Bringing data together – The National Digital Twin

An ecosystem of connected digital twins enabling better decisions faster across the built environment

What is the context for the National Digital Twin?

What is the National Digital Twin?

What is being done to deliver it?

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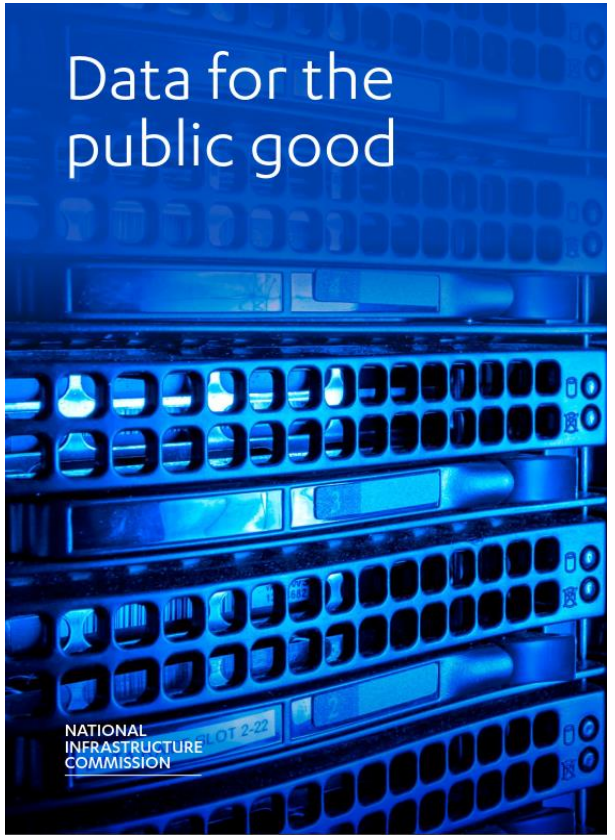
Aligned government messages



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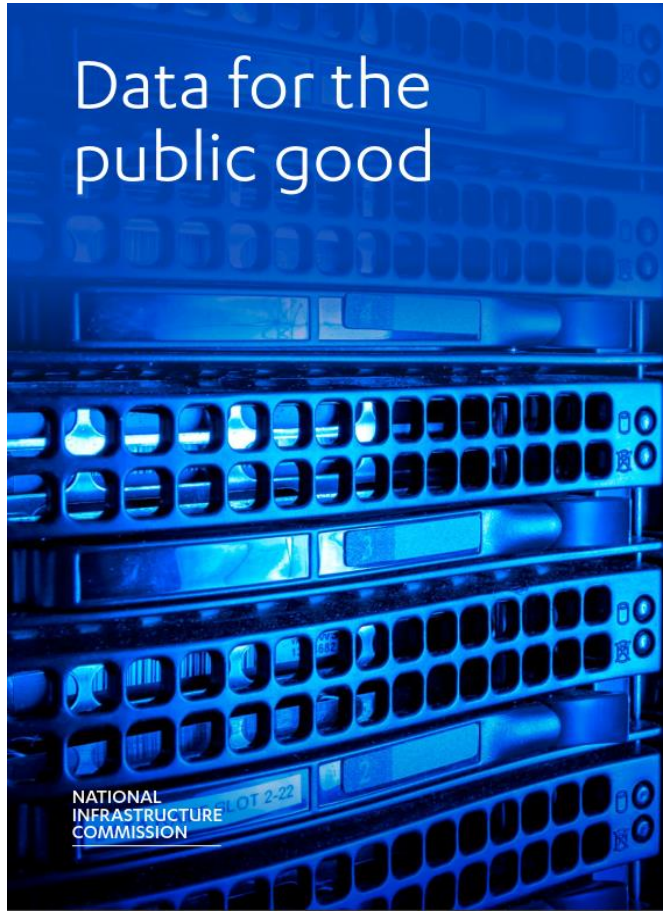
Data for the public good



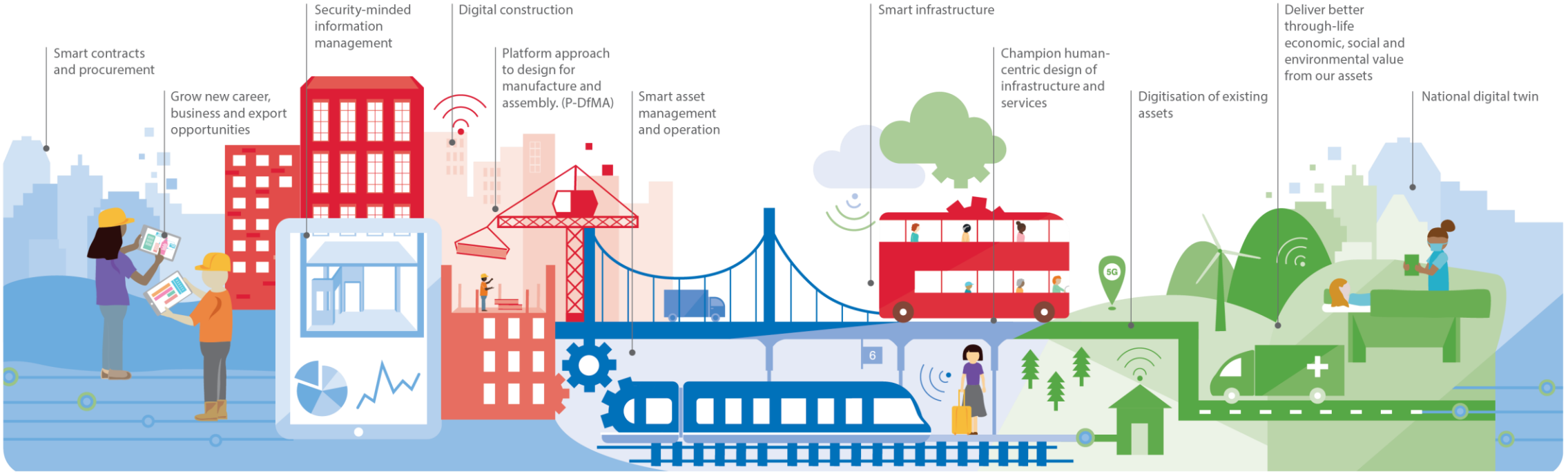
Recommendations:

1. **A National Digital Twin** – to enable better outcomes from our built environment

2. **An Information Management Framework** – to enable secure data sharing and effective information management

3. **A Digital Framework Task Group** – to provide coordination of key players

This is Digital Built Britain



Design

Use best practice, secure by default, information management and digital techniques to get data right from the start and design better-performing homes, buildings and infrastructure.

