digital twin™ CONSORTIUM

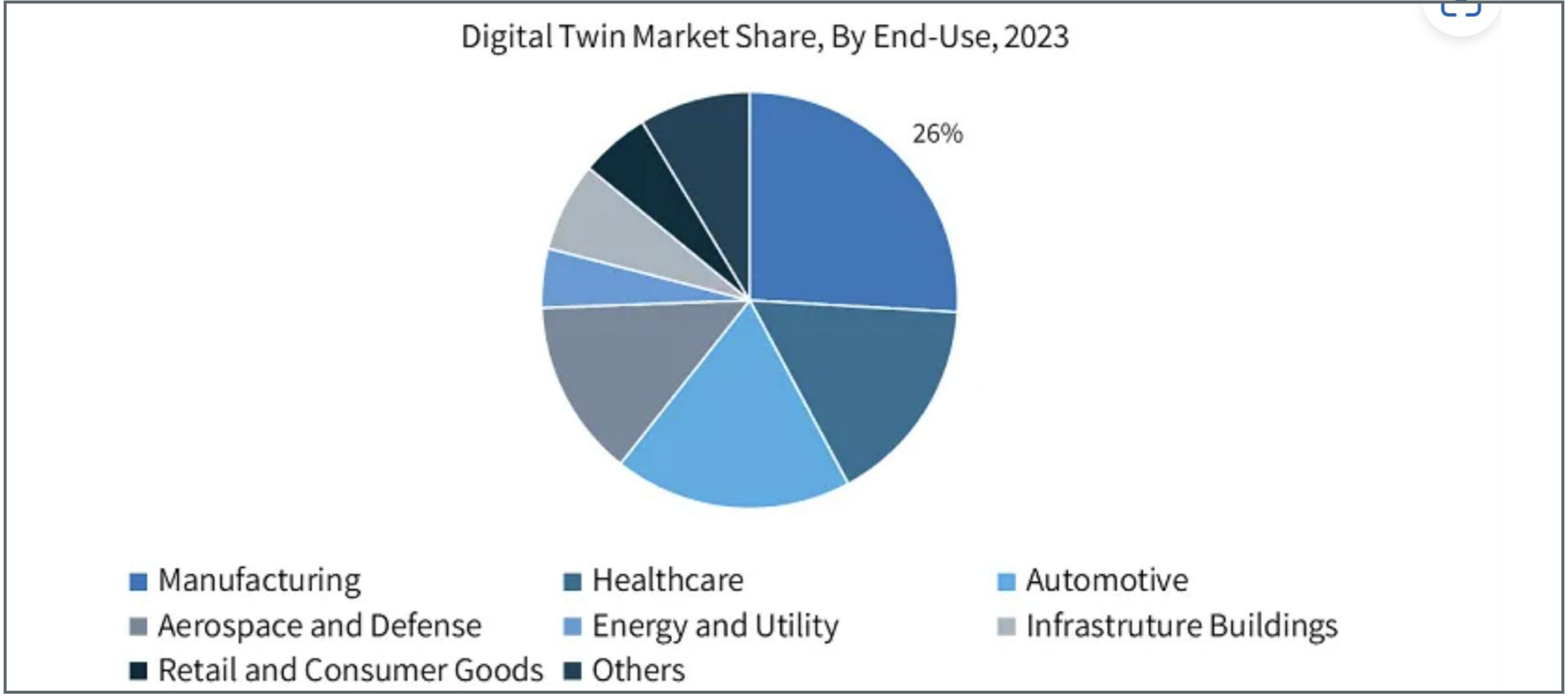
# Advancing Digital Twin Innovation

Dan Isaacs: CTO and GM

January 2025

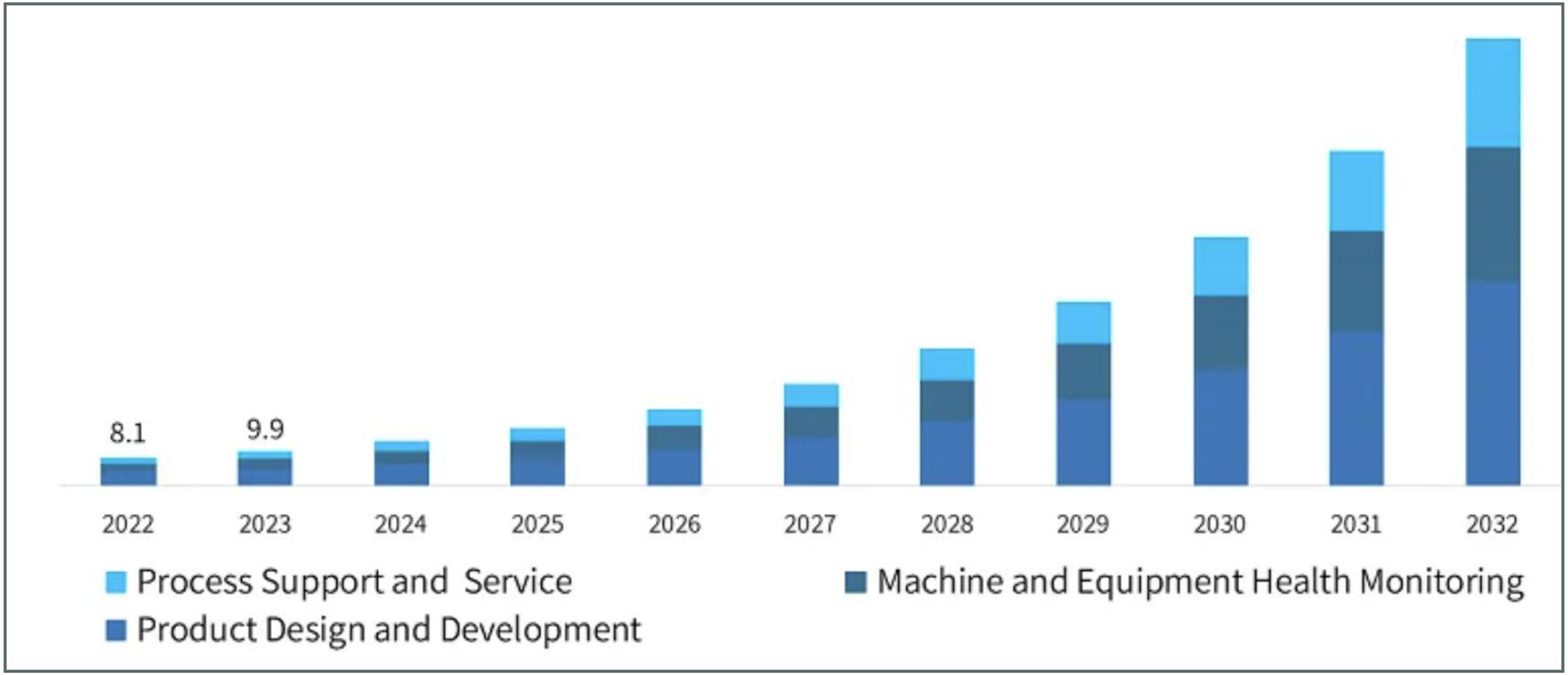
Global Market Insights
DIGITAL TWIN MARKET
GLOBAL STATISTICS
Market Size (2023)
$9.9 BN
CAGR (2024-2032)
>33%
Market Size (2032)
$125.1 BN
SEGMENT VALUATION
Product design and development segment
Market Share (2023)
50%
Manufacturing segment
Market Share (2023)
26%
North America
Market Share (2023)
35%

# Digital Twin Market Forecast




Source: www.gminsights.com

# Digital Twin Market Size, By Application, 2022-232 ($B)




Source: www.gminsights.com

# Advancing Digital Twin Innovation

## Increasing industry adoption of Digital Twins from on-premise to cloud

- Accelerating over a wide range of use cases
- Spanning from informant to performant
- Including the emergence of AI-integrated digital twins

## Expanding the Digital Twin Consortium scope to encompass

- Advanced Digital Engineering - methodologies and leading practices (MBSE, MBD,…)
- Digital Thread Lifecycle - from origination to decommissioning
- Integration of AI - driving Digital Twin evolution and adoption

## Steering Committee Members

## XL Industry Members

Researchers | Technology Providers | Academia | Government | Digital Twin Users

**200+ Members and Growing**

# Digital Twin Use Cases in Progress

### Aerospace & Defense
- Asset simulation, test, and operation / maintenance
- Continuous improvement of existing assets for EOL extension
- Dev SecOps – network cyber resiliency
- Maintenance / assembly training, mixed reality

### Mobility & Transportation
- Intelligent infrastructure
- Management and efficiency of airports / seaports / inland ports
- Monitoring of bridges for safety
- Highway traffic and congestion analysis
- Software Defined Vehicles

### Agriculture, Food & Beverage
- Maximize crop yield
- Vertical Farming
- Minimize energy and water use
- Sustainable
- Supply chain

9

### Healthcare & Life Sciences
- How systems are developed, designed and deployed
- Personalization for precision medicine
- Disease detection and analysis, treatment

### AECO
- Smart Building/Cities
- Facility Management
- Urban Planning
- Surface/Sub-Surface Reality Capture
- Temporal and Spatial
- Data Visualization

### Natural Resources
- Grid design and upgrade
- Resilient and secure
- Disaster prediction and emergency service delivery
- Renewables: Wind, Solar, Hydro…
- Alternative Energy
- Mining, Asset track & trace,

### Pharma & Regulatory
- Drug Discovery
- Development/Manufacturing
- Compliance and Regulation
- Production and Delivery

### Telecommunications
- Network Coverage/Security
- 5G/6G Signal Dispersion
- Emergency Management/Response
- Air, Land and Sea Communications

### Sustainability
- ClimaTech
- Carbon Reporting
- Governance and Compliance
- Circular Economy

### FinTech
- Secure transactions
- Operational resilience
- Smart Contracts
- Regular validation
  - Equitable
  - Trustworthy

### Manufacturing
- Asset/Product improvement
- Additive manufacturing
- Asst/Product lifecycle management (CASE)
- Supply chain logistics / management
- Packaging reduction
- Quality control

### Academia & Research
- Digital twins across industrial, cities, supply chains, smart agriculture, sustainability, etc.
- Workforce skills development
- Educational Curriculum
- Training/Certification
- Research Grants

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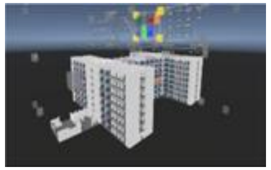
# End Users – Catalyst for new Use Cases


