Digital Twins and ISO/IEC 30186

Pathway from Maturity to Assurance

Digital Twins,

Creating value and making impact

Andy Butterfield
Managing Director, Global Built Environment
23rd April 2026

A purpose-led organization

Impact for a fair society and a sustainable world

For 125 years BSI has benefitted the world in a profound and unique way. Our independence, global reach and access to leading-edge experts sets us apart.

Due to the unique way we are incorporated, we reinvest our profits to foster progress and partnership, increasing trust between consumers, governments and organizations.

Ultimately, we help business and society thrive together accelerating progress towards a fair society and a sustainable world.

By Royal Charter

Your partner in progress

Creating **impact** for a safe, sustainable and digitally enabled **built environment**

Sustainability

- GHG/Carbon management
- Energy/Water Management
- Sustainable Materials & Products
- Sustainable Infrastructure
- Smart and Sustainable Cities
- **Data Centres**

Digital Trust

- **Digital Twins**
- **BIM**
- Information and Cyber Security
- Artificial Intelligence
- Digital Innovation and Technology

Health, Safety and Wellbeing

- Fire Safety
- Occupant Health & Wellness
- Prioritizing People

Quality

- Construction Products / Materials (Quality and Performance)
- Sector specific Quality Management

Data and Digital Tools, foundation for driving progress...

Creating **value** for organisations, and their people

Showcasing organisations **and their people's achievements**, globally

Bringing industry **stakeholders together to create value** and opportunity

Joint thought leadership, **pioneering innovation**

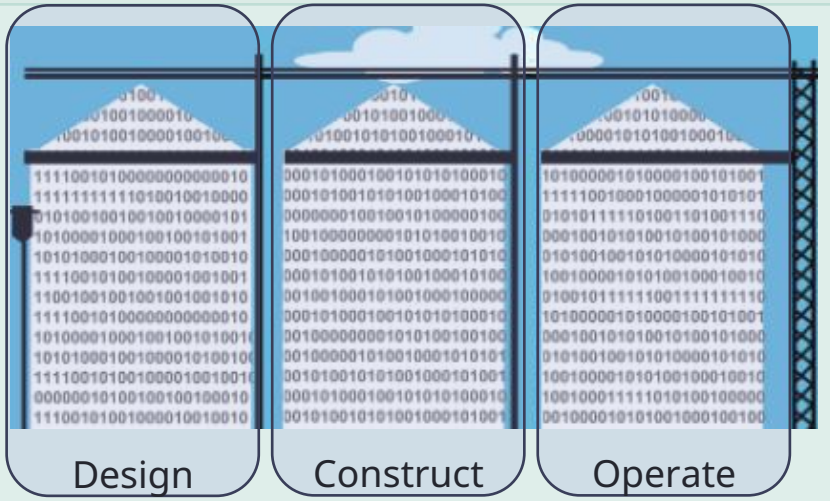
Partners in progress, developing solutions to shape the future of the built environment

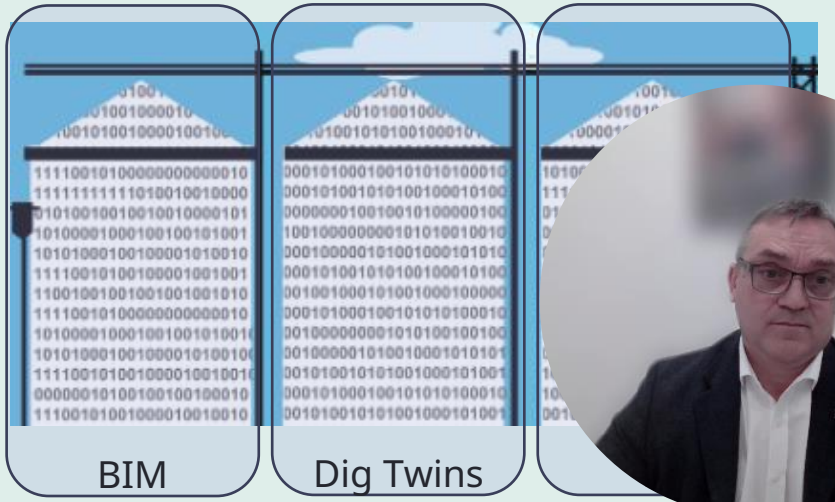
Challenges and **opportunities** for the next decade

A key Challenge, technology integration across the asset lifecycle

- Tools like BIM, **Digital Twins**, and AI are often used in isolation.
- True transformation requires **end-to-end integration** from design to operation.
- The risk of creating **digital silos** is real if systems don't talk to each other.

We have the opportunity to make a difference...





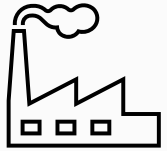
Poll 1

Digital Twins and ISO/IEC 30186

DTw Standards Landscape & Overview of ISO IEC 30186

Ceki Erginbas
Certification Technical Expert

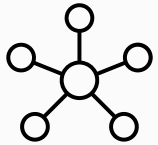
Digital Twin Standards Landscape



ISO / TC 184
Industrial automation systems and integration

Manufacturing

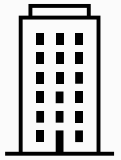
- **ISO 23247-1,2,3,4:2021**
  - Automation systems and integration
  - Digital twin framework for manufacturing



ISO/IEC JTC 1 / SC 41
Internet of Things and Digital Twin

Cross-Sector

- **BS ISO-IEC 30173:2023**
  - Concepts & Terminology
- **BS ISO- IEC 20924:2024**
  - IOT & DTw Vocabulary
- **BS ISO-IEC 30186:2025**
  - Maturity model
- 8 More DTw standards under development



CEN/TC 442
Building Information Modelling (BIM)

Built Environment

- **PD CEN/TR 18077:2024**
  - Use cases
- **BS EN 18162:2026**
  - Concept & Definitions
- More DTw standards to follow.