Build

Exploit new and emerging digital construction, information management, and manufacturing technologies and techniques to improve safety, quality and productivity during construction.

Operate

Use effective information management to transform the performance of the built environment and the services it delivers.

Integrate

Understand how the built environment can improve citizens' quality of life and use that information to drive the design and build of our economic and social infrastructure and the operation and integration of the services they deliver.

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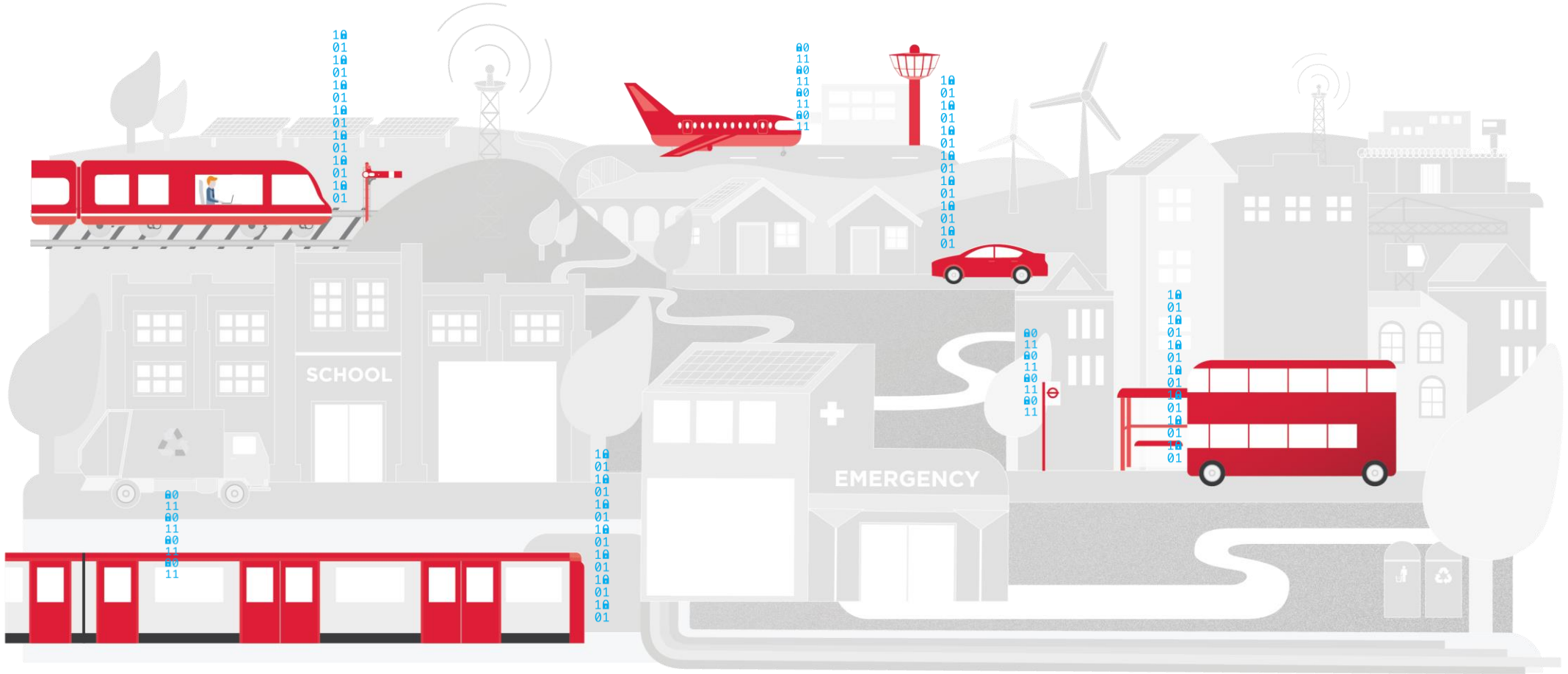
Transport



