Digital Twin architectures in manufacturing and ISO23247 standard (III)

[**anonymised**]

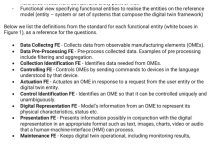
1. Motivation for using ISO23247 Reference Architecture

Be aligned with ISO23247?

What is the value of ISO23247 standard and the Reference architecture with functional view proposed in the standard when realising Digital Twin in practice ? Why architectures need to be aligned with the standard ?

ISO23247_Overview.pdf

GOOGLE DRIVE



Functional view specifying functional entities to realise the entities on the reference model (entity – system or set of systems that compose the digital twin framework)

Below we list the definitions from the standard for each functional entity (white boxes in Figure 1), as a reference for the questions.

- **Data Collecting FE** - Collects data from observable manufacturing elements (OMEs).
- **Data Pre-Processing FE** - Pre-process collected data. Examples of pre processing include filtering and aggregation.
- **Collection Identification FE** - Identifies data needed from OMEs.
- **Controlling FE** - Controls OMEs by sending commands to devices in the language understood by that device.
- **Actuation FE** - Actuates an OME in response to a request from the user entity or the Controlling FE.
- **Control Identification FE** - Identifies an OME so that it can be controlled uniquely and unambiguously.
- **Digital Representation FE** - Model's information from an OME to represent its physical characteristics, status etc.
- **Presentation FE** - Presents information possibly in conjunction with the digital representation in an appropriate format such as text, images, charts, video or audio that a human-machine interface (HMI) can process.
- **Maintenance FE** - Keeps digital twin operational, including monitoring results,

The standard provides a common terminology. It helps in communication with solution providers. In the end it will help with interoperability. — ANONYMOUS

2. Functionalities in the standard not implemented by current architecture.

Plug and Play

What are the reasons that large vendors are not interested in Plug and Play ?

Large vendors try to sell holistic solutions. They increase their profit by selling more modules of their own instead of enabling the integration of components by other vendors. This leads to a vendor lock-in for the users. — ANONYMOUS

Peer Interface

You rated the importance of Peer interface 3/5 in the survey,which is not in line with the grading from most of otherresponders 5/5. What is your reflection for this deviation?

The lower rating for peer interfaces is only due to priorities. I consider it more important to build singular digital twins in the first place before considering integration across many digital twins. — ANONYMOUS

3. Functionalities not captured by the standard.

DT versioning

Do you consider DT versioning (managing different versions of DT) same as Digital Thread? Please comment on that.

4.Final remarks

Terminology

Digital Twin, Digital Shadow, Digital Thread

The standard will help to achieve a common agreement. Most will agree that there are different levels of using digital representations of products; it is just a matter of giving them unique names. In my view digital twin includes acting on the physical one; digital shadow is just a digital model, possibly a lifecycle model; digital thread is a (growing) lifecycle model of a physical asset. — ANONYMOUS

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