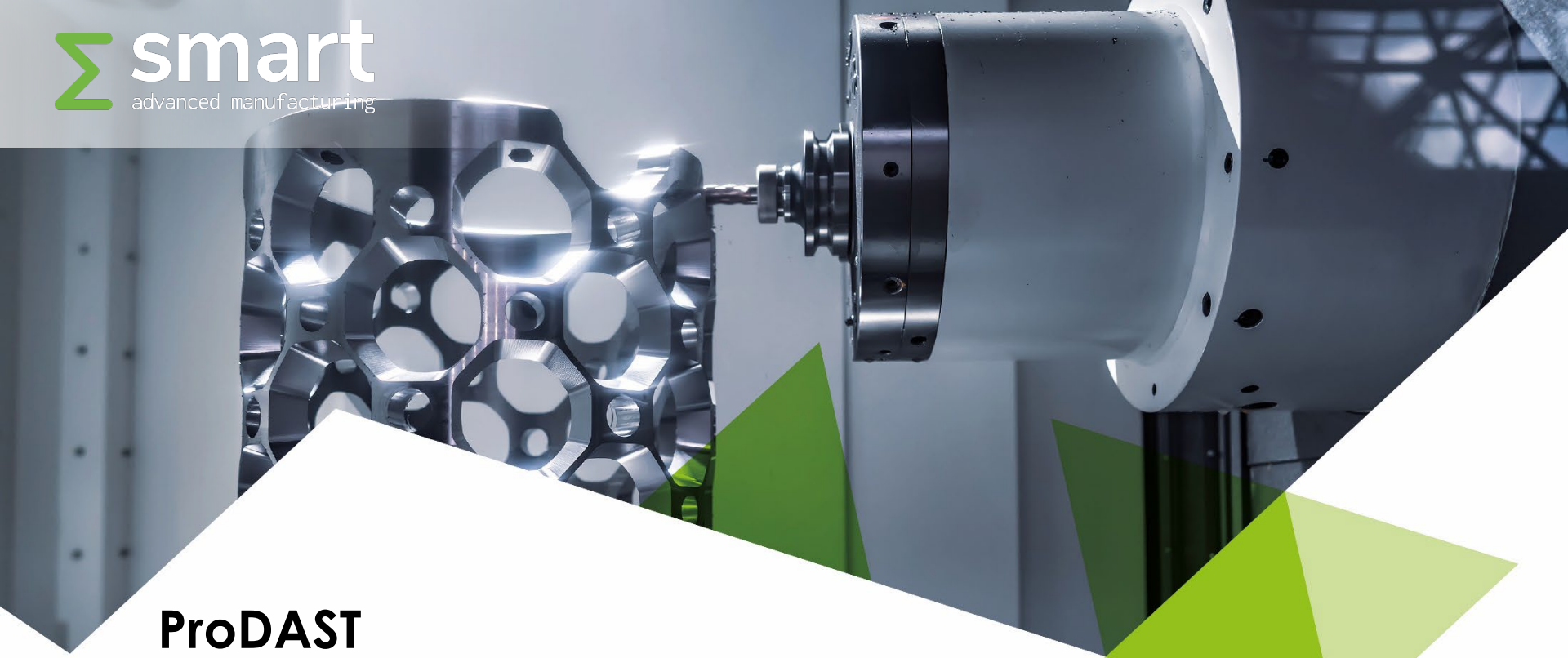
smart
advanced manufacturing



ProDAST

Product-based Diagnostic AI for Supplier and Technology Selection


smart
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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:

Develop a unified **AI-driven platform** that integrates manufacturing strategy, supplier selection, supply chain analysis, process selection, and product design testing. This platform will enable companies to connect product geometry, manufacturing processes, and supplier selections into a seamless, data-driven decision-making tool.

Motivation:

There is a growing need for a single AI tool capable of optimizing the entire product lifecycle—from design to production.
ProDUST will offer preliminary scanning of manufacturing processes, automatically generate various strategies, and evaluate them based on cost, time, quality, and environmental impact.
By virtually testing potential suppliers' capabilities and locations, companies can de-risk operations and achieve sustainable supply chain optimization.

PROPOSAL INTRODUCTION (I)

Content – The key developments of

This project will create a robust AI-driven platform with the following key components:

- **CAD Drawing Analysis**: The AI automatically generates a Bill of Materials (BoM) and product cards, analyzing product geometries to derive optimized manufacturing strategies.
- **Manufacturing Strategy Scanner**: Scans hundreds of manufacturing processes, rebuilding intermediate geometries to evaluate various production strategies for new products or review existing strategies for improvements in cost, lead time, quality, and sustainability.
- **Supply Chain Analysis**: Integrates manufacturing strategies and production targets with supply chain resilience analysis, improving risk management and reducing costs.
- **Environmental Impact Analysis**: Provides Scope 1, 2, and 3 carbon footprint analysis, allowing the comparison of different manufacturing strategies to reduce environmental impacts while remaining cost-effective.
- **AI-Driven Decision Making**: Combines design, manufacturing strategies, and supplier selection virtually, optimizing production objectives and supplier portfolios.
- **Matching System**: Virtual testing of different supply and manufacturing strategies with potential suppliers, enabling companies to co-define and streamline supply chain and production processes.