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Energy

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Water

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Telecoms

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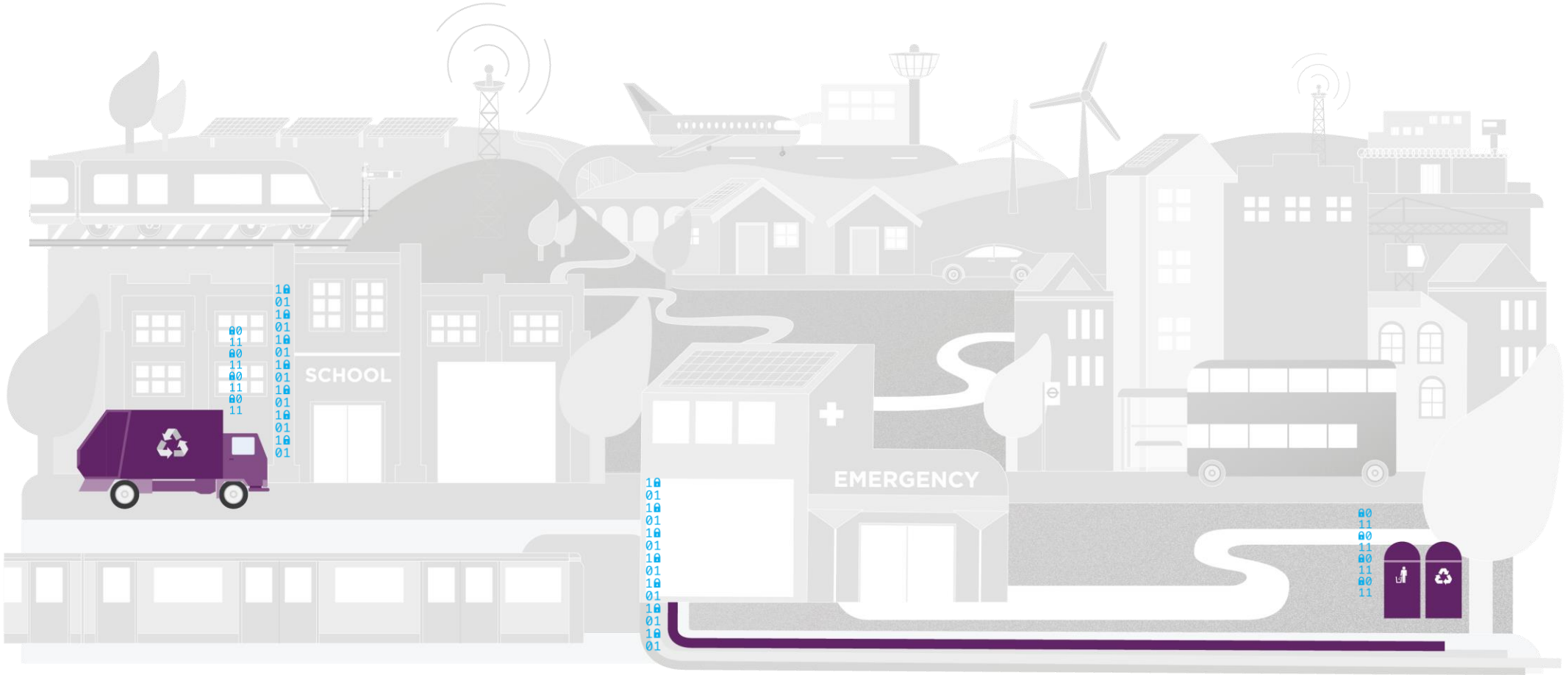
Waste



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Social infrastructure

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Residential, commercial and industrial

Interface with the natural environment

Built environment

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Systems-based view of the built environment