What ISO/IEC 30186 is (and isn't)

Defines a **generic DTw maturity model**, along with indicators and guidance for assessing maturity.

In Scope

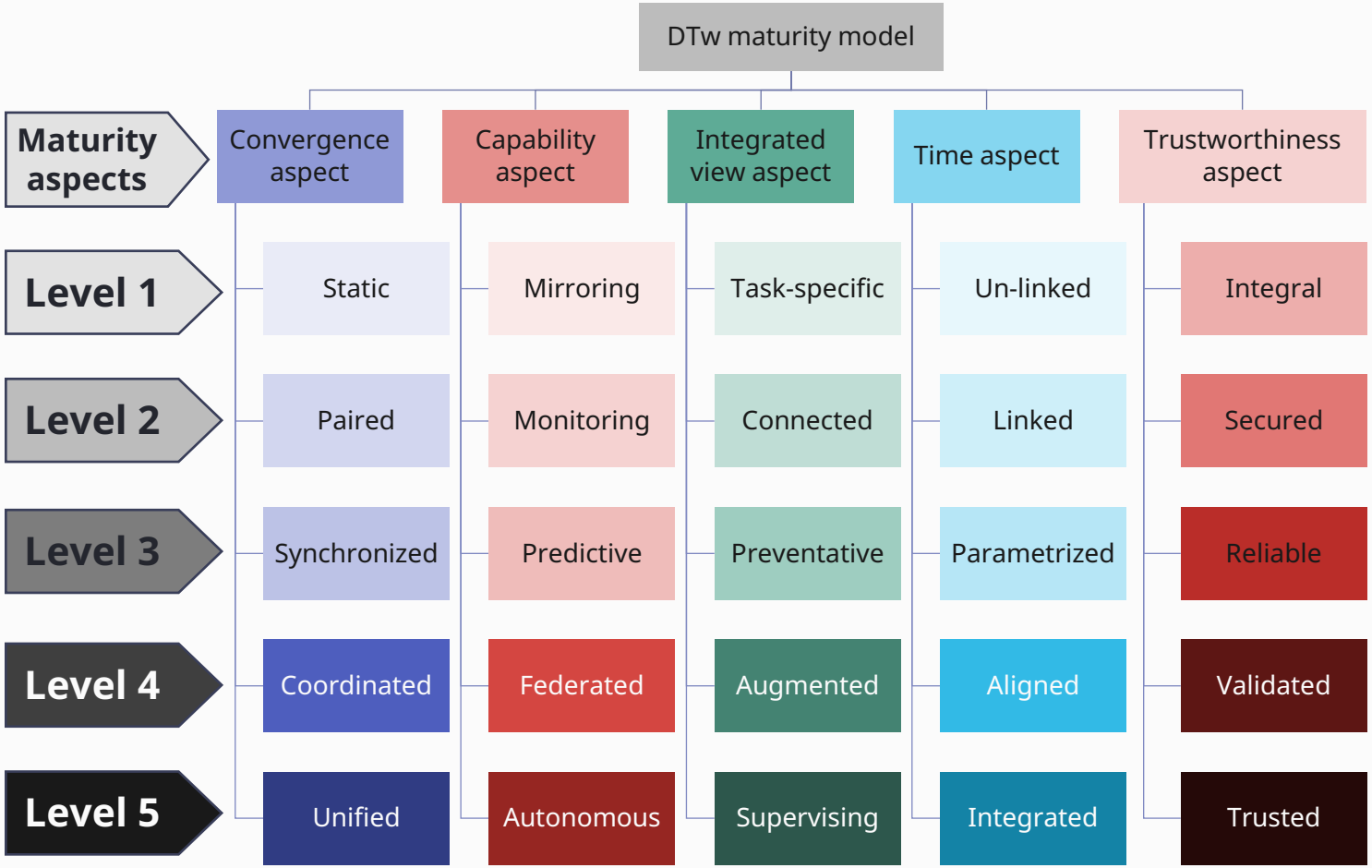
- Maturity model
- Sector Agnostic
- Assessment Indicators
- Assessment Guidance

Focuses on assessing **how mature a Digital Twin capability is**, in a consistent and sector-neutral way.

Out of Scope

- Prescribing a DTw Architecture
- Mandating specific data models or tools
- Product-specific technical requirements

