DIGITAL TWINS

In Machine Learning

WHAT IS DIGITAL TWIN

A DIGITAL TWIN is a

Digital Version Of

a Physical Object

A DYNAMIC, UP-TO-DATE DIGITAL REPLICA OF A BUILT ASSET OR ENVIRONMENT

HOW DOES DIGITAL TWIN TECHNOLOGY WORK?

PAST DATA

Historical performance data of individual machines, overall processes, and specific systems.

PRESENT DATA

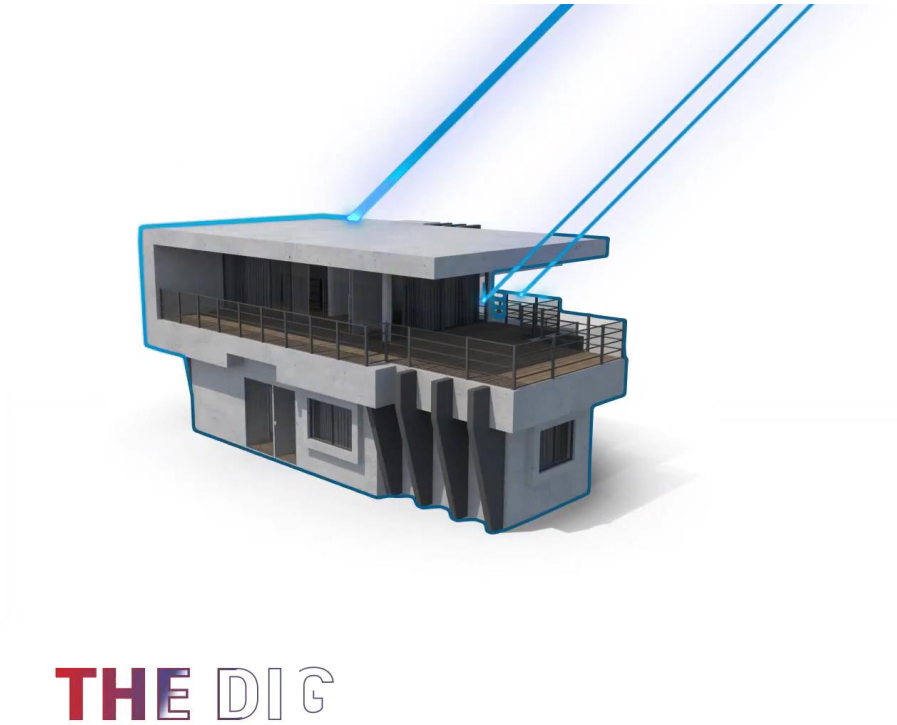
Real-time data from equipment sensors, outputs from manufacturing platforms and systems, and outputs from systems throughout the distribution chain. It can also include outputs from systems in other business units, including customer service and purchasing.

FUTURE DATA

Machine Learning as well as inputs from engineers.

DIGITAL TWIN FACILITATION IN REAL WORLD

- By providing the precise up-to-date model of its origin, a DIGITAL TWIN Can help DESIGNER, ENGINEERS, CONTRACTORS, OWNERS AND MANUFACTURERS to create more efficient structures.
- Digital twin can help IN PLANNING, DESIGN AND CONSTRUCTION FROM OPERATION TO MAINTENANCE.
- Digital twin update itself according to the data, that can make improvements.
- On large scale multiple digital twin can be integrated to develop ECO-System.



TECHNOLOGIES FOR DITITAL TWINS

IoT

INTERNET OF THINGS

IoT sensors enable constant data transmission, which is used to create a digital duplicate of physical object

CLOUD

CLOUD COMPUTING

Cloud computing allows to store gained data in the virtual cloud and easily access them from any location.

XR

EXTENDED REALITY

Due to its visualization capabilities, XR allows to digitally model physical objects

AI

ARTIFICAL INTELLIGENCE

As an advanced analytical tool, AI automatically analyze obtained data, provide valuable insights and made predictions

Data from the original asset is used to built and improve DIGITAL TWIN.

DESCRIPTIVE TWIN

INFORMATIVE TWIN

PREDICTIVE TWIN

COMPREHENSIVE TWIN

AUTONOMOUS TWIN

TYPES OF DIGITAL TWINS

DESCRIPTIVE TWIN

A DESCRIPTIVE Twin is a live, editable version of design and construction data.

INFORMATIVE TWIN

A INFORMATIVE Twin manage operational and sensory data.
As data is added twin become richer and richer and strongly linked to its physical counter-part.

COMPREHENSIVE TWIN

COMPREHENSIVE
Twin simulates future Senecios. It consider WHAT-IF questions.

AUTONOMOUS TWIN

In future Twin will become AUTONOMOUS, able to learn and act on behalf of users.

CONCLUSION

A Digital Twin is a Simulation?

Not exactly. A digital twin starts as a simulation, but the difference between a digital simulation and a digital twin is real-time updates.

With a simulation, engineers can run tests and conduct assessments on a simulated version of a physical asset. The simulation is static, however. In other words, it doesn't keep pace with the physical asset unless the engineer inputs new parameters into the simulation.

A digital twin, on the other hand, receives real-time updates from the physical asset, process, or system. Therefore, the tests, assessments, and analysis work conducted by engineers are based on real-world conditions. As the state of the digital twin dynamically changes as it receives new data from the physical world, it matures, producing outputs that are more accurate and valuable.