Academia and Research


Research Institutes


Smart Cities


Smart Buildings


Aerospace & Defense


Artificial Intelligence


Open Source Developers


Financials


Healthcare


Data Centers

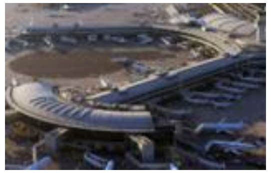

Manufacturing


Robotic Automation


Supply Chain


Transportation


Maritime


Airports


Oil & Gas


Renewables


Modular Nuclear Energy


Pharma


Precision Agriculture


Regulatory and Compliance

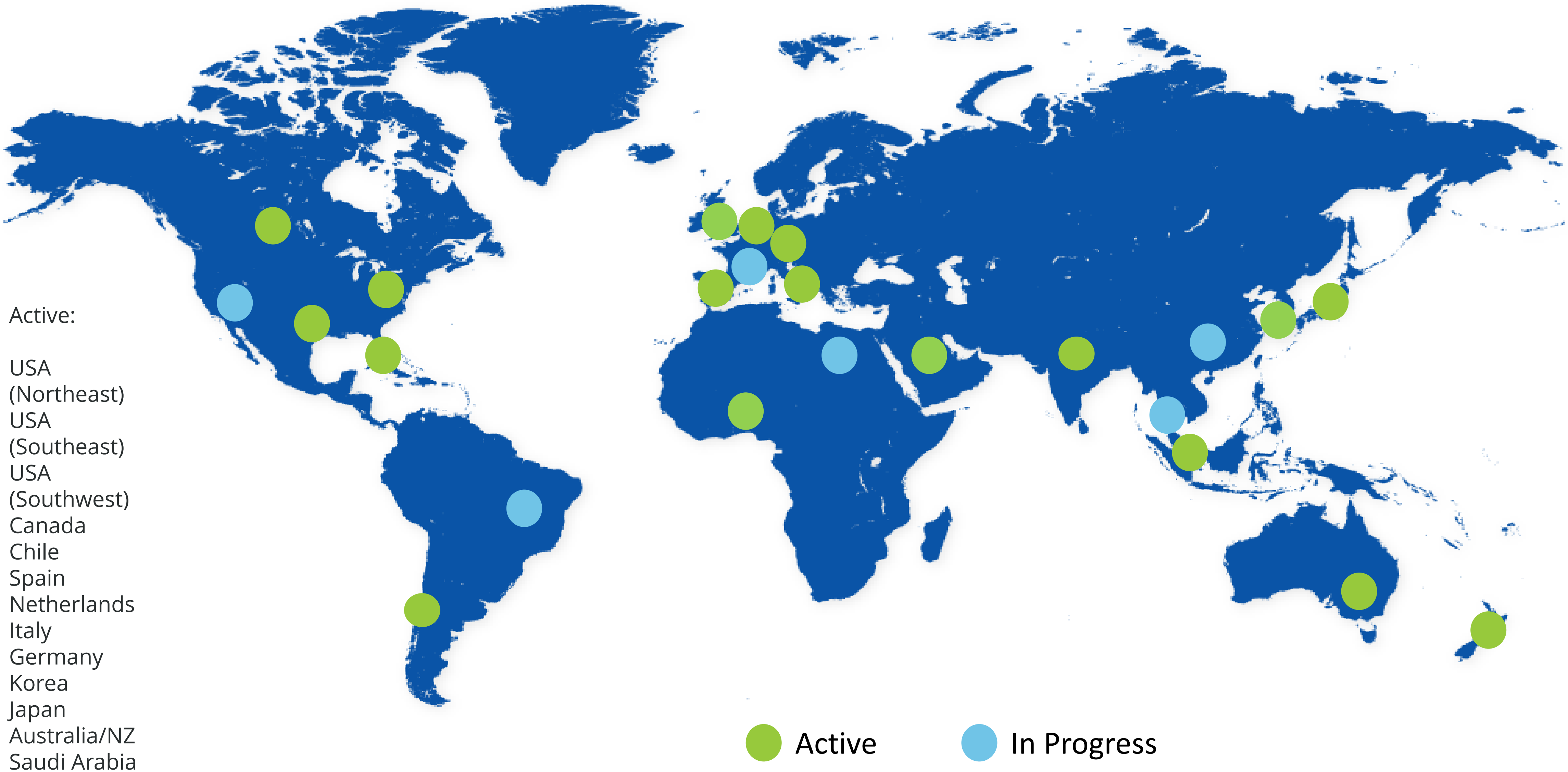

Emergency Management


Telecomm

# Regional Branch Coverage

Active:

USA (Northeast)
USA (Southeast)
USA (Southwest)
Canada
Chile
Spain
Netherlands
Italy
Germany
Korea
Japan
Australia/NZ
Saudi Arabia
Singapore
India



