

Process Tracking & Data Strategy Proposal
Business Report

Prepared by:
Silvio Serafin

Role:
Fabricator | Aspiring Business Analyst

Date:
03/09/2025

Executive Summary

This case study demonstrates how data-driven workflow improvements could transform operations by reducing delays, improving quoting accuracy, streamlining stock control, and cutting waste. The estimated impact of these changes is over £90,000 per year, achieved without adding headcount or major capital costs.

Estimated Annual Value (Conservative):	
Area	Annual Value
Faster Quoting	£60,000 (revenue)
Bottleneck Fixes	£12,000
Accountability	£10,400
Waste Reduction	£5,200
Delay Reduction	£4,992
Total	£92,592/year

Beyond the numbers, the strategic benefit is cultural: shifting from reactive firefighting to proactive planning. This creates stronger reliability, scalability, and competitiveness, while positioning the company for entry into high-growth markets such as data centre fabrication.

Contents

1. Context.....	5
2. Why Data Control Matters.....	5
3. Workflow & Process Overview (The Fluxogram).....	5
3.1. Proposed Improved Workflow	6
3.1.1. Key Improvement	6
3.2. Linking Sales Orders to Workflow & Requisition	6
3.2.1. Current Issues	6
3.2.2. Proposed Workflow	6
3.2.3. Impact.....	7
3.3. Automated Quotation Within Workflow.....	7
3.3.1. Current Issues	7
3.3.2. Proposed Workflow	7
3.3.3. Impact.....	7
3.4. Engineering Integration Within Workflow	8
3.4.1. Current Issues	8
3.4.2. Proposed Workflow	8
3.4.3. Impact.....	8
3.5. Barcode-Based Workflow Tracking	8
3.5.1. Impact.....	9
3.6. Labour & Material Cost Tracking.....	9
3.6.1. Current Issues	9
3.6.2. Proposed Workflow	9
3.6.3. Impact.....	10
3.7. Bottleneck Visibility	10
3.7.1. Current Issues	10
3.7.2. Proposed Workflow	10
3.7.3. Impact.....	10
3.8. Inventory Control & Requisition System.....	11
3.8.1. Current Issues	11
3.8.2. Proposed Workflow	11
3.8.3. Impact.....	11
3.9. Real-Time Job Status Dashboard	11
3.9.1. Current Issues	11
3.9.2. Proposed Workflow	12
3.9.3. Impact.....	12
3.10. Operational Transformation: Current vs Future State	12
3.10.1. Administrative and Sales Processes	13
3.10.2. Engineering	13
3.10.3. Shop Floor and Workflow Improvements.....	13
3.10.4. Impact.....	14
3.11. Strategic Value of Workflow Visibility	14
3.11.1. Disclaimer on Estimates	15
3.11.2. Example Value Areas (Estimate-Based).....	15
3.11.2.1. Delay Reduction	15
3.11.2.2. Better Quoting (More Jobs Won)	15
3.11.2.3. Bottleneck Fixes	16
3.11.2.4. Accountability and Micro Time Savings.....	16
3.11.2.5. Waste Reduction via Offcut Tracking	16
3.11.2.6. Narrative	17

4.	Market Growth & Strategic Opportunity.....	18
4.1.	Dual Capability Advantage.....	18
4.2.	Target Clients.....	19
4.2.1.	Strategic Fit.....	19
4.3.	Product Fit & Capabilities Table.....	20
4.4.	Required ISO & Compliance Standards.....	20
4.4.1.	Summary.....	21
5.	Future Insights: Scaling Toward Industry 5.0.....	22
5.1.	Strategic Value.....	22
6.	Conclusion.....	22

1. Context

As part of my university studies in computing and data analysis, I have developed this case study using my current workplace as a real-world example.

This project represents an important step in my academic development and personal growth as I work toward a future role in Business Intelligence or Business Analysis. I selected this company because I have direct experience in its day-to-day operations and a clear understanding of areas where meaningful improvements could be achieved.

The case study is designed as a practical, data-driven project, applying real workplace challenges to demonstrate how data can be used to improve visibility, efficiency, and decision-making. It reflects both academic learning and applied problem-solving, bridging the gap between theory and practice.

2. Why Data Control Matters

In many manufacturing environments, some form of data control exists, but it is often based on handwritten notes, paper job cards, and physical storage. While this approach may function at a basic level, it limits the ability to analyse, track, and learn from operations in a meaningful way.

