

GoSmarter

User Manual

AI Production Assistant for Metals Manufacturing

Version 2026.06

Generated: June 01, 2026

Getting Started With GoSmarter

Welcome to GoSmarter — the AI-assisted optimisation and management tool for the metals industry. This guide walks you through logging in, getting set up, and preparing your core data so you're ready to start.

What is GoSmarter?

GoSmarter is a tool that helps you manage your metals production and fabrication more efficiently. It helps you:

- Keep track of your metals inventory
- Manage customer orders
- Plan how to cut long products to reduce waste
- Store and find steel mill certificates for quality compliance

Getting Started

Logging In

Before you can use the app, you'll need to create an account or log in. If you're just giving it a go, you'll need to register. If you've been given access by your employer, you can sign in directly.

GoSmarter uses Microsoft's login tool. If you've previously signed in, click your email address to sign in again, or click **Use another account** to use a different one.

1. Click the **Sign In** button
2. Enter your email address and password
3. You'll be taken to the Dashboard

After entering your email, you'll be asked whether you'd like to stay signed in. This is optional, but it makes future logins faster by remembering your details.

If Your Account is Not Associated With a Company

After logging in, if your account is not associated with a company yet, you can still access our free tools or request a demo from the **Dashboard**. This gives you a chance to explore what GoSmarter can do before committing to a full setup.

Once your account is linked to a company workspace, you'll have access to the full set of tools and features available to your organisation.

The Dashboard

After logging in, you'll land on the Dashboard. From here, you can jump to any tool or operation in the app.

Tutorial Mode is on by default. It offers useful tips throughout all tools to help you get up to speed quickly.

Tutorial Mode can be hidden by clicking the **X** in the top right corner of the tips panel. See the [GoSmarter UI guide](#) for more on customising the interface.

Your User Account

Click your name in the bottom left corner to access your user account menu. From here you can access your profile, return to the Dashboard, activate or deactivate Tutorial Mode, and log out.

On your User Profile, you can change your display name. To change your email address, contact your administrator.

Company Settings

In the left menu, expand **Company core data** and click **Company** to access your company information.

On the Company page, you can view your company's details, switch between connected companies if you're part of more than one, and see which tools your company has access to.

Scroll down the Company page to view and manage your active tools and features.

You can also switch between connected companies using the **Company toggle** in the top left corner of the screen.

Organisations

Still under **Company core data**, click **Organisations** to access the Organisations page.

From here, you can view a list of all organisations your company is connected to – including customers, suppliers, service providers, and more.

Setting Up Core Data

To manage inventory, you first need a database of materials, inventory types, and stock locations. GoSmarter comes with a built-in list, but you can also create your own.

The **Materials**, **Inventory Types**, and **Stock Locations** pages each give you several ways to populate their databases:

- Build them line by line using a form
- Upload a CSV (a downloadable template is provided, ready to open in Excel)
- Use **Starter Lists** to create editable copies of GoSmarter's built-in data – the quickest option if you want to start from a sensible default and modify from there

Once a list has been created, you'll find a data table on each page showing all your records.

You're now set up and ready to start using GoSmarter's tools. Check out the guides below to continue.

GoSmarter Documentation

How to Find What You Need

Know what you're looking for? Use the search bar at the top of any docs page. Type the task, not the feature name – "upload certificate" finds more than "mill certs."

Brand new to GoSmarter? Start with [Getting Started](#). Account setup, first login, and initial inventory – most manufacturers are up and running within a few hours.

Mid-implementation? The [implementation guides](#) cover ERP connections, data imports, and migrating existing records without a headache.

Stuck on something specific? The [Troubleshooting guide](#) covers the issues our support team hears most often.

What GoSmarter Handles

- **Mill certificates** – upload, extract, store, and retrieve quality documentation without a paper trail
- **Inventory management** – track stock, locations, and material grades in real time
- **Cutting optimisation** – run optimised cut plans and stop leaving money on the floor
- **Order management** – allocate stock, track fulfilment, and keep despatch moving
- **Compliance and traceability** – link every item back to its heat number and mill certificate, end to end

Dashboard Overview

The Dashboard is the first page you see after logging in. It gives you a quick navigation to key areas of the GoSmarter system.

What You'll See

When you open the Dashboard, you'll see key information about your operation at a glance.

Main Dashboard Sections

The dashboard is designed to show you to the most important information first, so you can quickly access key tools such as:

- Inventory
 - Orders
 - Cutting jobs
 - Mill certificates
-

How to Use the Dashboard

Quick Navigation

From the dashboard, you can quickly jump to any section:

1. Click on any summary card to go to that section
 2. Use the left sidebar menu to navigate directly
 3. Recent items may have clickable links
-

Bookmark the dashboard page in your browser for quick access each day!

Frequently Asked Questions

Welcome to the Nightingale FAQ! Here you'll find answers to some of the most common questions about our AI solutions, services, and how we can help your business leverage the power of artificial intelligence. If you have a question that isn't covered here, please don't hesitate to [get in touch](#).

Quick Reference Guide

This page provides quick answers to common tasks. Bookmark this page for fast reference!

Getting Started

| Task | Steps |
|----------------|---|
| Log In | Click Sign In → Enter email and password |
| Select Company | Click company dropdown in sidebar → Select your company |
| Navigate | Use left sidebar menu |
| Log Out | Click your name at bottom of sidebar → Sign Out |

Inventory Tasks

| Task | Quick Steps |
|-------------------------|--|
| Add one item | Inventory → + Add Inventory → Fill form → Save |
| Clone one item | Inventory → Find Item → Duplicate |
| Split one item into two | Inventory → Find Item → Split → Update weight and/or quantity → Save |
| Upload many items | Inventory → Upload → Use template → Upload file |
| Edit quantity | Inventory → Find item → Edit → Change quantity → Save |
| Search inventory | Use the filters section at top of inventory table |
| Delete item | Find item → Delete (trash icon) → Confirm |
| Link mill certificate | Edit inventory to add heat code → Save → Upload mill certificate |

Order Tasks

| Task | Quick Steps |
|------------------------|---|
| Create order | Orders → + Add Order → Fill details → Save |
| Upload multiple orders | Orders → Upload → Use template → Upload file |
| Update order | Orders → Find order → Edit → Change info → Save |
| Change order status | Edit order → Change Status dropdown → Save |
| Find order | Use the filters section at top of orders table |
| Mark order complete | Edit order → Status = Complete → Save |

Mill Certificate Tasks

| Task | Quick Steps |
|----------------------|---|
| Upload certificate | Mill Certificates → Upload Certificate → Select file → Upload |
| Find certificate | Use the filters section at top of mill certificates table |
| View certificate | Click on certificate row → See details and preview |
| Download certificate | Open certificate → Download button |

Status Indicators

Order Status

- **Pending** - Not started
- **In Progress** - Currently working on it
- **Complete** - Finished

Optimisation Status

- **Running** - Calculating patterns
- **Complete** - Ready to view
- **Failed** - Error occurred (try again)

Certificate Status

- **Uploaded** - File stored in system
- **Verified** - Checked for accuracy
- **Linked** - Connected to inventory

Best Practices Checklist

Daily:

-

.

Weekly:

-

.

Monthly:

-

.

Quick Troubleshooting

| Problem | Try This |
|--------------------|---|
| Can't see any data | Check company selector - is correct company selected? |
| Changes not saving | Check for error messages, ensure required fields filled |
| Can't find an item | Clear all filters and search again |
| Page won't load | Refresh browser (F5) or log out and back in |
| Upload failed | Check file format and size, try again |

Getting Help

Need assistance?

1. Check the [full documentation](#)
2. Review the [Troubleshooting Guide](#)
3. Contact your system administrator
4. Watch video tutorials (links in each section guide)

Bookmark this page for quick access to the checklists. You can click the checkboxes to help keep track!

Customer Onboarding Guide

Welcome to GoSmarter.ai! This comprehensive onboarding guide will help you get started quickly and begin realizing the benefits of AI-driven production assistance for your metals manufacturing operation.

1. Introduction: Welcome to GoSmarter.ai

What is GoSmarter?

GoSmarter.ai is your AI-driven production assistant designed specifically for metals manufacturers. We help you:

- **Automate paperwork** - Eliminate manual data entry and reduce administrative burden
- **Track inventory** - Real-time visibility into stock levels and material locations
- **Optimise production** - AI-powered cutting plans that minimize waste and maximise efficiency
- **Ensure compliance** - Digital mill certificate /aterial test report management with instant search and retrieval

GoSmarter was created by people who understand the challenges of metal fabrication and production. We know your time is valuable, which is why we've made setup fast and easy.

Onboarding Overview

This guide will walk you through everything you need to get GoSmarter up and running in your facility. The entire onboarding process typically takes **1-2 days**, and you'll start seeing time savings immediately.

What you'll learn:

1. How to set up your account and invite team members
2. How to configure GoSmarter for your operation
3. How to use core features for daily tasks
4. A structured action plan for your first week

Key Benefits: What to Expect

GoSmarter customers have achieved remarkable results:

- **50% scrap reduction** in rebar cutting with AI-powered production planning
- **120+ hours saved per year** on mill certificate processing and management
- **Instant access** to quality documentation for audits and customer requests
- **Reduced errors** in inventory tracking and order management

Most customers see measurable time savings within the first week of using GoSmarter. This guide will help you achieve similar results.

2. Account Setup and Access

Sign-Up and Login

Getting started with GoSmarter is simple - no complex installation required!

1. **Access the platform** - GoSmarter is cloud-based and accessible via any web browser
2. **Sign up** - Visit app.gosmarter.ai and click **Register**
3. **Verify your email** - Check your inbox for a verification email and click the confirmation link

GoSmarter offers a free trial so you can evaluate the platform risk-free. No credit card required to start, no software to install.

We then do a quick verification with you to confirm your account setup and answer any initial questions. After that, we make you your company space and support you in getting started.

Adding Team Members

GoSmarter works best when your whole team is on board. You can invite people to register and then we can assign them to your company or you can give us a list of people to invite.

Begin with 2-3 key users during onboarding. Once they're comfortable, they can help train additional team members.

Platform Tour: Understanding the Interface

When you first log in, you'll see the main GoSmarter dashboard. Here's what each section does:

Key Navigation Areas:

- **Company core data** - Manage information about your company and how you work
- **Production Planning** - The space to manage stock, orders, scrap, and generate cutting plans
- **Compliant Metals** - The area to manage mill certificates and quality documentation
- **Utilities** - Additional tools like a scrap rate calculator

If you manage multiple locations or companies, use the company selector in the top-left corner to switch between them. GoSmarter will remember your selection for future visits.

3. Technical Configuration

Data Onboarding: Getting Your Information into GoSmarter

The key to getting value from GoSmarter is having your data in the system. Don't worry - we've made this easy!

Configure core data (OPTIONAL)

GoSmarter comes pre-configured with sensible defaults for common materials and processes. However, you can customise core data to match your specific operation:

1. Go to **Company core data > Organisations** to manage customers and suppliers. You can add new organisations (manually or bulk upload) or edit existing ones.
2. Navigate to **Company core data > Materials** to review and customise materials and grades. You can start from our list, bulk upload, or start from scratch.
3. Navigate to **Company core data > Inventory Types** to review and customise types of goods. You can start from our list, bulk upload, or start from scratch.
4. Navigate to **Company core data > Stock Locations** to set up your storage locations (yards, warehouses, bins). You can start from our list, bulk upload, or start from scratch.

GoSmarter includes a library of common materials and processes to help you get started quickly. Customisation is optional - you can use the defaults if they fit your needs. Setting your defaults now makes it easier for people to enter data later, with fewer risks of picking an incorrect value.

Inventory Import

There are two ways to add your initial inventory:

Option 1: Manual Entry (Good for small inventories or getting started quickly)

1. Go to **Inventory** in the main menu
2. Click **+ New item**
3. Fill in the details:
4. Mandatory fields
 - Name (e.g., Rebar 12x2500mm)
 - Material (e.g., Rebar Grade 60)
 - Quantity
5. Optional fields
 - Diameter, length, width, and depth
 - Type (e.g., bars, rods, etc.)
 - Supplier
 - Stock location (e.g., yard, bin)
 - Unit price
 - Weight

6. Click **Add item**

[View detailed Inventory Guide](#)

Option 2: Bulk Upload (Recommended for larger inventories)

1. Go to **Inventory**
2. Click **Bulk actions > Download CSV template**
3. Fill in your inventory data using the template
4. Click **Bulk actions > Upload CSV**
5. Select **Choose file** and upload your inventory file
6. Click **Upload** to import

GoSmarter uses simple interfaces. No technical expertise needed - if you can use a spreadsheet, you can upload your data.

Order Import

There are two ways to add your initial orders:

Option 1: Manual Entry (Good for small inventories or getting started quickly)

1. Go to **Orders** in the main menu

2. Click **+ New order**

3. Fill in the details:

4. Mandatory fields

- Order Reference (e.g., Cus ABC-001)
- Order Date

5. Optional fields

- Status (e.g., Pending, In Progress)
- Site (e.g., Project A)
- Delivery Date
- Line item(s)
- Line Item Reference (e.g., Cus ABC-001-001)
- Shape code (e.g., 01 for rebar)
- Diameter, length, width, and depth
- Quantity
- Price
- Status (e.g., Pending, In Progress)
- Heat code (if applicable / when known)

6. Click **Add order**

[View detailed Orders Guide](#)

Option 2: Bulk Upload (Recommended for larger order books)

1. Go to **Orders**

2. Click **Bulk actions > Download CSV template** to get a zip file with a template for orders and one for order line items

3. Fill in your orders and line item data using the templates - the line items use the order reference to link to the parent order

4. Click **Bulk actions > Upload orders & line items**

5. Select **Choose orders file** and upload your orders file

6. Optionally, select **Choose line items file** and upload your line items file

7. Click **Upload** to import

Mill Certificate Upload

Getting your quality documentation into GoSmarter is equally straightforward:

1. Navigate to **Compliant Metals > Mill Certificates**
2. Click **Upload Mill Certificate**
3. Select **Choose file** and upload your completed file
4. GoSmarter's AI automatically extracts key information including:
5. Heat/batch numbers
6. Chemical composition
7. Test results
8. Review the extracted data
9. The certificate is now searchable and linked to your inventory

GoSmarter automatically reads your mill certificates and extracts the important data. What used to take 10-15 minutes of manual data entry now happens in seconds!

[View detailed Mill Certificates Guide](#)

Integration Options

GoSmarter works standalone, but can also integrate with your existing systems:

- **Standalone Use** - No integrations required; GoSmarter works perfectly on its own
- **Data Export** - Export your data anytime to Excel, CSV, or PDF for use in other systems
- **API Integration** - Connect to ERP or order management systems (contact support for details)

We recommend starting with GoSmarter as a standalone tool. You can always add integrations later once your team is comfortable with the platform.

4. Orientation and Key Features Training

This section covers the essential features you'll use daily. We'll focus on quick wins and practical tasks.

Daily Operations Basics: Managing Inventory and Orders

Working with Inventory

Your inventory is the foundation of everything in GoSmarter. Here's what you need to know:

Viewing Your Stock:

1. Click **Inventory** in the main menu
2. See all your materials at a glance
3. Use filters to find specific items (by grade, size, location)
4. Click any item to see full details

Quick Exercise: Try adding a new material to your inventory right now using the manual entry option. This will help you get familiar with the interface.

Updating Stock Levels:

1. Find the item you want to update
2. Click the **Edit** icon (pencil)
3. Update the quantity
4. Click **Save**

GoSmarter's inventory management replaces clumsy spreadsheets with a simple, searchable interface. No more hunting through multiple Excel files!

[View complete Inventory Management Guide](#)

Managing Orders

Track customer orders from receipt to completion:

1. Go to **Orders** in the main menu
2. Click **+ New order** to add a new customer order
3. Enter order details (customer, materials needed, quantities, due date)
4. Track order status as it moves through production

[View complete Order Management Guide](#)

Compliance: Working with Mill Certificates

One of GoSmarter's most powerful features is instant access to quality documentation.

Step-by-Step Example: Upload and Retrieve a Certificate

1. **Upload:**
2. Go to **Mill Certificates**
3. Click **+ Upload Certificate**
4. Select your PDF certificate -
5. Click **Upload** and GoSmarter's AI extracts all key data automatically
6. **Search and Retrieve:**
7. Use the search bar to find certificates by:
 - File name
 - Date range
 - Status
8. Click on **Actions > View Certificate** to see the fully extracted document data
9. Download or email directly to customers

What used to take hours of searching through filing cabinets or folders now takes seconds. During audits or customer requests, you'll have instant access to all quality documentation.

Time Saved: Customers report saving **120+ hours per year** on certificate processing alone!

[View complete Mill Certificates Guide](#)

Production Planning: AI-Powered Optimisation

See GoSmarter's AI in action with production planning:

Quick Demo: Generate Your First Draft Cutting Plan

1. Go to **Production Planning > Cut Long Products**
2. Select the orders you want to plan
3. Choose available stock materials
4. Click **Generate Plan**
5. GoSmarter's AI creates an optimised cutting plan that:
6. Minimises scrap and waste
7. Shows exactly which bars to cut
8. Provides cut lists for the shop floor
9. Calculates material utilisation

This is where customers really see the power of AI. A task that might take hours manually is done in seconds enabling you to review / tweak the plan with your expertise

Real Results: Customers have achieved **50% scrap reduction** in rebar cutting using GoSmarter's optimisation.

Scrap Tracking

Keep track of waste and identify savings opportunities:

1. Navigate to **Production Planning > Scrap**
2. Log scrap by weight
3. Use insights to reduce waste over time

[View Scrap Calculator Guide](#)

You can use the main inventory tracker for scrap or offcuts where you need to maintain full traceability. Just set the inventory type to "scrap" or "offcut" when adding an item or split an existing item to create a new scrap/offcut item with all the existing properties of the original.

5. First Week Action Plan

Follow this structured timeline to ensure successful onboarding and early wins:

Day 1: Setup and Initial Data

Tasks:

- Complete account setup and log in successfully
- Add 2-3 key team members
- Upload initial inventory data (start with current stock)
- Give us examples of mill certificates from any suppliers we don't currently have on the platform so we can add them to your company space
- Upload 5-10 recent mill certificates
- Complete a quick tour of all main sections

Expected Time: 2-3 hours

Goal: By end of Day 1, you should be able to log in, navigate the platform, and see your data in the system.

Day 2: First Production Tasks

Tasks:

- Enter 2-3 current customer orders
- Search for a mill certificate by heat number
- Update inventory quantities based on actual stock

Expected Time: 2-3 hours

Goal: Experience core workflows and see AI in action.

Day 3: Team Training

Tasks:

- Train 2-3 additional team members on logging in
- Show them how to check inventory
- Demonstrate certificate search
- Have them try basic tasks (view orders, search materials)

Expected Time: 1-2 hours

Goal: Build confidence across your team and distribute knowledge.

Day 4: Real-World Usage

Tasks:

- Use GoSmarter for all new orders received today
- Update inventory for any materials used
- Upload any new mill certificates
- Generate your first AI-powered cutting plan
- Review the plan with a colleague

Expected Time: Ongoing during normal work

Goal: Make GoSmarter part of your daily routine.

Day 5: Review and Reflect

Tasks:

- Hold a 30-minute team meeting to discuss:
 - What time was saved this week?
 - What problems were solved (e.g., found missing certificate data quickly)?
 - Any questions or confusion?
 - What features to explore next?
- Document any outstanding questions for support
- Plan next week's rollout to additional team members

Expected Time: 30-60 minutes

Goal: Celebrate early wins, address issues, and maintain momentum.

This structured approach helps you build confidence gradually. By Day 5, many customers have already freed several hours by eliminating manual paperwork and reducing planning time.

6. Support and Resources

Getting Help

We're here to support your success!

Documentation:

- [GoSmarter Documentation Home](#) - All guides and tutorials
- [Dashboard Guide](#) - Understand your starting point
- [Inventory Management Guide](#) - Deep dive into stock tracking
- [Order Management Guide](#) - Master order workflows
- [Mill Certificates Guide](#) - Advanced certificate management
- [Quick Reference Guide](#) - Handy tips and shortcuts
- [Troubleshooting Guide](#) - Solve common issues

Customer Support:

- **Email Support:** support@gosmarter.ai

- **Response Time:** Within 24 hours on business days
- **Live Chat:** Available during business hours (coming soon)

Don't hesitate to reach out! Our team has deep experience in metal manufacturing and can help with setup, questions, or customization needs.

Customer Success Check-ins:

We recommend scheduling a check-in call with our customer success team after your first two weeks. We'll review your progress, answer questions, and help you get even more value from GoSmarter.

Common Onboarding Questions (FAQ)

Q: What if my inventory data is in an unusual format?

A: We can help guide you in transformaing data from other systems into the needed format. If you're having trouble, contact support and we can help you prepare your data or do a custom import.

Q: How secure is my data?

A: GoSmarter uses enterprise-grade security with encryption in transit and at rest. We follow industry best practices for data protection. Your data is stored securely in the cloud with regular backups.

Q: Can GoSmarter integrate with my ERP system?

A: GoSmarter works standalone but can integrate with many systems via our API. Contact our technical team to discuss your specific integration needs.

Q: What if I make a mistake entering data?

A: All data can be edited or deleted. We also maintain audit logs so you can see what changed and when. Don't worry - you can't break anything!

Q: Do I need special software or hardware?

A: No! GoSmarter is cloud-based and works in any modern web browser (Chrome, Firefox, Safari, Edge). No installation required.

Q: Can I export my data?

A: Yes! You can export data to CSV at any time. Your data is always yours.

Q: What happens when my trial ends?

A: You can choose a subscription plan that fits your needs. Your data and configuration are preserved - there's no disruption to your workflow.

User Community

Coming soon: user forum and community features

Join other GoSmarter users to share best practices, tips, and success stories.

7. Conclusion and Next Steps

Congratulations!

By following this onboarding guide, you now have:

- ✓ GoSmarter set up and configured for your operation
- ✓ Your initial inventory and mill certificates in the system
- ✓ Knowledge of core features and daily workflows
- ✓ Team members trained on basic usage
- ✓ Real experience using AI-powered production planning

Immediate Benefits You're Already Seeing

- **Digitised certificates** - No more filing cabinet or inbox searches
- **Centralised inventory** - One source of truth for all stock data
- **Automated planning** - AI helps you do in minutes what used to take hours
- **Time savings** - Less paperwork means more time for productive work

Next Phase: Full Deployment

Now that you have the basics in place, you're ready to fully integrate GoSmarter into your operations.

Recommended Next Steps:

1. **Expand Usage** - Roll out GoSmarter to additional team members
2. **Explore Advanced Features** - Dive deeper into optimisation
3. **Optimise Workflows** - Customize GoSmarter to match your specific processes
4. **Measure Results** - Track time savings and efficiency gains

Additional Resources:

- **Implementation Project Plan** - Structured roadmap for full deployment (coming soon)
- **Process-Specific Guides:**
 - [Inventory Management Deep Dive](#)
 - [Certificate Management Workflows](#)
 - [Order Processing Optimization](#)

Keep Learning

GoSmarter is designed to grow with you. As you become more comfortable with the basics, explore more features and advanced capabilities.

The most successful GoSmarter customers start simple and progressively add capabilities. There's no rush - focus on mastering the basics first, then expand when you're ready.

We're Here to Support Your Success

Remember, you're not alone in this journey. Our team is committed to your success:

- Comprehensive documentation and guides
- Responsive customer support
- Regular product updates and improvements
- A growing community of manufacturing professionals

Ready to take the next step? Explore our [process-specific guides](#) or [contact our customer success team](#) to schedule a check-in call.

Welcome to the GoSmarter family! We're excited to be part of your journey toward more efficient, data-driven metal manufacturing.

You've already accomplished a lot in your first week. Keep building on this momentum - the more you use GoSmarter, the more value you'll discover. Many customers tell us they wonder how they ever managed without it!

Inventory Management

Use Inventory Management to view your current stock, add new items, and manage each inventory line from one place.

Open Inventory from Production Planning

Start in the left navigation, then open Production Planning and select Inventory.

This takes you to the main inventory table where you can review existing stock and open item-level actions.

Read the Inventory Table

The inventory table is your working view for day-to-day stock checks.

From this screen, you can:

- View all inventory items currently in the system
- Open each line for more detail
- Add a new item when stock arrives

Add New Inventory Items

Use the New Item action to create an inventory line.

When the form opens, complete the required fields. You may need to scroll to see all inputs before saving.

The form is designed for direct stock entry, so you can capture the item once and use it immediately in later planning and allocation work.

Expand an Item to See Full Details

To inspect a line in more depth, expand the row using the chevron beside the item. After expanding, you can review key item information in one place.

If the item is connected to an order, that order appears in the details and can be opened from there.

Use the Actions Menu for Item Operations

Select Actions on the row in this same expanded view to open item-level operations.

From this menu, you can:

- Apply tag rules
- Mark stock as used
- Split an item into two quantities
- Duplicate an item with the same details
- Edit item fields
- Delete an item

Tags help you group and quickly access related inventory items. Tag rules define the conditions an item must meet to receive a tag. Rules update automatically, and you can manually run Apply Tag Rules if needed.

Record Stock Usage

Click Use Stock to open the stock usage window, then enter the amount and weight used so the item updates correctly.

Duplicate, Split, and Edit Items

Duplicate creates a second inventory record with the same details as the current item.

Split moves part of an item's quantity and weight into a new item, while keeping the same base details.

Edit opens the same core fields you used during item creation, so you can adjust details without recreating the record.

Finish and Move to Connected Workflows

Once your inventory is accurate, continue by linking and managing demand in Order Management.

Scrap Management

Scrap Management helps you log scrap records, monitor changes over time, and keep a clear view of where production waste is building up. The tool is designed for practical day-to-day tracking so you can review trends and decide where process improvements will have the biggest effect.

Open Scrap Management

Start by expanding Production Planning in the left navigation and opening Scrap Management.

From this page, you can log and manage scrap records and review a full record of edits. In this workflow, scrap is separate from offcuts. Offcuts are handled through inventory processes, while Scrap Management is focused on waste tracking and control.

The table gives you a current operational view of your records, and manual logging at the point of production gives you cleaner data for identifying where wastage is coming from.

Add Scrap Records

Select Add Entry to create a new scrap record directly in the app.

In the entry form, you can create new records, link each record to the relevant bin or skip, and track associated weight values.

Manage Existing Records

Each record includes an Actions control that opens record-specific operations.

From this menu, you can:

- Edit a record
- View record history
- Delete a record

Edit Existing Records

Choosing Edit opens a pre-populated version of the record form.

This lets you adjust previously entered values without rebuilding the record from scratch.

Review Record History

Selecting View History opens a timeline of updates for that record.

This history view helps you track changes over time while keeping the data under a single record instead of creating duplicate entries for each adjustment.

Wrap-Up

Scrap Management gives you a practical way to log waste, maintain an audit trail of changes, and build a more reliable view of scrap performance across production.

Digitise your mill certificates / MTRs

Mill certificates and Material Test Reports are quality records attached to incoming material. This guide shows how the Mill Certificates workspace supports upload, extraction, review, and traceability workflows.

Open the Mill Certificates Workspace

From the Compliant Metals navigation, open Mill Certificates to access certificate management and heat code data in one place. The page is set up to handle the full lifecycle: uploading files, processing extracted fields, tracking outcomes, and moving into review or inventory context.

Upload and Monitor Certificate Runs

Upload certificate PDFs directly from the main page. The flow is designed around ingestion first, then automated processing: once a file is submitted, the system extracts data and connects it to inventory using the captured heat codes. In the same list view, you can monitor each uploaded file, including status and upload timestamp.

Use the row-level actions menu when you need to branch into detail workflows for a specific run.

Inspect Run Details and Exports

From the actions menu, open View Details to inspect processed output for the run. The details view brings together heat code properties, export options, and access paths into related inventory records so review and downstream actions stay in one workflow.

Review and Correct Extracted Fields in Bulk Edit

Bulk Edit opens the uploaded certificate view and a full table of extracted values so you can verify the run before approval. If a scan quality issue, handwriting, or page condition causes a mismatch,

expand a line item and edit the field directly. The page flags unsaved edits and requires Save Changes before moving on.

Record a Review Outcome and Reopen if Needed

After correcting extracted values, run Review to lock in an outcome and create a review log. The review modal supports Approved or Issue states plus optional comments, then submits that decision into the run record.

Approved runs show a confirmation state and disable further edits. If the wrong outcome was set, use Update Review to switch from Approved back to Issue, which re-enables Bulk Edit for additional corrections.

Follow a Heat Code into Tests and Inventory

Inside the report table, each line item has actions for material-lot follow-through. You can open test results for the selected entry or jump directly to inventory context for that heat code.

When jumping to inventory from the certificate line, the destination view is filtered to the selected heat code so traceability checks stay focused.

Continue in Inventory Management

This walkthrough ends in the inventory workflow, where the filtered heat code view helps confirm stock linkage and downstream handling for the same material context.

For a more detailed guide to the digitisation flow, see [Digitising mill certificates](#).

Mill certificate reference

What is a mill certificate?

A mill certificate, also called an MTR, records the material identity and traceability details for a heat or lot, including the information needed to connect received stock to its supporting documentation and test results.

Accepted file types

You can upload common certificate document formats, including PDF files and standard image formats used for scans or photos of certificates.

Search, filter, and downloads

Use search and filters to narrow the certificate list by the details you need to review. From the certificate views, you can also download data as CSV, download the certificates shown on the current page as a ZIP, or download certificates grouped per heat code as a ZIP when available.

Heat-code linking rules

Heat-code matching is case-insensitive. Certificates are linked automatically when a matching heat code is found during certificate upload, and matching can also occur when inventory is loaded later for the same heat code.

Editing and deleting certificates

You can edit certificate details to correct metadata and maintain traceability records. Deleting a certificate removes it from the certificate list and any linked workflow views that depend on that stored certificate record.

Certificate statuses

- **Processing:** the uploaded certificate is still being read or indexed.
- **Complete:** the certificate finished processing and is available for normal review and linking.
- **Error:** the certificate could not be processed successfully and may need to be checked or uploaded again.

Common questions

- **Why is a certificate not linked yet?** Check that the heat code matches exactly apart from letter casing, and confirm the inventory or uploaded document contains the expected heat code.
- **Why are some certificates unavailable for download grouping?** Grouped ZIP downloads depend on the certificate and heat-code relationships available in the current results.

- **What happens if inventory is loaded after the certificate?** Matching heat codes can still be linked automatically when inventory data is loaded.

Best practices

- Use consistent heat-code formatting in source documents and inventory records.
- Review certificates that remain in **Processing** or **Error** before relying on them for traceability.
- Use filters before exporting so CSV and ZIP downloads reflect the exact working set you want to share or audit.
- Keep certificate metadata up to date so downstream inventory and test traceability remain easy to follow.

Track scrap

The Scrap Logging tool provides a straightforward way to track and manage scrap records in your production environment. This allows you to maintain visibility over scrap output and optimise your production processes based on accurate data.

Accessing the Scrap Logging Tool

To begin using the Scrap Logging and Tracking features, navigate to the Production Planning section within GoSmarter. From there, click on Scrap to access the Scrap Logging page. This section displays your scrap records in a table format, showing all logged entries at a glance.

Creating New Scrap Records

To add a new scrap entry, click the Add Entry button in the interface. This opens a form where you can input the details for your new scrap record. The form captures all necessary information required to properly log and categorise your scrap.

Once you have completed all the required fields in the form, click the Add Entry button to save the record. The new entry will then appear in your scrap records table, making it available for future reference and analysis.

Managing Existing Scrap Records

Each scrap record in the table includes an actions button located on the far right. You may need to scroll horizontally to see this button if your table contains many columns. Clicking the actions button reveals a menu with several options for managing that specific entry.

From the actions menu, you can edit existing entries to update information, view the complete edit history to track what changes have been made and when, or delete entries that are no longer needed. This gives you full control over your scrap records throughout their lifecycle.

When to Use Manual Scrap Logging

The manual scrap logging feature is designed as a quick and efficient method for tracking scrap when detailed provenance is not required. It provides a lightweight way to maintain awareness of scrap output without the administrative overhead of more detailed tracking systems.

However, if you require a more complete and comprehensive record of scrap with full provenance information, you should track scrap as part of your broader inventory management system. This ensures that your scrap data is integrated with your overall inventory and production records for better visibility and traceability.

Cut Long Products (Optimization)

The Cut Long Products section (also called Optimization) helps you plan how to cut your steel bars efficiently. This reduces waste and saves money by finding the best way to cut what you need from what you have.

What is Cutting Optimization?

When you have long steel bars in inventory and need to cut them into shorter pieces for orders, there are many ways to do it. Some ways waste more material than others.

The optimization tool automatically finds the best cutting pattern that:

- Uses the bars you have in stock
- Produces the pieces customers ordered
- Creates the least amount of waste
- Minimizes the number of cuts needed

Example:

If you have 12-meter bars and need pieces that are 3.5 meters and 4 meters long, the system figures out how to cut them to waste as little as possible.

Viewing Your Cutting Plans

The main page shows all your optimization runs (cutting plans).

What you'll see

- **Name** - Description of the cutting plan
- **Date Created** - When you ran it
- **Status** - Complete, in progress, or failed
- **Waste %** - How much material will be unused
- **Actions** - View details, download, delete

Running Optimization

Step 1: Prepare Your Data

Before running optimization, make sure you have:

1. Current inventory entered in the system
2. Orders entered with correct quantities and lengths
3. Matching material types and diameters

The optimizer can only use bars you have in inventory to fulfill orders you've entered.

Step 2: Start a New Optimization

1. Click the **+ New Optimization** button
2. A setup form appears

Step 3: Select What to Include

Choose what inventory and orders to use:

Inventory Selection

- Select the material grade (e.g., Grade 250)
- Select the diameter (e.g., 20mm)
- The system shows you how many bars you have available

Orders Selection

- Select which orders to include in this cutting plan
- Check the order numbers and quantities
- You can select multiple orders at once


Step 4: Run the Optimization

1. Give your optimization run a clear name (e.g., "Order 101-105 Grade 250 20mm")
2. Click **Run Optimization**

3. The system calculates the best cutting pattern
4. This usually takes 10-30 seconds

Step 5: Wait for Results

A progress indicator shows the optimization is working. When complete, you'll see:

-  Success message
- Results summary
- Option to view details

Understanding Results

Viewing the Cutting Plan

1. Click on a completed optimization from the list
2. The details page opens

Summary Section

- Total bars to cut
- Total pieces produced
- Waste percentage
- Material utilization

Cutting Patterns

Each pattern shows:

- Which bar from inventory to use (by position/ID)
- What lengths to cut from it
- How many times to repeat this pattern
- Waste remaining from each bar

Reading a Cutting Pattern

Example pattern:

Bar #1 (12,000mm) → Cut: 3,500mm, 3,500mm, 4,000mm = 11,000mm used
Waste: 1,000mm (8.3%)
Repeat this pattern: 5 times

This means:

- Take bar #1 from your inventory
- Cut one piece 3,500mm long
- Cut another piece 3,500mm long
- Cut one piece 4,000mm long
- You'll have 1,000mm left over as waste
- Do this same pattern on 5 different bars

Downloading Results

Downloading the Cutting Plan

To save the plan or print it for the production floor:

1. Open the optimization details
2. Click the **Download** button
3. Choose format:
4. **Excel** - Spreadsheet with all patterns
5. **PDF** - Printable cutting instructions
6. The file downloads to your computer

Print the PDF and give it to the operator who will be cutting the bars.

What's in the Download

The downloaded file includes:

- List of bars to use (by inventory reference)
- Exact cutting measurements for each pattern
- How many pieces of each length to produce
- Total waste calculation

- Summary statistics

Comparing Optimizations

If you want to try different approaches:

1. Run optimization with different inventory selections
2. Run optimization with different order combinations
3. Compare waste percentages
4. Use the plan with the lowest waste

Example:

- Run 1: Using only 12-meter bars = 12% waste
- Run 2: Using mix of 12-meter and 6-meter bars = 7% waste
- Choose Run 2 - saves material!

Managing Your Optimizations

Renaming an Optimization

1. Click the **Edit** button (pencil icon)
2. Change the name to something more descriptive
3. Click **Save**

Good naming examples:

- "Week 42 Grade 500 16mm"
- "Customer ABC Order 101-103"
- "Urgent Orders Oct 21"

Deleting Old Optimizations

To keep your list clean:

1. Find optimizations you no longer need
2. Click the **Delete** button (trash icon)

3. Confirm deletion

Deleted optimizations cannot be recovered. Download them first if you might need them later.

Common Questions

What if the optimization can't use all my inventory?

The system only uses bars that can efficiently produce the required pieces. Leftover inventory stays in your stock.

What if I don't have enough inventory to fulfill my orders?

The optimization will show what it can do with available inventory. You'll need to get more stock for the remaining orders.

Can I adjust the cutting patterns manually?

The patterns are optimized by the system. If you need different patterns, try running optimization with different inventory or order selections.

How accurate is the waste calculation?

Very accurate. However, add a small allowance for saw blade width (kerf) when cutting in real production.

Can I save multiple optimization runs?

Yes! Keep different scenarios saved so you can compare them and choose the best approach.

What if two patterns have similar waste percentages?

Other factors matter too: number of cuts, bar handling, operator convenience. Choose what works best for your situation.

Tips for Best Results

1. **Keep inventory accurate** - The optimizer can only work with what it knows you have
2. **Group similar orders** - Optimizing orders with the same material together gets better results
3. **Consider bar handling** - Sometimes a plan with slightly more waste but fewer cuts is more practical
4. **Save your plans** - Keep successful plans for reference when similar orders come in
5. **Download before cutting** - Always have a printed plan for the shop floor

Smart cutting planning saves material, time, and money!

Managing Inventory and Daily Operations with GoSmarter

This guide is designed for inventory managers, store personnel, and operations managers responsible for stock control and daily operational data. Learn how to use GoSmarter's Metals Manager capabilities to track materials, suppliers, and orders in one place, replacing manual inventory spreadsheets with GoSmarter's simpler, real-time interface.

Overview

The Challenge

Managing inventory in metals manufacturing traditionally involves juggling multiple spreadsheets, manual stocktakes, and disconnected systems. Finding out what raw materials are on hand, where they are located, and allocating them to jobs can be time-consuming and error-prone.

How GoSmarter Helps

GoSmarter provides a centralised, real-time inventory management system that:

- Tracks all materials, suppliers, and orders in one place
- Provides instant visibility into current stock levels
- Links mill certificates to inventory items for full traceability
- Enables multiple team members to access data simultaneously
- Reduces inventory errors and saves time compared to manual checking

GoSmarter can be used standalone or alongside existing systems. Benefits include less inventory error, significant time savings vs. manual checking, and improved traceability for compliance.

Navigating the Inventory Module

When you open the Inventory section, you'll see the Inventory dashboard - your central hub for all stock management activities.

Adding and Updating Stock Items

Adding New Stock

When new materials arrive at your facility, you can add them to your inventory:

1. Click the **+ New Item** button at the top right of the Inventory page.
2. Complete the fields in the **Add Inventory Item** form:
 - **Name*** – A clear item name (e.g., S355 Plate 10mm or Rebar 12mm).
 - **Heat Code** – Enter the heat/batch number if available.
 - **Material*** – Select the material grade (e.g., A36, S355, Aluminium 6061).
 - **Type** – Choose the product type (e.g., Plate, Bar, Rebar, Coil).
 - **Supplier** – Select an existing supplier from the list.
 - **Stock Location** – Choose where the item will be stored.
 - **Unit Price** – Optional price per piece or per unit weight.
 - **Quantity*** – Number of pieces.
 - **Dimensions (mm)** – Fill in whichever are relevant:
 - **Length (mm)**
 - **Width (mm)**
 - **Depth (mm)**
 - **Diameter (mm)**
 - **Weight (kg)** – Enter if known; otherwise leave as zero.
3. Click **Add Item** to save the new inventory record.

Example: Adding Steel Plates

Suppose you receive a delivery of 50 steel plates:

- **Name:** S355 Steel Plate 10mm

- **Heat Code:** AB12345678
- **Material:** S355
- **Type:** Plate
- **Supplier:** ABC Steel Supplies
- **Stock Location:** Bay 3, Rack A
- **Unit Price:** (optional)
- **Quantity:** 50
- **Length (mm):** 2400
- **Width (mm):** 1200
- **Depth (mm):** 10
- **Weight (kg):** Enter total or per-piece if known

Enter these details and click **Add Item**. The inventory updates immediately and becomes visible to all users.

Reordering / Duplicating Stock

If you regularly order the same items, you can quickly duplicate an existing stock item:

1. Find the item in your inventory list.
2. Click the **Actions > Duplicate** button (two overlapping squares icon) on that row.

Bulk Upload for Multiple Items

When you have many items to add (for example, after a large delivery or during initial setup):

1. Click the **Bulk Upload** button
2. Download the CSV template
3. Fill in your spreadsheet with inventory details:
4. One row per inventory item
5. Include all required columns (material type, dimensions, quantity, etc.)
6. Upload your completed file
7. Review the preview to verify data looks correct
8. Click **Confirm** to add all items

Always double-check your bulk upload data before confirming. It's easier to correct errors in the spreadsheet than to edit individual items afterward.

Updating Existing Stock

To update stock when materials are used in production or adjustments are needed. We offer a couple of ways to do this based on how you want to work.

Method 1: Direct Edit

1. Find the item in your inventory list (use search or filters)
2. Click the **Actions > Edit** button (pencil icon) on that row
3. Update the relevant information:
4. **Quantity** - Reduce after usage, increase if more arrives
5. **Location** - If material has been moved
6. **Status** - Mark as allocated, in-use, or available
7. Click **Save**

Method 2: Drawdown Usage

1. Find the item in your inventory list
2. Click the **Actions > Drawdown Usage** button (downward arrow icon) on that row
3. Enter the quantity or weight used in production
4. Click **Save**

Method 3: Split Stock

If you cut long products into smaller pieces and want to track the offcuts:

1. Find the item in your inventory list
2. Click the **Actions > Split Stock** button (scissors icon) on that row
3. Enter the quantity or weight of material being cut
4. Specify the dimensions of the new offcut pieces
5. Click **Save**

Update inventory immediately after cutting or using material (perhaps via a tablet on the shop floor) to keep data current. Real-time updates ensure everyone has accurate information.

Linking Mill Certificates to Inventory

One of GoSmarter's unique features for metals manufacturing is the ability to link mill test certificates directly to inventory items, ensuring full traceability and compliance.

Why Link Certificates?

Linking certificates to inventory provides:

- **Instant verification** of material properties (chemistry, grade, strength)
- **Product lineage** - Full traceability from mill to finished product
- **Compliance assurance** - Easy to prove materials meet specifications
- **Quick access** - View certificate data without searching through files

How to Link a Certificate

After digitising a mill certificate using GoSmarter's MillCert Reader AI (see the [Digitising Mill Certificates Guide](#)):

1. Open the inventory item you want to link
2. Click **Edit**
3. In the **Heat code** field simply enter the value associated with the items. NOTE: You may need to breakdown bulk deliveries into the relevant bundles or pieces first to ensure each inventory item has the correct heat code. this is easy to do with the Split option.
4. GoSmarter will automatically suggest matching certificates based on heat number

Viewing Certificate Data

Once linked, you can:

- Click on **Actions > View mill certificate** option
- See key properties (grade, chemical composition, mechanical properties) directly in the inventory view
- Download the original certificate PDF
- Verify compliance requirements instantly

Always link mill certificates to inventory items as soon as materials arrive. This ensures complete traceability and makes compliance audits much easier - you can pull records by date, supplier, or specification in seconds.

Managing Suppliers and Orders

Supplier Management

Keep track of who supplies your materials for better procurement and quality management.

Adding a Supplier

1. Go to **Company core data > Organisations** section in the navigation menu
2. Click **+ New Organisation**
3. Enter supplier details:
4. Company name
5. Contact person and details
6. Address
7. Select the Supplier role
8. Click **Save**

Linking Suppliers to Inventory

When adding inventory items, always select the correct supplier. This allows you to:

- See which materials came from which supplier
- Filter inventory by supplier
- Track supplier quality and reliability
- Quickly contact suppliers about specific batches

Order Management

GoSmarter helps you manage both customer orders and internal work orders that draw from inventory.

Creating a New Order

1. Navigate to **Orders** section
2. Click **+ New Order**
3. Enter order details:

4. Customer name or internal project
5. Required materials and quantities
6. Delivery date
7. Any special requirements

Example: Order for Cut Rebar

You receive an order for 100 pieces of cut rebar, 4m length, grade B500C:

1. Create new order with customer details
2. Specify: 100 pieces, 4m, B500C rebar in the order line items

Using Inventory Data Day-to-Day

Best Practices for Daily Operations

1. **Real-time updates** - Update usage immediately after cutting or consuming material
2. Use tablets or mobile devices on the shop floor for instant updates
3. This keeps data current for all team members
4. **Multi-user access** - Take advantage of cloud-based simultaneous access
5. Unlike single-user Excel files, multiple team members can view and update inventory at the same time
6. Production staff, managers, and office staff all see the same real-time data
7. **Regular reconciliation** - Perform periodic physical stock checks
8. Compare physical count with system data
9. Make adjustments as needed
10. Investigate significant discrepancies
11. **Use filters and search** - Find what you need quickly
12. Filter by material type, supplier, location, or availability
13. Search by heat number, batch number, or dimensions
14. Save frequently-used filter combinations

Performing Stock Audits

Regular audits ensure data accuracy:

1. **Physical count** - Count actual materials in your facility
2. **Compare with system** - Check against GoSmarter inventory levels
3. **Make adjustments** - For discrepancies:
4. Click **Edit** on the item
5. Enter the correct quantity based on physical count
6. Click **Save**

Tracking Offcuts and Remnants

After cutting products, you often have leftover pieces that can be reused:

1. When recording production usage, note any usable offcuts
2. Add the offcut as a new inventory item:
3. Material type: Same as original
4. Dimensions: Actual offcut size
5. Quantity: Number of offcut pieces
6. Status: Mark as "Offcut" or "Remnant"
7. Link to original heat's certificate for traceability
8. These offcuts become available inventory for future orders requiring shorter lengths

This practice reduces waste and improves material utilisation. See the [Tracking and Reducing Scrap Guide](#) for more on managing offcuts.

FAQ / Troubleshooting

Common Issues and Solutions

Q: What if I find a discrepancy between physical stock and GoSmarter?

A: Perform an inventory adjustment:

1. Click **Edit** on the item
2. Enter the correct quantity from your physical count

3. Save the adjustment

Q: How do I handle different units (kg vs tons, meters vs millimeters)?

A:

- GoSmarter uses consistent base units (typically millimeters for length, kilograms for weight)
- When entering data, use the unit shown in the field label
- For conversions, use the built-in calculator or convert before entering
- Contact your administrator if you need unit settings adjusted for your facility

Q: How do I handle materials from multiple locations or warehouses?

A:

- Use the **Location** field when adding inventory
- Create consistent location naming (e.g., "Warehouse A - Bay 3", "Yard 2 - Section C")
- Filter inventory by location to see what's in each area
- You can transfer materials between locations using inventory adjustments with location notes

Q: Can I import existing inventory data from Excel?

A: Yes, use the bulk upload feature:

1. Export your current Excel data
2. Download GoSmarter's CSV template
3. Map your Excel columns to the template columns
4. Upload the completed CSV
5. Review and confirm

For large or complex migrations, contact GoSmarter support for assistance.

With GoSmarter as your inventory management system, you're free from juggling spreadsheets. You now have real-time visibility, better traceability, and a foundation for optimising your entire production process.

Managing Orders

The Orders section is where you create and manage customer orders. Each order can contain multiple line items, and you can reserve specific inventory items against individual line items to ensure stock is not consumed by another order.

Open Orders from Production Planning

Orders are found inside the Production Planning section. Scroll down the left navigation, expand Production Planning, and select Orders.

The Orders page presents all your customer orders in a central data table. From here you can view existing records, create new orders, and open order-level actions. Select **New Order** in the top area to start recording a new customer requirement.

Create a New Order

Clicking New Order opens a form where you can enter the full details of the order, including the customer, order dates, and any relevant notes. Use **Add Line Item** to include the specific materials or products being ordered. A single order can hold as many line items as you need.

Once saved, the order appears in the main Orders table and is available for further management.

Order Actions

The Actions button on the right of any order row opens the available operations for that record. From this menu you can:

- View the full order details
- Edit the order
- Duplicate it to reuse the same structure for a similar order
- View the edit history for a full audit trail
- Delete the order

Select **View Details** to open the full order record.

View Order Details

The View Details page brings together all available information about an order. At the top you will find the key header fields — customer, dates, status, and other overall order information.

Scrolling down reveals a summary of all line items, followed by each individual line of the order in its own section. Deleted line items are collected in a separate table at the bottom of the page. If you need to restore a deleted line item, scroll to the right of that table to access the **Restore** button.

Work with Line Items

From the order details view, use **Edit Line Items** to modify existing entries or add new ones. You can also import new line items in bulk via CSV upload.

Each line item in the table has its own **Actions** button, reached by scrolling to the right. From there you can edit the individual line item, reserve stock against it (and manage any existing reservations), or delete the entry. To reserve stock for a line item, select **Manage Stock** from this Actions menu.

Reserve Stock for an Order

Reserving stock ties specific inventory items to a line item so they cannot be allocated elsewhere. Selecting **Manage Stock** from the line item's Actions menu opens the Reserve Stock panel, where you can filter available inventory and identify what is suitable for the order.

Scroll down to **Select Inventory Items** and use the tick boxes to choose the items you want to reserve.

Once one or more items are ticked, an additional field appears below (scroll down if it is not immediately visible). Enter the exact quantity you want to reserve, and choose whether to split the reservation into its own row. When your values are in place, select **Manage Stock** to confirm. A confirmation message is displayed once the reservation is saved.

After saving, the reserved items appear in the Reserved Items section on the order details page and are also reflected in the Line Items Summary above.

From the line item's Actions menu you can also select **Go to Reserved Inventory**, which opens the Inventory page pre-filtered to show only those reserved items. Scroll to the right on that page to access the Actions button for each reserved row, including the option to unreserve.

Unreserve Stock

If a reservation needs to be released, navigate to the reserved item via **Go to Reserved Inventory** from the line item's Actions menu, then select **Unreserve Stock** from the Actions column on the Inventory page. A confirmation prompt asks you to verify the action.