How maturity is defined



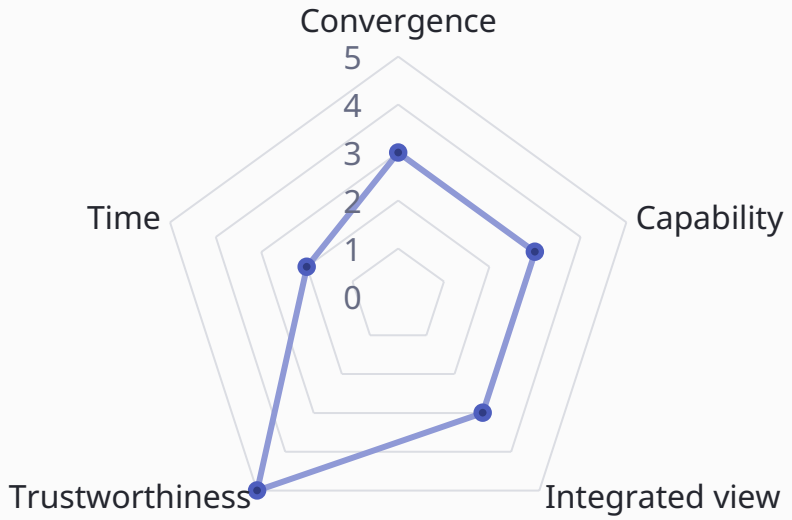
- Multi-dimensional concept
- 5 Aspects
- 5 Cumulative Levels of maturity
- Each level described in detail with objective criteria

How maturity is assessed

- Set of **YES / NO** assessment questions for each level

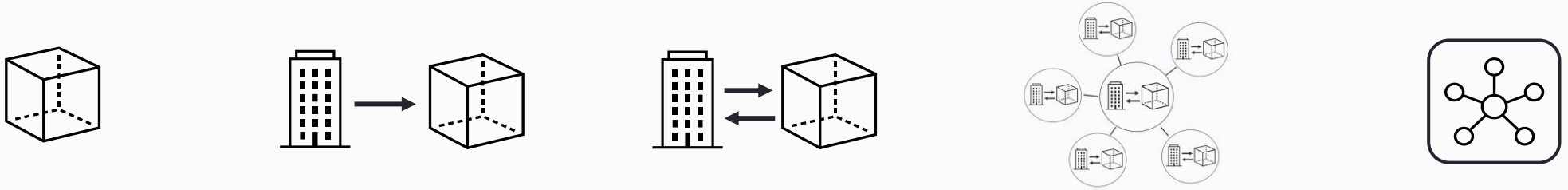
Aspect	Questions		Maturity Level Indicator
Capability	CA.2-1	Does a digital twin monitor the target entity through a data connection to enable identification, diagnosis, and analysis of issues?	2
	CA.2-2	Does the digital twin facilitate reactive operations with the target entity by providing insights based on monitored data, requiring human intervention?	
	CA.3-1	Does a digital twin use data or simulation tools to predict the behaviour of the target entity?	3
	CA.3-2	Does the digital twin enable 'what-if' analysis and time ahead predictions to optimize production, operation, maintenance, and design processes?	

- Each aspect scored separately
- No Collapsed Single Score
- Target Levels set according to use



Convergence aspect

- Looks at the relationship between the physical entity and the Digital Twin.
- From a static twin (essentially a model) at Level 1 to a unified, autonomous system-of-systems at Level 5



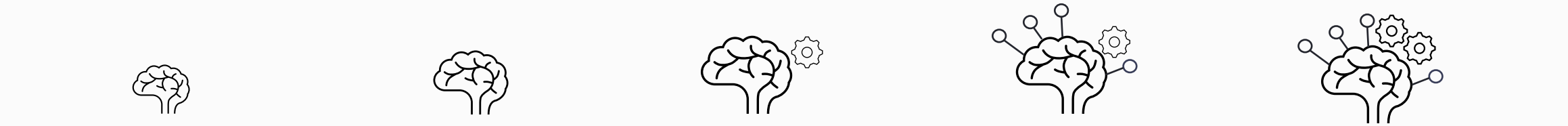
Level 1 Static	Level 2 Paired	Level 3 Synchronized	Level 4 Coordinated	Level 5 Unified
No data connection	1-way connection	2-way connection	Coordinated multi. DTws	System-of-systems

- Not an all-or-nothing approach
- Focus on objectively identifying where a capability sits on a maturity scale

- DTws can start as static models and then evolve over time
- Without excluding projects earlier in their development journey

Capability aspect

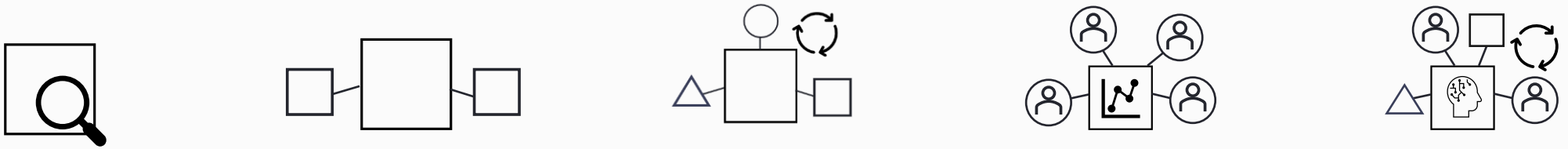
- The capability aspect focuses on what the Digital Twin can actually do.



- Early levels are descriptive and monitoring-based.
- Higher levels enable prediction, collaboration between multiple twins, and ultimately autonomous optimization.

Integrated view aspect

- The integrated view aspect is about users and collaboration.

