

Twin Data Mapping

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Discussion

A Twin Data Mapping identifies the semantic correspondence between a represented characteristic in a [Twin Relationship](#) and the data used by participating [Twin Realizations](#) to represent that characteristic.

Participating Twin Realizations may use different names, data structures, types, units, encodings, Topics, fields, or communication mechanisms for the same represented characteristic.

A Twin Data Mapping makes those differences explicit and provides a controlled basis for interpreting corresponding data across Twin Realizations.

The mapping defines semantic correspondence independently of the communication mechanism used to transport the data. A [DDS](#) Topic match, compatible datatype, or Quality of Service match does not, by itself, establish a Twin Data Mapping.

Definition

a mapping that identifies the semantic correspondence between a represented characteristic in a [Twin Relationship](#) and the data used by participating [Twin Realizations](#) to represent that characteristic

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
- DIDO-TE normalization of the source concepts

Note

A Twin Data Mapping applies only to characteristics identified as participating in the applicable Twin Relationship.

A Twin Data Mapping may identify differences in:

- Data names
- Data structures

- Datatypes
- Units
- Value representations
- Encodings
- Topic or field names
- Other representation characteristics relevant to semantic correspondence

A Twin Data Mapping does not require participating Twin Realizations to use identical data representations.

A communication mechanism transports data associated with a Twin Data Mapping but does not establish the semantic correspondence represented by the mapping.

Example

A real-world Twin Realization reports temperature as a field named `temperature_f` using degrees Fahrenheit, while a virtual Twin Realization represents the same characteristic as `temperature_c` using degrees Celsius.

The Twin Data Mapping identifies both data elements as representations of the same temperature characteristic and identifies the correspondence required between their units and values.

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