The real value of data appears when it is used to:

- Spot patterns in how jobs move through production.
- Identify slowdowns and bottlenecks before they escalate.
- Track material and labour costs for each product.
- Improve planning, quotations, and delivery times.
- Support decisions with facts instead of assumptions.

At present, in many similar settings, this gap remains wide open. There is no live dashboard, no historical tracking, and no predictive insight, which leaves a clear opportunity. As part of my academic development, I created this case study to explore what can be achieved with workflow tracking and data analysis.

The approach is drawn from first-hand shop floor experience and is designed to be simple, realistic, and scalable using tools that are already available.

3. Workflow & Process Overview

Currently, the workflow relies on manual communication, paper job cards, and disconnected steps for quoting, requisitions, and production setup. Important details

are often clarified late, which slows down preparation and increases the risk of errors once jobs reach the shop floor.

3.1. Proposed Improved Workflow

Sales order received → Job template activated, and bill of materials calculated → Engineering prepares drawings and specifications linked to the job code → Quotation engine triggered automatically → Requisition triggered if required → Barcode job card generated → Job starts at punching machine → Scans continue through each department (folding → welding → painting → assembly) → Final scan and job completion → Data sent to dashboard and archive

3.1.1. Key Improvement

This structure ensures that jobs are properly defined, costed, resourced, and validated before production begins. By connecting sales, engineering, and requisition into the same workflow, departments work with the same data from the start. The outcome is a smoother handover, stronger visibility across stages, and fewer delays or rework on the shop floor.

3.2. Linking Sales Orders to Workflow & Requisition

At present, sales orders are often passed on manually, which can lead to delays, missing materials, and confusion when jobs reach the shop floor. Engineering also receives information late or in incomplete form, which creates extra rework and slows down the release of drawings and technical specifications.

3.2.1. Current Issues

- Manual communication from sales to production
- Engineering receives unclear or incomplete information
- Materials sometimes forgotten or not ordered in time
- No automation to trigger job setup or requisitions

3.2.2. Proposed Workflow

- Sales order entered via a shared digital form or interface
- System automatically links the order to pre-set job templates
- Engineering receives the job code immediately, allowing drawings, technical files, and specifications to be created in parallel
- Once drawings are approved, the system triggers automatic material checks and requisitions
- A barcode job card is generated and attached to the order before release to production

3.2.3. *Impact*

Integrating sales, technical preparation, and production setup into a single digital workflow creates clarity and consistency across the business. Jobs cannot move forward without the required information, resources, and approvals, which significantly reduces errors and last-minute delays. This approach eliminates miscommunication between departments, ensures materials are always in place before production begins, and provides full visibility from order to completion. The result is faster turnaround times, more reliable delivery schedules, and a foundation for data-driven decision making.

3.3. *Automated Quotation Within Workflow*

At present, quotations are handled separately and often rely on manual calculations. This slows down response times, creates inconsistencies, and increases the risk of errors in pricing.

3.3.1. *Current Issues*

- Quotes calculated manually outside the workflow.
- Limited visibility of real-time material and labour costs.
- Risk of errors or delays in providing prices to clients.

3.3.2. *Proposed Workflow*

- Client request is logged.
- System identifies product type, quantity, and deadline.
- Template activates and pulls labour and material data automatically.
- Quotation is generated using formulas:
 - Labour hours × rate
 - Materials × unit cost
 - Overheads and margin added
- Quote is sent directly to the client or stored with the order record.

3.3.3. *Impact*

Automating quotations ensures consistency and accuracy, while reducing admin time. Quotes are generated based on real-time data, giving full visibility of costs before production begins. This allows the business to respond to client requests faster and more professionally, improving customer confidence and increasing the chances of winning new work.

3.4. Engineering Integration Within Workflow

At present, engineering often receives incomplete or delayed information from sales, which slows down the release of drawings and technical files. This can cause errors, rework, and late adjustments that affect production schedules.

3.4.1. Current Issues

- Engineering depends on manual handovers from sales.
- Information sometimes unclear or incomplete.
- Drawings prepared in isolation, not connected to live data.
- Limited visibility of material availability or quotation details.

3.4.2. Proposed Workflow

- Once a sales order is logged, the system generates a job code and notifies engineering automatically.
- Engineering prepares and approves drawings, specifications, and technical files linked to the job code.
- Live data such as templates, material checks, and quotation details are available from the start.
- When drawings are approved, the workflow confirms readiness and triggers requisitions, barcode creation, and production setup.