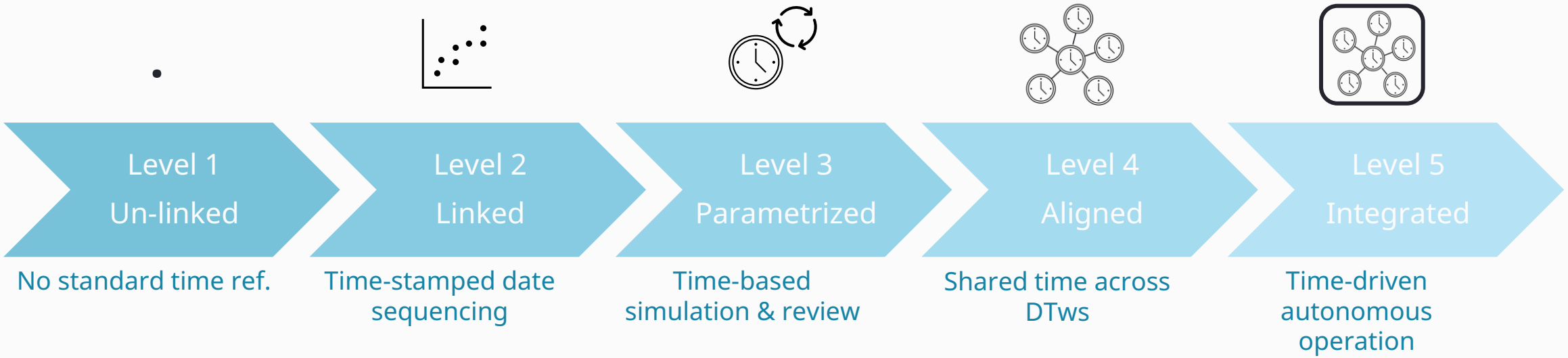


Level 1 Task-specific	Level 2 Connected	Level 3 Preventive	Level 4 Augmented	Level 5 Supervising
Single task focus	Connected tasks Single discipline	Cross-discipline Predictive analysis Lifecycle-wide	Enterprise-wide Decision support	Supervisory Cross-domain coordination

- Early levels are narrow, task-specific or discipline-specific activities.
- Higher levels span lifecycle stages, disciplines, teams, and eventually multiple domains.

Time aspect

- The time aspect assesses how time information is managed.



- From basic sequencing of data, through simulation and historical analysis, to fully integrated, time-aligned operation across multiple Digital Twins.

Trustworthiness aspect

- Trustworthiness covers security, data accuracy, reliability, and compliance across the DTw lifecycle.

- As maturity increases, trust is built proactively — through validation, automation, and eventually self-healing behaviour.

Why ISO/IEC 30186 matters

- Objective way of understanding DTw maturity
- Sector Agnostic
- Inclusive of early and advanced implementations
- Clear roadmap for development & improvement
- Strong basis for benchmarking
- Supports DTw specification
- Credible foundation for assurance solutions

Poll 2

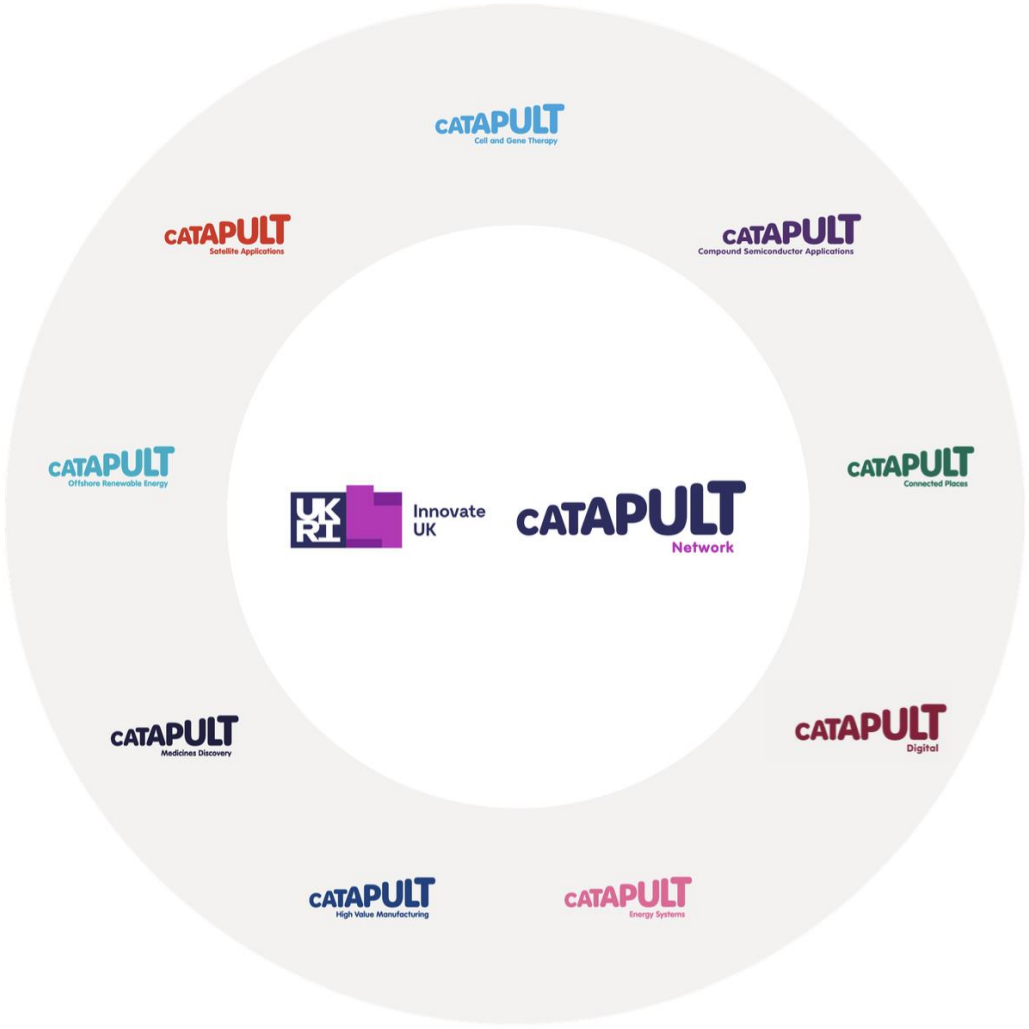
UK Digital Twin Centre

UK Digital Twin Centre

Delivered by Digital Catapult

Part of the Innovate UK Catapult Network

Catapults provide a unique combination of cutting-edge R&D facilities and world-class technical expertise to support UK business innovation.