Select **Unreserve** to release the stock. A confirmation message appears once the reservation has been removed.

Edit an Order

You can edit an order directly from the Actions menu on the main Orders table – select **Edit** to open the edit panel without going through the details view first.

The edit panel is the same form used when creating the order, pre-populated with all current values. Update whatever has changed and save. You can also duplicate an order from the Actions menu to reuse its structure, or view the full edit history to review previous versions of the record.

Calculating Scrap Rates

The Scrap Rate Calculator helps you model the financial impact of scrap using your own production and pricing figures. Instead of guessing what scrap costs you, you can enter your baseline numbers, set a target scrap ratio, and quickly see what improving scrap performance could return.

Open the Calculator from Utilities

Start by opening Utilities in the GoSmarter sidebar and selecting the Scrap Rate Calculator.

This view contains the full Input Parameters area and the calculate action. The calculator is designed to work from your actual values so the outputs reflect your real operating context.

What the Calculator Measures

The calculator uses the material you purchase, the scrap you generate, and the value of both to show the cost of current scrap and the effect of reducing it.

It also supports target-based planning. You can set a target scrap ratio and compare that target to current performance. That gives you a concrete way to estimate the return from process improvements that lower scrap.

Complete the Input Parameters

The left panel is where you enter the assumptions and baseline values for the calculation.

Use these fields:

- Target Scrap Ratio
- The percentage of scrap you want to reach.
- Lower values represent lower waste.
- Annual Volume (tonnes)
- The total material volume processed each year.

- Scrap Volume (tonnes)
- The total scrap or waste material generated each year.
- Purchase Value per tonne
- Your raw material purchase cost per tonne.
- Use the Currency setting in the form for the unit.
- Resale Value per tonne
- The value recovered when scrap is sold.
- This is usually lower than the purchase value.

As you complete the form, the Current Scrap Rate metric updates to reflect the inputs you have provided.

When your values are in place, select Calculate.

Review the Results Pane

After calculation, the Results pane appears and shows the impact of the changes defined in your Input Parameters.

At the top of the pane, you get a summary view of the projected outcome.

Below the summary, a detailed table breaks down the result values in more depth.

At the bottom of the pane, export actions let you:

- Download a PDF report
- Download a CSV file for Excel
- Generate a shareable link

These outputs make it easier to communicate the expected effect of scrap improvements with colleagues and stakeholders.

Use This as a Decision Support Tool

This calculator gives fast insight into the likely impact of planned changes to scrap performance and helps you produce a clean report for review and discussion. The guide demo also notes an important boundary: this is a calculator, not the workflow for recording scrap transactions. For scrap logging and operational tracking, use the [Scrap Management guide](#).

Digitising Mill Certificates and Ensuring Compliance

This guide is designed for quality assurance managers, compliance officers, and anyone who handles Mill Test Certificates (MTCs) or material test reports (MTRs). Learn how to use GoSmarter's Compliant Metals feature with its MillCert Reader AI to turn piles of certificate PDFs into searchable, actionable data.

Overview

The Problem

Manufacturers often receive material certificates as scanned PDFs or emails. Finding the right certificate later or extracting specific details can take hours of manual searching through files or different mill portals. This creates bottlenecks in:

- Verifying material specifications before use
- Responding to customer requests for certificates
- Conducting compliance audits
- Ensuring traceability for safety-critical applications

How GoSmarter Solves This

GoSmarter digitises mill test certificates in seconds using AI technology:

- **Automated extraction** - Upload a PDF, get structured data instantly
- **Searchable database** - Find any certificate by heat number, batch, supplier, or specifications
- **Full traceability** - Link certificates to inventory for complete product lineage
- **Compliance ready** - Generate reports and documents for audits with one click

One manager saved 120 hours per year by automating certificate handling with GoSmarter. Instead of manually searching through binders or typing data from PDFs, certificates are digitised and searchable in seconds.

Why This Matters for Safety and ISO Compliance

In metals manufacturing, using the correct grade material is critical:

- **Welding applications** - Wrong grade can compromise structural integrity
- **ISO compliance** - Traceability requirements for quality management systems
- **Customer requirements** - Many customers require certificates with deliveries
- **Legal liability** - Documentation proves materials meet specifications

GoSmarter ensures you can verify any material's specifications instantly, reducing compliance risk and improving quality assurance.

Uploading Certificates

Single Certificate Upload

To digitise a new mill test certificate:

1. Navigate to **Compliant Metals** → **Mill Certificates** in the main menu
2. Click **+Upload Certificate**
3. Click **Choose File** and select your PDF
4. Click **Upload**
5. GoSmarter's AI begins processing immediately

For best results, use clear, high-resolution scans or original digital PDFs. The AI can handle most mill certificate formats, including handwritten or lower-quality scans, but clarity improves accuracy.

AI Extraction Process

How It Works

GoSmarter uses advanced AI trained on mill certificates from suppliers worldwide. When you upload a certificate:

1. **Document analysis** - AI identifies the certificate type and format
2. **Data extraction** - Key fields are automatically extracted:

3. Heat number / Batch number
4. Steel grade / specification
5. Chemical composition (C, Si, Mn, P, S, etc.)
6. Mechanical properties (yield strength, tensile strength, elongation)
7. Dimensions (diameter, length, thickness)
8. Manufacturer/mill information
9. **Validation** - AI checks that extracted values are logical and consistent
10. **Structured storage** - Data is saved in searchable database format

This process typically takes 5-15 seconds per certificate page.

Viewing Extraction Results

Once processing is complete, you'll see the extracted data. The interface displays:

- **Certificate metadata** - Supplier, date, certificate number
- **Material identification** - Heat number, grade, dimensions
- **Chemical composition table** - All elements with percentages
- **Mechanical properties** - Strength values, elongation, hardness
- **Test results** - Any additional test data
- **Original PDF** - Link to view the source document

GoSmarter's AI is trained on mill certificates from suppliers our customers use, we train it continuously as we onboard more customers. As part of onboarding, we'll ask you about your common suppliers to prioritise training data.

Getting certificates for use elsewhere

After uploading, data is available exported as a CSV or as zip files of PDFs. The reason for the PDFs is to enable you to access the certificate PDFs for integration in other systems or for producing traceability packs.

Downloading by page will give you a PDF per page and it will be named with all the heat numbers found on that page. Downloading by heat code will give you a PDF per heat code, named with the heat number.

By making copies of the PDFs available with metadata filenames, you can easily integrate them into other systems or produce traceability packs for customers.

Viewing and Searching Certificate Data

Finding Certificates Quickly

The power of digitised certificates is instant searchability. To find a certificate:

1. Navigate to **Mill Certificates** main page
2. Use the **Filter** area to search based on a range factors, including for a specific head code.

Results appear instantly, showing matching certificates with key information.

Viewing from Inventory

You can also access certificate data directly from inventory items (see [Managing Inventory Guide](#)).

1. On an inventory item, select **Actions** → **View Certificate** if the heat number is available
2. View the full certificate data linked to that material
3. Download the original PDF if needed

This provides instant verification when allocating materials to orders or checking specifications before use.

This relies on heat codes being entered against inventory items and the mill certificates being uploaded. Linking is automatic and requires no extra work once both sides are in the system.

Ensuring Traceability

Best Practice Workflow

For complete traceability, follow this workflow:

1. **Material arrives** → Upload mill certificate immediately
2. **Certificate digitised** → Verify key data extracted correctly
3. **Add heatcodes to inventory** → Make sure inventory items have correct heat numbers when added during Goods In / REceivable
4. **Material used** → Certificate data follows material through production
5. **Delivery to customer** → Certificate included automatically

This ensures every piece of material has verified, traceable properties from mill to final delivery.

Compliance Checks in Production

Pre-Production Verification

Before starting a job, production managers can verify materials meet specifications:

1. **Review job requirements** - What grade/properties are needed?
2. **Check allocated inventory** - What materials are assigned to this job?
3. **View certificate data** - Click certificate icons in inventory
4. **Verify compliance** - Confirm grade, properties meet requirements

Example: Before cutting steel for a job requiring B500C rebar:

1. Job specs require: B500C, minimum yield strength 500 MPa
2. Allocated stock: Inventory item #1234
3. View certificate for item #1234:
4. Grade: B500C ✓
5. Yield strength: 545 MPa ✓
6. Certificate valid ✓
7. Proceed with confidence

This verification takes seconds with digitised certificates vs. potentially hours of searching with paper systems.

FAQ / Troubleshooting

Common Questions and Solutions

Q: What if the AI misreads a value?

A: The AI is highly accurate but not perfect. To correct:

1. Click **Edit** on the field with the incorrect value
2. View the original PDF side-by-side for reference
3. Enter the correct value manually
4. Click **Save**

All edits are logged. Over time, you can report persistent issues to GoSmarter support to improve the AI.

Q: What if a certificate is not in English or uses unusual formatting?

A:

- GoSmarter handles many languages and formats automatically
- For very unusual formats (rare regional mill formats), the AI may struggle
- If extraction fails or is very inaccurate:
- Contact GoSmarter support with a sample
- Meanwhile, manually enter key fields while keeping the original PDF in the system
- Support can update the AI to recognise similar formats in future

Q: How do I handle multi-page certificates?

A:

- Upload the entire multi-page PDF as one file
- The AI processes all pages and combines the data

Q: Can I edit a certificate after it's been uploaded?

A: Yes:

- Click **Edit** on any certificate
- Modify any extracted field
- You cannot edit the original PDF (it's read-only), but you can upload a replacement if needed
- All changes are tracked in the audit log

Q: How do I export certificate data for use in other systems?

A:

- Select the certificates you need
- Click **Export**
- Choose format: CSV (for Excel/database) or a PDF option
- Download the export file

Q: Are my certificates secure?

A: Yes:

- All data is encrypted in transit and at rest
- Access is controlled by user permissions (only authorised users can view)

- Audit logs track who accessed what and when
- Data is backed up regularly
- GoSmarter complies with relevant data protection standards

See the [Security section](#) below for more details.

Security Note

Data Protection for Sensitive Documents

Mill test certificates often contain sensitive information:

- Chemical analysis (proprietary blends)
- Supplier relationships
- Pricing information (sometimes)
- Test results that could be commercially sensitive

GoSmarter protects your data:

Encryption:

- All data transmitted over HTTPS/TLS
- Database encryption at rest
- Certificate PDFs stored in encrypted storage

Access Control:

- Role-based permissions (define who can view/edit certificates)
- Multi-factor authentication available
- User activity audit logs

Compliance:

- Designed to support ISO 9001 quality management requirements
- GDPR-compliant data handling

Backup and Recovery:

- Automated daily backups
- Point-in-time recovery available
- Disaster recovery procedures tested regularly

Best Practices Summary

Quick Reference for Success

Certificate Management:

1. ✓ Upload certificates immediately when materials arrive
2. ✓ Verify AI-extracted data for critical fields
3. ✓ Use consistent naming for certificate files
4. ✓ Configure compliance rules for automatic checking

Quality Assurance:

1. ✓ Always verify grade and key properties before using material
2. ✓ Generate certificate packages for customer deliveries
3. ✓ Keep original PDFs even though data is extracted (for legal/audit backup)

Team Workflow:

1. ✓ Define roles: who uploads, who verifies, who can edit
2. ✓ Train all relevant staff on search and verification
3. ✓ Establish SOP for certificate receipt and digitisation
4. ✓ Review extracted data quality quarterly with GoSmarter support
5. ✓ Continuously improve process based on team feedback

You're now ready to move to a near-paperless system for mill test certificates. Upload, verify, search, and share certificates at the click of a button - saving tremendous time and ensuring compliance with minimal effort.

GoSmarter.ai Implementation Project Plan

Purpose & Audience

This implementation project plan is a roadmap document aimed at project managers or champion users at customer organisations (e.g., digital transformation leads or IT/operations managers responsible for deploying GoSmarter company-wide). Its purpose is to guide the rollout of GoSmarter in a structured way, increasing the likelihood of success by addressing upfront planning, resource allocation, change management, and timeline.

In essence, this is a customer success playbook for launching GoSmarter across a metals manufacturing business. It covers what needs to happen in the first few weeks or months, from kickoff to full adoption. A well-defined plan is crucial in manufacturing environments to avoid disruptions – it helps coordinate tasks like data migration from legacy systems, integration with existing processes, and staff training.

This document defines success criteria (KPIs like reduction in manual entry, percentage of processes using GoSmarter, scrap reduction rates, etc.) so the company can measure ROI post-implementation.

Implementation Strategy

The implementation plan is structured in phases or steps, following best practices for SaaS deployment. We incorporate seven critical steps commonly recommended for SaaS rollout:

1. Assign an implementation owner
2. Define goals and scope
3. Plan rollout & training
4. Leverage vendor support
5. Migrate data
6. Integrate with other systems
7. Drive feature adoption

Each phase of the plan is presented clearly with its objectives, tasks, responsible parties, and timeframe. The tone is action-oriented and reassuring – providing practical tips to minimise risk

(e.g., test with a pilot group first, back up data) and highlighting GoSmarter's "zero-disruption" approach (no heavy downtime or long maintenance windows needed, given its cloud SaaS nature).

1. Project Kickoff & Vision Alignment

Objective

Establish the project's foundation. Ensure all stakeholders understand why the company is implementing GoSmarter and what success looks like.

Key Activities

1.1 Appoint the Implementation Owner/Project Lead

- Designate someone responsible for managing the rollout (often from IT or operations)
- Define roles of the core team:
 - Sponsor from management
 - Champions in each department
 - IT/technical lead
 - End-user representatives

1.2 Conduct a Kickoff Meeting

Schedule a kickoff meeting with GoSmarter's customer success manager (if available) and your internal team. In this meeting:

Review Current Pain Points:

- Excessive manual paperwork
- Data scattered in PDFs and spreadsheets
- Time-consuming certificate processing
- Inefficient production planning
- Lack of traceability and compliance visibility

Articulate the Vision and Goals:

- Automate certificate processing

- Centralize inventory data
- Reduce scrap by X%
- Save Y hours per week
- Improve compliance traceability
- Support carbon reduction goals

Define Scope:

- Which sites or departments will use GoSmarter first?
- Which GoSmarter modules are in scope for phase 1? (e.g., Inventory and Certificates first, then Production Planning)
- Clarify anything out of scope to avoid scope creep

1.3 Create Project Charter

Outcome of this step: A written Project Charter or summary listing:

- Team members and their roles
- Timeline overview
- Success metrics and KPIs
- Commitments and expectations
- Business outcomes (efficiency, carbon reduction, etc.)

Everyone should be aligned on expectations and enthusiastic about the benefits.

2. Define Success Metrics & Implementation Goals

Objective

Determine how you will measure the success of GoSmarter's implementation and set clear targets.

Key Activities

2.1 Identify Key Performance Indicators (KPIs)

Operational Efficiency Metrics:

- **Time to generate production plan:** Target reduced from 2 hours to 10 minutes
- **Certificate processing throughput:** Target to double the number of certificates processed per week
- **Hours saved on paperwork:** Track weekly time savings
- **Scrap rate reduction:** Target to cut scrap in half after 3 months (GoSmarter's planning can reduce scrap by 50%)

Adoption Metrics:

- **Order coverage:** "By end of Month 1, 80% of our active orders are planned through GoSmarter"
- **User engagement:** "By Month 2, all five plant supervisors are using GoSmarter daily for inventory checks"
- **Data quality:** "100% of mill certificates digitized and searchable within 6 weeks"

Business Impact Metrics:

- **ROI calculation:** Cost savings vs. subscription cost
- **Compliance improvements:** Reduction in audit preparation time
- **Carbon footprint:** Track emissions reduction through optimised cutting plans

2.2 Set Utilisation Goals

Define milestones at 1 month, 3 months, and 6 months where these metrics should be evaluated:

- **Month 1:** Pilot group fully onboarded, core features in daily use
- **Month 3:** Company-wide rollout complete, 80%+ adoption rate
- **Month 6:** Advanced features adopted, measurable ROI achieved

2.3 Determine Scope Boundaries

Note if any processes will not move to GoSmarter immediately:

- Perhaps the company will continue using its ERP for final invoicing but use GoSmarter for production planning
- Clarify these interfaces to manage expectations

- Document integration points and manual handoff processes

2.4 Documentation

Document these goals in the implementation plan. This ensures everyone knows what "success" is – important for motivation and post-implementation review.

3. Rollout Strategy & Timeline

Objective

Plan how GoSmarter will be rolled out to the organisation, in what sequence, and who needs training when. A phased rollout minimises disruption.

Key Activities

3.1 Determine Deployment Phases

Recommended Phased Approach:

Phase 1: Pilot Implementation (Weeks 1-4)

- Implement Inventory & Mill Certificates in one production site
- Select a representative pilot group (5-10 users)
- Focus on core functionality
- Gather feedback and refine processes

Phase 2: Module Expansion (Weeks 5-8)

- Expand to Scrap Tracking and Production Planning in pilot site
- Add more users from the same site
- Test integration workflows
- Document best practices learned

Phase 3: Company-Wide Rollout (Weeks 9-12)

- Roll out to additional sites or departments
- Deploy to quality/compliance team
- Full feature set available

- Monitor adoption and support needs

3.2 Create Implementation Timeline

Sample Timeline:

| Week | Phase | Activities | Responsible Party |
|-------|-----------------------|---|--|
| 1-2 | Pilot Setup | Environment configuration, data preparation, pilot user selection | Implementation Owner, IT Team |
| 3-4 | Pilot Training | Training sessions, initial usage, feedback collection | Implementation Owner, Champions |
| 5-6 | Pilot Refinement | Address feedback, optimize workflows, document processes | Implementation Owner, Champions |
| 7-8 | Phase 2 Rollout | Expand features, train additional users, test integrations | Implementation Owner, Department Leads |
| 9-10 | Company-Wide Training | Training sessions for all sites, support resources deployed | Champions, HR/Training Team |
| 11-12 | Full Deployment | Monitor usage, provide support, celebrate wins | Implementation Owner, All Teams |

(Note: Actual timing will depend on company size and readiness. The key is sequencing steps to handle one area at a time and avoid chaos.)

3.3 Plan the Training Program

Training Delivery Methods:

- **Live training sessions:** In-person or via video conference
- **Written documentation:** For self-paced learning
- **Guided on-screen tours:** Interactive walkthroughs in the app
- **Quick reference guides:** Printable cheat sheets for each role

Training Schedule Example:

- **Week 2:** 2-hour training workshop for pilot users on GoSmarter's core features
- **Week 4:** 1-hour refresher session and Q&A
- **Week 9:** Department-specific training sessions (operations, production, quality)

- **Week 10:** Advanced features training for power users

Training Content:

- Process-specific guides tailored to user roles
- Onboarding guide for new users
- Video demonstrations of common workflows
- FAQ document addressing anticipated questions

Training Leaders:

- Internal champion with support from GoSmarter's team
- Department supervisors for role-specific training
- IT team for technical/integration topics

3.4 Stagger the Rollout

Introduce GoSmarter to different groups sequentially:

- **Week 3:** Operations team (handles inventory and ordering)
- **Week 5:** Shop floor supervisors (production planning tool)
- **Week 7:** Quality/compliance team (certificate management)
- **Week 9:** Management/reporting users (analytics and dashboards)

This approach prevents overload and lets early adopters mentor others.

3.5 Plan Internal Communications

Communication Strategy:

- **Pre-launch announcement:** Email from leadership explaining the change and benefits
- **Weekly updates during rollout:** "This week we digitised 300 certs and saved 10 hours of manual work!"
- **Success stories:** Highlight early wins and positive user feedback
- **Support information:** Clear instructions on how to get help
- **Change management messaging:** Address "what's in it for me" to preempt resistance

Key Messages:

- Why we're making this change (current pain points)
- What benefits users will experience
- How the transition will be supported

- Timeline and what to expect when
- How to access training and support

Output

A detailed timeline with milestones for each phase, ensuring clear accountability and manageable pacing.

4. Leverage Vendor Support

Objective

Make the most of any assistance offered by Nightingale HQ (the provider of GoSmarter) to ensure a smooth implementation.

Key Activities

4.1 Identify Areas for Vendor Assistance

Common Vendor Support Areas:

- **Data migration:** Bulk conversion of mill cert PDFs through their AI
- **Training:** Expert-led webinars for your staff
- **Custom integrations:** API setup and configuration
- **Best practices consultation:** Implementation strategy review
- **Technical troubleshooting:** Resolution of complex issues

4.2 Schedule Sessions with GoSmarter Experts

Recommended Consultations:

- **Week 1:** Kickoff meeting and implementation planning review
- **Week 2:** Integration consultation (if needed)
- **Week 3:** Feature configuration review
- **Week 4:** Training webinar for pilot users
- **Week 8:** Mid-implementation check-in

- **Week 12:** Post-rollout review and optimization

4.3 Clarify Support Channels and SLAs

Document Support Details:

- **Contact methods:** Email, chat, phone
- **Support hours:** Business hours and time zones
- **Response time SLAs:** Expected turnaround for different severity levels
- **Escalation procedures:** How to escalate urgent issues
- **Customer success manager:** Dedicated contact if available
- **Documentation resources:** Knowledge base, user guides, API docs

Example Support Structure:

- **Email support:** support@gosmarter.ai
- **Chat support (Coming soon):** Available during UK business hours
- **Response guarantee:** 24 hours for standard issues, 4 hours for critical
- **Dedicated CSM:** Available for enterprise customers

4.4 Ensure Secure Data Sharing

Security Considerations:

- Review and sign NDA if handling sensitive data before the implementation
- Confirm data handling compliance (GDPR, industry standards) and security
- Document what data will be shared with vendor
- Ensure access is properly provisioned and revoked post-implementation

5. Data Migration & Preparation

Objective

Get all necessary data into GoSmarter safely and accurately, forming the foundation for using the platform.

Key Activities

5.1 Inventory Data Import

Preparation Steps:

1. **Gather master inventory list** from current system (ERP or spreadsheets)
2. **Clean the data:**
3. Remove duplicates
4. Ensure consistent material IDs
5. Verify descriptions are accurate
6. Standardise units of measure
7. Validate pricing information
8. **Follow GoSmarter's import process:**
9. Review import template format
10. Map your data fields to GoSmarter fields
11. Perform test import with sample data
12. Validate imported data matches expectations
13. Execute full import
14. Verify post-upload data integrity

5.2 Orders/Projects Data Import

Preparation Steps:

1. **Gather master order list** from current system (ERP or spreadsheets)
2. **Clean the data:**
3. Remove duplicates
4. Ensure consistent customer IDs
5. Standardise units of measure
6. Validate pricing information
7. **Follow GoSmarter's import process:**
8. Review import template format
9. Map your data fields to GoSmarter fields
10. Perform test import with sample data

11. Validate imported data matches expectations
12. Execute full import
13. Verify post-upload data integrity

5.3 Mill Certificates Archive

Ensure GoSmarter supports your certificate formats. GoSmarter builds custom parsers for each supplier to ensure you get the most accurate data extraction. Check our list of supported suppliers and give us samples from any suppliers not listed.

Certificate Migration Strategy:

Decision Point: Determine scope of historical certificate upload

- **Option A:** Upload all historical certificates (comprehensive but time-intensive)
- **Option B:** Upload representative batch for training (faster, focused on recent data)
- **Option C:** Only process new certificates going forward (minimal migration)

Recommended Approach:

- Upload last 6-12 months of certificates to populate system
- This provides useful historical data for traceability
- Allows staff training with real-world examples
- Balances comprehensiveness with time investment

Process:

1. Collect certificates from email archives, network drives, or filing cabinets
2. Organise by date, material type, or supplier
3. Use GoSmarter's AI-powered certificate processing
4. Verify extracted data accuracy through spot-checks
5. Address any extraction errors or ambiguous data

5.4 Scrap/Rework Data

Baseline Data Collection:

- Gather historical scrap rates (last quarter or year)
- Document current offcut management practices
- Calculate current material utilisation percentage
- Track rework instances and causes

Purpose: Establish baseline for measuring improvement after GoSmarter implementation

5.5 Data Mapping & Validation

For migrations from another system:

- **Field mapping exercise:** Ensure data maps correctly
- Material heat numbers → GoSmarter certificate fields
- Product codes → GoSmarter inventory IDs
- Supplier names → Standardised vendor list
- Units of measure → Consistent measurement system
- **Test and validate:**
 - Small test import first
 - Verify all critical fields populated correctly
 - Check for data truncation or formatting issues
 - Confirm relationships between data entities

5.6 Address Data Security & Backup

Security Measures:

- **Pre-migration backup:** Create complete backup of current system data
- **Cloud security verification:** Confirm GoSmarter's security infrastructure
- Data encryption (in transit and at rest)
- Access controls and authentication
- Compliance certifications that are required to process your data, based on your own regulatory environment
- **Access management:** Limit who can view/edit sensitive data during migration
- **Audit trail:** Document what was migrated, when, and by whom

Reassurance: GoSmarter runs on secure cloud infrastructure with enterprise-grade encryption and access controls, ensuring your manufacturing data is protected.

Output

GoSmarter environment populated with real data – inventory items, live orders, initial certificates – ready for users to work with. This sets the stage so users log into a system that reflects their business, making training more realistic and impactful.

6. Integration with Existing Systems (if needed)

Objective

Connect GoSmarter with other tools in the company's tech stack to ensure a seamless workflow (optional, depending on the company's needs).

Key Activities

6.1 Identify Integration Points

Common Integration Scenarios:

ERP/MRP Systems:

- Order flow: ERP → GoSmarter (production planning)
- Inventory sync: GoSmarter ↔ ERP (material tracking)
- Completion data: GoSmarter → ERP (production actuals)

Quality Management Systems:

- Certificate data export to QMS
- Compliance reporting integration
- Non-conformance tracking

Financial Systems:

- Material usage for cost accounting
- Scrap value calculations
- Job costing data

Other Systems:

- CAD/CAM systems (cutting plans)
- Warehouse management (inventory locations)
- Customer portals (order status)

6.2 Develop or Configure Integrations

Integration Methods:

API Integration:

- Review GoSmarter API documentation
- Develop or configure API calls
- Set up authentication and security
- Implement error handling and logging

File-Based Integration:

- CSV/Excel export/import
- Scheduled batch transfers
- File format mapping
- Automated file pickup/delivery

Manual Integration:

- Interim process for low-volume data
- Weekly or daily manual syncs
- Clear procedures documented

Example Implementation:

- Schedule IT team to script a daily export of new inventory receipts from ERP to GoSmarter
- Set up automated import of cutting plans from GoSmarter to CAD system
- Configure weekly export of scrap data to accounting system

6.3 Test Integrations

Testing Protocol:

1. **Unit testing:** Test each integration point individually
2. **Integration testing:** Test end-to-end workflows
3. **Data validation:** Verify data accuracy and completeness
4. **Error handling:** Test failure scenarios and recovery
5. **Performance testing:** Ensure adequate speed and reliability

Example Test Scenario:

- Create a new order in the ERP
- Verify it appears in GoSmarter (or can be imported without issue)
- Generate a cutting plan in GoSmarter
- Confirm the plan can be fed back to production systems if needed

- Validate all data fields are correctly transferred

Allow time for:

- Troubleshooting data mismatches
- Resolving technical glitches
- Refining mapping rules
- User acceptance testing

6.4 Phased Integration Approach

Integration Prioritisation:

Phase 1 (Initial Rollout):

- Minimal or no integrations
- Manual data exchange if needed
- Focus on standalone GoSmarter adoption
- Prove value before adding complexity

Phase 2 (Post-Adoption):

- Implement highest-value integrations
- Start with read-only integrations (safer)
- Add write-back capabilities once proven
- Expand to nice-to-have integrations

Benefits of Phased Approach:

- Show quick results without integration delays
- Learn system before adding integration complexity
- Reduce risk of implementation failure
- Allow time to secure integration resources

Key Principle: Since GoSmarter is meant to be zero-disruption and can run standalone, only integrate if it truly adds value. Keep the initial implementation lean to demonstrate results quickly, then expand.

Output

If chosen, key systems are talking to each other, reducing double data entry. If integrations are not done in initial rollout, the plan documents how data will be managed manually in the interim.

7. Adoption, Monitoring, and Ongoing Optimisation

Objective

Ensure that after GoSmarter is rolled out, users actually use it as intended and the company realises the projected benefits. Also set up a feedback loop for continuous improvement.

Key Activities

7.1 User Adoption Tracking

Monitoring Methods:

- **Activity metrics:** Certificates processed, plans generated, inventory transactions
- **Feature utilisation:** Which features are used most/least

Identify Adoption Gaps:

- Departments or users with low adoption rates
- Reach out to understand barriers or issues
- Provide additional training or support
- Address any technical or workflow obstacles

7.2 Feature Phasing Strategy

Progressive Feature Introduction:

Weeks 1-4 (Core Features):

- Digital certificate management
- Basic inventory tracking
- Simple production planning
- User gets comfortable with fundamentals

Weeks 5-8 (Intermediate Features):

- Advanced search and filtering
- Scrap tracking and reporting
- Multi-site inventory management
- Custom reports

Weeks 9+ (Advanced Features):

- Cutting plan optimiser (if applicable)
- Process automation features
- Integration capabilities

Rationale: Gradual expansion prevents overwhelm and builds user confidence. Master basics before introducing advanced functionality.

7.3 Gather Feedback

Feedback Collection Methods:

Formal Check-ins:

- End of Month 1: Structured feedback session
- End of Month 3: Mid-implementation review
- End of Month 6: Comprehensive evaluation

Continuous Feedback:

- In-app feedback mechanism
- Regular champion meetings
- Help desk ticket analysis
- User surveys (quarterly)

Key Questions to Ask:

- What features do you use most? Why?
- What features are you not using? Why?
- What difficulties have you encountered?
- What additional training would help?
- What would make the system more useful?
- What processes have improved? How much?

Feedback Response:

- Document all feedback systematically
- Prioritise issues by impact and frequency
- Create action plans for significant concerns
- Communicate back to users what's being addressed
- Request GoSmarter product improvements if needed

Example Action: "Someone finds the interface for scrap logging confusing – note this, provide additional guidance, ask GoSmarter for improvements. Continuous feedback helps tailor the tool to shop floor reality and increases user buy-in (they feel heard)."

7.4 Celebrate Quick Wins

Recognition Strategy:

Communicate Milestones:

- "In the first month, we processed 100% of mill certs through GoSmarter, saving an estimated 20 hours of data entry. Great job!"
- "Production planning time reduced from 2 hours to 15 minutes!"
- "Zero compliance issues in recent audit thanks to complete certificate traceability"

Recognition Activities:

- Email announcements of achievements
- Team meetings highlighting success stories
- Recognition for champion users who helped others
- Share before/after metrics showing improvement

Build Success Stories:

- Document specific examples of impact
- Capture user testimonials
- Create case studies for internal use
- Use success stories to motivate broader adoption

Positive Reinforcement: This encourages ongoing use and builds internal momentum for the change initiative.

7.5 Support & Maintenance Plan

Ongoing Support Structure:

Internal Support:

- **Champions:** Designated power users in each department
- **Help desk:** Internal contact for first-line support
- **Documentation:** Keep user guides updated as processes evolve
- **Training:** Onboarding for new employees

Vendor Support:

- **Technical issues:** Direct to GoSmarter support
- **Feature requests:** Channel through customer success manager
- **Updates:** Monitor GoSmarter release notes for new features
- **Best practices:** Participate in user community or webinars

Maintenance Activities:

- **Data quality:** Regular audits of data accuracy
- **User management:** Add/remove users as staff changes
- **Configuration updates:** Adjust settings as business needs evolve
- **Performance monitoring:** Track system performance and responsiveness

Key Advantage: GoSmarter is cloud-based and updates automatically (no heavy maintenance needed from IT). Internal admins should stay aware of new features by:

- Subscribing to GoSmarter's change log or newsletter
- Checking the guides/documentation site for "What's New"
- Attending vendor webinars on new capabilities
- Participating in user groups or forums

7.6 Post-Implementation Review

Timing: 3-6 months after full rollout

Review Components:

1. Metrics Assessment:

- Compare actual results vs. targets set in Phase 2
- Document all quantitative improvements:
- Scrap reduction percentage
- Time savings (hours per week)
- Production planning speed improvement
- Certificate processing throughput increase
- Compliance documentation time reduction

2. ROI Analysis:

- Calculate total cost (subscription + implementation time)
- Calculate total benefits (time savings × hourly rate, material savings, efficiency gains)

- Determine payback period and ongoing ROI

3. User Satisfaction:

- Survey user satisfaction scores
- Assess ease of use ratings
- Evaluate training effectiveness
- Measure support satisfaction

4. Process Improvements:

- Document workflow changes
- Identify best practices developed
- Note process standardisation achieved
- Recognise efficiency gains

5. Lessons Learned:

- What went well?
- What could have been done better?
- What would we do differently next time?
- What unexpected benefits were realised?
- What challenges were encountered and how were they resolved?

6. Next Steps:

- **For targets met:** Plan to leverage success (expand features, add more users)
- **For targets not met:** Identify why and adjust processes:
 - Additional training needed?
 - Process refinement required?
 - Integration gaps to address?
 - Change management interventions needed?

Output: Comprehensive post-implementation report documenting the journey, results, and future recommendations.

Key Message: Implementation isn't a one-time event but an ongoing journey – much like continuous improvement in manufacturing. Regular review and adjustment ensure you maximise the value of your GoSmarter investment.

8. Appendix

8.21 Risk Log

A proactive risk assessment and mitigation plan:

| Risk | Impact | Likelihood | Mitigation Strategy |
|---|--------|------------|---|
| User Resistance: Operators revert to old spreadsheet habits | High | Medium | <ul style="list-style-type: none"> • Ensure ease of use with guides and cheat sheets • Get supervisor support for new process • Demonstrate time-saving benefits early • Recognise early adopters |
| Data Import Errors: Data corruption or loss during migration | High | Low | <ul style="list-style-type: none"> • Perform test imports first • Maintain backups of all data • Validate data post-import • Have rollback plan |
| Integration Failures: Systems don't communicate properly | Medium | Medium | <ul style="list-style-type: none"> • Thorough testing before go-live • Phased integration approach • Have manual backup procedures • Engage vendor support early |
| Insufficient Training: Users don't understand how to use features | High | Medium | <ul style="list-style-type: none"> • Comprehensive training program • Multiple training formats (live, video, written) • Champions available for support • Ongoing training for new features |
| Project Timeline Delays: Implementation takes longer than planned | Medium | Medium | <ul style="list-style-type: none"> • Build buffer into timeline • Clear milestone tracking • Weekly progress reviews • Escalation procedures for blockers |
| Scope Creep: Project expands beyond original plan | Medium | High | <ul style="list-style-type: none"> • Clear project charter with defined scope • Change request process • Regular scope reviews |

| Risk | Impact | Likelihood | Mitigation Strategy |
|--|--------|------------|---|
| | | | <ul style="list-style-type: none"> • Executive sponsor approval for changes |
| Technical Issues: System performance or availability problems | Medium | Low | <ul style="list-style-type: none"> • Test system before full rollout • Understand SLA with vendor • Have support escalation path • Monitor system performance |
| Key Person Dependency: Implementation relies too heavily on one person | Medium | Medium | <ul style="list-style-type: none"> • Document all processes and decisions • Cross-train team members • Distribute knowledge across champions • Have backup leads identified |

8.2 Change Management Best Practices

Do's:

- ✓ Involve end-users early in the process
- ✓ Communicate benefits clearly and frequently
- ✓ Provide comprehensive training in multiple formats
- ✓ Celebrate early wins and successes
- ✓ Listen to feedback and act on it
- ✓ Support users through the transition with available help
- ✓ Start with pilot groups to prove value
- ✓ Have executive sponsorship and visible support
- ✓ Be patient – adoption takes time

Don'ts:

- ✗ Drop the new tool on users without explanation
- ✗ Ignore user concerns or resistance
- ✗ Provide inadequate training or support
- ✗ Rush the rollout without proper preparation

- X Assume everyone will embrace change immediately
- X Forget to communicate progress and wins
- X Leave users to figure it out on their own
- X Implement everything at once without phasing
- X Declare victory at go-live – adoption is ongoing

Change Management Principles for Manufacturing:

1. **Respect existing processes:** Understand why things are done the current way before changing them
2. **Show don't tell:** Demonstrate concrete time/cost savings rather than just promising them
3. **Shop floor input:** Get input from people who actually do the work daily
4. **Make it easy:** The new way should be easier than the old way, not harder
5. **Support is critical:** Users need to know help is available when they need it
6. **Cultural sensitivity:** Acknowledge that change is hard, especially for long-tenured staff
7. **Management alignment:** Supervisors and managers must model and reinforce the new behaviors

8.3 Sample Communication Templates

Pre-Launch Announcement Email

Subject: Introducing GoSmarter – A New Tool to Make Our Work Easier

Dear Team,

I'm excited to announce that we will be implementing GoSmarter, a new cloud-based platform designed to streamline our manufacturing operations.

Why are we doing this? Currently, we spend too much time on manual paperwork, searching for certificates, and managing data across multiple spreadsheets. GoSmarter will help us:

- Automate certificate processing and management
- Centralise our inventory data
- Optimise production planning to reduce scrap
- Save time on administrative tasks
- Improve our compliance and traceability

What does this mean for you? Over the next [X] weeks, we'll be rolling out GoSmarter in phases. [Department/Team] will be our pilot group, starting [date]. You'll receive training and support to help you get comfortable with the new system.

Timeline:

- [Date]: Pilot group begins
- [Date]: Company-wide training starts
- [Date]: Full rollout complete

Training and Support: We're committed to making this transition smooth. You'll have access to:

- Live training sessions
- Video tutorials
- Quick reference guides
- Champion users in your department for help

Questions? Contact [Implementation Owner] at [email/phone]

We're confident that GoSmarter will make your work easier and help us operate more efficiently. Thank you for your support of this important initiative.

[Executive Sponsor Name] [Title]

Weekly Progress Update Template

Subject: GoSmarter Implementation Update – Week [X]

This Week's Highlights:

- [Number] mill certificates processed through GoSmarter
- [Number] cutting plans generated
- [X hours] of manual work saved
- [Number] new users trained

Key Accomplishments:

- [Specific achievement 1]
- [Specific achievement 2]
- [Specific achievement 3]

User Feedback: "[Positive quote from user]" – [Name, Role]

Next Week:

- [Planned activities for next week]
- [Training sessions scheduled]
- [Milestones to achieve]

Need Help? Contact your department champion or [support email]

Thank you for your continued support!

[Implementation Owner]

Success Story Template

Subject: Success Story: How [Department] Saved [X] Hours with GoSmarter

The Challenge: [Describe the problem they were facing]

The Solution: [Describe how they used GoSmarter to address it]

The Results:

- Time saved: [X hours per week]
- Process improvement: [Specific metric]
- User feedback: "[Quote]"

What We Learned: [Key takeaways or best practices]

Congratulations to [Team/Individual] for this great success!

Conclusion

By following this implementation plan, a metals manufacturer can systematically adopt GoSmarter, mitigate common challenges (like employee resistance or data integration issues), and track the impact on their business. The structured approach aligns with SaaS best practices and is tailored to the manufacturing context for minimal disruption and maximum uptake.

Key Success Factors:

1. Strong executive sponsorship and visible support
2. Clear goals and measurable success metrics
3. Comprehensive training and change management
4. Phased rollout with pilot validation
5. Continuous feedback and improvement

6. Celebration of wins to build momentum

7. Patience and persistence through adoption curve

Remember: Implementation is not just a technical project – it's a change management initiative. Success requires attention to people, processes, and technology in equal measure.

Ready to get started? Use this plan as your roadmap, adapt it to your specific context, and embark on your GoSmarter journey with confidence. The result will be a more efficient, data-driven, and competitive manufacturing operation.

For questions or support with your GoSmarter implementation, contact your Customer Success Manager or visit the GoSmarter support portal.

Document Version: 1.0

Last Updated: January 2026

Owner: GoSmarter Customer Success Team

The GoSmarter UI

This guide shows you how to use GoSmarter's user interface (UI) features to work faster with your data across tools.

What This Guide Covers

In this guide, you will learn how to use GoSmarter UI tools to get the most out of your data and all GoSmarter tools.

Using Bulk Actions

The **Bulk Actions** button lets you upload and download larger amounts of data in one go.

It will also often provide a comma-separated values (CSV) template that you can download and open in Excel before uploading your data.

Working with Data Tables

Most tools include a data table. This table shows all records relevant to the current tool.

You can sort and filter the table to find what you need.

Keep in mind that you may need to scroll right to access all columns. You can use the horizontal scroll bar at the bottom of the page, or hold **Shift** while using your mouse wheel.

Filtering Records

Click the **Filters** button to open filter controls and narrow the table to the records you need.

Filtering is the fastest way to cut through long lists and focus on the right items.

Sorting Records

An arrow in a column header shows which column currently controls sort order.

To sort by a different column, click that column name.

Using Row Actions

Inside a data table, click the **Actions** button on a row to open actions for that specific record.

This is where you can run record-level tasks quickly without leaving the table.

Add/Edit Side Panels

When you use row actions such as **Add** or **Edit**, GoSmarter opens a sidebar panel.

These panels include forms you can complete to add, edit, split, and otherwise manage a record.

Viewing Record History

Click **View History** from a row's Actions menu to open a history window.

This shows a full record of changes made to that item over time.

Tutorial Mode

All pages include tutorial information, and **Tutorial Mode** is on by default.

If tutorials are not showing:

1. Click your name in the bottom-left corner.
2. Toggle **Tutorial Mode** on.

With Tutorial Mode enabled, hover over a question mark icon to see an explanation of the field beside it.

Tutorial Panes

Many pages also include a more detailed tutorial pane.

These panes explain how a tool works and include practical tips to help you get better results.

Need a Change?

If you want to request a feature or suggest a change, contact the support team and share what you need.

Tracking and Reducing Scrap with GoSmarter

This guide is designed for production managers, shop supervisors, and continuous improvement teams focusing on minimising scrap and waste in the manufacturing process. Learn how to use GoSmarter's Scrap Calculator, Scrap Logger, and Offcut Manager to reduce costs, improve sustainability, and drive data-driven process improvements.

Overview

Why Scrap Reduction Matters

Every bit of scrap represents:

- **Lost money** - Wasted material cost plus labor spent processing it
- **Environmental impact** - Unnecessary production, energy use, and CO2 emissions
- **Inefficiency** - Opportunities for process improvement
- **Competitive disadvantage** - Higher costs vs. competitors with lower waste

Real Results: In a trial, Midland Steel reduced scrap rates by 50% using GoSmarter's planning optimisation tools. This directly improved profitability and sustainability.

How GoSmarter Helps

GoSmarter provides comprehensive scrap management tools:

- **Scrap Logger** - Record and categorise all waste
- **Scrap Calculator** - Assess the financial impact of improving scrap rates
- **Inventory Offcut Manager** - Reusable remnants are first-class citizens to prevent waste
- **Production Planning Integration** - Optimise cuts to minimise scrap automatically

This guide shows you how to log scrap, analyse it, and use that data to take action that reduces waste.

Reducing scrap directly improves your bottom line and environmental footprint. GoSmarter makes scrap reduction a measurable, data-driven process rather than guesswork.

Logging Scrap and Offcuts

Recording Scrap After Production

At the end of each production run or cutting session, log the scrap produced:

1. Navigate to **Production** → **Scrap**
2. Click **+ Add entry**
3. Fill in the scrap entry form:
4. **Date/Time** - When scrap was produced/measured
5. **bin/Skip reference** - Where the scrap is
6. **Opening weight** - The bin weight before the latest batch of scrap
7. **Closing weight** - The bin weight including the latest batch of scrap
8. Click **Save**

Update scrap data immediately after each job (via tablet on shop floor if possible). This keeps data current and ensures nothing is forgotten. Regular logging builds a comprehensive dataset for analysis.

Managing offcuts in inventory

Not all remnants are waste - many can be reused. Tracking offcuts in inventory helps you track reusable pieces:

1. After a cutting operation, identify usable offcuts (pieces long/large enough for future use)
2. Navigate to **Production planning** → **Inventory**
3. Identify the relevant inventory item the offcut is from
4. If the offcut is the remainder of the inventory, edit the item and change the type to "Offcut" and update the new dimensions
5. If only part of the inventory item was used to make an offcut, Split the original item and say what quantity or weight was originally picked to make the cut. This discounts the original inventory item and creates a new offcut item with the remaining quantity or weight. You can then edit the properties to reflect the new dimensions of the offcut.

The offcut is now available in your inventory for future orders requiring shorter lengths.

Example: Managing Rebar Offcuts

You cut 10 x 12m rebar bars into 10m pieces for an order:

- Ordered: 10 pieces @ 10m
- Source: 10 bars @ 12m
- Result: 10 offcuts @ 2m each

Instead of scrapping the 2m pieces:

1. Add to Offcut Manager: 10 pieces, 2m long, grade B500C, 12mm diameter
2. Link to original heat's certificate
3. Store in designated offcut area
4. Later, when an order needs 1.5m pieces, these offcuts can be used

Result: What would have been 20m of scrap becomes useful inventory, reducing both waste and future material costs.

Systematically tracking and reusing offcuts can reduce scrap by 10-20% in typical operations. GoSmarter ensures these remnants don't get lost or forgotten.

Best Practices to Reduce Waste

1. Use Production Planning Optimisation

GoSmarter's Production Planning tool (see [Optimised Production Plans Guide](#)) drafts optimised cutting patterns by:

- Analysing orders and available stock
- Generating plans that minimise scrap
- **Proven results:** 50% scrap reduction in trials

Action: Always run the Cutting Plans for long product cutting jobs rather than planning manually to save time and reduce waste.

2. Maintain Accurate Offcut Inventory

Reusable offcuts can't help if you don't know you have them:

- Log all offcuts immediately after cutting
- Store offcuts in organised, labelled areas

- Include offcut inventory in planning (Planner can suggest using offcuts)
- Regularly review and use older offcuts before they get damaged or lost

3. Optimise Stock Length Procurement

Use scrap data to inform purchasing decisions:

- Review which stock lengths generate most scrap
- Consider ordering different standard lengths that better match your typical orders
- Example: If you frequently cut 3.5m pieces, stocking 10.5m bars (3 x 3.5m) instead of 12m bars eliminates scrap

Action: Run a quarterly analysis of most common order lengths vs. most common stock lengths. Adjust stock inventory to minimise mismatch.

4. Regular Logging Drives Improvement

The act of measuring scrap makes people more conscious of it:

- Make scrap logging part of the job completion process
- Review scrap data in production meetings
- Set scrap reduction goals and track progress
- Celebrate improvements

Example KPI: "Reduce scrap rate from 15% to 10% over next quarter"

5. Investigate Scrap Spikes Immediately

When scrap suddenly increases:

- Use GoSmarter reports to identify when/where it happened
- Investigate the cause (machine issue, material quality, operator change, etc.)
- Fix the root cause quickly before it becomes normal
- Document learnings for future reference

6. Balance Speed vs. Waste

Sometimes rushing causes waste:

- Rushed jobs may skip optimisation to save planning time

- Result: Higher scrap from suboptimal cutting patterns
- **Better approach:** Invest 10 minutes in planning to save material worth hundreds of dollars

Foster a culture where minimising scrap is valued, not just speed. When operators know their scrap rates are tracked and matter, they'll take time to do it right.

Sustainability Angle: Scrap and Carbon Footprint

Environmental Impact of Scrap

Scrap represents wasted resources and environmental impact:

- **Energy** - Energy used to produce steel that becomes waste
- **CO2 Emissions** - Carbon footprint of that wasted production
- **Raw materials** - Iron ore, coal, etc. that went into wasted steel
- **Transportation** - Emissions from shipping material that becomes scrap

Reducing scrap directly reduces your environmental footprint.

Using the Emissions Calculator

GoSmarter includes an Emissions Calculator (see [Customising GoSmarter Guide](#) for details):

1. Navigate to **Tools** → **Emissions Calculator**
2. Enter parameters:
3. Material type (different steel grades have different carbon footprints)
4. Weight or tonnage
5. Click **Calculate**
6. View estimated CO2 emissions

Example: If you scrap 2 tons of steel per month:

- Input: 2 tons, Steel Grade 500
- Calculator shows: ~4 tons CO2 equivalent
- Annual scrap: 24 tons steel = ~48 tons CO2

If you reduce scrap by 50% (to 1 ton/month):

- Save 12 tons steel/year

- Reduce CO2 by ~24 tons/year

This data can support:

- Sustainability reporting
- Carbon reduction initiatives
- ESG (Environmental, Social, Governance) commitments
- Marketing claims about environmental responsibility

Scrap reduction saves money AND reduces environmental impact. Use GoSmarter's data to quantify both benefits, supporting business case for continuous improvement investments.

FAQ / Troubleshooting

Common Questions

Q: How do I edit a scrap entry if I made a mistake?

A:

1. Go to the **Scrap** page
2. Find the entry you need to change
3. Click **Edit**
4. Make corrections
5. Click **Save**

All edits are logged in the audit trail.

Q: What if scrap was reused immediately (not stored as offcut)?

A:

- If material was used in the same job, don't log it as scrap
- If it will be used very soon, you can either:
 - Not log it (if it's immediate reuse)
 - Log it as an offcut with a note "reused on Job #XYZ"

The goal is accurate tracking, so use whichever approach makes sense for your workflow.

Q: Does GoSmarter track scrap sales?

A:

- GoSmarter primarily tracks scrap generation and reduction
- For full scrap sales/revenue tracking, you may need to integrate with your finance system or ERP
- Contact support if scrap revenue tracking is a requirement

Q: Can I set scrap targets or goals?

A: Not at present, but you can monitor scrap trends over time in reports. Use this data to set manual targets for your team.

Q: How do I categorise different types of scrap?

A:

- You can customise the Inventory Types to track different types of scrap in inventory
- Common categories: Offcuts (reusable remnants), Trim waste, Defective material, Setup waste, etc.
- Alternatively, you can have different scrap bins/skips for different types of scrap and log accordingly in the Scrap tracker

Q: What if we have multiple production lines or locations?