3.4.3. Impact

Integrating engineering into the digital workflow ensures technical preparation is aligned with real-time data from the beginning. Drawings are completed with full visibility of costs and materials, reducing rework and improving accuracy. This creates a stronger connection between sales, engineering, and production, shortens lead times, and ensures jobs are fully validated before they reach the shop floor.

3.5. Barcode-Based Workflow Tracking

Each job receives a job card with a unique barcode. This card travels with the job from start to finish. At every key stage, the operator or department scans the card when starting and finishing the task. All data is logged into a central system and displayed on a live dashboard, giving full visibility of progress, timing, and accountability.

Stage	Operator / Department Action	Logged Data
Sales Entry	Enter order specs, client details, deadlines	Client ID, specs, quantity, delivery date
Job Creation	Activate template, generate barcode job card	Product type, bill of materials, job ID
Engineering	Prepare and approve drawings, specifications, files	Drawing approval date, revision code, engineer ID
Quotation	System calculates cost using labour and material data	Estimated time, material cost, margin
Punching	Scan job card when starting	Operator ID, timestamp, machine ID
Folding	Scan job card when receiving and completing	Start time, end time
Welding	Scan before starting and again when finished	Welder ID, duration, material used
Painting	Scan when job arrives and again when finished	Paint time, batch info
Assembly/Fitting	Final scan before packaging or dispatch	Completion time, final status

3.5.1. Impact

Barcode-based tracking transforms job cards from static paper into a live source of data. By including engineering in the workflow, technical approvals are linked directly to the same system as production. This creates full traceability, makes bottlenecks easier to identify, and provides real-time progress updates across all departments.

3.6. Labour & Material Cost Tracking

Currently, labour and material usage are not tracked in detail on a per-job basis. Costs are estimated broadly, which limits visibility and reduces accuracy in pricing and quoting. This makes it harder to see where time and resources are being lost.

3.6.1. Current Issues

- No detailed record of labour hours per job
- Material usage often estimated rather than logged
- Limited insight into true job profitability

3.6.2. Proposed Workflow

- Operators log time through barcode scans at each stage.
- Material usage (wire, gas, discs, sheet metal, etc.) recorded directly against the job.
- System combines labour cost and material consumption into a live cost-per-job view.
- Data feeds directly into quotation, planning, and reporting tools.

3.6.3. *Impact*

By capturing both labour and material costs in real time, the business gains a true picture of job profitability. Quoting becomes more accurate, waste is easier to identify, and management can compare actual costs against estimates. Over time, this builds a historical database that supports smarter planning, better resource allocation, and stronger competitiveness on pricing.

3.7. *Bottleneck Visibility*

Currently, delays in production are often noticed only when jobs fall behind schedule. There is limited visibility into where work slows down, how long it remains idle, or what specific issues cause bottlenecks. This makes it difficult to address problems early and prevent them from recurring.

3.7.1. *Current Issues*

- Bottlenecks identified too late in the process
- No accurate measurement of idle time between stages
- Root causes of delays not recorded or shared
- Lack of data to support targeted improvements

3.7.2. *Proposed Workflow*

- Barcode scans record start and finish times at every stage.
- System highlights where jobs spend the most time in process or idle.
- Operators add quick notes when scanning job completion to log problems encountered (e.g. missing materials, rework, machine breakdowns).
- Operators also record how long was spent resolving the problem before the job moved on.
- Dashboard view combines timing data with operator feedback to show both where and why bottlenecks occur.

3.7.3. *Impact*

This approach turns bottleneck tracking into a complete feedback loop. Managers see not only the stages where delays happen but also the specific issues that caused them. Over time, recurring problems become visible, whether they are missing resources, machine downtime, or design changes. This enables quicker fixes, better planning, and long-term reduction of repeated slowdowns. The result is a more transparent and collaborative process where problems are identified early, and solutions can be shared across departments.

3.8. Inventory Control & Requisition System

At present, material usage and stock levels are tracked manually using spreadsheets or paper notes. This creates gaps in accuracy, makes it difficult to see real-time availability, and often results in missed orders or production delays when materials run short.