We accelerate the practical application of deep tech to equip the UK to be future ready

- We solve what matters by shaping and de-risking early adoption deep tech products, services and solutions.
- We partner for progress with UK government, industry and academia to deliver transformational deep tech solutions.
- We challenge purposefully to push deep tech frontiers inclusively, responsibly and sustainably.

The UK Digital Twin Centre

Delivered by Digital Catapult

What is the UK Digital Twin Centre?

National, regional stakeholders

UK Businesses

SMEs

Technology innovators

Industry bodies

Universities, Research, Academia

Global partnerships

Helping UK sectors and businesses realise the critical and real-world value of digital twins.

Supporting new research and innovation to push the possibilities of what digital twins can do.

Nurturing a thriving ecosystem of capabilities and active collaborations.

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Co-investment from Artemis TECHNOLOGIES THALES Short Brothers A Boeing Company

What is the UK Digital Twin Centre?

How

£37.6m Investment from Belfast Region City Deal, Innovate UK and industry partners

Why

£62m Increase in GVA in 10 years (£36M gross NI)

230 New jobs in manufacturing sector (104 in NI)

100+ Members of thriving ecosystem

50% Reduction in cost of producing a digital twin

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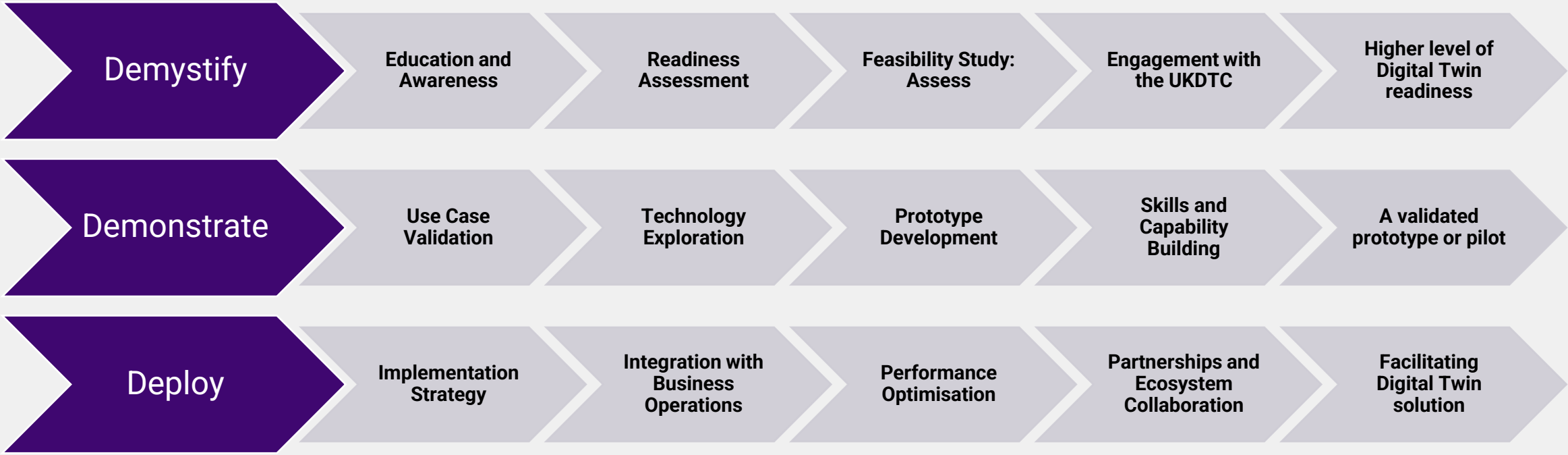
Vision & Mission

The overarching objective of the UK Digital Twin Centre programme is to **make digital twins more accessible in the UK** by actively enabling industries and innovators **to realise their potential** to advance the development of products, processes and systems.



