A Guide For Digital Engineering

The DoD 5000.97 Blueprint

Patrick Dunfey, *Anark VP of Marketing*

Jim Martin, *Anark Director of Customer Engagement*

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DoD 5000.97 Digital Engineering will transform product manufacturing

Immediate impact (December 2023)

Digital engineering must be addressed in the acquisition strategy… after the date of this issuance.

DoD INSTRUCTION 5000.97

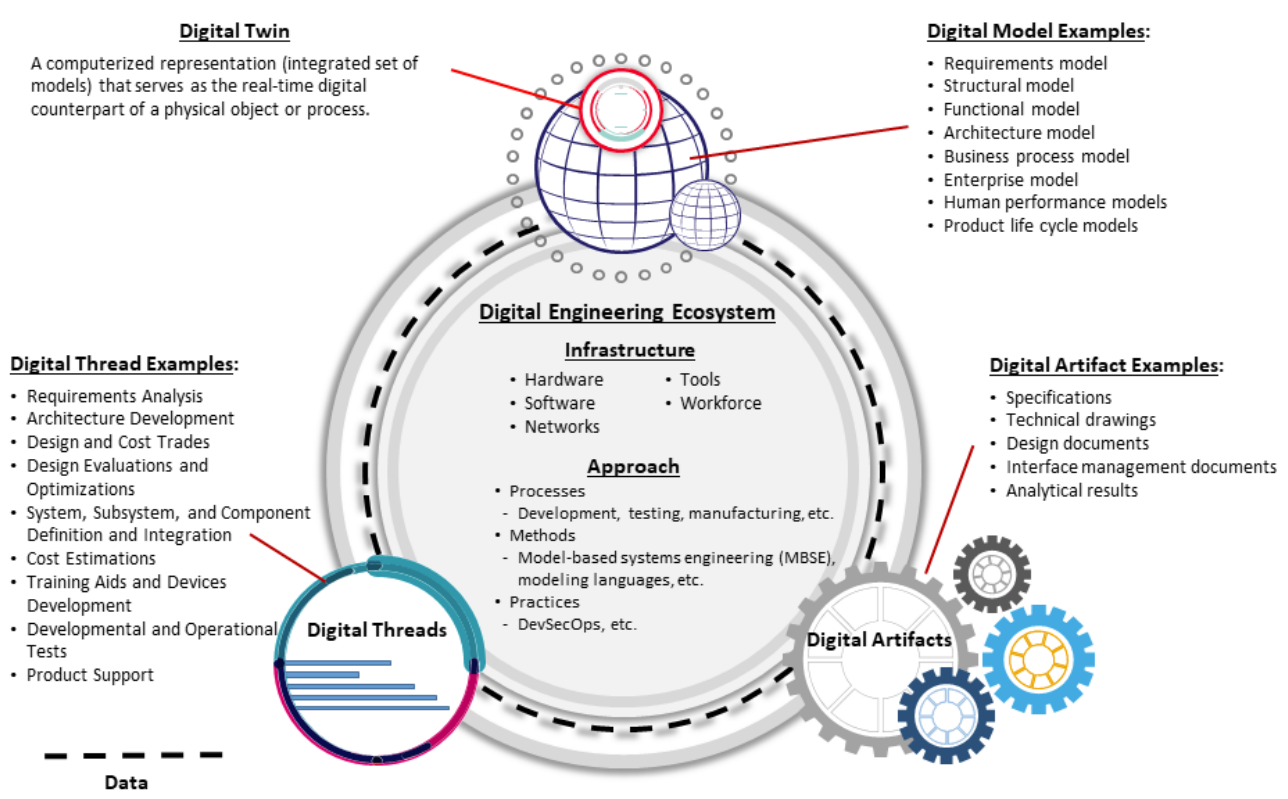
DIGITAL ENGINEERING

Originating Component:	Office of the Under Secretary of Defense for Research and Engineering
Effective:	December 21, 2023
Releasability:	Cleared for public release. Available on the Directives Division Website at https://www.esd.whs.mil/DD/.
Incorporates and Cancels:	Department of Defense Directive 5000.59, "DoD Modeling and Simulation (M&S) Management," August 8, 2007, as amended
Approved by:	Heidi Shyu, Under Secretary of Defense for Research and Engineering

Purpose: In accordance with the authority in DoD Directive 5137.02, this issuance establishes policy, assigns responsibilities, and provides procedures for implementing and using digital engineering in the development and sustainment of defense systems.

Broader impact

Digital engineering will transform product manufacturing DoD 5000.97 Digital Engineering is the blueprint



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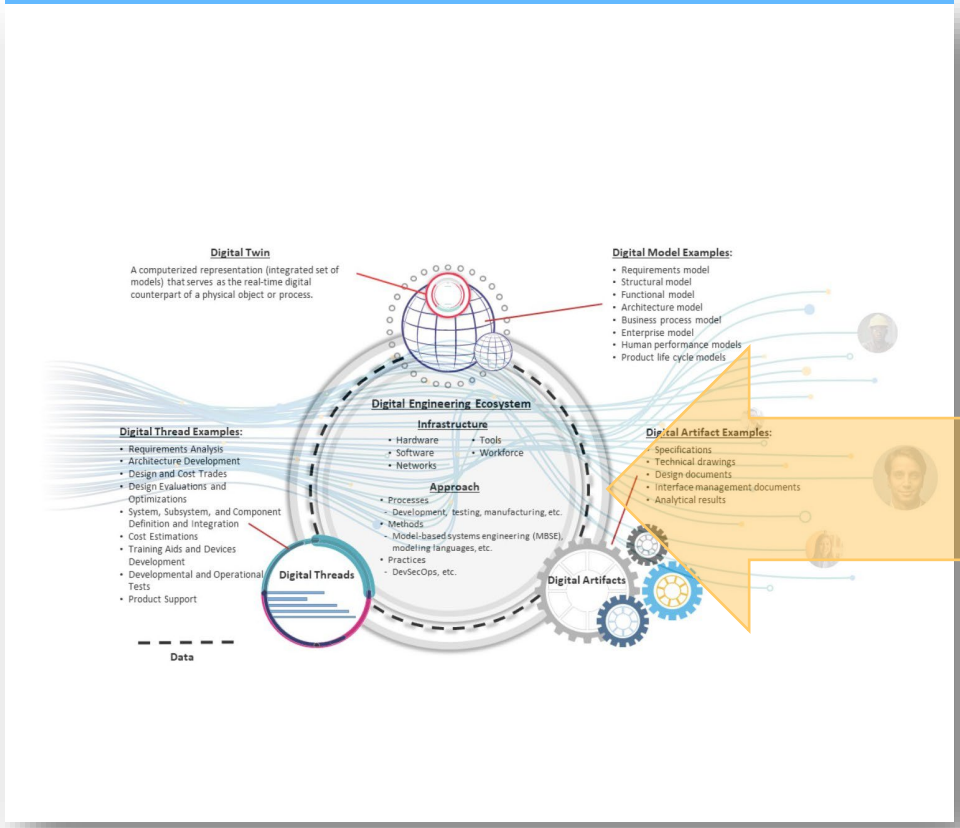
Manufacturers need the blueprint AND the manual

The Manual

A Guide for Digital Engineering and DoD Instruction 5000.97



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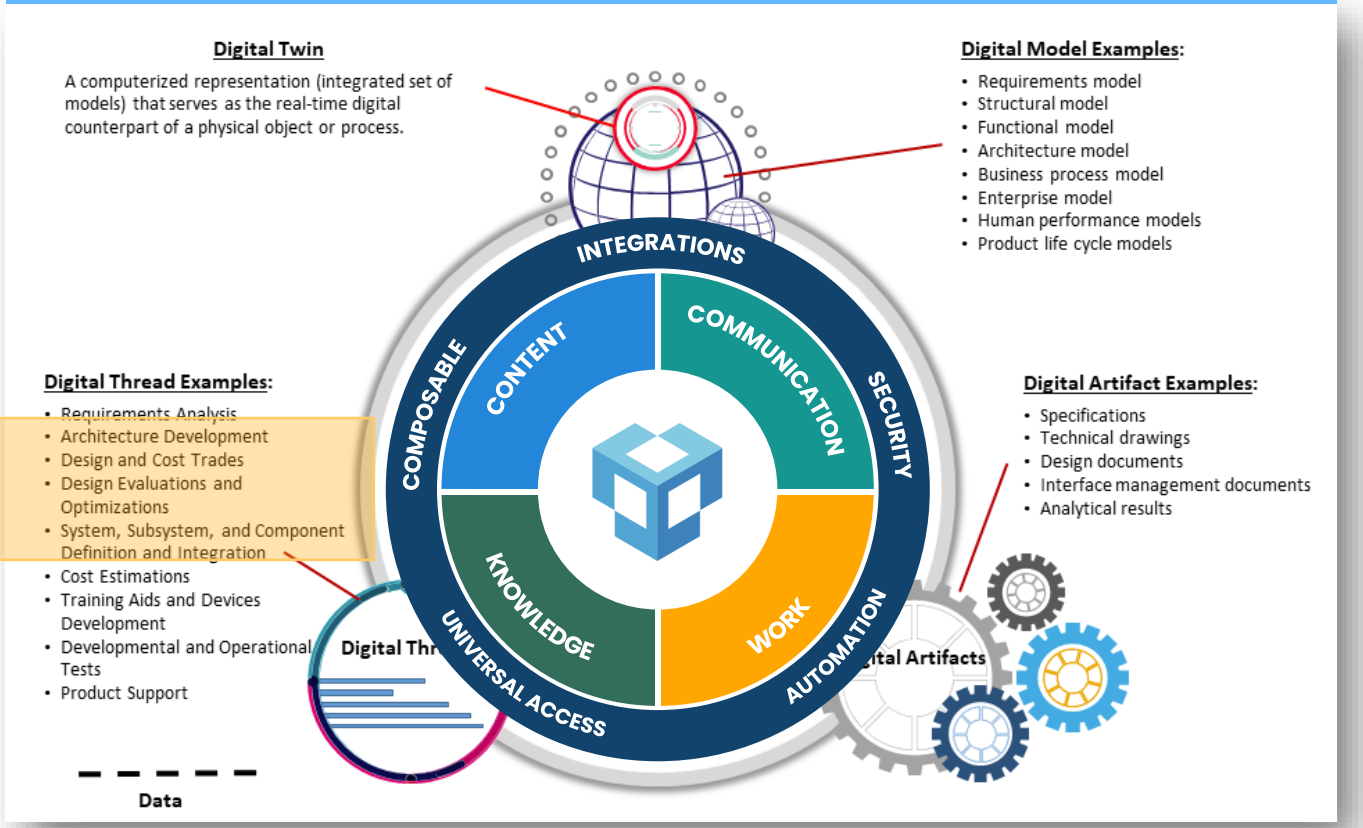

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The collaborative digital engineering environment

Collaborative digital environments are key to involving all stakeholders.