3.8.1. Current Issues

- Stock levels updated manually and inconsistently
- Missed or late material orders
- Limited visibility of offcuts and leftover material
- Production delayed due to lack of materials on hand

3.8.2. Proposed Workflow

- Barcode system introduced for material check-in and check-out.
- Automated reorder alerts triggered when stock reaches a set threshold.
- Offcut calculator records leftover sheet material, making it available for reuse.
- Kanban-style labelling system applied to commonly consumed items (nuts, bolts, screws, silicone, welding tips, discs, etc.) using green, amber, and red signals to show stock levels immediately.
- Just-in-time material planning supported by livestock visibility and historical consumption data.

3.8.3. Impact

This approach combines digital accuracy with visual simplicity. The barcode system and reorder alerts provide real-time precision, while Kanban-style traffic-light labels give operators and supervisors an instant view of stock health. This reduces reliance on memory, prevents shortages of high-use consumables, and makes it easier to plan orders in the right quantities. Over time, the system lowers waste, improves resource availability, and strengthens overall production flow.

3.9. Real-Time Job Status Dashboard

At present, progress on jobs is tracked manually or through verbal updates, which makes it difficult for management to know exactly where work stands. Delays are often discovered too late, and delivery dates are estimated without live data to support them.

3.9.1. Current Issues

- No live visibility of job progress across departments.

- Delays and stalled jobs identified only after they cause disruption.
- Delivery schedules estimated manually with limited accuracy.

3.9.2. *Proposed Workflow*

- Each barcode scan automatically updates a central dashboard.
- Dashboard displays job progress by department and current status.
- Stalled or delayed jobs flagged in real time for immediate action.
- Delivery schedules updated automatically based on actual progress data.

3.9.3. *Impact*

A live dashboard turns production tracking into a transparent, data-driven process. Managers gain instant visibility of where each job is in the workflow, allowing them to intervene quickly if a stage is delayed. This improves accuracy in delivery forecasting, reduces surprises, and builds trust with clients by providing clear and reliable timelines. Over time, the dashboard also serves as a historical record, supporting continuous improvement and better workload planning

3.10. *Operational Transformation: Current vs Future State*

The shift from manual processes to integrated, data-driven systems transform the way work flows across sales, engineering, and the shop floor. By connecting every stage through barcode scanning, live dashboards, and automated checks, the business moves from reacting to problems after they occur to proactively preventing them.

3.10.1. *Administrative and Sales Processes*

Area	Current State	Future State	Business Impact
Quotation	Manual calculation	Automated quoting	Faster response, fewer errors, proactive cost control
Sales Handover	Verbal/email only	Digital handover with job code	Clearer communication, fewer delays, proactive clarity
Requisition	Paper requests	System-triggered requisition	Better planning, fewer shortages, proactive stock management

3.10.2. *Engineering*

Area	Current State	Future State	Business Impact
Drawings	Delayed, rework common	Linked to job code and workflow data	Faster release, fewer errors, proactive preparation
Information	Received late or incomplete	Shared with sales and production upfront	Better clarity, smoother handovers, proactive alignment

3.10.3. *Shop Floor and Workflow Improvements*

Area	Current State	Future State	Business Impact
Job Tracking	Paper job cards	Barcode scans with live system	Real-time visibility, proactive monitoring
Cost Analysis	No detailed tracking	Live cost per job	Smarter quoting, proactive profitability control
Inventory	Manual boards	Barcode + Kanban-controlled stock	Reduced waste, proactive stock availability
Bottlenecks	Not tracked or analysed	Live timestamps + operator feedback	Faster problem-solving, proactive bottleneck prevention

3.10.4. *Impact*

Right now, operations are reactive: problems are only spotted after they cause delays, shortages, or rework. With this system, the entire workflow becomes proactive. Jobs are released only when drawings, materials, and approvals are ready. Bottlenecks are flagged in real time with both timing data and operator feedback. Stock levels trigger alerts before shortages occur.

The result is fewer surprises, smoother production, and a shift from firefighting to planning. Delivery schedules become more reliable, quoting more accurate, and recurring issues easier to eliminate. Over time, the business gains the ability to anticipate problems before they happen, building a culture of proactive, continuous improvement.

3.11. *Strategic Value of Workflow Visibility*

Moving toward a fully traceable, barcode-driven process is not just about digitalisation or automation, it is about transforming the way decisions are made. Today, most issues are handled reactively: delays are noticed only when jobs fall behind, shortages are found only when stock runs out, and bottlenecks are identified only after work piles up.

With live workflow visibility, the business shifts to a proactive model. Every department can see progress as it happens, stock shortages are flagged before they occur, and bottlenecks are identified the moment they start to form. This allows managers to act ahead of problems, not after they cause disruption.