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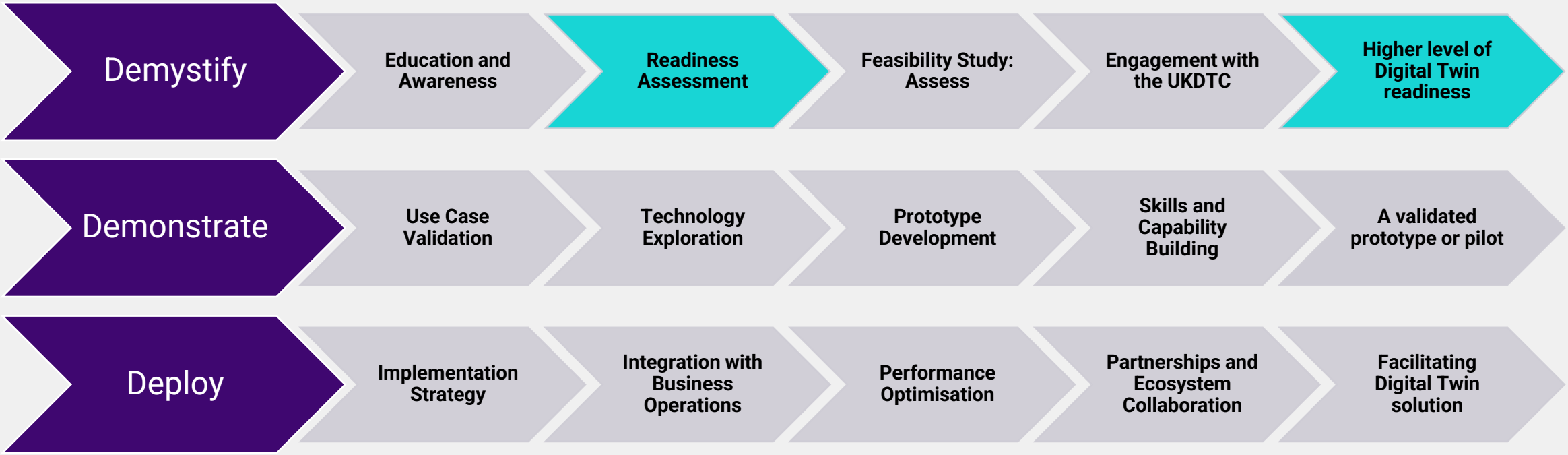

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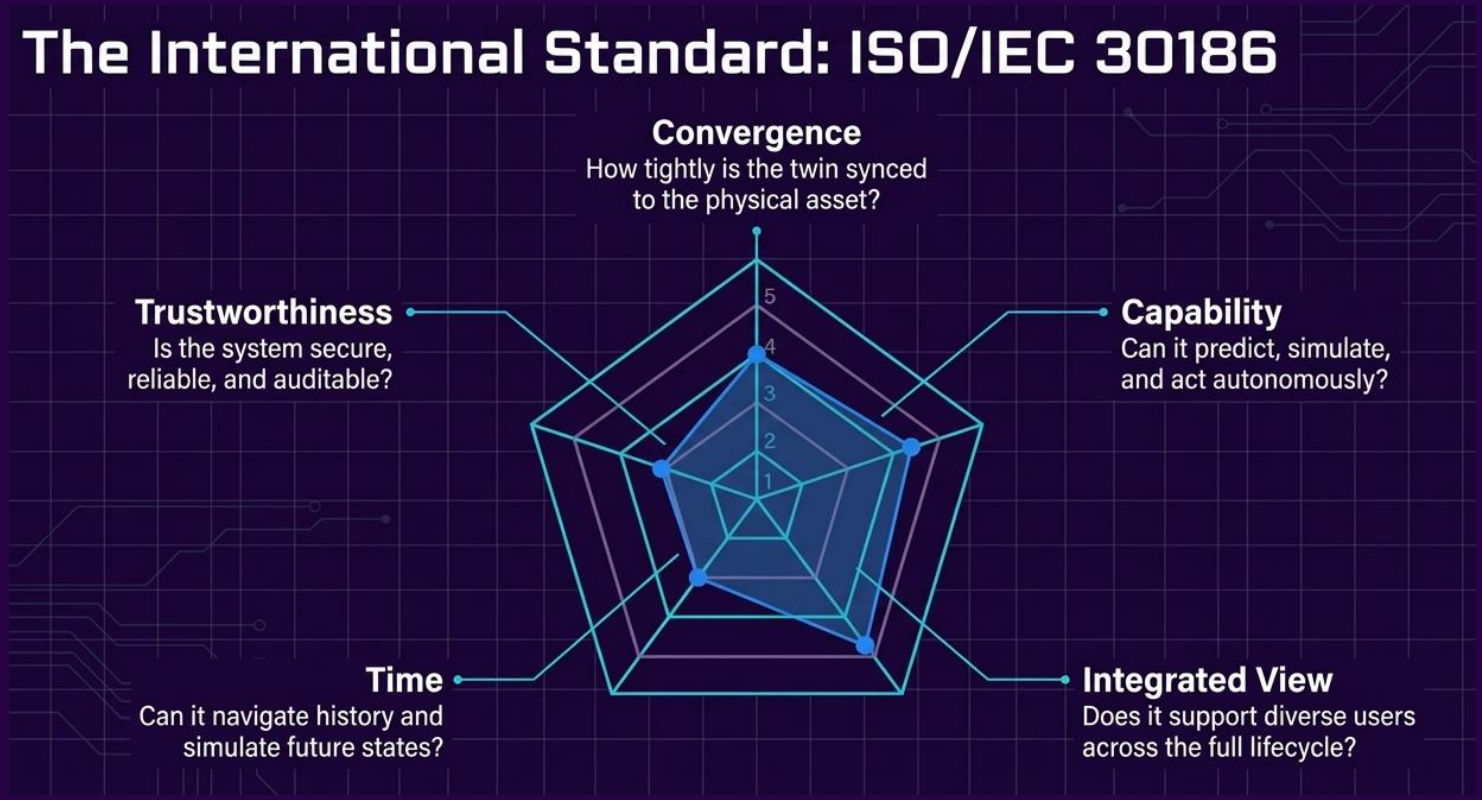
The UKDTC Technical Readiness Assessment

Based on the ISO 30186 Maturity Standard

UKDTC Technology Readiness Assessment

Directly based on the ISO/IEC 30186 Digital Twin Maturity Framework

ISO 30186 MATURITY ASSESSMENT



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UKDTC Technology Readiness Assessment

Five dimensions. Five levels each. Identifies gaps in organisational readiness and guides companies through Demystify, Demonstrate, Deploy.