Contractor-to-government, contractor-to-supplier digital **collaboration** and more.

Customers, regulators, suppliers, and more are **integrated to complete the digital thread**.

A **feedback mechanism** for stakeholders and contributors to the authoritative source of truth.

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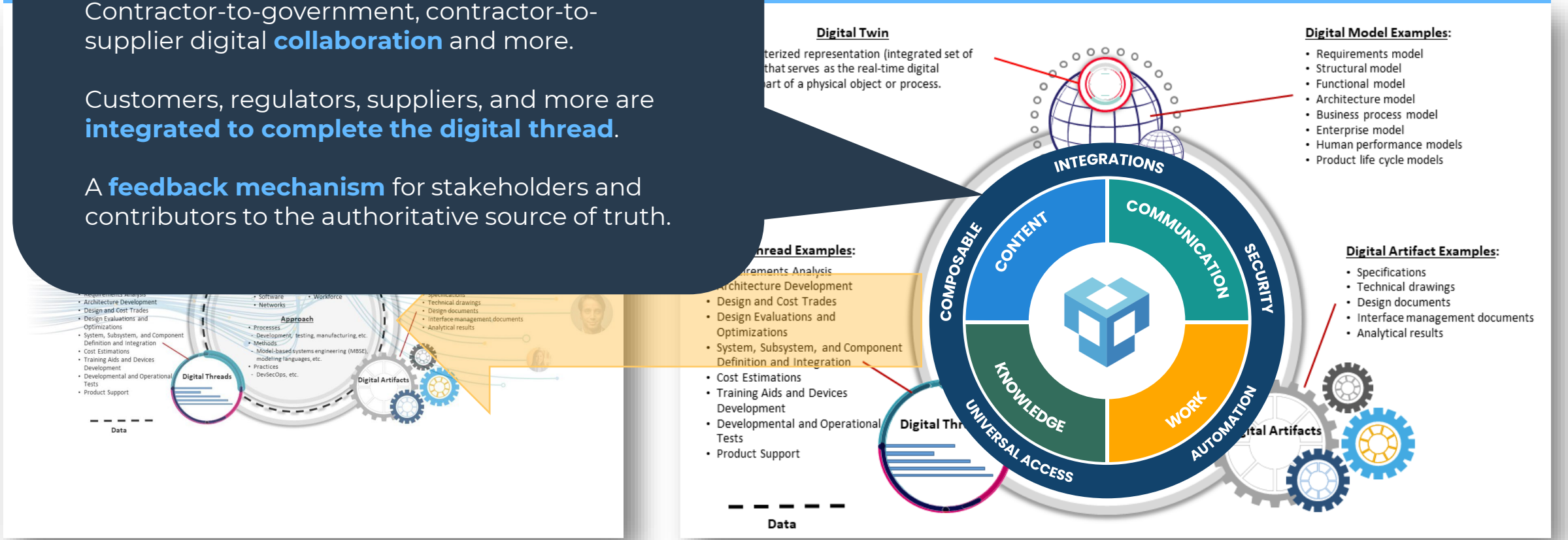

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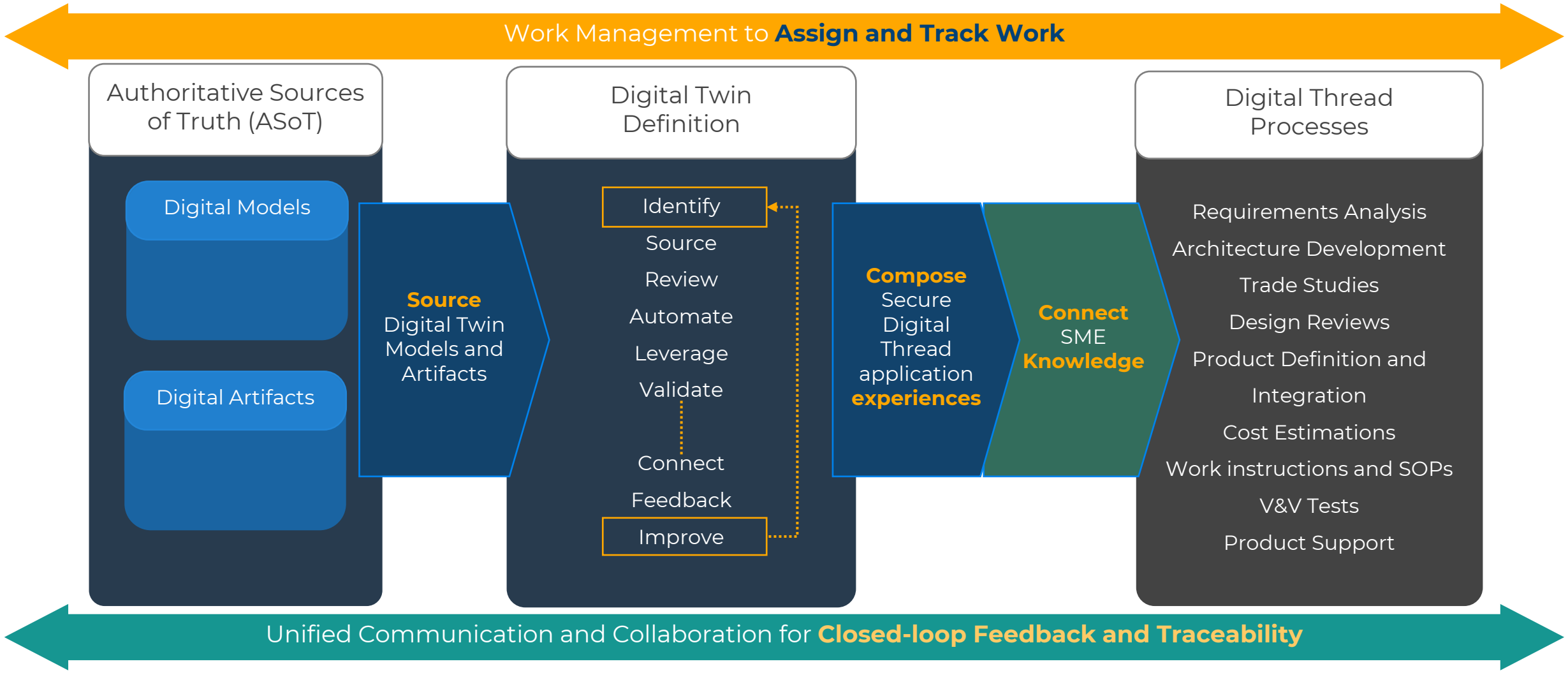
Digital Engineering Ecosystem Elements



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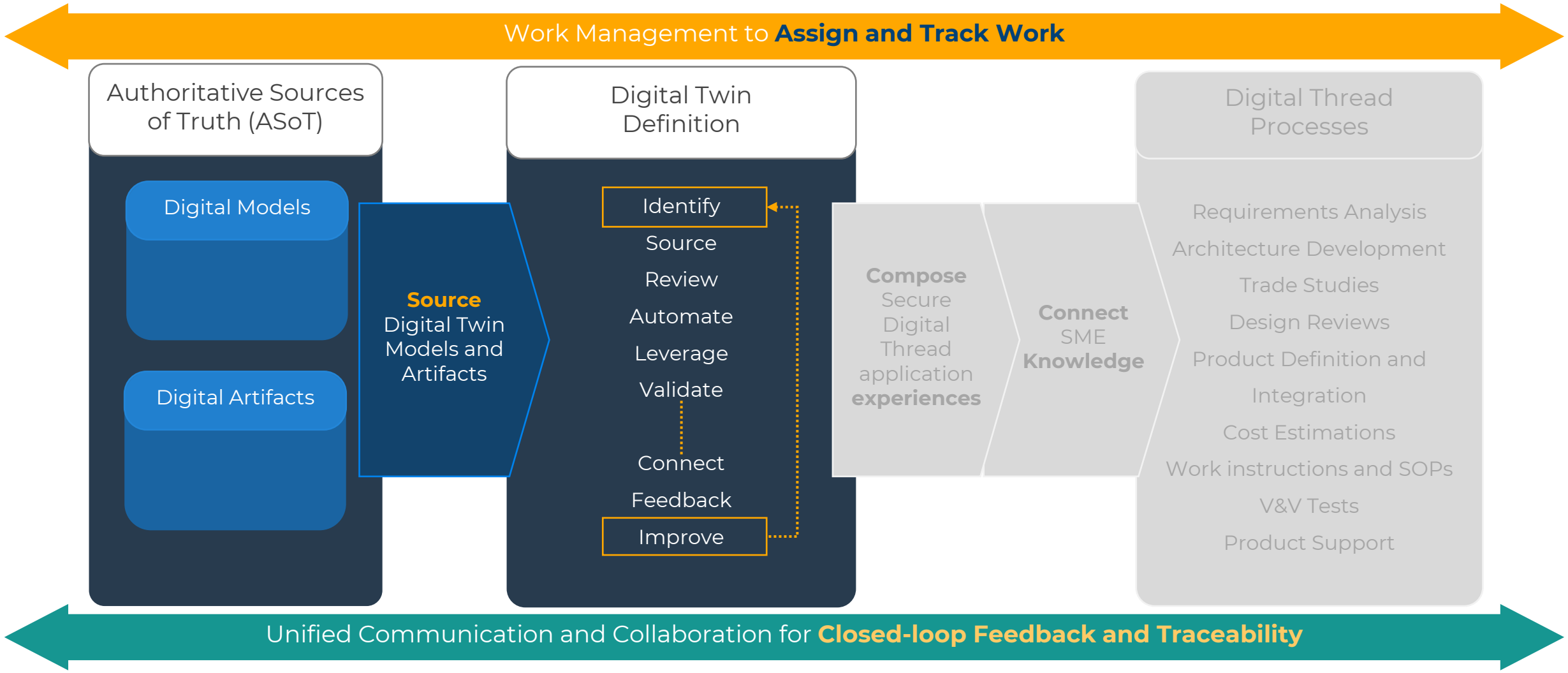

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Digital Twin: Find the simplest value first