The strategic value goes beyond efficiency:

- Delays are reduced through real-time intervention.
- Quoting becomes more accurate, increasing win rates and profitability.
- Bottlenecks are solved early, keeping work flowing smoothly.
- Team accountability improves because progress is visible to everyone.

- Material waste is reduced by tracking offcuts and consumables more closely.

These changes lead to real financial savings and stronger competitiveness, even without hiring more staff or adding extra machinery. The goal is to use visibility to anticipate and prevent problems, turning the business into a proactive, data-driven operation.

3.11.1. *Disclaimer on Estimates*

The figures presented in this section are not based on actual measured data. They are logical estimates, built from observed shop floor patterns and typical workflow assumptions. The purpose is not to promise precise cost savings but to illustrate the strategic value of visibility, traceability, and proactive process management.

3.11.2. *Example Value Areas (Estimate-Based)*

3.11.2.1. *Delay Reduction*

If the root cause of just two production delays per week is prevented, saving three hours per job. Assumption: Workflow visibility makes it possible to spot and prevent two delays weekly. Each delay avoided saves: 3 hours of lost time

Hourly rate: £16/hour

Calculation:

$2 \text{ jobs/week} \times 3 \text{ hours/job} \times £16 = £96/\text{week}$

$£96/\text{week} \times 52 \text{ weeks} = £4,992/\text{year}$

3.11.2.2. *Better Quoting (More Jobs Won)*

If quoting accuracy improves the win rate by 5%, resulting in one additional job per month worth £5,000. Assumption: Accurate, data-driven quotations improve competitiveness and conversion rate. Average job value: £5,000 (e.g. panel batches, utility/data centre jobs).

12 months/year

Calculation:

$£5,000 \times 12 = £60,000/\text{year}$ in additional revenue

(This is revenue, not profit, but it highlights growth potential.)

3.11.2.3. *Bottleneck Fixes*

If throughput improves by 5% across 100 jobs per month by resolving bottlenecks earlier. Assumption: Current workload is ~100 jobs/month. 5% improvement = 5 additional jobs completed per month.

Average labour cost per job: £200 (based on 12.5 hrs × £16/hr)

Calculation:

5 extra jobs/month × £200 = £1,000/month

£1,000 × 12 = £12,000/year

3.11.2.4. *Accountability and Micro Time Savings*

If each employee saves just 10 minutes per day through clearer workflows and less wasted motion:

10 minutes saved/day per person = 0.167 hrs/day

15 workers (fabricators, welders, fitters, painters, etc.)

Hourly rate: £16

Working days/year: ~260

Calculation:

15 × 0.167 hrs/day = 2.5 hrs/day

2.5 hrs/day × £16 = £40/day

£40/day × 260 = £10,400/year

3.11.2.5. *Waste Reduction via Offcut Tracking*

If sheet metal waste is reduced by £100 per week through better tracking and reuse of offcuts. Assumption: Barcode scanning and offcut calculator help reclaim material value.

Estimate: £100/week saved

Calculation:

£100/week × 52 = £5,200/year

Total Estimated Strategic Value Summary		
Area	Source of Value	Annual Estimate
Delay Reduction	Preventing 2 delays/week (3 hrs each @ £16)	£4,992
Better Quoting	1 additional £5k job/month	£60,000 (revenue)
Bottleneck Fixes	+5 jobs/month completed through smoother flow	£12,000
Accountability Boost	10 minutes saved per day × 15 workers	£10,400
Waste Reduction	£100/week reclaimed from offcuts	£5,200
Total Estimate		£92,592/year

3.11.2.6. Narrative

The total estimate of £92,592 per year represents a conservative calculation based only on a handful of measurable areas. In practice, the potential impact is far greater. These changes don't just save hours or reduce waste they reshape how the business operates.

By moving from disconnected, paper-based processes to an integrated, data-driven system, every department becomes faster, clearer, and more reliable. Bottlenecks are prevented before they build up, quotations win more work, materials flow more smoothly, and employees spend less time waiting and more time producing.

The figures presented are a safe baseline. The true potential lies in the cultural shift: becoming proactive instead of reactive, continuously learning from data, and scaling up without adding unnecessary cost. That is where the long-term competitive advantage is created and why the real value of this transformation will almost certainly exceed what is shown here.