system of systems

system of services

cyber-physical system

sustainable system

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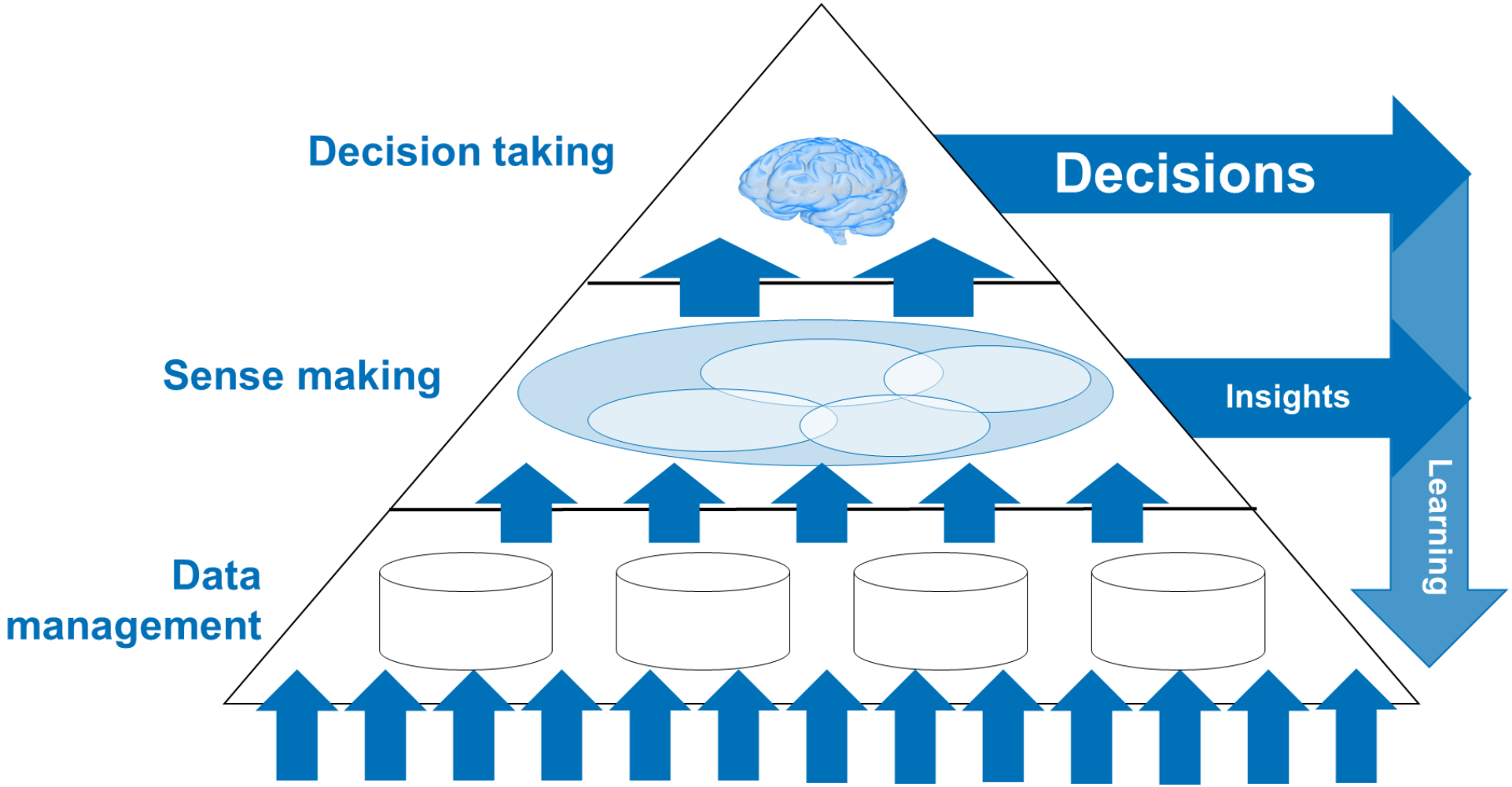
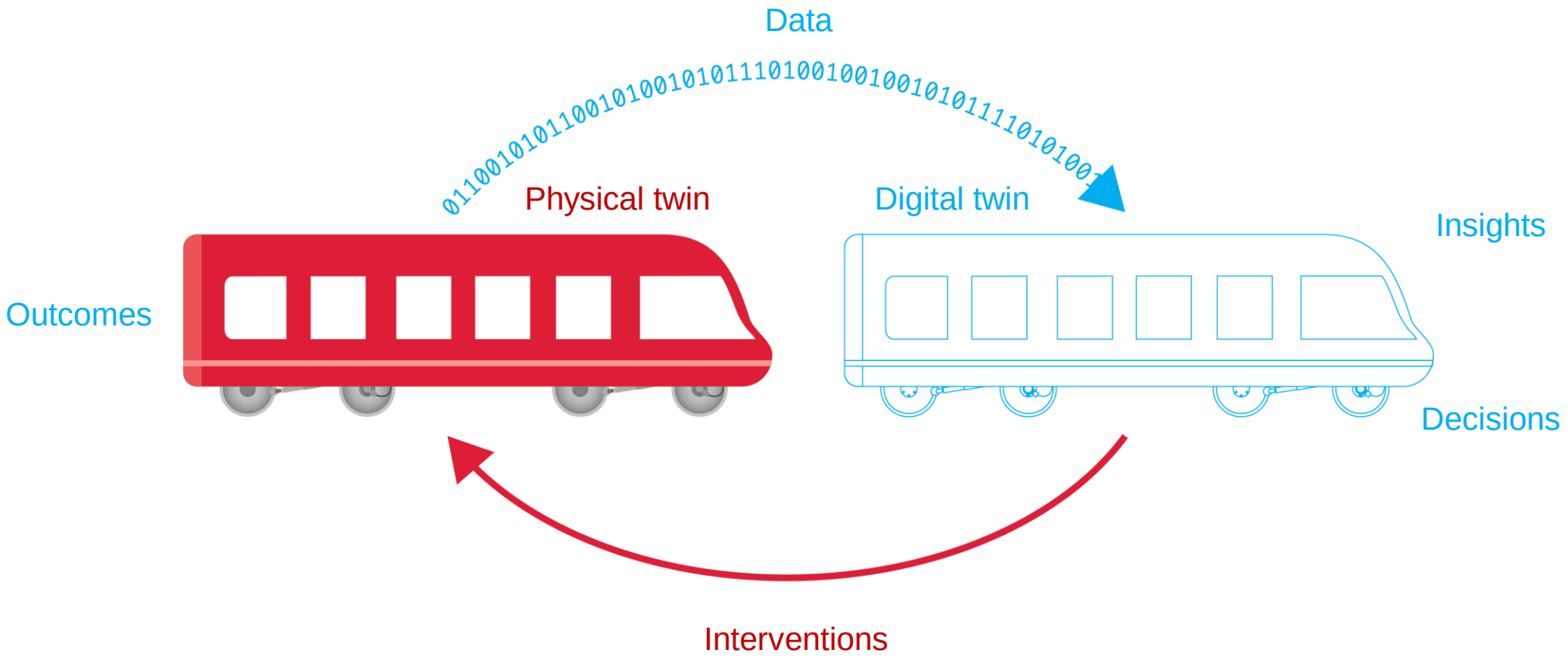
The information value chain