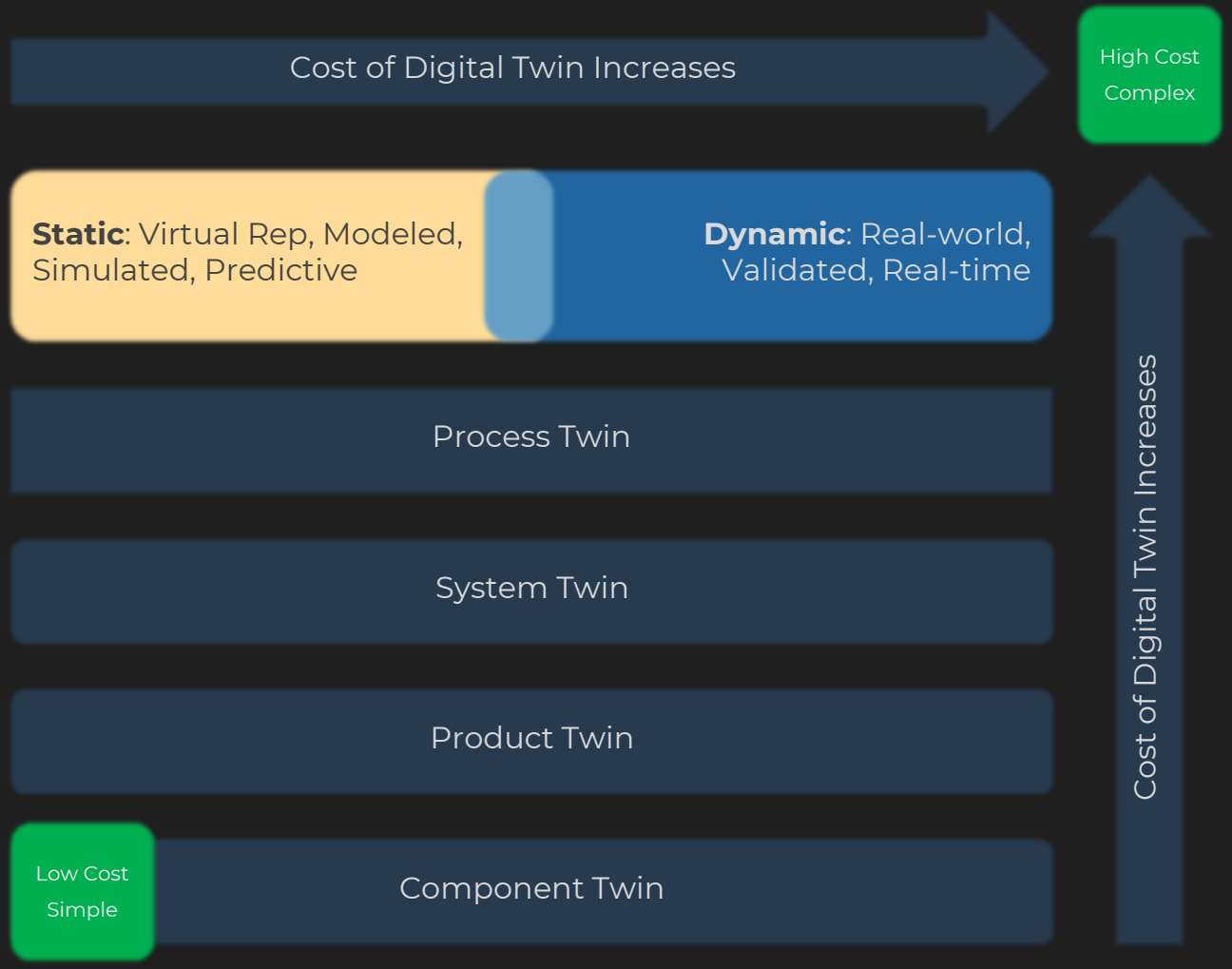
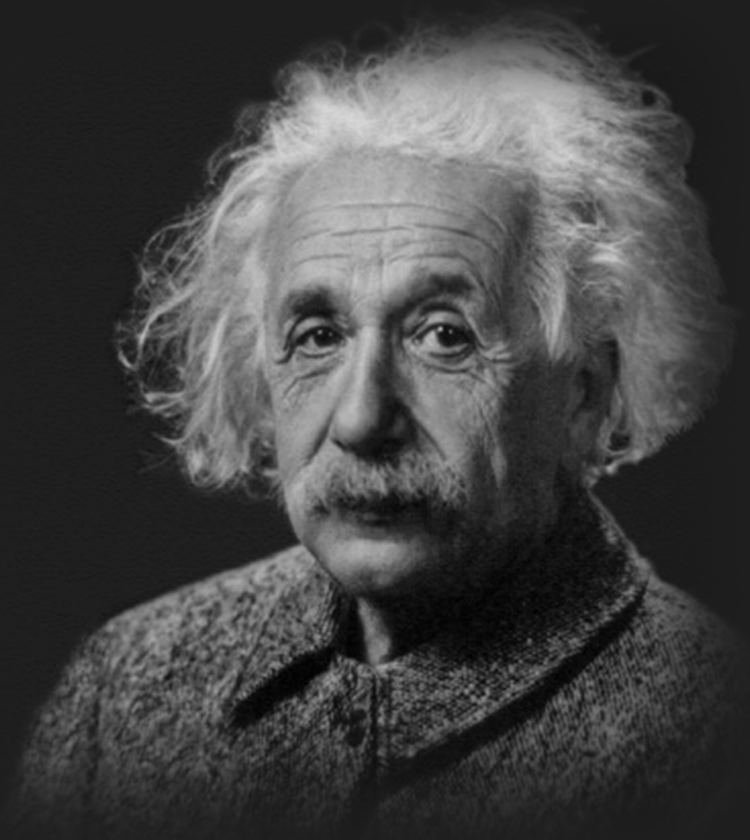


Figure 1: The Digital Twin Value – Cost Relationship

"Everything should be made as simple as possible, but no simpler."

- Albert Einstein



Finding simplest first Digital Twin value

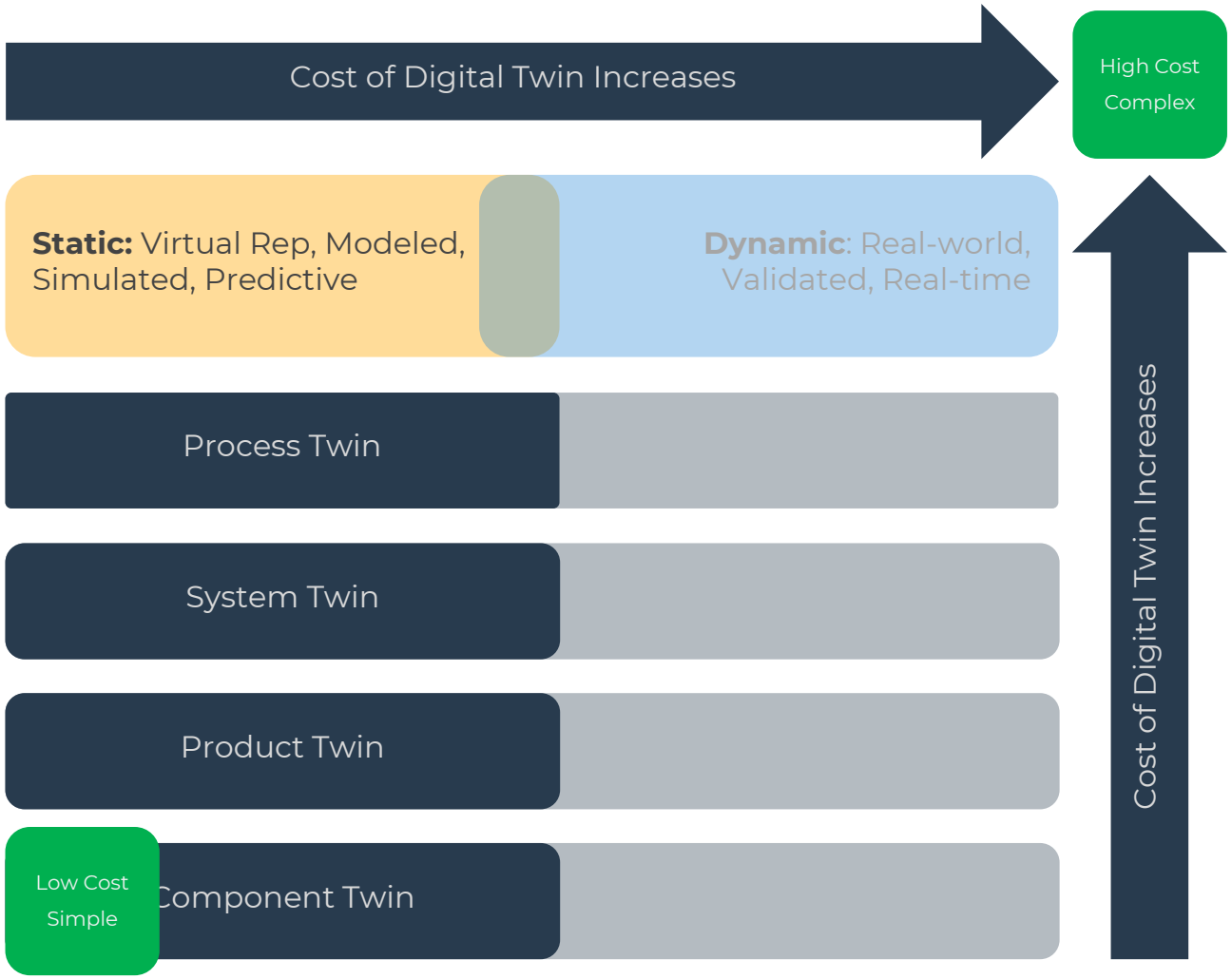


Figure 1: The Digital Twin Value – Cost Relationship

Identify digital models and artifacts that make up digital twin definition

Source into central hub from authoritative source(s) of truth (ASoT)

Review and approve digital twin definition

Automate static digital twin sourcing for a live connection to ensure the right data is always accessible and actionable

Leverage digital twin models and artifacts in digital thread processes

Validate models and artifacts represent real-world behavior and performance.

