

DIGITAL TWIN (DT) & EXTENDED DIGITAL TWIN (XDT) TECHNOLOGY



Our Digital Twin Technology has three important characteristics: The connections between the physical model, the corresponding virtual model, and the real-time data connections. Our technology is more than a visual copy!

Basic DT tailored to Mission

Digital Twin (DT)

Virtual environment, digital replication of assets: physical, systems; processes.
Replication of features, functionalities and behavior of assets.
Building and coding the DT

E3S' Agnostic Digital Twin Technology goes Beyond Mirroring Visuals

Our steps to creating comprehensive Digital Twin Technology:

- Operations and Systems Auditing
- Analysis of operations or process environment
- Design of the Digital Twin to meet business objectives
- Itemizing and clarifying an incremental construction of the DT according to budget or project maturity.

Impactful results depend on Simulation, Testing & Monitoring:

- Simulation of real-time conditions to enable 'what-if' analysis of production and maintenance scenarios.
- Testing and refining of the DT technology and accompanying software
- Monitoring and upgrading of the DT scope.

XDT - Set to Impact

DT Market Solutions!

Extended Digital Twin Technology, (XDT) is achieved by enhancing Digital Twin replication through the integration of features such as Large Language Models (LLM), Data Analytics, and AI reasoning. It enables real-time monitoring and decision-making capabilities for the replicated asset; allowing the digital twin to transcend traditional mirroring, and provide substantial value to the client's information extraction and decision-making processes.

E3S stands out in the market by implementing both live and runtime digital twins, a key differentiator that underscores why we coined the term "Extended Digital Twin." This innovation ensures continuous, dynamic representation and optimization of asset performance, setting E3S apart in the industry.



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Our Digital Twin Technology can be applied to a variety of challenges. We're Ready to Solve!

Predictive Maintenance and State Assessment:

Problem...

Predictive maintenance and accurate state assessment of systems and equipment are challenging, leading to unexpected downtimes and increased maintenance costs.

E3S' SOLUTION



E3S leverages AI and digital twin technologies to create real-time operational knowledge models that predict maintenance needs and assess system states. This reduces downtime and maintenance costs by proactively identifying potential issues before they escalate and only fixing/replacing what is needed.

Semantic Reasoning sets our XDT Apart



E3S specializes in developing Semantic Reasoning Systems that utilize AI to evaluate the condition of systems, processes, equipment, and workflows—collectively referred to as the "state of the world"—to automate decisions aimed at achieving specific goals.

Our focus extends beyond building data-driven AI models, such as Artificial Neural Networks or Large Language Models, to creating comprehensive AI-powered Orchestration Systems capable of diligently monitoring and autonomously controlling mission-critical operations.

Our solutions incorporate ontologically inspired, symbolic digital representations, commonly known as Digital Twins (DTs). These DTs interface with and analyze a variety of disparate data sources to understand the current state of the world effectively.

Features that Enhance Efficiency

Advanced Assessment Techniques: Utilization of physics-based and state-machine approaches to enhance DT state assessment.

Processing Layer: A robust processing layer composed of object-oriented libraries and methods for semantic reasoning over context, relative to the evolving states of DT components.

AI Model Integration: Support for integrating data-driven AI models designed to transform data about DTs into actionable knowledge, such as state inference, pattern classification, function approximation, object recognition, parameter estimation, and outcome prediction.



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