Digital twins



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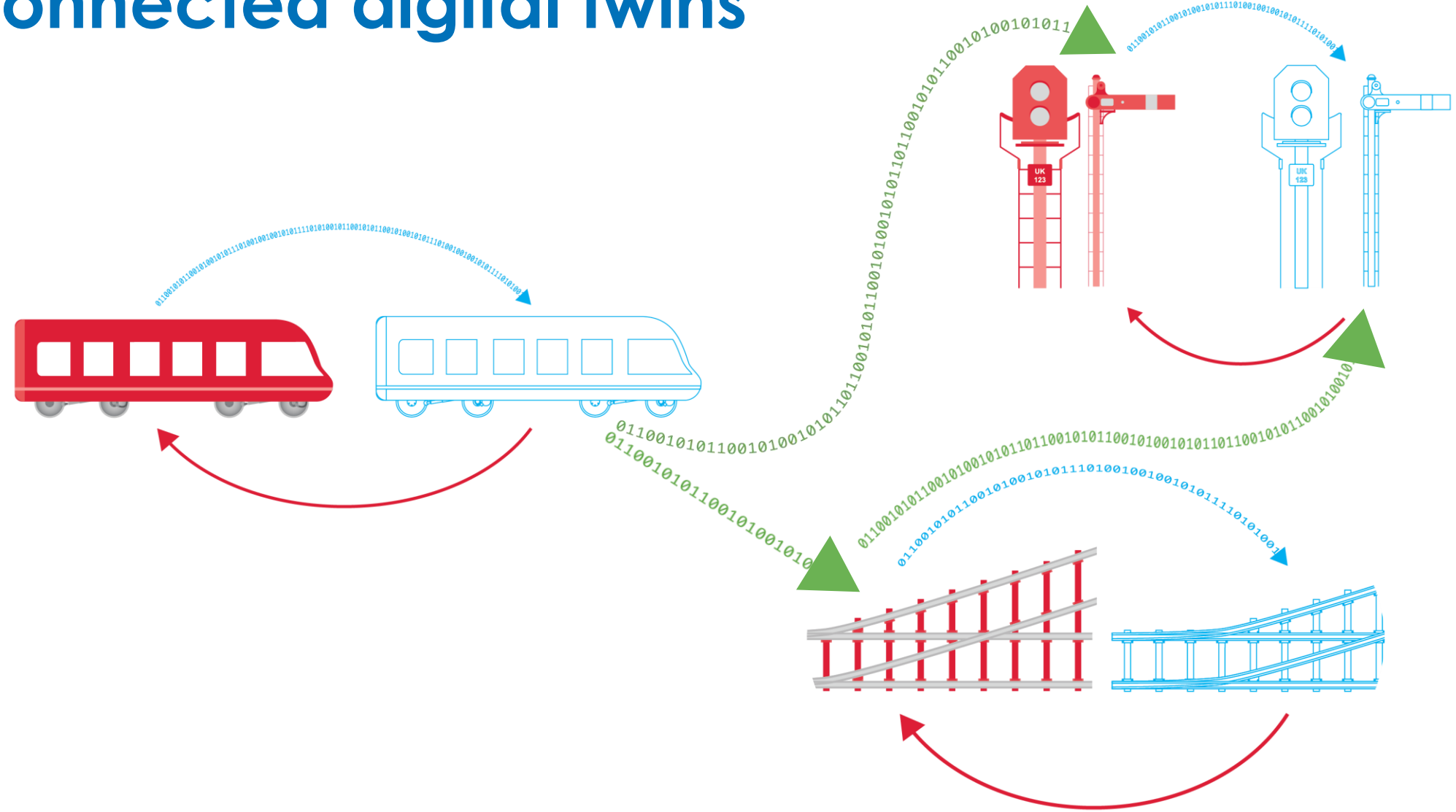
Connected digital twins



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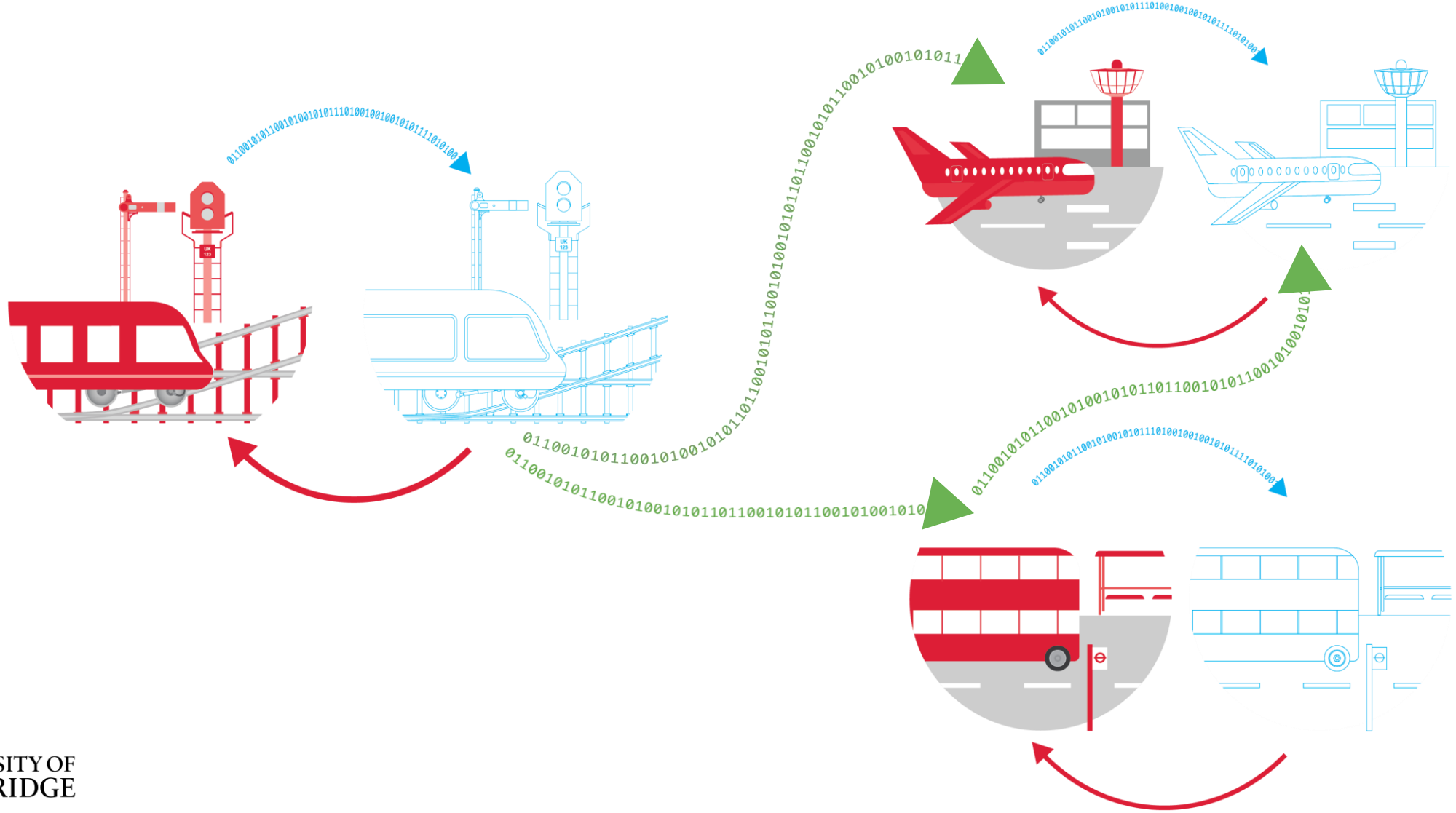
Ecosystem of connected digital twins