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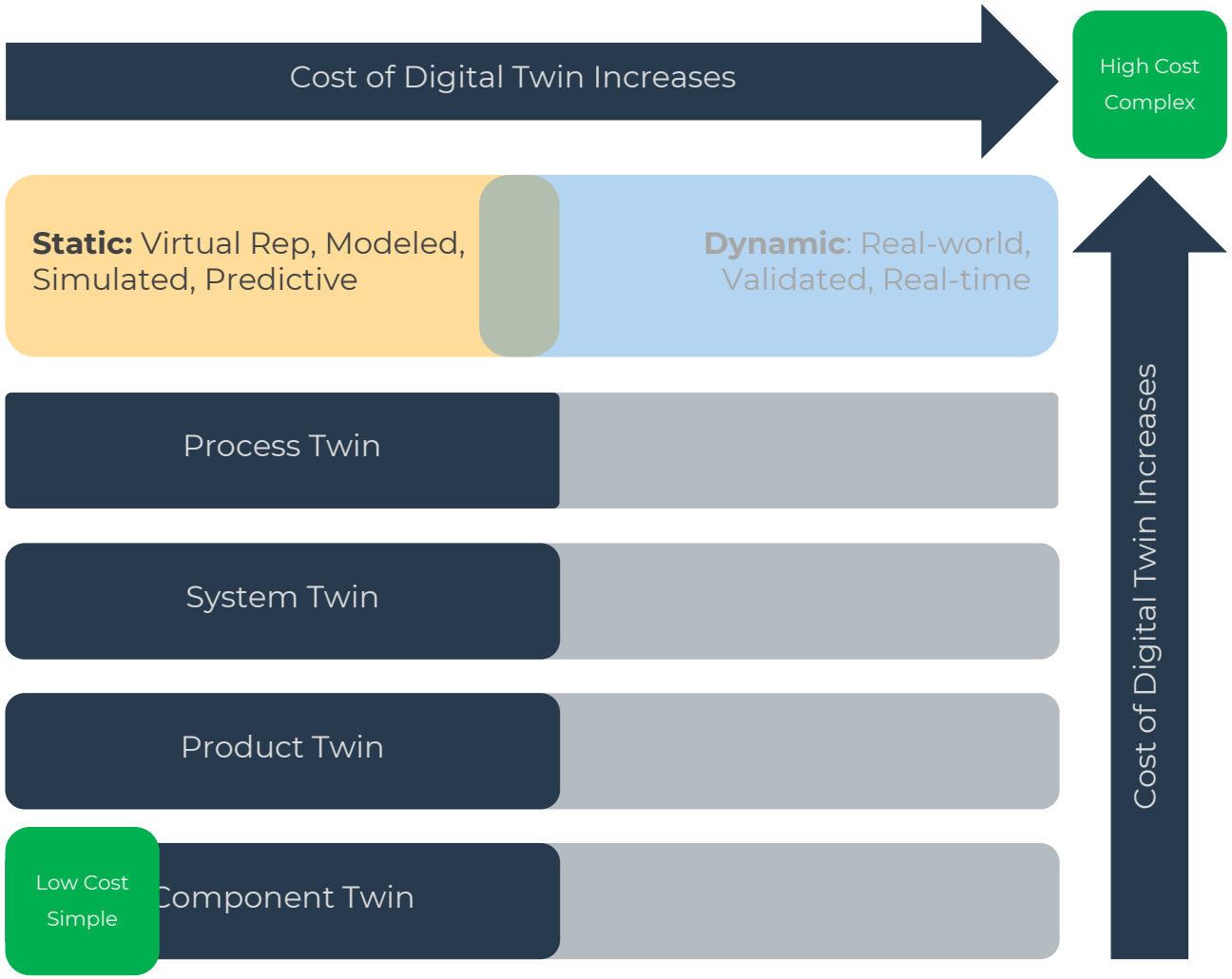
Finding simplest first Digital Twin value



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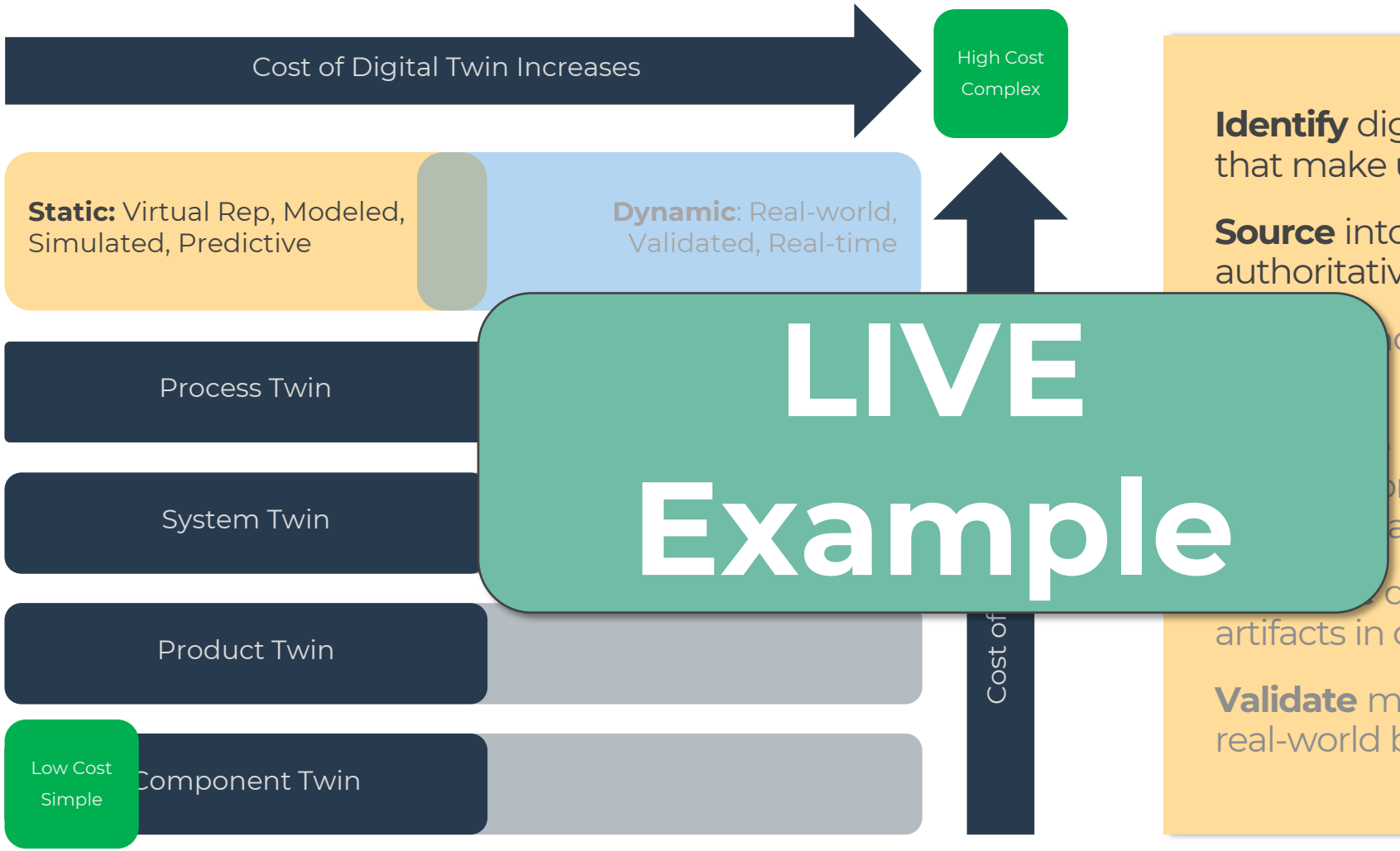

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LIVE Example

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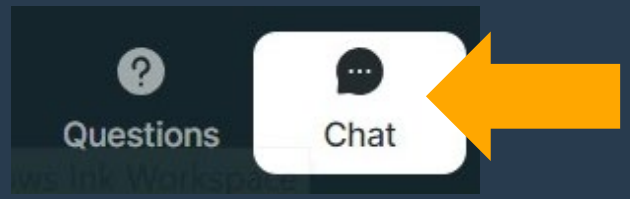

Ask the audience:
What else is needed in the Digital Twin?

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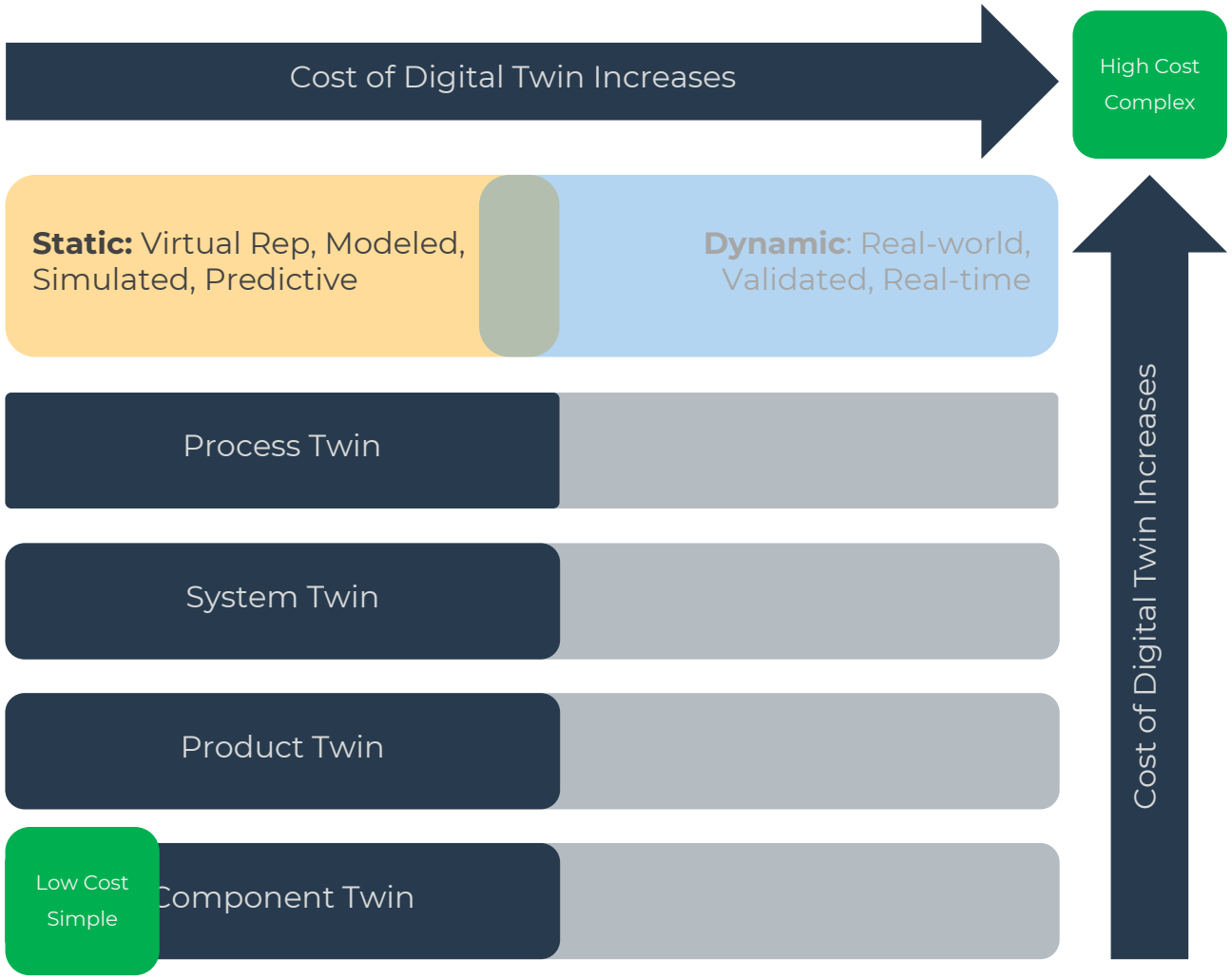

