

Cutting-Edge Solution for Slashing Manufacturing Costs, Time, and Energy

darkonium

The Challenge for UK Manufacturing

Global Pressure: Firms must boost output to stay competitive

Rising Costs: 68% are tackling soaring energy and ops costs

Fragile Supply Chains: Brexit & COVID exposed weak links

Execution Gap: 86% value digital but only 5% are truly smart

→ Modernisation is urgent

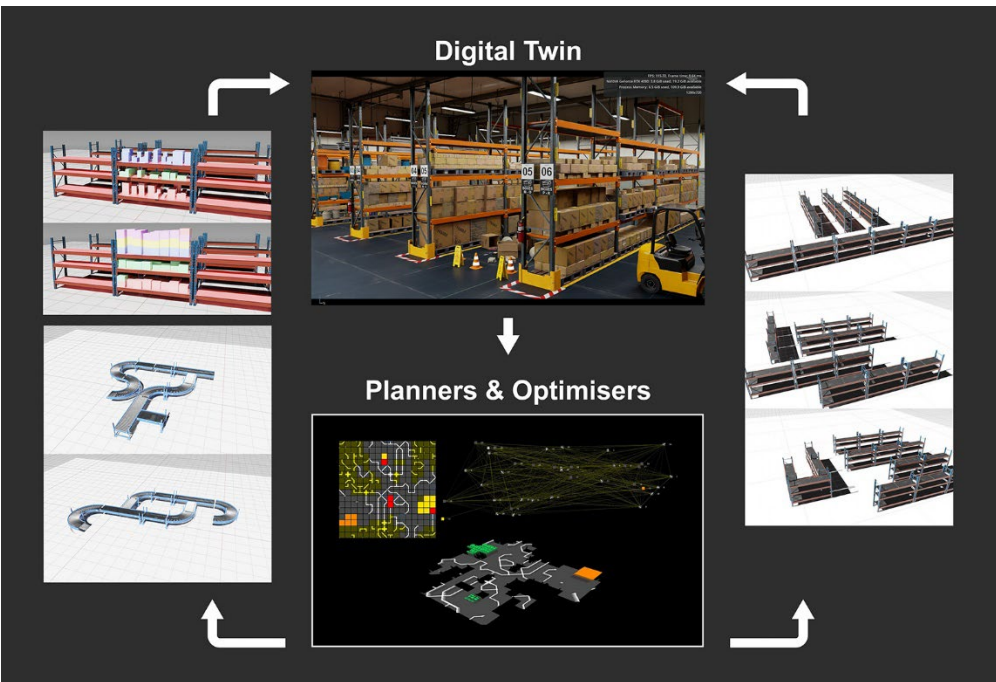
→ Execution is easier said than done



Your Path to Execution

New Factory Capability:

We transform your factory into a smart, self-optimising operation with the help of intelligent systems.



What This Means for You

Our integrated approach delivers a direct and measurable impact on your most critical KPIs.

Drastic Cost & Waste Reduction: Hidden inefficiencies get found then eliminated with data-backed actions.

Faster Throughput: AI finds and validates optimal workflows before implementation.

Data-Driven Decisions: Your factory turns into a live data ecosystem, with real-time, full-visibility data to drive clarity and speed.

System / Approach can **model** across multiple facilities up to international scale.

Model incorporates all aspects of the process, including:

Behaviours

- Equipment characteristics
- Process Interactions
- Shift optimisation
- Behavioural modelling
- Relevant algorithms

Commercials

- Work to Optimisation objectives (e.g. speed/throughput, cost, quality, safety, energy, perishables etc.)
- Supply / batch objectives
- Develop / trial KPI's



Physical Aspects

- Production layout (including national/international multi-site)
- Component assembly
- Handling of liquids and solids
- Storage / buffering
- Vehicle Movements

Logistics

- National / International movements
- Optimise deliveries
- Threats to process
- Waste management
- Resource allocation
- Reliability / Asset Management

The Proof is in the Numbers

15-40% Energy Reduction

By creating a virtual model of energy flow, our AI pinpoints hidden waste from idle equipment and inefficient processes.

→ Alucast saved £78K/year

25-65% Less Downtime

AI-powered predictive maintenance, running on live data, anticipates failures before they stop production.

→ Brompton Bikes cut downtime by 33%

10-93% Waste Reduction

The digital twin allows for process validation without using physical materials, virtually eliminating trial-and-error scrap.

→ Raynor Foods cut overproduction by 93%

15-20% Throughput Gain

Simulated thousands of crowd flows at Berlin Central Station to optimise arrival routes.