A:

- Tag scrap entries with Line/Machine/Location
- Reports can filter by these tags
- This shows which areas have highest scrap rates
- Helps focus improvement efforts where they'll have most impact

Integration with Production Planning

The Scrap Reduction Cycle

1. **Plan optimally** - Use Cutting Plans to minimise expected scrap
2. **Execute** - Follow the optimised cutting plan
3. **Log actual scrap** - Record what actually happened
4. **Compare** - Did actual match planned? If not, why?
5. **Analyse** - Use reports to find patterns and opportunities

6. **Improve** - Make changes based on insights

7. **Repeat** - Continuous improvement cycle

Using Both Tools Together

Production Planning Guide (see [Optimised Production Plans](#)) shows how to:

- Generate optimal cutting plans that minimise waste
- The Planner suggests which stock to use and how to cut it

This Scrap Guide shows how to:

- Track actual scrap vs. planned scrap
- Analyse trends and identify issues
- Manage offcuts for reuse

Together: Plan optimally, execute, measure, improve. This creates a data-driven scrap reduction program.

Scrap reduction begins with measurement. With GoSmarter's tools, you can track, analyse, and systematically reduce waste - improving both profitability and sustainability through data-driven decisions.

Troubleshooting Guide

Having problems? This guide helps you solve common issues. Try the solutions in the order listed.

Login Issues

Can't Log In - "Invalid Username or Password"

Try these steps:

1. **Check your email address**
2. Make sure you typed it correctly
3. No extra spaces before or after
4. Check CAPS LOCK is off
5. **Check your password**
6. Passwords are case-sensitive
7. Make sure CAPS LOCK is off
8. Try retyping it carefully
9. **Reset your password**
10. Click "Forgot Password" link
11. Follow the email instructions
12. Create a new password
13. **Contact your administrator**
14. They can verify your account is active
15. They can reset your password if needed

Page Says "Not Authorized" After Login

This means:

- Your account exists but doesn't have permission

- You may not be assigned to a company

What to do:

1. Contact your system administrator
 2. They need to assign you to your company
 3. They'll set up your permissions
-

Navigation Problems

Can't See the Sidebar Menu

Try these:

1. **Look for the menu icon**
2. Top left corner
3. Sidebar icon (a square with a rectangle in it)
4. Click it to show the menu
5. **Browser window too small**
6. Make your browser window wider
7. Zoom out if too zoomed in (Ctrl+Minus or Cmd+Minus)

Clicked Something and Nothing Happened

Possible causes:

1. **Page still loading**
2. Wait a few seconds
3. Look for a loading spinner
4. **Need to save first**
5. Click Save button if editing something
6. Then try navigating again
7. **Internet connection issue**

8. Check your internet connection

9. Refresh the page (F5)

Data Display Issues

Can't See Any Data / Empty Lists

Common causes and fixes

Wrong company selected

- Look at company selector in sidebar
- Click it and select the correct company
- Data will reload automatically

Having the wrong company selected is the #1 cause of "missing data"!

Filters are active

- Look for active filter indicators
- Click "Clear Filters" or "Reset"
- All data should appear

Search box has text

- Look at the search box at the top
- Clear any text in it
- Press Enter or click X

No data exists yet

- If you're new to the system, lists start empty
- You need to add data first

Data Looks Wrong or Outdated

Try these:

1. Refresh the page

2. Press F5
 3. Or click browser refresh button
 4. Or navigate away and back
 5. **Check you're on right company**
 6. Verify company selector
 7. Switch if needed
 8. **Clear your browser cache**
 9. Ctrl+Shift+Delete (Windows)
 10. Cmd+Shift+Delete (Mac)
 11. Select "Cached images and files"
 12. Click Clear
-

Saving and Editing Problems

"Save" Button Doesn't Work

Check these:

1. **Required fields missing**
2. Look for red outlines on fields
3. Look for error messages in red text
4. Fill in all required fields (often marked with *)
5. **Invalid data entered**
6. Numbers in wrong format
7. Dates in wrong format
8. Check error messages for guidance
9. **Internet connection lost**
10. Check your connection
11. Try saving again

Changes Disappeared After Saving

This usually means:

- The save didn't actually work
- Look for error messages
- Check required fields were filled
- Try again more carefully

Prevention:

- Wait for "Saved successfully" message before leaving page
- Don't click browser back button while saving

Can't Edit or Delete Something

Possible reasons:

1. **Item is being used elsewhere**
 2. Example: Can't delete inventory that's in an optimization
 3. Example: Can't delete order that's linked to a cutting plan
 4. You may need to remove links first
 5. **Don't have permission**
 6. Contact your administrator
 7. Your account may need different permissions
 8. **Item is locked**
 9. Some completed items can't be edited
 10. Create a new one instead
-

Upload Problems

Upload Button Does Nothing

Try these:

1. **Check file type**
2. Make sure it's an accepted format
3. PDF for certificates
4. Excel (.xlsx) for data uploads
5. Images (JPG, PNG) for photos
6. **File too large**
7. Maximum is usually 10MB
8. Compress or resize the file
9. Try again
10. **Browser popup blocker**
11. Allow popups from GoSmarter
12. Check browser settings

Upload Failed with Error

Common errors

"Invalid file format"

- Wrong file type
- Use the correct format (PDF, Excel, etc.)

"Missing required columns"

- For data uploads (inventory, orders)
- Download the template again
- Don't change column names
- Fill it correctly

"Duplicate entries"

- Some items already exist
- Check for duplicates in your file
- Or in the existing data

Template Download Not Working

1. **Popup blocked**
 2. Allow popups for this site
 3. Try downloading again
 4. **Download to wrong location**
 5. Check your Downloads folder
 6. Check browser download settings
-

Optimization Problems

Optimization Won't Run

Check these:

1. **No inventory selected**
2. You must select inventory bars
3. Click inventory selector
4. Choose material and diameter
5. **No orders selected**
6. You must select at least one order
7. Check order checkboxes
8. Make sure they match the inventory material
9. **Inventory and orders don't match**
10. Material types must match
11. Diameters must match

12. Select matching items

Optimization Failed or Gave No Results

Common causes

"Not enough inventory"

- Orders need more material than you have
- Add more inventory
- Or reduce order quantities

"No compatible matches"

- Order lengths too long for inventory bars
- Order material/diameter doesn't match inventory
- Check specifications match

"Calculation timeout"

- Very complex optimization
- Try selecting fewer orders
- Run multiple smaller optimizations

Cutting Plan Results Don't Make Sense

Review these:

1. **Check the cutting patterns carefully**
2. Read each pattern
3. Verify the math
4. Check units (should be mm)
5. **High waste percentage**
6. May be unavoidable for these lengths
7. Try the scrap calculator to verify
8. Consider different inventory bars
9. **Download and review offline**

10. Sometimes easier to review in Excel

11. Print and check manually

Search and Filter Problems

Search Not Finding Items

Try these:

1. **Check spelling**
2. Type carefully
3. Try partial matches (e.g., "Grade" instead of "Grade 250")
4. **Clear other filters**
5. Active filters might hide the item
6. Clear all filters first
7. Then search again
8. **Different company**
9. Verify correct company selected
10. Item might be in different company's data

Too Many Results

Narrow it down

1. Use filters together with search
 2. Be more specific in search
 3. Sort by relevant column
-

Performance Problems

Page Loading Slowly

Try these:

1. **Check internet speed**
2. Run a speed test
3. Contact IT if very slow
4. **Close other browser tabs**
5. Each tab uses memory
6. Close unnecessary ones
7. **Clear browser cache**
8. See instructions under "Data Looks Wrong" above
9. **Try different browser**
10. Chrome, Edge, or Firefox work best
11. Update to latest version

System Feels Sluggish

Quick fixes:

1. **Logout and login again**
 2. Clears temporary data
 3. Refreshes connection
 4. **Restart your browser**
 5. Close completely
 6. Open again
 7. **Restart your computer**
 8. If problem persists
 9. Clears all caches
-

Certificate Problems

Can't View Certificate PDF

Try these:

1. **Download it first**
2. Don't try to view in browser
3. Download and open with PDF reader
4. **Install PDF reader**
5. Adobe Reader (free)
6. Browser PDF viewer
7. Windows/Mac built-in viewers
8. **File corrupted**
9. Ask for original certificate
10. Upload again






Certificate Won't Link to Inventory

Check these:

1. **Material types match**
 2. Certificate grade matches inventory grade
 3. Can't link Grade 250 cert to Grade 500 inventory
 4. **Already linked elsewhere**
 5. One certificate can link to multiple items
 6. But check if it's already linked correctly
-

Browser Compatibility

GoSmarter Works Best With

-  **Google Chrome** (recommended)
-  **Microsoft Edge** (recommended)
-  **Mozilla Firefox**
-  **Safari** (Mac/iOS)
-  **Internet Explorer** - IE is no longer supported in general, and will not function correctly

Update your browser:

- Use the latest version for best experience
- Auto-updates usually handle this

When All Else Fails

If you've tried everything and still have problems:

Step 1: Document the Issue

Write down:

- What you were trying to do
- What you clicked
- Exact error message (take screenshot)
- What company you're working with
- What time it happened

Step 2: Try These General Fixes

1. **Logout completely**
2. Click your name → Sign Out

3. Close browser completely

4. Open browser again

5. Login again

6. **Try incognito/private window**

7. Ctrl+Shift+N (Chrome/Edge)

8. Cmd+Shift+N (Safari)

9. Tests without cache/cookies

10. **Try different browser**

11. If Chrome doesn't work, try Edge

12. Helps identify if it's browser-specific

13. **Try different computer**

14. If available

15. Helps identify if it's your device

Step 3: Contact Support

Reach out to:

- Your system administrator
- IT support desk
- Provide all documentation from Step 1

They'll need to know:

- Your username/email
 - Which company you're working with
 - What you were doing when the problem occurred
 - Error messages (screenshots help!)
 - Steps you've already tried
-

Preventing Problems

Good habits to avoid issues:

1. Always verify correct company is selected
 2. Save work regularly
 3. Clear filters when done
 4. Keep browser updated
 5. Don't use browser Back button while editing
 6. Wait for "Save successful" messages
 7. Double-check data before clicking Delete
 8. Keep paper backups of important information
 9. Download important results (cutting plans, etc.)
 10. Log out when leaving for the day
-

Quick Diagnostic Checklist

Use this to troubleshoot any problem:

Error Messages Explained

| Error Message | What It Means | How to Fix |
|---------------------|-----------------------------------|-----------------------------|
| "Unauthorized" | No permission to access | Contact administrator |
| "Not Found" | Item doesn't exist or was deleted | Check company selection |
| "Invalid Input" | Data format wrong | Check field requirements |
| "Connection Failed" | Internet problem | Check connection, try again |
| "Session Expired" | Been idle too long | Log in again |
| "Duplicate Entry" | Item already exists | Check existing data |

Don't hesitate to ask your administrator for help. That's what they're there for!

Generating Optimised Production Plans (Cutting & Scheduling)

This guide is designed for production planners, scheduling managers, and operations leads who organize the daily or weekly manufacturing schedule - particularly those planning cutting of long products (rebar, beams, pipes, etc.). Learn how to use GoSmarter's Long Product Production Planning feature to create first-draft cutting plans that minimise waste and meet order requirements efficiently.

Overview

The Challenge

Planning cutting sequences to fulfill orders with minimal scrap is complex:

- **Manual planning takes hours** - Calculating optimal combinations of cuts from available stock
- **Suboptimal patterns waste material** - Without optimisation, scrap rates can be unnecessarily high
- **Changing requirements complicate planning** - Late orders, stock changes, or rush jobs disrupt carefully planned schedules
- **Difficult to balance competing goals** - Minimise scrap, meet deadlines, use available stock efficiently

How GoSmarter Automates This

GoSmarter's AI-powered Cutting Plans:

- **Computes optimal plans in minutes** - What might take hours manually is done automatically
- **Minimises scrap** - Intelligent algorithms find the most efficient cutting patterns
- **Handles complexity** - Manages multiple orders, different stock lengths, and various constraints simultaneously
- **Provides flexibility** - Planners can review, adjust, and re-optimize as needed

In trials, users achieved 50% scrap reduction when using GoSmarter's automated planning vs. manual planning. This demonstrates the optimisation is not just faster, but significantly more effective.

Scope

This tool is specifically designed for **long products** - materials where length is a primary dimension:

- Rebar (reinforcing steel bars)
- Structural beams (I-beams, H-beams, etc.)
- Pipes and tubes
- Bar stock
- Profiles and sections

The tool creates a **suggested cutting schedule** which planners can review and adjust before execution.

Preparing Input Data

Before generating a production plan, ensure the required data is in GoSmarter:

1. Open Orders

The planner needs to know what you need to produce:

1. Navigate to **Orders** (see [Orders Management Guide](#))
2. Verify all orders for the planning period are entered:
3. Required lengths and quantities
4. Material specifications (grade, diameter, etc.)
5. Due dates
6. Any special requirements
7. Mark orders as "Ready for Planning" or similar status

Tip: If you have many orders to enter, use the bulk upload feature (CSV import) to save time.

2. Available Stock Inventory

The planner needs to know what raw materials are available:

1. Navigate to **Inventory** (see [Inventory Management Guide](#))
2. Ensure current stock levels are accurate:
3. Stock lengths available (e.g., how many 12m bars you have)
4. Material types and grades
5. Quantities on hand
6. Update any recent deliveries or usage

The plan's quality directly depends on accurate input data. If inventory levels or order details are wrong, the plan will be suboptimal. Make it a practice to verify data accuracy before running the planner.

Running the Plan Generation

Once input data is ready:

Step-by-Step: Generate a Production Plan

1. Navigate to **Production Planning** → **Cut long products**
2. Click **+ New Plan** or **Generate Plan**
3. Configure plan parameters:
4. **Date range** - Which orders to include (e.g., "Orders due this week")
5. **Stock selection** - Which inventory to consider (e.g., "All available rebar stock")
6. **Optimisation goal** - Minimise scrap (default), minimise cuts, or balanced
7. **Constraints** - Any special rules or priorities
8. Click **Generate Plan**
9. Wait for processing (typically 30 seconds to 2 minutes depending on complexity)

Large or complex plans (many orders, many stock options) may take a couple of minutes to compute. This is still dramatically faster than manual planning, which could take hours for the same work. The system is doing thousands of calculations to find the optimal solution.

What Happens During Generation

GoSmarter's AI:

1. **Analyses all orders** - Understands required lengths, quantities, materials
2. **Evaluates stock options** - Considers all available stock items
3. **Calculates combinations** - Determines how to cut each stock piece to fulfill orders
4. **Optimises for minimal waste** - Finds patterns that minimise leftover scrap
5. **Handles constraints** - Respects priorities, deadlines, material requirements
6. **Produces cutting instructions** - Generates a detailed plan of which cuts to make

The result is a comprehensive cutting schedule optimised for efficiency.

A scrap rate under 2.5% is generally excellent for most cutting operations. Rates above 5% suggest either: - Suboptimal stock lengths for your typical orders - Complex order mix requiring difficult combinations - Opportunity to source different standard lengths

Use the Scrap Calculator (see [Scrap Guide](#)) to analyse and improve.

Reviewing and Editing the Plan

The Planner as a Suggestion Tool

Important: GoSmarter provides an optimised **suggestion**. Experienced planners should review and can adjust based on:

- Shop floor realities (machine availability, operator skills)
- Material considerations (prefer using older stock first, etc.)
- Schedule constraints (certain orders need to go first)
- Quality requirements (specific heats for certain customers)

The AI handles the complex maths; you add the practical expertise.

Executing the Plan

Sharing the Plan with Production

Once you've reviewed and are satisfied with the plan:

1. Click **Approve Plan** or **Finalise**
2. Choose output format:
3. **Print** - Physical paper for shop floor
4. **PDF** - Digital document to email or display on screens
5. **CSV** - Data export for other systems (e.g., CNC machine programming)

The plan document includes:

- Cutting instructions for each stock item
- Visual diagrams (if configured)
- Order references
- Material specifications
- Any notes or special instructions

Communicating to the Shop Floor

Best Practices:

1. **Provide clear instructions** - Ensure cutting operators understand the plan format
2. **Highlight priorities** - Mark urgent or special orders clearly
3. **Include contact** - Note who to ask if there are questions or issues
4. **Support visuals** - Diagrams help operators quickly understand complex cuts

Example Shop Floor Instruction:

Job: Plan #2025-01-30-A
Date: January 30, 2025
Operator: Cutting Team A

Stock #1001 (12m bar, B500C 12mm):
Cut 4 pieces @ 3m each → Label for Order #245
Scrap: None

Stock #1002 (12m bar, B500C 12mm):
Cut 4 pieces @ 3m each → Label for Order #245
Scrap: None

... [continue for all stock items]

NOTES:

- Order #245 is PRIORITY - complete first
- Keep offcuts over 1.5m in offcut storage area
- Update inventory in GoSmarter after cutting

Integration with Other Systems

If you have automated cutting machines or other shop floor systems:

- **CNC machines** - Export cutting patterns in machine-compatible format
- **Label printers** - Automatically print labels for cut pieces
- **Scheduling software** - Export as task list for production scheduling
- **ERP systems** - Update production status via API or file export

Consult GoSmarter support for integration options specific to your equipment.

Monitoring and Feedback

Updating During Execution

As the plan is executed:

1. **Mark completed cuts** - Check off stock items as they're processed

2. **Log actual scrap** - Record real scrap vs. planned (for analysis)

3. **Note deviations** - If the plan couldn't be followed exactly, document why

This feedback helps:

- Track progress on the plan
- Understand differences between planned and actual
- Improve future planning (e.g., if machine constraints weren't accounted for)

Best Practices for Production Planning

1. Run the Planner Consistently

Recommendation: Run the planner at the same time each day (or week) with the latest data.

Benefits:

- Establishes a routine
- Ensures plans are based on current orders and stock
- Allows production team to expect and prepare for new plans

Example Schedule:

- Every morning at 8 AM: Review new orders, update inventory
- 8:30 AM: Run planner for the day's production
- 9 AM: Distribute plan to shop floor, production starts at 9:30 AM

2. Maintain Accurate Stock Data

The plan is only as good as the inventory data:

- Update stock levels immediately when new deliveries arrive
- Record usage after each production run
- Regular physical stocktakes to verify data accuracy
- Investigate and correct discrepancies quickly

See: [Inventory Management Guide](#) for best practices.

3. Use Actual Scrap Data to Improve

After executing plans:

1. Compare planned scrap vs. actual scrap
2. If actual is consistently higher than planned, investigate:
3. Are there cutting inefficiencies (blade waste, operator practices)?
4. Is stock quality causing more waste than expected?
5. Are machines calibrated correctly?
6. Use insights to:
7. Improve shop floor processes
8. Provide better input parameters to planner
9. Adjust stock purchasing

See: [Scrap Reduction Guide](#) for detailed scrap analysis.

4. Handle Late/Rush Orders Strategically

Option A - Separate Quick Plan:

- For a single urgent order, run a quick plan just for that order
- Use available stock, accept slightly higher scrap if necessary for speed
- Execute immediately

Option B - Re-Optimise Full Plan:

- Add the urgent order to the full order list
- Re-run the complete plan to re-optimize everything including the rush job
- Better overall efficiency, but takes a bit more time

Choose based on urgency vs. efficiency trade-off.

5. Communicate Changes Clearly

If a plan changes after distribution:

- **Clearly mark changes** - Highlight what's different (new plan version number, change notes)
- **Notify affected operators** - Don't assume they'll notice the update
- **Provide rationale** - Brief explanation helps acceptance ("New order added for VIP customer")

6. Review Plan Quality Periodically

Monthly or quarterly, review planning performance:

- Average scrap rate on plans vs. actual
- Percentage of plans executed as-is vs. modified
- Time saved vs. manual planning (if measurable)
- Material cost savings from optimized planning

Use this data to:

- Justify continued use of the tool to management
- Identify opportunities for further improvement
- Recognize and reward teams for effective planning and execution

FAQ / Troubleshooting

Common Questions

Q: What if the plan doesn't include all my orders?

A: Check:

1. Are all orders marked as "Ready for Planning"? Some might be in draft status.
2. Is the date range correct? Orders outside the selected range won't be included.
3. Is there sufficient stock? If you don't have stock that matches order material specs, those orders can't be planned.
4. Are filters applied? Ensure you haven't inadvertently filtered out certain orders.

If an order still isn't included, review its details - there may be a data issue preventing it from being planned.

Q: The suggested scrap is still high, what can I do?

A:

1. **Review stock lengths** - The available stock may not match well with order requirements. Consider ordering different standard lengths.
2. **Combine with offcuts** - Ensure the planner has access to available offcut inventory; using offcuts can reduce scrap.

3. **Check for small orders** - Very small or odd-sized orders may be inherently wasteful. See if they can be combined with future orders or if customer can accept standard sizes.

4. **Re-optimize with different constraints** - Try allowing the planner to use different stock, or adjusting priorities.

If scrap remains high, use the Scrap Calculator (see [Scrap Guide](#)) to analyze and understand why.

Q: Does the planner account for machine capacities or multiple machines?

A:

- Current version primarily optimises cutting patterns, not machine scheduling
- If you have multiple cutting machines, you may need to:
 - Manually split the plan across machines based on capacity
 - Run separate plans for each machine's workload
 - For complex multi-machine scheduling, contact GoSmarter support about advanced features or integrations

Q: Can I save and reuse plans?

A: Yes:

1. Approved plans are saved in the system
2. You can view past plans under **Plans** → **History**
3. Plans can be duplicated/reused if you have similar repeating orders
4. This is useful for regular production runs (e.g., weekly standing orders)

Q: What if I need to plan for different products (not just one material type)?

A:

- The planner can handle multiple material types in a single run
- It will keep materials separate (won't suggest cutting rebar from beam stock, for example)
- For very diverse product mixes, you might run separate plans per product category for clarity

Q: How do I give feedback to improve the planner?

A:

- GoSmarter continuously improves the AI based on real-world usage
- If you notice patterns that aren't optimal, or have suggestions:
 - Document specific examples (save the plan, note the issue)
 - Contact GoSmarter support with your feedback
 - Your input helps improve the system for everyone

Q: Can I override the AI completely and plan manually in the system?

A: Yes:

- You can enter a plan manually without using the optimiser
- This might be useful for very special cases or small jobs
- However, you'll miss the optimisation benefits
- Most users find the best approach is: let AI suggest, then manually adjust as needed

Advanced Tips & Tricks

Power User Techniques

1. Planning Strategies for Different Scenarios:

High-Mix, Low-Volume:

- Many different orders, small quantities each
- Strategy: Group orders by material grade/size, run separate plans per group
- Reduces plan complexity while still optimising each group

Low-Mix, High-Volume:

- Few order types, large quantities
- Strategy: Run full optimisation across all orders; savings from efficiency multiply with volume

Rush Jobs Mixed with Regular:

- Some urgent, some standard schedule
- Strategy: Plan urgent separately for speed, then plan regular jobs optimally

2. Using Historical Plans:

- Review past successful plans for similar order mixes
- If you have recurring orders, save high-performing plans as templates
- This can speed up planning for repeat business

3. Stock Management Insights:

- After several planning cycles, analyse which stock lengths are most versatile
- Consider standardising on 2-3 stock lengths that handle 80% of your orders efficiently
- This simplifies inventory and improves optimisation potential

4. Collaborative Planning:

- Have both planning team and shop floor supervisors review plans together periodically
- Shop floor can provide feedback on practicality; planners can explain optimisation rationale
- This builds mutual understanding and improves both planning and execution

Integration with Other GoSmarter Features

Complete Workflow Example

End-to-End Use of GoSmarter for Production:

1. **Orders received** → Entered in Orders module
2. **Material arrives** → Added to Inventory with linked Mill Certificates
3. **Planning time** → Run Cutting Plans with orders and inventory
4. **Optimised plan generated** → Review and approve
5. **Execute cutting** → Shop floor follows plan
6. **Log actual scrap** → Record real waste in Scrap Logger
7. **Update inventory** → Used stock depleted, offcuts added
8. **Analyse performance** → Review scrap reports, compare planned vs. actual
9. **Continuous improvement** → Use insights to improve future planning and processes

Linked Guides:

- [Metals Manager](#) - Manage stock and offcuts
- [Mill Certificates](#) - Link certificates to materials for compliance
- [Scrap Management](#) - Log and analyse scrap
- [Customising GoSmarter](#) - Advanced features and configurations

This integrated approach maximises the value of GoSmarter across your operation.

GoSmarter's Cutting Plans does the complex optimisation math in minutes, freeing you to focus on strategy, quality, and continuous improvement. Start planning smarter today and watch your scrap rates - and costs - drop.

Customising GoSmarter and Advanced Tips

This guide is designed for system administrators, power users, and anyone who wants to configure GoSmarter to fit their organisation's specific needs and leverage advanced features. Learn how to customise settings, manage users, use advanced tools, and get the most out of GoSmarter beyond the basic process guides.

Overview

Why Customise GoSmarter?

While GoSmarter works well out-of-the-box, customisation allows you to:

- **Align with your workflows** - Adapt the system to how your organisation operates
- **Improve user experience** - Configure what each team sees and can do
- **Unlock advanced value** - Use features like APIs and calculation tools
- **Maximise ROI** - Get more value by fully utilising all capabilities

GoSmarter is built to be flexible. This guide helps you "make GoSmarter your own."

What You'll Learn

This guide covers:

1. User management and permissions
2. Custom fields and data organisation
3. Integration and API usage
4. Free calculation tools (Shape Code, Emissions, etc.)
5. Staying updated with new features
6. Advanced tips and power user techniques

If you're responsible for managing GoSmarter for your organisation, this guide will help you configure it optimally and support your users effectively.

User Management & Permissions

Currently users must be reviewed and assigned by GoSmarter support. Please contact support to manage users.

Once people are allocated to the organisation they can perform day-to-day activities within the application.

Billing and subscription management is handled separately via the GoSmarter sales team.

Integration & API Usage

Why Integrate GoSmarter?

GoSmarter may be one of several systems in your IT ecosystem. Integration allows:

- **Data sync** - Keep GoSmarter data aligned with ERP, accounting, etc.
- **Automated workflows** - Trigger actions in other systems based on GoSmarter events
- **Custom reporting** - Pull GoSmarter data into business intelligence tools like Power BI
- **Extended functionality** - Build custom applications on top of GoSmarter

API Overview

GoSmarter provides a RESTful API for programmatic access:

- **Read data** - Fetch inventory, orders, certificates, scrap logs, etc.
- **Write data** - Create or update records from external systems
- **Real-time sync** - Keep data current between systems
- **Custom integrations** - Build exactly what you need

API usage requires programming/scripting knowledge. If you're not technical, work with your IT team or contact GoSmarter support for integration assistance.

Getting Started with the API

1. API Documentation:

- Access docs at api-docs.gosmarter.ai
- Review authentication, endpoints, request/response formats

- Documentation includes:
- Available endpoints (URLs for different data types)
- Request formats (how to query data)
- Response formats (what you'll get back)
- Authentication methods (how to use your API key)
- Example code (Python, JavaScript, curl, etc.)

Common Integration Use Cases

1. Sync with ERP System:

- Automatically import new purchase orders from ERP into GoSmarter Orders
- Export production completion data from GoSmarter back to ERP for invoicing
- Keep inventory levels synchronized

2. Power BI Dashboards:

- Daily automated pull of scrap data into Power BI
- Create executive dashboards showing scrap trends, production efficiency, etc.
- Combine GoSmarter data with financial data for comprehensive business intelligence

3. Automated Alerts:

- Script checks GoSmarter API for low stock levels every hour
- Sends email or SMS alerts to purchasing team when stock is low
- More responsive than waiting for users to check the system

4. Custom Mobile App:

- Build a simple mobile app for shop floor operators
- Uses GoSmarter API to display today's production plan
- Allows operators to log scrap completion directly from phones/tablets

Begin with read-only integrations (pulling data for reports) before attempting complex read-write sync. This minimizes risk while you learn the API.

Utilising Free Tools

GoSmarter provides several free calculation tools that add value even beyond the core platform:

Emissions Calculator

Quantify the carbon footprint of your steel usage:

1. Navigate to **Tools** → **Emissions Calculator**
2. Enter parameters:
3. Material type (different steel grades have different footprints)
4. Quantity (weight in kg/tons or number of pieces with dimensions)
5. Production method (if known - virgin steel vs. recycled content)
6. Click **Calculate**
7. View estimated CO2 equivalent emissions

Use Cases:

Sustainability Reporting:

- Calculate total emissions from monthly/annual steel use
- Track progress on carbon reduction goals
- Report for ESG (Environmental, Social, Governance) compliance

Supplier Comparison:

- Compare carbon footprint of steel from different suppliers
- Factor environmental impact into purchasing decisions

Customer Communication:

- Provide customers with carbon footprint data for their projects
- Support customers' own sustainability reporting

Scrap Reduction Benefits:

- Quantify environmental benefit of reducing scrap
- Example: Reducing scrap by 10 tons/year = ~20 tons CO2 saved
- Makes the business case for efficiency investments even stronger

Use the Emissions Calculator alongside scrap tracking to demonstrate both financial and environmental benefits of GoSmarter. This supports sustainability initiatives and can be a differentiator in customer communications.

How to Access Free Tools

As a GoSmarter Customer:

- Tools are integrated in the main menu: **Utilities** section

As a Non-Customer:

- Visit the [GoSmarter app](#)
- Access calculators without login
- Results are not saved
- Great for trying GoSmarter before committing

Staying Updated with New Features

GoSmarter is continuously evolving. New features and improvements are released regularly.

How to Stay Informed

You can subscribe to release notes at change.gosmarter.ai/ or check the **What's new** section in the application.

Proactive Feature Adoption

Make it a practice to:

1. **Monthly review** - Spend 15 minutes reading latest release notes
2. **Identify relevance** - Which new features apply to your operation?
3. **Test new features** - Try them on non-critical data first
4. **Train users** - Share relevant updates with your team
5. **Provide feedback** - Let GoSmarter know what works and what could be better

This ensures you're continuously getting more value from the platform, not just using the same features year after year.

Advanced Tips & Tricks

Power User Techniques

1. Bulk Operations:

- For repetitive tasks, use bulk edit/update features
- Example: Select multiple inventory items and update their location at once
- Much faster than editing individually

2. Save Filters and Views:

- Bookmark frequently-used filter combinations
- Example: "My urgent orders", "Low stock items", "Pending certificates"

3. Data Export/Import:

- Use CSV export/import for bulk data operations
- Example: Export inventory, make bulk changes in Excel, re-import
- Faster than web forms for large datasets
- Be cautious: verify data before import to avoid errors

4. Multi-Tab Workflow:

- Open GoSmarter in multiple browser tabs
- View reference data in one tab while entering new data in another
- Example: Have production plan in one tab, inventory in another, update both in parallel

Admin Efficiency Tips

1. Regular Data Quality Audits:

- Monthly: Run data quality reports (duplicates, missing data, etc.)
- Quarterly: Review and clean up old, inactive records
- Maintain high data quality for better system performance and user experience

2. User Training Schedule:

- New user onboarding: Show them their role-specific features only (avoid overwhelming)
- Quarterly refresher: Share new features, best practices
- Just-in-time training: When a new feature launches, train relevant users immediately

3. Backup and Recovery Plan:

- Understand GoSmarter's backup procedures (ask support if unclear)
- Know how to request data restoration if needed
- Document your customisations (custom fields, roles, etc.) so they can be recreated if necessary

4. Performance Monitoring:

- Watch for slow performance or errors
- Report issues to support promptly
- Keep track of system usage patterns (e.g., peak times) for planning

5. Change Management:

- When making significant configuration changes, communicate to users beforehand
- Test changes in non-production environment if possible
- Have a rollback plan if a change causes issues

FAQ / Troubleshooting

Common Questions

Q: Can GoSmarter do [specific feature]?

A:

- Check [documentation](#) or see the in-app **Help guides**
- If not found, contact support with your specific use case
- GoSmarter is actively developed; even if a feature doesn't exist, it might be planned

Q: How do I request a new feature?

A:

- Go to **What's new** and navigate to the feedback section
- Describe your need and use case
- GoSmarter works closely with manufacturers; customer input heavily influences roadmap
- You may be contacted for more details or to participate in beta testing

Q: What if my company's process is slightly different from GoSmarter's default workflow?

A: Two approaches:

1. **Adapt GoSmarter:** Use custom fields, tags, and configuration to bend the tool to your process
2. **Adapt your process:** Sometimes the "GoSmarter way" may actually be a best practice; consider if adjusting your process makes sense

Often a hybrid approach works best. Contact support for guidance specific to your situation.

Q: Can I access GoSmarter from multiple locations/devices?

A: Yes:

- Cloud-based, accessible from anywhere with internet
- Use on desktop, laptop, tablet, mobile
- Login from office, shop floor, home office, etc.
- Data is synchronised in real-time

Q: What if we have multiple plants/locations?

A:

- GoSmarter supports multi-location organisations
- Can separate data by location or consolidate - depends on your preference
- Contact support to configure for your structure

Q: Is multi-language support available?

A:

- This is planned for future releases

Q: How do I measure the ROI of GoSmarter for our organisation?

A: Track:

- **Time savings:** Hours saved on manual tasks (planning, certificate searching, etc.)
- **Material savings:** Scrap reduction value
- **Error reduction:** Fewer mistakes, rework, customer complaints
- **Compliance benefits:** Faster audits, avoided penalties

Quantify before and after using GoSmarter to calculate ROI. GoSmarter support can help with ROI analysis.

Making GoSmarter Your Own: Summary

Key Takeaways

1. **Customisation** - Use custom fields and tags to fit GoSmarter to your specific needs
2. **Integration** - Leverage APIs to connect GoSmarter with your broader IT ecosystem
3. **Free Tools** - Use Shape Code, Weight, and Emissions calculators for added value
4. **Stay Current** - Regularly review new features and adopt those that benefit you
5. **Power User Practices** - Employ advanced techniques to maximise efficiency

By investing time in customisation and learning advanced features, you'll get far more value from GoSmarter than just using it "as is."

GoSmarter provides the tools; you configure it to fit your unique operation. Take advantage of customisation options to maximise efficiency, improve user adoption, and drive better business results.

Tags and Tag Rules

This guide explains how to create and manage tags, build tag rules, and apply those rules to inventory so tags stay up to date without manual checking on every item.

What Tags and Tag Rules Do

Tags let you group inventory by conditions that matter to your team. For example, you can tag certified stock so you can filter and review those items faster.

Tag Rules automate that process. Instead of adding tags manually item by item, you define rule conditions once and let GoSmarter assign tags when records match those conditions.

Open Tag Management and Review Existing Tags

Open **Tags** under **Company core data** to reach **Tag Management**.

In this table, you can:

- Review existing tags
- See each tag's description and colour
- Check how many items currently use each tag
- Start creating new tags

Create a New Tag

Select **Add Tag** to open the tag form.

The panel lets you define the tag details and choose a colour. You can use a default colour or choose a custom one, so tags are easier to recognise in tables and filters.

After completing the form, select **Add Tag** to save it.

GoSmarter confirms the action with a notification. Your new tag appears in the Tag Management table, including its colour, description, and assignment count.

Edit or Delete Existing Tags

Each tag row has an **Actions** menu.

Use this menu to edit or delete a tag. Choosing **Edit** opens a panel that mirrors the Add Tag panel. You can change the tag's settings, including its colour, then save your changes and confirm the table reflects the update.

Open Tag Rules and Create a Rule

Under **Company core data**, open **Tag Rules**. This page lists existing rules with their linked tag, active status, and description.

Select **Add Rule** to define a new rule.

In the Add Rule panel, enter:

- Rule name
- The tag the rule should apply
- Whether the rule is active
- An optional description

Build Rule Conditions Correctly

Rules only work when conditions are defined. Add a condition and then choose:

- The field to check (for example, **Quantity** or **Heat Code**)
- The comparison operator (for example, **=**, **!=**, or **contains**)
- The value to compare against

When you add more than one condition, link them with **AND** or **OR**. If you use **OR**, a record that matches either condition still triggers the rule.

If you need combined logic, add a **Group**. Groups let you nest checks so you can model patterns like one required condition plus one of several acceptable values.

In this example we have used grouped logic so the item **Type** can be either **Coil** or **Bar**, while still requiring **Quantity** above 20.

Save, Verify, and Maintain the Rule

Select **Add Rule** to save. GoSmarter shows a confirmation and adds the new rule to the Rule Management table.

From the table, you can edit or delete the rule later through row actions, just like tag management.

Apply Tag Rules to Inventory and Confirm Results

Tag Rules should apply automatically to matching items. If you need to force an update, open **Inventory** under **Production Planning**, use the filters to find matching items, open **Actions** for each item, and choose **Apply Tag Rules**.

After running the action, GoSmarter confirms how many rules were applied. Existing matching rules may be re-applied during this action.

Return to **Tags** and check the tag row to confirm assignment counts updated as expected.

Filter Inventory by Tags

Once tags are applied to your items, you can use them to filter the data table quickly. Click on any tag in the Tag Management table to automatically filter and display only items with that tag assigned.

You can also select multiple tags to create a more specific filter. This lets you find items that match specific groups or conditions without needing to create a formal Tag Rule.

Integration Strategy

At Nightingale HQ, we understand that every manufacturing business has unique systems and workflows. Our integration strategy is designed to meet you where you are and grow with your needs without forcing expensive system replacements or lengthy implementation projects.

The Crawl, Walk, Run Approach

We believe in progressive integration that lets you start quickly and scale at your own pace.

Crawl: Independent Use

Start using GoSmarter immediately through our intuitive web interface. No integration required, just log in and begin:

- Access all core features through the browser-based platform
- Manage inventory, orders, and production planning independently
- Try features risk-free without touching your existing systems
- Perfect for testing, pilot projects, or departments starting digital transformation

Best for: Getting started quickly, evaluating the platform, departmental use or small business use

Walk: Import & Export

When you're ready to connect data between systems, use our built-in import and export tools:

- **Import data** from comma-separated values (CSV) files from other systems or spreadsheets
- **Export results** to share with other systems or teams
- Periodically update data with semi-manual synchronisation by importing/exporting within the platform
- Full control over what data moves and when
- No technical expertise required

Best for: Periodic data sharing, maintaining data sovereignty, simple workflows

Run: API Integration

Achieve full automation with real-time, bidirectional integration:

- Connect GoSmarter directly to your ERP, MES, or other systems
- Automate data flows without manual intervention
- Build custom workflows tailored to your operations
- Access the complete platform programmatically

Best for: High-volume operations, real-time requirements, complex workflows

Integration Tools & Resources

Open APIs

Our representational state transfer (REST) APIs provide comprehensive access to all platform features:

- **Available at no additional cost** to all customers
- Complete documentation with examples
- Authentication and security best practices
- Rate limits designed for production use

[Access API Documentation →](#)

Developer Centre

A complete resource hub for technical teams:

- Interactive API explorer and sandbox
- Integration guides and tutorials
- Best practices and design patterns

[Visit Developer Centre →](#)

MCP Server

For modern integration architectures, we offer a Model Context Protocol (MCP) server:

- Standardised protocol for AI agent integration

- Enable conversational interfaces to GoSmarter data
- Build custom AI assistants for your operations
- Integrate with Claude, VS Code, and other MCP-compatible tools

[Learn about MCP Integration →](#)

Our Integration Philosophy

We Play Nicely

The software landscape is diverse, and we respect that. Your business likely runs on a combination of:

- Established ERP systems (SAP, Microsoft Dynamics, NetSuite, etc.)
- Industry-specific MES or production software
- Custom tools built for your specific needs
- Excel spreadsheets and specialized databases

We don't replace. We complement. Our goal isn't to cost you hundreds or thousands of hours replacing critical systems that, while they may not meet all your needs, are essential to your operations.

Open by Design

- **No integration fees:** Our APIs are included with your subscription
- **Vendor-neutral:** We support integration with any system that can consume REST APIs
- **Your data, your rules:** Export your data anytime, in standard formats

Partnership Approach

As we work with more customers, we encounter different supplier systems and niche software. Our commitment:

1. **Build integration kits** for commonly requested systems
2. **Document integration patterns** for similar tools
3. **Establish partnerships** with your specific vendors when possible
4. **Support your IT team** in building custom integrations

We view integration as a partnership. If you need to connect with a specific vendor system, we'll work with you to make it happen, whether that means providing extra documentation, building connector code, or coordinating directly with your vendors.

Getting Started with Integration

Not sure which approach is right for you? Our team can help assess your needs and recommend the best integration path.

Reach out to us at support@gosmarter.ai

Quick Start Checklist

1. **Start with the interface** - Get familiar with core features
2. **Test import/export** - Move sample data in and out
3. **Review our API docs** - Understand what's possible
4. **Define your integration goals** - What processes need automation?
5. **Connect with our team** - We'll help plan your integration journey

Common Integration Scenarios

Scenario 1: ERP → GoSmarter → Production Floor

- ERP pushes orders via API
- GoSmarter optimises cutting plans
- Results exported to production systems or displayed on tablets

Scenario 2: Hybrid Manual/Automated

- Daily inventory import from your existing system
- Manual planning and optimisation in GoSmarter
- Export cutting lists and reports for your team

Scenario 3: Full Automation

- Real-time bidirectional sync with ERP and MES
- Automated order intake and processing
- Production data flows back to business systems
- Webhook notifications for critical events

Remember: There's no wrong way to integrate with GoSmarter. Whether you use our interface standalone, sync data periodically, or build deep API integrations, we're here to support your journey.

30-Day Behaviour Change Playbook

New software doesn't fail at the technical level. It fails because people keep reaching for the spreadsheet. This playbook tells you how to stop that from happening, in the first 30 days, before habits re-form.

This playbook covers the people side of your rollout. Pair it with the [Implementation Project Plan](#) for the full technical and project management picture.

The Core Challenge: Software vs. Habit

Every production manager in metals has a personal spreadsheet. Some are masterpieces with years of accumulated logic, colour-coded tabs, formulas that nobody else understands. They work. That's the problem.

GoSmarter needs to become the trusted source of truth before people stop cross-checking it against the spreadsheet. The first month is the window. Get it right and adoption sticks. Get it wrong and the spreadsheet wins.

The playbook is split into three parts:

1. **Rollout approach:** parallel or cut-over?
2. **Champion network:** who leads the change on the floor?
3. **First-month KPIs:** how do you know it's working?

Part 1: Parallel vs. Cut-Over Rollout

What the Terms Mean

Parallel running means operating GoSmarter and your existing process at the same time for a defined period. Every action that goes into GoSmarter also goes into the old system (or spreadsheet). You compare outputs. When you trust the new system, you stop the old one.

Cut-over means picking a date and switching. From that morning, GoSmarter is the only system. The old spreadsheet is archived. You don't look back.

Neither approach is always right. The decision depends on your risk tolerance, your team size, and how different GoSmarter's output is from your current process.

When to Run Parallel

Choose parallel running if:

- Your existing process has legal or audit obligations (e.g., mill certificate (also called a **Material Test Report (MTR)**) filing must remain unbroken during transition)
- You have a large team and can't retrain everyone simultaneously
- GoSmarter is replacing a bespoke internal tool with unusual logic that needs validation
- Your production volume is high enough that a mistake has immediate commercial consequences

Parallel period recommendation: two to four weeks. Longer than four weeks and people stop taking GoSmarter seriously as it becomes the "other" system rather than the real one.

How to run it well:

- Designate a single person to compare GoSmarter's output with the legacy output each day. This should take no more than 15 minutes.
- Log every discrepancy in a shared document. Categorise as: (a) GoSmarter is wrong, (b) legacy system is wrong, (c) the inputs were different, (d) both are right but show the same thing differently.
- Set a go/no-go date at the start. Don't let it drift. If you reach the date and have unresolved category (a) discrepancies, escalate to GoSmarter support before extending the parallel period.

Even if you cut over on inventory and orders, consider a short parallel period for mill certificate uploads. Regulators and customers don't care about your change management programme – they need the cert. Validate the extraction accuracy on real documents before you rely on it for compliance.

When to Cut Over

Choose a clean cut-over if:

- You have a small team (fewer than 10 users) who can be trained in one session
- Your existing process is genuinely broken, parallel running would mean doubling up on broken work
- You're starting fresh with GoSmarter before a new contract or site opens, so there's no legacy data to compare against

- Your team has already piloted GoSmarter in a limited context and trusts it

How to run it well:

- Archive, don't delete, the legacy spreadsheet or system. People need to know it still exists for reference. The goal is to reduce the psychological cost of switching: if they know they can look back, they're less likely to keep both running in parallel anyway.
- Pick a Monday. Never cut over mid-week. You want a clean weekly boundary.
- Do a full data import check the Friday before. If anything looks wrong, you have the weekend to fix it without production pressure.
- Brief every user on the Friday. Not an email, have a conversation, even a five-minute stand-up at shift start.

The Hybrid Approach

Most medium-sized operations do this in practice: cut over on inventory and orders (low risk, easy to validate), run parallel on production planning for two weeks (higher stakes, needs confidence), and run parallel on mill certificates for four weeks (compliance-critical).

This is sensible. Document your approach explicitly so the whole team knows what's live and what's still being validated.

Part 2: Nominating Shop-Floor Champions

Why Champions Matter

You can brief a team once. A champion reinforces the message every day, answers the five-minute questions that nobody sends an email about, and spots when someone has quietly gone back to their spreadsheet.

The best champions aren't always the most senior people. They're the ones who other people ask when something doesn't look right.

Who to Nominate

Look for people who have:

- **Credibility on the floor:** their colleagues trust their judgement, not just their job title
- **Natural curiosity:** they've already asked questions about GoSmarter or explored it without being asked

- **A production task that GoSmarter directly improves:** if the champion's own day gets better, their advocacy is genuine

Aim for one champion per shift if you run multiple shifts. If you have separate teams for inventory, production planning, and mill certificates, ideally nominate a champion in each area.

Avoid nominating: the most senior person in the room by default, anyone who openly resisted the rollout decision, or anyone with a workload that leaves no time to support colleagues.

What Champions Do

The champion role is not a second job. Define it narrowly:

| Task | Time commitment |
|--|-----------------|
| Attend a 30-minute champion briefing before go-live | Once |
| Be the first point of contact for questions from their team | As needed |
| Do a five-minute daily check of GoSmarter during week one | Week 1 only |
| Flag recurring issues or confusion to the implementation lead | Ongoing |
| Join a brief weekly check-in call with the implementation lead | Weeks 1–4 |

GoSmarter's customer success team can join your champion briefing to run a Q&A session. Contact us via the [GoSmarter app](#) or book a session through [your account dashboard](#).

Supporting Your Champions

Champions need three things to succeed:

1. **Authority:** a clear message from the implementation lead (or site manager) that the champion's guidance should be followed. Without this, champions get ignored.
2. **An escalation path:** when a champion can't answer a question, they need to know exactly who to ask and how quickly they'll get a response. Document this on day one.
3. **Recognition:** at the end of the first month, acknowledge what the champion did. It doesn't need to be formal. A mention in a team meeting is enough. People remember these things.

Part 3: First-Month KPIs

You need to know whether the rollout is actually working, not just whether people are logging in. These three KPIs tell you what you need to know in the first 30 days.

KPI 1: Shadow Spreadsheet Usage

What it measures: Whether your team is still maintaining parallel records outside GoSmarter.

How to track it: Ask each champion to do a 10-minute informal check at the end of weeks two and four. Are people keeping personal spreadsheets updated? Are separate tracking sheets still circulating via email or WhatsApp?

This is a behavioural signal, not a system metric. You won't get it from a dashboard. You get it from asking.

What good looks like: By the end of week four, no active spreadsheets covering data that GoSmarter now holds. Legacy sheets exist for reference only and haven't been updated in at least two weeks.

What to do if it's not good: Don't shame the spreadsheet users. Find out what GoSmarter isn't doing that the spreadsheet was doing for them. Is it a missing field? An export they can't get? A report format they need? Fix the root cause, not the behaviour.

KPI 2: AI-Plan Acceptance Rate

What it measures: Whether planners are trusting GoSmarter's optimised cutting plans or overriding them every time.

How to track it: GoSmarter logs plan acceptance and overrides in the optimisation output. Review this in your Dashboard at the end of weeks two and four. Look at the ratio of accepted plans to manual overrides.

What good looks like: An acceptance rate above 70% by the end of week four. 100% is not the goal. Experienced planners will correctly override the AI when they have information GoSmarter doesn't (a machine is down, a customer has a specific preference). You want the AI to be the starting point, not something people discard without reading.

What to do if it's not good: Low acceptance usually means one of three things:

- The input data (stock levels, order details) is inaccurate, so the plan is generating wrong results
- Planners don't understand what the plan is optimising for and don't trust the logic

- The plan format is unfamiliar and the planner is defaulting to what they know

Talk to your champion and sit with a planner for 30 minutes. You'll identify the issue quickly.

If acceptance is low in week one, that's normal. The AI is learning your data and your planners are learning the format. If it's still low in week three with no upward trend, escalate early.

KPI 3: Certificate Search Time

What it measures: How long it takes a user to locate a specific mill certificate (MTR) in GoSmarter vs. how long it used to take.

How to track it: Ask three or four users who regularly retrieve certificates to time themselves on a real search in week one, then again in week four. You want before-and-after data from the same people on the same type of task.

A baseline search in a paper or folder-based system typically takes five to twenty minutes. GoSmarter search should return results in under 30 seconds once certificates are uploaded.

What good looks like: Search time under two minutes by week four, including any time spent interpreting the result. The two-minute target accounts for users who are still building familiarity with the interface.

What to do if it's not good: The most common reason search is slow is that certificates haven't been consistently uploaded or tagged. Check your upload completeness rate (what percentage of recent deliveries have a certificate in GoSmarter?) and address any gaps before assuming the search tool is the problem.

Week-by-Week Timeline

| Week | Focus | Champion actions | Implementation lead actions |
|-------------------------|--|---|---|
| Week 0 (pre-go-live) | Champion briefing, data import check, archive legacy systems | Attend briefing, read this playbook | Confirm data imports, pick KPI baselines, brief site manager |
| Week 1 | Go-live, daily check-ins | Five-minute daily check, answer questions, log issues | Daily stand-up with champions, monitor plan acceptance |
| Week 2 | First KPI check, address blockers | Shadow spreadsheet check, flag recurring issues | Review acceptance rate, check search times, fix root causes |
| Week 3 | Normalisation | Champion available for questions, not actively monitoring | Confirm parallel period end date (if running parallel) |
| Week 4 | End-of-month review | Final shadow spreadsheet check | Review all three KPIs, document what worked, share with GoSmarter |

Escalation: What to Do When It's Not Working

If you reach the end of week four and adoption is poor, run through this checklist before concluding that the software isn't right for your team:

- **Is the data accurate?** Poor data produces poor outputs. If GoSmarter's inventory doesn't reflect actual stock, nobody will trust its plans.
- **Did every user get a hands-on training session, not just a walkthrough?** Watching a demo and doing the task are different. Require that every user completes at least one real task in GoSmarter before go-live.
- **Has the implementation lead checked in with non-champions?** The champions give you signal, but they're also optimistic by nature. Speak directly to the most resistant users.
- **Is there a specific feature gap?** Log it with GoSmarter support. Many feature requests come from early adopters in the first month.