# Liaisons - Global Collaboration

American Institute of Aeronautics & Astronautics

AIoT User Group

Augmented Reality for Enterprise Alliance

Association for Smarter Homes & Buildings

Autonomy Institute

buildingSMART International

The Smart Manufacturing Institute

Centre for Spatial Data AECOs and Land Administration

CEO Leadership Alliance Orange County

The FIWARE Foundation

Global Mining Guidelines Group

International Council on Systems Engineering

Industrial Digital Twin Association

Interoperability Institute

InnovateEnergy

ISO/IEC JTC 1/SC 41

Manufacturing x Digital

National Institute of Building Sciences BIM Council

Open Applications Group

Open Health Systems Laboratory

Open Industry 4.0 Alliance

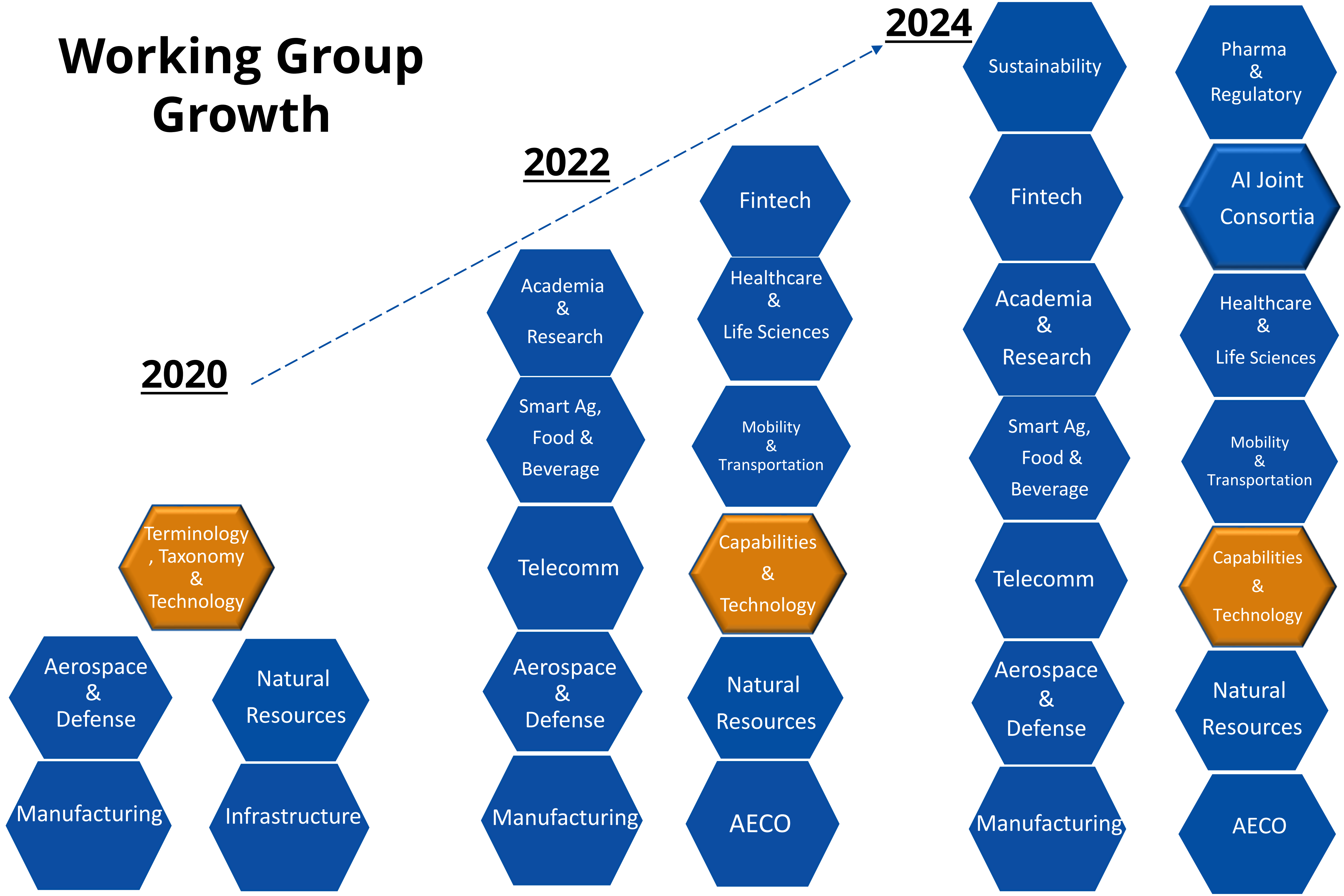
OPC Foundation

Post-Industrial Institute

Smart Cities Council

Texas State CIEDAR Consortium

# Working Group Growth

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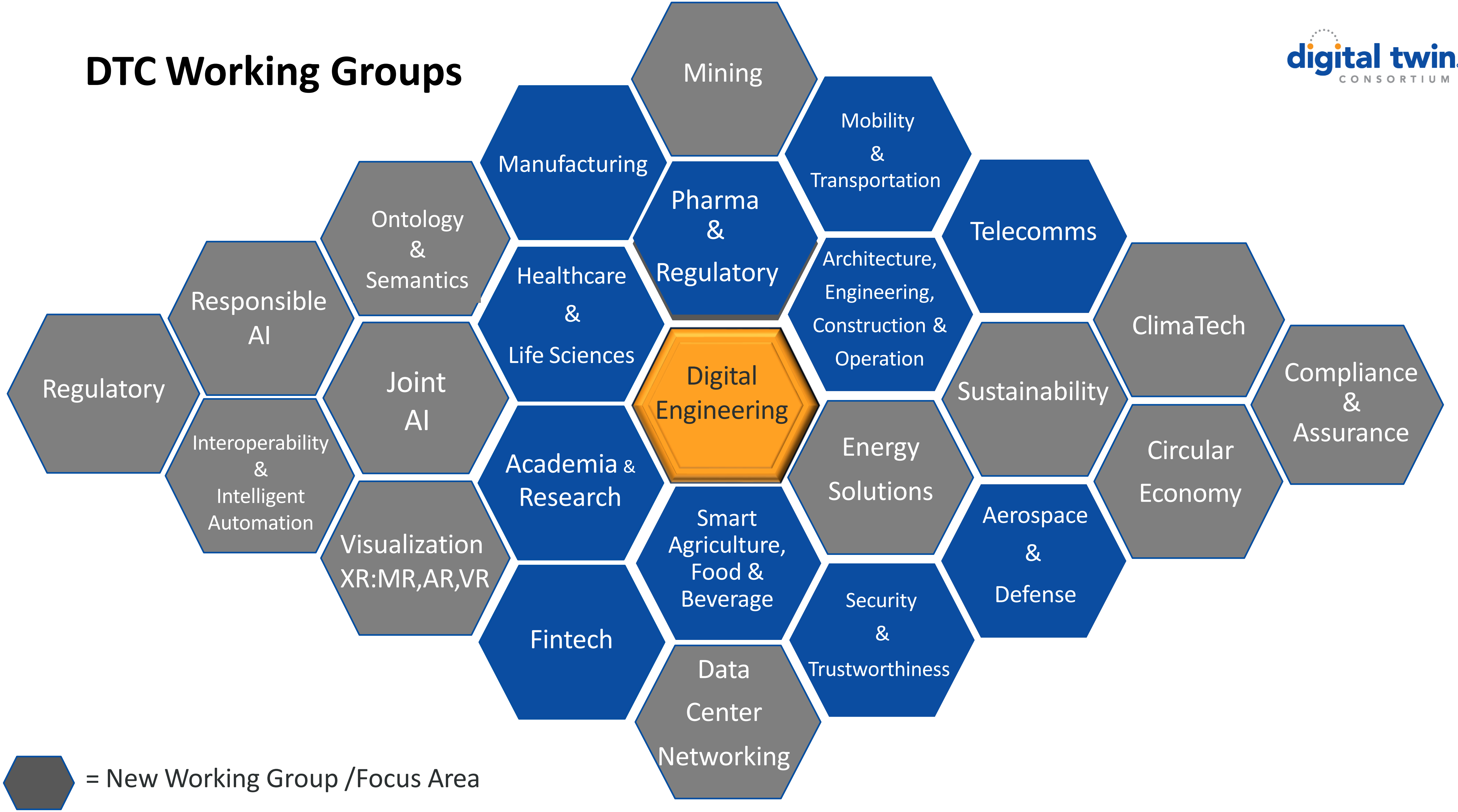
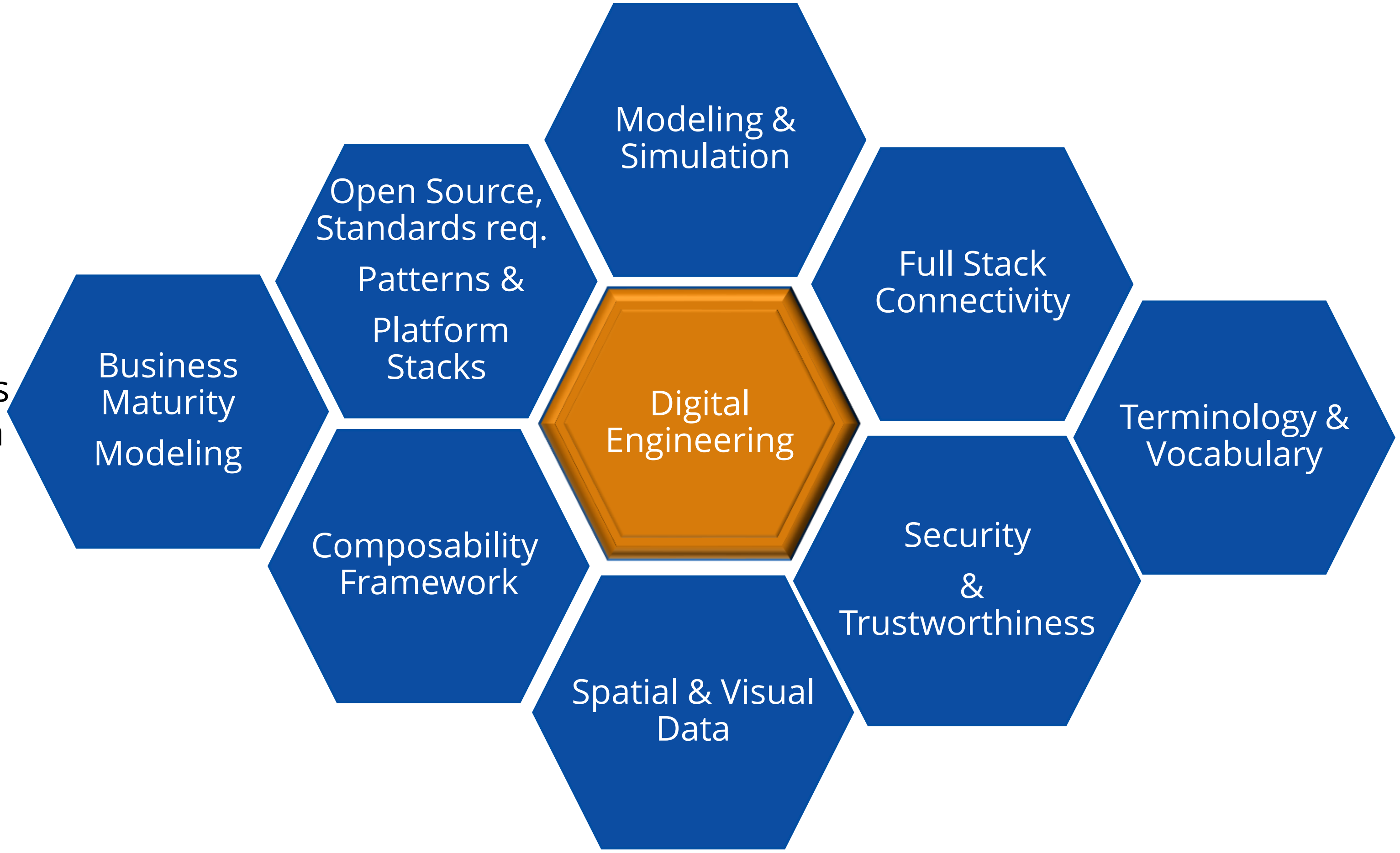
# DTC Working Groups



# Digital Engineering Subgroups
# Creating the Foundation for the Digital Twins

**Focus**

- Helps to create and identify the horizontal foundational elements and fundamental building blocks for digital twins
- Contributes to standard requirements, open source and cross-functional use cases
- Identifies and develops composable frameworks through corresponding subgroups that focus on business maturity models, system reference architectures, simulation & modeling, security & trust and spatial & visual data.
- Develop use cases and case studies that align and are consistent with the composable framework for the Technology Showcase and promote the Technology Spotlight, focusing on DTC member innovation and thought leadership.



# New Working Groups

Data Center Networking

Mining

Energy Solutions

- Focus Includes: Networking, Enterprise, Operations, Energy Efficiency, Sustainability, Security, Reliability

- Safety, Encompassing Entire Value Chain and Digital Marketplace

- Encompasses both Traditional: Oil and Gas, Nuclear and Alternative Energy sources

# New Subgroup Focus Areas In Progress

Assured Supply Chain

Software Automation

Verification and Validati

**Manufacturing Working Group**

**Digital Engineering  Working Group**

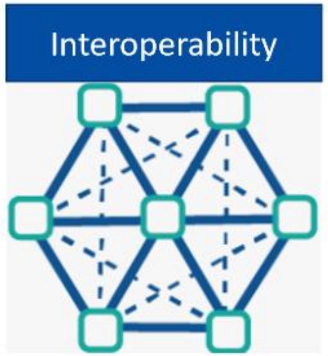
# Structure


## Member Driven

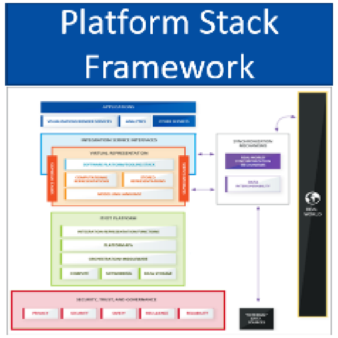
- Highly Collaborative
- Results Oriented
- Demonstrative
- Global Regional Branch Organizers
- Industry-wide Liaisons

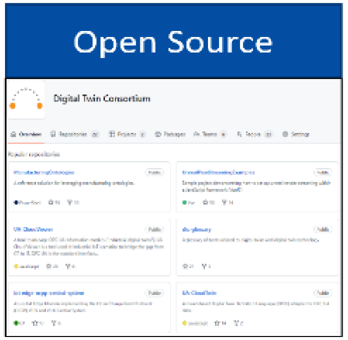
# Frameworks







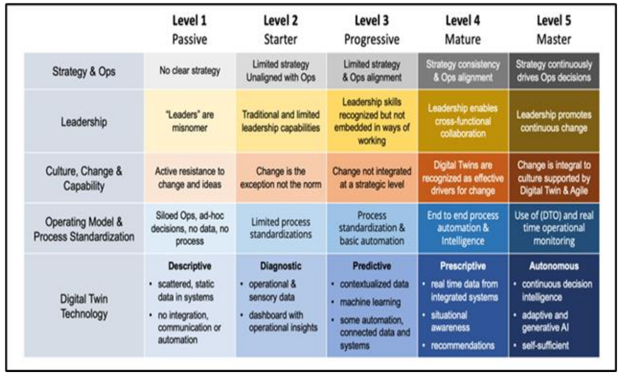



# Showcase

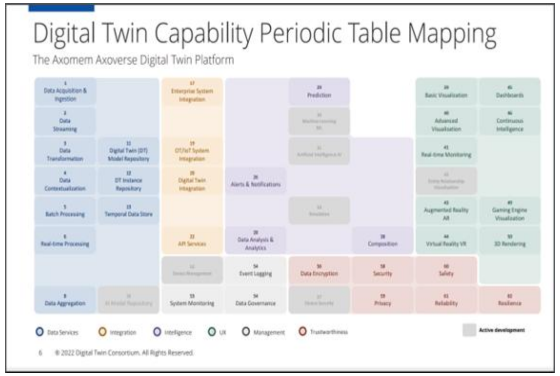

- ROC Windfarms - XMPro
- Ecol Café End-to-End Enterprise Digitalization I4.0
- 5G Secure Network - Intuitus
- Battery System Development – Dassault Systemes
- Flood Management – University of Melbourne
- Tracking Injuries in Hospitals – Axomem
- Long-haul COVID Management – Dell
- Financial Transactions – Intuitus
- Smart Airports and AR – EventSystems, others
- Intelligent Transport – Autonomy Institute

# From Work Product to Use Case Workflow

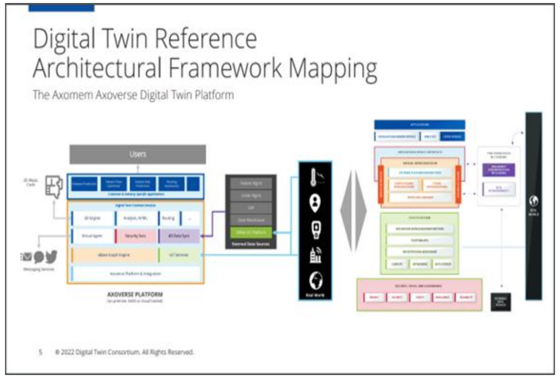


| | Level 1 Passive | Level 2 Starter | Level 3 Progressive | Level 4 Mature | Level 5 Master |
|---|---|---|---|---|---|
| Strategy & Ops | No clear strategy | Limited strategy Unaligned with Ops | Limited strategy & Ops alignment | Strategy consistency & Ops alignment | Strategy continuously drives Ops decisions |
| Leadership | "Leaders" are misnomer | Traditional and limited leadership capabilities | Leadership skills recognized but not embedded in ways of working | Leadership enables cross-functional collaboration | Leadership promotes continuous change |
| Culture, Change & Capability | Active resistance to change and ideas | Change is the exception not the norm | Change not integrated at a strategic level | Digital Twins are recognized as effective drivers for change | Change is integral to culture supported by Digital Twin & Agile |
| Operating Model & Process Standardization | Siloed Ops, ad-hoc decisions, no data, no process | Limited process standardizations | Process standardization & basic automation | End to end process automation & Intelligence | Use of (DTO) and real time operational monitoring |
| Digital Twin Technology | Descriptive<br>• scattered, static data in systems<br>• no integration, communication or automation | Diagnostic<br>• operational & sensory data<br>• dashboard with operational insights | Predictive<br>• contextualized data<br>• machine learning<br>• some automation, connected data and systems | Prescriptive<br>• real time data from integrated systems<br>• situational awareness<br>• recommendations | Autonomous<br>• continuous decision intelligence<br>• adaptive and generative AI<br>• self-sufficient |

