Navy xAPI Profile Index

Index for Navy xAPI Implementation Information

Document Version: 1.0

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Revision History

Version	Release Date	Notes
0.5	08/30/2022	Initial draft
1.0	1/10/2023	First release for Navy review.

Table 1: Navy xAPI Profile Index Revision History

1. Overview

The Navy has adopted xAPI as part of its planned modernization of learning technology and capabilities to support the goals of Sailor 2025 and Ready, Relevant, Learning (RRL). Navy-specific requirements and guidelines for how xAPI data should be modeled and stored are critical to achieving consistent results in reporting, analytics, and interoperability. The primary purpose of this document is to provide an alphabetical listing and reference for all the events and data elements in the Navy Experience API (xAPI) Profiles. This document replaces the Navy xAPI Library temporarily hosted at https://netc.usalearning.net/xapi-library and is intended to be a stand-alone resource for referencing or locating specific Navy xAPI requirements.

This document is organized into the following sections:

- Navy Profiles
- xAPI Code Libraries
- xAPI Content Examples
- Acquisition Resources
- Additional Resources

1.1. How to Read this Document

This document is a listing of all the events and data captured in Navy xAPI Profiles. Users can browse the table of contents or use the search feature within the PDF reader to find specific keywords or topics. The primary roles that will reference this document are xAPI Content Developers and Acquisition Professionals. Below are some of the most frequently asked questions and sections visited in this document based on these roles.

1.1.1. xAPI Content Developers

As an xAPI developer, I'm looking for…

1. **How to Implement the Navy's Core xAPI Requirements?**
    - Refer to Section 2.1. (Navy Core xAPI Profile Events & Data)
2. **How to Track Common Activities?**
    - *Refer to Section 2.2. (Navy Common Reference Profile Events & Data)*
3. **How to Track Assessment Content?**
    - Refer to Section 2.3. (Navy Assessment Profile Events & Data)
4. **How to Track E-learning Content?**
    - Refer to Section 2.4. (Navy E-learning Profile Events & Data)
5. **How to Track Performance Assessment Content?**
    - Refer to Section 2.5. (Navy Performance Assessment Profile Events & Data)
6. **How to Track Simulation Content?**

- Refer to Section 2.6. (Navy Simulation Profile Events & Data)
7. How to Track Task Trainer **Simulation** Content?
    - *Refer to Section 2.7. (Navy Task Trainer Simulation Profile Events & Data)*
8. **How to Reuse Existing xAPI Code Libraries?**
    - *Refer to Section 3. (xAPI Code Libraries)*
9. **How to See Existing xAPI Content Examples?**
    - *Refer to Section 4. (xAPI Content Examples)*

1.1.2. Acquisition Professionals

As an acquisition professional, I'm looking for…

1. **Data Item Description (DID) for xAPI Data**
    - *Refer to Section 5.1. (DID for xAPI Data)*
2. **General xAPI Contracting Requirements**
    - *Refer to Section 5.2. (General Contracting Requirements)*
3. **E-learning xAPI Contracting Requirements**
    - *Refer to Section 5.3. (E-learning xAPI Contracting Requirements)*
4. **Performance Support xAPI Contracting Requirements**
    - *Refer to Section 5.4. (Performance Support xAPI Contracting Requirements)*
5. **Simulation xAPI Contracting Requirements**
    - *Refer to Section 5.5. (Simulation xAPI Contracting Requirements)*
6. **Task Trainer Simulation xAPI Contracting Requirements**
    - *Refer to Section 5.6. (TT Simulation xAPI Contracting Requirements)*
7. **Assessment xAPI Contracting Requirements**
    - *Refer to Section 5.7. (Assessment xAPI Contracting Requirements)*
8. **Performance Assessment xAPI Contracting Requirements**
    - Refer to Section 5.8. (Performance Assessment xAPI Contracting Requirements)

2. Profiles

2.1 Navy Core xAPI Profile

The Navy Core xAPI Profile defines the requirements for <u>all</u> Navy xAPI implementations regardless of content type or other tracking tracking requirements. This profile includes information that, after successful implementation, results in an interoperable data environment. All of the published xAPI profiles inherit requirements from the Navy Core xAPI Profile. All community-extended profiles used by the Navy should also inherit requirements from the Navy Core xAPI Profile.

