TWIN-003b — Configure Twin Data Mappings

Go to TWIN-003 — Configure a Twin Relationship

Statement

The DIDO-TE SHALL configure a Twin Data Mapping for each represented characteristic requiring correspondence among participating Twin Realizations.

Source

- [DTE1] U.S. Patent Application US20220237111A1, virtual and physical Twin Node concepts and comparison of Twin Node behavior
- [DTE2] Non-Traditional BAA Submission, Digital Twin concepts and F17, *Twin Nodes Selection*
- [DTE9] Distributed Immutable Data Object Reference Architecture (DIDO-RA), Appendix A, *Digital Twin*, and DDS data-distribution concepts

Rationale

A Twin Relationship identifies the characteristics represented across its Twin Realizations. The participating realizations need not represent those characteristics using identical data structures, names, types, units, encodings, or communication mechanisms.

A Twin Data Mapping identifies the correspondence between a represented characteristic and the data used to represent that characteristic in the participating Twin Realizations.

Explicit data mappings prevent implementation-specific names, DDS Topics, field names, data types, units, or encodings from implicitly determining semantic correspondence.

The mapping also provides a controlled basis for state acquisition, synchronization, simulation, comparison, and Validation across heterogeneous Twin Realizations.

Applies To

- DIDO-TE
- Twin Identity
- Twin Relationship
- Twin Realization
- Twin Data Mapping
- Configuration
- DDS
- Test Definition

Verification

Verification confirms that:

1. Each represented characteristic requiring correspondence has a Twin Data Mapping.
2. Each Twin Data Mapping identifies the represented characteristic to which it applies.
3. Each Twin Data Mapping identifies the corresponding data used by the participating Twin Realizations.
4. Different names, data structures, types, units, or encodings remain distinguishable within the mapping.
5. A communication mechanism or technically compatible data representation does not establish semantic correspondence in the absence of an applicable Twin Data Mapping.
6. Each Twin Data Mapping is traceable to the applicable Twin Relationship Configuration.

Verification includes a Twin Relationship in which at least two Twin Realizations represent the same characteristic using different data representations.

Traceability

Plugin Backlinks: Nothing was found.

ConOps Relationship

This requirement supports Configuration of semantic correspondence among Twin Realizations before state acquisition, synchronization, simulation, comparison, or Validation occurs.

Delivery Phase

TBD

Requirement Status

Draft

Statement Reference

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