If you're struggling with adoption, contact us. We know change is hard and have worked with dozens of companies. Reach out to us via talktous@gosmarter.ai or reach out to the person currently supporting you.

Summary: Your First-Month Checklist

- Decided on parallel vs. cut-over approach and documented it for the team
- Named at least one champion, confirmed their authority and escalation path
- Set a baseline for all three KPIs before go-live
- Archived (not deleted) all legacy spreadsheets and tools
- Completed week-two KPI check and addressed any blockers
- Completed week-four KPI check and shared results with GoSmarter

Rollout Packages by Business Type

No two metals businesses are identical. But the path from first login to measurable value tends to follow one of five well-worn routes, depending on your system setup, how you work, and what you're trying to fix first.

These packages give you a clear, fixed-timeline plan with milestones and **Key Performance Indicators** (KPIs) you can track from day one – whether you're running the rollout yourself or working with a GoSmarter partner.

If you're implementing GoSmarter through a reseller or implementation partner, share this page with them before your first call. The packages are designed to give both sides shared language and clear expectations.

Which package is right for you?

Match yourself to a package based on three things:

- **Your current system** – **Enterprise Resource Planning** (ERP) platform, spreadsheets, or a mix of both
- **How your business runs** – single-site fabricator, service centre, stockholder, or multi-site group
- **Your product mix** – rebar-heavy, plate-heavy, mixed processing, or stock-and-ship

If you fit more than one package, start with the one closest to your biggest current bottleneck. Add the next package as your next phase once you're live and stable.

Package 1: Service Centre Epicor Sprint

This package is for you if:

- You run a mid-size steel service centre
- Epicor is your main system
- You deal with high order churn and constant replanning

What you will achieve in 30 days:

| Phase | Target window | How you know you are done |
|-------------------------|---------------|---|
| Discovery and data map | Days 1–5 | Your order, stock, and certificate fields are mapped and agreed |
| Core setup and pilot | Days 6–15 | One planner is running their daily workflow live in GoSmarter |
| Parallel run and tuning | Days 16–25 | Your operations lead has approved the gap between old and new plans |
| Cut-over and go-live | Days 26–30 | GoSmarter is your primary planning workflow |

Targets to hold yourself to:

- 30% reduction in planning cycle time by day 30
- 70%+ AI plan acceptance by day 30
- 20% reduction in urgent manual replans by day 45

Package 2: Fabricator Infor or Katana Fast-Track

This package is for you if:

- You run a fabrication business on Infor or Katana
- Your production planners still rely on side spreadsheets
- You regularly hit bottlenecks between sales orders and floor scheduling

What you will achieve in 35 days:

| Phase | Target window | How you know you are done |
|----------------------------|---------------|--|
| Process walk-through | Days 1–4 | Your current-state workflow is documented and signed off |
| Template-led configuration | Days 5–12 | Your shop defaults and planning rules are configured |
| Live pilot shift | Days 13–21 | At least one shift is running on GoSmarter plans |
| Team rollout | Days 22–35 | All shift planners are trained and active |

Targets to hold yourself to:

- 25% reduction in schedule adjustments caused by missing data
- 15% reduction in avoidable scrap in your pilot line
- 80% of active jobs planned inside GoSmarter by day 35

Package 3: Family-Owned Stockholder Excel Exit

This package is for you if:

- You run a family-owned stockholder business
- Your core process still runs on spreadsheet and email handoffs
- You do not have a large internal technical team

What you will achieve in 30 days:

| Phase | Target window | How you know you are done |
|-------------------------|---------------|---|
| Spreadsheet audit | Days 1–3 | Your key sheets are catalogued and risk-ranked |
| Data clean-up sprint | Days 4–10 | Your stock and order imports pass validation |
| Controlled parallel run | Days 11–24 | Your spreadsheet is reference-only – no new data going in |
| Spreadsheet retirement | Days 25–30 | Spreadsheet updates stopped and the file is archived |

Targets to hold yourself to:

- 90% reduction in duplicate manual data entry by day 30
- Certificate retrieval time under two minutes by day 30
- Zero active shadow spreadsheets by day 45

Package 4: Rebar Optimiser Production Ramp

This package is for you if:

- Your operation is rebar-focused

- Your core problem is cutting yield, not just administration
- Your team needs fast confidence in the optimisation output before they will trust it

What you will achieve in 30 days:

| Phase | Target window | How you know you are done |
|--------------------------|---------------|---|
| Pattern baseline capture | Days 1–4 | Your baseline yield and scrap data is locked |
| Optimiser configuration | Days 5–11 | Your product rules and constraints are validated |
| Shift-level trial | Days 12–20 | Your trial shift has reached a stable run cadence |
| Full-line go-live | Days 21–30 | Daily rebar plans are generated in GoSmarter |

Targets to hold yourself to:

- 10–15% scrap reduction by day 30
- 30% faster plan generation by day 21
- 80%+ planner trust score in your week-four review

Package 5: Multi-Site Phased Rollout

This package is for you if:

- You operate multiple plants with mixed systems
- You need one consistent playbook with site-by-site sequencing
- You need central reporting across local workflows

What you will achieve in 90 days:

| Phase | Target window | How you know you are done |
|--------------------------------|---------------|---|
| Group blueprint | Days 1–10 | Your common data standard and decision rules are agreed |
| Site one pilot | Days 11–30 | Your first site meets its KPI baseline targets |
| Site two and three replication | Days 31–70 | Later sites are live using the same package with only local adjustments |
| Group operating rhythm | Days 71–90 | Your monthly cross-site KPI review is running |

Targets to hold yourself to:

- Each replication site live in less than 50% of your pilot lead time
- A consistent reporting pack across all live sites
- Measurable reduction in planning-quality variance between sites

Weekly rhythm — the same for every package

Whichever package you are on, keep the same weekly review cadence:

1. **Monday checkpoint:** where are you against the milestone? What is blocked?
2. **Midweek configuration review:** is your data accurate? Are people actually using the system?
3. **Friday outcomes review:** KPI trend, risks, and next-week actions agreed before the meeting closes

Use the [Implementation Toolkit](#) for the discovery checklist, configuration template, and [Return on Investment \(ROI\)](#) calculator that go with your package.

Email talktous@gosmarter.ai and describe your setup in two sentences. We will point you at the right package or tell you if your situation calls for something different.

Implementation Toolkit by Business Type

This toolkit is your working document for the five **Rollout Packages**. It covers what to capture before you start, how to set up GoSmarter for your business type, how to calculate the value you are getting, and how to know when you are done.

If you are an implementation partner, use this alongside the package guide at every customer project. If you are running the rollout yourself, work through each section in order.

Run the discovery checklist before your first configuration call. Completed answers let you set up GoSmarter in a single session rather than going back and forth for missing data.

1) Discovery checklist

Fill this in before any configuration work starts. The more complete your answers, the faster you will be live.

Your business objectives

- What is your commercial priority for the next 90 days – margin, throughput, compliance, or service level?
- What are your top three workflow bottlenecks, ranked by how much time they cost you per week?
- Who owns each of your current operational reports, and how often do they run?

Your current systems

- What is your main system right now – an **Enterprise Resource Planning** (ERP) system, a spreadsheet, or a mix?
- What file formats can your current system export (CSV, Excel, XML, direct API)?
- Where are the data quality risks – stock accuracy, order completeness, or certificate gaps?

Your operations

- What type of plant do you run and how many shifts per day?

- Which product families account for most of your volume – long products, flat, or mixed?
- Who needs to sign off any change to your live planning workflow before you can switch?

Your change readiness

- Who is your named implementation owner?
- Who will be the shop-floor champion on each shift?
- What training windows do you have in the next 30 days?
- Have you had a failed software rollout before? If yes, what went wrong?

2) Configuration guide by business type

Each business type uses the same five setup areas. The questions and defaults change depending on which package you are on.

| Area | What you decide | What gets produced |
|-----------------|--|--------------------------------|
| Data model | Material grades, stock dimensions, order structure | Agreed data mapping |
| Workflow rules | Planning constraints, backup rules, who to escalate to | Approved workflow matrix |
| User roles | Who plans, who supervises, who reads-only | Role and permission map |
| Reporting views | What you need to see daily and weekly | Your standard dashboard layout |
| Integrations | How data moves in and out and how often | Integration step-by-step guide |

Service Centre Epicor Sprint – configuration priorities

- Get order ingestion and replanning running first
- Turn on planner-facing variance alerts from day one so your team can see what changed and why
- Set up cycle-time and override-rate reporting before you go live so you have a baseline to beat

Fabricator Infor or Katana Fast-Track — configuration priorities

- Make the shift-level job queue the first thing your planners see when they log in
- Configure job-priority rules for your bottleneck machines before your pilot shift
- Set up a daily handoff report between your sales team and production team

Family-Owned Stockholder Excel Exit — configuration priorities

- Start with the minimum fields you need to replace your spreadsheet — add more after week two
- Add strict validation on imports so your old data does not pollute the new system
- Set up certificate retrieval as the first thing you demonstrate to your team

Rebar Optimiser Production Ramp — configuration priorities

- Add your scrap reason codes at setup, not after go-live — you will need them for reporting
- Configure your cut pattern constraints before your first trial shift
- Turn on daily optimisation acceptance tracking so you can coach your planners on what to override and why

Multi-Site Phased Rollout — configuration priorities

- Agree the group-level common fields before you configure any individual site
- Allow each site to have optional local fields, but keep them in a separate layer
- Standardise your weekly cross-site report before you add site-specific variations

3) ROI calculator

Use this to calculate the value GoSmarter delivers — and to show it to your finance team or board.

The four levers

1. **Labour time savings** — hours saved per week, multiplied by blended hourly cost
2. **Scrap cost reduction** — baseline scrap percentage minus current scrap percentage, multiplied by monthly material spend

3. **Error and rework reduction** — baseline rework incidents minus current incidents, multiplied by average rework cost
4. **Audit and compliance time savings** — baseline certificate retrieval time minus current time, multiplied by request volume

What you need to fill it in

Gather these before your day-zero review:

- Last 8–12 weeks of planning cycle times
- Last 8–12 weeks of scrap rates by product family
- Hours per week your team spends on stock, order, and certificate handling
- Cost assumptions reviewed and agreed with your finance or operations lead

When to review

| Review point | What to produce |
|--------------|---|
| Day 0 | Baseline pack with assumptions signed off by your operations lead |
| Day 30 | Early value report — is the trend moving in the right direction? |
| Day 60 | Confirmed actual savings and any blockers to address |
| Day 90 | Full value report and your recommendation for the next phase |

4) Weekly review checklist

Use this at every Monday checkpoint:

- Each milestone is marked green, amber, or red, with one named owner per risk
- Data quality issues are logged with a fix date and an owner
- Adoption is measured by real workflow usage, not just login counts
- **Key Performance Indicator** (KPI) movement is tracked against your package targets
- Next-week actions are written down and owned before the meeting ends

5) How you know you are done

Your implementation is complete when these five conditions are met:

1. Your primary workflow runs in GoSmarter as the operational default – not alongside a spreadsheet
2. Your agreed 30-day KPI targets are met, or you have a documented recovery plan with a named owner
3. Your shop-floor champion can run the core workflow without any help from your implementation team or from GoSmarter
4. Your **Return on Investment (ROI)** tracker has a signed baseline, your day-30 actuals, and a forward forecast
5. You know which package comes next

If you are stuck at any point, reach out to us at talktous@gosmarter.ai. We have worked through all five packages with real businesses and can usually unblock a rollout in one call.

GoSmarter Glossary

This glossary is your quick reference for metals manufacturing terminology, AI and data concepts, and GoSmarter platform terms. Browse by category at the [Glossary section index](#) or use the A–Z below. For the full shop-floor-focused metals reference, see the [Metals Manufacturing Glossary](#).

GoSmarter Platform Terminology

A

AI (Artificial Intelligence)

AI is the broad field of computer science concerned with building programs that can think and learn in a human-like way. In manufacturing, AI powers predictive scheduling, quality inspection, demand forecasting, and optimisation tools like GoSmarter's Cutting Plans.

→ [Read more about AI](#)

Allowance

Extra length added to calculations to account for saw blade width when cutting. Usually 5-10mm per cut.

AWS (Amazon Web Services)

Amazon's cloud computing platform. Provides the infrastructure for storage, databases, and compute workloads used by modern manufacturing software. GoSmarter runs on cloud infrastructure compatible with AWS services.

→ [Read more about AWS](#)

Azure

Microsoft's cloud computing platform. Azure services including Azure Data Factory, Azure Batch, and Azure Cognitive Services are commonly used in manufacturing analytics and automation projects.

→ [Read more about Azure](#)

B

Bar

A long piece of steel. Also called "stick" or "length." Typically 6 or 12 meters long.

Batch Number

See [Heat Number](#).

Bulk Upload

Uploading multiple items at once using a spreadsheet file instead of entering them one by one.

C

Certificate

See [Mill Certificate](#).

Company Selector

The dropdown menu in the sidebar that lets you choose which company location you're working with.

Cut Length

The length of pieces you need to cut from longer bars.

Cutting Optimisation

The process of calculating the most efficient way to cut standard-length stock into the lengths your orders require — minimising waste. The underlying maths problem is called the cutting stock problem. GoSmarter's Cutting Plans solves it automatically, reducing scrap by up to 50%.

→ [Read more about Cutting Optimisation](#)

Cutting Pattern

A plan showing which pieces to cut from a bar and in what order. The output produced by cutting optimisation.

D

Dashboard

The main starting page that shows a summary of your operation.

Diameter

The thickness of a steel bar, measured across its circular cross-section. Usually measured in millimeters (mm).

Download

Saving a file from GoSmarter to your computer. Click the download button, and the file saves to your Downloads folder.

E

EN 10204

The European standard that defines the types of material test certificates (MTCs). There are four types: 2.1 (declaration of compliance), 2.2 (test report), 3.1 (manufacturer's inspection certificate

for your specific batch), and 3.2 (co-signed by an independent inspector). When a customer's purchase order says "3.1 certs required," they mean EN 10204:3.1.

→ [Read more about EN 10204 and the four certificate types](#)

ERP (Enterprise Resource Planning)

Software that manages core business functions in one system – finance, procurement, inventory, HR, sales. Common examples: SAP, Sage, Epicor, Dynamics. ERPs are built for every industry, which means they're not built for the specifics of metals manufacturing: heat numbers, EN 10204 types, cut-to-length yield tracking, or off-cut management. Many metals manufacturers use a specialist tool like GoSmarter alongside their ERP.

→ [Read more about ERP in Metals Manufacturing](#)

Excel

Spreadsheet program used for data uploads and downloads. Files end in .xlsx.

F

Filter

A way to narrow down a long list to show only items matching certain criteria. Like searching, but more specific.

G

Grade

The type or classification of steel based on its strength and properties. Examples: Grade 250, Grade 500. Also called "material grade."

H

Heat Number

A unique code from the steel mill identifying the batch of steel – essentially a batch ID for a single melt. Every piece of metal cut from that melt shares the same heat number. It links the physical material to its mill certificate and is the foundation of traceability. Also called "batch number."

→ [Read more about Heat Numbers in Steel](#)

I

Inventory

All the steel bars you currently have in stock at your facility.

→ [Read more about Metals Inventory Management](#)

J

Jupyter

An open-source tool used by data scientists and analysts to write and run code interactively. Widely used for Python-based data analysis and machine learning. Relevant if you're evaluating analytics or AI vendors.

→ [Read more about Jupyter](#)

K

Kerf

The width of material removed by a saw blade when cutting. Usually 3-5mm. Use the "allowance" field to account for this.

L

Length

How long a steel bar is, measured in millimeters (mm). Common lengths: 6,000mm (6 meters) or 12,000mm (12 meters).

Login

Entering your username and password to access the system.

Long Products

Steel produced in linear cross-sections: bars, rods, rebar, angles, channels, beams, and tube. They come in standard lengths and are cut to customer-specified lengths. The key challenges are cutting optimisation and off-cut management. Contrasts with flat products (plate, sheet, coil).

→ [Read more about Long Products in Steel](#)

M

Material

The type or grade of steel. Used interchangeably with "grade."

Mill Certificate (MTC)

An official quality document from the steel manufacturer showing chemical composition, mechanical properties, and test results. Also called "Mill Test Certificate," "Test Certificate," or "Quality Certificate." Mill certificates are issued to the EN 10204 standard and tie back to the heat number.

→ [Read more about Mill Test Certificates](#)

Millimeter (mm)

Unit of measurement used for all lengths in the system. 1,000mm = 1 meter.

O

Optimization

See [Cutting Optimisation](#).

Order

A customer's request for specific steel pieces. Includes specifications like material, diameter, length, and quantity.

P

Pattern

See [Cutting Pattern](#).

PDF

A file format for documents. Used for mill certificates and printable cutting plans. You need a PDF reader to view these files.

Pending

Status indicating something hasn't been started yet. Example: "Pending order" means the order hasn't been worked on.

Piece

An individual cut length of steel. When you cut a bar, you produce multiple pieces.

Q

Quantity

How many pieces or bars. Can mean:

- How many bars in inventory
- How many pieces a customer ordered
- How many times to repeat a cutting pattern

R

Rebar (Reinforcing Bar)

Ribbed steel bar embedded in concrete structures to add tensile strength. Typically specified to BS 4449 (UK) or EN 10080 (Europe). Traceability is critical for rebar — once concrete is poured, the paperwork is the only proof the steel met spec. Cut-and-bend operations are common.

→ [Read more about Rebar](#)

Reference Data

Standard information used throughout the system, like material grades and types. This data is pre-loaded and doesn't usually change.

S

Scrap

Material that's left over after cutting and is too short to use. Also called "waste" or "drops." Minimising scrap is a core function of cutting optimisation.

Scrap Rate

The percentage of material that becomes waste when cutting. Lower is better. Formula: $(\text{waste} \div \text{total length}) \times 100$.

Sidebar

The menu panel on the left side of the screen. Use it to navigate between different sections.

Specification (Spec)

The detailed requirements for steel: material grade, diameter, length, and any special properties.

Status

The current state of something. Examples:

- Order Status: Pending, In Progress, Complete
- Certificate Status: Uploaded, Verified, Linked

T

Template

A pre-formatted spreadsheet file for uploading data. Download it, fill it in, then upload it back to the system.

Traceability

The ability to track steel from the mill through your facility to the customer — and prove it at any point. It means knowing which certificate a bar came in on, which heat number it carries, and which sales order it's going out on. Required by ISO 9001, construction regulations, and most large-buyer contracts.

→ [Read more about Steel Traceability](#)

Type

A category or classification for steel. Different from grade – refers to intended use or form.

U

Upload

Sending a file from your computer into GoSmarter. Opposite of download.

Utilization

How much of your material is actually used vs. wasted. High utilization = less waste = better efficiency.

V

Verification

Checking that information is accurate and correct. For example, verifying mill certificate details against the actual document.

W

Waste

See [Scrap](#).

Y

Yield Rate

The percentage of input material that ends up in saleable output. Formula: $(\text{Output Weight} \div \text{Input Weight}) \times 100\%$. For cut-to-length steel distribution, benchmarks run 85–92%. A 1% improvement on a £2 million material spend is worth £20,000.

→ [Read more about Yield Rate in Steel Manufacturing](#)

Common Abbreviations

| Abbreviation | Meaning |
|--------------|---------------------------------------|
| mm | Millimeters (unit of length) |
| m | Meters (unit of length, 1m = 1,000mm) |
| kg | Kilograms (unit of weight) |
| MTC | Mill Test Certificate |
| PDF | Portable Document Format (file type) |
| ID | Identification or Identifier |
| % | Percent |

Common Phrases

"In stock"

Material you currently have available in your inventory.

"On order"

Material you've ordered from suppliers but haven't received yet.

"Run an optimization"

Creating a new cutting plan to find the most efficient way to cut bars.

"Link to inventory"

Connecting a mill certificate to specific bars in your inventory for traceability.

"Upload a template"

Filling in the provided spreadsheet and sending it to the system to add multiple items at once.

"Download results"

Saving the optimization cutting plan to your computer so you can print it or share it.

Units of Measurement

All measurements in GoSmarter use the metric system:

Item Length

- 1 millimeter (mm) = 0.001 meters
- 1,000 millimeters = 1 meter
- 6,000mm = 6 meters
- 12,000mm = 12 meters

Why millimeters?

More precise than meters for steel work. Avoids decimal points (12,000mm instead of 12.0m).

Converting

- Meters to millimeters: multiply by 1,000 ($6\text{m} \times 1,000 = 6,000\text{mm}$)
 - Millimeters to meters: divide by 1,000 ($6,000\text{mm} \div 1,000 = 6\text{m}$)
-

Question Words

What to ask when confused about a term:

- **What is it?** - Definition/explanation
- **Why does it matter?** - Purpose/importance
- **When do I use it?** - Situations/applications
- **Where do I find it?** - Location in the system
- **How do I use it?** - Instructions/steps

Don't hesitate to ask your administrator if you need clarification on any term!

This glossary is your quick reference for GoSmarter terminology. Bookmark this page!

What Is Azure Logic Apps?

Azure Logic Apps allows you to schedule, automate, and orchestrate tasks. When it comes to integration across multiple services in Azure, there is no better service for extensible, dynamic solutions. Logic Apps are an important component of Microsoft's **Cloud Integration Platform**, which aims to democratise integration so that anyone is capable of creating lightweight integrations that are consistent and scalable - without the steep learning curve.

The creation of the Logic Apps platform is part of **Microsoft's push to become an Enterprise iPaaS leader**. iPaaS, or 'integration platform as a service' describes a suite of cloud services that enable the development, execution and governance of integration flows between cloud-based and on premises processes, or indeed a combination of both. Microsoft's integration vision involves cultivating a rich ecosystem of many out-of-the-box connectors. For example, they offer several **Standard connectors** for building automated workflows across popular services such as Office 365, SharePoint, and Power BI. Microsoft also offers a marketplace where third-party ISVs (Independent software vendor) can publish their own connectors, allowing you to integrate popular services outside of Microsoft, such as Salesforce.

Logic Apps are instantiated based on events, and they scale automatically based on the number of events they need to handle. It is a pure, pay-for-usage OpEx billing model so there are no upfront costs to reserve compute resources, resulting in reduced costs to run your integration solutions overall. Another key advantage is reduced DevOps, as you wouldn't need to take care of OS patching, high availability and so on. By focusing purely on business logic and optimising operations, your team will have a reduced time to market.

Primarily, Logic Apps serves as a gate to other Azure services you may want to employ to your automation solution, delivering new and innovative integration scenarios. Like many other services in the Azure cloud ecosystem, Logic Apps are completely serverless. This means you would not need to take care of the underlying server infrastructure, freeing you from hosting, scaling, managing, monitoring and maintaining solutions built with these services.

Moreover, you can use the **on-premises data gateway** to create hybrid integrations and connect virtually anything. According to Microsoft, the gateway works as a 'bridge that provides quick data transfer and encryption between data sources on premises and your logic apps'. The gateway connects to the cloud in a firewall-friendly manner and uses only outbound connections. All data that travels through the gateway is encrypted, meaning you can run complex scenarios and increase productivity for your business with peace-of-mind.

Visual design tools in Logic Apps

A logic app resource is shaped by a workflow. A workflow is a series of steps that defines a task or process, starting with a single trigger and followed by one or multiple actions.

A trigger specifies the condition to meet before running any actions in the workflow. For example, this may be getting an email or detecting a new file in an Azure blob storage account.

Example Logic App workflow in the designer.

You can create visual workflows that define your Logic App using the Logic Apps designer in the Azure portal, Visual Studio Code, or Visual Studio. Note that the above workflow features conditional logic which enables actions accordingly.

A common Logic App workflow is to create an automated alerting system using Azure Cognitive Services. This uses AI to perform intelligent actions and extract value from your data — for example, triggering a notification when a sensor reading breaches a threshold or when a new document arrives in blob storage.

Read here to [find out more about how Azure Logic Apps work](#).

Executive View

Logic Apps enable automated and intelligent integrations management. This enables cohesive and centralised solutions which can touch all areas of your business.

Access to a serverless approach give you piece of mind when it comes to availability and cost. The data gateway means that you can choose what information you would like to remain on premises and what can be moved to the cloud, allowing you to fully realise the capabilities of an iPaaS solution.

Logic Apps helps businesses:

- create dynamic integration workflows using a simple, interactive, drag-and-drop design interface
- gain access to an ecosystem of over 200+ enterprise connectors
- better support B2B and enterprise messaging integration
- get things done sooner with a faster time to market

Business function leader view

Azure Logic Apps is designed to be flexible and extensible, allowing you to implement workflows seamlessly with simple, user-friendly and intuitive tools.

While many connectors for Azure services are readily available, you can also create custom integrations that provide the best value for your organisation and better meet organisational needs - allowing you to access innovative solutions which help bring the best out of your business.

You may need this service if:

- you use existing BizTalk and on-premises investments and are looking for an easier way of connecting existing processes to the cloud
- your team would like access to faster historical insights from Azure Logic App's in-built monitoring tools
- you are looking for a scalable and lightweight service

Technical View

Logic Apps allows technical teams to connect systems across on-premises and cloud, allowing them to get ahead with pre-defined templates for common integration scenarios.

While you can create scalable integrations without coding, your team will enjoy extending default capabilities with Azure Functions through code.

What's more, since Logic Apps are serverless you wouldn't need to take care of the underlying server infrastructure.

You can create your Logic Apps as Azure Resource Manager templates to set up and automate deployments across multiple environments and regions. This allows for an efficient 'Write once, reuse often' approach.

Logic Apps help deliver:

- seamless apps and services integration
- **business intelligence** and AI adoption

Get this service if you encounter:

- problems with automating your integration deployments
- issues with server-based solutions and would like to move serverless
- limitations with integration capabilities within your organisation

Azure Logic Apps in metals manufacturing

Manufacturing operations run on events. A stock level drops. A quality check fails. A new order arrives. A mill certificate is uploaded. The problem is that most manufacturing systems don't talk to each other – so someone has to manually move information between them.

Azure Logic Apps automates those handoffs. For metals manufacturers, practical use cases include:

- **Low stock alerts:** Trigger a notification to the purchasing team automatically when inventory for a specific product falls below a set threshold – no one needs to check a spreadsheet.
- **New order workflows:** When a sales order lands in your ERP, automatically trigger production scheduling checks, update inventory reservations, and notify the relevant planner.
- **Quality event escalation:** When a non-conformance record is created, automatically log it, notify the quality manager, and start a corrective action workflow.
- **Mill certificate processing:** When a new PDF is uploaded to a shared drive or blob storage, trigger an extraction pipeline to pull structured data and attach it to the right heat number.
- **ERP-to-despatch integration:** Automate the flow of confirmed order data to your despatch or logistics system without manual re-entry.

If your team is spending time on tasks that are really just "if this happens, do that" – Logic Apps can handle it.

What Is Microsoft Power Platform?

The Power Platform is a suite of services that consists of four key components, the first of which is Power Apps.

Power Apps are applications you build that users can interact with. You build these applications with low-code techniques without diving into traditional development tools. This means they can be built by a broader set of people in your organisation and don't require as much maintenance when things change in your underlying platform.

Power Automate allows you to automate a series of steps. This prevents you from having to do laborious, detailed or difficult tasks manually. Power Automate can automate the work in a repeatable sequence with the consistency of a machine. Moreover, you will be able to communicate with multiple systems through connectors so you can apply the powerful automation sequence you have generated directly into a cross-platform workflow.

Power BI is a data visualisation tool that allows you to input raw data generated by your organisation and turn it into beautiful, interactive visuals that one can more readily gain insights from to take proactive action. One may also employ **natural language queries** to query the data and get answers to critical questions.

The final component is **Power Virtual Agents**, to date the newest addition to Microsoft Power Platform. Power Virtual Agents 'empower[s] everyone to easily build intelligent chatbots' without knowing the underlying developer technology, meaning you can build smarter bots and easily integrate them as no-code solutions designed with the same audience in mind as Power Apps.

Power Platform depends on a selection of core services which enable these components to perform. All business applications need to collect some sort of data from users or may want to bring data from separate silos within the organisation to a central place. This can serve as a repository to allow building applications and generating automation workflows easier.

Microsoft Dataverse, formerly known as Common Data Service, is the answer for this. It is an abstraction across multiple underlying Microsoft data storage technologies, bringing the best of all the services together.

The Dataverse is easy to manage as both the metadata and data are stored in the cloud. It is also easy to secure so that users can only see your data if you grant them access. To learn more about the Dataverse and what having a managed, centralised data platform offers, [read more at Microsoft's website](#).

Since not all data will be available in the Dataverse, Microsoft has implemented a concept called connectors which enable Power Apps as well as Power Automate flows to interact with data from other systems and services. Connectors allow you to perform those interactions without familiarity with APIs or the developer interfaces that those services provide.

There are 300+ **out-of-the-box connectors** and you can create custom connectors by customising the existing APIs that services may define.

Another popular native Power Platform capability is **AI Builder**, which helps you provide AI models that are designed to **optimise your business operations**.

As Microsoft declares: 'AI Builder is a turnkey solution that brings the power of AI through a point-and-click experience, so you don't need coding or data science skills to access the power of AI.'

Furthermore, **Microsoft Azure** plays two key roles in the Power Platform. First, most Power Platform services are built on some aspect of Microsoft Azure, leveraging all the great capabilities in terms of high availability, scalability and more.

This also allows you to reach out into the traditional capabilities of Microsoft Azure if you were building an application from scratch using custom development. Therefore, a realistic workflow could be to start with the Power Platform and build all your applications, dropping all the way down to Azure when it is necessary and extending your app's capabilities with custom code.

Executive View

Microsoft Power Platform enables you to build automated and intelligent business solutions. All products offer an intuitive no-code or low-code interface. This enables cohesive and centralised solutions for all business users and reduces development costs for your organisation.

Dataverse lets you securely store and manage data used by business applications in a centralised manner, vastly improving the capability of your productivity tools.

Power Platform helps businesses:

- respond rapidly to customer and employee needs at scale with Power Virtual Agents
- intuitively use the power of AI through a point-and-click experience
- better support B2B and enterprise messaging integration
- get things done sooner with a faster time to market

Business function leader view

Microsoft Power Platform is designed to be flexible and extensible, allowing you to implement workflows seamlessly with simple, user-friendly and intuitive tools.

The 300+ connectors available help create custom business solutions without API knowledge so you can provide the best value for your organisation and better meet organisational needs.

You may need this service if:

- you are looking to reduce your dependency on disparate third-party tools
- you would like to manage all business processes in a single platform
- you want powerful analytics, design, development, and automation tools to be accessible for more business users

Technical View

While Power Platform is orientated towards a low-code or no-code audience, technical teams will enjoy pushing the capabilities of their custom business solutions to create something uniquely efficient and valuable for their business.

As Power Platform is built on some aspect of Microsoft Azure, you can extend your application's capabilities through Azure functions.

Power Platform for developers helps deliver:

- an extension of the user experience of Power Apps
- innovative solutions beyond out-the-box capabilities

What are Azure Cognitive Services?

Azure Cognitive Services is a Microsoft Azure product. Read more about [Microsoft Azure](#).

Definition of Azure Cognitive Services

From [Microsoft](#):

Azure Cognitive Services: A comprehensive family of AI services and cognitive APIs to help you build intelligent apps. Cognitive Services bring AI within reach of every developer – without requiring machine-learning expertise. All it takes is an API call to embed the ability to see, hear, speak, search, understand and accelerate decision-making into your apps.

Cognitive Services are divided into five categories as outlined below.

| Category | Description | Example services |
|------------|--|--|
| Decision | Decision services empower you to "make smarter decisions faster". This includes offering customers personalised content and detecting and acting on potential problems or problematic content. | Content Moderator, Personaliser |
| Language | Language services extract meaning from text, making it easier to support your customers from within your application. | QnA Maker, Text Analytics, Translator Text |
| Speech | Speech services perform speech processing, including translation and converting between speech and text. | Speech-to-Text, Text to Speech, Speech translation |
| Vision | Vision services provide capability to process images and videos, and analyse the data they extract. | Computer Vision, Face, Ink Recogniser |
| Web search | Web search services integrate Bing search capabilities into your application. | Bing Spell Check, Bing Autosuggest, Bing Visual Search |

Does your organisation need Azure Cognitive Services?

Azure Cognitive Services comprise a collection of APIs (application program interfaces), SDKs (software development kits), and services that developers can use to make their apps more intelligent without the need to build and train algorithms from scratch.

You may need Azure Cognitive Services if:

- You want to improve your app's performance with intelligent features but do not have the resources to build them
- You want to gain insights from your data such as sentiment analysis and video content, but lack the skill to build and train models
- Your app requires intensive administration, for example content moderation or customer service, and you want to reduce the burden

Benefits

Benefits of Azure Cognitive Services include:

- The services provide pre-trained intelligent algorithms, saving the need to invest in building and training models from scratch
- They are quick to set up and can be easily integrated into existing applications
- They add value to your application by improving user experience, and reduce your administrative load
- All of the services offer a free trial tier so you can experiment with them before committing
- Beyond the free trial, the pricing scales with usage so you only pay for the services you use

Technical considerations

Prerequisites and Integrations

To get started with Azure Cognitive Services, you need a Microsoft Azure account. Read more about [Microsoft Azure](#).

Setting up an Azure Cognitive Services product is quick and easy, and a free tier is available for all of the different services so you can experiment with the services before spending any money.

To set up a service:

1. Get a free account on [Microsoft Azure](#), if you don't already have one
2. Go to the Azure Marketplace via the tile on your [dashboard](#)
3. Search for the service you want to use and click [Create](#)
4. Give the resource a name and choose your subscription, resource location, and resource group. Select the free pricing tier (F0) to begin with.
5. When the resource is created, save the API key. You will use this to make calls to the resource from within your application.

Once you have your API key you can call the service from another application, for example:

- [Azure Notebooks](#), or any other Jupyter Notebook
- Docker containers (for select [services](#))

You can also integrate the services into your own application by calling the API.

You can monitor your usage using the Azure Dashboard.

Security and Compliance

Azure Cognitive Services are built on Microsoft Azure security infrastructure and use all Microsoft Azure security measures. You can read more about [Microsoft Azure security](#).

The privacy of data processed by Azure Cognitive Services is maintained in alignment with Azure's privacy commitments, which you can [read about](#).

Microsoft Azure carries an impressive list of compliance certifications which you [can view](#).

Pricing

Azure Cognitive Services are pay-as-you-go services so you only pay for what you use, and there are no up-front set-up fees. Read more about Microsoft Azure and its [pricing structure](#).

The pricing structure differs between services. Each service offers a free tier allowance (for example, Bing Autosuggest provides 1000 monthly transactions on the free tier), and beyond the free tier the services are billed by number of transactions (calls to the API) or by amount of data processed. For example:

- Content Moderator is billed per 1000 transactions
- Speech-to-text is billed per audio hour

- Text to Speech is billed per million characters

These billable transactions reduce in cost as monthly thresholds are surpassed.

You can read more about Azure Cognitive [Services pricing](#).

Alternatives to Azure Cognitive Services

There are other Machine Learning APIs available from different vendors, however Azure Cognitive Services offers the most extensive collection of services. If a competitor offers a service that interests you, your choice will mostly be determined by preference between the vendors, suitability of the interface, individual features and your existing skills.

Other Machine Learning APIs include:

- Amazon Lex, Amazon Translate, and Amazon Rekognition from [AWS](#)
- IBM Watson and IBM Visual Recognition from [IBM Cloud](#)
- Dialogflow, Cloud Speech API and Cloud Vision API from [Google Cloud](#)

What are Long Products in Steel? Bars, Rebar, Sections, and Tube Explained

Walk into any steel stockholder in the UK and you'll see one of two things: racks of bars, sections, and tube stretching the length of the warehouse, or a flat bay full of plate and sheet.

Those two worlds — long products and flat products — are different industries with different challenges. Different equipment, different ways of cutting, different yield calculations, and different operational software requirements.

If you work with bars, sections, rebar, or tube, you're in the long products world. Here's what that means.

What are Long Products?

In the steel industry, **long products** refers to steel produced by rolling in a continuous linear cross-section. The material has a consistent profile along its length — round, square, hexagonal, or a structural shape like an angle or a beam.

Long products are produced by rolling semi-finished steel (billets or blooms) through a series of roll passes that progressively shape the cross-section. The finished product comes out as a long bar or coil, which is then cut to stock lengths for the market.

Standard stock lengths vary by product type and market, but 6 metres, 12 metres, and 18 metres are common in the UK. Some material is available in random lengths.

Types of Long Products

Round Bar

The most common bar form. Used in engineering, machining, shafts, fasteners, and general fabrication. Available in a wide range of diameters — from a few millimetres to hundreds of millimetres. Grades range from mild steel (S275, S355) to engineering alloys (EN8, EN19, 4140) to stainless (304, 316).

Square and Flat Bar

Square bar is used in engineering and fabrication. Flat bar (rectangular cross-section) is widely used in structural fabrication, support brackets, and as a building block for welded frames.

Hexagonal Bar

Common in fastener manufacturing and turned parts. The hexagonal cross-section is used directly in bolt and nut production.

Angle (Angle Iron)

An L-shaped cross-section. One of the most widely used structural sections – used in frames, supports, shelving, brackets, and lattice structures. Available as equal angles (both legs the same length) and unequal angles.

Channel (U Channel)

A C-shaped cross-section. Used in structural frames, vehicle chassis, and purlins. Also used in shelf and racking systems.

Universal Beam and Universal Column

The classic structural "I" and "H" sections. Universal Beams (UB) are optimised for bending resistance – used in floors, roofs, and bridges. Universal Columns (UC) are optimised for compressive loads – the vertical elements in steel frames.

Rebar (Reinforcing Bar)

Deformed bar used to reinforce concrete. The surface ribs improve bond with concrete. In the UK, typically specified to BS 4449 (grade B500B). One of the highest-volume long products in the construction market.

Tube and Hollow Sections

- **Circular Hollow Section (CHS)** – round tube, used structurally and architecturally
- **Square Hollow Section (SHS)** – square tube, widely used in structural frames and furniture
- **Rectangular Hollow Section (RHS)** – rectangular tube, used in structures and vehicle chassis

Hollow sections are produced by several methods: seamless (extruded) or welded (ERW – Electric Resistance Welded). The production method affects the certification requirements and appropriate applications.

Wire Rod

Produced in coil form for further processing – drawn into wire, used in fasteners, welding wire, and spring manufacture. Wire rod is the input for many downstream cold-working operations.

How Long Products Differ from Flat Products

Flat products – plate, sheet, and coil – are a different part of the steel market. The distinction matters for operations.

Cutting method. Long products are cut by length – saw, shear, or plasma torch across the cross-section. Flat products are cut in two dimensions – profiling, laser cutting, or punching to shape.

Yield calculation. Long product yield is one-dimensional: how much length did you get from your input length, less saw kerf and end crop. Flat product yield is two-dimensional: how much usable area did you get from your input sheet, accounting for the nesting of parts.

Optimisation problem. Long products use linear cutting optimisation – the cutting stock problem. Flat products use 2D nesting. Different algorithms, different software, different expertise.

Storage and handling. Long products are stored in racking – bundles, tube, sections on horizontal arms. Flat products are stored as stacks of plate or coil on reels. Cranes, fork-lifts, and stillages all work differently.

Certification requirements. Both need EN 10204 certificates, but the product standards are different. EN 10025 governs structural long products; EN 10051 governs strip and plate. The grades are specified differently.

Why the Distinction Matters for Operations

Software and systems built for flat products don't work well for long products – and vice versa. The operational workflows are genuinely different.

Cut planning. A long products operation needs one-dimensional optimisation: given these stock lengths and these order requirements, what's the best combination of cuts? A flat products operation needs 2D nesting software. They're not interchangeable.

Inventory recording. Long product inventory is recorded in lengths, quantities, and weight. A remnant bar is a specific length at a specific location, linked to a specific heat number. Flat product inventory involves sheets of defined dimensions. Generic inventory systems that don't understand this structure create problems.

Traceability. In long products, the heat number links a bar to its certificate. An off-cut from that bar retains the heat number. In flat products, a profiled part cut from a plate similarly retains the plate's heat number. The principle is the same, but the workflow is different.

Specific Challenges for Long Products

Manufacturers

Length variance. Stock doesn't always arrive at exactly the ordered length. End-to-end measurements, tolerances, and mill over-runs mean actual lengths vary. Your system needs to handle actual lengths, not just nominal lengths.

Remnant management. After cutting orders, you're left with remnant pieces. Tracking and reusing remnants is critical for yield. If remnants aren't recorded accurately, they pile up in the rack, become unidentified, and eventually get scrapped — a significant yield loss.

Bundle complexity. A bundle of bar might contain a mix of lengths (for example, from a previous partial cut). Recording the exact contents of a bundle, linked to the correct heat number, is harder than it sounds without a proper system.

Grade interchangeability. Some orders can be fulfilled by higher-grade material than specified. Some cannot. The system needs to understand the grade hierarchy and flag when substitution is or isn't appropriate.

How GoSmarter Is Built for Long Products

GoSmarter's tools are purpose-built for the long products world.

GoSmarter Cutting Plans solves the one-dimensional cutting stock problem — calculating the cut plan that gets the most product from your available stock lengths. It handles multiple grades, sizes, and remnant tracking.

The **Production Planning Solutions** connect cut planning to order management — ensuring the right material is allocated to the right order before it hits the saw.

FAQ

In practice, the terms are often used interchangeably in steel distribution. Technically, 'hollow section' refers to the structural forms (CHS, SHS, RHS) produced to EN 10210 or EN 10219. 'Tube' is a broader term that includes precision tube, mechanical tube, and conveyance tube produced to different standards. The distinction matters when specifying material for regulated applications — check the applicable product standard.

For structural applications, S275 and S355 (to EN 10025) are the most widely used. S355 has largely replaced S275 as the default structural grade for most applications. For engineering bar, EN8 (080M40) and EN19 (709M40) are common in the UK market. For rebar, B500B (to BS 4449) is standard. Stainless long products are typically 304 or 316 grades depending on corrosion requirements.

Hot-rolled bar is produced directly from the rolling mill and has a scaled surface finish. Dimensional tolerances are relatively wide. Cold-finished (or bright) bar is further processed — drawn, ground, or turned — to achieve tighter tolerances, a better surface finish, and improved mechanical properties. Cold-finished bar is used where precision dimensions matter — machined parts, hydraulic applications, shafts. Hot-rolled is used in structural and general fabrication where the mill tolerance is acceptable.

See Also

- [Cutting Plans](#) — GoSmarter's tool for cut planning in long products operations.
- [What is Cutting Optimisation?](#) — The maths behind minimising scrap on the saw.
- [What is Yield Rate in Steel Manufacturing?](#) — Formula, benchmarks, and how to improve it.
- [What is Rebar?](#) — Reinforcing bar, BS 4449, and why traceability is critical.
- [Production Planning Solutions](#) — How GoSmarter connects cut planning to production.
- [Metals Manufacturing Glossary](#) — Every key term, defined in plain English.

What are database improvements?

Definition of database improvements

Database improvements can mean improving the design of the database, improving the performance of the database, and improving the security of the database. These improvements ensure that data is accurate, secure, accessible (where appropriate) and efficiently stored in order to reduce the cost of storage and access, and to reduce downtime.

Executive view

Data is important to achieving your strategic goals, and making improvements to your database will ensure that your data is stored securely, is accurate, and is efficiently and readily available to appropriate parties.

Database improvements helps businesses:

- ensure compliance with data security legislation.
- reduce downtime and data loss.
- ensure accurate and reliable data is available for modeling and insights.

Business function leader view

Database improvements are required if your team has experienced issues of data loss, data corruption, data inaccuracies or data security. Improvements can be made to the design of the database to ensure that data storage and structure is consistent and that relationships are clearly defined, which reduces instances of duplication and decreases storage costs. The database performance can also be improved to improve the speed of data access. Improving the security of the database will ensure compliance.

You may need this service if your team:

- experiences problems of data duplication, corruption or loss.

- experiences database downtime.
- has a large volume of data and do not have security measures in place.
- is using data to gain insights that drive decision-making.

KPIs you should consider measuring for this are:

- Reduced downtime.
- Increased speed of data availability.
- Costs saved by reducing unnecessary load.
- Reduced costs associated with data loss and corruption.

Technical view

When implementing data science and AI solutions in your products, the availability, security and accuracy of your data are essential. Implementing database improvements will improve the performance of your projects and make development smoother and more efficient.

Database improvements help deliver:

- improved data security and compliance
- faster page loads
- faster interactive applications
- user retention
- reduced bounced rate
- faster access to data for analysis
- reduce database size
- improved scalability

Get this service if you encounter:

- slow performance of web pages and applications.
- increasing server resource charges.
- high bounce rates.
- inadequate data security measures or noncompliance.

Key criteria to consider are:

- The most appropriate tech stack.
- The cost of improvements compared to benefits from those improvements.
- Data security.
- GDPR.
- Any potentially unneeded data.

What are long-range, low-power sensor networks?

Definition of long-range, low-power sensor networks

Long-range, low-power sensor networks are a type of wireless technology. They are systems of connected sensors that work over a large area using little power. This means that they have the benefits of wide-area mobile networks at a lower cost. They do not allow for large data transfers, so are not used for human communications (voice, video, and other communications that transfer large volumes of data). However, their capacity to connect devices across wide distances makes them useful for Internet of Things (IoT) technologies and other machine-to-machine communications.

Executive View

Long-range, low-power sensor networks can be deployed over large areas to collect data that can be analysed and developed into predictive models to drive strategic decisions. They can also be integrated into existing products to add intelligent features that will make them more appealing to users and to gather usage data to improve their performance over time. Long-range, low-power sensor networks help businesses:

- develop smart, IoT products or integrate connectivity into existing products. - gather data across wide areas that can be used to develop better products and make better decisions through **data science**.

Business Function Leader View

Long-range, low-power sensor networks help teams to develop smart products, both by allowing the products to connect to other IoT technologies and by gathering data to make better decisions. If your business makes use of monitoring devices, implementing long-range, low-power sensor networks will improve the efficiency and accuracy of the devices' data collection and reduce

downtime. Monitoring devices are used in agriculture, for example, to assess yield. You may need this service if:

- your industry makes use of monitoring devices.
- you are developing products that would be improved by connectivity.

KPIs you should consider measuring for this are:

- Lower downtime.
- Improved products measured by increased sales and retention.

Technical View

Long-range, low-power sensor networks use narrow bandwidth transmissions to achieve long-range. They can be implemented at relatively low cost due to low-power (thanks to limited daily server communications) and use of unlicensed spectrum. The fact that the sensor networks are low-power also means that battery life can be ten years or more, saving resources.

Long-range, low-power sensor networks help deliver:

- efficient and accurate usage data for your product.
- improved performance.
- connectivity over long distances and on unlicensed spectrum.

Get this service if you encounter:

- high power usage.
- issues with network range for your product or monitoring devices.
- a high number of network gateways.
- high costs of using licensed spectrum.

Key criteria to consider are:

- How much data do you need to transmit and how frequently?
- Where will your devices be located?
- Will you need to add your own network/Gateways?
- What are your target costs for setting up and maintaining the network?
- How much autonomy do you require over your network?

What is AI integration into applications?

Definition of AI integration into applications

AI systems such as natural language processing and machine learning algorithms can be integrated into existing applications to add functionality and improve their performance over time. Examples of AI features that can be integrated into applications are:

- facial recognition image processing
- speech processing
- personalised content

Executive view

If your company is developing an application there are numerous development costs to consider that are associated with security features, personalisation and data collection. Often AI solutions exist to support these requirements, which are effective and improve your product over time. This leads to improved performance of your product, and greater customer satisfaction, as well as better, more efficient data collection.

AI integration into applications helps businesses:

- save on development costs by introducing machine learning features.
- create more secure and profitable products that effectively meet end-users' needs.

Business function leader view

AI integration into applications helps teams to build effective products with enhanced security features and intelligent, personalised content. These products are generally more profitable than applications without AI features because they attract a larger user base and introduce up-selling and retention opportunities. You may need this service if:

- you are developing an application.

- your team lacks data science skills and experience.

KPIs you should consider measuring for this are:

- increased sign-ups to your application
- increased revenue from up-selling via intelligent features (e.g. product/upgrade recommendations)
- improved retention rate

Technical view

Developing intelligent features for your application leads to better usage feedback for you and a more efficient and personalised experience for the end-user. AI integration into applications helps deliver:

- actionable feedback
- automation
- increased security
- reduced development load

Get this service if you encounter:

- difficulty or lack of time and resources for developing security, recommendation and automation features for your product.
- a lack of insight into how your product is being used.
- low customer retention.

Key criteria to consider are:

- Does a solution for your automation and security needs already exist for integration?
- Do you have the resources available to monitor feedback from AI integrations?
- Are you able to store and process data from intelligent features securely?
- Would AI features enhance your product?

What is AI product development?

Definition of AI product development

AI product development is the development of an AI solution - either from scratch or building upon an AI solution that is used internally - that can be made available externally as a marketable product.

Executive view

AI development can lead to a wealth of opportunities to improve conversion rates, reduce costs and drive revenue for your business. Building these solutions into marketable products creates further opportunity to generate revenue for your business through sales and licensing.

AI product development helps businesses:

- to create innovative products that can generate revenue for your business.

Business function leader view

AI product development helps teams to offer innovative, valuable products to customers that will increase sales and drive revenue.

You may need this service if:

- you want to offer innovative, AI-driven products to your customers.

KPIs you should consider measuring for this are:

- profits from selling the product
- increased market share from adding AI products to your offering

Technical view

AI product development requires teams to turn AI solutions into marketable products.