4. Market Growth & Strategic Opportunity

The UK Government is expected to invest approximately £9 billion annually in data centre infrastructure for the next 10 years nearly £100 billion in total. This spending covers land, shell construction, fit-out, electrical systems, cooling, and support infrastructure.

Industry data shows that building and infrastructure make up around 45% of data centre costs, with a significant share tied to fabricated steel and sheet metal for panels, enclosures, frames, and support structures. Even a conservative assumption of 10% of total spend going into metal fabrication equates to around £10 billion over the decade.

To put this into perspective:

- Total investment: ~£100 billion
- Estimated metal fabrication share: ~£10 billion
- Capturing just 0.8% of this fabrication market could represent £80 million in potential revenue.

4.1. *Dual Capability Advantage*

This opportunity extends beyond panels. The factory already operates with two parallel capabilities:

- Panel fabrication — suited for electrical enclosures, server racks, and modular housings.
- Heavy structures (telecoms side) — suited for frames, cooling housings, cable ladders, and load-bearing supports.
- Data centres require both. Having these capabilities under one roof means the business is uniquely positioned to offer a full-service fabrication solution: precision panels and enclosures combined with structural components for installation and integration.

Why these matters:

- Existing capabilities already cover both light and heavy fabrication needs.
- Entering the data centre sector requires only minor adjustments, not major restructuring.
- Agility and short lead times provide a competitive advantage.
- Lean workflows and traceable supply chains match expectations for large-scale contracts.

- In short, the combined capabilities of panel work and heavy structural fabrication create a much broader opportunity in the data centre sector. With the right targeting and compliance, the business can address a significant share of this multi-billion market.

4.2. Target Clients

The data centre sector is driven by a mix of contractors, project managers, and specialist subcontractors. Success in this market depends not only on capability but also on proven credibility. With a track record of delivering large-scale fabrication projects for nationally recognised utility and infrastructure providers, the business already has the credentials and portfolio strength to compete at this level. and Strategic Fit.

Client	Why They Fit
Mercury (Ireland)	Active across the UK and Europe delivering large-scale data centres. Known for outsourcing fabrication, making them a direct entry point into the sector.
Jacobs	Manages complex, multi-billion infrastructure projects. Requires modular, scalable fabrication partners to meet technical and volume demands.
Arup	Global consultancy with a strong focus on sustainability. Our lean, JIT-driven workflows and traceable supply chains align with their compliance goals.
Turner & Townsend	Project managers for most UK hyperscale data centre builds. Provide access to global tech clients by managing procurement and supplier frameworks.
Mace Group	Major engineering contractor delivering projects in London and Europe. Constant need for electrical panels, modular frames, and structural fabrication.
Colin Construction	Specialist in logistics and M&E subcontracting. Represents an opportunity for niche supply or white-label partnerships.

4.2.1. Strategic Fit

What makes this opportunity realistic is that the business is already operating at a high level — delivering projects for nationally recognised clients in critical

infrastructure sectors. This demonstrates the ability to meet strict compliance standards, manage complex workflows, and deliver at scale.

By combining these credentials with lean, data-driven workflows and a proven portfolio, the business is positioned in the best possible place to compete for and win contracts with the leading players in the data centre sector.

4.3. Product Fit & Capabilities Table

The categories below have been selected because they represent the core sheet-metal and structural components most frequently required in data centre construction. These products cover both precision fabrication (such as panels, enclosures, and racks) and heavy structures (such as frames and cable supports), which aligns directly with the dual capabilities already available in the factory. By matching these needs with existing strengths, the business can position itself as a versatile supplier able to cover a wide range of data centre requirements.

Data Centre Needs	Capability	Estimated Share of Fabrication Market	Value Over 10 Years	0.8% Market Capture
Electrical Panel Enclosures	Fully aligned — main product line	25%	£2.5 billion	£20 million
Modular Frame Systems	Racks, supports, base plates	20%	£2.0 billion	£16 million
Cooling Unit Housings	Light gauge precision sheet metal	15%	£1.5 billion	£12 million
Brackets, Fixtures & Trays	Standard sheet metal components	10%	£1.0 billion	£8 million
Cable Management Solutions	Cable trays, trunking, management systems	10%	£1.0 billion	£8 million
Heavy Structural Frames	Large frameworks, load-bearing supports	15%	£1.5 billion	£12 million
Cable Ladders & Supports	Telecom-side production of large support systems	5%	£0.5 billion	£4 million

4.4. Required ISO & Compliance Standards

To compete for data centre contracts as a fabrication supplier, certain certifications are essential while others provide a competitive advantage. Since the business role is to manufacture and deliver (not install on site), the focus is on standards that prove quality, compliance, and reliability in fabrication.