2.1.1. Events

There are no events that correlate to xAPI verbs required in the Navy Core xAPI Profile

2.1.2. Data

Name	Description	Reference(s)[1]
Actor	Used to represent the person performing the action in a Statement.	2.1.1.1 Actor Requirements
Object	Used to represent the thing that was acted on in a Statement.	2.1.3.1. Activity Object Requirements
Platform	Used to specify the computer system's software or hardware used while the Actor experienced the content	2.1.4.5. Context Platform
Timestamp	Used to provide the date and time when a learning experience occurred	2.1.5. Timestamps
Verb	Used to represent the action being performed in a Statement.	2.1.2.1. Verb Requirements
User Agent	The string value in the User-Agent header of the web browser's HTTP request	2.1.4.1. Context Requirements

2.2 Navy Common Reference Profile

The Navy Common Reference Profile provides the xAPI Concepts (i.e., verbs, activity types, extensions) and Statement requirements for general types of learning or training events. These Concepts and events can be reused (commonly referenced) across multiple types of content and with other Navy xAPI Profiles.

2.2.1. Events

Name	Description	Reference(s)[2]
Accessed	Indicates the actor accessed or navigated to an object.	2.2.3.1. Accessing a Menu 2.2.4.1. Accessing a Menu Item
Closed	Indicates the actor ended or shut down an object that was previously opened.	2.2.1.4. Closing a File
Downloaded	Indicates that the actor downloaded (rather than accessed or opened) a file or document.	2.2.1.3. Downloading a File

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[1] See *Navy Core xAPI Profile.pdf* for table references
[2] See *Navy Common Reference Profile.pdf* for table references

Disliked	Indicates that the Actor does not approve of the object or event.	2.2.5. Like & Dislike Buttons
Exited	Indicates the actor intentionally departed from the object.	2.2.2.3. Exiting a Page
Liked	Indicates that the Actor approves of, recommends, or endorses the object or event.	2.2.5. Like & Dislike Buttons
Opened	Indicates the actor opened an object.	2.2.1.1. Opening a File
Printed	Indicates the actor printed an electronic file or other digital content from their screen to a printing device.	2.2.2.2. Printing a Page
Uploaded	Indicates the actor transferred a file from a local computer to a remote computer, application, or web server.	2.2.1.2. Uploading a File
Viewed	Indicates the actor arrived at, entered or visited an object.	2.2.2.1. Viewing a Page

2.2.2. Data

Name	Description	Reference(s)[3]
Course ID Number	A string value of the identifier of the course.	2.1.3. Activity Extensions
Hull Applicability	A string value that identifies the hull number(s) to which the content is applicable.	2.1.3. Activity Extensions
Hull Configuration	A string value that identifies the hardware/software configuration that is represented in the content.	2.1.3. Activity Extensions
Launch Location	Indicates the location where the content was experienced, Afloat or Ashore	2.1.4.2. Context Extensions
Navy Enlisted Classification	A string value used to identify the Navy Enlisted Code that the content supports.	2.1.3. Activity Extensions
School Center	The schoolhouse or learning center that owns the content.	2.1.4.2. Context Extensions
Target Audience	The target audience for the content.	2.1.3. Activity Extensions

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[3] See *Navy Common Reference Profile.pdf* for table references

Target Rating	The specific Navy rating(s) targeted by this content.	2.1.3. Activity Extensions
Tech Doc ID	A string value that identifies the technical document or PMS series and version/revision used to support the content.	2.1.3. Activity Extensions
Tech Doc Procedure ID	A string value that identifies the technical document or MRC and version/revision used to support the content.	2.1.3. Activity Extensions
Tech Doc Procedure Title	A string value that provides the approved title of the documented procedure used to support the content.	2.1.3. Activity Extensions

2.3 Navy Assessment Profile

The Navy Assessment Profile provides the baseline requirements for collecting and structuring xAPI data for the most common types of assessments and surveys. The Navy Assessment Profile defines the requirements for xAPI-enabled assessments including formative and summative assessments.