AI product development helps:

- deliver marketable AI solutions.
- build **applications** that incorporate AI features such as natural language processing, personalised content, product recommendations and advanced analytical features.

Get this service if you encounter:

- difficulty bringing products to market.
- a lack of understanding of product delivery.

Key criteria to consider are:

- How will you market your product?
- Does your sales team have the appropriate knowledge to sell your product?
- How will you keep your intellectual property secure when your product is available externally?
- Is your product easy for the end-user to deploy?
- How transferable is your product?

What is AI strategy?

Definition of AI strategy

AI strategy refers to a company's vision for how AI will be deployed to help achieve the company's business goals. It should be closely linked to your **data strategy** and hence to your business objectives. It provides a roadmap for executing your business's AI priorities.

Executive view

Setting up an AI strategy helps businesses:

- to diagnose which business goals can be solved with AI.
- adjust the culture and mindset in the business to be accepting and ready for AI.
- set clear, achievable plans and goals for their AI initiatives.

Business function leader view

AI strategy helps align teams towards a common goal and ensures the right foundation and culture have been laid for success.

You may need this service if:

- your **data strategy** doesn't have a clear section dedicated to AI for improving data quality and data governance.
- you have knowledge or skills gaps in your team that need addressing.
- you have identified an AI use case but do not know how or have been unable to execute it.

If you want to measure the performance of your AI strategy, you should set KPIs that are in line with your data and business strategy and associated KPIs. Your AI strategy should also help you achieve your business priorities.

Technical view

The AI strategy of your organisation will identify opportunities for automation, AI product development and AI integration into products. In order to successfully follow the strategy to meet business goals, technical teams need to lead the way in data culture and ensure that data is appropriately collected and stored to drive the AI initiatives.

AI strategy helps deliver:

- increased automation.
- more successful AI initiatives.
- increased adoption of AI in product development.
- a more positive attitude towards data and AI from the whole organisation.

Get this service if you encounter:

- a lack of enthusiasm for AI initiatives.
- uncertainties as to which potential AI initiatives are aligned to business goals.
- difficulties deploying AI products.

Key criteria to consider are:

- What tech stacks will be required to deliver AI initiatives?
- Are there skill gaps in your team that need to be filled in order to follow the AI strategy?
- Will you need to make changes to the way that your data is stored and accessed in order to deliver AI initiatives?

What is AI?

Summary

- Artificial intelligence is a broad area of computer science concerned with building computer programs that can think like humans.
- Everyday AI systems are artificial narrow intelligence – they are restricted to a single task or family of tasks.
- Some of the tasks that AI can perform include communication in natural language, image recognition and classification, and problem-solving.
- AI systems utilize many tools to solve problems intelligently, including machine learning.
- AI is used by many businesses to improve efficiency and gain customer insight.

What is Artificial Intelligence (AI)?

Artificial intelligence is a technology that can ‘think’ in a human-like way. It is a diverse area of computer science that enlists tools such as machine learning and image processing to recreate and build upon the complex capabilities of the human brain. Like humans, AI systems can perceive their surroundings and learn from them, and use reasoning to solve problems.

You will have encountered several AI systems before reading this article today. These systems break down the thought processes that make up human intelligence and recreate them in bite-sized yet powerful chunks. As of yet, there is no artificial equivalent of the whole broad spectrum of human cognitive ability, but there are plenty of AI systems that can perform tasks we are capable of, more quickly than we could. Whenever you ask Alexa or Siri to look something up for you, you are engaging with an AI system that exhibits natural language processing (NLP), a capability far beyond the cognitive reaches of most animals. When you do a Google search, you are tapping into a deep learning program that figures out which of the billions of pages of content is most likely to suit your needs.

Consumers make use of AI every day

Encompassing all areas of human intelligence in a single system is the realm of Artificial General Intelligence (AGI) research. An AGI is a hypothetical machine that can learn like a human – that is, understand an entirely novel problem and figure out how to solve it – and. This problem could be

any and – crucially – all of: having a conversation with a human, making a cup of coffee and obtaining a university degree by attending lectures and tutorials.

Sitting alongside Artificial General Intelligence is something much more familiar: Artificial Narrow Intelligence (ANI). This is the realm of Alexa, Google Maps, the Netflix recommendation engine and all the other AI systems we have easy access to today. Artificial Narrow Intelligence doesn't have the capability to learn just any old task; it is restricted to a single task or family of tasks and draws its intelligence from a specific dataset.

What can AI do?

Deciding which elements can be programmed as ANI systems, and how, has been the subject of research since the 1950s. Intelligence itself is a vast and complex concept. In everyday life we may refer to a person as 'intelligent' if they can recall interesting facts, or if they are very good at maths, but even speech and fine motor control are aspects of human intelligence. It may seem trivial for a human to learn how to walk and talk, but these learning processes are hard-wired into a brain that was shaped by millions of years of iterative tweaks.

Artificial intelligence is similarly diverse, and different AI systems address different areas of intelligence.

Some of the challenges tackled by AI include:

- solving problems using reasoning
- communicating using natural language (that is, the languages of people rather than programming languages)
- perceiving the environment
- accessing appropriate 'memories'
- planning

Most tasks require several intelligent capabilities to be employed. Planning a trip, a task that humans and AI perform on a regular basis, involves reasoning, planning, accessing memories and research.

Many AI systems utilise several of these capabilities to achieve a given task. For example, many email providers have a spam filter, which use natural language processing to scan the contents of incoming emails and employ reasoning to combine this with metadata - such as the sender information – and past experiences (whether you have marked emails like this as spam in the past) to decide whether or not the message should be filtered.

How does AI work?

AI utilises a suite of tools to perform these tasks intelligently. While early computer programs could only perform the specific instructions fed to them by a computer programmer, today's AI systems get better over time without additional code. This important feature of AI is the ability for computers to learn, and underlies the biggest breakthroughs in AI to date. **Machine learning** is commonplace in familiar applications, whether it is deployed to give you recommendations (see Amazon, YouTube and Facebook advertising) or to make talking toys. Machine learning comes in several forms.

In supervised machine learning, the program is told how to classify data. For example, you might feed into your algorithm lots of photographs of dogs, and lots of photographs of cats. You would then 'supervise' the algorithm as it makes predictions from new data, letting it know if its prediction (in this case, 'cat' or 'dog') is correct. This training process improves the algorithm so it becomes very likely to correctly identify the animal from a previously unseen photo.

In unsupervised machine learning, the program is not told how to classify the data fed to it. The algorithm – equipped with a large suite of tools including image processing, natural language processing, logic and statistics – simply clusters and categorises the raw data. This is useful when you have an enormous quantity of unstructured data. Unsupervised machine learning algorithms can quickly identify patterns that a human would take decades to find.

Reinforcement learning is an action-based learning algorithm, in which the system attempts various actions in order to figure out which course of action is 'best' (based on some form of reward). This form of machine learning was deployed by AlphaGo, Google DeepMind's computer that was the first to beat a Go champion. What makes AlphaGo remarkable is that its reinforcement learning processes can be applied to learning lots of different tasks.

AlphaGo learned to play Go by playing thousands of games and iteratively improving its ability to predict the best next move.

Machine learning algorithms become far more powerful when they work together. When multiple algorithms are layered on top of each other and interact to interpret multiple high-level features of enormous datasets, the system is performing deep learning. Deep learning, supported by neural networks that are (as the name suggests) modelled on the neurons of the brain, can produce powerful solutions to complex problems by applying multiple problem-solving techniques at once.

Data is the driving force

The common thread behind supervised and unsupervised machine learning is data. Data is driving both AI and the need for AI, because so much data is readily available now that it takes the power of AI algorithms to sift through it and extract meaning.

Machine learning programs are exceedingly good at sifting through data and finding patterns. Our own brains cope well with finding patterns and correlations between two variables, because we are so accustomed to two-dimensional graphs. But can you imagine a ten-dimensional graph? That is far beyond what our three-dimensional brains can fathom, but for AI it is entirely manageable.

With Big Data comes big complexity, and the job of AI is to extract meaning from the noise.

Many familiar AI systems were built on top of enormous data sets, from which they draw their intelligence. A simple example is the assistants built into smartphones - Siri and Google Assistant. If you ask one of these assistants what the weather will be like tomorrow, they are not figuring it out from first principles but looking up the information on the Internet. Machine learning algorithms have similarly been deployed to process vast volumes of medical data, to suggest appropriate (and extremely precise) medical diagnoses.

These systems are limited by the availability of data, so to use them in business to gain competitive advantage, you need a big dataset. Gaps in the data can have significant impact. Think of driverless cars; they are trained to avoid obstacles using a huge number of possible cases, for example, "You are approaching a zebra crossing and a mother and child are standing on the pavement. You should stop". But the real world generates new anomalies every day, and a missing case could lead to (in the best case) undesirable processing time.

Much of human intelligence is based on data: our past experiences, successes and failures, and everything we have read or been told. We also utilise common sense and reasoning. **AI systems** are now beginning to emerge that exhibit some features of these areas of intelligence, in the hope that soon the gaps in our data will matter much less.

How can AI help me?

There's no doubt that AI is a powerful tool, nor that it is becoming increasingly available. No longer just a tool for the tech giants of the world, it can be deployed in most businesses to bring a wealth of benefits.

Machine learning algorithms can be used with any set of data to improve insights and make valuable predictions. This can apply to customer or purchasing data to predict who is likely to buy your products and how you can target those markets. Applied to manufacturing data, it can be used improve your processes, speeding up production and reducing waste.

Gaining insight and predictions from your data empowers you to improve productivity, increase revenue and prevent lost opportunities

You may already be utilising process automation to save time in various areas of business, by handing over repetitive tasks to a machine. Deploying AI can enhance this by enabling the system to make decisions such as 'how can I prioritise this workload most efficiently?' as well as performing the tasks themselves. Employing AI can also broaden the scope of the tasks that can be automated. Chatbots (a common application of natural language processing) can free up time usually spent on customer service, without compromising on customer experience.

There are, of course, a multitude more benefits that AI can bring to your organisation that are beyond the scope of this article. For further reading, try these blog posts:

- [Expert Perspectives: Enhancing business with data and AI](#)
- [Industry IoT, smart factories and AI in manufacturing](#)
- [A partnership of Machine Learning and AI with healthcare professionals](#)
- [These advanced techniques of AI in retail are making retailers' jobs a breeze](#)
- [How AI is enhancing B2B marketing](#)
- [AI steps up the game in medical diagnosis](#)

How can I start adopting AI?

AI projects can take ten minutes or ten months, depending on what you want to achieve. Download our free [7 Quick Wins Projects guide - link no longer works](#) to start with seven small AI projects that are quick to implement and will give you quick returns. The projects include:

- [Improving accessibility of your meetings](#)
- [Improving knowledge worker productivity](#)
- [Building an FAQ chatbot](#)

Before you jump into a larger AI project, you should develop an [AI strategy](#) for your business. This will ensure that you are sponsoring AI projects that support your business goals and strategy, rather than spending money on AI for the sake of it.

When you are confident in your AI strategy, you can start [developing AI](#) to support your business goals.

Image credits

[1] By Martin Grandjean - Grandjean, Martin (2014). "La connaissance est un réseau". Les Cahiers du Numérique 10 (3): 37-54. DOI:10.3166/LCN.10.3.37-54., [CC BY-SA 3.0](#)

[2] By Axd - Own work, [CC BY-SA 4.0](#)

What is AWS (Amazon Web Services)?

Definition of AWS (Amazon Web Services)

From [ideamintech](#):

Amazon Web Services is a cloud computing platform that provides customers with a wide array of cloud services. We can define AWS (Amazon Web Services) as a secured cloud services platform that offers compute power, database storage, content delivery and various other functionalities. To be more specific, it is a large bundle of cloud based services. Consider we need electricity for our home. Either we can generate our own electricity or purchase it from electric power companies. When we generate our own electricity, we need set up a lot of Infrastructure costing us a lot of money. Instead of that, we could purchase electricity and pay as we use. Similarly, AWS is one of the cloud computing providers that provide us computing, storage, networking and lot more services that we can pay as we use.

AWS is a [cloud service provider](#). Other cloud vendors to consider are:

- [Microsoft Azure](#)
- [IBM Cloud](#)
- [Google Cloud](#)

Key technologies

There are more than 165 services available from AWS, across 24 categories. These products include the following:

Data storage and management

- **Amazon S3** (Simple Storage Service) is a scalable, secure, and durable object storage service with easy-to-use management tools. Data can be stored as different classes depending on frequency of access needs, to keep storage costs low.
- **AWS Backup** is a backup service that allows you to centralise and automate backups of data from across all AWS services.

- **Amazon EFS** (Elastic File System) is a scalable, elastic file storage system that automatically grows and shrinks to match demand. Data can be stored as an Infrequent Access class to save costs on storage on data that is not accessed every day.
- **Amazon Aurora** and **Amazon RDS** (Relational Database Service) are relational databases that support analytics and operational activities, saving the need to manage the underlying infrastructure or tasks like backups.
- **Amazon Neptune** is a fast, fully managed graph database service that supports both Property Graph and W3C's RDF graph models. It can be used to store billions of relationships to support applications in use cases such as recommendation engines and network security.
- **Amazon DynamoDB** is a serverless, scalable key-value and document database service.
- **AWS Lake Formation** is a service that makes it easy to set up a secure data lake in days. It allows you to collect and classify data from disparate sources and set up a centralised catalog. This service prepares data for analysis via Amazon Redshift and other services.

Analytics

- **Amazon Redshift** is a data warehouse service that integrates data from diverse services and allows you to query petabytes of data using SQL, to build business intelligence reports.
- **AWS Glue** is a fully managed extract, transform, and load (ETL) service that makes it easy to prepare and load data for analytics.
- **Amazon Athena** is an interactive query service that allows you to quickly analyse your data stored in Amazon S3 using standard SQL, paying only for the queries you run.
- **Amazon QuickSight** is a fast, cloud-powered business intelligence service that allows you to extract insights from your data and share them with relevant stakeholders via interactive report dashboards. With a pay-per-session pricing model, the service is a cost-effective way to introduce business intelligence to your organisation.

AI and machine learning

- **Amazon SageMaker** is a fully managed service that all of the components used for machine learning in a single toolset, enabling data scientists to build, train, and deploy machine learning (ML) models quickly and cost-effectively.
- **Amazon Personalize** is a machine learning service that can be used to introduce personalised content and product recommendations to applications.
- **Amazon Forecast** is a fully managed service that uses machine learning to deliver highly accurate forecasts. Even without any machine learning experience, you can use it to convert your time series data into projections of metrics such as product demand, resource needs, or financial performance.

- **Amazon Lex** is a service for building voice and text chatbots that can be integrated into applications. With an intuitive interface, you can create a chatbot in minutes, and take advantage of the advanced deep learning functionalities of automatic speech recognition and natural language understanding.

Security and Compliance

Cloud security is the "highest priority" at AWS. Customers have access to a data center and network architecture built to meet the requirements of the most security-sensitive organizations, without the cost implications of managing such resources in-house.

Security

AWS services are built on secure global infrastructure and data is automatically encrypted when flowing through the global network. You can automate manual security tasks and have complete control over your data and who has access to it. Security products from AWS include **AWS Identity and Access Management (IAM)** and **AWS Security Hub**.

Read more about AWS security [AWS security](#).

Privacy

AWS gives you ownership and control over your data, providing tools that allow you to determine where your data will be stored, secure it, and maintain control of who has access to your data and AWS services. There is also a security assurance program that uses best practices for global privacy and data protection to help you operate securely within AWS.

Read more about AWS data privacy [data privacy](#).

Compliance

AWS offers a collection of **Compliance Programs** that guide users through comply with legal requirements, as well as services to support these resources, such as **Amazon Inspector** and **AWS Config**.

Read more about AWS compliance [AWS compliance](#).

Pricing

AWS has a competitive, scalable pricing structure in which you only pay for the services you use. The monthly [pricing calculator](#) helps you to budget and estimate costs of using AWS services.

Creating an [account](#) on AWS provides:

- 12 months of free access to select services, including data storage and some AI services.
- Short term free trials of select services, including a two-month trial of Amazon Redshift.
- access to more than 20 always-free services, including 25GB of storage on Amazon DynamoDB.

Beyond the free services, AWS offers the choice between a pay-as-you-go (PAYG) model and reserved pricing. With either option, you are billed monthly for the services you use or reserve.

Pay as you go (PAYG)

A great option for scalability, with PAYG pricing you pay only for the AWS services you use. This allows you to innovate and adopt technologies rapidly without being hit by large set-up costs.

The PAYG model differs between AWS services. For example, storage is charged by space used and number of requests, whereas machine learning services carry additional charges for training hours.

Some services, such as S3, offer [tiered pricing](#) that grants volume discounts when your usage increases beyond certain thresholds.

Reserved pricing

If you are confident of the computing power and storage space you will need for your application in advance, the reserved pricing model can save you 30% of costs for select services. You can also choose to pay upfront for some or all of a year of reserved services for an even greater discount. The reserved pricing model is a good way to minimise risk and manage budgets, and there is even an [EC2 Reserved Instance Marketplace](#) in case circumstances change.

Purchase AWS services through an Amazon Partner Network (APN) partner

As well as having the option to buy directly from Amazon Web Services, you can go through an APN partner. APN partners can be Consulting Partners, who help customers to design and build AWS-based applications, or Technology Partners, who provide AWS-hosted software. Many APN

partners are resellers of AWS services, which brings the benefit of having an expert on-hand to ensure you pay only for what you need, and local support. For those just starting out with cloud computing, a Managed Service Provider (MSP) can guide you through every stage of the cloud journey.

You can find an APN partner [APN partner](#).

Support

All AWS accounts come with a free Basic support plan, which includes customer service, online communities and learning resources, access to the AWS Personal Health Dashboard, and access to the AWS Trusted Advisor service. Additional technical support becomes available when you purchase a Developer, Business, or Enterprise support plan, starting at \$29 per month.

Learn more about the support plans [support plans](#).

Executive view

Implementing data science and AI in your business requires vast data storage capabilities and expensive infrastructure. A cloud computing solution such as AWS provides pay-as-you-go access to these systems and allows you to scale the costs as you grow, avoiding expensive set-up costs.

AWS helps businesses:

- adopt AI without expensive set-up costs
- develop high-quality applications that collect and leverage data to maximise revenue

Business function leader view

AWS helps teams adopt AI solutions that can drive growth and improve performance, as well as providing solutions to host applications and build improved functionality that will drive sales. AWS is a cloud computing platform, which allows pay-as-you-go access to storage and computing services without expensive infrastructure set-up fees. Signs your department should invest in this are:

- you are developing an application and need a hosting solution that is cheap to implement and will scale as you grow
- you are planning to adopt AI in your team and need access to data storage and machine learning tools at a price that will scale with your needs KPIs you should consider measuring for this are:

- improved sales when AI features are implemented
- savings on infrastructure investment
- improved efficiency of resource management
- improved product performance

What is AWS Redshift?

Amazon Redshift is an Amazon Web Services (AWS) product. Read more about AWS [about AWS](#).

Definition of Amazon Redshift

From [Amazon Web Services](#):

Amazon Redshift is a fast, fully managed data warehouse that makes it simple and cost-effective to analyze all your data using standard SQL and your existing Business Intelligence (BI) tools. It allows you to run complex analytic queries against petabytes of structured data using sophisticated query optimization, columnar storage on high-performance storage, and massively parallel query execution. Most results come back in seconds. With Redshift, you can start small for just \$0.25 per hour with no commitments and scale out to petabytes of data for \$1,000 per terabyte per year, less than a tenth the cost of traditional solutions. Amazon Redshift also includes Amazon Redshift Spectrum, allowing you to directly run SQL queries against exabytes of unstructured data in Amazon S3 data lakes. No loading or transformation is required, and you can use open data formats, including Avro, CSV, Ion, JSON, ORC, Parquet, and more. Redshift Spectrum automatically scales query compute capacity based on the data being retrieved, so queries against Amazon S3 run fast, regardless of data set size.

Read more about:

- [Data Warehousing](#)
- [Business Intelligence \(BI\)](#)

Does your organisation need Amazon Redshift?

Amazon Redshift is a cloud-based data warehousing solution that allows you to store, transform and query vast volumes of data at high speed. The data warehouse is structured as a cluster of nodes. Each node can store and query data and their communication and applications are managed by a single leader node. The cluster of nodes performs Massively Parallel Processing (MPP), wherein each node performs a small part of each processing task in parallel, which is what allows you to perform high-speed processing across large datasets. This makes Amazon Redshift ideal for business intelligence operations, especially when you want to obtain real-time insights

from streaming data such as app performance and manufacturing information. Amazon Redshift allows you to scale your storage and compute power to meet your needs and budget.

You may need Amazon Redshift if:

- You want to gain insight from large volumes of data that are currently stored in a number of separate locations.
- The data you use and process varies in quantity over time and you need a flexible storage solution.
- Your data insights come from disparate sources so that gaining insight is time-consuming.
- Your data workloads are difficult to manage.
- You want to scale your data infrastructure to support real-time streaming and analysis.

Benefits

Benefits of Amazon Redshift include:

- It can automate scaling of your storage and computing power to suit your needs, with each cluster supporting up to 8PB of storage.
- It allows you to easily query and write data to your data lake solution, giving you the flexibility to work with highly structured and unstructured data.
- It integrates with a suite of [AWS](#) analytics solutions.
- It is fast and flexible.
- It scales resources in real-time to manage performance as you run queries.
- AWS provides one hour of free Concurrency Scaling credits per day, allowing resources to scale whilst keeping pricing predictable.
- Automated provisioning and back-ups allow you to focus on your analytics, rather than your data warehouse management.

Technical considerations

Prerequisites and Integrations

To get started with Amazon Redshift, you need an AWS account. Read more about [AWS about AWS](#).

You can set up Amazon Redshift in a matter of minutes by following Amazon's comprehensive [Getting Started Guide](#). You can also migrate to Amazon Redshift from Oracle with minimal downtime.

Setting up Amazon Redshift involves creating and configuring your cluster, and setting up security and permissions. Once you have a cluster you can load your data and start analysing it. You will need some familiarity with web technologies and SQL to complete these steps.

You can load data into Amazon Redshift from a range of data sources including [Amazon S3](#), Amazon DynamoDB, Amazon EMR, AWS Glue, AWS Data Pipeline and or any SSH-enabled host on Amazon EC2 or on-premises.

When you want to use your data warehouse for business intelligence you can access the data in Amazon Redshift using standard JDBC and ODBC drivers. There are a variety of business intelligence tools that offer connectors to Amazon Redshift, including [Power BI](#), Tableau Server and Mode Analytics. You can see a list of Amazon Redshift Partners who offer BI technology that integrates with Amazon Redshift [Amazon Redshift](#).

Security and Compliance

From [Amazon](#):

Amazon Redshift encrypts and keeps your data secure in transit and at rest using industry-standard encryption techniques. To keep data secure in transit, Amazon Redshift supports SSL-enabled connections between your client application and your Redshift data warehouse cluster. To keep your data secure at rest, Amazon Redshift encrypts each block using hardware-accelerated AES-256 as it is written to disk. This takes place at a low level in the I/O subsystem, which encrypts everything written to disk, including intermediate query results. The blocks are backed up as is, which means that backups are encrypted as well. By default, Amazon Redshift takes care of key management but you can choose to manage your keys using your own hardware security modules (HSMs) or manage your keys through AWS Key Management Service.

There is no direct access to your compute nodes in Amazon Redshift except through the data warehouse cluster's lead node, which means that your data is equally secure regardless of how much you choose to store.

You can read more about AWS security [AWS security](#).

Amazon Redshift has been assessed by third-party auditors to ensure its security and compliance against a range of international standards. AWS provide several [resources and services](#) to help you ensure that your configuration is compliant with industry standards.

Pricing

Amazon Redshift is a pay-as-you-go service so you only pay for what you use, and there are no up-front set-up fees. Read more about AWS and its pricing structure [pricing structure](#).

With Pay-As-You-Go (PAYG) pricing for Amazon Redshift, your monthly bill calculated from an hourly rate based on the type and number of nodes in your cluster, so you only pay for the storage you actually use. Amazon provides backup storage equal in size to your provisioned storage for free, and charges [standard Amazon S3 rates](#) for additional backup storage. There are no additional charges for data transfer to Amazon Redshift within the same AWS region, but additional charges do incur for data transfer from other sources.

If you use Amazon Redshift Spectrum to query your data, additional charges will incur based the amount of Amazon S3 data scanned to execute your query. You can keep these costs to a minimum by compressing your data (using one of Redshift's [supported formats](#), and by storing your data in a columnar format such as **Apache Parquet** or **Apache ORC**. Amazon provides [documentation](#) for converting your data to one of these formats if necessary.

Reserved pricing is available for Amazon Redshift, and further discounts are available if you pay for your reserved instances upfront. You can read more about the savings opportunities of reserved pricing [reserved pricing](#).

You can calculate the monthly cost of using Amazon Redshift [Amazon Redshift](#).

Alternatives to Amazon Redshift

Amazon Redshift performs best when it utilises Massively Parallel Processing (MPP) to load and analyse data, but MPP is only supported when your data is in Amazon S3 or relational DynamoDB or on Amazon EMR, unless you adopt an ETL (extract, transform, load) solution. Furthermore, Amazon Redshift's high speed can run up high costs, so if speed is not your highest priority you might find a different solution is friendlier to your budget.

Alternatives to Amazon Redshift include:

- [Google Cloud's BigQuery](#)
- [Snowflake](#)
- [Microsoft Azure's Azure Synapse](#)

What is Amazon S3?

Amazon S3 is an Amazon Web Services (AWS) product. Read more about AWS [about AWS](#).

Definition of Amazon S3

From [Amazon Web Services](#):

Amazon Simple Storage Service (Amazon S3) is an object storage service that offers industry-leading scalability, data availability, security, and performance. This means customers of all sizes and industries can use it to store and protect any amount of data for a range of use cases, such as websites, mobile applications, backup and restore, archive, enterprise applications, IoT devices, and big data analytics. Amazon S3 provides easy-to-use management features so you can organize your data and configure finely-tuned access controls to meet your specific business, organizational, and compliance requirements. Amazon S3 is designed for 99.999999999% (11 9's) of durability, and stores data for millions of applications for companies all around the world.

Does your organisation need Amazon S3?

Amazon S3 is described by Amazon as "object storage built to store and retrieve any amount of data from anywhere". Similar to Google Drive in that it can store many different data types, Amazon S3 makes it easy to meet the data needs of large and complex web applications - including Netflix, Airbnb, and Amazon itself.

Amazon S3 has a non-hierarchical structure, allowing you to organise your data in ways that best suit your business needs. Object data is stored within 'buckets' and organised using flexible key-value tags. Keeping track of your data is made easy by the S3 Inventory report, which can be configured to generate daily or weekly reports to keep you informed.

There are several storage classes available for Amazon S3 storage, differentiated by how frequently you would access the data. The Standard storage class is intended for frequently accessed data, whereas the Glacier storage class is intended for data archiving and as a result has longer retrieval times. The Intelligent Tiering class is designed to optimise storage costs by automatically moving data to the most cost-effective storage access tier. The storage class

options make Amazon S3 valuable for a variety of purposes, from creating backups to hosting web applications.

You may need Amazon S3 if:

- you need a reliable and scalable back-up solution for a variety of data types
- you need to retain data for long periods of time without accessing it
- transferring your data to analytics solutions is costly and time consuming, and you want a storage solution that can be queried directly
- you are building a mobile or web application and need to store production data
- you want to quickly and easily build a data lake solution on which to build AI products
- you want to host a web application or website

Benefits

Benefits of Amazon S3 include:

- It features industry-leading availability, durability and scalability
- There are a range of cost-effective storage classes available to meet and scale with your needs
- A number of tools are available to ensure security and compliance
- It features a flexible storage management and administration capabilities
- The query-in-place services for analytics remove the need to transfer data for analysis
- It integrates with a wide range of solutions for primary storage, backup and restore, archive, and disaster recovery

Technical considerations

Prerequisites and Integrations

To get started with Amazon S3, you need an AWS account. Read more about AWS [about AWS](#).

You can set up Amazon S3 in no time by following Amazon's comprehensive [Getting Started Guide](#). The guide walks you through the process of signing up for Amazon S3, creating your first bucket, adding objects to it, and manipulating the objects within the bucket.

There are several options for transferring your data into Amazon S3, including via the command line, using the API, or through the AWS Management Console. Your offline data can be transferred using [AWS Direct Connect](#) or [AWS Storage Gateway](#), or it can be physically transported into Amazon S3 by an [AWS Snowball device](#).

A variety of Software Development Kits (SDKs) are available to make it easy to integrate your application with S3, including SDKs for Java, Python, .NET, PHP, and Node.js.

Security and Compliance

Amazon S3 is "secure by default" - only resource owners have access to the resources they create. Access control mechanisms can be used to selectively grant access to additional users, while the the Amazon S3 console makes it easy to review permissions and accessibility.

Data transfer into and out of Amazon S3 can be performed via SSL endpoints using the HTTPS protocol, and optionally the Server-Side Encryption can be used to secure your data at rest.

An additional AWS service, **Amazon Macie**, can be employed to ensure data protection within Amazon S3. Amazon Macie is a security service that uses machine learning to automatically discover, classify, and protect sensitive data in AWS.

You can read more about AWS security [AWS security](#).

Amazon S3 has been assessed by third-party auditors to ensure its security and compliance against a range of international standards. AWS provide several [resources and services](#) to help you ensure that your configuration is compliant with industry standards.

Pricing

Amazon S3 is a pay-as-you-go service so you only pay for what you use, and there are no up-front set-up fees. Read more about AWS and its pricing structure [pricing structure](#).

With Pay-As-You-Go (PAYG) pricing for Amazon S3, your monthly bill is calculated based on:

- the size of the objects stored, their storage class, and the time for which they are stored
- the number of requests made against the objects in storage
- the number of retrievals
- any storage management features that are enabled
- the number of objects stored in Intelligent Tiering object classes, as these incur monthly monitoring and automation fees

You can calculate the monthly cost of using Amazon S3 [Amazon S3](#).

Alternatives to Amazon S3

Amazon S3 offers enormous scope for functionality, flexibility, and security, with which necessarily comes great complexity. If you don't have need for Amazon S3's more advanced features then you may find it easier to set up your object storage on a different platform - such as Dropbox or Google Drive, which are designed with team collaboration in mind.

Other cloud vendors offer similar products to Amazon S3, so if you already use Azure or Google Cloud services, you might find that choosing the same vendor for your object storage saves time and money. These products are:

- **Blob Storage** from **Microsoft Azure**
- **Cloud Storage** from **Google Cloud**
- **IBM Cloud Object Storage** from **IBM Cloud**

Amazon S3 in metals manufacturing

Metals manufacturers generate a lot of documents that need to be kept, found quickly, and never lost. Mill certificates. Test reports. Non-conformance records. Quality inspection results. Customer compliance packs. Most of it ends up on a shared drive organised by someone's filing logic — which works until that person leaves.

Amazon S3 is built for exactly this kind of storage at scale:

- **Mill certificate archive:** Store every certificate as a structured object, tagged with heat number, grade, dimensions, and customer. Retrieve any certificate in seconds rather than searching through folders.
- **Production records retention:** Regulatory and customer requirements often mean keeping records for years. S3's Glacier storage class makes long-term archiving cheap and reliable.
- **AI data lakes:** Building AI tools for scrap prediction, demand forecasting, or production scheduling requires a large volume of clean historical data. S3 is the standard choice for building the data lake that feeds those models.
- **Quality image storage:** If your quality process involves photography or visual inspection, S3 stores images reliably and integrates with machine learning services for automated defect detection.
- **Backup and disaster recovery:** If your ERP or MES goes down, S3-backed snapshots mean you're not rebuilding from scratch.

The manufacturers still emailing PDFs around or hunting through Windows Explorer folders are the ones S3 was built to rescue.

What is Azure Batch?

Azure Batch is a Microsoft Azure product. Read more about Microsoft Azure [here](#).

Definition of Azure Batch

From [Emtec](#):

Azure Batch is a robust service that provides parallel batch processing to execute intensive workloads of varying size. It creates a pool of compute nodes (virtual machines) to tackle heavy loads. With Azure Batch, batch processing has become more streamlined and viable to complete data-intensive workloads at any scale.

Does your organisation need Azure Data Factory?

Azure Batch is a service that manages the workload of applications. A workload is the work assigned to an application over a given time period. Sometimes the workload of an application is greater than it can handle in that time period, for example if it needs to process vast volumes of data, and this can lead to slow processing time, crashes, and expensive server costs if you use a cloud-based server. Azure Batch is designed to take the workload that is greater than the capability of your application, and divide it between a number of nodes - virtual machines (VMs) - that can each run your application and perform different parts of the workload in parallel. It is like asking a group of people to each make a car component and bring them together, instead of asking one person to build a car on their own. Each node performs a task that is a subset of the overall workload. Azure Batch can create the nodes required to complete the workload, assign tasks to them, schedule the tasks, get the data it needs from your storage solution and pass it to the nodes, and scale the number of nodes to suit your budget and timescale.

You may need Azure Batch if:

- You offer a Software-as-a-Service application that needs to handle large volumes of data
- You have experienced crashes and slow processing times due to the volume of data you need to process
- You are developing (or want to develop) an IoT device that will generate data
- You need to test your application for peak load or usage before deployment

- You have a high-compute application that performs tasks such as media rendering, image analysis or complex simulations

Azure Batch lists the following example use-cases:

- Financial risk modeling using Monte Carlo simulations
- VFX and 3D image rendering
- Image analysis and processing
- Media transcoding
- Genetic sequence analysis
- Optical character recognition (OCR)
- Data ingestion, processing, and ETL operations
- Software test execution
- Finite element analysis
- Fluid dynamics
- Multi-node AI training
- Large-scale rendering workloads

Benefits

Benefits of Azure Batch include:

- It can automate scaling of your computing power to suit your needs, from tens of VMs to thousands.
- You only pay for the computing power you actually use, and you can control the scale to suit your deadline and budget.
- It can deliver compute power on demand, rather than on a schedule.
- It can manage high-volume repetitive tasks with ease.
- It allows you to expand your data processing capability to handle large volumes of data.
- It allows you to scale your application without additional infrastructure costs.

Technical considerations

Prerequisites and Integrations

To get started with Azure Batch, you need a Microsoft Azure account. Read more about Microsoft Azure [Microsoft Azure](#). You also need to create a Batch Account. The Batch Account is used to authenticate your application when you run tasks. You can create a Batch Account [Batch Account](#).

Most Batch solutions use Azure Storage for storing resource files and output files. You can associate a storage account with your Batch account when you create the Batch account, or later. You can create an Azure Storage Account [Storage Account](#).

One of the benefits of Azure Batch is that you can choose the operating system and developer tools that you use to run workloads. Nodes running Windows will accept Windows code, including Microsoft .NET, and with Linux there is a choice of distributions including CentOS, Ubuntu, and SUSE Linux Enterprise Server. When creating a pool of nodes, you can set it up to run tasks in **Docker** containers.

Nodes can run any executable or script that is supported by the operating system environment of the node. Executables or scripts include .exe, .cmd, *.bat, **PowerShell** scripts for Windows, and binaries, shell, and **Python** scripts for Linux.

Once a Batch job is up and running you can monitor your applications via the Azure portal, the Batch Explorer tool, or from the command line.

Security and Compliance

Azure Batch is built on Microsoft Azure security infrastructure and uses all Microsoft Azure security measures. You can read more about Microsoft Azure security [Azure security](#).

All compute nodes in Azure Batch have configurable Firewall settings. When you create a pool of nodes they operate in isolation from other pools, so data is not processed or transported unnecessarily.

Microsoft Azure carries an impressive list of compliance certifications which you can view [can view](#).

Pricing

Azure Batch is a pay-as-you-go service so you only pay for what you use, and there are no up-front set-up fees. Read more about Microsoft Azure and its pricing structure [pricing structure](#).

There's no charge for Batch itself, only the underlying compute and other resources consumed to run your batch jobs, including applicable software licence costs. You are billed by the second of compute resources, and can choose the compute power and storage of the nodes you run to suit your budget. You can also choose between low-priority and high-priority virtual machines to further manage the per-second cost of computing. Reserved pricing is available for Azure Batch.

You can read more about Azure Batch pricing [Batch pricing](#).

Alternatives to Azure Batch

If you already use Azure storage and compute services, Azure Batch is an obvious choice to start job scheduling and parallel process management. However, if your storage is elsewhere or you are not familiar with Azure services you may find an alternative solution suits your organisation better. Examples of alternative job scheduling and compute management services are:

- [AWS Batch](#)
- [IBM workload automation](#)

What is Azure Data Factory?

Definition of Azure Data Factory

Azure Data Factory is a cloud-based data integration service. It does not store data itself, but allows you to create and monitor automated workflows that collect, integrate, and (to some extent) transform large volumes of data from disparate sources, and pass them on to other services that can store, transform, analyse and use the data. You can think of Azure Data Factory like a conveyor belt in a physical factory, where your data is a stream of products that are being sorted, collated and packaged.

Does your organisation need Azure Data Factory?

Azure Data Factory converts disparate data silos into trusted information that can be stored in a centralised repository. It can be used for a large-scale, single data migration (for example, if you want to migrate your data to an Azure storage service) or to continually process streams of data that are generated by your company from different sources, allowing you to implement data-driven processes that act on a central data repository.

You may need Azure Data Factory if:

- you want to break away from data silos
- your company utilises large volumes of data from disparate sources
- you operate (or want to operate) data-driven processes
- you make use of (or plan to make use of) cloud-based Azure data analysis and AI technologies
- you have experienced bottlenecks when trying to prepare large quantities of data for analysis
- you need to migrate a large volume of data between storage services

Benefits

Benefits of Azure Data Factory include:

- It can combine cloud-based and on-premises data securely and efficiently.
- It streamlines and cleans data for use on a variety of Azure services.
- It can handle structured, unstructured and semi-structured data, including streaming data.
- The data pipelines it creates are highly available and fault-tolerant.
- You have the option to set up processes via a visual interface or by writing code.
- You can perform some transformations on your data within the pipeline you set up, making the output ready for analysis.
- You can monitor and manage on-demand, trigger-based, and clock-driven custom flows.

Technical considerations

Prerequisites and Integrations

To get started with Azure Data Factory, you need a Microsoft Azure account. Read more about Microsoft Azure [Microsoft Azure](#).

You do not need coding skills to set up and automate data migration pipelines with Microsoft Data Factory as there is a visual interface, however, if you want greater control of the pipeline and ability to customise processes you can use Python, .NET or ARM.

Azure Data Factory can take raw input data from a variety of sources and deliver trusted output data to a variety of sinks. Compatible sources and sinks include Azure storage services such as Azure Blob Storage, **Azure Cosmos DB**, and **Azure SQL Database**, as well as third-party products such as **Amazon Redshift** and **Salesforce**. A variety of data transformation activities can be performed as part of your data pipeline, including **Hive**, **Pig** and **Hadoop** Streaming scripts.

Security and Compliance

Azure Data Factory is built on Microsoft Azure security infrastructure and uses all Microsoft Azure security measures. You can read more about Microsoft Azure security [Azure security](#).

Azure Data Factory is certified by HIPAA, HITECH, ISO/IEC 27001, ISO/IEC 27018 and CSA STAR. Azure Data Factory can be used to ensure compliance with GDPR by setting up a process that will

fetch and consolidate personal information about a person and send it to them if they make a GDPR information request.

Pricing

Azure Data Factory is a pay-as-you-go service so you only pay for what you use, and there are no up-front set-up fees. Read more about Microsoft Azure and its pricing structure [pricing structure](#).

When you set up data pipelines with Azure Data Factory you add a number of steps to each pipeline. The price of the service is based on the number of steps (called activities executed) and the time it takes to execute them each time they run.

You can read more about Azure Data Factory pricing [here](#).

Alternatives to Azure Data Factory

Azure Data Factory is largely intended for Azure customers who need to integrate data from Microsoft and Azure sources. While Azure Data Factory does offer limited support for third-party sources such as Amazon Redshift, other data integration solutions, such as **AWS Data Pipeline** and **Fivetran**, may be more appropriate for your business if you do not primarily use Azure data services.

If the majority of your data is stored in-house and you are not planning to migrate to a cloud storage solution, **SQL Server Integration Services (SSIS)** may also be a more appropriate tool for your data integration. SSIS also offers a wider range of transformation processes as part of the data pipeline than Azure Data Factory.

Azure Data Factory in metals manufacturing

Metals manufacturers typically operate with data scattered across systems that were never designed to talk to each other: an ERP handling orders and inventory, a separate system (or spreadsheet) for production scheduling, weighbridge records in one place, quality data in another.

Azure Data Factory is the plumbing that connects them. In manufacturing, it's used for:

- **ERP integration:** Pull order, stock, and despatch data from your ERP into a centralised data store where it can be queried alongside production records.
- **Shop floor to cloud:** Move data from MES systems, weighbridges, and production sensors into Azure storage automatically — no manual exports, no stale reports.

- **Quality data pipelines:** Consolidate inspection results, test certificates, and non-conformance records from multiple sources for unified reporting.
- **AI data preparation:** Feed clean, structured production data into AI models for demand forecasting, scrap prediction, or capacity planning – the kind of analysis that tools like **GoSmarter AI** are built on.

If you're still copying data between systems manually or waiting for someone to run a report, Azure Data Factory is the fix.

What is Azure?

Definition of Azure

From [Microsoft](#):

Microsoft Azure is an ever-expanding set of cloud services to help your organisation meet your business challenges. It's the freedom to build, manage and deploy applications on a massive, global network using your favourite tools and frameworks.

Azure is a [cloud service provider](#). Other cloud vendors to consider are:

- [Amazon Web Services \(AWS\)](#)
- [IBM Cloud](#)
- [Google Cloud](#)

Key technologies

There are more than 600 products available from Microsoft Azure, across 22 categories. These products include:

AI and machine learning

- **Cognitive Services** are a suite of AI capabilities that can be integrated into your apps through API calls. This allows developers without any AI or machine learning experience to build intelligent apps
- **Machine Learning** services allow developers to build, train and deploy machine learning models. The service supports a range of open source tools and frameworks, including PyTorch, TensorFlow, and scikit-learn
- **Azure Bot Service** supports development of intelligent, enterprise-grade bots such as QnA bots and virtual assistants. The service integrates with Cognitive Services to add powerful AI capabilities, including natural language processing (NLP) and computer vision

- **Azure Cognitive Search** is a cloud search service with built-in AI capabilities such as NLP and computer vision. The service makes it easier to work with unstructured data (e.g. text and images) by organising and structuring it to make it searchable
- **Azure Databricks** is a collaborative data science environment based on Apache Spark, that is optimised to work with other Azure services. It provides a platform in which teams can collaborate to gather, analyse and model data. Interaction with data is possible through interactive notebooks that support a range of languages - including Python, R, Scala, and SQL - and deep learning frameworks

Analytics

- **Azure Stream Analytics** is an intuitive, real-time analytics platform that can handle complex analytics at high speed. The service is easy to set up using SQL and can be extended with C#, JavaScript, and built-in machine learning capabilities
- **Azure Analysis Service** is a scalable and secure data analytics platform that can combine data from multiple sources to produce shareable insights that integrate with Power BI for visualisation
- **Azure Synapse Analytics** is a highly scalable solution to analyse large volumes of data, especially across distributed data sources like data lakes

Data storage and management

- **Azure SQL Database, Azure Database for PostgreSQL, Azure Database for MySQL, and Azure Database for MariaDB** are relational databases to support analytics or operational activities, saving the need to manage the underlying infrastructure or tasks like backups
- **Azure Cosmos DB** is Microsoft's globally distributed, multi-model database service, which provides highly scalable storage for data that can be accessed using a variety of APIs including SQL, MongoDB, Cassandra, Tables, and Gremlin
- **Table Storage** is a high-latency NoSQL datastore for structured data
- **Data Factory** is a service that allows you to integrate data from several sources for transformation and analytics
- **Azure Data Lake Storage** is a highly scalable and cost-effective data lake solution for big data analytics. It is a centralised repository for vast quantities of structured and unstructured data

Security and Compliance

Microsoft are committed to security, privacy and compliance across their Azure products. The [Azure Trust Center](#) provides details of Microsoft's foundational principles of trust: security, privacy, compliance and transparency.

Security

Microsoft Azure features multi-layered, built-in security controls that can be managed via intuitive controls. Intelligent features helps to identify and protect against potential threats. Security products from Azure include **Security Center** and **Key Vault**.

Read more about Azure security [Azure security](#).

Privacy

The Microsoft Privacy Standard enforces strict protections on Microsoft business processes. Using Azure products, you have a clear view of where your data is stored, how it is secured, and who can access it. You can choose the geographical location of your data centre when you set up your Azure products.

Read more about Azure data privacy [data privacy](#).

Compliance

Microsoft Azure holds more than 90 compliance certifications, and features products and tools that help you to ensure compliance. Tools such as **Compliance Manager** allow you to track your compliance with GDPR and other privacy regulations. **Azure Security and Compliance Blueprints** can be used to create, deploy and update compliant environments for your data.

Read more about Azure compliance [Azure compliance](#).

Pricing

Microsoft Azure has a competitive, scalable pricing structure with several options to support businesses as they grow. From the dashboard you can access at-a-glance cost overviews to manage spending, and the Azure [pricing calculator](#) helps you to budget and estimate costs of using Azure services.

Creating an [account](#) on Microsoft Azure provides:

- 12 months of free access to select services, including data storage and some AI services

- £150 credit to use on any Azure service for 30 days
- access to more than 25 always-free services, including Security Center and Search

Beyond the free services, Microsoft Azure offers the choice between a pay-as-you-go (PAYG) model and reserved pricing. With either option, you are billed monthly for the services you use or reserve.

Pay as you go

A great option for scalability, Azure products are charged by time, events and storage space.

For example, Azure Machine Learning services are charged by hour of use by the virtual machine, Azure Bot Service is charged per thousand messages, and pricing for Azure SQL database is calculated based on hours of available access and storage space, in increments of 32GB.

Reserved pricing

If you are confident of the computing power and storage space you will need for your application in advance, the reserved pricing model can save you 20-30% of costs. In this model, you reserve the time and storage space required for the next year or two years, and pay for it monthly.

Azure Dev/Test Pricing

Microsoft Azure offers discounted rates to support ongoing development and testing. The discounts are available for the following services:

- Windows Virtual Machines*
- BizTalk Virtual Machines*
- Azure SQL Database*
- SQL Server Virtual Machines
- Logic Apps Enterprise Connection
- App Service Instances
- Cloud Service Instances
- HD Insight Instances

*These services also remain eligible for reserved instance pricing in addition to dev/test discounts.

You can find out more about Dev/Test Pricing [here](#).

Purchase Azure services through a Cloud Solution Provider (CSP)

As well as having the option to buy directly from Microsoft Azure, you can go through a CSP who will provision, manage and support your subscriptions. This is a good option if you already purchase Microsoft solutions through a CSP, as they will consolidate your bills and ensure you are not using duplicate services. A CSP provides local support and expertise to help you get started with cloud services and manage costs, and will often offer bundle deals that can save you money. You can find a CSP [a CSP](#).

Support

All Azure accounts come with free customer service, documentation, and tutorials to help you get started. Additional technical support becomes available when you purchase a support plan, starting at just over £20 per month. Learn more about the support plans [support plans](#).

Executive view

Implementing data science and AI in your business requires vast data storage capabilities and expensive infrastructure. A cloud computing solution such as Microsoft Azure provides pay-as-you-go access to these systems and allows you to scale the costs as you grow, avoiding expensive set-up costs.

Microsoft Azure helps businesses:

- adopt AI without expensive set-up costs
- develop high-quality applications that collect and leverage data to maximise revenue

Business function leader view

Microsoft Azure helps teams adopt AI solutions that can drive growth and improve performance, as well as providing solutions to host applications and build improved functionality that will drive sales. Microsoft Azure is a cloud computing platform, which allows pay-as-you-go access to storage and computing services without expensive infrastructure set-up fees.

Signs your department should invest in this are:

- you are developing an application and need a hosting solution that is cheap to implement and will scale as you grow

- you are planning to adopt AI in your team and need access to data storage and machine learning tools at a price that will scale with your needs

KPIs you should consider measuring for this are:

- improved sales when AI features are implemented
- savings on infrastructure investment
- improved efficiency of resource management
- improved product performance

What is Cutting Optimisation in Steel Manufacturing?

Every day, somewhere in a steel stockholder or long products manufacturer, someone is staring at a whiteboard or a spreadsheet trying to figure out how to cut this week's orders from the stock on the rack.

They're asking: which bars do I use? How do I cut them so I don't end up with a skip full of short pieces I can't sell? How do I get everything shipped without ordering more stock than I need?

This is the cutting stock problem. It's been studied by mathematicians for decades. It's one of the problems that computers solve far better than humans. And solving it well is worth real money.

What is Cutting Optimisation?

Cutting optimisation (also called cut plan optimisation or cutting stock optimisation) is the process of calculating the most efficient set of cuts to make from a set of stock lengths in order to fulfil a set of customer orders – while minimising the material left over as scrap or off-cut.

It's a class of mathematical problem called the **cutting stock problem** – a type of combinatorial optimisation. In plain English: given the bars you have in stock and the lengths your customers need, what's the best way to cut them?

"Best" means different things in different contexts:

- Minimum waste (scrap by weight or length)
- Minimum number of bars used (fewer saw cycles, lower labour)
- Maximum use of existing remnants (reducing the need to open new stock)
- A combination of all three, weighted by what matters most to your business

Why Humans Can't Solve It Optimally by Hand

The cutting stock problem is **NP-hard**. You don't need to know what that means mathematically, but the practical implication is important: as the number of order lines and stock lengths increases, the number of possible cutting combinations increases exponentially.

A simple example: three order lines against one bar length might be manageable. Try 30 order lines against 6 different stock lengths, with multiple bars available of each, and the number of possible combinations runs into the millions. No human can evaluate all of them. No spreadsheet is designed for it.

What actually happens in practice:

- The saw operator uses experience and instinct to build a cut list
- They usually start with the longest pieces and work downwards — a heuristic, not an optimum
- They get a workable result, but rarely the best possible result
- Offcuts accumulate in the rack, and no one is quite sure what to do with them

The gap between "workable" and "optimal" is where money disappears. In high-volume long products manufacturing, that gap can be significant.