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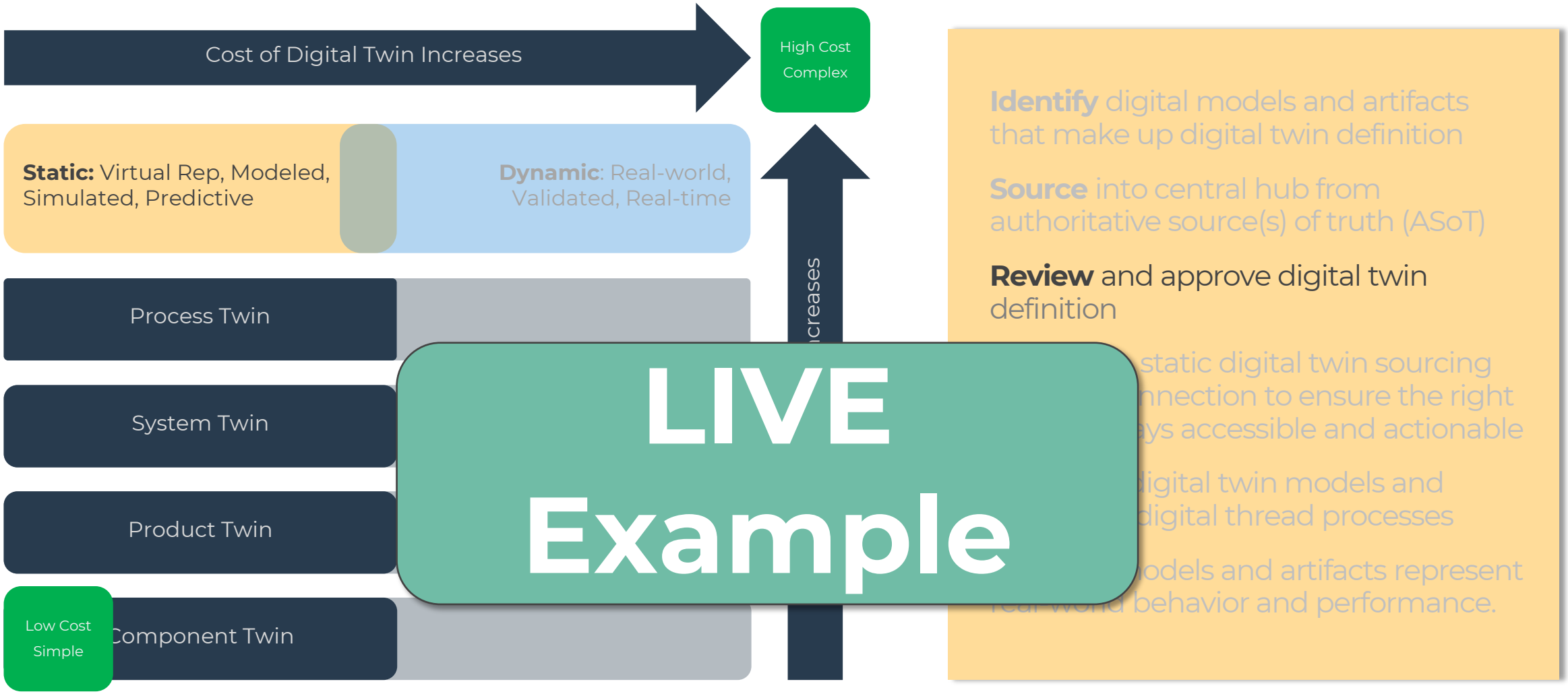

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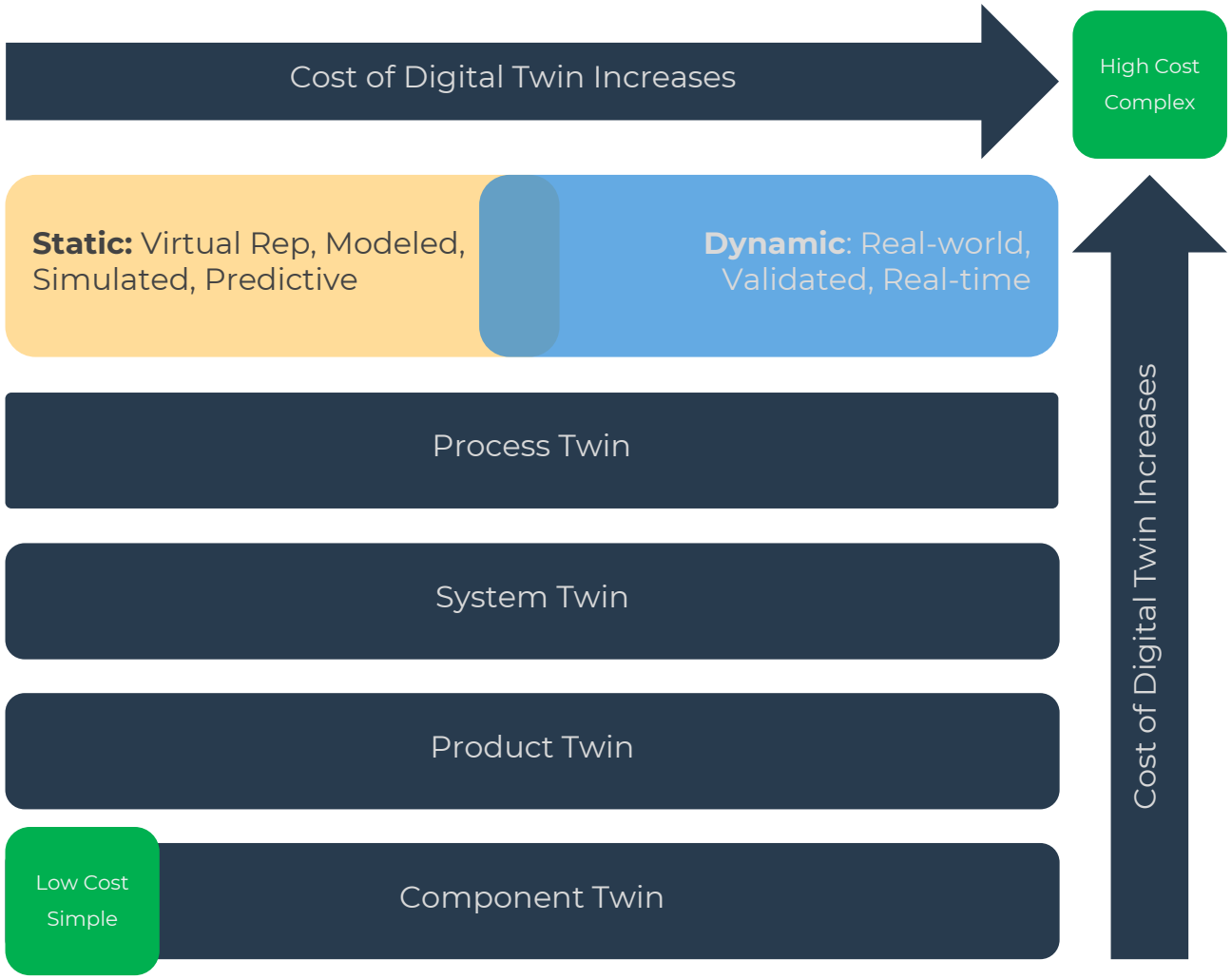

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Maximizing Digital Twin value

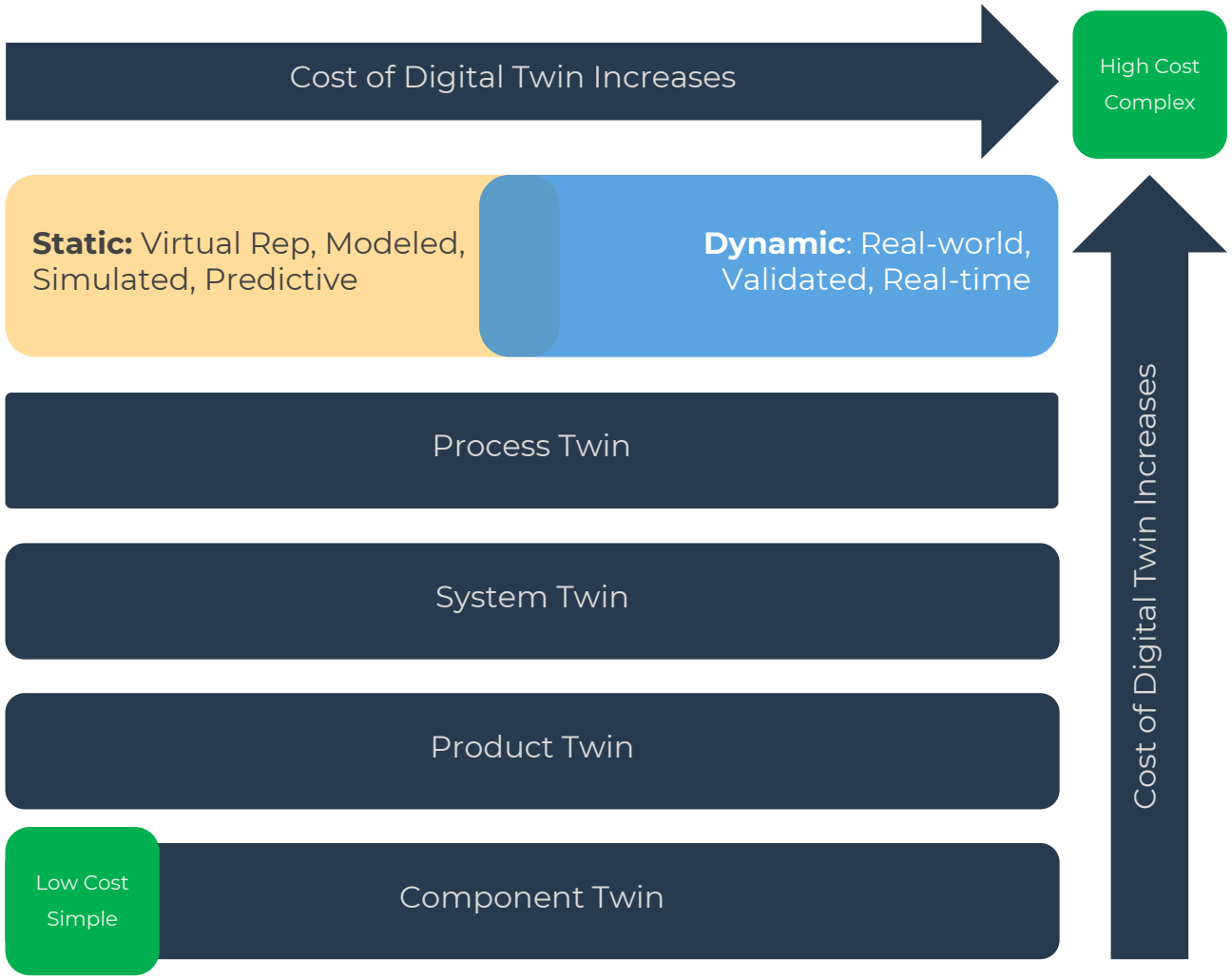

Figure 1: The Digital Twin Value – Cost Relationship

Validate models and artifacts represent real-world behavior and performance.

