

Engineering intelligence with accountable control

The Thinking Value Chain connects first-principles design, AI-assisted reasoning, simulation, digital twins, sensing and traceable evidence.

TVC AEGIS K-Ledger™



Thinking Value Chain

TVC carries engineering intent from evidence to industrial execution while preserving the reasoning behind each decision.

Evidence

Modelling

Governed reasoning

Validation

Industrial execution

Evidence-gated, reviewable and reversible

AEGIS governed decisions

The Agentic Epistemic Workflow structures physics-aligned engineering decisions around explicit evidence gates.

Evidence first

Assumptions and supporting records remain visible before a decision advances.

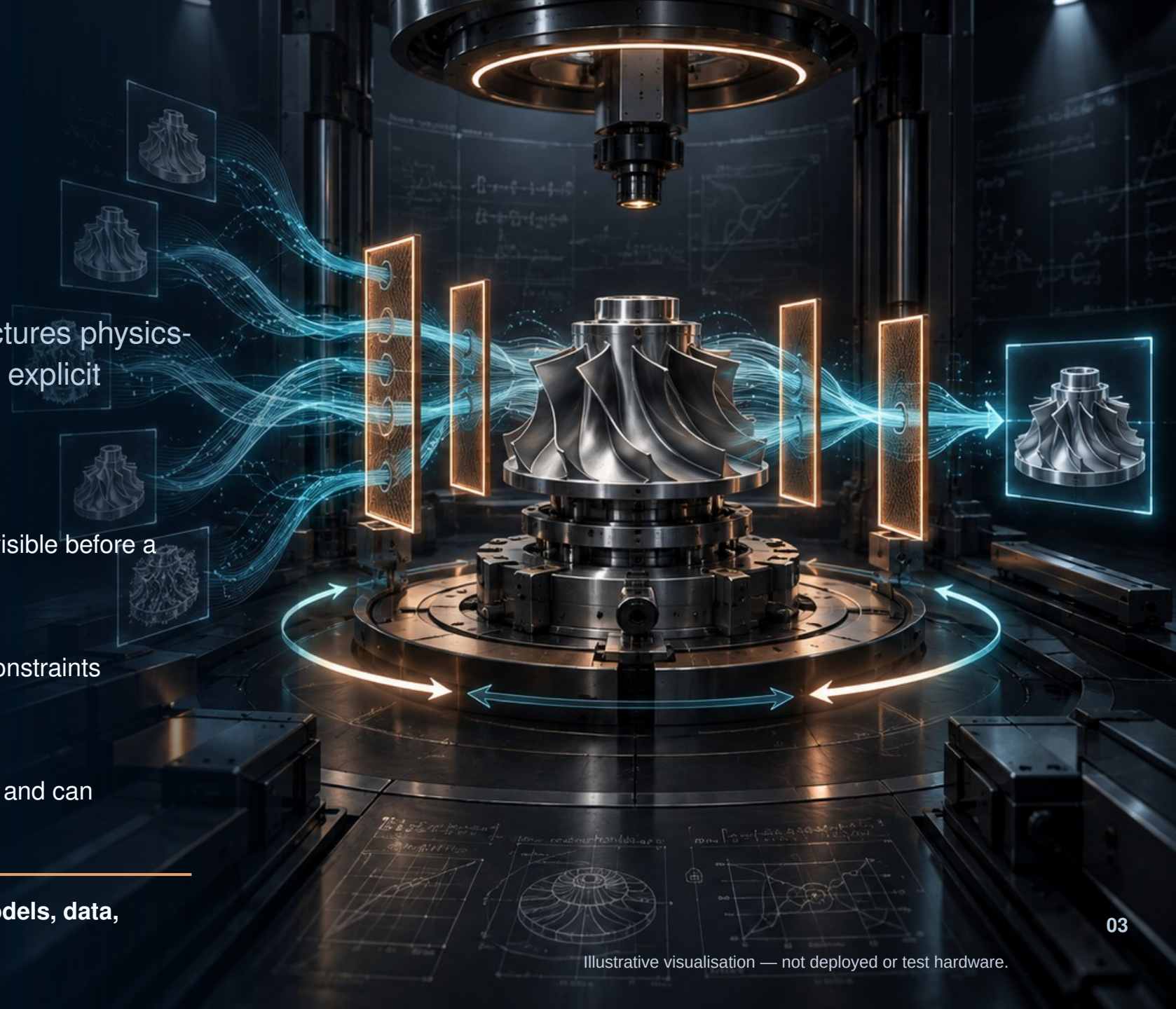
Physics aligned

Models and agents work inside engineering constraints rather than replacing them.

Human authority

Accountable engineers retain decision control and can reverse a governed step.

K-Ledger™ preserves provenance across models, data, assumptions and validation records.



Illustrative visualisation — not deployed or test hardware.

One engineering technology ecosystem

Governed cognitive design agents connect specialist reasoning across materials, electrochemistry, structures, magnetics, thermodynamics and flight.

Virtual testing links simulation with physics-informed digital twins, sensing and feedback from surrogate hardware.

Lifecycle and circularity assessment keeps resource efficiency visible as concepts mature.

Advanced materials and manufacturing
Transport and aerospace
Energy and infrastructure



Funded R&D and public milestones

Everlast™: completed 28 February 2025

Sustainable battery demonstrator supported through the DCMS Create Growth Programme.

QuESTran: technical feasibility project delivered March 2026

Administratively closing. Innovate UK feasibility project exploring integrity assurance for transport platforms.

ReALL-i: September 2026 to February 2027

Resource efficiency and performance for SME drive systems, including motors and pumps.

I-MAG/ARC: commencing October 2026

AI-assisted rare-earth magnet discovery for demanding applications, including fusion.

Engineering ideas developed into testable, sustainable demonstrators