PROPOSAL INTRODUCTION (II)

Expected outcome:

- **AI Product Diagnostic Code**: Creation of a sophisticated AI tool for product diagnostic, incorporating CAD drawing analysis, process data, and supplier data analytics.
- **Technology Database Expansion**: Replenish and review the Kaiba technology database to test and optimize manufacturing solutions.
- **Alpha and Beta Testing**: Testing the tool with partner companies in real-world manufacturing environments to validate and refine its capabilities.
- **Deliverables for Partner Companies**: A comprehensive report detailing process improvements, supplier selection, and technology recommendations, providing tangible strategies to optimize operations.

Impacts: Market Impact of the Project

- **Enhanced Supplier Selection:** Companies will be able to select suppliers that are precisely aligned with their manufacturing strategies and sustainability goals.
- **Optimized Supply Chain Performance**: Comprehensive risk and performance analytics will significantly improve supply chain efficiency and resilience.
- **Cost Reduction:** Advanced AI tools and interactive databases will streamline processes, resulting in cost savings and time reductions.
- **Case Studies**:
  - Supplier selection applied to a Fortune 500 company, finding alternative suppliers for a critical product by rebuilding the manufacturing chain and optimizing supplier selection.
  - Technology scanner applied in the Oil & Gas Corporate, yielding a 20% cost savings, a 25% material wastage reduction and a 15% reduction in lead time by optimizing the primary shaping process and supplier portfolio.

PARTNERS

Current Consortium:

Shapespace ltd (Edinburgh): A software company specializing in CAD and feature recognition, responsible for developing code to detect features and characteristics from CAD models and rebuild intermediate geometries to evaluate different manufacturing strategies.

Partner search:
Kaiba is looking for partners OEMs in the following sectors applied to **metal products** in:

- **High-Value Manufacturing**: OEM with high value components and products such aerospace, defence, energy (e.g., offshore wind, nuclear, oil&gas) and low carbon (e.g., hydrogen)
- **High-Tech**: OEM with high complexity metal products such as space, electronics industries and machinery.
- **High-Volume**: OEM with a volume and complexity such as automotive and rail.

The goal is to collaborate and help the OEM optimize their supply chains, de-risk production, and increase sustainability through advanced AI-driven technology and supplier selection processes via our technology development

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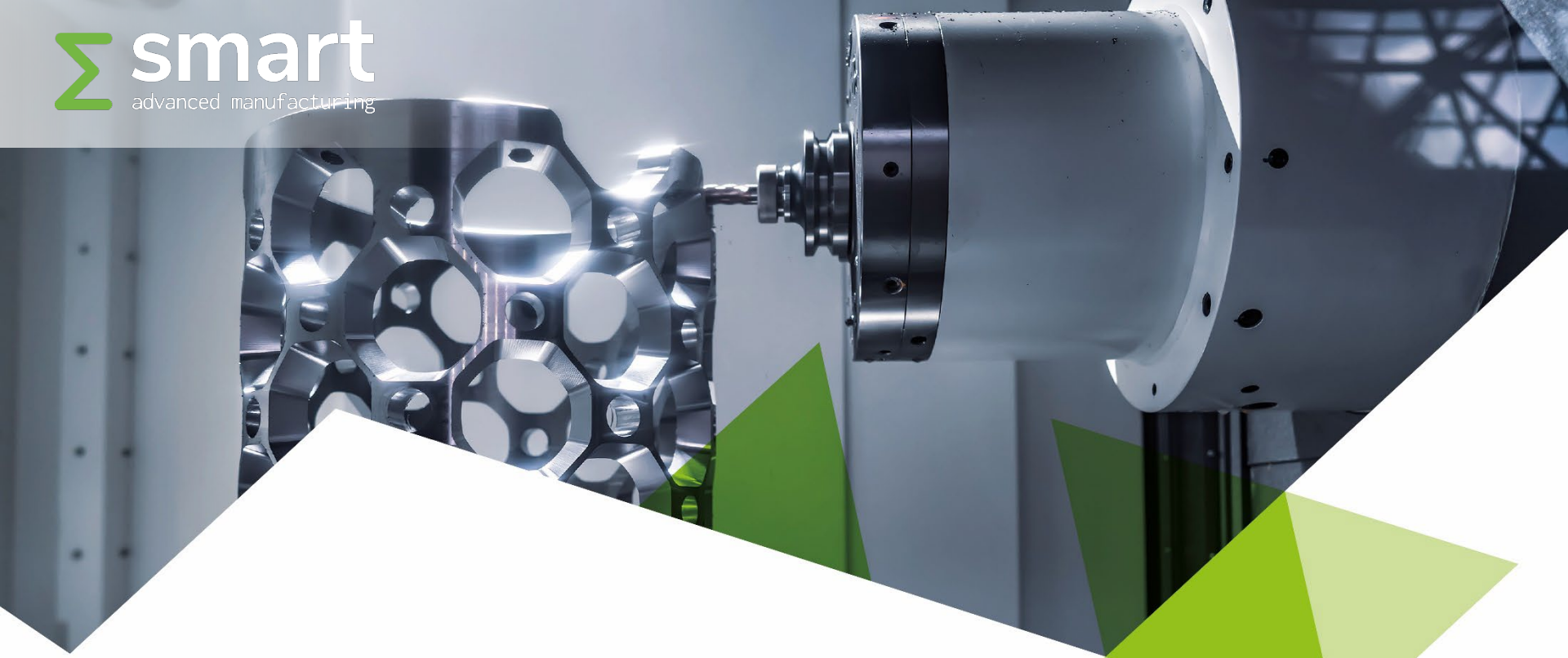

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