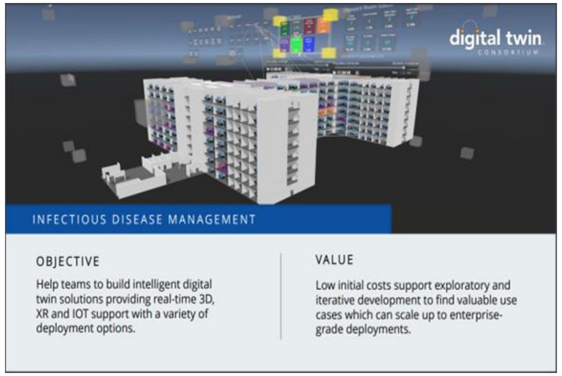
**Digital Twin Maturity Assessment**




**Identification of Capabilities**




**Mapping to Platform Stack Framework**




**Digital Twin Implementation**

# Technology Showcase Reference Library

Welcome to the digital twin industry's definitive use case reference library

The Technology Showcase is a living journal that chronicles the evolution of digital twins. Here, you will learn how our members are building the digital infrastructure of the future.


DIGITAL TWINS FOR PUBLIC SAFETY

WIND FARMS REMOTE OPERATIONS CENTER (ROC)

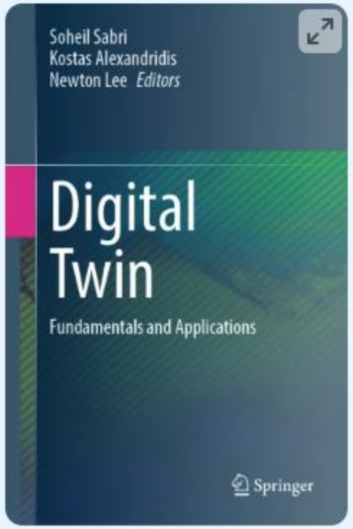
SCOPE 3 CARBON EMISSIONS REPORTING

INFECTIOUS DISEASE MANAGEMENT

EMERGENCY COMMUNICATION SERVICES

BUILDINGS AS BATTERIES

MANUFACTURING QUALITY CONTROL VIA REMOTE OPERATOR




# Digital Twin

## Fundamentals and Applications

Book | Jan 2025

## Overview

**Editors:** Soheil Sabri, Kostas Alexandridis, Newton Lee

- Provides a well-rounded overview and demonstration of digital twin and digital transformation technologies
- Explores and showcases how digital twins advance our ability to address and solve contemporary problems
- Links state-of-the art theory, methodology, and practice across academic, governance and industry institutions

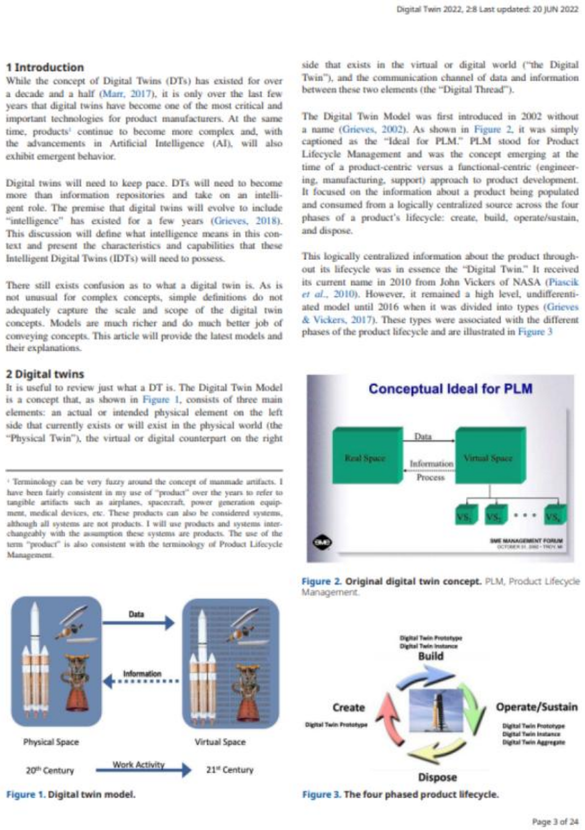
- Led by Academia & Research WG Co-Chairs
- Contributions from:
  - UCF
  - CSDILA
  - OC Survey
  - Institute for Education, Research and Scholarships
  - Georgia Institute of Technology
  - University of Leeds
  - Aker BP
  - RWTH Aachen University
  - Agile Fractal Grid
  - Digital Twin Institute

ORDER ONLINE:
Digital Twin: Fundamentals and Applications

# Evolution towards Intelligent Digital Twins

## Intelligent digital twins and the development and management of complex systems – Dr. Michael Grieves

**Research Gate# 360863845**



Digital Twin 2022, 2:8 Last updated: 20 JUN 2022

**1 Introduction**

While the concept of Digital Twins (DTs) has existed for over a decade and a half (Marr, 2017), it is only over the last few years that digital twins have become one of the most critical and important technologies for product manufacturers. At the same time, products[1] continue to become more complex and, with the advancements in Artificial Intelligence (AI), will also exhibit emergent behavior.

Digital twins will need to keep pace. DTs will need to become more than information repositories and take on an intelligent role. The premise that digital twins will evolve to include "intelligence" has existed for a few years (Grieves, 2018). This discussion will define what intelligence means in this context and present the characteristics and capabilities that these Intelligent Digital Twins (IDTs) will need to possess.

There still exists confusion as to what a digital twin is. As is not unusual for complex concepts, simple definitions do not adequately capture the scale and scope of the digital twin concepts. Models are much richer and do much better job of conveying concepts. This article will provide the latest models and their explanations.

**2 Digital twins**

It is useful to review just what a DT is. The Digital Twin Model is a concept that, as shown in Figure 1, consists of three main elements: an actual or intended physical element on the left side that currently exists or will exist in the physical world (the "Physical Twin"), the virtual or digital counterpart on the right side that exists in the virtual or digital world ("the Digital Twin"), and the communication channel of data and information between these two elements (the "Digital Thread").

The Digital Twin Model was first introduced in 2002 without a name (Grieves, 2002). As shown in Figure 2, it was simply captioned as the "Ideal for PLM." PLM stood for Product Lifecycle Management and was the concept emerging at the time of a product-centric versus a functional-centric (engineering, manufacturing, support) approach to product development. It focused on the information about a product being populated and consumed from a logically centralized source across the four phases of a product's lifecycle: create, build, operate/sustain, and dispose.

This logically centralized information about the product throughout its lifecycle was in essence the "Digital Twin." It received its current name in 2010 from John Vickers of NASA (Piascik et al., 2010). However, it remained a high level, undifferentiated model until 2016 when it was divided into types (Grieves & Vickers, 2017). These types were associated with the different phases of the product lifecycle and are illustrated in Figure 3

[1] Terminology can be very fuzzy around the concept of manmade artifacts. I have been fairly consistent in my use of "product" over the years to refer to tangible artifacts such as airplanes, spacecraft, power generation equipment, medical devices, etc. These products can also be considered systems, although all systems are not products. I will use products and systems interchangeably with the assumption these systems are products. The use of the term "product" is also consistent with the terminology of Product Lifecycle Management.



**Figure 1.** Digital twin model.



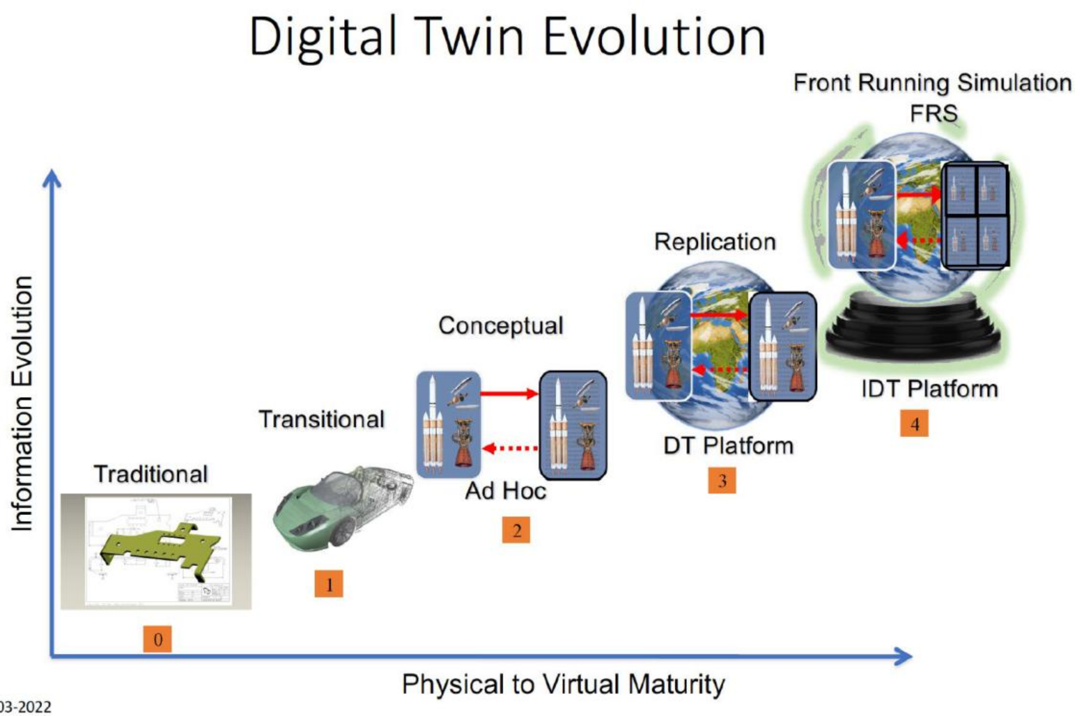
**Figure 2.** Original digital twin concept. PLM, Product Lifecycle Management.



