

Digital Twin

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Discussion

A Digital Twin provides a digital representation of a referent whose relevant state, behavior, configuration, and lifecycle characteristics are represented through controlled data.

The referent may be a physical asset, software component, process, system, or other identifiable subject. The relationship between the referent and its Digital Twin may support observation, simulation, comparison, prediction, synchronization, or controlled interaction.

The DIDO Reference Architecture describes a Digital Twin in terms of a real-world item, a software representation, and the data linking the two. It also identifies simulation, predictive modeling, state monitoring, and response to observed state as Digital Twin uses.

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Within DIDO Solutions architectures, the concept is applied more generally to permit the referent to be physical, virtual, logical, or software-defined.

Definition

a digital representation of an identifiable referent whose applicable state, behavior, configuration, or lifecycle characteristics are related to the referent through controlled data

Source

- [DIDO Reference Architecture — Digital Twin](#)
- DIDO Solutions normalization of the DIDO Reference Architecture concept for physical, virtual, logical, and software-defined referents

Note

A Digital Twin does not require every characteristic of the referent to be represented. The applicable purpose, requirements, or configuration determine which characteristics participate in the twin relationship.

A Digital Twin also does not imply bidirectional control. Observation, synchronization, simulation, and control are separate capabilities and require explicit architectural treatment.

Example

A Digital Twin of a deployed service may represent the service's configuration, operational state, observed inputs and outputs, resource conditions, and selected behavior for comparison with expected or simulated behavior.

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