



FORGE⁴MI

**Focused Operational & Resilience
Growth Engine for the
Manufacturing Industry**

The background is a collage of industrial machinery, including a lathe and a drill press, rendered in a dark green, semi-transparent style. A bright green Greek letter sigma (Σ) is positioned to the left of the text. The text 'smart' is in a large, white, lowercase sans-serif font, and 'advanced manufacturing' is in a smaller, white, lowercase sans-serif font below it.

Σ smart
advanced manufacturing

ORGANISATION PROFILE

Name: Kaiba Digital Ltd, spinout from the University of Strathclyde (Glasgow) in 2023

Personnel: 2 Founders (Daniele Marini, Benoit Fernandez), 3 part-time collaborators

Size: Micro-enterprise (£60k commercial revenue)



Products/Services/Technical areas:

Kaiba specializes in AI-driven supply chain solutions and industrial strategies, primarily focusing on metal manufacturing:

- **Environmental Diagnostic AI (EnDAI):** Reducing environmental impact, improving sustainability, and enhancing supply chain resilience.
- **Supplier Matching & Compatibility Analysis:** Quantitatively matching OEMs with suppliers to de-risk technology implementation, increase efficiency, and reduce costs.
- **Supply Chain Diagnostic & Supplier Selection Services:** Analysing supply chain risk and resilience, identifying vulnerabilities, and optimizing supplier selection.
- **Manufacturing Capabilities Diagnostic Tools:** Evaluating business, operational, technological, and financial capabilities, providing data-driven matches with products and strategic development opportunities.

R&D project expertise: Kaiba has successfully delivered projects for major clients, including a Fortune 500 aerospace company, and is actively working on further commercial collaborations. Their R&D focus includes:

- Development of AI-powered diagnostic tools in partnership with the University of Strathclyde and NMIS.
- Advancing supply chain optimization technology to reduce costs, lead times, and environmental impact.
- Research into expanding their services from metal manufacturing to composites and polymers sectors.
- Kaiba's innovations are grounded in over a decade of research in industrial and academic settings.

PROPOSAL INTRODUCTION (I)

Vision:

To develop a **digital platform** that integrates a technology driven diagnostic tool, sector compatibility analysis, and a recommendation engine.

FORGE⁴MI will empower metal manufacturers and industrial suppliers with strategic insights that drive operational excellence, competitive advantage, cross-sector diversification, informed decision-making, and alignment with relevant development options.

Motivation:

Enhancing levels of readiness, resilience, and competitiveness in the marketplace, to bridge the gap between the current and future states of industrial suppliers. Offering a comprehensive diagnostic of their operational and technological capabilities by offering new:

- **Opportunities to Develop:** Identify achievable and profitable sector and product targets for companies to expand and diversify into via actionable development options.
- **Technological Development and Growth Options:** Support the development of new technological capabilities and services via compatible and cost-effective providers or internal development.
- **Opportunities to Supply:** reduce the “time-to-match” required with OEMs and their products, and supply into new and emerging sectors.

PROPOSAL INTRODUCTION (I)

Content – The key developments of FORGE⁴MI

- **Capabilities Analysis Tool:** Digitalize and code our detailed assessment of the company's dynamic, business, and operational capabilities, including ESG, industrial know-how, and equipment cards.
- **Industrial Capabilities Dashboard and Technological Profile:** Coding the comprehensive map of the company's resilience, reliability, recognition, and readiness. This dashboard compares the company's performance with industrial standards across sectors, regions, and industries, helping identify gaps and opportunities.
- Code and continue the development of our **AI tool for Strategy Diagnostic** for:
 - **Sector Compatibility:** quantify the company's fit with different sectors and its nominal products, estimating potential returns from new opportunities.
 - **Recommendation Engine:** Provides a set of actional development options to improve capabilities at strategy, business and technology level. Match match with relevant service and equipment providers, aiding in technology implementation and operational efficiency improvements.
- Develop and code **FORGE⁴MI recommendation platform** to match efficiently equipment and service providers with metal manufacturers

PROPOSAL INTRODUCTION (II)

Expected outcome:

- Creation of a **digital platform** integrating diagnostic tools and AI tools
- Optimized recommendation engine with **test cases implemented** with the industrial partners.
- Comprehensive **diagnostic reports and strategic recommendations** tailored to manufacturers and providers.
- **Test** the recommendation against target RoI and production targets of the partner companies
- **Set** the live profiles of the test cases in our platform

Impacts:

- **Opportunities for Sector and Product Target Development:** helps companies define achievable and profitable sector and product targets, supporting business growth and revenue stream (e.g., 2 new sectors for Omnitool)
- **Technological Development and Growth:** By mapping a company's resilience, reliability, recognition, and readiness against industry standards, the project enables companies to develop new technological capabilities and services, enabling savings generation and optimal performances (e.g., 50% idle time decreasing and 35% machining time decreasing, respectively via automation and toolpath optimization).
- **Business Competitiveness:** Through the recommendation engine and AI-driven sector compatibility analysis, companies can improve readiness and position within the industry via adopting best practise and compatible technologies (e.g., 100 consultants into 1 single engine).
- **Environmental and Sustainability Impact:** Support for more sustainable practices and technological roadmaps for development (e.g., adopt greener practice to support the technological development).

Schedule: 2 years

PARTNERS

Current Consortium:

Kaiba had applied the “analogic” version of the tool to several companies.

On a machining SME (Omnitool Ltd), the implementation of the analogic version of **FORGE⁴MI** generated a set of new targets and development projects currently undertaken, which are set to generate **£500k additional revenue and cost savings in the next 4 years** (give a yearly revenue of a circa £1.5 per year)

Partner search:

Kaiba is looking for partners in the following areas:

- **Metal Manufacturing Companies:** as primary shaping (casting, forging, additive layer manufacturing), machining, welding and/or any other processes for expanding capabilities and their supply portfolio
- **Industrial Service Companies:** Specialized in providing services like digital services (e.g., FEM/CAD), quality management and technical services (MRO, calibration), looking to expand their customers portfolio.
- **Equipment Vendors:** Offering technological equipment and machinery to augment manufacturers' operational capabilities and looking to expand their customer portfolio
- **Advisory/Public bodies, RTOs and Consultants:** offering strategic and technological advise/consultancy to metal manufacturers

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