What Scrap Savings Look Like in Practice

Numbers make this concrete.

Say you process 500 tonnes of steel bar per month. If your current cut planning produces 4% scrap, you're throwing away 20 tonnes of steel every month. At £600 per tonne, that's £12,000 per month — or £144,000 per year — going in the skip.

Optimised cut planning typically reduces scrap by 1–3 percentage points on comparable order profiles. At 1.5 percentage points, you recover 7.5 tonnes of steel per month. That's £4,500 per month you were previously writing off.

Midland Steel achieved a 50% reduction in scrap after implementing the GoSmarter Cutting Plans. The saving wasn't marginal — it fundamentally changed the economics of their operation.

The scrap reduction benefit compounds. Less scrap means:

- Fewer raw material purchases (you're getting more output from the same input)
- Lower disposal costs (skip hire, transport, processing)
- Better margin on every order

How Optimised Cut Planning Differs from a Manual Cut List

A manual cut list typically looks like this: someone lists the required lengths in descending order and assigns them to bars, moving to the next bar when the current one can't fit the next piece. This is called the First Fit Decreasing heuristic. It's the instinctive approach most people use.

It's not bad. It's just not optimal. It tends to produce more waste than necessary because it doesn't consider the full combination of available lengths and order quantities simultaneously.

An optimised cut plan considers:

- All order lines at once, not sequentially
- Multiple stock lengths simultaneously
- Existing remnants and off-cuts in the rack
- The relative cost of different scrap patterns
- Constraints like bar type, grade, and heat number (where orders require specific material)

The result is a cut list that may look counterintuitive — cutting shorter pieces first, or using a specific bar that seems inefficient in isolation — because it's been calculated to minimise waste across the entire batch.

What Types of Material Cutting Optimisation Works For

Cutting optimisation applies to any material that is processed in linear lengths:

- **Steel bar** (round, square, flat, hexagonal)
- **Structural sections** (angle, channel, universal beam, universal column, RSJ)
- **Hollow sections** (rectangular hollow section, circular hollow section, square hollow section)
- **Rebar** (reinforcing bar, cut to schedule)
- **Tube** (steel, stainless, aluminium)
- **Aluminium extrusion** (in architectural and engineering applications)
- **Any other linear material** cut to order from stock lengths

It's specifically suited to **long products** — the cut-to-length, bar and section world. Flat products (plate, sheet, coil) involve a two-dimensional nesting problem, which is a related but different class of optimisation.

How the GoSmarter Cutting Plans Works

GoSmarter Cutting Plans takes your open order lines and your available stock as inputs. It calculates the optimal cut plan – telling your saw operator exactly which bars to pull, in what sequence to cut them, and what lengths to produce.

The process:

1. Orders come in. The system reads the required lengths, quantities, grades, and any certification requirements.
2. The system checks available stock – including remnants and off-cuts already in the rack.
3. The optimisation engine calculates the cut plan that minimises waste across all open orders.
4. The cut list goes to the saw. The operator follows it. The offcuts are automatically recorded back into inventory with their heat number and cert link intact.

The system accounts for saw kerf (the material lost per cut), stock length tolerances, and minimum remnant thresholds (what's worth keeping versus scrapping).

FAQ

No. The relative benefit of optimisation is consistent regardless of volume – you're always reducing waste as a percentage of input. But the absolute pound value of savings scales with throughput. Even a smaller service centre processing 50–100 tonnes per month will see meaningful scrap reduction. The GoSmarter Cutting Plans is built for SME manufacturers, not just large operations.

A cut plan (or cut list) specifies which bars to cut and what lengths to produce from each. A cutting schedule sequences that work across time – which orders get cut first, which saw handles which material type, and so on. Cutting optimisation primarily refers to the cut plan: the mathematical problem of how to cut. Scheduling is a secondary layer on top.

Yes. The optimiser handles grade, size, and certification constraints. It will not suggest substituting a lower-grade material for a higher-grade order requirement. Each order line's material constraints are respected – the optimisation is done within those constraints, not by relaxing them.

Off-cuts above a minimum useful length threshold are recorded back into stock automatically with their original heat number and cert link. They become available for future orders that require shorter lengths. Off-cuts below the threshold are logged as scrap. Over time, the system learns the typical off-cut profile for your order mix and the optimiser factors this into future cut plans.

See Also

- [Cutting Plans](#) – GoSmarter's tool that calculates optimal cut plans and cuts your scrap in half.
- [Production Planning Solutions](#) – How GoSmarter improves production planning for long products manufacturers.
- [Scrap, Waste & Yield Optimisation Hub](#) – The full guide to reducing waste and improving yield.
- [Midland Steel Case Study](#) – How Midland Steel achieved a 50% reduction in scrap.
- [What is Yield Rate in Steel Manufacturing?](#) – How to measure and improve your material yield.
- [What are Long Products in Steel?](#) – Bars, sections, rebar, tube: the world cutting optimisation is built for.
- [Metals Manufacturing Glossary](#) – Every key term, defined in plain English.

What is Dynamics 365 Field Service?

Field Service is a core customer engagement application on the [Dynamics 365 platform](#) and, like the CRM itself, is fully customisable and extensible. It is useful for teams who conduct services offsite where proactive time management is crucial to prevent bottlenecks. Field Service helps streamline business operations by offering smart scheduling capabilities such as the schedule assistant to configure recommended time slots and resources for bookings.

Broadly speaking, Field Service refers to the management of a range of tasks to be completed offsite. The standard service lifecycle begins with a work order. This specifies the work that needs to be done by a technician on the field. It may include customer details, service location, appointment time, and the customer asset being serviced. A customer asset is usually an appliance or a piece of equipment at the customer's location.

Field services licenses may also include customer service functionality which provides self-service tools via [virtual agents](#). These can be trained according to customer pain points to tackle frequently asked questions and offload strain on human customer service resources. Rich knowledgebase portals may also be consulted so field technicians can be automatically informed on which services need to be in their work order, reducing friction and time between a customer issue and your organisation's fix, and helping improve customer retention.

Field agents have access to relevant work order information via the mobile app.

From a [mobile app](#), field agents can access information about what services are to be completed in the work order as well as information on required products. In the app they can get an overview of their scheduled work orders, obtain signatures from customers to sign-off work, and register any product orders they may have made to complete their work order.

Field Service can automatically assign the right resource to a task according to particular resource skills and a [proficiency model](#) scale which determines their familiarity with the issue and the level of security clearance to which they are entitled.

Moreover, resource substitutes can be arranged for any change of plans, such as a customer cancelling or a resource being off sick. The [Resource Scheduling Optimisation \(RSO\)](#) add-on uses AI to intelligently optimise technician efficiencies and reduce cost through lower fuel consumption and reduced vehicle maintenance. This helps ensure that a substitute resource is available at no change of plans for the customer, and that resources are given appropriate, timely work orders. Field Service therefore helps achieve scale and deliver an optimal distribution of work across your organisation's field technicians.

RSO dashboard featuring the schedule assistant on the Filter and Map view

Customers will receive updates on their preferred communication channel with details on when their technician will be arriving and when they are on the way.

Another key draw of Field Service is the ability to monitor assets to ensure uptimes and meet SLAs with your customers. For this, one may use Azure IoT and **Connected Field Service**, which allows organisations to monitor signals coming from a customer asset and, if desired, notify the customer (and other stakeholders) of system anomalies and perform a priority repair.

In the below example, the dashboard is helping an organisation monitor a vending machine along key metrics of temperature, humidity, and pressure. In addition we can set up workflows called rules which allow telemetry alerts. For example, if the pressure is too high an IoT alert will be automatically passed along to Dynamics 365 from Azure IoT.

IoT central alerts sample dashboard

Inside the Dynamics 365 alert we are able to access basic information such as the exact pressure reading which triggered the alert, and the customer asset concerning the alert. Due to the urgency of IoT alerts, Dynamics 365 will automatically create a work order preloaded with recommended work order services based on the specific part which triggered the alert. The work order also gets automatically scheduled according to the best and most available resource that can do the job, with a colour flag on the item indicating high priority within the schedule assistant.

Executive View

Dynamics 365 Field Service enables companies to analyse progress and make better offsite business decisions, where each movement is time-critical and customer-facing. For organisations requiring a smarter way of coordinating their professionals on the field, Field Service offers an automated approach for ensuring your resources are well-distributed and well-informed.

Field Service helps businesses:

- solve business problems
- enhance day-to-day operations
- advance the overall functioning of your field agents
- improve decision making

Business Function Leader View

Dynamics 365 Field Service ensures your team members on the field have access to a centralised way of obtaining work order information, schedules and much more for their daily tasks.

You may need this service if:

- your business uses field agents
- your business suffers from a lack of centralisation
- your business is looking to utilise AI to boost scheduling capabilities
- your business is looking to work with IoT to smartly monitor customer assets and receive proactive alerts before issues arise

Technical View

Technical teams should take the lead with the AI and IoT capabilities of Dynamics 365, as well as the limitless possibilities your technical team can arrange on a service built using Microsoft Power platform.

Dynamics 365 Field Service helps deliver:

- **business intelligence** and AI adoption.
- limitless personalisation through low-code app development made specifically for your organisation
- an IoT network to monitor customer assets and proactively inform them of issues

Get this service if you encounter:

- problems with a lack of a current decentralised system for managing field agents and work orders
- frustration with reactive scheduling issues and a lack of proactive problem solving

What is Dynamics 365?

Dynamics 365 has become a key figure in the cloud CRM space in terms of **market share**, frequency of use and customer satisfaction. Its adaptability, integration capabilities, and **robust data security and governance** make it an attractive option for businesses seeking digital transformation from the ground up. Businesses seeking to migrate from an existing CRM may be enticed by the relative affordability of Dynamics 365 with its numerous licensing options, benefiting SMEs all the way up to enterprise organisations. But what exactly is Dynamics 365, and how can it improve business operations for you?

Dynamics 365 is a cloud-first platform providing CRM (customer relationship management) solutions for businesses. The platform takes a modular approach and offers a suite of products which can be tweaked and defined according to business needs.

Dynamics 365 offers a range of business intelligence apps as well as sub-apps and add-ons.

The platform offers several independent but connected business functions for automated, integrated, and intelligent sales marketing. This enables cohesive and centralised solutions which can touch all areas of your business.

The business areas (or modules) within Dynamics 365 include sales, customer service, and marketing. Each module can customise your CRM system to suit your organisation and track your customer needs effectively, dependant on your role or task.

Using the capabilities of each of these modules you can begin to systematically convert your sales leads into paying customers. For example, you may calculate a lead score which considers job role, details about the specific organisation in question, and actions taken by the relevant contact during customer communications. This allows you to strengthen your marketing efforts by nurturing the most promising leads or troubleshoot ailing ones, all the while providing insights for next actions to acquire and retain customers.

Dynamics 365's customer engagement applications are built on the Microsoft Power Platform, enabling you to craft custom and automated experiences around your data and processes using **Power BI**, Power Apps or Power Automate with minimal coding required.

The baked-in **business intelligence** of Dynamics 365 is most evident from their **AI suite** of products. These allow you to use the power of AI to prevent fraud, deliver astute, data-driven customer communications, and convert your observational data into actionable insights.

The history of Dynamics 365 involves Microsoft's acquisition of smaller ERP systems developed by other companies, such as Great Plains (GP) and Axapta (AX) - both now part of the Dynamics

365 family. As part of integrating these systems, Microsoft have built Dynamics 365 on top of **Microsoft Azure**, itself an ever-expanding and industry-trusted platform with a broad ecosystem of services. Consequently, unlike other cloud CRMs, Microsoft use their own data centres and offer a 99.9% SLA supported by their own **Trust Center** policies.

Businesses used to the Microsoft look-and-feel from popular SaaS offerings within Office 365 or Sharepoint will feel right at home using Dynamics 365 as it includes a similar UI/UX as well as native integration with your favourite productivity apps. For example, Microsoft offer **add-ins for Excel** to analyse and edit data from Microsoft Dynamics systems to increase productivity and ensure data accessibility.

A sample sales activity social dashboard below shows open leads with a breakdown of lead sources. On the left is a sales funnel graphic, outlining the leads according to their corresponding stages with estimated revenue figures attached. You can move leads along by qualifying them as opportunities, allowing you to then put forward a quote and close an order.

| **An example of the Dynamics 365 Sales Hub Dashboard**

Executive View

The Dynamics 365 suite of applications is designed to be flexible and extensible. You can license the apps that provide the best value for your organisation and select services according to organisational needs.

Access to the global fabric of Azure data centres give you piece of mind when it comes to data uptime and ensures high availability. The hybrid model option also means that you can choose what information you would like to remain on premises and what can be moved to the cloud, allowing you to use a SaaS solution wherever you are able to reduce infrastructure costs.

Dynamics 365 helps businesses:

- streamline processes by making actionable insights from heaps of organisational data
- adopt AI natively into organisational marketing efforts
- remain in the Microsoft ecosystem and benefit from the native integrations Dynamics 365 offers

Business function leader view

Dynamics 365 benefits from Microsoft's extensive cloud infrastructure which means you can take advantage of preferred data centres around the world. This ensures you are using data services

with proximity to your users and reduce latency. Department leaders can also take advantage of role-based access control via Azure Active Directory.

You may need this service if:

- you are looking for an all-in-one business application with finance, operations, sales, service, manufacturing and project management capability
- your team has access to large volumes of data but is not using it to make predictions or decisions
- you need to ensure full ownership and encryption options over your data
- you are a growing organisation, and you require a modular CRM that will grow with you

The KPIs you should consider measuring for this are:

- increased sales of your product
- improved customer retention
- increased lead generation
- increased efficiency with customer communications
- increased profits

Technical View

Dynamics 365 provides a cloud-ready, centralised approach for your CRM operations no matter the size of your organisation. Technical teams will enjoy the opportunity to utilise heaps of observational data for actionable insights.

Dynamics 365 helps deliver:

- seamless application and data source integration
- business intelligence and AI adoption

Get this service if you encounter:

- a lack of cohesion between departments when it comes to using data
- problems with connecting teams to a single unified solution
- high infrastructure costs pushing you to a cloud-first approach

Key criteria to consider are:

- Dynamics 365 is more rewarding to teams committed to the Microsoft ecosystem due to its native integration capabilities. How will your organisation's non-Microsoft applications factor into the CRM process?

- What are the data needs of all departments and how can Dynamics 365 be best utilised to meet them?

What is ERP in Metals Manufacturing – and Why Do So Many Manufacturers Outgrow Theirs?

You spent £200,000 on an ERP system seven years ago. The implementation took 14 months. You had consultants on site for most of it. And now your operations team has a spreadsheet open in the background at all times because the ERP can't tell them which bars have 3.1 certs.

This is the metals manufacturing ERP story. It plays out across the industry, from small stockholders to mid-size service centres. The ERP handles finance and orders reasonably well. The shop floor works around it.

Let's break down why this happens – and what a sensible solution looks like.

What is ERP?

ERP (Enterprise Resource Planning) is a category of software that integrates core business management functions into a single system.

The idea is elegant: one system of record for everything. You enter a sales order once. The system updates inventory, schedules production, triggers purchasing, posts accounting entries, and generates the despatch documentation. No rekeying. No silos. One version of the truth.

In theory.

The modules in a typical ERP include:

- **Finance and accounting** – general ledger, accounts payable, accounts receivable, management accounts
- **Sales order management** – orders, pricing, customer records, quotations
- **Procurement** – purchase orders, supplier management, goods receipt
- **Inventory** – stock records, locations, movements
- **Production** – works orders, bills of material, routing
- **HR and payroll** – headcount, payroll, absence management (in larger systems)

For a manufacturing business, the promise of ERP is a connected view of the entire operation. For many businesses, it largely delivers on that promise – in the back office.

Common ERP Systems in Metals Manufacturing

The metals industry uses a wide range of ERP systems, from large enterprise platforms to industry-specific packages:

- **SAP** – dominant in large steel producers and some service centres; powerful but expensive and complex
- **Sage 200 / Sage X3** – common in UK SMEs; solid financials but limited metals-specific functionality
- **Epicor** – used in some metals and distribution businesses; better manufacturing capability than many SME ERPs
- **Infor CloudSuite Industrial (SyteLine)** – used in manufacturing environments, some metals capability
- **Syspro** – common in metals distribution and manufacturing, particularly in Southern Africa and some UK operations
- **Dynamics 365 / Business Central** – Microsoft's ERP, increasingly common in SMEs; flexible but requires significant metals-specific customisation
- **Metals-specific ERP** – a handful of niche vendors serve the metals distribution and service centre market specifically; better fit out of the box but smaller development investment and support ecosystems

What ERPs Do Well in Metals

It's worth being fair about this. ERPs aren't bad. They're just not designed for the specific operational problems of metals manufacturing.

Finance and accounting. ERPs are very good at this. Purchase ledger, sales ledger, nominal coding, management accounts, VAT returns. If your ERP is any good at all, these work well.

Sales order management. Taking orders, managing customer records, pricing, quotations. ERPs handle the commercial side of order management competently.

Procurement and goods receipt. Raising purchase orders, matching to delivery notes, posting goods receipt. ERPs do this – the gaps emerge in the detail of what's recorded, not in the basic process.

Basic inventory location. How many tonnes of 25mm round bar are in location B3? Most ERPs can answer that.

Despatch and invoicing. Generating delivery notes, invoices, and posting the financial entries for despatches. ERPs handle this.

Where ERPs Fall Short in Metals

This is where the spreadsheets start appearing.

No Mill Certificate Reading

An ERP has no mechanism to read an incoming mill certificate, extract the heat number, grade, chemical composition, and mechanical properties, and store that data against the goods-in record. Someone does this manually – or it doesn't get done properly.

The result: certificate data lives in PDFs in a folder, not in the ERP. When someone needs to find the cert for a specific heat number, they search the folder. Or their email. Or the filing cabinet.

No Cutting Optimisation

An ERP can record a works order to cut a bar. It cannot calculate the optimal combination of cuts to minimise waste across an entire batch of orders. That calculation requires specialist optimisation algorithms that no general-purpose ERP includes.

The result: cut plans are built manually, by experienced operators who do their best. The best they can do is significantly worse than a computer optimising the problem properly.

Inventory Data Is Stale

Most ERP inventory updates happen when transactions are posted – often at the end of a shift or the next morning. The system's inventory view is hours behind reality. In a busy operation, that means the ERP says you have material you've already used, and it doesn't know about material you've received.

Sales teams quote based on ERP inventory. They promise material that isn't available. Or they hold back from quoting because the ERP shows stock they know isn't really there.

No Heat Number Tracking

Heat number is not a standard field in most ERP systems. Some businesses add it as a custom field on a stock lot, but it's a workaround, not a designed feature. The ERP has no concept of the heat number as the root of a traceability chain, and no built-in logic for maintaining that chain through partial picks, off-cuts, and despatch documentation.

No Grade Substitution Logic

The ERP doesn't know that S355 can fulfil an S275 requirement. It doesn't know that EN19 cannot substitute for EN8 without engineering approval. These rules live in people's heads.

The Spreadsheet Gap

Here's what actually happens in most metals businesses with an ERP.

The ERP handles the finance and commercial sides. The shop floor runs on spreadsheets.

There's a spreadsheet for the cert register — listing heat numbers and what certs have been received. There's a spreadsheet for the cut plan — the operator builds it manually each morning. There's a spreadsheet for available stock — the one that's more up to date than the ERP. There's a spreadsheet for committed stock — because the ERP doesn't show real-time allocations.

These spreadsheets are maintained by specific people. When those people go on holiday, no one knows where the spreadsheets are or how they work. When someone updates the wrong version, the data is wrong. When the spreadsheet has 10,000 rows and no one has cleaned it in three years, it's a liability.

The spreadsheet gap is not a sign that your team isn't good enough. It's a sign that the ERP isn't designed for your operational reality.

Why Replacing the ERP Isn't the Answer

When operations teams reach their frustration threshold with the ERP, the instinct is often to replace it. Find a better system. One that does everything.

The problem with this instinct:

- **Duration.** ERP replacements take 12–24 months minimum. During that time, the business keeps running on the old system.

- **Cost.** Implementation costs for a replacement ERP in a mid-size metals business routinely run to six figures. Often seven.
- **Disruption.** Every workflow changes. Finance, sales, operations, despatch — all at once.
- **Risk.** ERP replacements have a poor track record. Many go over time, over budget, or fail to deliver the promised functionality.
- **Data migration.** Years of historical data — certs, heat numbers, stock movements, customer records — all need to migrate cleanly.

And after all that? You've probably got a new ERP with the same metals-specific gaps, because metals is a niche that most ERP vendors don't prioritise.

How GoSmarter Fills the Gap Without Replacing Your ERP

GoSmarter is not an ERP. It doesn't replace your ERP. It does the metals-specific jobs your ERP can't do — and it sits alongside the ERP, not instead of it.

- **MillCert Reader** reads mill certificates automatically and stores the data against the stock record. Your ERP doesn't have to do this.
- **Cutting Plans** generates optimal cut plans from your open orders and available stock. Your ERP doesn't have to do this.
- **Metals Manager** tracks stock by heat number, grade, cert status, and commitment in real time. Your ERP doesn't have to do this.

The ERP keeps doing what it does well: finance, procurement, sales orders. GoSmarter handles the shop floor operations that the ERP can't.

The best tech stack in metals manufacturing in 2025 looks like this: ERP for the back office, GoSmarter for the shop floor. Two systems, each doing what it's actually built for.

FAQ

Yes. GoSmarter is designed to work alongside existing ERP systems rather than replace them. Integration points typically include sales order import (so GoSmarter knows what needs cutting and shipping) and inventory updates (so the ERP's financial records reflect actual stock movements). The specific integration depends on the ERP in use. GoSmarter's implementation team has worked with Sage, Dynamics, Epicor, and others.

Some metals businesses have invested significant sums in customising their ERP – adding heat number fields, building cert management modules, writing cutting plan tools. If those customisations are working, there may be no need to replace them. The GoSmarter conversation starts with understanding what's already working and what isn't. We fill gaps; we don't create new ones.

Significantly less than an ERP replacement. GoSmarter implementations are typically measured in weeks, not months. Because GoSmarter focuses on specific operational functions rather than the whole business, the scope is contained. You don't need to migrate your full financial history or retrain your accounts team. The people who benefit most – the operations team, the goods-in team, the saw operators – are the ones whose processes change.

That depends on your complexity. Very small operations – a single site, a handful of staff, a limited product range – can sometimes manage adequately with accounting software and specialist tools like GoSmarter. Once you have multiple locations, a large customer base, complex pricing, and significant procurement activity, an ERP's financial and commercial management capabilities become genuinely valuable. The question isn't whether to have an ERP – it's whether to expect the ERP to also do your metals-specific shop floor operations, which it won't do well.

See Also

- [MillCert Reader](#) – Reads mill certificates automatically. No manual entry.
- [Cutting Plans](#) – Generates optimal cut plans. No spreadsheet required.
- [Metals Manager](#) – Real-time stock tracking by heat number and cert status.
- [What is Metals Inventory Management?](#) – Why generic inventory tools fail for steel.
- [What is Steel Traceability?](#) – The operational requirement your ERP can't meet.
- [Metals Manufacturing Glossary](#) – Every key term, defined in plain English.

What is Google Cloud BigQuery?

BigQuery is a Google Cloud product. Read more about Google Cloud [Google Cloud](#).

Definition of BigQuery

From [Google](#):

Storing and querying massive datasets can be time consuming and expensive without the right hardware and infrastructure. BigQuery is an enterprise data warehouse that solves this problem by enabling super-fast SQL queries using the processing power of Google's infrastructure. Simply move your data into BigQuery and let us handle the hard work. You can control access to both the project and your data based on your business needs, such as giving others the ability to view or query your data.

Check out our article '[What is Data Warehousing?](#)' to find out more the benefits of a data warehouse.

Does your organisation need BigQuery?

BigQuery is a fully-managed, serverless cloud data warehouse that scales with your needs and is easy to set-up and manage. By adopting BigQuery, you can avoid the hassle of developing and managing the infrastructure needed to store large, complex datasets, allowing you to focus on gaining insight from your data. You can query your data using standard SQL statements, making it easy to get started with analysing your data.

You may need BigQuery if:

- Your organisation holds large volumes of data across disparate sources
- Querying your data takes a long time because it is stored or processed inefficiently
- You want to avoid the cost implications of setting up a data warehouse (e.g. hardware purchase)
- You want to implement [Business Intelligence](#) quickly and easily

Benefits

Benefits of BigQuery include:

- You can run queries fast enough to analyse terrabytes of data in **seconds**
- It scales automatically with your usage
- It replicates and deploys your data across multiple data centres to maximise availability
- You can reveal real-time insights from streaming data
- BigQueryML allows data scientists to implement machine learning models within BigQuery
- BigQuery GIS provides support for geospatial analysis, "making BigQuery the **only cloud data warehouse** with built-in GIS functionality"

Technical considerations

Prerequisites and Integrations

To get started with BigQuery, you need a Google Cloud account. Read more about Google Cloud [Google Cloud](#).

Google Cloud offers comprehensive [documentation](#) to assist you if you plan to migrate your data from a different Data Warehouse environment, such as Teradata of [Amazon RedShift](#).

BigQuery integrates with a suite of Google Cloud [tools and partners](#), including:

Data Integration Solutions

- Informatica
- SAP
- Confluent
- SnapLogic

BI and data visualisation

- Tableau
- Looker
- Qlik

Security and Compliance

Google Cloud services are built on the same secure-by-design infrastructure that is used by Google itself. Google has a policy of creating trust through transparency so you can read all about their security, privacy and compliance measures by visiting their [Trust and Security centre](#).

BigQuery provides strong security and governance controls with fine-grained Identity and Access Management, and your data is always encrypted at rest and in transit.

Pricing

BigQuery is a pay-as-you-go service so you only pay for what you use, and there are no up-front set-up fees. Read more about Google Cloud and its pricing structure [pricing structure](#).

The cost of using BigQuery depends on both your storage and query requirements, as outlined below:

| Service | Price |
|---------------------------------------|--------------------------|
| Storage | \$0.02 per GB, per month |
| Storage (long term) | \$0.01 per GB, per month |
| Streaming data | \$0.01 per 200 MB |
| Querying data (first 1 TB per month) | Free |
| Querying data (beyond 1 TB per month) | \$5 per TB |

Flat-rate pricing is also available for querying data, starting at \$10000 per month for reserving 500 slots.

You can read more about BigQuery pricing [BigQuery pricing](#).

Alternatives to BigQuery

If you already use Google Cloud services then BigQuery is a sensible option for your data warehouse. Other cloud vendors offer their own data warehouses, which you should also consider. When choosing a data warehouse service, consider the cost of storing and querying data, the speed of data analysis, the availability and security of your data, and the integrations available.

Other cloud data warehousing services include:

- [Redshift](#) from [AWS](#)

- IBM Db2 Warehouse on Cloud from IBM Cloud
- Azure Synapse from Azure

What is Google Cloud?

Definition of Google Cloud

From [Wikipedia](#):

Google Cloud Platform (GCP), offered by Google, is a suite of cloud computing services that runs on the same infrastructure that Google uses internally for its end-user products, such as Google Search and YouTube. Alongside a set of management tools, it provides a series of modular cloud services including computing, data storage, data analytics and machine learning. Registration requires a credit card or bank account details.

Google Cloud is a [cloud service provider](#). Other cloud vendors to consider are:

- [Microsoft Azure](#)
- [Amazon Web services \(AWS\)](#)
- [IBM Cloud](#)

Key technologies

There are more than 90 services available from Google Cloud, across more than 15 categories. These products include the following:

Data storage and management

- **Cloud Storage** provides highly durable, scalable global storage for object data that can be accessed instantly and integrated into applications. Four different storage classes are available, differentiated by frequency of data access, to allow you to manage costs with minute detail. Transfers between these classes can be automated using triggers.
- **Cloud SQL** is a fully managed relational database to support analytics or operational activities, saving the need to manage the underlying infrastructure or tasks like backups
- **Cloud BigTable** is a petabyte-scale noSQL database service to support large analytical and operational workloads

- **Cloud Firestore** is a scalable noSQL database service that can store, sync and query data to support your mobile, web or IoT app
- There are a suite of tools for data migration and cloud set-up, including **BigQuery Data Transfer Service** and **Migrate for Compute Engine**.

Analytics

- **BigQuery** is a serverless cloud data warehouse service that integrates data from diverse services. As well as being highly scalable it has in-built machine learning features that allow you to gain insight and predictions whilst streaming large volumes of data.
- **Data Catalog** is a metadata management service that empowers organizations to quickly discover, manage, and understand all their data in Google Cloud. Powered by Google Search technology, it makes it easy to discover and organise your data.
- **Cloud Dataprep by Trifacta** is an intelligent data preparation service that allows you to visually explore, clean and prepare your data for analysis, reporting, and machine learning..

AI and machine learning

- **AutoML** is a suite of machine learning tools that make training high-quality models accessible to non-experts. It features a simple graphical user interface that can be used to train, evaluate, improve and deploy machine learning models. The tools include **AutoML Vision** and **AutoML Translation**.
- **Cloud AI Building Blocks** is a set of AI tools that can be seamlessly integrated into your applications to add sight, language, conversation, and structured data.
- **DialogFlow** is a service that allows you to build conversational interfaces - such as chatbots - and put them into production on messaging platforms, IoT devices, websites, and other applications.

Security and Compliance

Google Cloud services are built on the same secure-by-design infrastructure that is used by Google itself. Google has a policy of creating trust through transparency so you can read all about their security, privacy and compliance measures by visiting their [Trust and Security](#) centre.

Security

Google Cloud's global network of data centres feature multi-layered security and encryption at rest and in-transit by default. Security products from Google Cloud include **Cloud Security Command Center** and **Cloud Security Scanner**.

View the Google Cloud Security Showcase [Security Showcase](#).

Privacy

Google Cloud gives you complete ownership and control over your data, providing tools that allow you to determine where your data will be stored, secure it, and maintain control of who has access to your data. Google Cloud also offers multiple-factor authentication on data and services, and protects sensitive data with advanced tools like phishing-resistant Security Keys.

Read more about Google Cloud data privacy [data privacy](#).

Compliance

Google Cloud products are independently verified for security, privacy and compliance and there are a suite of resources available to help users ensure that their security and privacy settings meet regulations. There are also industry-specific resources available for financial services, government and public sector, and healthcare and life sciences compliance procedures.

Read more about Google Cloud compliance [Cloud compliance](#).

Pricing

With no up-front costs or termination fees, and a competitive, scalable pricing structure, Google Cloud's pricing structure offers many opportunities to save costs of computing infrastructure. These include:

- **Sustained-use discounts** for workloads that run for most of the month
- Discounts for services that can be interrupted (such as data mining)

The [Google Cloud Platform Pricing Calculator](#) helps you to budget and estimate costs of using Google Cloud services.

Creating an [account](#) on Google Cloud provides:

- \$300 free credit to spend on Google Cloud Platform in your first 12 months.
- access to the Always Free programme that confers limited access to many common Google Cloud resources - such as Cloud Storage and Vision AI - for free.

Beyond the free services, Google Cloud offers the choice between a pay-as-you-go (PAYG) model and committed use contracts (or a combination of the two). With either option, you are billed monthly for the services you use or reserve.

Pay as you go (PAYG)

A great option for scalability, with PAYG pricing you pay only for the Google Cloud services you use. This allows you to grow and innovate without being hit by high set-up and scaling upfront costs.

Each service is priced based on a number of components. For example, Cloud Storage pricing is based on storage space, network usage (when data is read from the service) and number of operations (events where data is added or changed).

Committed use contracts

If you are confident of the computing power and storage space you will need for your application in advance, you can save on costs by purchasing committed use contracts for your estimated upcoming usage. The discount is up to 57% for most resources like machine types or GPUs. The discount is up to 70% for memory-optimized machine types. There are no upfront payments for committed use contracts and you are still billed monthly as with PAYG.

Purchase Google Cloud services through an Google Cloud partner

As well as having the option to buy directly from Google Cloud, you can go through a Google Cloud Partner. Google Cloud partners can help you to migrate to, build on, or work in the cloud. Many Google Cloud partners are value-added resellers who can save costs by ensuring you only buy what you need, and by helping you to get set up efficiently. Other partners are managed service providers who can take care of the administration side of your cloud computing and allow you to focus on growth and innovation. You can find an APN partner [APN partner](#).

Support

All Google Cloud Platform customers have access to basic support for free, providing customer service via phone and chat for billing issues. There is comprehensive documentation available for all services, but for technical support on top you can upgrade to a Development, Production, or Business-critical support plan, from \$100 per month. Learn more about the support plans [support plans](#).

Executive view

Implementing **data science** and **AI** in your business requires vast data storage capabilities and expensive infrastructure. A cloud computing solution such as Google Cloud provides pay-as-you-go access to these systems and allows you to scale the costs as you grow, avoiding expensive set-up costs.

Google Cloud helps businesses:

- adopt AI without expensive set-up costs
- develop high-quality applications that collect and leverage data to maximise revenue

Business function leader view

Google Cloud helps teams adopt AI solutions that can drive growth and improve performance, as well as providing solutions to host applications and build improved functionality that will drive sales. Google Cloud is a cloud computing platform, which allows pay-as-you-go access to storage and computing services without expensive infrastructure set-up fees.

Signs your department should invest in this are:

- you are developing an application and need a hosting solution that is cheap to implement and will scale as you grow
- you are planning to adopt AI in your team and need access to data storage and machine learning tools at a price that will scale with your needs

KPIs you should consider measuring for this are:

- improved sales when AI features are implemented
- savings on infrastructure investment
- improved efficiency of resource management
- improved product performance

What is IBM Cloud?

Definition of IBM Cloud

From **IBM**:

IBM Cloud™ is a robust suite of advanced data and AI tools, and deep industry expertise to help you on your journey to the cloud.

IBM Cloud is a **cloud service provider**. Other cloud vendors to consider are:

- **Microsoft Azure**
- Amazon Web services (**AWS**)
- **Google Cloud**

Key technologies

There are more than 100 products available from IBM Cloud, across 16 categories. These products include:

Data storage and management

- There are several robust and durable object, block and file storage services including **Object Storage**, **File Storage**, and **IBM Cloud Backup**
- **IBM Lift** is a service that allows you to migrate your data via a CLI (command line interface)
- **IBM Db2 Warehouse on Cloud** is a full-managed, cloud **data warehouse** service
- There is a vast selection of SQL and NoSQL databases available, including **IBM Cloudant**, **IBM compose**, and **IBM Cloud Databases for PostgreSQL**

AI and machine learning

- **IBM watsonx.ai** is the AI studio for building, training, and deploying AI models — the successor to Watson Studio and Watson Machine Learning

- **IBM watsonx Assistant** is the service for building and deploying virtual assistants across channels
- IBM Watson features natural language processing services, including **IBM Watson Text to Speech**, **IBM Watson Speech to Text**, and **IBM Watson Natural Language Understanding**
- **IBM Data Refinery** is a self-service data preparation tool for data scientists, engineers, and business analysts

Analytics

- **IBM Analytics Engine** is a combined Apache Spark and Apache Hadoop service for creating analytics applications
- **IBM Streaming Analytics** is a service for analysing a broad range of streaming text, video, audio, geospatial and sensor data
- **IBM Decision Optimisation** is a self-service decision environment designed to harness optimization-based support

Security and Compliance

IBM Cloud features a suite of tools and services that ensure your data is secure on its platform. Visit the IBM Cloud Security centre [Security centre](#).

Security

All of IBM Cloud's services are protected by its scalable suite of technologies and solutions for data security, including encryption at rest and in transit. Security products from IBM Cloud include **Network Security** and **IBM Cloud Data Shield**.

Read more about IBM Cloud security [Cloud security](#).

Privacy

IBM services are designed with data privacy at their core. Data access is strictly controlled and monitored across IBM Cloud services, and you have almost 60 data centres to choose from when setting up your services, so you can stay in control of your data's location. Read more about IBM Cloud data privacy [data privacy](#).

Compliance

IBM Cloud infrastructure is approved by more than 30 compliance programmes. IBM Cloud offers a suite of resources to help you ensure compliance to these programmes when you set up your services.

Read more about IBM Cloud compliance [Cloud compliance](#).

Pricing

IBM Cloud has a competitive, scalable pricing structure with several options to support businesses as they grow. From the [IBM Cloud console](#) you can access at-a-glance cost overviews to manage spending, and the IBM Cloud [pricing calculator](#) helps you to budget and estimate costs of using IBM Cloud services.

Creating a [Lite Account](#) on IBM Cloud provides completely free access to more than 40 services on IBM Cloud, including:

- 25GB Object Storage per month
- 100MB data storage on Db2, an SQL database
- Thousands of API calls to IBM Watson AI services

IBM Cloud does not require a credit card to create an account, so you can get started right away.

Beyond the free services, IBM Cloud offers the choice between a pay-as-you-go (PAYG) model, reserved pricing, and subscription. With each option, you are billed monthly for the services you use or reserve.

Pay as you go

When you upgrade from a Lite Account to a PAYG account you receive \$200 credit - valid for 30 days - to spend on any of the full offering of more than 190 services. IBM Cloud products are charged by time, events and storage space, so your monthly bill always reflects your usage.

You can view the PAYG pricing model of any service via the [pricing list](#).

Reserved pricing

If you are confident of the computing power and storage space you will need for your application in advance, and you want to guarantee availability of virtual servers, the reserved pricing model is a great option for reliability and cost-effectiveness. In this model, you reserve the time and storage

space required for the next year or two years, and make consistent monthly payments at reduced cost.

Read more about IBM Cloud [reserved pricing](#).

Subscription pricing

Subscription pricing is available for long-term commitments to IBM Cloud services, [on request](#).

Support

All IBM Cloud accounts come with a Basic support plan, as well as documentation, resources, and tutorials to help you get started. Additional and prioritised technical support becomes available when you purchase an Advanced or Premium support plan, starting at £200 per month. Learn more about the support plans [support plans](#).

IBM Cloud in metals manufacturing

Metals manufacturers are sitting on more production data than ever – from ERP systems, weighbridges, quality inspection records, and mill certificates. IBM Cloud gives you the infrastructure to stop that data rotting in silos.

Relevant use cases for manufacturers include:

- **IBM Db2 Warehouse on Cloud:** Store and query large volumes of production, quality, and inventory data without managing your own servers.
- **IBM watsonx.ai:** Build predictive models for scrap rate reduction, demand forecasting, or equipment failure – trained on your own production data.
- **IBM Object Storage:** Retain mill certificates, compliance documents, and inspection records at scale, with enterprise-grade durability.
- **IBM Decision Optimisation:** Apply optimisation algorithms to production planning problems – the same class of technology used in GoSmarter AI's [Cutting Plans](#).

If your business is already invested in IBM's ecosystem (Maximo for asset management, for example), IBM Cloud is the natural place to add AI and analytics without a full rip-and-replace.

What is Jupyter?

Definition of Jupyter

From [Project Jupyter](#):

Project Jupyter is a non-profit, open-source project, born out of the IPython Project in 2014 as it evolved to support interactive data science and scientific computing across all programming languages. Jupyter will always be 100% open-source software, free for all to use and released under the liberal terms of the modified BSD license.

Key technologies

Jupyter is a suite of products that support data science and scientific computing, including:

- **Jupyter Notebook**, an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text.
- **JupyterHub** is a multi-user version of the notebook designed for companies, classrooms and research labs.
- **JupyterLab**, a web-based interactive development environment for Jupyter notebooks, code, and data.

Jupyter Notebooks in action

Jupyter Notebooks are the core of Jupyter. A notebook integrates code, its output (e.g. [data visualisations](#)), and additional text in markdown format. This makes notebooks ideal for presenting data science projects. Your code, comments and output are processed by Jupyter on a server - which can be anywhere - and presented as a web page in HTML format.

Jupyter notebooks are made up of cells, in which you can type code in any language, or text in markdown format.

When you open your first Jupyter notebook you will be presented with an empty cell:

Your first view of Jupyter Notebooks

When you type python code into a cell and click 'run', the code is executed by a python kernel, and its output appears below the cell.

Running code in jupyter notebooks

Jupyter Notebooks offer two types of cell: code cells and markdown cells. When you change a cell to a markdown cell, you can document what your code does in markdown format.

Switching to markdown

Running a markdown cell will apply formatting to it.

Markdown format in Jupyter

When you use packages such as Matplotlib to plot your data in a Jupyter notebook, the plot will appear beneath the code cell.

Plotting your data in Jupyter

What makes Jupyter Notebooks great for data scientists is that it supports several languages. When you create a new Jupyter notebook you choose what type of kernel you want to use. Here is a notebook running an R kernel that does the same thing as the python notebook above:

You can also use R with Jupyter notebook

Does your organisation need Jupyter?

Jupyter's collection of open-source software makes it easy for organisations to collaborate on shared data science projects and present their findings in a clear way. Notebooks can be hosted on your own hardware or in the cloud — for example using [Azure Machine Learning](#) or Docker. JupyterHub is a collaboration tool that allows teams of any size to work on Jupyter notebooks via Kubernetes or any virtual or physical machine.

Using Jupyter notebooks with Docker makes collaboration easy, because a Docker container hosting your notebook will also have all of its dependencies installed, saving the need for collaborators to install and update packages to match the notebook. When used with Git and Docker, Jupyter notebooks introduce seamless collaboration opportunities to your projects.

As well as being portable and accessible, Jupyter notebooks are easy to share across organisations and the world. Your notebooks can be converted to static HTML for public viewing.

You may need Jupyter if:

- you are undertaking a data science project and want to present your findings alongside your code

- you are undertaking a collaborative project and need to share results, thoughts and code easily
- you need multiple parties to collaborate on a project without having to install and update packages on several machines

Technical considerations

Prerequisites and Integrations

Although Jupyter is language-agnostic, it runs on Python, so you need to have Python installed to install Jupyter.

Getting started with Jupyter notebooks is as simple as hitting an install button. Jupyter Notebooks is most easily installed using the Anaconda distribution, which also installs Python, R, and a number of common data science packages such as matplotlib. You can install Anaconda from [this page](#).

Once you are using Jupyter Notebooks there are a variety of additional packages and configurations to choose from on the Project Jupyter [website](#).

Pricing

Jupyter is open source and completely free to use. Once you implement Jupyter for cloud projects, your costs will come from hiring virtual machines or sharing Docker images.

Jupyter in metals manufacturing

Jupyter Notebooks are where AI for manufacturing gets built. Before a model goes into production, someone is experimenting with it in a notebook — cleaning production data, testing algorithms, and visualising results.

For metals manufacturers, typical Jupyter use cases include:

- **Scrap rate analysis:** Pull historical production data, visualise where waste spikes occur, and prototype predictive models to catch problems before they happen.
- **Cutting optimisation research:** Test and compare algorithms for problems like the [cutting stock problem](#) — the kind of work that underpins GoSmarter AI's [Cutting Plans](#).

- **Mill certificate data extraction:** Prototype machine learning pipelines to extract structured data from PDFs before productionising them.
- **Demand forecasting:** Build and validate forecasting models on real order history before committing to a production deployment.

Jupyter is the workbench. The models that eventually run your production planning or flag quality issues almost certainly started life as a notebook.

What is Metals Inventory Management? Why Steel Is Different From Widgets

A widget is a widget. You have 500 of them in location B3. An order needs 50. You pick 50. Done.

Steel is not like that.

You might have 20 tonnes of 25mm round bar on the rack. But is it S275 or S355? Grade EN8 or EN19? Does it have 3.1 certs? Is any of it already committed to a live order? Is the cert for the last delivery missing? Was that batch from the heat number your customer specifically excluded on their purchase order?

These questions matter. And they're why managing metals inventory with generic stock-control software — or worse, a spreadsheet — doesn't work.

What is Metals Inventory Management?

Metals inventory management is the process of tracking steel (and other metals) through a business — from goods-in through processing through despatch — with sufficient specificity to support compliance, customer commitments, and operational decision-making.

That specificity includes:

- **Grade and specification** — not just "steel bar" but "S355J2+N to EN 10025-2"
- **Size and section** — diameter, wall thickness, section dimensions
- **Heat number** — the batch identifier that links physical material to its mill certificate
- **Certification status** — which EN 10204 type is held, is it on file, does it cover this material?
- **Location** — which bay, rack, or bay position in the warehouse
- **Quantity and weight** — current stock, accounting for partial picks and off-cuts
- **Commitment status** — how much is already allocated to live orders
- **Available quantity** — total stock minus committed stock = what you can actually sell

Every one of these dimensions matters. A system that can't track all of them is not adequate for metals inventory management.

Why Generic Inventory Tools Fail for Metals

Generic ERP inventory modules and warehouse management systems are built around a simple model: SKU, location, quantity. They're designed for items that are interchangeable within a product code.

This model breaks down for metals in several important ways.

No Concept of Heat Number

In a generic system, all 25mm round bar S355 might share a single product code. Every unit is assumed to be identical. But a customer purchase order might specify a particular heat number — or exclude one. A quality hold might apply to one heat but not another. You need to know which bar came from which heat.

No Certification Status

The system has no idea whether the material has a valid 3.1 cert on file, whether it's 2.2 only, or whether the cert arrived at all. If you can't see certification status in your inventory view, you can't confidently commit certified material to an order that requires it.

Stale Data

Generic systems update inventory when transactions are posted — which often happens hours or days after the physical event. Real-time inventory (or near-real-time) matters in metals because the same bar can be promised to two customers if the system doesn't reflect live allocations. In high-volume operations, that causes costly service failures.

No Off-Cut Tracking

Generic systems have no concept of an off-cut — a remnant piece produced when a bar is cut for an order. Off-cuts go back into stock with their heat number and grade intact. Without specific support for this workflow, off-cuts either disappear from the system (appearing as unaccounted stock shrinkage) or pile up in the rack as unidentified material.

Grade Substitution Logic

Sometimes a customer's order can be fulfilled with a higher-grade material than specified — but the system needs to know that. S355 can usually fulfil an S275 requirement. EN19 cannot

substitute for EN8 without engineering approval. Generic systems have no grade hierarchy logic. Someone has to make those decisions manually — and remember to document them.

The Two Flavours of Metals Inventory Problem

Most metals businesses face one of two inventory problems — or both at the same time.

Problem 1: Too Much Stock

Excess stock ties up working capital. It occupies rack space that could hold faster-moving material. It ages — some material can degrade in storage (surface corrosion, dimensional changes). And when certs go missing or become outdated, aged stock can become unshippable.

The root cause is usually a disconnect between procurement and actual demand. Orders are placed based on gut feel, historical volumes, or a supplier's minimum order quantity — not on what the cut plans actually require. The result is slow-moving lines accumulating in the warehouse.

Problem 2: Not Enough of the Right Stock

The opposite problem, but equally common. The warehouse is full — but not of what the orders require. You have 15 tonnes of 20mm bar and a customer needs 25mm. You have plenty of S275 and an urgent order for S355. You have certified stock, but the cert for the specific heat required by the customer is missing.

This causes stock-outs on live orders, emergency procurement at premium prices, and delivery delays. The problem is that "total stock" figures mask the actual availability of specific material for specific orders.

What Real-Time Visibility Actually Means

Real-time inventory visibility for metals means seeing, at any given moment:

- **Available by grade, size, and heat** — not just total weight in a category
- **Committed vs available** — what's already allocated to live orders, what's free to sell
- **Cert status** — is the certificate on file, and what type is it?
- **Location** — which bay or rack position, so picking is fast
- **Off-cuts** — with their heat number and dimensions, ready to be reused

With this visibility, a sales rep can quote accurately — and commit a delivery date — without calling the warehouse. A buyer can see what needs ordering before stock runs out. A despatch team can build a delivery with confidence that every item is present, traceable, and certified.

Without it, everyone is making decisions based on outdated information and hoping for the best.

How Certificate Data Links to Stock

In a properly managed metals inventory system, every stock item is linked to its mill test certificate data:

- The goods-in record captures the heat number from the delivery note and the certificate
- The certificate is stored against the goods-in record
- Each stock line inherits the heat number and cert reference from goods-in
- When material is cut, the off-cut carries the same heat number and cert link
- When material is picked for despatch, the despatch record carries the heat number and cert reference automatically

This chain should be maintained without manual re-entry at any stage. Every manual transcription is an opportunity for an error. Every error is a potential traceability gap.

GoSmarter Metals Manager Features

GoSmarter Metals Manager is built for this specific problem. It tracks metals by grade, size, heat number, cert status, and commitment — in real time.

Key capabilities:

- **Goods-in with cert linking** — material is booked in with its cert data attached, using data captured by **MillCert Reader**
- **Live committed vs available view** — see exactly what's free to sell at any moment
- **Off-cut tracking** — off-cuts are automatically booked back into stock with heat number and cert intact
- **Grade substitution control** — the system knows which grades can substitute for which requirements, and flags exceptions
- **Cert status visibility** — instantly see which stock lines have 3.1 certs, which have 2.2, and which are waiting for documentation

The result is an inventory system that reflects the physical reality of your warehouse — not an approximation of it from yesterday's paperwork.

FAQ

Most ERPs manage the financial and procurement side of inventory adequately. Where they fall short is the operational detail: heat number tracking, cert status, real-time commitment visibility, and off-cut management. The typical outcome is that teams run parallel spreadsheets to track the detail the ERP can't handle. GoSmarter replaces those spreadsheets with a system that's connected to the ERP for financial data but does the metals-specific inventory tracking properly.

Committed stock is material that has been allocated to a live customer order — it's earmarked, even if it hasn't left the warehouse yet. Available stock is total physical stock minus committed stock. In a busy operation, these numbers diverge significantly. If you quote a customer based on total stock without knowing how much is committed, you'll promise material that's already sold. Real-time commitment tracking prevents this.

A partial pick produces an off-cut — the remaining portion of the bar. That off-cut must be returned to stock with the original heat number and cert link, recorded at its actual remaining length. If the system doesn't support partial picks properly, the off-cut either disappears (appearing as unexplained stock shrinkage) or sits in the rack as an unidentified, untraceable piece. GoSmarter handles partial picks and off-cuts automatically.

The same principles apply: grade, size, heat number, cert, commitment status, off-cut management. But the physical characteristics are different — tube has wall thickness as an additional dimension, hollow sections are described differently, and the cutting dynamics are slightly different. GoSmarter's inventory system handles bar, section, tube, and hollow sections natively, with the appropriate dimension fields for each product type.