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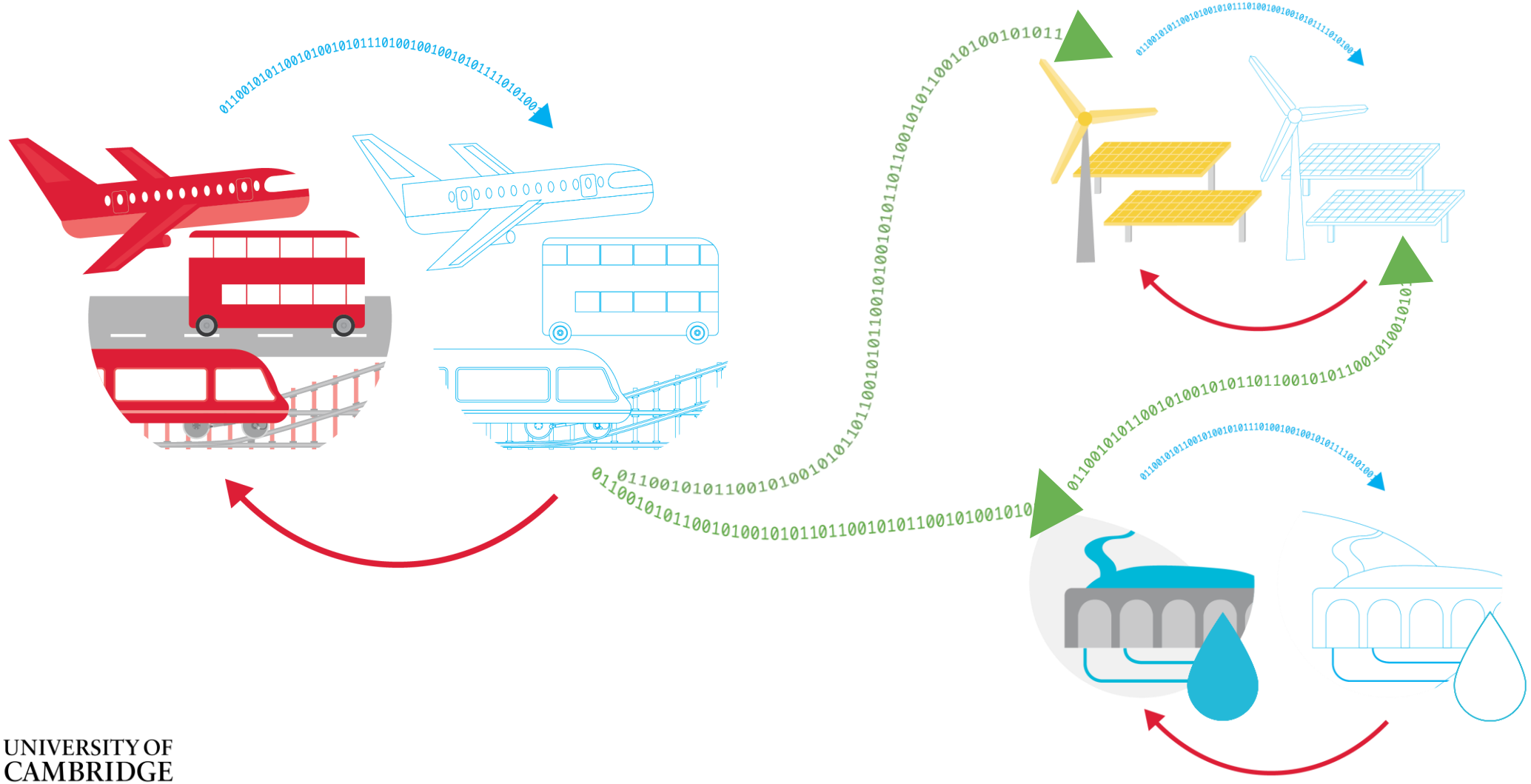
Ecosystem of connected digital twins



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Ecosystem of connected digital twins

