

TWIN-006d — Detect Synchronization Failure

[Go to TWIN-006 — Synchronize Twin Realization State](#)

Statement

The [DIDO-TE](#) SHALL detect when synchronization fails to satisfy the configured [Synchronization Parameters](#).

Source

- [\[DTE1\] U.S. Patent Application US20220237111A1](#), virtual and physical Twin Node concepts, baseline test results, modification of Twin Nodes, comparison of results, and validation
- [\[DTE2\] Non-Traditional BAA Submission](#), Digital Twin concepts, real-time monitoring, scenario testing, integration, and Twin Nodes Selection
- [\[DTE9\] Distributed Immutable Data Object Reference Architecture \(DIDO-RA\)](#), Digital Twin, distributed data, DDS publish-subscribe, and Quality of Service concepts

Rationale

Synchronization among participating [Twin Realizations](#) may fail to meet one or more configured [Synchronization Parameters](#).

Such failure may result from missing or delayed updates, ordering violations, exceeded tolerances, unavailable state information, communication disruption, or other conditions that prevent the required synchronization behavior from being achieved.

Detection of synchronization failure prevents a [Twin Relationship](#) from being treated as synchronized when the configured synchronization conditions have not been satisfied.

The requirement does not define *Synchronization Failure* as a separate controlled term. Failure is determined directly from whether synchronization satisfies the configured Synchronization Parameters.

Applies To

- [DIDO-TE](#)
- [Twin Relationship](#)
- [Twin Realization](#)
- [Synchronization Parameter](#)
- [Twin Data Mapping](#)
- [Configuration](#)
- [Quality of Service](#)

- [Test Execution](#)

Verification

Verification confirms that:

1. The DIDO-TE detects synchronization that does not satisfy a configured Synchronization Parameter.
2. A synchronization result that violates a configured timing, ordering, tolerance, trigger, or other synchronization condition is detectable.
3. A synchronization result that satisfies the configured Synchronization Parameters is distinguishable from one that does not.
4. Failure of one Synchronization Parameter can be distinguished from failure of another when multiple parameters govern the synchronization activity.
5. The detected failure remains associated with the Twin Realizations involved in the synchronization activity.
6. The detected failure is traceable to the Synchronization Parameter that was not satisfied.

Verification includes at least one synchronization activity that intentionally violates a configured Synchronization Parameter and confirms detection of the failure.

Traceability

Plugin Backlinks: Nothing was found.

ConOps Relationship

This requirement supports detection of synchronization conditions that prevent participating Twin Realizations from satisfying the configured Synchronization Parameters during or before Test Execution.

Detected synchronization failures support subsequent recovery, analysis, Validation, monitoring, and evidence generation.

Delivery Phase

TBD

Requirement Status

Draft

Statement Reference

{{section>dido:03-dido-te:99-annexes:annex-c-requirements:03-functional-requirements:03-03-twin-node-requirements:twin-006-synchronize-twin-state:twin-006d-detect-synchronization-failure#Statement&noheader&nofooter&noeditbtn}}

© 2026 Dido Solutions, Inc. and Jackrabbit Consulting, Inc.

From:
<https://wiki.didosolutions.com/> - Dido Solutions, Inc Wiki

Permanent link:
<https://wiki.didosolutions.com/dido/03-dido-te/99-annexes/annex-c-requirements/03-functional-requirements/03-03-twin-node-requirements/twin-006-synchronize-twin-state/twin-006d-detect-synchronization-failure>

Last update: 2026/08/21 09:07