**Figure 3.** The four phased product lifecycle.









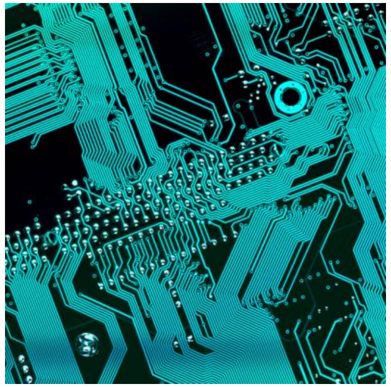


[Intelligent digital twins and the development and ... | Digital Twin (digitaltwin1.org)](Intelligent digital twins and the development and ... | Digital Twin (digitaltwin1.org))

# Digital Twin Evolution

## Traditional (DT)

- Passive
- Offline
- Goal Given
- Predictive



**DATA**

## Intelligent (IDT)

- Active
- Online
- Goal Seeking
- Anticipatory

**DATA FLOW**

## Multi-Agent GenAI (MAGS)

- Interactive
- Autonomous
- Reasoning
- Decision-Making

**GENERATIVE**

Adopted from: [Grieves, Michael. (2022). Intelligent digital twins and the development and management of complex systems. Digital Twin. 2. 8. 10.12688/digitaltwin.17574.1.]

## Gen AI Multi-Agent Systems: A Secret Weapon for Tech Teams

*Multi-agent Gen AI systems can greatly enhance and accelerate the process of ideating, designing, and testing new products.*

May 28th, 2024 1:19pm by Dan Kraemer

…Multi-agent GenAI systems are much like they sound: a collection of AI agents working together. Whereas one agent does a single task, such as a coding co-pilot, a multi-agent system combines multiple development tasks — product ideation, design, testing, customer segmentation, etc. — that learn from one another to optimize creativity and productivity. Successful multi-agent systems act as a "digital twin" for your development team, continually generating multiple new concepts and future scenarios. Multi-agent systems don't replace development and product teams, but instead augment them.

## Digital Twin Consortium Members Develop and Deploy Multi-Agent Gen AI Systems

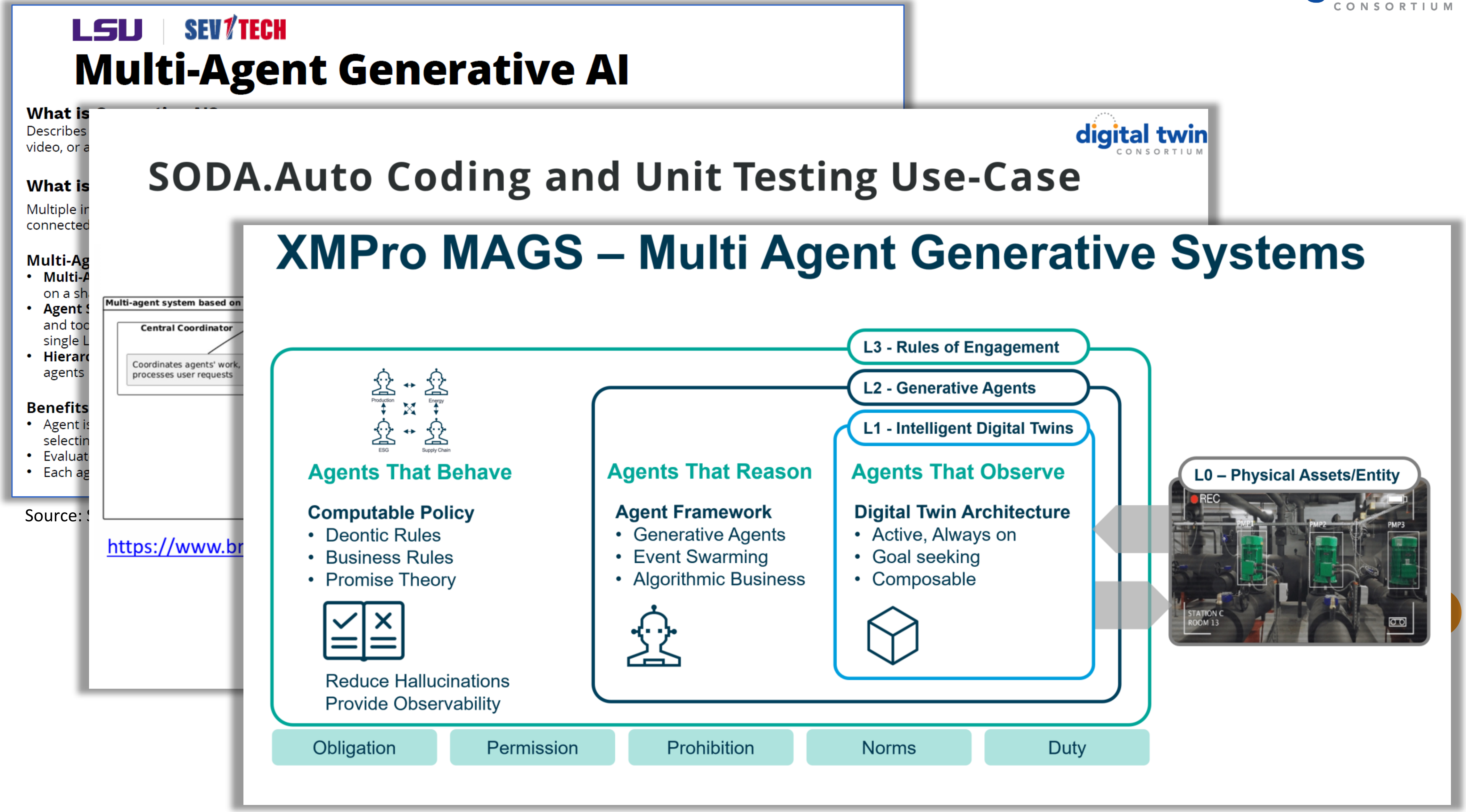
*Use Cases of Digital Twin Multi-Agent Generative AI Systems Deliver Added Value*

**BOSTON, MA – JULY 23, 2024** – Today, Digital Twin Consortium® (DTC) announced that members are developing and deploying Multi-agent GenAI Systems (MAGS) that are redefining the boundaries of how product design, services, and processes can be realized, born of efficiency and optimizations. Use cases include automotive, infrastructure, and manufacturing, where MAGS is utilized to drive significant productivity improvements, streamline operations, and maximize efficiency.

Digital twins are providing advanced levels of automation infused with GEN AI, not only integrating copilots but now utilizing MAGS to perform a multitude of tasks either operating independently, self-organizing, self-optimizing and orchestrated—with or without a traditional human in the loop for decision-making guided by human oversight that is free from conventional repetitive routine activities.

# MAGS Examples

Manufacturing
Automotive
Infrastructure



LSU | SEV1TECH
Multi-Agent Generative AI
What is
Describes
video, or a
What is
Multiple i
connected
Multi-Ag
• Multi-A
on a sh
• Agent S
and too
single L
• Hierarc
agents
Benefits
• Agent is
selectin
• Evaluat
• Each ag
Source: S
SODA.Auto Coding and Unit Testing Use-Case
digital twin CONSORTIUM
Multi-agent system based on
Central Coordinator
Coordinates agents' work, processes user requests
https://www.br
XMPro MAGS – Multi Agent Generative Systems
L3 - Rules of Engagement
L2 - Generative Agents
L1 - Intelligent Digital Twins
L0 – Physical Assets/Entity
Production
Energy
ESG
Supply Chain
Agents That Behave
Computable Policy
• Deontic Rules
• Business Rules
• Promise Theory
Reduce Hallucinations
Provide Observability
Agents That Reason
Agent Framework
• Generative Agents
• Event Swarming
• Algorithmic Business
Agents That Observe
Digital Twin Architecture
• Active, Always on
• Goal seeking
• Composable
REC
PMP1
PMP2
PMP3
STATION C
ROOM 13
Obligation
Permission
Prohibition
Norms
Duty




# MAGS Webinars

https://www.digitaltwinconsortium.org/webinars/

# Agent Lifecycle Phases

**Planning Phase**

Agents assist in system design and strategy development

**Simulation Phase**

Virtual agents test system behavior and performance

**V&V Phase**

Agents validate system functionality and performance

**Deployment Phase**

Agents support system implementation and activation

**Operation & Maintenance Phase**

Agents support system performance optimization

**Decommission Phase**

Agents support systematic retirement of components

[Source: (DTC insights with Gen AI)]

# Manufacturing Digital Twin-based Agent Lifecycle Phases

Planning Phase

Agents assist in system design and strategy development

| Application Type | Planning Phase Value | Simulation Phase Value | Verification & Validation Value | Deployment Phase Value | Value Measurement Method & KPIs |
|---|---|---|---|---|---|
| Factory Layout Optimization | Agents simulate different equipment placement scenarios and material flow patterns during layout planning | Virtual agents stress-test layout configurations with varying production scenarios | Agents validate layout effectiveness through virtual production runs against defined constraints | Agents assist in physical setup by providing real-time guidance for equipment positioning | - Layout Efficiency Score - Material Flow Distance Reduction - Space Utilization Improvement - Setup Time Reduction - Number of Layout Iterations |
| Process Control System Design | Agent-based modeling of control strategies and system interactions during architectural planning | Multi-agent simulation of control scenarios including fault conditions and edge cases | Agents perform automated testing of control logic across various operational scenarios | Agents guide staged implementation of control systems with learning-based adaptation | - Control Strategy Coverage - Edge Case Detection Rate - System Response Accuracy - Implementation Success Rate - Time to Deployment |
| Supply Chain Network Design | Agents model different network configurations and supplier relationships during strategic planning | Virtual agents simulate supply chain dynamics under various disruption scenarios | Agents validate network resilience through automated scenario testing | Agents assist in phased network activation and partner onboarding | - Network Resilience Score - Risk Assessment Accuracy - Partner Integration Success - Implementation Timeline Adherence - Cost Optimization Achievement |
| Maintenance System Architecture | Agents help design optimal maintenance strategies and resource allocation plans | Virtual maintenance scenarios simulated with varying resource constraints | Agents validate maintenance procedures through virtual execution and timing analysis | Agents support gradual transition from preventive to predictive maintenance | - Strategy Coverage Score - Resource Allocation Efficiency - Procedure Validation Rate - Implementation Progress - System Readiness Metrics |
| Quality Control Network Design | Agents model inspection point placement and testing strategies during system design | Multi-agent simulation of quality control scenarios with varying defect types | Agents validate inspection procedures through virtual production runs | Agents guide implementation of quality control systems with learning capabilities | - Inspection Coverage Score - Defect Detection Capability - Procedure Effectiveness - Implementation Accuracy - System Performance Metrics |
| Energy Management System Design | Agents model energy distribution networks and consumption patterns during planning | Virtual agents simulate energy usage scenarios and demand response strategies | Agents validate energy management strategies through virtual grid scenarios | Agents support phased implementation of energy optimization systems | - Energy Efficiency Prediction - Strategy Effectiveness - System Response Accuracy - Implementation Progress - Cost Reduction Achievement |
| Production Scheduling System | Agents design scheduling rules and constraints during system architecture | Virtual agents simulate scheduling scenarios with varying production demands | Agents validate scheduling algorithms through virtual production runs | Agents assist in gradual transition from static to dynamic scheduling | - Algorithm Effectiveness - Constraint Satisfaction Rate - Schedule Optimization Level - Implementation Success - System Adaptation Speed |
| Inventory Management System | Agents model inventory policies and storage strategies during system design | Multi-agent simulation of inventory dynamics under various demand patterns | Agents validate inventory policies through virtual supply chain scenarios | Agents guide implementation of dynamic inventory management | - Policy Effectiveness Score - Storage Optimization Level - System Response Accuracy - Implementation Progress - Cost Efficiency Achievement |
| Robot Control System Design | Agents model robot interaction patterns and workspace coordination during planning | Virtual agents simulate robot collaboration scenarios and safety protocols | Agents validate robot control algorithms through virtual operation scenarios | Agents support phased implementation of collaborative robotics | - Interaction Safety Score - Collaboration Efficiency - Algorithm Validation Rate - Implementation Success - System Performance Metrics |
| Environmental Control Design | Agents model facility environmental control strategies during system planning | Virtual agents simulate environmental response under various conditions | Agents validate control strategies through virtual facility scenarios | Agents guide implementation of adaptive environmental systems | - Strategy Effectiveness Score - Response Accuracy Rate - System Validation Level - Implementation Progress - Efficiency Achievement |