UKDTC TECHNOLOGY READINESS ASSESSMENT

Convergence	Capability	Integrated View	Time	Trustworthiness
How tightly is the twin synced to the physical asset?	Can it predict, simulate, and act?	Does it support users across the full lifecycle?	Can it navigate history and simulate futures?	Is it secure, reliable, and auditable?

Data & Connectivity	Analytics & Intelligence	Organisational & Lifecycle	Temporal & Real-Time	Security & Trustworthiness
Can you connect, sync, and federate your twin with the asset?	Can it predict, simulate, and learn from new data?	Are people, processes, and governance ready across the lifecycle?	Can it timestamp, sequence, and simulate across time?	Is it secure, reliable, auditable, and trusted?

Scoring: 0 = Not considered 1 = Planned 2 = In progress 3 = Implemented 4 = Validated. Each dimension scored independently; overall readiness = minimum level across all five dimensions.

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UKDTC: Digital Twin Readiness Assessment

	A	B	C	D	E	F
1	**Digital Twin Readiness Assessment – Summary Results**					
2	*Based on ISO/IEC 30186 Digital Twin Maturity Framework | Scoring: 0=Not considered 1=Planned 2=In progress 3=Implemented 4=Validated*					
4	**Readiness Dimension**	**Weighted Score (/1.0)**	**% Readiness**	**Level Achieved***	**Readiness Aspect (ISO 30186 equivalent)**	
5	**Data & Connectivity Readiness**	**0.53**	53	Level 3	*Convergence Aspect*	
6	**Analytics & Intelligence Readiness**	**0.52**	52	Level 3	*Capability Aspect*	
7	**Organisational & Lifecycle Readiness**	**0.38**	38	Level 2	*Integrated View Aspect*	
8	**Temporal & Real-Time Readiness**	**0.62**	62	Level 4	*Time Aspect*	
9	**Security & Trustworthiness Readiness**	**0.45**	45	Level 3	*Trustworthiness Aspect*	
10	**OVERALL READINESS SCORE**	**2.5**	**50**	**Level 2**	**All five readiness dimensions combined**	
11						
12	** Level achieved is indicative, based on score bands: <20%=L1, 20–39%=L2, 40–59%=L3, 60–79%=L4, ≥80%=L5*					
13	*Each dimension is weighted equally (20%) toward the overall score (which is an equal score for each section)*					
14						

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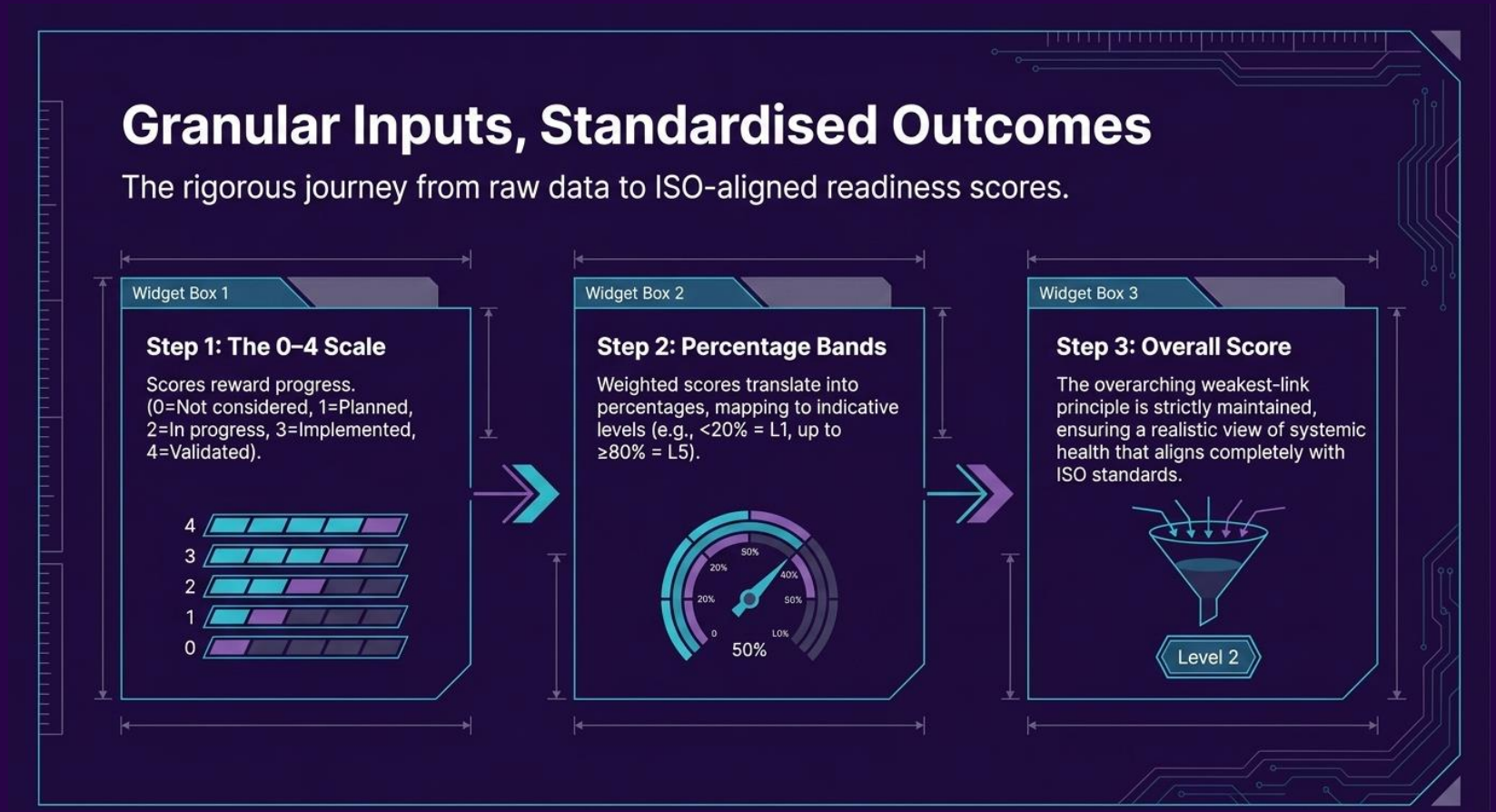
Granular Inputs, Standardised Outcomes

