NOD-005d — Observe Node Execution

Go to NOD-005 — Execute a Node

Statement

The DIDO-TE SHALL observe each Node throughout its participation in Test Execution.

Derived From

- NOD-005 — Execute a Node
- NOD-005a — Authorize Node Execution
- NOD-005b — Initiate Node Execution
- NOD-005c — Provide Node Inputs
- [DTE5] DIDO-TE Requirements Register, source requirement identifier and obligation to be assigned
- [DTE6] Structured Information Processing Reference Architecture (SIP-RA)
- [DTE7] Federated Data Interpretation Systems Reference Architecture (FDIS-RA)

Rationale

Observation captures the behavior, state, interactions, outputs, resource use, timing, and operating conditions of a Node during Test Execution.

The applicable Node Definition, Node Implementation, Node Configuration, and Test Definition identify the observable characteristics, observation points, collection mechanisms, sampling conditions, and expected behavior.

Observation distinguishes expected Node behavior from a deviation requiring execution control or treatment as a Test Execution Exception. It also associates Node behavior with the applicable Test Inputs, Node Bindings, Test Resources, and Test Results.

Incomplete, inaccurate, intrusive, incorrectly timed, or untraceable observation may conceal a material deviation or alter the behavior being evaluated.

Applies To

- DIDO-TE
- Node
- Node Definition
- Node Implementation
- Node Configuration
- Node Binding

- Test Definition
- Test Input
- Test Resource
- Test Environment
- Test Execution
- Test Execution Exception
- Test Result
- Evidence
- Traceability

Verification

Verification confirms that:

- The DIDO-TE uniquely identifies the Node being observed.
- The DIDO-TE identifies the applicable Test Execution and Test Definition.
- The Test Definition identifies the required observations, observation points, collection mechanisms, timing, frequency, duration, and applicable tolerances.
- The DIDO-TE verifies that each required observation mechanism is available before Node execution begins.
- The DIDO-TE observes the Node from execution initiation through execution completion or termination.
- The DIDO-TE observes the Node state, activity, interactions, outputs, resource use, timing, and applicable operating conditions.
- The DIDO-TE associates each observation with the applicable Node, Test Execution, Test Input, and time.
- The DIDO-TE uses a controlled and consistent time reference for observations.
- The DIDO-TE preserves the sequence of observations across applicable Nodes and Test Resources.
- The DIDO-TE distinguishes an observed value from an expected value or applicable tolerance.
- The DIDO-TE detects a missing, incomplete, delayed, duplicated, corrupted, altered, misattributed, or out-of-sequence observation.
- The DIDO-TE detects a Node state, behavior, interaction, output, or resource use that differs from the applicable criteria.
- The DIDO-TE identifies an observed condition that constitutes a Test Execution Exception.
- The DIDO-TE prevents observation mechanisms from altering Node behavior beyond specified tolerances.
- The DIDO-TE protects sensitive observations from unauthorized disclosure.
- The DIDO-TE preserves each material observation or an integrity-protected reference to it.
- The DIDO-TE records the observation identity, Node, Test Execution, observation point, mechanism, value, unit, time, sequence, expected value, tolerance, finding, and applicable exception.
- Repeated observation of equivalent Node behavior under equivalent conditions produces equivalent observations within specified tolerances.
- The DIDO-TE maintains Traceability among the Node Definition, Node Implementation, Node Configuration, Test Definition, Test Inputs, Node Bindings, Test Resources, observations, exceptions, Test Results, and resulting Evidence.
- A missing, incomplete, inaccurate, intrusive, altered, misattributed, ambiguously timed, or untraceable observation constitutes nonconformance with this requirement.

Verification includes:

- Inspection of required observations and observation mechanisms
- Observation of Node state, behavior, interactions, outputs, resource use, and timing
- Confirmation that observations use a controlled and consistent time reference
- Confirmation that observations identify the applicable Node, Test Execution, and Test Input
- A negative assessment involving a missing observation
- A negative assessment involving an altered or misattributed observation
- A negative assessment involving an observation outside an applicable tolerance
- Confirmation that a material deviation produces a detectable condition
- Confirmation that observation does not alter Node behavior beyond specified tolerances
- Inspection of observation records, exceptions, Test Results, Evidence, and Traceability

Referenced By

- NOD-005e — Control Node Execution
- NOD-005f — Handle a Node Execution Exception
- NOD-005g — Complete Node Execution
- NOD-005h — Record Node Execution
- NOD-008c — Observe Node Activity
- NOD-008 — Observe a Node

Related Architecture Sections

- Add links to the architecture sections governing Node observation, observation points, time synchronization, Test Execution Exceptions, Test Results, Evidence, and Traceability.

Delivery Phase

☐ Assign the applicable delivery phase.

Requirement Status

Draft

Statement Reference

Use the following syntax to reference this requirement's Statement section from another DokuWiki page:

```
{{section>dido:03-dido-te:99-annexes:annex-c-requirements:03-node-
requirements:nod-005-execute-a-node:nod-005d-observe-node-
```

```
execution#Statement&noheader&nofooter&noeditbtn}}
```