Source: (DTC insights with Gen AI)

# Expanding Scope

# Digital Engineering Attributes

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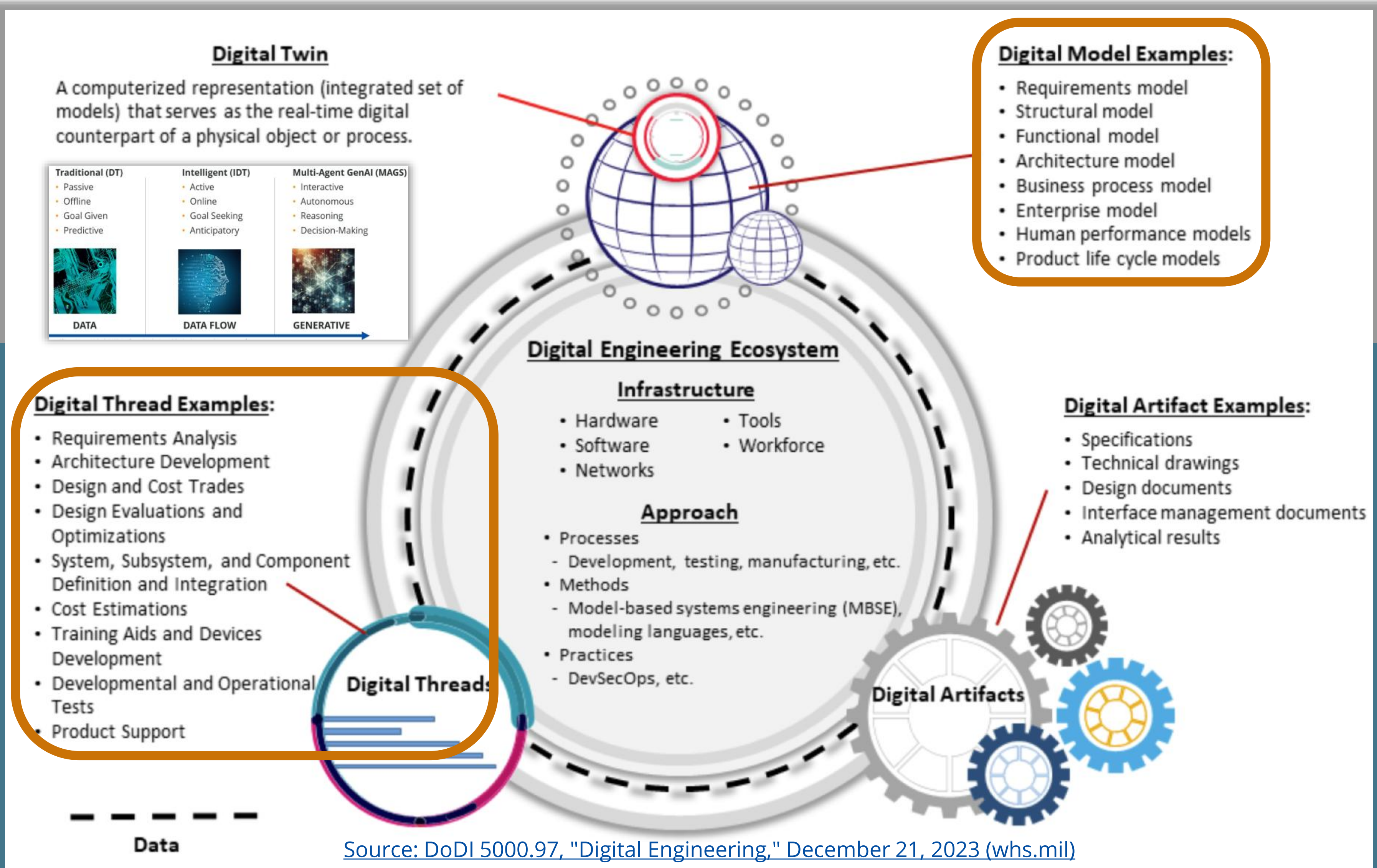
# Digital Twin Consortium Scope Expansion

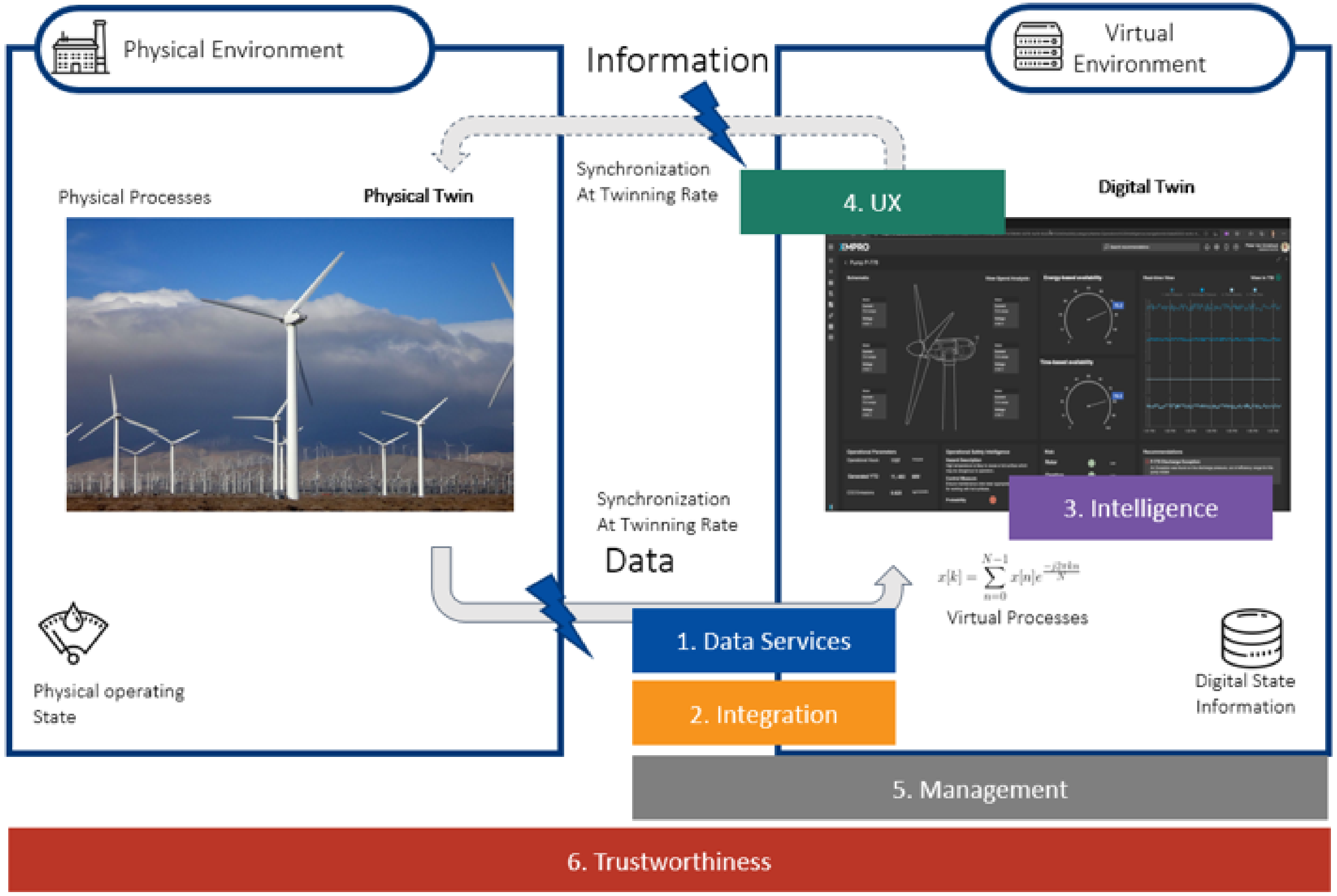



Source: DoDI 5000.97, "Digital Engineering," December 21, 2023 (whs.mil)

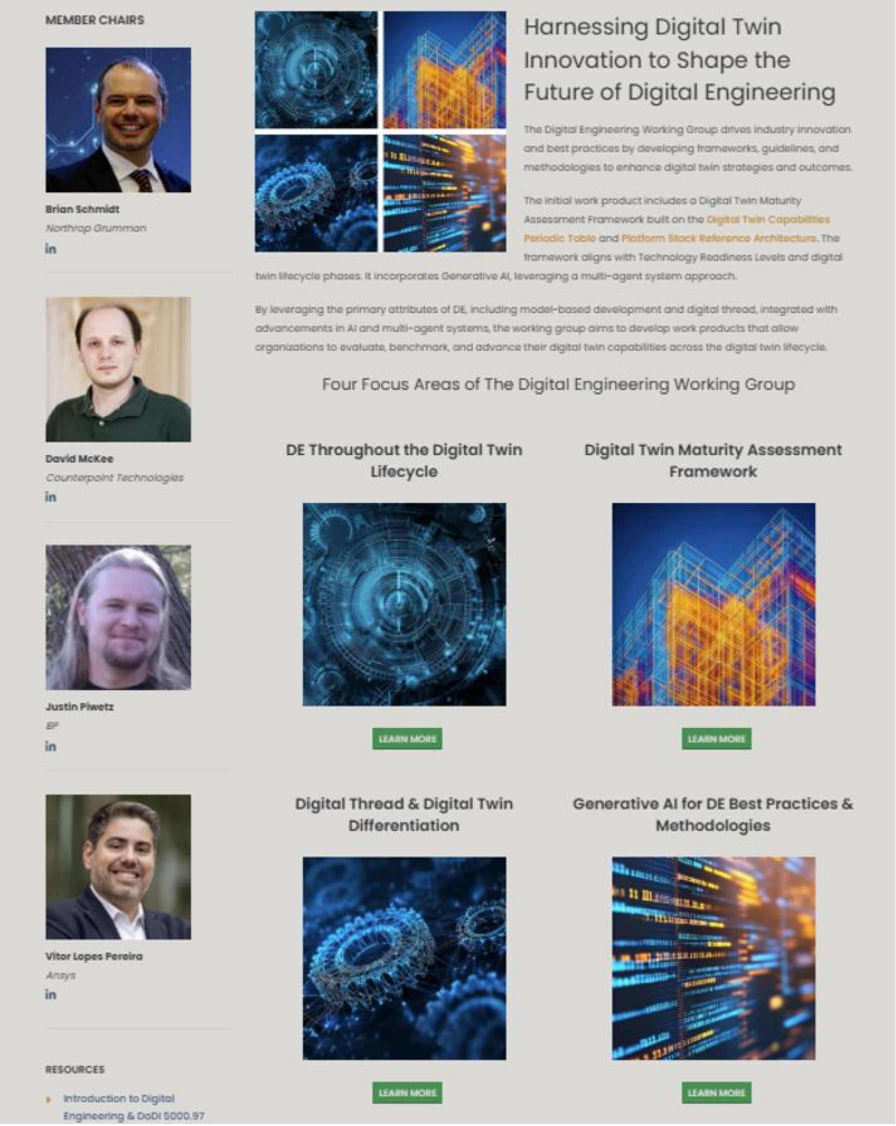
Data management should adhere to DoD Data Strategy goals – make data visible, accessible, understandable, linked, trustworthy, interoperable, and secure