From Raw Data to ISO-Aligned Readiness Scores.



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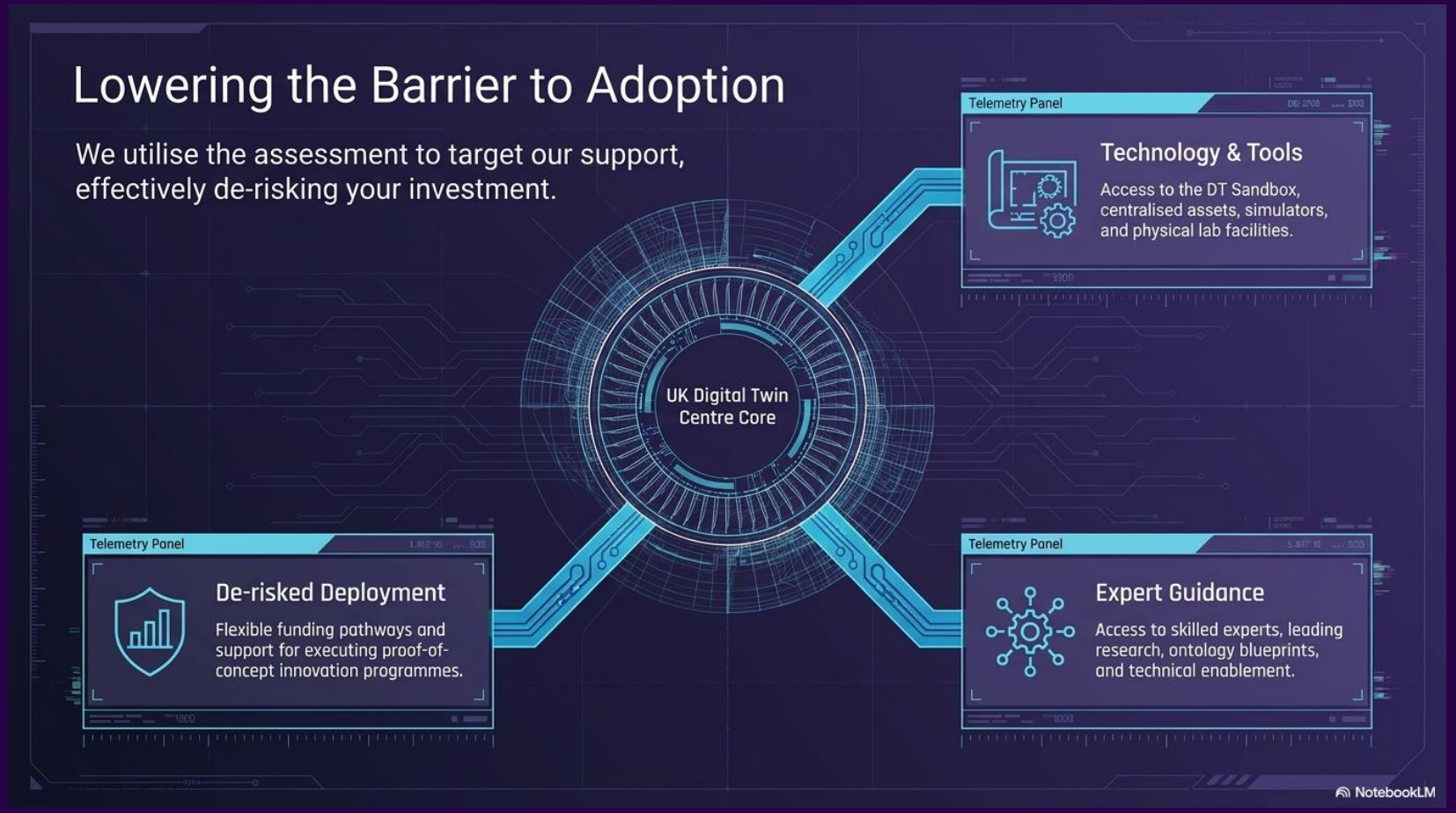
UK Digital Twin Centre



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Thank you!

Please reach out to Paul Coyle, Community Engagement Manager
paul.coyle@digicatapult.org.uk

UK Digital Twin Centre

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Poll 3

Poll 4

Q&A

Poll 5

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