Connect systems, products, equipment, and other IoT enabled data streams

Monitor and **feedback** from real-world, real-time performance

Continuously **Improve** digital twin definition and related digital thread processes

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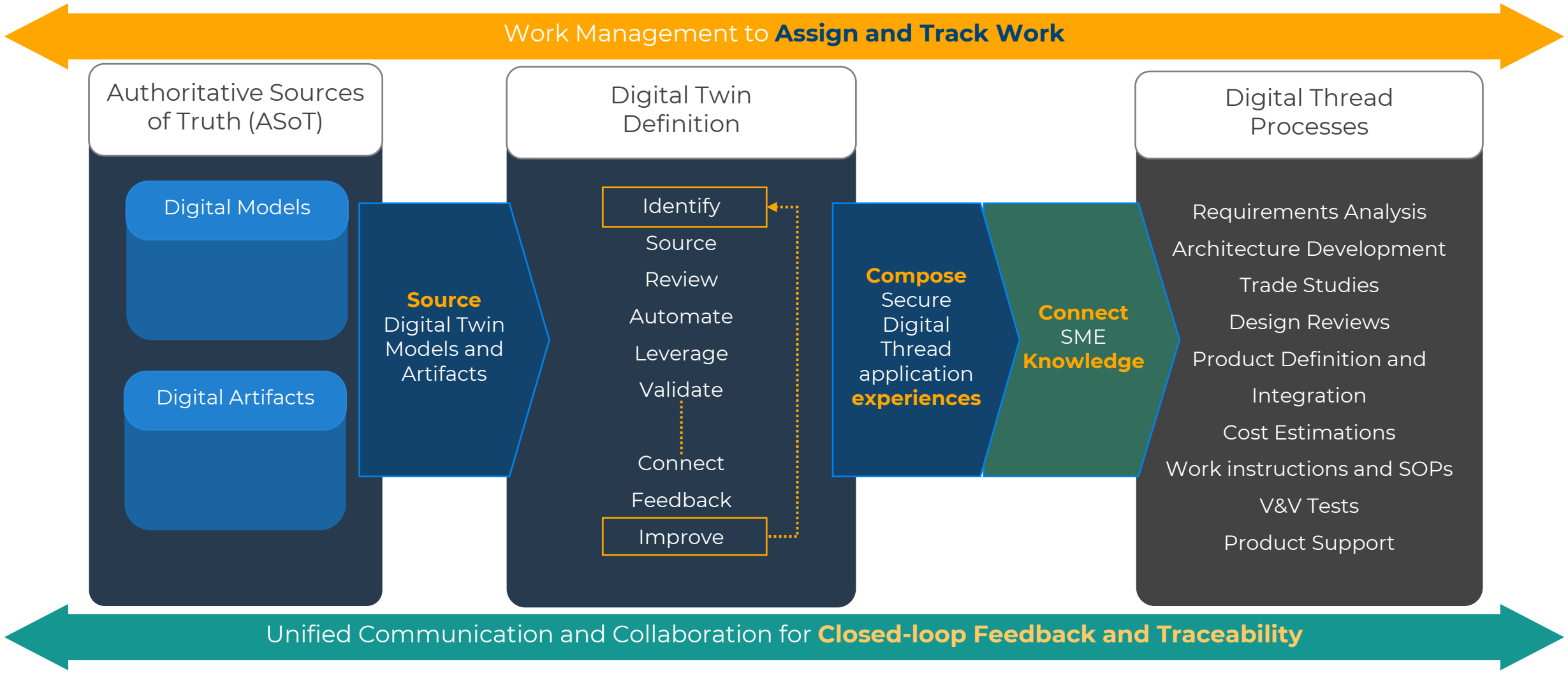
Digital Engineering Ecosystem Elements



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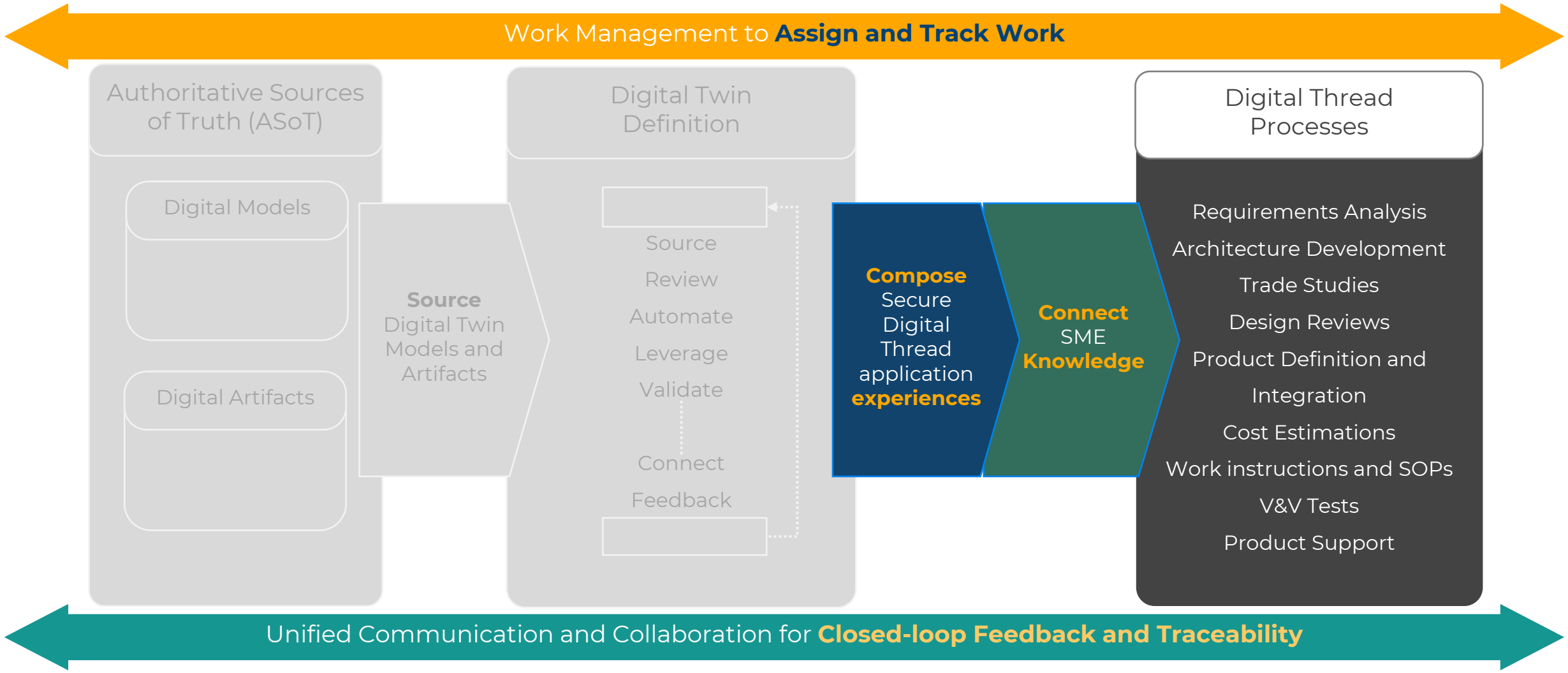

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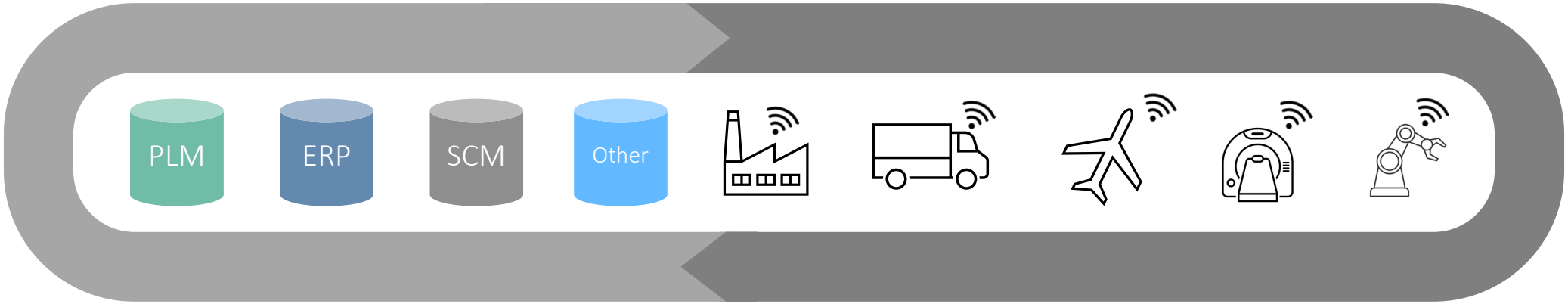
The Digital Thread Promise

Closed-loop digital utopia



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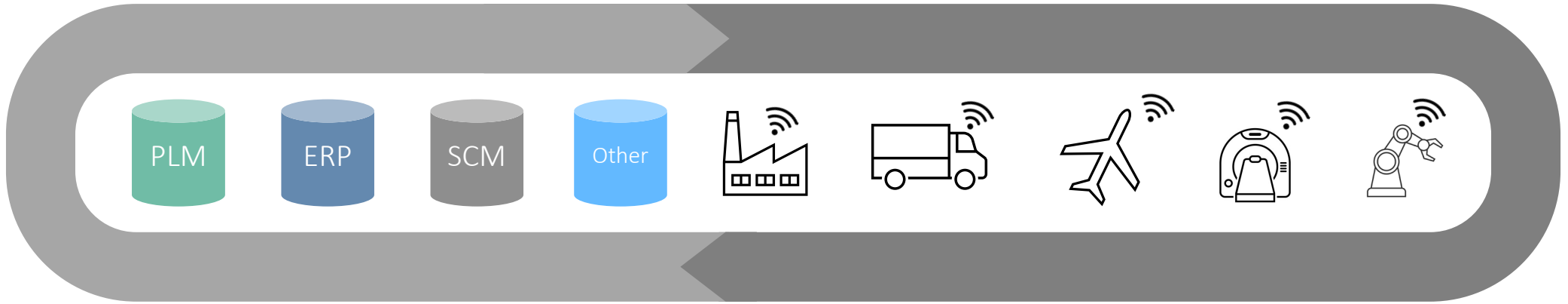
The Digital Thread Reality

Systems and machines are connected. People and their daily work are not.