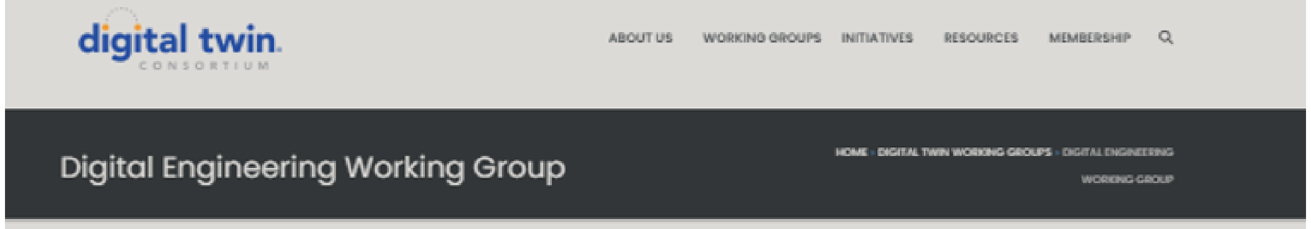
# Digital Twin Definition

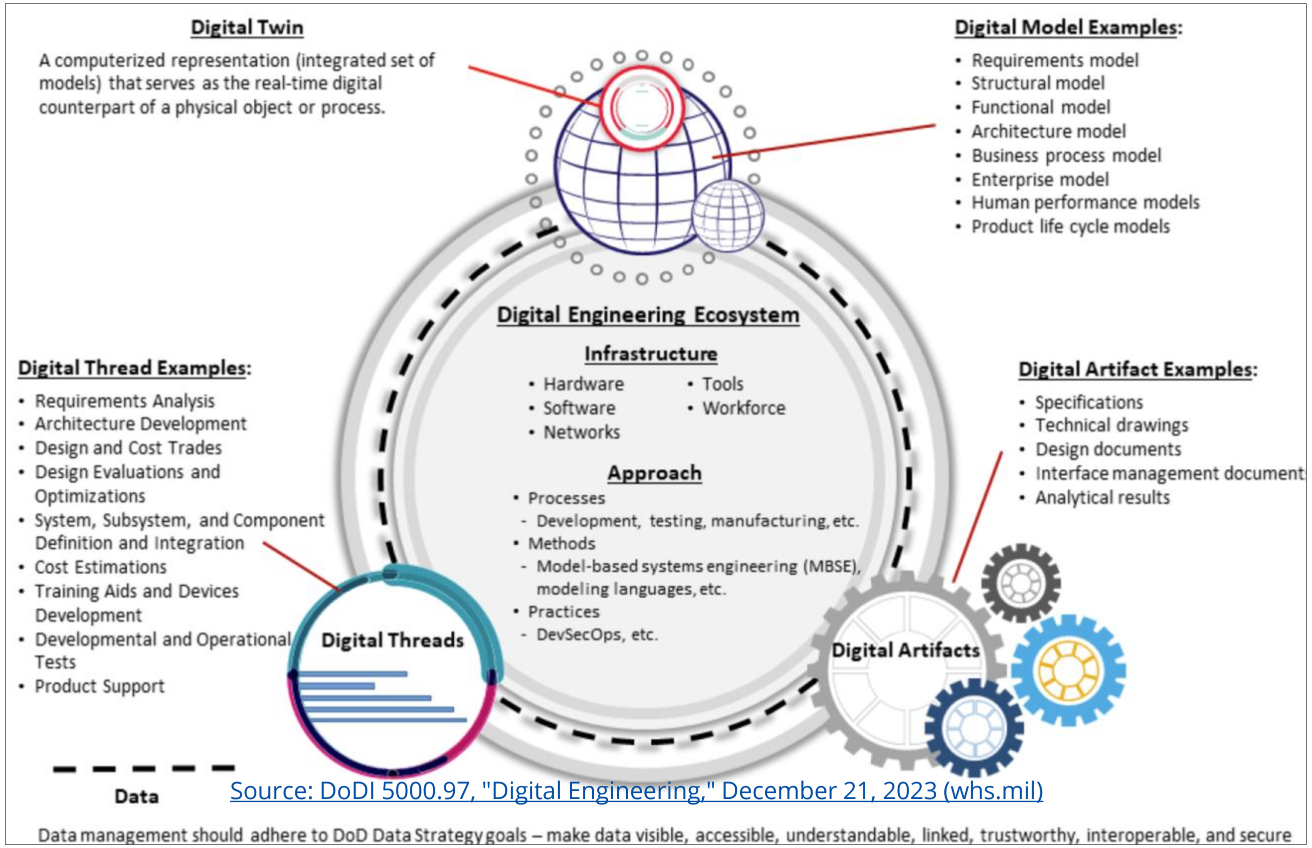
A digital twin is an **integrated data-driven** virtual representation of real-world entities and processes, with **synchronized interaction** at a specified frequency and fidelity.



# Digital Engineering Working Group



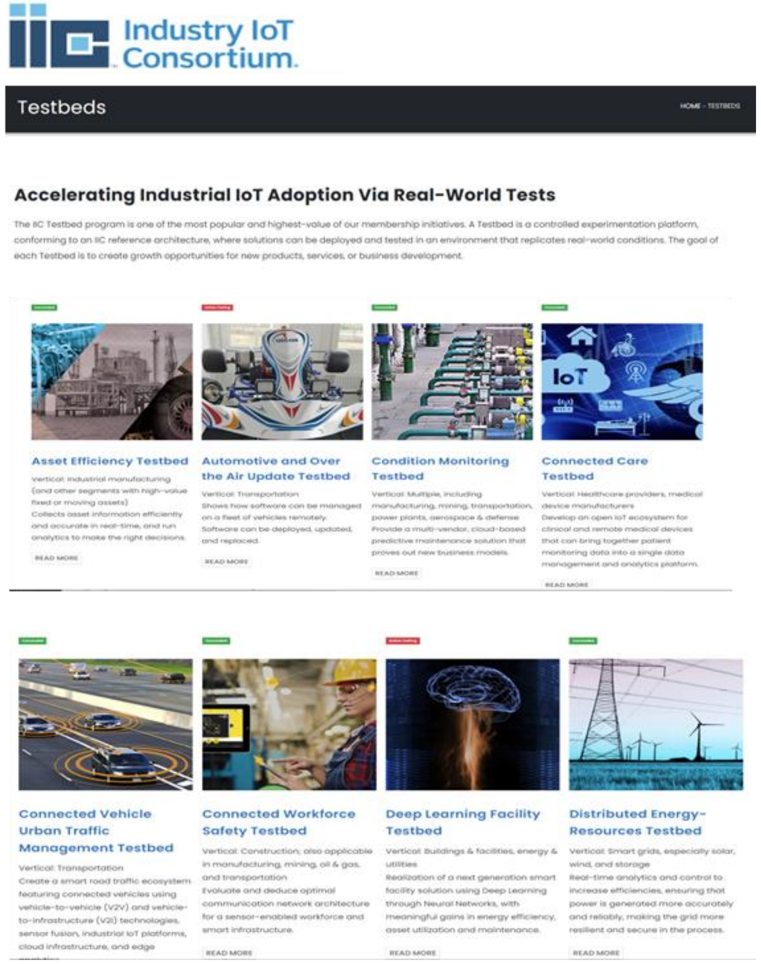

[Source: DoDI 5000.97, "Digital Engineering," December 21, 2023 (whs.mil)]

# New Testbed Initiative

# DTC Testbed Initiative

## Based on the IIC Testbed program success – DTC is reinvigorating a streamlined testbed initiative



Industry IoT Consortium

Testbeds

HOME · TESTBEDS

### Accelerating Industrial IoT Adoption Via Real-World Tests

The IIC Testbed program is one of the most popular and highest-value of our membership initiatives. A Testbed is a controlled experimentation platform, conforming to an IIC reference architecture, where solutions can be deployed and tested in an environment that replicates real-world conditions. The goal of each Testbed is to create growth opportunities for new products, services, or business development.

