

Digital Twin Consortium Announces the Digital Twin System Framework

The Digital Twin Consortium® (DTC™), an EDM Association community, today announced the Digital Twin System Framework.



An EDM Association
Community

Digital Twin Consortium, an EDM Association
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BOSTON, MA, UNITED STATES, August 25, 2026 /EINPresswire.com/ -- The [Digital Twin Consortium®](#) (DTC™), an

EDM Association community, today announced the [Digital Twin System Framework](#), formally defining the Digital Twin System (DTS) – a term already present in DTC’s published digital twin definition but never separately defined. The framework specifies the DTS as a four-layer architecture – Data, Context, Decision and Process Orchestration, and Actuation – supported by the Digital Thread, and extends DTC’s decision-making language so that humans, autonomous agents, and robots are treated as actuators.



The Digital Twin System gives industrial organizations a way to connect AI to operational reality without losing control of context, evidence, authority, or safety.”

*Pieter van Schalkwyk, CEO of
XMPPro*

A digital twin shows what is happening in a physical system; the Digital Twin System defines how that insight becomes action – and each layer adds distinct value. Data is the foundation: synchronized, trustworthy information drawn from the physical system. Context gives that data meaning, binding it to the asset, its process, and its operating limits. Decision and Process Orchestration turns meaning into evaluated, coordinated decisions. Actuation

closes the loop, carrying decisions back into the physical world through people, autonomous agents, or machines.

“The Digital Twin System Framework unifies DTC’s prior work – the Digital Twin and AI Agent Capabilities Periodic Tables, the Industrial AI Agent Manifesto, and the Digital Thread – into one cohesive architectural framework, each defined a piece of the problem. The DTS defines how they operate together, giving organizations a single blueprint to realize digital twin systems in production,” stated Dan Isaacs, GM & CTO, DTC.

Consider a pump in a water treatment plant. The Data layer streams vibration and flow

measurements; the Context layer maps them to the pump's model and operating envelope, revealing early-stage cavitation; Decision and Process Orchestration weighs the evidence, confirms who – or what – has authority to act, and selects the response; Actuation executes it: a maintenance work order, an AI agent rescheduling downstream operations, or the control system trimming pump speed. The Digital Thread preserves traceability from measurement to action.

“AI has moved faster than the architectures many companies use to govern it,” said Pieter van Schalkwyk, CEO of XMPPro and Co-Chair of the Composability Framework Working Group. “The Digital Twin System gives industrial organizations a way to connect AI to operational reality without losing control of context, evidence, authority, or safety.”

At scale, the Decision and Process Orchestration layer is multi-agent: specialized AI agents coordinate under clear safety hierarchies rather than communicating point-to-point, preventing conflicting objectives from creating unsafe system states. For trustworthy production deployment of the Actuation layer, the framework leverages the ten governance laws of the DTC's previously announced Industrial AI Agent Manifesto, developed by the Composability Framework Working Group.

The laws – including deterministic validation and execution, separation of agent cognition from action execution, emergency stop and human override, complete auditability, and multi-agent safety orchestration – ensure that every action reaching the physical world is validated against the digital twin's constraints, traceable, and subject to human override.

The framework extends the Digital Twin Capabilities Periodic Table and the AI Agent Capabilities Periodic Table, which maps onto the four layers, and support digital engineering methodologies. The Digital Twin System shows how digital twin information can participate in a broader operational architecture for decisions, orchestration, and actuation.

Learn more about the DTS Framework. Watch the upcoming [Webinar](#) on September 9th at 1 pm PT. Led by DTC member co-chairs of the Capabilities and Technology and Digital Engineering: Pieter Van Shalkwyk, CEO of XMPPro and Dr. David McKee, CTO of Crysp, the webinar showcases real-world deployed application examples.

About Digital Twin Consortium

The Digital Twin Consortium® (DTC) is Accelerating Digital Twin Innovation™. DTC advances digital twin adoption and market growth by working closely with members to foster development, raise awareness, and enhance interoperability of digital twin applications throughout the Digital Twin Lifecycle across industries. DTC is an EDM Association community. For more information, visit <https://www.digitaltwinconsortium.org>.

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