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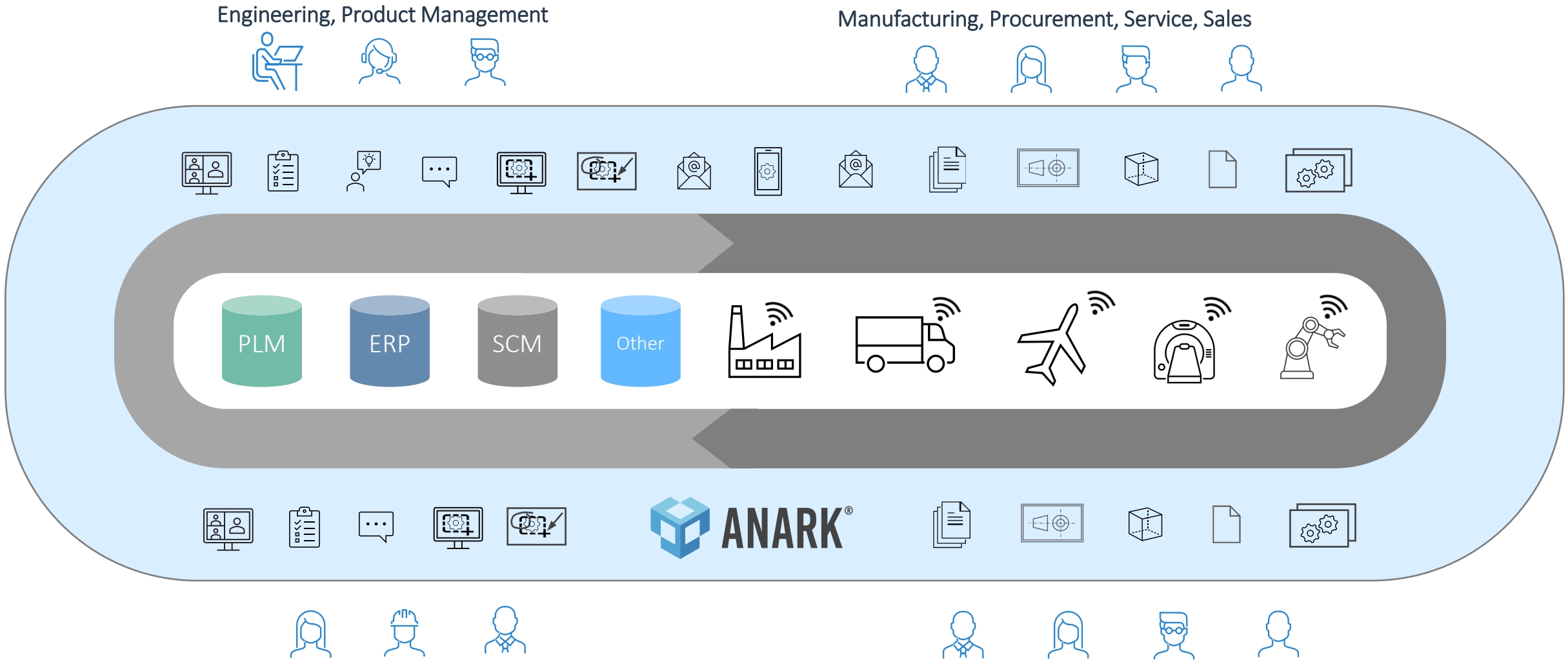
Digital Thread Collaboration

Integrate customers, regulators, contractors, suppliers, operators into the Digital Engineering ecosystem with traceability and security



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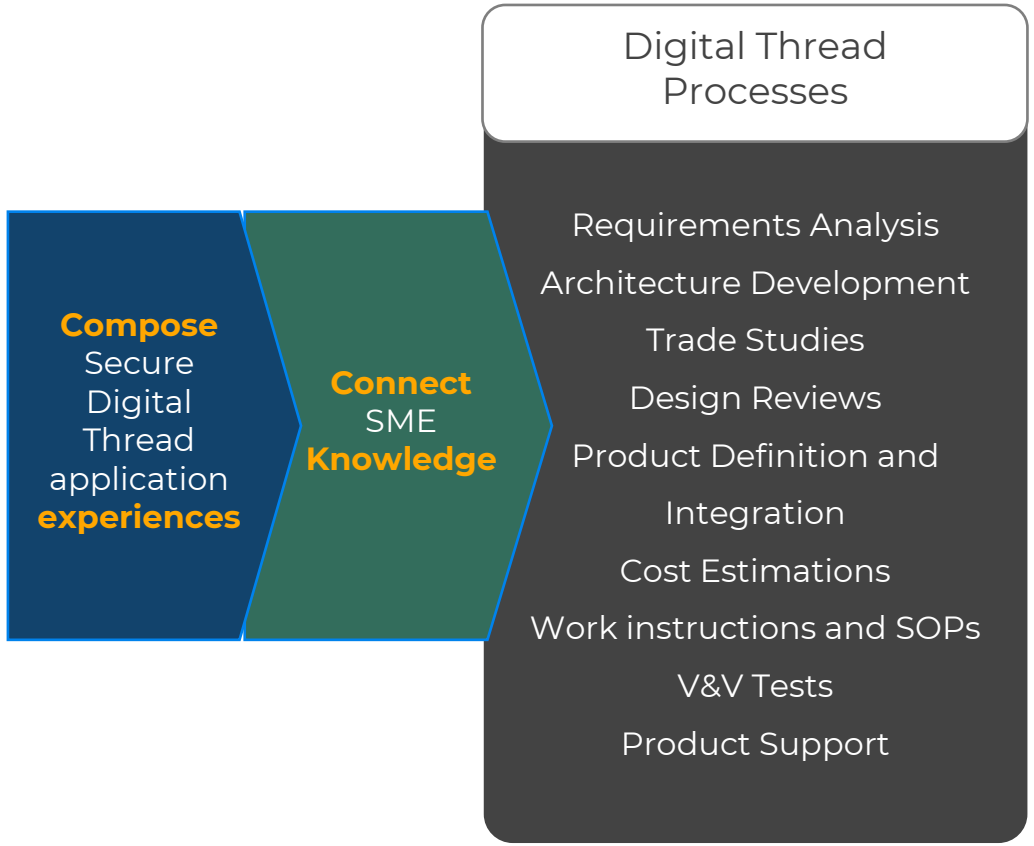
Digital Thread Value – Power Better Processes

Connect people and collaboration data to the digital thread for maximum value

DoD Instruction 5000.97 describes:

- ✓ Interconnections and traceability
- ✓ Controlled interplay of technical data, software, information, and knowledge
- ✓ Connect authoritative data and orchestrate information across a system's life cycle.
- ✓ Empower decision makers to access, integrate, and transform data into actionable information.
- ✓ Support the feedback loop over the life cycle.
- ✓ Allow different audiences with different perspectives to extract data from and adjust usage of models to carry out different activities



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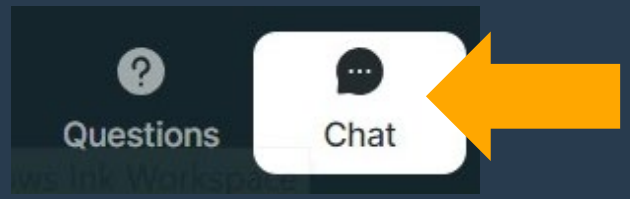
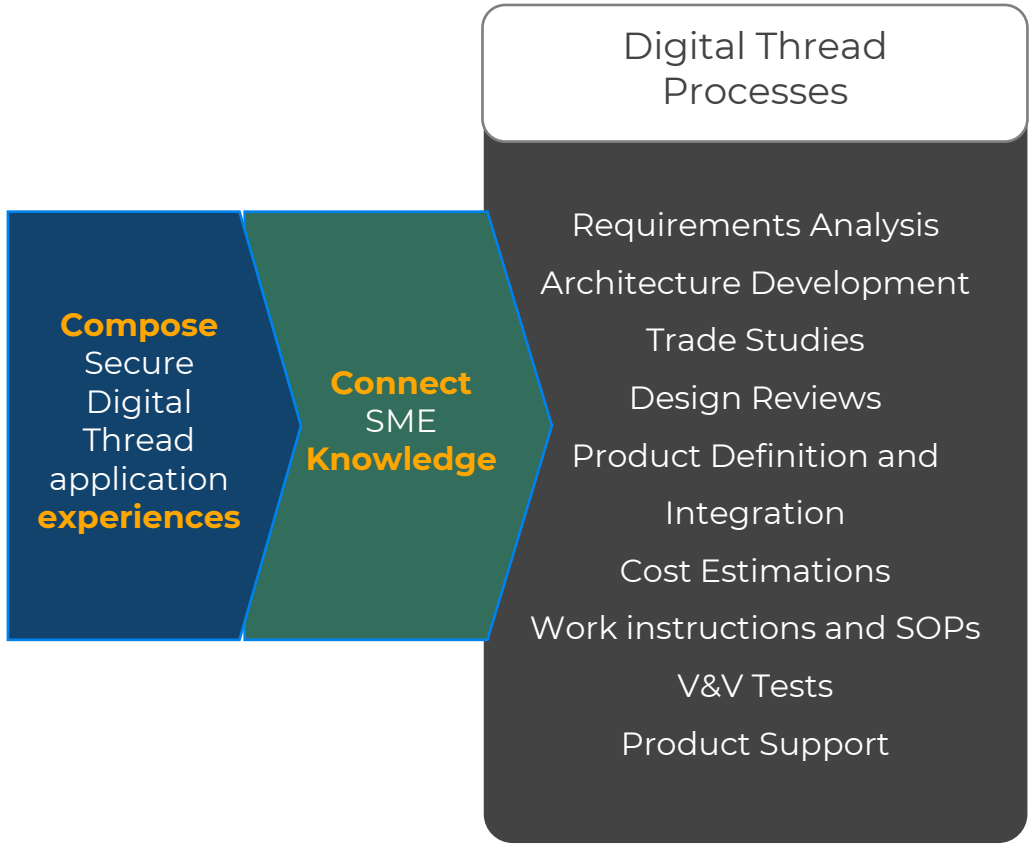
Digital Thread Value – Power Your Processes



Ask the audience:
What other processes are powered by The Digital Thread?