**Asset Efficiency Testbed**
Vertical: Industrial manufacturing (and other segments with high-value fixed or moving assets)
Collects asset information efficiently and accurate in real-time, and run analytics to make the right decisions.
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**Automotive and Over the Air Update Testbed**
Vertical: Transportation
Shows how software can be managed on a fleet of vehicles remotely. Software can be deployed, updated, and replaced.
READ MORE

**Condition Monitoring Testbed**
Vertical: Multiple, including manufacturing, mining, transportation, power plants, aerospace & defense
Provide a multi-vendor, cloud-based predictive maintenance solution that proves out new business models.
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**Connected Care Testbed**
Vertical: Healthcare providers, medical device manufacturers
Develop an open IoT ecosystem for clinical and remote medical devices that can bring together patient monitoring data into a single data management and analytics platform.
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**Connected Vehicle Urban Traffic Management Testbed**
Vertical: Transportation
Create a smart road traffic ecosystem featuring connected vehicles using vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) technologies, sensor fusion, industrial IoT platforms, cloud infrastructure, and edge

**Connected Workforce Safety Testbed**
Vertical: Construction; also applicable in manufacturing, mining, oil & gas, and transportation
Evaluate and deduce optimal communication network architecture for a sensor-enabled workforce and smart infrastructure.
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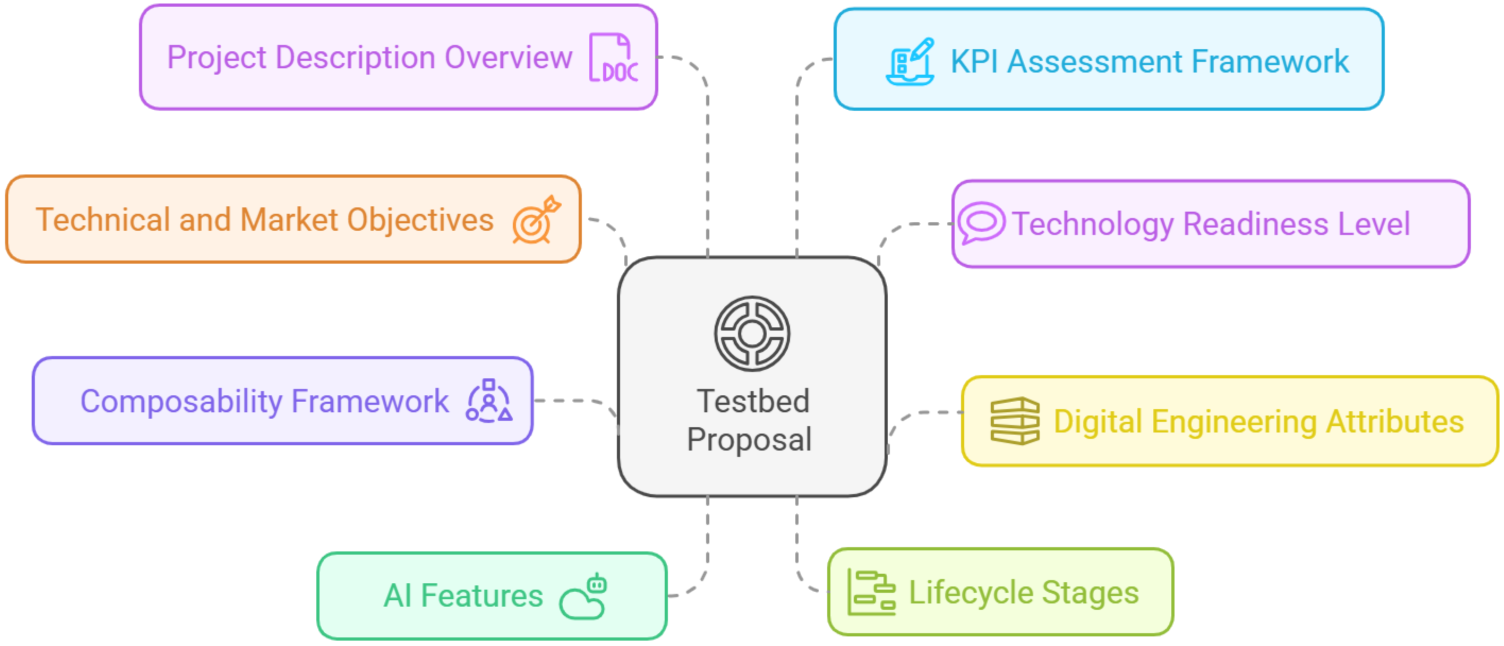
**Deep Learning Facility Testbed**
Vertical: Buildings & facilities, energy & utilities
Realization of a next generation smart facility solution using Deep Learning through Neural Networks, with meaningful gains in energy efficiency, asset utilization and maintenance.
READ MORE

**Distributed Energy-Resources Testbed**
Vertical: Smart grids, especially solar, wind, and storage
Real-time analytics and control to increase efficiencies, ensuring that power is generated more accurately and reliably, making the grid more resilient and secure in the process.
READ MORE



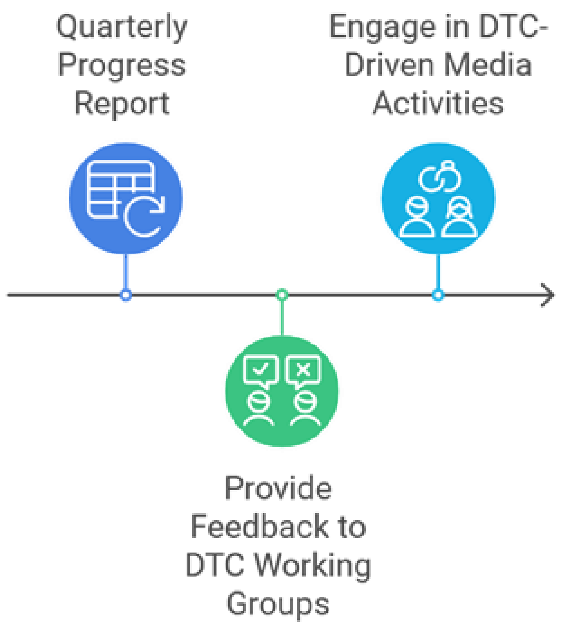
# DTC Testbed Development

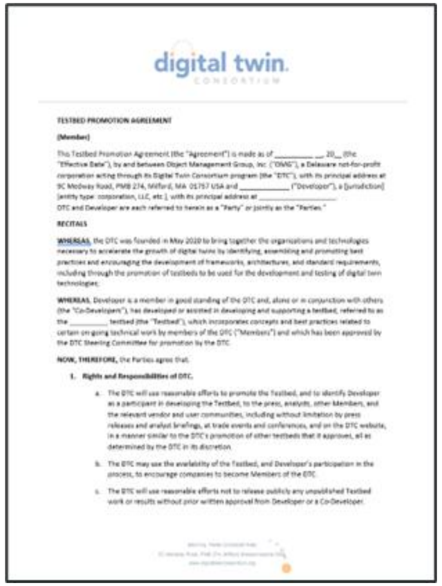
### Testbed Development Stages

Proposal Received → Review & TAC Approval → Testbed Development → Deployment & Implementation

## Testbed Proposal Checklist

- Project Description
- Assessment Framework
- Business Maturity Model
- Technology Readiness Level
- Capabilities Periodic Table
- Model Based Development
- Platform Stack Framework
- Digital Thread
- AI Features Functionality
- Lifecycle Stages

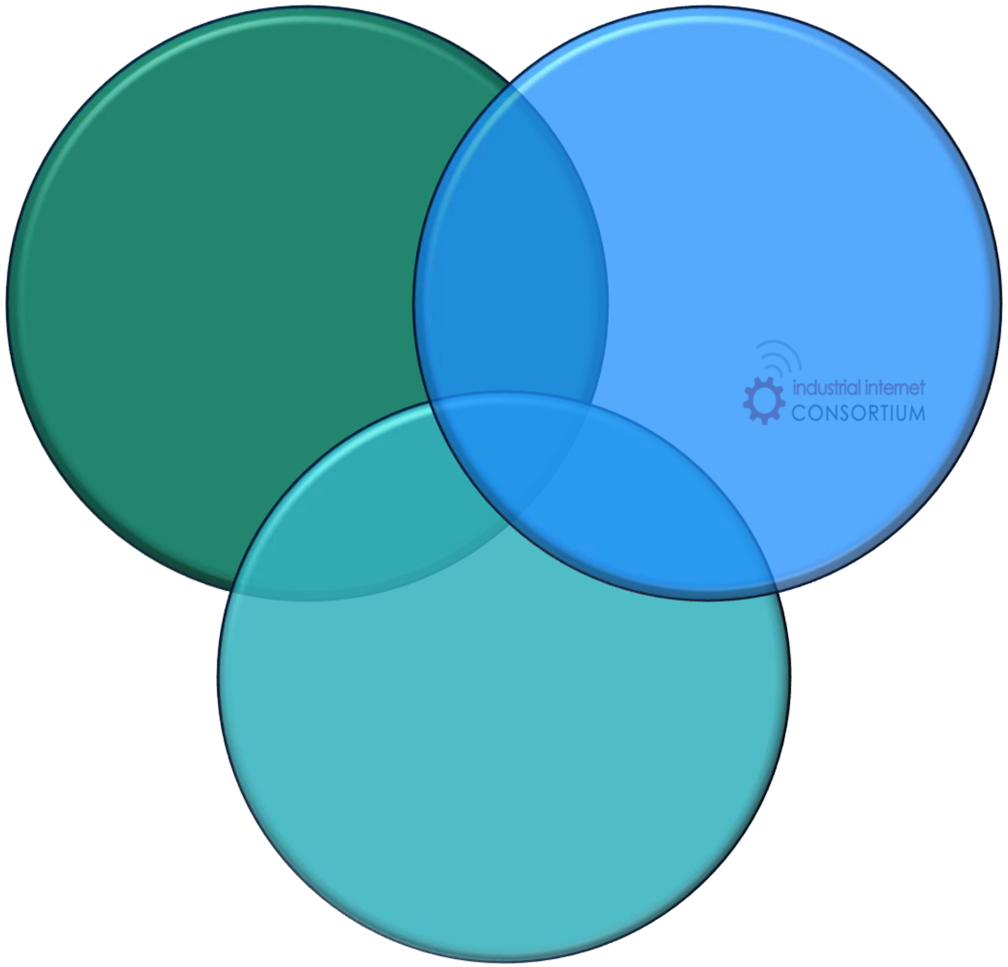



| Testbed Name: | |
|---|---|
| Date of Issue | |
| Previous Reports | |
| Individual Contacts | |
| Member Company Contacts | |
| New Member Recruitment | |
| Deliverable Documents | |
| Timeline | |
| Status Updates | |
| Items to Resolve | |
| Help Needed | |

# OMG Consortia Community Combined Expertise

OMG Standards Development Organization.




digital twin. CONSORTIUM

AREA

OMG Object Management Group.

# OMG Cross-Consortia AI Joint Working Group

Standardization & Semantics

Interoperability & Intelligent Automation

Extended Reality (AR/MR/VR)

Responsible AI/Ethics & Data Provenance

**FOCUS AREAS**

# Member Contribution / Collaboration

Q1: PR - "DTC Launches Testbed Initiative"

**Q1 Regional Meeting**
Heilbronn, Germany
Jan 28 - 30

**Q1 Member Meeting**
Reston, VA
March 18 - 20

**Q2 Member Meeting**
Denver, CO
June 10 - 12

**Q3 Member Meeting**
Leeds, UK
Sept 16 - 18

Arc Industry Leadership Forum Orlando, FL
Feb 10 - 13

Industrial Immersive, Houston, TX
March 3 - 4

ASME, MEEd, Los Angeles, CA
March 27 - 29

Hannover Messe, Germany
March 31 - April 4

CGA Geography of Digital Twins Cambridge, MA
May 22 - 24

- Technology Spotlight
- Technology Showcase
- Testbed
- Sandbox
- Monthly Webinars
- Digital Reflections Blog
- Journal of Innovation Publications
- Social Media
- Public/Private Partnerships

# Advancing Innovation and Business Outcomes

## Innovation

**Thought Leadership**

Non-traditional approaches to problem solving using Unconventional thought process

## Collaboration

**Force Multiplier**

Engage with industry leaders, innovators, researchers, and others to develop and implement advanced technology

## Leadership

**Establish Authority**

Bring Expertise and Knowledge to forefront
Drive Industry Transformation

## Growth

**New Revenue Sources**

Ability to recognize and rapidly execute on market opportunities

**Learn More - Get Involved !**

www.digitaltwinconsortium.org

# Thank You!