→ Deutsche Bahn projects improved disruption readiness

How We Deliver – The Dual-Engine Advantage



“The World-Class Foundation”

- Physically accurate digital twin / framework at industrial scale for solver and tool integration.
- Live 3D model of your factory
- Full-team collaboration

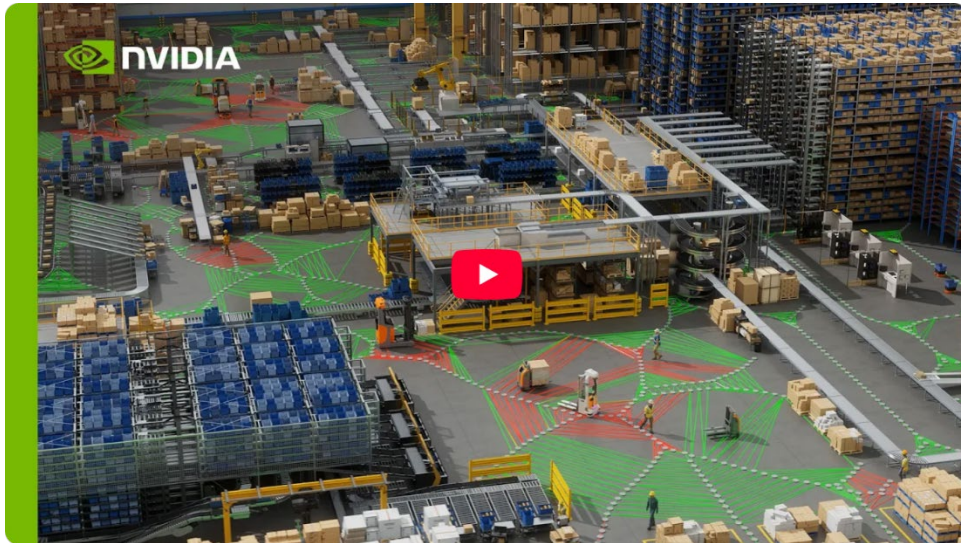


“Our Proprietary Intelligence”

- Thousands of micro-simulations at each step, guided by AI that learns from events.
- Precise (genetic) solvers for optimal strategies
- Geospatial data intelligence

 builds it.   optimises it.

In Action: Live Demo



Watch a real-time, physics-accurate digital twin in Omniverse simulating robotics, logistics, and human workflows.

→ Test changes without risk

Investment & Timeline

Phase	Activity	Key Deliverable	Timeline	Cost
1. De-risk: Digitise & Assess	Together on the factory floor, we capture data our AI needs to deliver the first optimisation win — using tech and expertise.	Digital Readiness Report; ROI Roadmap with prioritised opportunities.	2 - 4 Weeks	From £7,500
2. Model & Plan	We build a digital twin linked to our intelligence layer — a sandbox for validating deep optimisation on your top priority.	Virtually validated twin; Detailed optimisation & implementation plan.	6 - 12 Weeks	From £25,000
3. Pilot: Build & Test	We deploy the twin and optimisation within part of your real-world operation.	Deployed pilot; Measured and validated against projections.	4 - 6 Weeks	Project-Specific
4. Implement & Scale	We gradually scale solutions across your operations, train your team, and make the twin their live dashboard.	Full scale deployment; Training.	3 - 6 Months	Project-Specific
5. Train & Support	Ongoing training, support, and continuous optimisation of the digital twin.		Ongoing	Retainer

Flexible Funding That Fits Your Budget

Option A: The Traditional Path

Best for: Companies with a defined budget.

What you get: A fixed-fee structure for each project phase, offering simplicity, full control, transparency and predictability over spending.

Option B: The Hybrid Partnership

Best for: Companies with tight budgets who want to minimise risk.

What you get: A small upfront fee, with the rest of our compensation based on the actual savings we achieve.

Option C: The Self-Funding Model

Best for: Companies avoiding upfront capital costs.

What you get: We secure grants or investor funding to cover project costs, repaid via a share of your new revenue or savings.

Blueprint: Automotive & Aerospace

- **The BMW Model:** The automotive giant uses this technology to create full-scale digital twins of production facilities, projecting **30% savings** from more efficient planning before a single brick is laid.
 - **BAE Systems & The Tempest Jet:** Digital twin technology embedded from the project start to reduce physical testing times, lowers costs, and accelerate the development of next-generation fighter jet program.
- We help UK firms reach this level of digital excellence.

Blueprint: Food & Beverage

The Raynor Foods Story: This UK sandwich maker, supported by the Made Smarter programme, implemented a gamified digital twin that empowered its staff and transformed the business.

- **19%** Reduction in Energy Use
- **93%** Drop in Overproduction Waste
- **£50,000** in Monthly Savings

→ Staff empowered by gamified twin. Proof that live data = profit.

Why Us? Your End-to-End Partner

We are a specialist British Startup, trusted partner to industry leaders and government bodies, recognised for our pioneering work in AI and digital twins.



Powered by technology / insight / validation from
NVIDIA Inception membership*



UKRI & UKSA Advisors on AI and sustainability

Proven Delivery: UK National Resilience, Deutsche Bahn, Co-AIMS Hub*

Let's Start the Conversation

Book a complimentary, no-obligation 30-minute scoping session to discuss your specific challenges and identify the highest-value starting point for your digital journey.

schedule here

darkonium