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LIVE Example

Digital Thread Processes

- Requirements Analysis
- Architecture Development
- Trade Studies
- Design Reviews
- Product Definition and Integration
- Cost Estimations
- Work instructions and SOPs
- V&V Tests
- Product Support

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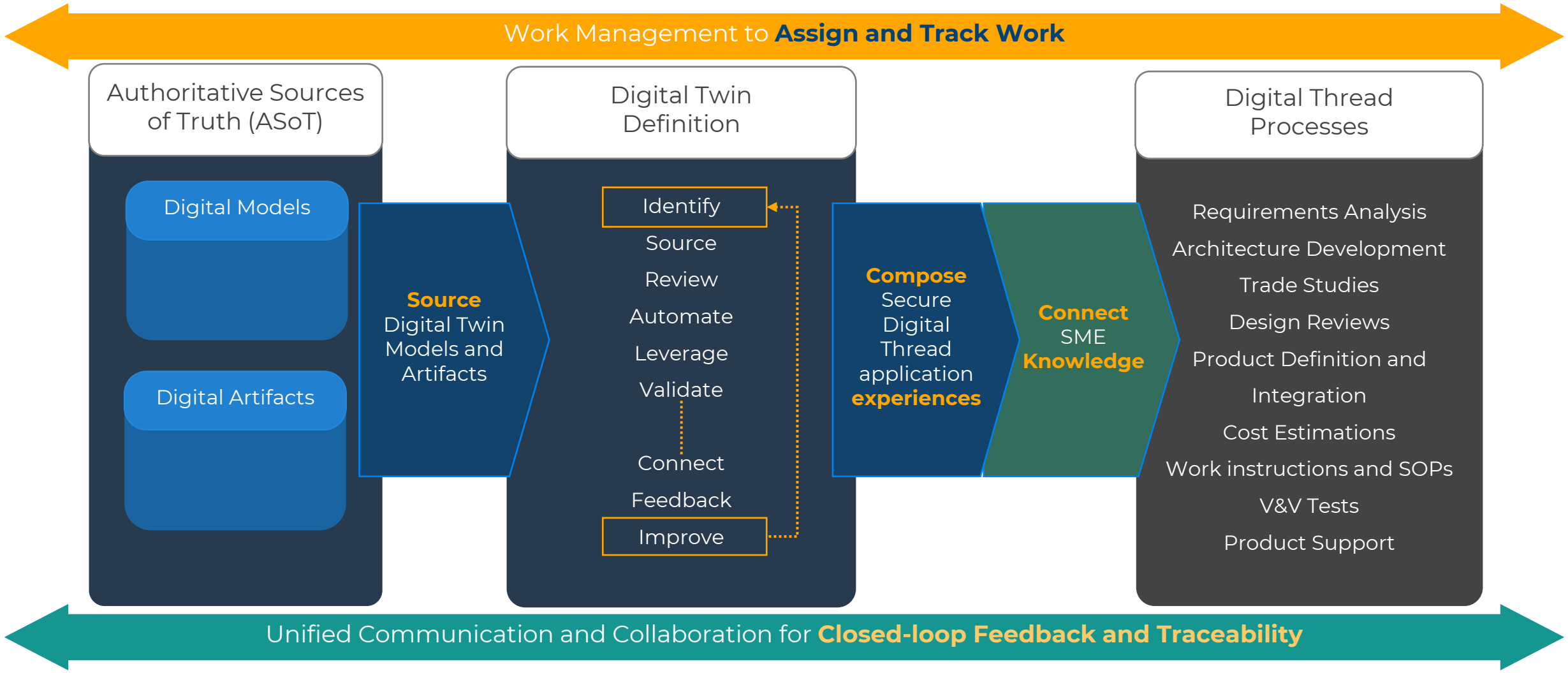
Digital Engineering Ecosystem Elements



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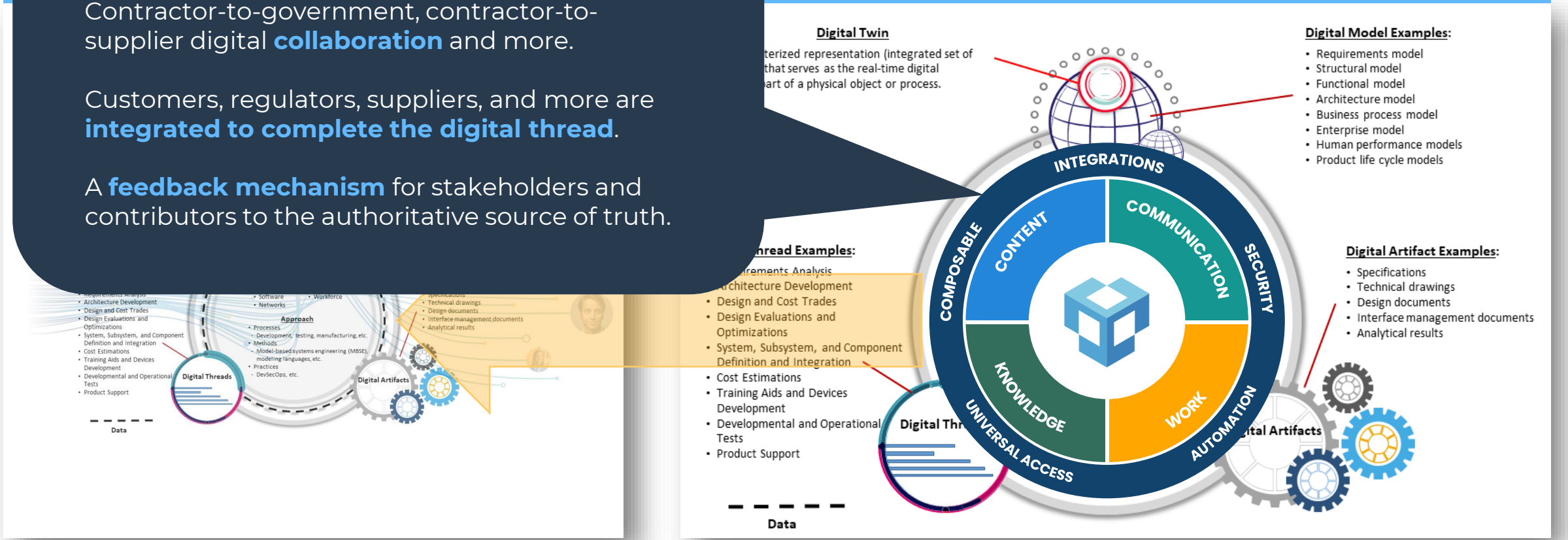

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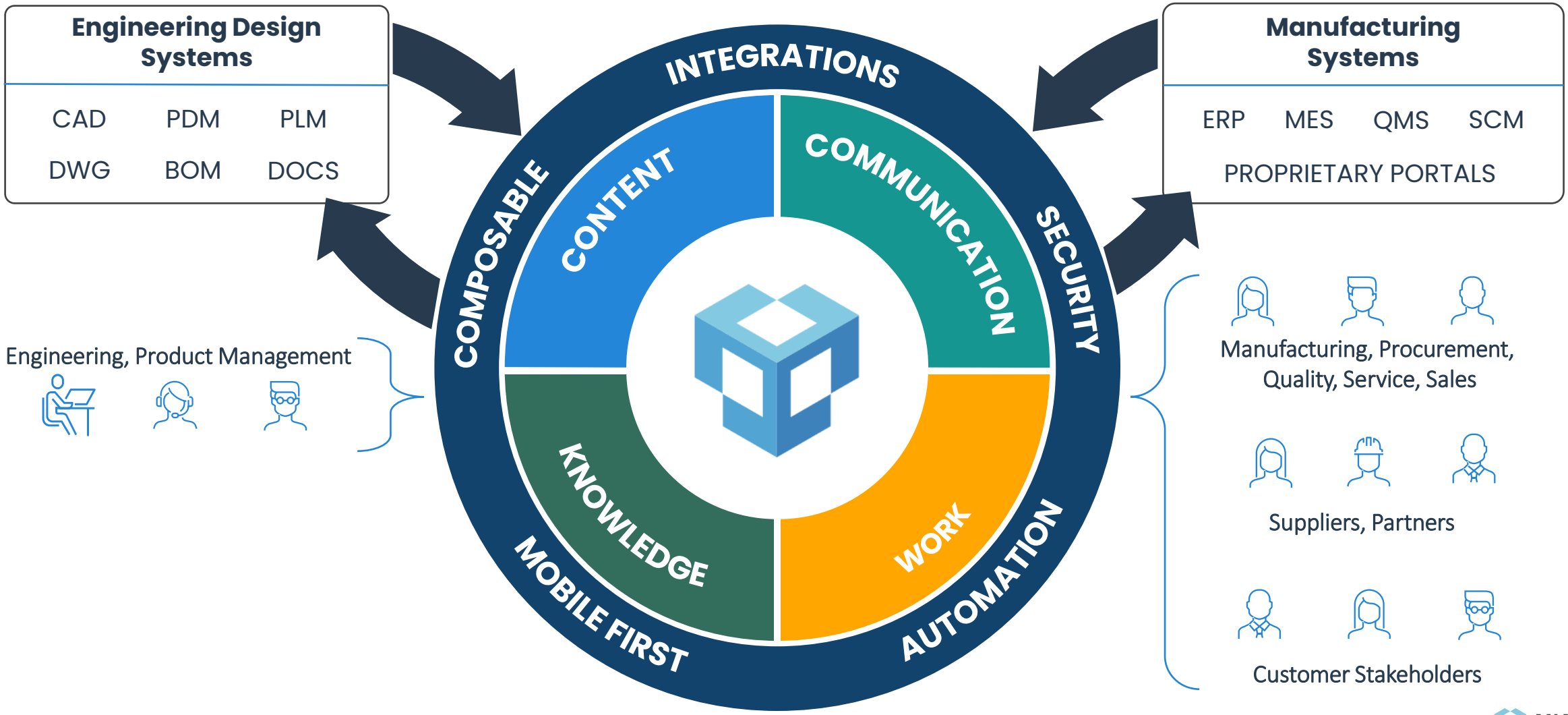
Anark's Collaboration Platform

Speaks the languages of digital engineering so your teams can focus on innovation



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Closed-loop technical data exchange

Office of the Secretary of Defense (OSD) Manufacturing Technology (ManTech) Modernization Challenge

Challenge

- Silos of Information and Collaboration Break the Digital Thread
- Diverse OIB Technology Infrastructure and Personnel Prevent Scalable Solutions
- Organizational Barriers Remain Between Program Offices and OIB Sites

Solution:

- Streamline operations
- Improve workforce productivity and satisfaction
- Connects heterogeneous data silos into a collaborative digital thread
- Meet a diverse OIB where they work

https://www.anark.com/about/news/anark-wins-organic-industrial-base

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Upcoming Lunch ‘n Learn:

Getting Started with Digital Engineering Content Management

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