See Also

- [Metals Manager](#) — GoSmarter's live inventory system built for metals.
- [MillCert Reader](#) — Links cert data to inventory records automatically at goods-in.
- [Inventory Solutions](#) — How GoSmarter approaches inventory management for metals manufacturers.
- [What is Steel Traceability?](#) — Why heat number tracking through inventory is critical.
- [What is a Heat Number in Steel?](#) — The identifier that makes inventory traceability possible.
- [What is ERP in Metals Manufacturing?](#) — Why ERPs struggle with metals-specific inventory.

- [Metals Manufacturing Glossary](#) – Every key term, defined in plain English.

What is Microsoft Project Bonsai?

Microsoft Project Bonsai is a low-code AI platform for industrial systems. It speeds up AI-powered automation development and is part of Microsoft's Autonomous Systems suite.

Project Bonsai can be used to build AI-powered systems that provide guidance to operators of control industrial equipment. Other uses include optimising process variables, improving production efficiency and reducing downtime.

What is Project Bonsai?

Project Bonsai is a tool offered by Microsoft that allows developers with little or no AI experience to design and train an AI agent to do various tasks. It is a 'machine teaching' tool. These tasks could be to advise a human operator or to optimise industrial process variables to improve production efficiency.

Does your organisation need Project Bonsai?

Project Bonsai can improve the production efficiency of existing manufacturing equipment or provide guidance to human operators.

You may need Microsoft Project Bonsai if:

- You wish to improve production efficiency
- You want to reduce downtime
- Your manufacturing lines experience a loss of yield during product changeovers or shift changes
- You want a low-code platform that speeds up AI-powered automation development
- You want a tool that allows the subject matter experts to design the AI control system; not a developer who may not have any experience with the subject matter
- To have the ability to run the trained brain either in the cloud or on-premise
- You wish to use machine teaching in your manufacturing environment to leverage the skills and knowledge of your subject matter experts

Benefits

Benefits of Microsoft Project Bonsai include:

- You have the option of designing AI systems using an intuitive UI system or by using code
- The intuitive nature of Project Bonsai allows subject matter experts to design the AI control systems, not experts AI control systems who might not have any idea how the process being controlled works
- Easily understand exactly why decisions are made with a black box free AI that allows a greater understanding of the AI's decisions.
- Build once and reuse your AI in multiple projects to save time and money.
- Add safety policies to ensure that your company meets safety and compliance regulations and keep your staff safe.

Technical considerations

Prerequisites and Integrations

To get started with Microsoft Project Bonsai, you need a [Microsoft Azure](#) account.

Setting up and getting started with Microsoft Project Bonsai is quick and easy. Project Bonsai is currently in preview and requires an Azure subscription to run, there is no free tier at this time.

To get started with a Microsoft Project Bonsai project:

1. Get a free account on [Microsoft Azure](#), if you don't already have one
2. Enable Azure cloud services
3. Create a Bonsai workspace by visiting the [Azure portal](#) and creating a workspace.
4. Go to the Azure Marketplace via the tile on your [dashboard](#)
5. Search for the Bonsai service and click [Create](#)
6. Give the resource a name and choose your subscription, resource location, and resource group
7. Resource provisioning can take up to 5 minutes. Once complete, open up the [Bonsai UI - link no longer works](#) and select your subscription and workspace to complete the setup process

You must run a training simulation to provide an authentic training environment for the Bonsai brains. The simulators can be produced using a variety of common simulation platforms, like

Simulink or AnyLogic. If you use a simulation software package that is not supported then use the simulator API to integrate the custom simulation.

Another aspect that needs to be well defined before you can train a Bonsai brain is to ensure that the control problem the Brain will be tackling is well defined, with set limits to ensure safe operation of equipment.

Security and compliance

Microsoft Project Bonsai is built on Microsoft Azure security infrastructure and uses [Microsoft Azure security measures](#). It is still in preview, however, so does not have robust security and compliance documentation at this time. It is recommended to not use preview services for critical production workloads.

Pricing

At the current time, Microsoft Project Bonsai is in preview. Because of this, there is no publicly available pricing information. To get more detailed pricing information [request a quote](#).

Alternatives to Microsoft Project Bonsai

There are no real direct alternatives to Microsoft Project Bonsai that offer the same range of benefits. There are other low-code AI platforms, but there are not necessarily intended for a manufacturing environment. An alternative that should always be considered is to produce an autonomous control system in a software package like MATLAB, or using a programming language like Python, in combination with one of the AI/machine learning packages.

What is Power BI?

Definition of Power BI

From [Microsoft](#):

Power BI is a business analytics solution that lets you visualize your data and share insights across your organization, or embed them in your app or website. Connect to hundreds of data sources and bring your data to life with live dashboards and reports.

Does your organisation need Power BI?

Power BI helps teams implement [business intelligence](#) with ease. It is relatively simple to start building dashboards of interactive visualisations from a range of data sources, so you can start to see actionable insights very quickly. Being able to share reports and dashboards with select teams gives Power BI the advantage of making relevant insights available to the right people quickly.

You may need Power BI if:

- you want to make use of business intelligence for data-driven decision making
- you want to be able to share insights with different groups and teams
- you have difficulty gaining insight from data that is spread across several storage locations or comes from disparate sources
- your IT team is burdened by frequent requests for data access from different departments

Benefits of Power BI

The benefits of Power BI to your business include:

- Data insight dashboards can be shared with select teams and groups, making actionable insights into all areas of business performance available to relevant personnel
- It allows you to seamlessly connect disparate data sources to produce a holistic view of your business
- It delivers powerful [data modeling](#) and [visualisation](#)

- It empowers your teams to act on personalised insight dashboards
- The powerful search function allows you to ask questions of your data in natural language to get intelligent insights

Power BI can also be used to publish interactive data visualisations, for example by integrating them into your application for your users to explore.

While use of Power BI desktop is free, adopting shared dashboards on the Power BI service comes at a cost. You can measure your return on investment by considering the following KPIs:

- Increased sales after implementing business intelligence
- Reduced costs when insights gained from Power BI are implemented to improve efficiency
- Reduced time spent analysing data

Technological Considerations

Getting Started with Power BI

Creating a [Power BI Service](#) account and installing [Power BI Desktop](#) are both completely free.

Microsoft provides comprehensive documentation to help you get started with Power BI, but you may find that to get the most out of it you will need to provide training for the staff who use it. You should take the cost of training into consideration when deciding if Power BI is right for your business.

People who are proficient with Excel - especially Power Pivot and Power Query - will find it easier to start using Power BI than those who are not.

Integrations

One of Power BI's main strengths is the huge number of data sources to which it can connect. With more sources added monthly - and the option to develop your own Power BI connectors - whatever your data source, you can almost certainly bring your data into Power BI.

Currently supported data sources include:

- Microsoft products including Excel, Access and Sharepoint
- [Azure](#) services including Azure SQL Database, Azure SQL Data Warehouse, Azure Blob Storage, and Azure Table Storage
- Google Analytics

- Facebook
- Oracle
- MailChimp
- Salesforce
- SQL Server
- .csv and .txt files

View the full list [full list](#).

Pricing

Power BI desktop software can be installed for free, providing you with instant access to powerful data modeling and visualisation tools and connect data from many different sources. Providing tiered access to dashboards to teams requires a subscription to the Power BI service from £7.50 per user monthly.

Alternatives to Power BI

Other business intelligence tools do exist that perform similar functions to Power BI.

- **Sisense** - [link no longer works](#) boasts unmatched time-to-insight and makes it easier to embed your visualisations than Power BI does
- **ThoughtSpot** offers an AI-driven, search-based alternative to Power BI
- **Tableau** comes at a higher cost than Power BI but integrates with more data sources and can handle greater volumes of data, so might be a better option if you anticipate high volumes and don't have the time or resources to develop custom connectors for your data

What is Python?

What is Python?

Python is a popular programming language with a wide variety of applications including **data science**, web development, scientific computing, and software development.

From python.org:

Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity and code reuse. The Python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms, and can be freely distributed.

The distinguishing features of Python include:

It is a high-level language

Python is relatively easy to learn - compared to assembly languages and machine languages - because a lot of functionality such as memory addresses and call stacks are under the hood.

It is an interpreted language

Python does not need to be compiled but instead is executed line-by-line, by an interpreter. This means that errors can be left unchecked in code that does not run, but it does have the advantages of platform independence and greater flexibility compared to compiled languages.

It is dynamically typed

In languages such as Java and C#, variable types need to be declared, e.g. `int x = 1`. In Python, the type does not need to be declared (`x = 1`). If you try to do something that will throw a type

error (e.g. by attempting to add an integer to a string, `2 + "3"`), it will be caught at run-time. Dynamically typed languages allow variable types to be changed automatically, for example:

```
x = 1
# x is an integer

x = "Hello World!"
# x is now a string
```

It is an object-oriented language that also supports functional programming

Object-oriented languages allow users to define, create and edit their own types, which allows for efficient code-reuse and flexibility. Being able to create custom classes allows for a modular structure that improves readability and ease of troubleshooting.

Functional programming is a paradigm in which code is encapsulated in mathematical functions, and is supported in the Python language.

Other advantages of the Python language

Readability

Python is designed with readability in mind. To illustrate this concept, have a look at these two scripts, each of which prints the sum of 1 and 2 to the screen:

```
// Java code

public class SumOneAndTwo {

    public static void main {
        int x = 1;
        int y = 2;

        System.out.println(x+y);
        // Prints 3
    }
}
```

```
# Python code

x = 1
y = 2

print(x+y)
# Prints 3
```

It is clear from this example that Python is less verbose than Java, although its dynamic typing makes it less clear what type each variable is.

The founding philosophy of Python is summarised in the [Zen of Python](#), which among other constraints, defines Pythonic code as beautiful, explicit, and simple.

Packages

The base Python language is supplemented by a huge number of packages that offer additional functionality. [PyPi](#), the Python Package Index, currently lists 221,311 projects, so it is highly likely that someone has already done the work you need to get your own project started.

Popular Python packages for data science include:

- [Pandas](#) is data analysis and manipulation tool that makes data wrangling easier
- [NumPy](#) is a scientific computing package that provides multi-dimensional array objects and tools to work with them

- **Matplotlib** is a comprehensive library for creating static, animated, and interactive visualizations in Python
- **Scikit-learn** provides a variety of tools for predictive data analysis
- **TensorFlow** is an AI library designed for development and training of machine learning models

Popularity of Python

Python is frequently cited as the language of choice by data scientists, and its popularity continues to rise. According to The **PYPL Popularity of Programming Language Index**, which judges language popularity by the frequency of Google searches for tutorials, Python is the most popular language and its popularity has grown by 19% in the last five years (as of March 2020).

IEEE, which combines metrics from a number of sources to rank languages by popularity, listed Python as the number one programming language across all language types in its **The Top Programming Languages - link no longer works** 2019 report.

Getting started with Python

To start using Python, you need to install it. For data science, installing the Anaconda distribution is recommended. The Anaconda distribution includes Python, R, and a number of common data science packages such as Matplotlib, as well as Jupyter Notebook (see below).

You can install Anaconda from [this page](#).

Development tools

Python is an interpreted language so does not require a compiler. You can write Python code in any text editor, but a number of IDEs (Integrated Development Environments) are available that make coding easier with features such as autocomplete.

Popular IDEs for Python include:

- Visual Studio Code
- pyCharm
- Spyder
- Sublime Text
- Atom

[Jupyter Notebook](#) is built around Python, and is a popular solution for collaborative data science development in the cloud. A notebook can contain a mixture of Python (or a number of other languages) code, text in markdown format, and code outputs such as plots.

Learning Python

If you want to upskill your team or learn Python yourself, the following resources will help you.

Books

- [Python Cookbook](#), by David Beazley and Brian K. Jones
- [Python Crash Course: A Hands-On, Project-Based Introduction to Programming](#), by Eric Matthes
- [Data Science From Scratch: First Principles with Python](#), by Joel Grus

Websites

- [Learn Python](#) offers a free, step-by-step course to learn Python from scratch
- [DataCamp](#) features a large number of Python-based, interactive data science courses
- [Codecademy](#) has a number of interactive Python courses available, including some specific to data science skills
- [W3 Schools](#) offers free tutorials in a large number of programming languages

What is Rebar? Reinforcing Bar Explained for Manufacturers and Fabricators

Concrete is strong in compression. Press down on it and it holds. Pull it, bend it, or twist it and it cracks. That's its fundamental weakness.

Rebar fixes that. Steel is strong in tension. Embed steel bar in concrete and you get a composite material that handles both compression and tension. Reinforced concrete is the material that modern buildings, bridges, and infrastructure are built from.

For the manufacturers and fabricators who supply the rebar, it's also one of the most compliance-critical, traceability-intensive, cutting-optimisation-heavy products in the steel industry.

What is Rebar?

Rebar (short for reinforcing bar, also called reinforcement bar or re-bar) is deformed steel bar produced specifically for use as tensile reinforcement in concrete structures.

The "deformed" part is important. The surface of rebar is rolled with ribs, lugs, or deformations. These protrusions interlock with the concrete as it sets, creating a mechanical bond. Smooth bar has significantly poorer bond strength – which is why plain round bar is not used as structural rebar in modern construction.

Rebar is produced in diameters ranging from 6mm (typically wire mesh or tie wire) up to 50mm and beyond for large civil engineering applications. The most common diameters in general building construction are 10mm, 12mm, 16mm, 20mm, 25mm, and 32mm.

UK Rebar Standards: BS 4449 and BS 6744

In the UK, rebar is governed by two primary standards:

BS 4449 – Carbon Steel Bars

BS 4449 is the British Standard for carbon steel bars for the reinforcement of concrete. It's the default rebar standard for general construction.

The most common grade under BS 4449 is **B500B**:

- **B** indicates the bar is for reinforcing concrete
- **500** is the characteristic yield strength in MPa (500 N/mm²)
- **B** (the second letter) indicates the ductility class – Class B is standard, Class A has lower ductility (used in mesh), Class C has higher ductility for seismic applications

B500B is the standard grade for cut-and-bend fabrication throughout the UK construction market.

BS 6744 – Stainless Steel Bars

BS 6744 covers stainless steel bars for reinforcement – used in applications where corrosion resistance is critical: coastal structures, bridge decks exposed to de-icing salts, and below-ground applications in aggressive environments. Stainless rebar is significantly more expensive but offers a service life advantage in these conditions.

What is Cut-and-Bend?

Cut-and-bend is the processing operation where stock rebar (in straight lengths) is cut to the required bar marks and bent to the shapes specified in a bending schedule.

A **bending schedule** is a drawing (or set of drawings) that specifies, for each pour in a concrete element:

- The bar mark (the label for each unique bar shape)
- The bar type, diameter, and grade
- The number of bars required
- The bending dimensions and shape code
- The total length when bent

The cut-and-bend fabricator reads the bending schedule, cuts bar to the correct unbent length for each bar mark, bends the bar to the specified shape, bundles the bars by mark, tags them, and delivers them to site in time for fixing.

Timing matters. Rebar is normally delivered on a just-in-time basis – you don't want it cluttering the site before the steel fixers are ready. Delivery delays cause programme delays. Programme delays on a construction site cost real money.

Why Traceability is So Critical in Rebar

Once concrete is poured, you cannot inspect the steel inside. The concrete is permanent. The rebar is invisible.

That means the paperwork — the mill test certificate, the heat number, the traceability chain — is the only proof that the specified material went into the structure. Structural engineers, building control inspectors, and clients require documented evidence of compliance. If there's a structural failure, investigators will look for that evidence. If it doesn't exist, liability falls on whoever was responsible for maintaining it.

The stakes are high. Buildings and bridges are expected to stand for decades. People's lives depend on the structural integrity of reinforced concrete. That's not melodrama — it's why traceability in rebar is treated as seriously as it is.

What EN 10204 Type is Required for Rebar?

For structural rebar applications in the UK, **EN 10204 3.1** is the minimum acceptable certificate type. The certificate must be batch-specific — tied to the heat number of the material being used.

For some higher-specification applications (nuclear structures, certain civil engineering projects), 3.2 may be required. Check the project specification.

Operational Challenges for Rebar Manufacturers and Fabricators

Cutting Efficiency

Rebar is purchased in stock lengths — typically 6m or 12m. The bending schedule specifies the unbent lengths required for each bar mark. The fabricator's cut plan must extract those lengths from stock with minimum waste.

Bending schedules for a large project may contain hundreds of bar marks, each with different dimensions. Calculating the optimal cut plan manually — which stock lengths to use, in what combination — is impractical. Optimised cut planning software is a prerequisite for efficient rebar fabrication.

Traceability Through Bending

The heat number link must survive the cut-and-bend process. A bundle of bars cut from a specific stock length carries the heat number of that stock. When bars are bent and bundled by bar mark, the heat number must travel with them to the delivery documentation and certificate package.

If the heat number is lost during the cutting process — because someone wrote it on paper and the paper got wet, or because the system doesn't record it at the saw — the traceability chain is broken before the bars even leave the factory.

Certificate Management

A large project may require certificates for dozens of different heat numbers, delivered in multiple batches over the duration of the project. Managing that volume of documentation — ensuring the right cert goes with the right delivery, that nothing is missing when a building inspector asks — is a significant administrative task without a proper system.

Remnant Rebar

Rebar cutting always produces remnants — the short pieces left after the required bar marks have been cut. For straight bar marks, remnants can sometimes be used for shorter bar marks on other projects. But they must be accurately recorded with their heat number and diameter. Unrecorded remnants become untraced material — unusable in certified applications.

How GoSmarter Helps Rebar Manufacturers

GoSmarter MillCert Reader reads incoming rebar certificates — from any mill, in any format — and links them to the goods-in stock record by heat number.

GoSmarter Cutting Plans generates optimal cut plans from bending schedule requirements. The optimiser minimises waste across the entire order — across all bar marks and all available stock lengths simultaneously.

Midland Steel — a rebar and long products manufacturer — achieved a 50% reduction in scrap after implementing GoSmarter's Cutting Plans. That's not a small improvement. It's the difference between scrap being a background cost and scrap being a controllable variable.

The **Compliance Solutions** handle certificate packaging for deliveries — ensuring every bundle that leaves the yard is accompanied by the correct, traceable documentation.

FAQ

BS 4449 is the standard most structural engineers and building control bodies expect for general construction in Great Britain. However, rebar can also be specified to European standard EN 10080 – which is technically equivalent in terms of performance requirements. Some project specifications explicitly require one or the other. Always check the project specification before ordering. Importing rebar from outside the UK adds complexity: material must still meet the performance requirements of BS 4449 or the equivalent European standard.

A bar mark is the identifier on a bending schedule for a specific bar shape. Each unique combination of diameter, length, and bending shape gets its own bar mark. The fabricator cuts and bends each bar mark in the required quantity and bundles them separately for delivery. The bar mark label on the bundle tells the steel fixer which bars go where in the concrete element.

Yes, provided you maintain traceability. The off-cut retains the heat number and grade of the original bar. If the off-cut meets the specification requirements for the second project – same or higher grade, sufficient length for the required bar marks – it can be used. Your system must record the off-cut at the time it's produced, with its heat number and diameter, so it remains traceable. GoSmarter Metals Manager handles this automatically.

A full certificate package for a rebar delivery typically includes: the delivery note listing all bar marks delivered; the EN 10204 3.1 mill test certificates for each heat number in the delivery; a certificate transmittal sheet cross-referencing the delivery note to the certificates. Some clients or structural engineers also require a declaration of compliance with BS 4449 and, for CARES-accredited fabricators, the relevant CARES approval reference. GoSmarter can produce the certificate package automatically at despatch.

See Also

- [MillCert Reader](#) – Reads rebar certificates automatically and links them to stock.
- [Cutting Plans](#) – Generates optimal cut plans from bending schedules.
- [Compliance Solutions](#) – Certificate management for every delivery.
- [Midland Steel Case Study](#) – 50% scrap reduction in a rebar operation.
- [What is EN 10204?](#) – The certificate types explained. 3.1 is the minimum for structural rebar.
- [What are Long Products in Steel?](#) – Where rebar fits in the broader long products family.
- [What is Steel Traceability?](#) – Why the paper trail matters when the concrete is poured.
- [Metals Manufacturing Glossary](#) – Every key term, defined in plain English.

What is Steel Traceability? From Mill to Customer

Imagine a structural beam fails in a building. The engineer needs to know what steel it was made of, who made it, and whether it met specification. The insurance company needs the same information. So does the regulator.

If you were in the supply chain, you need to answer those questions precisely. Not approximately. Not "we think it was probably S355 from our usual supplier." Precisely.

That ability to answer precisely — at any point in time, for any piece of material — is what **steel traceability** means. It's not a bureaucratic exercise. It's the paper trail that protects everyone in the supply chain when something goes wrong.

What is Steel Traceability?

Steel traceability is the ability to track a piece of metal — at any stage of its journey through the supply chain — back to its original source and documentation.

Full traceability means you can answer all of the following:

- What grade is this material?
- What heat number does it belong to?
- Which mill produced it, and when?
- What are its chemical composition and mechanical properties?
- What EN 10204 certificate covers it, and of which type?
- Which purchase order did it arrive on?
- Which customer orders has it (or will it) fulfil?
- Where in the warehouse is it right now?

The ability to answer all of those questions, for any stock item at any time, is what genuine traceability looks like in practice.

Why Steel Traceability is Required

ISO 9001 and Quality Management

ISO 9001 – the international quality management standard – requires organisations to maintain documented information that demonstrates materials meet specified requirements. For metals manufacturers, this means maintaining mill certificates and being able to link them to the material they cover.

An auditor checking ISO 9001 compliance will ask to see the traceability records for a sample of stock. If you can't produce them, you have a non-conformance. Repeat failures result in loss of accreditation – which in many supply chains means loss of business.

Construction Regulations and CE/UKCA Marking

Structural steel used in construction in the UK and Europe must carry appropriate conformity marking (UKCA in Great Britain, CE in Northern Ireland and mainland Europe). This requires traceable, documented evidence that the material meets the specified product standard.

For steel fabricators, this means every piece of steel in a structure must be traceable to a mill test certificate. The certificate must be retained – often for the life of the structure.

Safety-Critical Applications

In aerospace, nuclear, oil and gas, and pressure vessel manufacturing, traceability to heat number is a regulatory requirement. The specification – and the consequences of failure – are severe enough that "we lost the paperwork" is not an acceptable answer.

In these industries, traceability isn't just about compliance. It's about being able to perform effective recalls when something goes wrong. If a batch of steel with incorrect chemistry was used in pressure pipework, you need to know exactly which spools, in which installations, are at risk. You can only do that with complete heat-number-level traceability.

Customer and Commercial Requirements

Even outside regulated industries, customers increasingly require documented traceability as a commercial condition of purchase. Large contractors, automotive OEMs, and energy companies require their supply chains to maintain material traceability as a quality condition.

Failing to provide the required documentation is a breach of those commercial terms.

What Happens When Traceability Breaks

Traceability gaps don't announce themselves at the time they occur. They tend to surface later — at the worst possible moment.

Audit failure. An ISO 9001 or customer-specific audit reveals that certificates cannot be matched to stock items. The auditor raises a non-conformance. The business has a defined period to implement corrective action.

Delivery hold. A customer asks for the mill certificate for a delivery. You can't find it, or the cert you find doesn't match the heat number on the delivery note. The payment is held. The relationship is damaged.

Product liability. Something in a structure or product fails. Investigators trace the supply chain. If you can't demonstrate that the material you supplied met specification and that you held the appropriate documentation, you're exposed.

Internal rework. Material in the warehouse can't be identified — the bundle tags have fallen off, the heat number wasn't recorded at goods-in, and three certs are plausible candidates. Someone has to verify the material before it can be used. Hours lost.

The Key Data Points in a Traceability Chain

Full traceability in metals manufacturing connects these data points in an unbroken chain:

Mill heat → Heat number assigned at the steelmaking furnace

Mill test certificate → Documents the chemical and mechanical properties of the heat

Goods-in record → Records the arrival, links the delivery to the purchase order and the heat number

Stock record → Tracks the material in the warehouse — location, quantity, grade, heat number, cert status

Picking and cutting record → Records what was used, when, in what quantities, and what off-cuts remained

Despatch record → Links the finished goods to the customer order, carrying the heat number and cert reference

Customer documentation → The delivery note and certificate provided to the customer, completing the chain

Every link in that chain must be intact. If any link is missing, the chain is broken – and you can't prove what you claim to know about the material.

How GoSmarter Maintains Traceability Automatically

Manual traceability – writing heat numbers in ledgers, filing PDFs in folders, hoping someone updated the spreadsheet – is fragile. Every handoff is an opportunity for a link to break.

GoSmarter MillCert Reader captures the heat number, grade, cert type, and certificate data automatically at goods-in. The cert links directly to the stock record.

GoSmarter Metals Manager maintains the heat number link through every subsequent operation: cuts, partial allocations, off-cut returns, location moves, and order despatch. The link never breaks because no one has to remember to maintain it.

When a customer asks for the certificate for a delivery, the system produces it instantly – with the heat number, cert data, and despatch reference all tied together. Audit-ready documentation, without the admin overhead.

FAQ

It depends on your industry and the application. In construction, records may need to be retained for the life of the structure – potentially 10–15 years or more. ISO 9001 requires retention for the period specified in your quality management system. In regulated industries, specific legislation may impose requirements. A practical rule of thumb: retain records longer than you think you need to. Digital records are cheap to store. Failed audits and product liability claims are not.

All certified steel should have traceable documentation – the EN 10204 certificate and the heat number that links it to the material. In practice, the rigour of traceability requirements scales with the application. General engineering and construction require 3.1 traceability as a minimum. Safety-critical industries require more. Even in lower-risk applications, maintaining traceability protects you commercially and reduces the risk of liability if something goes wrong downstream.

Quality control is the process of checking that material meets specification – testing, inspection, measurement. Traceability is the documentation of those checks and the evidence that a specific piece of material meets a specific specification. You can have quality control without traceability (you checked, but you didn't record it properly). You can also have traceability without good quality control (you have paperwork, but the testing was inadequate). You need both.

Yes – and you must, if those off-cuts are going to be used in certified applications. An off-cut retains the heat number and cert of the bar it came from. If your system records off-cuts

accurately when they're returned to stock, they remain fully traceable. If the off-cut is just thrown in a bin with no record, it becomes untraced material — and it can't be used in any certified application. GoSmarter Metals Manager tracks off-cuts automatically.

See Also

- [MillCert Reader](#) — Captures mill certificate data automatically at goods-in.
- [Metals Manager](#) — Maintains heat number traceability through every stock movement.
- [Compliance Solutions](#) — How GoSmarter handles compliance documentation from mill to customer.
- [Mill Certificate Automation Hub](#) — The complete guide to automating the cert and traceability process.
- [What is a Mill Test Certificate?](#) — What an MTC contains and why it matters.
- [What is a Heat Number in Steel?](#) — The unique identifier at the heart of traceability.
- [What is EN 10204?](#) — The European standard that defines certificate types.
- [Metals Manufacturing Glossary](#) — Every key term, defined in plain English.

What is Yield Rate in Steel Manufacturing? Formula, Benchmarks, and How to Improve It

In most industries, margin improvement means selling more or spending less on overheads. In metals manufacturing, there's a third lever that many businesses underuse: stop throwing raw material in the skip.

Yield rate is the measure of how well you're using the material you buy. In steel distribution and long products manufacturing, where raw material typically accounts for 60–80% of production cost, yield is one of the most direct paths to profitability.

A 1% improvement in yield isn't just a metric win. On meaningful volumes, it's real money recovered from what was previously scrap.

What is Yield Rate?

Yield rate is the percentage of input material that becomes usable, saleable output.

The Formula

$$\text{Yield Rate (\%)} = (\text{Usable Output} / \text{Total Input}) \times 100$$

So if you receive 100 tonnes of steel bar and ship 94 tonnes of finished cut product, your yield rate is 94%.

The remaining 6% — the 6 tonnes that didn't become product — is lost as:

- **Saw scrap** (the kerf from every cut)
- **End crops** (the first cut from a bar to square the end)
- **Off-cuts** that are too short to be useful and get scrapped
- **Process losses** (scale, oxidation, handling damage)
- **Non-conforming material** (failed inspection, incorrect grade)

Why Yield Rate Matters

Material cost is typically 60–80% of total production cost in steel manufacturing. That proportion varies by product type and value-add, but the principle holds: the steel is the biggest single cost in the process.

Everything else – labour, energy, overheads – operates on top of that material cost. Improving yield doesn't just reduce scrap disposal costs. It means you get more saleable product from the same raw material spend.

A Financial Example

Suppose you process 1,000 tonnes of steel bar per month. Material costs £600 per tonne. Total material spend: £600,000 per month.

| Yield Rate | Usable Output | Material Lost | Value Lost |
|------------|---------------|---------------|---------------|
| 97% | 970 tonnes | 30 tonnes | £18,000/month |
| 96% | 960 tonnes | 40 tonnes | £24,000/month |
| 95% | 950 tonnes | 50 tonnes | £30,000/month |

The difference between 97% and 96% yield is 10 tonnes of steel per month – worth £6,000. Every month. £72,000 per year.

Now factor in disposal costs (skip hire, transport, processing) and you add another £30–60 per tonne on top of the lost material value. The actual cost of poor yield is higher than the material alone.

Typical Yield Rates by Material Type

Benchmarks vary significantly by product type, order mix, and the nature of the processing operation.

Steel Bar (Cut to Length)

Well-optimised operations typically achieve 96–98% yield on standard cut-to-length work. Anything below 95% consistently suggests significant room for improvement in cut planning. Operations with complex multi-length order mixes and high remnant ratios may sit lower.

Structural Sections and Hollow Sections

Similar range to bar: 95–97% in well-run operations. Section products tend to produce slightly more end-crop waste because of the more complex cross-section and the need for cleaner cuts.

Rebar (Cut and Bend)

Rebar cut-and-bend operations can achieve 97–99% on straightforward schedules. Complex bending schedules with multiple bar marks and small quantities drive up waste. Optimised scheduling against standard-length stock is critical.

Mixed Operations

Service centres handling diverse order books across multiple product types will typically see weighted average yields in the 93–97% range. The wider the variation in order lengths, the harder it is to achieve consistently high yield without optimisation.

Main Causes of Yield Loss

Understanding where yield goes is the first step to recovering it.

Poor Cut Planning

The biggest single driver of avoidable waste. When cut plans are built manually — by instinct rather than optimisation — the combination of cuts chosen is rarely the most efficient. Small inefficiencies across hundreds of bars per month add up quickly.

Excessive Allowances

Operators sometimes cut pieces slightly longer than required as a safety margin against measurement errors. This is understandable, but it adds up. If every piece is cut 5mm long, across a thousand cuts per day, you're losing material that goes to waste when the customer cuts to final dimension.

Off-Cut Accumulation

Off-cuts — the remnant pieces left after cutting orders — need to be tracked and reused. If they're not recorded accurately in the system, they pile up in the rack until someone doesn't know what

they are, writes them off as scrap, and disposes of them. Usable material that was never allocated to an order.

Incorrect Ordering

Ordering the wrong stock length for the order mix is a common problem when cut planning and procurement aren't connected. If you consistently order 6-metre bar when your orders require 2.5-metre pieces, you're always going to have significant remnants.

Non-Conforming Material

Receiving steel that doesn't meet specification — or discovering non-conformances during production — results in material write-offs. Better incoming inspection reduces this cause of yield loss.

How GoSmarter Improves Yield

GoSmarter Cutting Plans directly attacks the largest cause of yield loss: suboptimal cut planning.

The optimiser calculates the cut plan that minimises waste across the entire current order book — simultaneously. Not sequentially. Not by instinct. By computing the combination of cuts that gets the most product from the least material.

In practice, this means:

- **More efficient use of each bar** — fewer offcuts, smaller end waste
- **Better use of existing remnants** — the system knows what's in the rack and uses it before opening new stock
- **Reduced excess stock ordering** — procurement is informed by actual cut plan requirements
- **Automatic off-cut tracking** — offcuts go back into inventory with traceability intact, ready to be reused

Midland Steel reduced scrap by 50% after implementing Cutting Plans. Their yield improvement wasn't marginal — it fundamentally changed the unit economics of their operation.

How to Measure and Track Your Yield

You can't improve what you don't measure. Start here:

1. **Define your measurement boundary.** Is yield calculated per order? Per production shift? Per month? Pick a consistent time period and stick to it.
2. **Record actual input weight.** Weigh material in, or use the purchase weight from the delivery note.
3. **Record usable output.** This is the weight shipped to customers or transferred to finished goods.
4. **Record scrap.** Weigh it when it goes to the skip. This closes the loop and validates your input/output figures.
5. **Calculate yield by product type.** Aggregate yield hides where the losses are. Bar may be at 97%; a complex section product may be at 91%. Knowing the difference tells you where to focus.

FAQ

It depends heavily on product type, order mix, and processing complexity. For straightforward cut-to-length bar, 96–98% is achievable with good cut planning. For complex mixed operations, 93–95% may be more realistic. The most important benchmark is your own historical performance: the question to ask is not "are we at industry average?" but "are we improving, and where is the waste going?"

Yes, surprisingly so. A typical cold saw kerf is 3–5mm. A single cut might waste just a few cubic centimetres of steel. But across 500 cuts per shift, across multiple shifts, across a working year — it adds up to several tonnes. In high-specification alloy steel, even a few extra cuts per bar can represent meaningful material cost. Reducing the number of cuts (through better cut planning) reduces kerf waste.

They're two sides of the same coin. Yield rate is the percentage of input that becomes useful output. Scrap rate is the percentage of input that doesn't. If your yield rate is 96%, your scrap rate is 4%. Improving yield by 1 percentage point reduces scrap by 1 percentage point. The same improvement, framed differently. Internally, tracking both can be useful: scrap rate makes the cost of waste visible; yield rate frames the improvement opportunity.

See Also

- [Cutting Plans](#) – The GoSmarter tool that reduces scrap by improving cut plan efficiency.
- [Scrap, Waste & Yield Optimisation Hub](#) – The full guide to improving yield in metals manufacturing.
- [Production Planning Solutions](#) – How GoSmarter supports production planning decisions.
- [Midland Steel Case Study](#) – 50% scrap reduction in practice.
- [What is Cutting Optimisation?](#) – The maths behind minimising waste on the saw.
- [What are Long Products in Steel?](#) – The material world where yield improvement matters most.
- [Metals Manufacturing Glossary](#) – Every key term, defined in plain English.

What is a 3.1 Certificate? EN 10204 Types Explained

What Is a 3.1 Certificate?

A 3.1 certificate is an inspection certificate validated by the manufacturer's authorised inspector for your specific batch of steel. The heat number, grade, and mechanical properties are tied to the physical material you received. It is the most common certificate type required in steel distribution and construction supply chains. If a purchase order says "3.1 certs required," this is the document they mean.

Here's why that matters in practice.

Your customer's purchase order says "3.1 certs required." Your supplier sends a 2.2. Your despatch team doesn't know the difference. The shipment gets held up, the customer is furious, and someone spends three hours on the phone to the mill.

This happens every day in metals distribution. And it happens because EN 10204 is one of those standards that everyone references and almost no one explains.

Here's the plain-English version.

What is EN 10204?

EN 10204 is the European standard that defines the types of inspection documents (material test certificates) that metal producers and suppliers can issue to their customers.

It was published by the European Committee for Standardisation (CEN). In the UK, it's adopted as BS EN 10204. The current edition is EN 10204:2004.

The standard doesn't tell you what the steel has to be made of. That's the job of product standards like EN 10025 (structural steel) or EN 10210 (hollow sections). EN 10204 tells you what document the manufacturer must provide to prove the metal meets that product standard.

Think of it as the framework for paperwork. It defines the chain of evidence.

The Four Certificate Types

EN 10204 defines four types of document. They're numbered 2.1, 2.2, 3.1, and 3.2. The higher the number, the more rigorous the verification.

Type 2.1 – Declaration of Compliance

The simplest type. The manufacturer issues a written statement that the product meets the specified requirements.

No test results are included. No inspector signs off on your specific batch. It's essentially a declaration on headed paper that says "yes, this meets the spec."

When is it used? Very rarely in metals manufacturing. Acceptable only for non-critical, low-specification applications where no mechanical or chemical data is needed.

Type 2.2 – Test Report

A step up from 2.1. This document includes actual test results – chemical composition, mechanical properties – but the key point is that those tests were carried out on similar products, not necessarily your specific batch.

The test results come from the same production run, but they're not tied to your exact heat number. The manufacturer's representative issues the document based on non-specific inspection.

Where is it used? Some commodity material, lower-specification applications, and situations where the customer isn't in a regulated supply chain. But be careful: if your customer specifies EN 10204 without naming a type, some will argue that 2.2 isn't sufficient.

Type 3.1 – Inspection Certificate (Authorised by Manufacturer)

This is the workhorse of steel distribution. Most structural steel, engineering steel, and fabricated components require a Type 3.1 certificate as a minimum.

A 3.1 certificate is validated and signed by the manufacturer's own authorised inspection representative – a person designated for that role, independent from the production department. The test results are specific to your batch, tied to the heat number on the certificate.

This is the document that travels with the steel through the supply chain. The heat number links the physical material to the certificate. The certificate links the material to its properties. That chain is what makes traceability possible.

Type 3.2 — Inspection Certificate (Authorised by Manufacturer and Independent Inspector)

The most rigorous type. Everything in a 3.1, plus a co-signature from an independent third-party inspector — someone not employed by the manufacturer.

Type 3.2 is required in highly regulated applications:

- Nuclear power generation
- Pressure vessels and pipework (PED compliance)
- Offshore oil and gas
- Some defence contracts
- Certain aerospace applications

It's more expensive. It takes longer to produce. Source it only when the application genuinely requires it. Specifying 3.2 unnecessarily drives up cost and lead time without any practical benefit.

Why EN 10204 Matters for Your Business

It's a contractual requirement

When a customer specifies EN 10204 3.1 on a purchase order, they are making it a condition of the contract. Delivering material with a 2.2 certificate isn't a minor paperwork issue — it's a breach.

Worse, if the material ends up in a critical application and something goes wrong, the absence of the correct documentation exposes everyone in the supply chain to liability.

It's an audit trigger

ISO 9001-accredited businesses are required to maintain documented evidence that materials meet specifications. EN 10204 certificates are a primary source of that evidence. Auditors ask for them. Customers ask for them during supplier assessments. If you can't produce them, you fail the audit.

It drives operational chaos when certificates are missing

This is the practical day-to-day problem. Certificates arrive as PDFs. Some are scanned at angles. Some are in German. Someone downloads them into a shared folder called "certs" with no

consistent naming. Then someone needs to find the cert for a specific heat number from three months ago and spends four hours searching.

Multiply that across hundreds of deliveries per month and you've got a significant operational overhead — and a compliance risk whenever something can't be found.

Common Mistakes Metals Manufacturers Make

Assuming 2.2 is fine when 3.1 was specified. Read the purchase order. Every time.

Filing certificates separately from stock records. If the cert isn't linked to the specific stock item, finding it later is a nightmare.

Not checking the cert before booking goods in. By the time you discover the cert is the wrong type, the material may already be in production.

Accepting faxed or photocopied certs. For Type 3.2 in regulated industries, the original signatures matter. Know what your customer actually needs.

Failing to archive certs for the retention period. In some industries, you need to retain certs for the life of the product. In construction, that can be 10–15 years.

How GoSmarter Automates EN 10204 Management

GoSmarter MillCert Reader reads mill certificates automatically — regardless of format, layout, or language — and extracts the key data: heat number, grade, EN 10204 type, chemical composition, mechanical properties, and supplier.

That data is stored against the right stock record. When you need to find a 3.1 cert for a specific heat number, it takes seconds, not hours.

The system flags when incoming certificates don't match what the purchase order requires. If the PO specifies 3.1 and the cert is a 2.2, you know before the material goes into stock — not when your customer calls to complain.

FAQ

A 3.1 certificate is a document from the steel mill confirming that your specific batch of steel was tested and passed. It's signed by an authorised inspector at the mill. The heat number on the cert

matches the physical steel you received. If a purchase order says "3.1 certs required," this is the document they mean — not a 2.2, not a declaration, not a photocopied test report.

A 2.2 test report contains test results from the production run, but those tests weren't carried out on your specific batch. A 3.1 inspection certificate is validated by the manufacturer's authorised inspector for your exact heat number. If your customer's purchase order specifies 3.1, a 2.2 is not acceptable. Check the PO every time.

Not in itself — EN 10204 is a standard, not a law. But contractual requirements and industry regulations often make it mandatory. In construction, the Building Regulations and CE/UKCA marking requirements create an effective obligation to hold appropriate certificates. In regulated industries like nuclear and pressure vessels, the specific legislation may require 3.2 certification. The practical answer: if your customer specifies it, it's mandatory for that contract.

EN 10204 originated in the steel industry but is routinely applied to other metals — aluminium, copper, stainless steel, and alloys. The types (2.1 through 3.2) carry the same meaning. Some non-ferrous product standards may reference their own inspection document requirements, but EN 10204 is widely used across the metals industry regardless of material.

This depends on your industry and the application of the material. For structural steelwork in construction, retention periods of 10–15 years are common, aligned with the life of the structure. ISO 9001 requires you to retain documented information for the period specified in your quality management system. In regulated industries, specific legislation may impose longer requirements. When in doubt, keep them longer than you think you need to.

See Also

- [MillCert Reader](#) — Reads EN 10204 certificates automatically. Every format. Every language.
- [Steel Distributor Software](#) — how GoSmarter manages EN 10204 certificate workflows end to end for steel stockholders and distributors
- [Compliance Solutions](#) — How GoSmarter handles compliance documentation end to end.
- [Mill Certificate Automation Hub](#) — The complete guide to automating the certificate process.
- [What is a Mill Test Certificate?](#) — What an MTC actually contains, and why it matters.
- [What is a Heat Number in Steel?](#) — The unique identifier that ties a cert to a piece of steel.
- [What is Steel Traceability?](#) — The full chain from mill to customer.
- [Metals Manufacturing Glossary](#) — Every key term, defined in plain English.

What is a Heat Number in Steel? Traceability From the Mill

Somewhere on every piece of steel you stock, there is a number. It might be stamped on the end of the bar. It might be stencilled on a bundle tag. It might be printed in tiny type on a label that someone has helpfully peeled off.

That number is the heat number. And it is the most important piece of information on your shop floor.

Lose it, and your traceability chain is broken. Find it, and you can prove — to any customer, any auditor, any regulator — exactly what that piece of steel is and where it came from.

What is a Heat?

In steel production, a **heat** is a single melt cycle. Raw materials — scrap steel, pig iron, alloys — are loaded into an electric arc furnace or basic oxygen furnace. The furnace melts everything together into liquid steel. That entire charge is called a heat.

One heat produces a defined quantity of liquid steel — typically anywhere from 50 to 300 tonnes, depending on the furnace. The liquid steel is cast into semi-finished forms: billets, blooms, or slabs. All of those semi-finished pieces share the same chemistry because they came from the same melt.

That shared chemistry is why the heat matters. Every tonne of steel from a single heat has the same chemical composition. When the mill tests one sample from the heat, those results apply to all the material from that heat.

What is a Heat Number?

A **heat number** is the unique alphanumeric identifier assigned by the steel mill to a specific heat. It's the reference that ties every piece of material from that melt to its quality documentation.

Heat numbers are typically 4–8 characters: letters, numbers, or a combination. The format varies by mill and country. There's no universal standard for how they look — but there is a universal requirement for what they do.

Every piece of finished steel product (bar, plate, tube, section, rebar) that comes from a heat must be traceable back to that heat number. The heat number is stamped, stencilled, marked, or tagged on the material at the mill.

The mill test certificate for that heat carries the same number. The chemical analysis, mechanical properties, and grade validation on the certificate apply to all material from that heat.

Why Heat Numbers Matter for Traceability

Traceability in metals means being able to prove the full chain: what is this material, where did it come from, and what documentation backs it up?

The heat number is the critical link in that chain. It connects:

- The **physical material** (the bar, tube, or section in your warehouse)
- The **mill test certificate** (which contains the test data)
- The **purchase order** (against which the material was bought)
- The **delivery note** (which records the goods-in event)
- The **customer's order** (which the material was used to fulfil)

Break any of those links, and you have a traceability gap. Traceability gaps cause failed audits, customer claims, and — in safety-critical applications — potential liability.

When Heat Numbers Matter Most

In everyday steel distribution, heat numbers are important but often treated as background information. In certain situations, they become critical:

Product recalls or non-conformances. If a batch of steel turns out to have incorrect chemistry, the heat number is how you identify every piece of that material in the supply chain and recall it before it's used.

Structural and construction applications. Building regulations and structural engineers require traceability to the original mill documentation. The heat number is the reference point.

Rebar in concrete. Once the concrete is poured, you cannot inspect the steel. The heat number on the certificate is the only proof that the right material went into the structure.

Pressure vessels and pipework. Regulated by the Pressure Equipment Directive (PED) and similar legislation. Traceability to heat number is a legal requirement.

Aerospace and defence supply chains. Full material traceability is non-negotiable. Heat numbers must be maintained throughout manufacturing, machining, and assembly.

How Heat Numbers Appear on Mill Certificates

The mill test certificate will prominently reference the heat number — usually in the header or identification section of the document. A single certificate may cover multiple product lines (different sizes or lengths) but they all carry the same heat number if they came from the same melt.

Some certs list multiple heat numbers if the order was fulfilled from more than one heat. In that case, the document will typically show which product quantities correspond to which heat.

This is important for goods-in checks. If a delivery contains material from two different heats, those are two separate traceability records — even if the material looks identical and carries the same grade specification.

What Happens When Heat Numbers Are Lost or Mistyped

This is where things go wrong. And it happens more often than most manufacturers admit.

Sticky note failure. Someone writes the heat number on a sticky note attached to the bundle. The sticky note falls off. No one can remember which cert goes with which stack.

Manual transcription errors. A heat number like "H4827B" gets typed as "H4872B." The systems don't match. The cert can't be found. The material is effectively untraced.

Separated material. A large delivery is split across two storage locations. One lot gets its cert filed correctly. The other lot's cert ends up in the wrong pile.

Off-cut orphans. Stock is cut for an order. The remnant goes back into the rack without its heat number recorded. Next time someone picks it, no one knows what it is.

Each of these sounds trivial. Multiply them across thousands of stock lines and hundreds of deliveries per month, and you've got a serious compliance exposure. And when an auditor asks you to prove the traceability of a specific batch, "we think it's probably fine" is not an acceptable answer.

How GoSmarter Tracks Heat Numbers Automatically

GoSmarter MillCert Reader extracts the heat number from incoming mill certificates automatically — regardless of the certificate format or layout. That heat number links directly to the stock record created at goods-in.

GoSmarter Metals Manager maintains the heat number link through every subsequent operation: partial picks, off-cuts returned to stock, material moved between locations, and allocations to customer orders.

When material leaves the door, the despatch documentation carries the heat number and certificate reference automatically. The traceability chain is intact, without anyone having to remember to write it down.

FAQ

In steel, heat number and batch number are often used interchangeably, but they're not quite the same thing. A heat number specifically refers to the melt batch — the unique identifier from the steelmaking process. A batch number might be used more broadly by a distributor to reference a goods-in event that could include material from multiple heats. For traceability purposes, the heat number is the more precise and important reference.

Yes — and this is common. A single heat of liquid steel can be cast and rolled into multiple product forms: bar in different diameters, angles, channels, and sections. All of those products share the same heat number because they came from the same melt. The mill test certificate covers all of them. When you receive a mixed delivery from one heat, one certificate covers all the material.

Don't accept it — or quarantine it until the supplier provides the heat number and certificate. Material without a traceable heat number cannot be certified for any application requiring compliance documentation. Contact the supplier immediately. If the material is genuinely from a traceable heat, the mill or supplier can provide the original documentation. If they can't, treat the material as non-conforming.

The same principle applies regardless of where the steel was made. International mills assign heat numbers in their own format, and the mill test certificates carry those numbers. The traceability chain works the same way. Where it gets complex is format and language: certificates from mills in China, Turkey, or Eastern Europe may use different layouts and languages. GoSmarter MillCert Reader handles international certificate formats automatically.

See Also

- [MillCert Reader](#) — Reads heat numbers from any certificate format. Links them to stock automatically.
- [Metals Manager](#) — Tracks heat numbers through every stock movement.
- [Mill Certificate Automation Hub](#) — The complete guide to automating your cert and traceability process.
- [What is a Mill Test Certificate?](#) — What an MTC contains and why it matters.
- [What is EN 10204?](#) — The European standard that defines certificate types and requirements.
- [What is Steel Traceability?](#) — The full chain from mill heat to customer delivery.
- [Metals Manufacturing Glossary](#) — Every key term, defined in plain English.

What is a Mill Test Certificate? A Plain-English Guide

Your customer is on the phone. They need the cert for the steel they bought from you six weeks ago. You know it arrived — you watched it come off the lorry. But finding it? That's another matter.

You've checked the shared folder. You've searched the email archive. You've asked the goods-in team. And somewhere in a pile of PDFs named things like "cert_scan_final_v2_ACTUAL.pdf" is the document your customer needs.

This is the daily reality of mill certificate management for most metals manufacturers. Let's fix that — starting with understanding exactly what a mill test certificate is.

What is a Mill Test Certificate?

A **mill test certificate** (MTC) — also called a material test certificate, test certificate, or mill cert — is the document issued by a metal producer that certifies a specific batch of material meets defined specifications.

It's the metal's birth certificate and its academic transcript rolled into one. It proves where the material came from, what it's made of, and how it performed in testing.

Every batch of steel, aluminium, stainless steel, or other certified metal that enters your supply chain should come with one. Without it, you can't prove the material is what it says it is.

What Does a Mill Test Certificate Contain?

Every MTC is slightly different in layout — different mills use different formats. But the core data is consistent. Here's what you should expect to find:

Supplier and Mill Information

- Name and address of the producing mill
- Works order number or internal production reference
- Date of issue

Material Identification

- **Heat number** — the unique identifier for the melt batch. This is the most critical piece of traceability data on the entire document.
- Material grade (e.g., S355J2, Grade 8, 316L stainless)
- Product standard (e.g., EN 10025-2, ASTM A36, BS 4449)
- Product form (bar, plate, tube, section, coil)
- Dimensions and quantity

Chemical Composition

The actual chemical analysis of the heat. Elements listed will vary by grade and product standard but typically include:

- Carbon (C)
- Manganese (Mn)
- Silicon (Si)
- Phosphorus (P)
- Sulphur (S)
- Chromium, Nickel, Molybdenum (for stainless and alloy steels)

The analysis must fall within the limits set by the product standard. If it doesn't, the certificate isn't valid for that grade.

