

Test Execution Exception

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Discussion

A Test Execution Exception identifies an event or condition that disrupts, prevents, or requires deviation from the defined progression of [Test Execution](#).

A Test Execution Exception can arise from:

- An invalid [Test Argument Value](#)
- An unsatisfied [Starting Condition](#)
- An unsatisfied [Timing Condition](#)
- Expiration of a [Timeout](#)
- An unavailable [Test Item](#)
- An unavailable [Node](#)
- An unavailable [Operational Resource](#)
- An unavailable [Execution Facility](#)
- An unavailable [Executable Artifact](#)
- An unsatisfied [Dependency](#)
- An invalid [Configuration](#)
- A communication failure
- A resource failure
- A security event
- A policy violation
- An invalid state transition
- An unexpected [Test Result](#)
- An unauthorized operation
- An external event
- Another defined exceptional condition

A Test Execution Exception can identify:

- Its identity
- Its name
- Its description
- Its exception type
- Its severity
- Its detection time
- Its detection source
- Its originating event or condition
- The affected [Test Run](#)
- The affected [Test Sequence](#)
- The affected [Sequence Step](#)
- The affected [Test Step](#)
- The affected [Test Executable](#)
- The affected Operational Resources

- The applicable [Test Run State](#)
- The applicable [Exception Handling](#)
- The applicable [Governance Policies](#)
- Its disposition
- Its resulting Test Run State
- Its applicable [Test Run Termination Reason](#)
- Its [Evidence](#)
- Its [Provenance](#)
- Its [Traceability](#)

A Test Execution Exception can cause DIDO-TE to:

- Continue Test Execution
- Retry an operation
- Repeat a Sequence Step
- Skip a permitted Sequence Step
- Select an alternative [Execution Path](#)
- Restore a defined state
- Perform a compensating operation
- Pause the Test Run
- Resume the Test Run
- Cancel the Test Run
- Terminate the Test Run
- Request an authorized [Actor](#) decision
- Record the exception without changing the Test Run State

The applicable Exception Handling determines the response to a detected Test Execution Exception.

Definition

event or condition that disrupts, prevents, or requires deviation from the defined progression of [Test Execution](#)

Source

Adapted from:

- [OMG Test Information Interchange Format \(TestIF\), Version 1.0](#)
- [Test Execution](#)
- [Test Run](#)
- [Test Run State](#)
- [Test Run Termination Reason](#)
- [Exception Handling](#)
- DIDO Reference Implementation Conceptual Model
- DIDO-TE draft Requirements Register

OMG TestIF defines information used to describe and exchange testing activities and execution

results.

OMG TestIF does not define Test Execution Exception as a separate TestIF model element. This definition introduces the term to identify exceptional events and conditions affecting DIDO-TE Test Execution and to associate those events and conditions with their handling, resulting Test Run States, Test Results, Evidence, Provenance, and Traceability.

Note

A Test Execution Exception is specific to Test Execution. It does not mean:

- An approved exception to a Governance Policy
- A waiver from a Requirement
- A legal or regulatory exception
- A programming-language exception unless the programming-language exception affects Test Execution
- Any unusual event unrelated to Test Execution

A Test Execution Exception differs from an error:

- An error identifies an incorrect state, value, action, or result
- A Test Execution Exception identifies an event or condition requiring a Test Execution response

An error can cause a Test Execution Exception. An error that does not affect Test Execution does not necessarily constitute a Test Execution Exception.

A Test Execution Exception differs from a failure:

- A failure identifies an inability to perform a required function or satisfy a required condition
- A Test Execution Exception identifies the effect of an event or condition on Test Execution progression

A failure can cause a Test Execution Exception. A Test Execution Exception does not necessarily indicate a failure.

A Test Execution Exception differs from a [Test Run Termination Reason](#):

- A Test Execution Exception identifies the event or condition affecting Test Execution
- A Test Run Termination Reason classifies why the Test Run entered the Terminated Test Run State

A handled Test Execution Exception does not necessarily terminate the Test Run.

An unhandled or unrecoverable Test Execution Exception can cause a Test Run to enter the Terminated [Test Run State](#).

A single Test Execution Exception can result in:

- No Test Run State transition
- One Test Run State transition
- Multiple Test Run State transitions

- One or more additional Test Results
- One or more additional Evidence records

Multiple Test Execution Exceptions can contribute to one Test Run termination.

The applicable [Acceptance Criteria](#) or Governance Policies should determine:

- Which events and conditions constitute Test Execution Exceptions
- How DIDO-TE classifies each Test Execution Exception
- Which Exception Handling applies
- Whether Test Execution can continue
- Whether human intervention is permitted or required
- Which Test Run State transition occurs
- Which Test Run Termination Reason applies
- Which Evidence DIDO-TE preserves

Example

A [Test Step](#) requires a Node to return a response within 30 seconds.

The Node does not return the response before the applicable [Timeout](#) expires.

DIDO-TE detects a Test Execution Exception identifying:

- The expired Timeout
- The affected Test Run
- The affected Sequence Step
- The affected Test Step
- The affected Node
- The time of detection
- The applicable Exception Handling

The applicable Exception Handling permits one retry. If the retry succeeds, DIDO-TE continues Test Execution and records the Test Execution Exception and its disposition.

If the retry does not succeed, DIDO-TE:

- Changes the Test Run State from **Running** to **Terminated**
- Assigns **Timed Out** as the Test Run Termination Reason
- Identifies the Test Run as an [Incomplete Test Run](#)
- Preserves the applicable Evidence
- Maintains Provenance and Traceability

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