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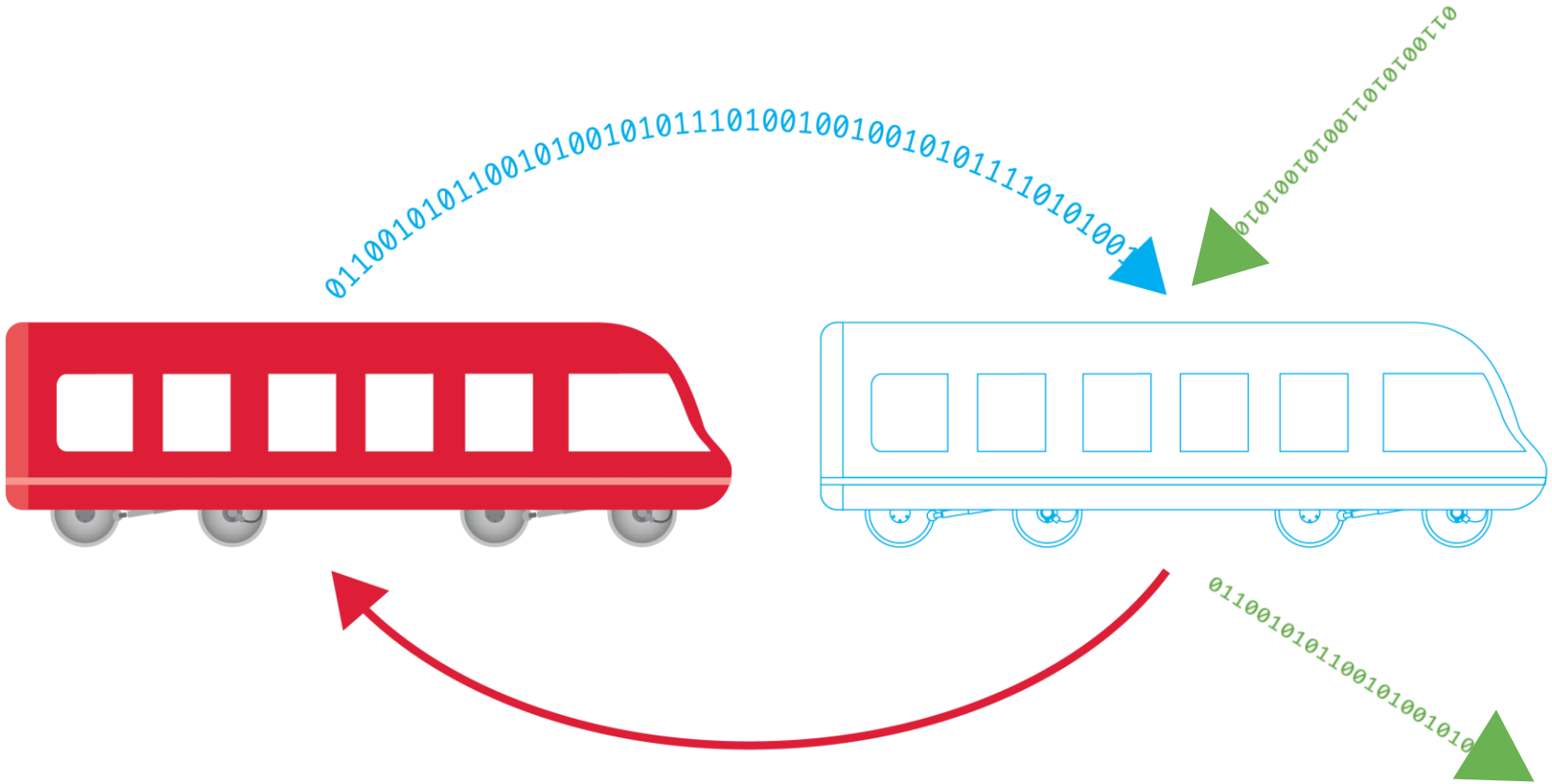
Connectable digital twins



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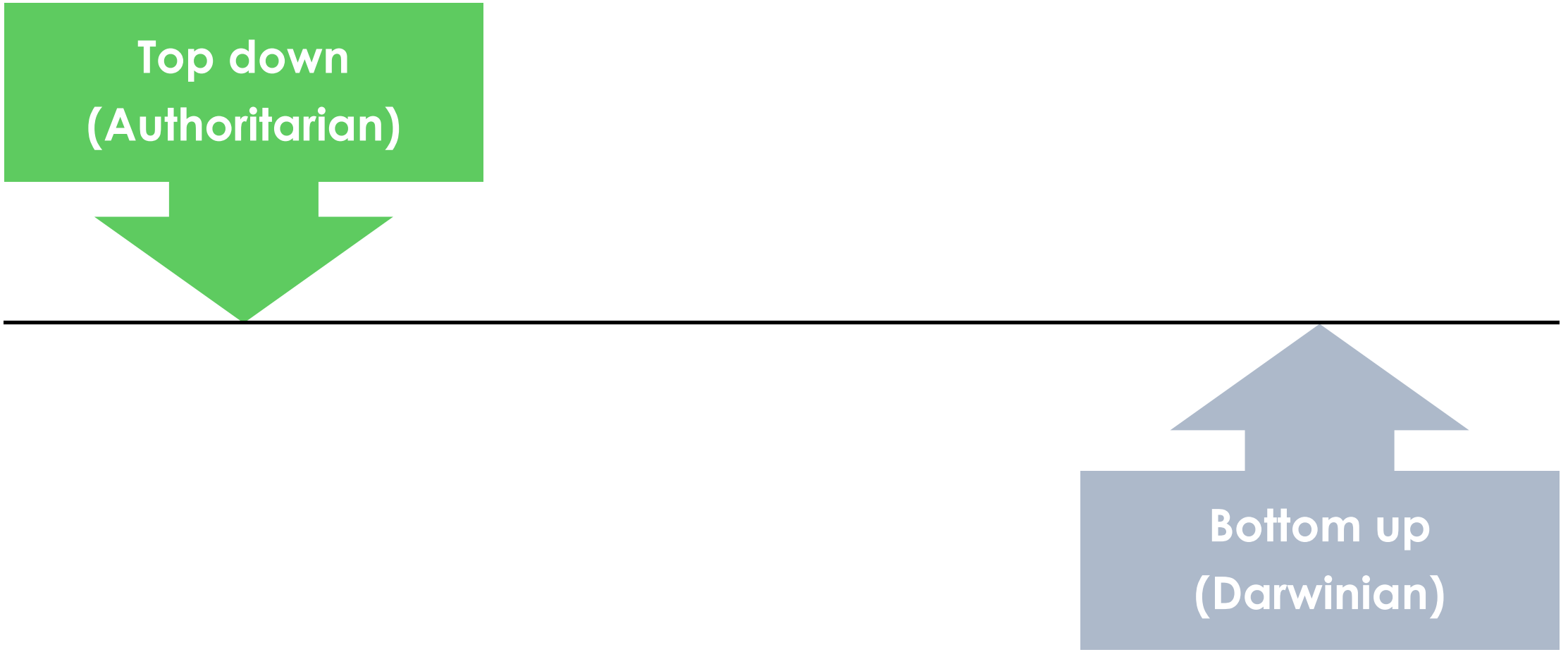
Benefits of the National Digital Twin