- Mandatory Certifications (Non-Negotiable for Market Entry)
- ISO 9001:2015 (Quality Management System) – Establishes process control, traceability, and consistency. Required by almost all Tier 1 contractors.
- CE Marking / UKCA Compliance – Legally required for fabricated products (panels, enclosures, frameworks) sold in the UK/EU.
- EN 1090 (Structural Steel Welding & Marking) – Mandatory for racks, frames, and load-bearing structures. Essential for heavy fabrication work.
- RoHS Compliance – Ensures that materials used in electrical and digital components are free from restricted hazardous substances.
- IP Ratings (e.g. IP55, IP66) – Product testing and certification required for electrical enclosures, particularly in cooling or outdoor environments.
- Strongly Recommended (Client Expectations in Tenders)
- ISO 14001:2015 (Environmental Management System) – Demonstrates commitment to sustainability, which is a priority for hyperscale data centre projects.
- Constructionline / CHAS / Achilles – Supplier pre-qualification portals. Speed up tendering processes and are often requested by Tier 1 contractors.
- Optional but Advantageous (Adds Competitive Edge)
- Cyber Essentials – UK government-backed digital security standard. Not required for fabrication but builds trust with clients in high-security industries such as data centres.

4.4.1. Summary

With ISO 9001, CE/UKCA, EN 1090, RoHS, and IP Ratings in place, the business can legally and credibly supply panels, enclosures, racks, and structural components into the data centre supply chain. Adding ISO 14001 and supplier portal accreditations strengthens competitiveness, while optional certifications such as Cyber Essentials show readiness for a digital-driven sector. Together, these steps ensure the business is positioned as a fully compliant, agile, and scalable partner for high-value data centre contracts.

5. Future Insights: Scaling Toward Industry 5.0

While the current strategy focuses on Industry 4.0 building digital visibility, traceability, and automation into workflows there is a clear opportunity to evolve further into Industry 5.0. This next phase places emphasis on collaboration between human expertise and smart systems, creating a balance between efficiency and flexibility.

Potential Additions:

- **AI-Supported Decision Making** – Predictive models that forecast material demand, stock replenishment, and production timelines based on historical data.
- **Digital Twin** – Virtual simulation of job flows and resource use, allowing production to be tested and optimised before execution on the shop floor.
- **Smart Client Dashboards** – Secure, external-facing dashboards that let clients track the progress of their jobs in real time.
- **Worker-Friendly Mobile Interfaces** – Tablet and mobile access to workflow systems, making job tracking and requisitions simpler and more intuitive for operators.
- **Human-Centric Automation** – Automation designed to support skilled workers by removing repetitive tasks, not replacing their craftsmanship and decision-making.

5.1. Strategic Value

These features can be introduced gradually as the data foundation matures. By building step by step, the business avoids disruption while positioning itself at the forefront of modern manufacturing. The long-term goal is not just efficiency, but a smarter, more resilient operation where people and technology complement each other creating a competitive edge in flexibility, speed, and customer trust.

6. Conclusion

This case study is not just about modernising workflow it is about building the foundation for a smarter, leaner, and more resilient business. The ability to capture and control data at every step, from sales and quoting through to requisition, tracking, and delivery, creates a level of visibility, traceability, and accountability that current systems cannot achieve.

These improvements go beyond technical upgrades. They represent a cultural shift moving from reactive firefighting to proactive planning. With data guiding decisions, the business can eliminate waste, predict risks, and deliver with greater accuracy. Stock movement becomes controlled, requisitions become reliable, quotations become sharper, and costs are tracked in real time.

Most importantly, this approach connects every department into one integrated structure. Instead of isolated functions, the company operates as a single, scalable system capable of meeting today's challenges and ready to grow into new markets like data centres.

In short, this project highlights how small but well-structured changes can create a stronger foundation for the future. By improving visibility, reducing waste, and making information easier to share between departments, the business can work with greater confidence and efficiency. These steps are not about transforming everything overnight, but about moving gradually toward a more organised, data-driven way of working one that supports both day-to-day operations and long-term growth.

This report is intended as a practical roadmap, showing how the company can use its existing strengths to step confidently into new opportunities.