Mechanical Properties

Test results from physical testing of the material:

- **Tensile strength** — the maximum stress before fracture (MPa)
- **Yield strength** — the stress at which permanent deformation begins (MPa)
- **Elongation** — how much the material stretches before failure (%)
- **Impact toughness** — Charpy V-notch values at a specified temperature (Joules)

These must also meet the minimum requirements defined in the product standard.

Certificate Type and Authorisation

The certificate will identify which EN 10204 type it is — 2.1, 2.2, 3.1, or 3.2. For 3.1 and 3.2 certificates, it will carry the signature and stamp of the authorised inspection representative.

Who Issues a Mill Test Certificate?

The steel mill or primary metal producer issues the original MTC at the point of manufacture. The document is specific to the batch (heat) produced.

In some supply chains, there are intermediaries – stockholders, service centres, distributors – between the mill and the end customer. The original MTC travels through the chain. It is not reissued by intermediaries. You pass on the original (or a copy confirmed as true to the original) to your customer.

This matters. If someone in the chain issues their own "certificate" rather than passing on the mill's original, that document has different legal and commercial status. Know the difference.

Who Needs Mill Test Certificates?

The short answer: anyone who buys or uses certified metal.

- **Steel stockholders and distributors** – to prove to customers that the material they've purchased meets specification
- **Fabricators and manufacturers** – to demonstrate to end customers and building control that the steel used in a structure or product meets the required standard
- **Construction contractors** – to satisfy building regulations and structural engineers
- **Aerospace and automotive suppliers** – to meet the rigorous traceability requirements of regulated supply chains
- **Quality managers** – to maintain ISO 9001 compliance and pass audits

In construction alone, it's not uncommon for a project to require certificates for thousands of individual heat numbers. That's a serious document management challenge.

What Happens When a Mill Certificate Goes Missing?

Nothing good.

At best: you spend hours searching for it, delaying despatch and annoying the customer.

At worst: you can't prove the material meets the specification. The customer rejects the delivery. If the material is already installed or incorporated into a product, you may face a claim, a recall, or a compliance failure.

In regulated supply chains – structural steel, rebar in concrete, pressure vessels – operating without valid traceability documentation is a serious legal and commercial risk. The phrase "it's definitely fine" is not a substitute for a 3.1 cert.

The Difference Between 2.1, 2.2, 3.1, and 3.2 Certificates

These are the four types defined by EN 10204, the European standard for material test documents:

| Type | What it contains | Who signs it | Typical use |
|------|---|--------------------------------------|---------------------------------------|
| 2.1 | Declaration only – no test data | Manufacturer | Non-critical, low-spec applications |
| 2.2 | Test results from the production run – not batch-specific | Manufacturer | Lower-spec commodity materials |
| 3.1 | Batch-specific test results, tied to your heat number | Manufacturer's authorised inspector | Most structural and engineering steel |
| 3.2 | Same as 3.1, plus independent third-party co-signature | Manufacturer + independent inspector | Nuclear, pressure vessels, offshore |

When a purchase order specifies "3.1 certs," a 2.2 is not acceptable. Full stop.

How GoSmarter Automates Mill Certificate Management

GoSmarter MillCert Reader extracts the critical data from MTCs automatically – heat number, grade, certificate type, chemical composition, mechanical properties – regardless of the format or layout the mill uses.

That data links directly to the stock record. When you need to find the cert for a specific heat, it takes seconds. When a customer asks for documentation, you can produce it immediately – without digging through a shared folder or searching email archives.

The system also validates incoming certificates against purchase order requirements. Wrong cert type? You know before it goes into stock.

FAQ

Not exactly. A mill test certificate contains the actual test data — chemical composition, mechanical properties — for the specific batch. A certificate of conformance (CoC) is a simpler document that states the material conforms to a specification, without necessarily including full test data. Some customers accept a CoC for lower-risk applications. For structural steel and other regulated uses, a full MTC with test data is the minimum. If in doubt, ask your customer what they actually need before the goods arrive.

No. You pass on the original certificate from the producing mill. You may add your own company information (a delivery note, a certificate transmittal) but the underlying MTC must be the mill's original document. If you reissue a test certificate in your own name without being the manufacturer, that raises serious questions about authenticity and liability. GoSmarter stores and transmits the original cert data, keeping the chain of evidence clean.

Every mill uses its own format. Some are slick PDFs. Some are scanned faxes with skewed text and coffee stains. Some arrive via email; others via a supplier portal; some still arrive on paper with the delivery. The format varies wildly — which is precisely why automating cert extraction is hard without specialist software. GoSmarter MillCert Reader handles the variability so your team doesn't have to.

Don't use the material. An MTC that doesn't meet the specified grade's limits is not a valid certificate for that grade. Contact the supplier immediately. If the material is already in stock or (worse) in production, you have a non-conformance situation that needs to be managed through your quality system. This is exactly why checking certs at goods-in — not weeks later — matters.

See Also

- [MillCert Reader](#) — Reads and files mill certificates automatically. No manual entry.
- [Compliance Solutions](#) — End-to-end compliance documentation management.
- [Mill Certificate Automation Hub](#) — The full guide to automating your cert process.
- [What is EN 10204?](#) — The European standard that defines certificate types.
- [What is a Heat Number in Steel?](#) — The unique batch identifier at the heart of every MTC.
- [What is Steel Traceability?](#) — How certs, heat numbers, and stock records connect.
- [Metals Manufacturing Glossary](#) — Every key term, defined in plain English.

What is business intelligence?

Definition of business intelligence

From [our blog](#)

Business intelligence refers to the systematic collection, integration, analysis and reporting of data from all areas of your business - from finance and sales to worker productivity - to drive better decision making.

Executive view

Business intelligence gives you a clear view of your company's performance and progress towards your strategic goals. This insight comes from applying analysis and modeling to data from all areas of your business so that you are fully informed at all times, and makes actionable insights available to all teams so that improvements to processes are made efficiently.

Business intelligence helps businesses:

- streamline processes by making actionable insights available to people at all levels of the organisation.
- gain a clearer view of the whole organisation's performance.
- develop a clear strategy for growth based on insights.

Business function leader view

Business intelligence helps teams to gain valuable insight into their performance and act on that insight efficiently.

Business intelligence brings value to different departments throughout an organisation:

- **Sales teams** use business intelligence to gain a clearer view of conversion rates and insights into the quality of leads passed to them, helping them to focus their attention, keep track of their targets and improve their performance.

- For companies offering physical products, having insight into seasonal trends helps **purchasing departments** to ensure that inventory is adequate for periods of high demand.
- Getting an overview of churn rates, reviews and ticketing supports training, and improves the quality and personalisation of **customer service**, leading to improved customer retention and advocacy.
- **Finance departments** can stay ahead of potential problems such as overspending and revenue downturns thanks to the predictive properties of business intelligence.

KPIs you should consider measuring for this are:

- Improved conversion rate at all levels of your funnel.
- Reduced stock waste.
- Improved retention rates.
- Reduced overspend.

Technical view

Business intelligence solutions make actionable insights available to all relevant stakeholders, reducing their dependency on IT teams to make insights available. Business intelligence solutions can be built into products to deliver insights both internally and directly to clients. For business intelligence to be successfully implemented, the structure of available data must be understood and it should be stored efficiently to allow secure and efficient access from different stakeholders.

Business intelligence helps deliver:

- actionable insights and feedback.
- tiered availability of data and results of analyses to different stakeholders.
- insights that are tailored to the user.

Get this service if you encounter:

- high demand from different departments to understand the data your company holds.
- a lack of understanding of data analysis throughout your organisation.
- difficulties aggregating data from disparate sources.
- a need to offer tiered security access to data and insights.

Key criteria to consider are:

- Which tech stack should you use to implement business intelligence?
- How will you maintain the security of your data?
- Is your data structured and stored in a way that allows access by your business intelligence solution?

Image source

What is cloud data development?

Welcome to the Nightingale HQ overview of cloud data development services. Here we aim to introduce people to what they need to know.

Definition of cloud data development

Cloud data development is the process of migrating your data storage solution onto a central, cloud-based resource upon which analytical environments and business intelligence tools can be built.

Executive view

Cloud data development can transform your organisation's approach to storage and analysis of data by creating a central hub that is secure, efficient and flexible enough to suit your organisation's growing and changing needs. Hosting this resource on the cloud allows your organisation to make use of your provider's security features and confer access to up-to-date technology without the costs associated with setup and updates.

Cloud data development helps businesses:

- streamline processes by making actionable insights available to people at all levels of the organisation.
- build an environment in which more can be done with data to meet business goals and to define a strategy for growth.
- make use of cloud computing to access up-to-date technology without upfront costs.

Business function leader view

Cloud data development helps teams break away from data silos and create a central, accessible repository from which data can be accessed, analysed and used to meet your business goals. A data platform encompasses both secure cloud data storage and - via your cloud vendor - a suite of

business intelligence and analysis tools that allow teams to gain valuable, actionable insights from data and improve performance in all areas.

You may need this service if:

- data comes from disparate sources so that gaining insight is time-consuming.
- you want to build AI features into your products.
- your business suffers from data silos due to friction between departments or technological factors, which prevents teams from seeing the bigger picture.
- your business lacks the resources to maintain on-site data storage facilities.
- you lack a central, secure repository for your business data.

KPIs you should consider measuring for this are:

- Reduced time spent analysing data from disparate sources.
- Improved conversion rates and reduced overspend from acting on data insights.
- Reduced costs updating technology after shifting to cloud computing.

Technical view

Cloud data development provides access to a central service in which data can be securely stored and analysed. The data platform encompasses a data warehouse, data analysis platforms and business intelligence tools that make actionable data insights available to all relevant teams in your organisation.

Cloud data development helps deliver:

- a single repository of integrated data from one or more sources.
- a single source of current and historical data.
- storage of the data for reports/analytics.
- actionable insights and feedback.
- tiered availability of data and results of analyses to different stakeholders.
- insights that are tailored to the user.

Get this service if you encounter:

- difficulties aggregating data across your organisation.

- high demand from different departments to understand the data your company holds.
- lack of resources to maintain an on-site data storage facility that meets your organisation's security, fidelity and up-time requirements.
- difficulties aggregating data from disparate sources.
- a need to offer tiered security access to data and insights.

Key criteria to consider are:

- What are the cost implications of migrating to a cloud data solution?
- What are the potential savings after migrating to a cloud data solution?
- How will you ensure that data is accurate?
- How will you ensure that data is stored securely?
- Which cloud vendor is right for your needs?

What is data collection?

Definition of data collection

From [Wikipedia](#)

Data collection is the process of gathering and measuring information on targeted variables in an established system, which then enables one to answer relevant questions and evaluate outcomes.

Executive view

Collecting data can have many benefits for a business. It is difficult to know how you are doing and what you are doing well or where you are going wrong if you are not looking at the data. Evaluating your data can help you make better business decisions to save money and time. It is a well-established fact that every business benefits from data, and ultimately, a data strategy.

Data collection helps businesses:

- evaluate and improve internal operations.
- evaluate performance.
- solve business problems.
- better understand customers and how to serve them.
- make better decisions.

Business function leader view

Data collection helps teams stay in tune with business objectives and recognise companywide or personal strengths, which helps to keep everyone motivated. When the whole team are involved with data, not only do you get a better view of the entire business, but the individual segments grow a better understanding and appreciation of each other.

If your company suffers from a lack of data practices, from collection to analytics, you may need to look over your **data strategy** or get help constructing one. It is possible to outsource data services and there are pros and cons to doing so, but if you want to set up your business for a future with AI, we recommend building up these capabilities internally.

Technical view

Data collection is the key to better products as it provides insights as to how customers use your products that you can act on to increase engagement, sign-ups and revenue. Furthermore, data collection throughout the marketing funnel leads to multiple opportunities to identify areas for improved conversions. Your data will likely come from multiple sources in many different forms, so you should have a clear data strategy that will define how your data will be stored, accessed and analysed.

Data collection helps deliver:

- actionable feedback from your end-users.
- actionable insights to focus your marketing efforts.
- more efficient decision-making based on data.
- opportunities for **AI** initiatives built on data.

Get this service if you encounter:

- a lack of awareness of KPIs such as conversion rates.
- a lack of insight into how people use your products.

Key criteria to consider are:

- What is the structure of the data you are collecting?
- What tech stacks should be used to collect the data?
- How will you store the data securely?
- How will you store the data so that it can be accessed and analysed by relevant teams efficiently?

What is data modeling?

Definition of data modeling

From [Wikipedia](#)

Data modeling in software engineering is the process of creating a data model for an information system by applying certain formal techniques.

Data modeling is a process used to define and analyze data requirements needed to support the business processes within the scope of corresponding information systems in organizations. Therefore, the process of data modeling involves professional data modelers working closely with business stakeholders, as well as potential users of the information system.

Data modeling is the process of structuring and organising data as a map that clearly visualises data sources, transfers and relationships. It is applied during the design stage of an application or system to understand how data will be used to support it.

Executive view

The quality of a business data model reflects the organisation of the whole business. A messy data model with inefficient storage and access solutions can reflect dysfunctional business processes, and lead to slow, inefficient decision making. A data modeling initiative can sit as part of an initiative for cultural and process changes.

Data modeling helps businesses:

- build products that use data efficiently and meet business goals.
- empower teams to make data-driven decisions efficiently.
- manage large volumes of data.

Business function leader view

Data modeling provides a clear, big-picture view of your data sources, transfers and relationships. Developing a data model is the first step towards ensuring that your products use data efficiently and reducing unnecessary server costs, and enables you to make decisions more quickly and efficiently.

You may need this service if:

- you are building an application that will access multiple data sources.
- you manage a large volume of data and want to store and access it efficiently.
- it takes a long time to make data-driven decisions because your data is difficult to find and analyse.

KPIs you should consider measuring for this are:

- reduced costs of data storage and querying
- improved efficiency of project delivery
- improved efficiency of decision making when a big picture view is quickly and easily available

Technical view

Data modeling helps teams to design systems and software that utilise data, and to design effective database structures. Your application will need to access and store data efficiently to reduce server costs. Developing a clear view of your data sources and relationships will guide your development to avoid repetitive queries and manage data effectively.

Data modeling helps deliver:

- products that can integrate data from several sources and process it effectively.
- products that store and process data efficiently to reduce load.

Get this service if you encounter:

- high expenses from repeated, unnecessary server requests.
- high expenses from data storage.
- lags and bugs in your product due to inefficient data processing.

Key criteria to consider are:

- Are you able to identify all of your data sources and how data is queried by your application?
- Do you have the time and resources available to audit your data storage and processing solutions?

What is data platform auditing?

Definition of data platform auditing

Data platform auditing reviews your data platform against fitness for purpose measures such as security, compliance and structure.

Executive view

Your organisation's data platform should be a central hub that is secure, efficient and flexible enough to suit your organisation's growing and changing needs. Data platform auditing is needed to ensure that your data platform meets these needs and is set up correctly so that your teams can use it to meet strategic goals.

Data platform auditing helps businesses:

- ensure compliance and protect assets and data, by reviewing and improving the security of your data platform.
- reduce costs by reviewing and improving the structure of your data platform.

Business function leader view

Data platform auditing helps teams reduce instances of data loss, data corruption, data inaccuracies and data security on their data platform. Improvements can be made to the design of the data platform to ensure that data storage and structure is consistent and that relationships are clearly defined, which reduces instances of duplication and decreases storage costs. The data platform performance can also be improved to improve the speed of data access. Improving the security of the data platform will ensure compliance and reduce the risk of data loss and corruption.

You may need this service if:

- your team experiences problems of data duplication, corruption or loss.

- you have a large volume of data on your data platform and do not have security measures in place.
- your team is using a data platform to gain insights that drive decision-making.

KPIs you should consider measuring for this are:

- reduced downtime
- increased speed of data availability
- costs saved by reducing unnecessary load
- reduced costs associated with data loss and corruption

Technical view

When implementing data science and AI solutions in your products, the availability, security and accuracy of your data are essential. Reviewing and improving your data platform will improve the performance of your projects and make development smoother and more efficient.

Data platform auditing helps deliver:

- improved data security and compliance
- faster page loads
- faster interactive applications
- user retention
- reduced bounced rate
- faster access to data for analysis

Get this service if you encounter:

- slow performance of web pages and applications.
- increasing server resource charges.
- high bounce rates.
- inadequate data security measures or noncompliance.

Key criteria to consider are:

- The cost of improvements compared to benefits from those improvements.
- Data security.

- GDPR.

- Any potentially unneeded data.

What is data platform development?

Definition of data platform development

A data platform is a service that includes data collection, storage and analysis. Developing a data platform creates a central service that encompasses a data warehouse, business intelligence tools, and a suite of data science and analytical environments.

Executive view

Developing a data platform can transform your organisation's approach to storage and analysis of data by creating a central hub that is secure, efficient and flexible enough to suit your organisation's growing and changing needs.

Data platform development helps businesses:

- streamline processes by making actionable insights available to people at all levels of the organisation.
- build an environment in which more can be done with data to meet business goals and to define a strategy for growth.

Business function leader view

Data platform development helps teams break away from data silos and create a central, accessible repository from which data can be accessed, analysed and used to meet your business goals. A data platform encompasses both secure data storage and a suite of business intelligence and analysis tools that allow teams to gain valuable, actionable insights from data and improve performance in all areas.

You may need this service if:

- data comes from disparate sources so that gaining insight is time-consuming.
- you want to build AI features into your products.

- your business suffers from data silos due to friction between departments or technological factors, which prevents teams from seeing the bigger picture.
- you lack a central, secure repository for your business data.

KPIs you should consider measuring for this are:

- Reduced time spent analysing data from disparate sources.
- Improved conversion rates and reduced overspend from acting on data insights.

Technical view

Developing a data platform provides access to a central service in which data can be securely stored and analysed. The data platform encompasses a data warehouse, data analysis platforms and business intelligence tools that make actionable data insights available to all relevant teams in your organisation.

Data platform development helps deliver:

- a single repository of integrated data from one or more sources.
- a single source of current and historical data.
- storage of the data for reports/analytics.
- actionable insights and feedback.
- tiered availability of data and results of analyses to different stakeholders.
- insights that are tailored to the user.

Get this service if you encounter:

- difficulties aggregating data across your organisation.
- high demand from different departments to understand the data your company holds.
- lack of understanding of data analysis throughout your organisation.
- difficulties aggregating data from disparate sources.
- a need to offer tiered security access to data and insights.

Key criteria to consider are:

- What are the cost implications of migrating to a data platform?
- What are the potential savings after migrating to a data platform?

- How will you ensure that data is accurate?
- How will you ensure that data is stored securely?

What is data platform security auditing?

Definition of data platform security auditing

Data platform security auditing reviews the security of your data platform and provides recommendations for improvements.

Executive view

Keeping your data platform secure is vital to ensuring that your organisation is compliant, that your customers' data is protected from theft, and that your assets and intellectual property are properly hidden.

Data platform security auditing helps businesses:

- to ensure compliance.
- to protect customer data.
- to protect assets and intellectual property.

Business function leader view

Data platform security auditing helps teams to ensure that their data and business intelligence is protected.

You may need this service if:

- your team is using a data platform to gain insights that drive decision-making.

KPIs you should consider measuring for this are:

- improved security measures on your data platform
- reduced costs associated with data loss and corruption

Technical view

Data platform security auditing will provide you with a complete overview of areas of your data platform that are at risk. Data breaches may occur at the point of entry of data, within the storage solution of your data platform, or at the point of access across your organisation. Data platform security auditing will identify these areas of risk and provide recommendations to ensure that your data, models and business intelligence are fully protected.

Data platform security auditing helps deliver:

- improved data security on your data platform.
- improved scalability of your data platform.

Get this service if you encounter:

- data platform security breaches.
- a lack of security measures in place for your data platform, or lack of confidence in the adequacy of security measures.
- a need to demonstrate data platform security to third parties, such as customers or regulators.

Key criteria to consider are:

- What security measures are currently in place on your data platform?
- Do you have the resources to implement improvements recommended by an audit?
- Who will need access to the report generated by the audit, and what is their level of technical understanding?

FAQs

Metals manufacturers hold data that is commercially sensitive and operationally critical. Mill certificates, customer specifications, pricing agreements, quality records, and production plans represent both intellectual property and contractual obligations. A data platform security failure in a manufacturing business can mean more than a regulatory fine – it can mean loss of competitive advantage, breach of contract, and damage to customer relationships that have taken years to build.

For manufacturers that supply to defence, aerospace, energy, or pharmaceutical industries, data platform security is often a contractual requirement. Customers in these sectors typically require evidence of adequate security measures as part of the supplier qualification process. A data

platform security audit provides that evidence in a form that can be shared with customers and regulators.

Manufacturing data platforms often accumulate security vulnerabilities through historical decisions that made sense at the time but create risk in the current environment:

- **Access control drift:** As staff change roles or leave, permissions that were appropriate at one time remain in place. Regular access reviews should be part of any audit.
- **Unencrypted data in transit:** Legacy integrations between systems often use protocols that do not encrypt data in transit, creating interception risks.
- **Inadequate backup and recovery:** Operational data that cannot be recovered in the event of a system failure or ransomware attack creates both operational and regulatory risk.
- **Weak authentication:** Single-factor authentication on systems holding sensitive manufacturing data is inadequate by current standards.

A data platform security audit identifies these vulnerabilities systematically and provides a prioritised remediation plan.

GoSmarter is built on Microsoft Azure with enterprise-grade security controls, including encryption at rest and in transit, role-based access control, multi-factor authentication, and regular security monitoring. We treat our customers' data with the same seriousness that we apply to our own security posture, and we are happy to discuss our security controls with customers undergoing their own supplier security assessments.

What is data science auditing?

Definition of data science auditing

Data science auditing is a review of your data science solutions to assess their quality, security and compliance.

Executive view

Data science auditing ensures that your organisation is producing models and solutions that meet your strategic goals and are secure, compliant, and of good quality.

Data science auditing helps businesses:

- to produce good quality data science solutions.
- to ensure that resources are being spent on data science solutions that meet your strategic goals.

Business function leader view

Data science auditing helps teams ensure that the models you are using are of good quality, compliant, and secure.

You may need this service if:

- you are using models that were developed in-house but experiencing problems with their accuracy and compliance.
- you are concerned about the security of the models you use.

KPIs you should consider measuring for this are:

- improved accuracy of predictive models.
- improved compliance and security of your data science solutions.

Technical view

Data science auditing involves an outside expert reviewing your code, documentation and solution or model to assess reproducibility, quality, and how well it meets your business needs.

Data science auditing helps deliver:

- review of your solution by an outsider with relevant expertise
- data verification
- improvements to your model's reproducibility and quality
- a second, outsider opinion on your model

Get this service if you encounter:

- difficulty assessing the quality of your data science solutions.

Key criteria to consider are:

- Are you able to clearly communicate the goals of your data science project and the problems that it is trying to solve?
- Do you have the resources to act on the findings of a data science audit?

FAQs

Manufacturing AI projects — cutting optimisation, predictive maintenance, quality prediction, demand forecasting — represent significant investments in time, expertise, and in some cases production changes based on model recommendations. Understanding whether those models are actually doing what they are supposed to do, and doing it reliably, is not optional.

A data science audit in a manufacturing context typically examines:

- **Model accuracy:** Is the model performing as claimed on real production data, not just the test set it was evaluated on during development?
- **Data quality and relevance:** Is the training data representative of current production conditions? Models trained on historical data can degrade as conditions change.
- **Reproducibility:** Can the model results be reproduced independently? Can someone else run the model and get the same output?
- **Robustness:** How does the model perform on unusual inputs, edge cases, or data quality problems that are common in real manufacturing environments?

- **Bias and fairness:** Are there systematic patterns in model errors that affect particular product types, shifts, or operators?

The team that built a data science solution has a natural bias toward believing it works correctly. Independent audit provides the outside perspective that is essential for identifying problems that the development team may not have looked for, or may have explained away as acceptable.

This is particularly important in manufacturing where the consequences of model errors can be significant: a cutting optimisation model that systematically underestimates scrap rates leads to real material losses. A demand forecasting model with systematic bias leads to real inventory problems. Independent audit is the mechanism for catching these problems before they become operational issues.

GoSmarter's data science work follows rigorous evaluation standards — holdout test sets, cross-validation, performance monitoring in production, and regular retraining as production conditions change. We document our model performance in terms that manufacturing teams can understand and challenge, not just in terms that data scientists use with each other.

What is data science consulting?

Definition of data science consulting

Data science consulting is a service that will help your organisation develop a data science strategy and implement data science solutions.

Executive view

Data science consulting introduces expertise to your organisation that will help you to improve your **data science strategy** and solutions. You may need a consultant to help you start integrating data science into your business strategy, or to help keep your projects on track.

Data science consulting helps businesses:

- to implement **data science**.
- to develop a data science strategy.

Business function leader view

Data science consulting helps teams to implement data science and work towards the goals of the organisation's data science strategy.

You may need this service if:

- you are building a product that could be improved by **intelligent features**.
- your team has access to large volumes of data but is not using it to make predictions or decisions.
- you are undergoing a data or AI project with a fast turnaround and need expert help.
- you are working on a **data science** initiative that is not making enough progress, and you need outside expertise.

KPIs you should consider measuring for this are:

- Quicker turnarounds due to more efficient decision-making.
- Increased efficiency when data and insights are shared between departments.
- Increased revenue from acting on data insights.
- Reduced costs due to more efficient data collection, storage and analysis.

Technical view

Even if your team possesses the necessary skills to develop data models for your organisation, you may need the services of a data science consultant to help you deploy the models efficiently and in line with your organisation's data science strategy.

Data science consulting helps deliver:

- improved performance through analysis of usage data.
- personalised content that can drive increased up-sells and interactions.
- more efficient processes of deploying data science models.

Get this service if you encounter:

- difficulty deploying data models
- difficulty developing a [data science strategy](#)
- missed opportunities to gain actionable insights from data
- lack of personalised content in your product

Key criteria to consider are:

- Does your team lack the skills required to develop and deploy data science models?
- Do you have appropriate data storage solutions in place that will keep user data secure?
- Do you have the time and resources to apply your analysis to make improvements to your product?
- What are the skill gaps in your team that a consultant can fill?

What is data science development?

Definition of data science development

Data science development is the development of custom data science solutions (algorithms, models) from the data source to the deployment of the models. The development leads to solutions that can be used to gain valuable, actionable insight from your data that improves in accuracy over time and to build intelligent products that generate profit for your business.

Executive view

The advantage of developing custom data science solutions for your business is that the models deployed are tailored to driving your own organisation's data and strategic goals. The solutions can, therefore, lead to better quality products that can be used internally for driving better decision-making or sold externally to gain revenue.

Data science development helps businesses:

- to develop custom **data science** solutions to drive better decision making.
- to develop innovative products to build revenue.

Business function leader view

Data science can be applied in all areas of your business. It helps development teams to improve the products they build, helps sales and marketing teams with market segmentation and advertising, and supports financial decision-making. Developing custom data science solutions as opposed to using pre-built solutions empowers your team to gain custom, tactical insights and build innovative products.

You may need this service if:

- you are building a product that could be improved by **intelligent features**.
- your team has access to large volumes of data but is not using it to make predictions or decisions.

- you want a solution that is customised to your specific data sources and tactical goals.

The KPIs you should consider measuring for this are:

- increased sales of your product
- improved customer retention
- increased lead generation
- improved cash flow
- increased profits

Technical view

Data science development can be applied to your product by integrating custom usage data collection solutions and implementing innovative features that analyse the usage data and apply custom algorithms to the usage data to drive improved performance and user experience.

Data science development helps deliver:

- improved performance through analysis of usage data.
- personalised content that can drive increased up-sells and interactions.
- custom models that will transform, analyse and generate insights from your data to drive business goals.

Get this service if you encounter:

- missed opportunities to apply usage data to improving performance.
- lack of personalised content in your product.
- lack of understanding of how your product can be improved.
- difficulty integrating off-the-shelf data science solutions that suit your specific needs.

Key criteria to consider are:

- Do you have appropriate data storage solutions in place that will keep user data secure?
- Do you have the time and resources to apply your analysis to make improvements to your product?
- Does your product have enough users to generate actionable data insights?

- What are the cost implications of developing custom solutions and how will the benefits compare to those using a pre-built solution?

What is data science strategy?

Definition of data science strategy

Data science strategy refers to a company's vision for how data will be used to help achieve the company's business goals, how to build a thriving data culture, and how to address the skills and knowledge required to execute this vision.

Executive view

Data science strategy goes far beyond analysing your data to make improved business decisions. It's about creating a thriving environment for data where it can be easily shared and accessed, safely stored and standardised, and viewed as a central resource to all departments. While it can be beneficial for a company to outsource data science skills, we recommend building up data skills within your team by upskilling and recruiting where possible as part of your data science strategy.

Data science strategy helps businesses:

- solve business problems
- enhance day-to-day operations
- advance the overall functioning
- improve decision making
- create a data-focused company culture
- upskill teams

Business function leader view

Data science strategy helps teams to work towards a common goal while ensuring a standardised way of working with data. It may also involve developing new skills within your team to facilitate your data efforts.

You may need this service if:

- your team is struggling to make data-driven decisions efficiently, despite access to data.
- your team lacks the skills to analyse data or set up data cycles.
- your team has an ad-hoc or reactive approach to using data to meet your business goals.
- your business suffers from data silos due to friction between departments or technological factors, which prevents teams from seeing the bigger picture.

KPIs you should consider measuring for this are:

- Quicker turnarounds due to more efficient decision-making.
- Increased efficiency when data and insights are shared between departments.
- Increased revenue from acting on data insights.
- Reduced costs due to more efficient data collection, storage and analysis.

Technical view

Data science strategy provides the whole organisation with a roadmap to being data-driven. Technical teams need to be involved in setting the data science strategy to ensure that it is realistic and that the vision leads to a centralised data platform in which data is stored securely and efficiently, and which provides actionable insights to everyone who needs them.

Data science strategy helps deliver:

- enhanced data skills among all staff.
- improved data modelling and database structure.
- **business intelligence** and AI adoption.

Get this service if you encounter:

- a lack of cohesion between departments when it comes to using data.
- a lack of understanding of data insights.
- ad hoc or reactive requests for data insights, which can lead to inefficiencies.

Key criteria to consider are:

- What tools should the organisation implement to store data securely and efficiently?

- How should business intelligence be incorporated into the strategy and which tools will be required?
- Will your database structure need to be changed to meet the data science strategy?
- What are the data needs of all departments and how can the data science strategy meet them?
- How can the organisation adopt a data culture?
- Who should receive training and how should the training be delivered?

What is data science?

Definition of data science

From [Wikipedia](#)

Data science is a multi-disciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from structured and unstructured data. Data science is related to data mining and big data.

Executive view

Data science applies scientific methods to data to reveal insights and predictions that can help you to meet your business goals. There are two key goals in applying data science to your business: building better products and making better decisions. Data science is applied to building intelligent features and automation into products to make them more appealing and profitable to customers. Data analysis and machine learning can be applied to business metrics to drive better recommendations and predictions.

Data science helps businesses:

- build better products.
- make better decisions.

Business function leader view

Data science can be applied in all areas of your business. It helps development teams to improve the products they build, helps sales and marketing teams with market segmentation and advertising, and supports financial decision-making.

You may need this service if:

- you are building a product that could be improved by intelligent features.

- your team has access to large volumes of data but is not using it to make predictions or decisions.

KPIs you should consider measuring for this are:

- increased sales of your product
- improved customer retention
- increased lead generation
- improved cash flow
- increased profits

Technical view

Data science can be applied to your product by integrating usage data collection solutions and implementing features that analyse the usage data and apply algorithms to the usage data to drive improved performance and user experience.

Data science helps deliver:

- improved performance through analysis of usage data.
- personalised content that can drive increased up-sells and interactions.

Get this service if you encounter:

- missed opportunities to apply usage data to improving performance.
- lack of personalised content in your product.
- lack of understanding of how your product can be improved.

Key criteria to consider are:

- Do you have appropriate data storage solutions in place that will keep user data secure?
- Do you have the time and resources to apply your analysis to make improvements to your product?
- Does your product have enough users to generate actionable data insights?

What is data strategy?

Definition of data strategy

Data strategy refers to a company's vision for how data will be used to help achieve the company's business goals.

Executive view

Data strategy enables companies to analyse progress and make better business decisions, but it also helps to create a thriving data environment where it can be easily shared and accessed, safely stored and standardised, and viewed as a central resource to all departments. While it can be beneficial for a company to outsource data science skills, we recommend building up data skills within your team by upskilling and recruiting where possible as part of your data strategy.

Data strategy helps businesses:

- solve business problems
- enhance day-to-day operations
- advance the overall functioning
- improve decision making

Business function leader view

Data strategy helps teams to work towards a common goal while ensuring a standardised way of working with data.

You may need this service if:

- your business has poor data management among departments causing data-related issues and incompatibility between projects.
- your business suffers from data silos due to friction between departments or technological factors, which prevents teams from seeing the bigger picture.

If you want to measure the performance of your data strategy, you should set KPIs that are in line with your business strategy and associated KPIs. Your data strategy should always be linked to your business priorities and may include a detailed [AI strategy](#) section.

Technical view

Data strategy provides a clear, actionable plan to make data more accessible by relevant departments while ensuring that it is stored efficiently and securely. Technical teams should take the lead in setting a standardised way of working with data and work with executive teams to ensure that data is being used to meet business goals.

Data strategy helps deliver:

- improved data modelling and database structure.
- [business intelligence](#) and AI adoption.

Get this service if you encounter:

- a lack of cohesion between departments when it comes to using data.
- ad hoc or reactive requests for data insights, which can lead to inefficiencies.

Key criteria to consider are:

- What tools should the organisation implement to store data securely and efficiently?
- How should business intelligence be incorporated into the strategy and which tools will be required?
- Will your database structure need to be changed to meet the data strategy?
- What are the data needs of all departments and how can the data strategy meet them?

What is data visualisation?

Definition of data visualisation

From [Wikipedia](#)

Data visualization is the graphic representation of data. It involves producing images that communicate relationships among the represented data to viewers of the images. This communication is achieved through the use of a systematic mapping between graphic marks and data values in the creation of the visualization. This mapping establishes how data values will be represented visually, determining how and to what extent a property of a graphic mark, such as size or color, will change to reflect change in the value of a datum.

Executive view

Data visualisation empowers all of the teams in your organisation to make data-driven decisions and act on insights from your data. By displaying data as visual charts such as bar charts, line charts and maps, gaining insight is a quicker and more accessible process. This saves time and resources in communicating and understanding data.

Data visualisation helps businesses:

- to make data-driven decisions.
- to reduce the cost and time required to gain insight from data.
- to make actionable data insights available across the organisation to improve KPIs.

Business function leader view

Data visualisation makes data insights accessible to everyone and empowers your teams to take data-driven actions efficiently. You might build a shared data dashboard for your team so that everybody can gain a clear overview of your team's performance quickly, and act on the insight. You may also build reports and dashboards to share with executive teams and clients to demonstrate the value of your team's work and highlight KPIs.

You may need this service if:

- your team needs a clear, at-a-glance overview of performance on a regular basis.
- your team regularly reports on performance to executives or clients.
- your team is missing opportunities to act on data insights due to lack of time or analysis skills.
- you want to gain insight into customer behaviour, market segmentation and marketing campaign performance.

KPIs you should consider measuring for this are:

- improved **conversion rate** at all levels of your funnel
- reduced **stock waste**
- improved **retention rates**
- reduced **overspend**

Technical view

Data visualisation makes your company's data more accessible to those who can act on the insights to improve performance. Implementing data visualisation may require you to perform a data audit to get an overview of your data's sources, storage locations and relationships (see [data modeling](#)). Introducing data visualisation tools in your organisation will reduce the load on IT teams as access to data insights can be passed on to team leaders.

Data visualisation helps deliver:

- actionable insights and feedback
- improved accessibility of data insights

Get this service if you encounter:

- repeated requests from different teams for data retrieval
- a lack of understanding of data insights throughout your organisation

Key criteria to consider are:

- What tools and tech stacks should you use to visualise your data?
- How will you maintain the security of your data?
- Will staff require training to access, use and interpret data visualisation dashboards?

- Do you have the time and resources to set up a data visualisation system?

What is data warehousing?

Definition of data warehousing

From [Wikipedia](#)

In computing, a data warehouse (DW or DWH), also known as an enterprise data warehouse (EDW), is a system used for reporting and data analysis, and is considered a core component of business intelligence. DWs are central repositories of integrated data from one or more disparate sources. They store current and historical data in one single place that are used for creating analytical reports for workers throughout the enterprise.

Executive view

Data warehousing refers to building a system that can store large volumes of data from several sources, as a central repository from which all other systems can access the data efficiently. This allows your business to implement a range of data science products, including business intelligence and artificial intelligence.

Data warehousing helps businesses:

- reliably and accurately store large volumes of valuable data.
- modernise their data usage.
- create a central repository of all available data to inform better decision making.

Business function leader view

Data warehousing helps all teams within a business to make better-informed decisions based on accurate insights. If you wish to perform data analysis and data science to make better decisions within your team or to implement intelligent features in your products, you will need data that is stored centrally and efficiently.

You may need this service if:

- data insights come from disparate sources so that gaining insight is time-consuming.
- you are developing **business intelligence** for your organisation and need a central repository for historical and current data.

KPIs you should consider measuring for this are:

- Reduced time spent analysing data from disparate sources.
- Improved conversion rates from actionable insights.

Technical view

Data warehousing helps deliver:

- a single repository of integrated data from one or more sources.
- a single source of current and historical data.
- storage of the data for reports / analytics.

Get this service if you encounter:

- difficulties aggregating data across your organisation.

Key criteria to consider are:

- Time and cost to develop and maintain this resource.
- Accuracy of data.

[Image source - link no longer works](#)

FAQs

For metals manufacturers, a data warehouse addresses a problem that nearly every business in the sector recognises: critical business data is scattered across multiple systems – ERP, production management, quality management, finance, and often spreadsheets – that do not easily communicate with each other. Getting a coherent picture of the business requires manual data extraction and reconciliation, which is slow, error-prone, and consistently too late for the decisions that need to be made.

A data warehouse consolidates this data into a single, integrated repository where it can be queried, analysed, and reported on without manual reconciliation. The result is faster, more

accurate reporting and the ability to answer questions across systems — connecting production data to financial data, quality data to order data, inventory data to sales data — that would otherwise require significant manual effort.

The specific benefits of a data warehouse for a metals manufacturer include:

- **Real-time or near-real-time production reporting:** Know the current state of orders in production, not the state from last night's batch report.
- **Cross-system analysis:** Connect quality data to production data to understand which processes, materials, or shifts are associated with quality issues.
- **Historical analysis:** Understand trends in scrap rates, delivery performance, and material consumption over time, not just the current period.
- **Accurate inventory valuation:** Real-time view of stock with current cost data for finance reporting.
- **Customer performance analysis:** Understand order fulfilment performance by customer, product type, and time period.

The most important decision in a data warehouse project is not the technology — it is the data. Understanding what data you have, where it lives, how reliable it is, and what decisions it needs to support is the foundation of any successful data warehouse. GoSmarter's digital review service helps manufacturers answer these questions before committing to a technology investment.

What is database maintenance?

Definition of Database maintenance

From [Science Direct](#):

Database maintenance plans are a method of ensuring that a database is optimised and performing well.

Executive view

Data is important to achieving your strategic goals and database maintenance ensures that your data is stored securely, is accurate, and is readily available to appropriate parties.

Database maintenance helps businesses:

- reduce downtime and data loss.
- ensure accurate and reliable data is available for [modelling](#) and [insights](#).

Business function leader view

Database maintenance helps teams to ensure that accurate data is reliably available, that their databases are not being overloaded and that their data is secure.

You may need this service if:

- your team experience database downtime.
- you have a large volume of data and do not have maintenance or security measures in place.
- your team is using data to gain insights that drive decision-making.

KPIs you should consider measuring for this are:

- reduced downtime
- increased speed of data availability

- improved error logging
- costs saved by reducing unnecessary load
- reduced costs associated with data loss and corruption

Technical view

When implementing data science and AI solutions in your products, the availability, security and accuracy of your data are essential. Implementing database maintenance will improve the performance of your projects and make development smoother and more efficient.

Database maintenance helps deliver:

- improved error tracking
- data and log file management
- index fragmentation
- statistics
- corruption detection
- backups

Get this service if you encounter:

- slow performance and high storage costs due to inefficient data storage or data inaccuracies.
- poor file management.
- difficulties accessing data.
- occurrences of data corruption or data loss.

Key criteria to consider are:

- most appropriate tech stack
- data security

Database maintenance in metals manufacturing

If you're running production planning, inventory management, or quality tracking on a database, maintenance isn't optional — it's the difference between decisions you can trust and numbers that lie.

In a metals manufacturing environment, database maintenance matters for:

- **Production records:** Accurate historical production data is essential for demand forecasting and capacity planning. Corrupt or incomplete records lead to bad estimates.
- **Mill certificate storage:** Quality certificates need to be retrievable on demand for compliance. Poor index management makes search slow and unreliable.
- **Scrap and yield tracking:** AI models for scrap reduction — like GoSmarter AI's [Cutting Plans](#) — are only as good as the underlying data they're trained on.
- **ERP data integrity:** If your ERP and your shop floor data drift apart, you're managing two versions of reality. Database maintenance keeps them in sync.

The bottom line: rubbish in, rubbish out. Clean, well-maintained data is the foundation that everything else — reporting, forecasting, AI — is built on.

What is developing a centre of excellence?

Definition of developing a centre of excellence

From [Wikipedia](#)

A centre of excellence (COE) is a team, a shared facility or an entity that provides leadership, best practices, research, support and/or training for a focus area.

The focus area could be data analytics, data science, AI or business intelligence.

Executive view

Developing a centre of excellence promotes collaboration in your business and defines best practice for your specific focus area - whether it be AI, data science, analytics or business intelligence - to drive progress towards your strategic goals. A centre of excellence provides a central department of expertise that can be drawn on to build capability and enthusiasm across different departments.

Developing a centre of excellence helps businesses:

- foster a positive data culture
- define best practices
- promote collaboration
- provide a way to build skills and solutions that support your [data science strategy](#)

Business function leader view

Developing a centre of excellence helps teams to build skills, knowledge and progress in the area of focus. If your organisation has a [data strategy](#), a data science strategy or an AI strategy, developing a centre of excellence is a tried and tested method for ensuring that all teams are aligned towards the strategic goals and are progressing towards them.

You may need this service if:

- you have a **data science** strategy but are not seeing enough progress towards the strategic goals.
- you are having trouble fostering enthusiasm and positive culture for data science and AI.
- your team lacks the skill and knowledge required to implement data initiatives.

KPIs you should consider measuring for this are:

- improved progress towards strategic goals
- increased enthusiasm for the focus area
- increased up-skilling of staff in the focus area

Technical view

Developing a centre of excellence sets and maintains best practices for the focus area, creating a central function that can make software and technology decisions, avoiding the risk of shadow IT and improving IT efficiency across the organisation. Developing a centre of excellence can also create leadership opportunities for technologists in the organisation, improving staff retention by allowing career progression.

Developing a centre of excellence helps deliver:

- a central function for software and technology decision making.
- increased awareness of IT issues across the organisation.
- improved skills across the organisation.

Get this service if you encounter:

- shadow IT - software and technology decisions being made by different departments without IT being involved.
- a lack of appreciation for the focus area by other departments.
- poor staff retention due to a lack of career progression opportunities.

Key criteria to consider are:

- Does enough talent exist within the organisation to develop a centre of excellence or will you need to recruit experts?
- How will you up-skill staff from relevant departments?

- How will the decisions of the centre of excellence be communicated and upheld across the organisation?

Building an AI centre of excellence in manufacturing

Most manufacturers have run at least one AI pilot. Many run several. The ones that stall at pilot stage usually share the same problem: no one owns AI as a function, so it stays a side project.

A centre of excellence changes that. For metals manufacturers looking to adopt AI tools across production, quality, and commercial teams, a well-structured CoE means:

- **One place for decisions:** Which tools to adopt, which data standards to follow, which vendors to trust. No more every department buying something different.
- **Skills that stick:** Training engineers and planners to work with AI tools — and keeping that knowledge in-house when staff move on.
- **Momentum:** Pilot projects get productionised. Wins get shared across sites. Progress compounds instead of resetting every year.
- **Less shadow IT:** When teams trust the CoE to solve their data problems, they stop building their own spreadsheet workarounds.

GoSmarter AI works with manufacturers at various stages of this journey. Whether you're establishing your first data governance framework or scaling tools like the [Cutting Plans](#) across multiple sites, having the right internal structure is what turns a good tool into lasting change.

What is remote support?

Definition of remote support

From [Wikipedia](#)

In information technology (IT), remote support tools are IT tools and software that enable an IT technician or a support representative to connect to a remote computer from their consoles via the Internet and work directly on the remote system. Although its main focus is the access to computers located anywhere in the world, the remote support applications also provide features like file transfer, desktop sharing, file synchronization, command line or guest accessibility.

Executive view

An expert can help your business to meet its strategic goals via remote support. It provides the opportunity to develop unique products and build [data science](#) capabilities within your organisation without the commitment of costs of hiring dedicated support teams.

Remote support helps businesses:

- gain the benefits of an in-house data science expert without the commitment or costs of hiring an employee.
- remove barriers to adoption by bringing in outside help regardless of location.

Business function leader view

Remote support helps teams to access technical expertise wherever you are located. Through remote support, an expert can help your team to succeed in their data science projects whilst keeping costs low. This is useful if you are planning to launch a specific product that requires expert advice, or if you have a small team that doesn't necessarily need a dedicated IT support team.

You may need this service if:

- you are building a data science team and need to bring in an expert to provide direction and support while the team builds their skills and expertise.
- you are undergoing a data or AI project with a fast turnaround and need expert help.
- you want to remove geographical restrictions on bringing in expert help.

KPIs you should consider measuring for this are:

- Reduced costs from using remote support consultant compared to in-house staff.
- Improved efficiency of project delivery.

Technical view

Remote support helps to expand the technical skill and expertise of your team by bringing in outside support.

Remote support helps deliver:

- increased efficiency of development when help from an expert is deployed.
- keeping production going while staff are being trained.
- data support for all teams, freeing up technical staff.

Get this service if you encounter:

- Too much time spent supporting other teams with data-related enquiries.
- You are undergoing a data or AI project with a fast turnaround and need expert help.

Key criteria to consider are:

- Does the remote support agent understand your needs?
- Is the remote support agent familiar with your tech stacks?

What is the Internet of Things?

Definition of the Internet of Things

From [Wikipedia](#):

The Internet of things is a system of interrelated computing devices, mechanical and digital machines that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

To go a little further than things that are connected to each other via the internet, IoT is more commonly being used to refer to things that use sensors to **collect data** and talk to each other, i.e. analyse the data and generate a reaction.

Everyday IoT

The internet of things is everywhere, and the best way to start explaining it is to have a look around you. If you have a wireless printer, a thermostat, or a virtual voice assistant, you have IoT devices within your home, and you can probably control them all from your tablet, phone or assistant, as they are all connected to the internet.

Smart homes are increasingly being built with this technology in mind, so your lights, heating, security systems, appliances and much more can all be controlled in one place. But if your home didn't come smart, you can buy these things independently and enjoy the ease of asking your voice assistant to water the garden or print a recipe using your wireless printer.

You might not have fully integrated smart appliances, but over 1 in 4 people currently own a virtual assistant, and the number is rapidly increasing, making voice assistants the most commonplace IoT devices. Wearable tech to monitor personal health is also a huge trend that uses IoT that is using sensors to bring people closer to their health.

Commercial IoT

Stepping outside of our homes, we find another wave of IoT applications appearing in supermarkets to healthcare facilities and in transportation. A few of these applications are very

similar to our home comfort IoT, for example, smart buildings such as offices, stores or hotels that have multiple elements that can be controlled in one place, but other applications go a bit further.

The **retail industry** uses several forms of IoT, from asset tracking to manage inventories more efficiently and to keep a better check on lost and missing items. This works to reduce theft but also eases customers who have made online orders by giving real-time delivery updates. Retailers are even using this technology to send exclusive offers to app users when they are near a store. Finally, some supermarkets are creating a smarter check out system like **Sainsbury's Smart Shop** that allows you to scan and go, or **Amazon Go** stores where you can just pack your item straight into your bag and walk out.

The internet of medical things (IoMT) or **Smart Healthcare**, covers even more, from remote health monitoring to specialised devices like a smart inhaler or a pacemaker. Other applications include robots that cruise hospital halls delivering supplies, smart beds that can adjust to correctly support a patient or predictive maintenance for vital equipment.

The world of transport also has plenty of IoT applications, from all the sensors that power self-driving cars, to technology that can help drivers find a free parking space in the city.

Industrial IoT

The **industrial internet of things** (IIoT) refers to manufacturing and smart factories where sensors can be installed to equipment to gather insights about processes within the factory and optimise them. This can be applied to inventory management, augmenting design processes, conducting predictive maintenance and much more.

Industrial IoT can also refer to farming practices, such as environmental monitoring to replicate optimal conditions for crop growth, automated irrigation systems and even livestock management.

Infrastructure IoT

Finally, IoT can be applied at the infrastructure level to create smart cities powered by smart energy, connected with smart transport. Public transport can be optimised using **IoT and digital twin concepts** for better management of risks and delays, while sensors at **stops** can identify passengers with needs and adjust for them e.g. announcing the arrival of transport earlier to allow elderly passengers enough boarding time, purifying polluted air or providing air conditioning based on the weather.

We are already seeing many cities roll out **connected street lights**, which can save millions in electricity costs as they only come on when required, **wireless smart grid sensors** to optimise

energy flow and identify issues before they occur, and **smarter materials** for construction to reduce the carbon footprint of the building industry.

In another example, we see **smart bins** that collect solar energy and use it to compress waste allowing for 8 times more rubbish to be collected before they need to be emptied. Better still they use wifi to let the council know when they are ready to be emptied, saving on recourses.