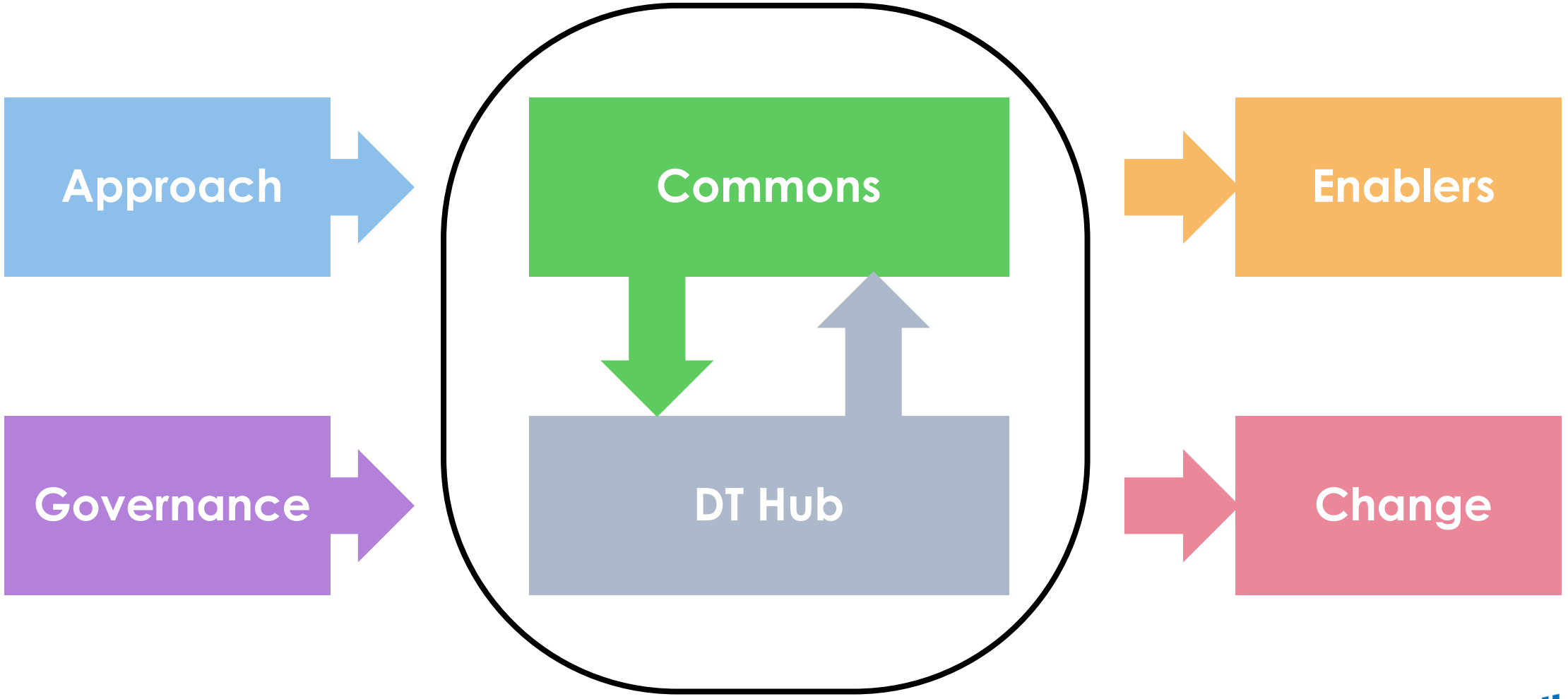
Better outcomes for the public per whole-life pound

- **Benefits to society:** Improved stakeholder engagement. Better outcomes for the ultimate customers (the public – taxpayers/bill payers/fare payers/voters). Improved customer satisfaction and experience through higher-performing infrastructure and the services it provides.
- **Benefits to the economy:** Improved national productivity from higher-performing and resilient infrastructure operating as a system. Improved measurement of outcomes. Better outcomes per whole-life pound. Improved information security and thereby personnel, physical and cyber security.
- **Benefits to business:** New markets, new services, new business models, new entrants. Improved business efficiency from higher-performing infrastructure. Improved delivery efficiency, benefiting the whole construction value chain – investors, owners, asset managers, contractors, consultants, suppliers. Reduced uncertainty and better risk management.
- **Benefits to the environment:** Less disruption and waste. More reuse and greater resource efficiency – a key enabler of the circular economy in the built environment.

The background to the approach



The core streams of the Roadmap



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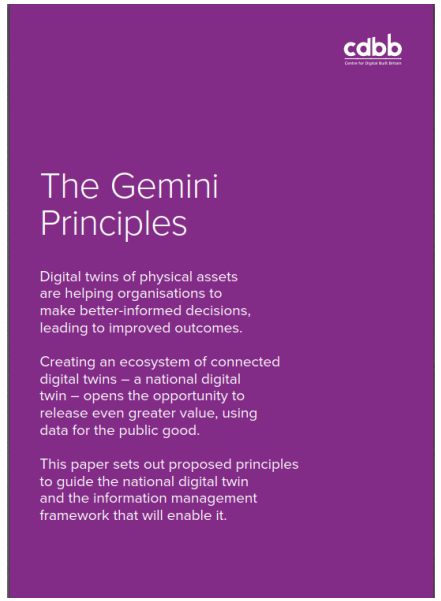
Guided by the Gemini Principles



Purpose: Must have clear purpose	**Public good** Must be used to deliver genuine public benefit in perpetuity	**Value creation** Must enable value creation and performance improvement	**Insight** Must provide determinable insight into the built environment
Trust: Must be trustworthy	**Security** Must enable security and be secure itself	**Openness** Must be as open as possible	**Quality** Must be built on data of an appropriate quality
Function: Must function effectively	**Federation** Must be based on a standard connective environment	**Curation** Must have clear ownership, governance and regulation	**Evolution** Must be able to adapt as technology and society evolve

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Thank you

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