2.3.1. Events

Name	Description	Reference(s)[4]
Initialized	Indicates that the Actor successfully started an attempt on an Activity.	2.4.1.1 Initializing an Assessment
Responded	Indicates an Actor responded to an assessment question.	2.4.3.1. Responding to an Assessment Question
Resumed	Indicates that the Actor continued or reopened a suspended attempt on an Activity.	2.4.1.3. Resuming an Assessment
Suspended	Indicates that the Actor suspended an attempt on an Activity with the intent to return at a later time.	2.4.1.2. Suspending an Assessment
Terminated	Indicates that the Actor successfully ended an attempt on an Activity.	2.4.1.4. Terminating an Assessment

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[4] See *Navy Assessment Profile.pdf* for table references

2.3.2. Data

Name	Description	Reference(s)[5]
Assessment Type	The value representing the type of assessment (i.e., survey, quiz, progress test, pretest, posttest, comprehensive).	2.3.3. Activity Extensions
Choices (for Multiple Choice Questions)	A representation of the different choices available during a multiple choice question.	2.3.5.3.2. Choice2.4.3.2.2. Choice 2.4.3.2.2.1. Choice (Yes/No) with Explanation 2.3.5.3.3.2.4.3.2.2.2. Choice with Multiple Responses
Choices (for Sequencing Questions)	A representation of the different choices available during a sequencing question.	2.3.5.3.8.2.4.3.2.7. Sequencing
Completion	Indicates if the assessment is complete	2.3.5.1.2.4.3.1. Responding to an Assessment Question 2.3.4. 3.2.4. Terminating an Assessment
Duration	The duration, in ISO 8601, representing the total time spent in the assessment	2.3.4. 3.2.4. Terminating an Assessment
Extended Interaction Type	The type of interaction when the interactionType is other but a more specific interaction type that is not an existing interactionType is known.	2.2.3. Activity Extensions
Learner Response (for Fill-In Questions)	Representation of the learner's response to a fill-in question.	2.3.5.12.4.3.1. Responding to an Assessment Question

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[5] See *Navy Assessment Profile.pdf* for table references

Learner Response (for Likert Questions)	Representation of the learner's response to a likert question.	2.3.5.12.4.3.1. Responding to an Assessment Question
Learner Response (for Long Fill-In Questions)	Representation of the learner's response to a long fill-in question.	2.3.5.12.4.3.1. Responding to an Assessment Question
Learner Response (for Matching Questions)	Representation of the learner's response to a matching question.	2.3.5.12.4.3.1. Responding to an Assessment Question
Learner Response (for Multiple Choice Questions)	Representation of the learner's response to a multiple choice question.	2.3.5.12.4.3.1. Responding to an Assessment Question
Learner Response (for Numeric Questions)	Representation of the learner's response to a numeric question.	2.3.5.12.4.3.1. Responding to an Assessment Question
Learner Response (for Other Questions)	Representation of the learner's response to another question.	2.3.5.12.4.3.1. Responding to an Assessment Question
Learner Response (for Performance Questions)	Representation of the learner's response to a performance question.	2.3.5.12.4.3.1. Responding to an Assessment Question
Learner Response (for Sequencing Questions)	Representation of the learner's response to a sequence question.	2.3.5.12.4.3.1. Responding to an Assessment Question
Learner Response (for True/False Questions)	Representation of the learner's response to a true or false question.	2.3.5.12.4.3.1. Responding to an Assessment Question
Response Explanation	The learner's response to an interaction which asks the learner to explain why the answer was given. i.e., True or False, and explain why.	2.2.5.2.5. Result Extensions 2.3.5.1.2.4.3.1. Responding to an Assessment Question

		2.4.3.2.2.1. Choice (Yes/No) with Explanation
Response Type	The type of response to be used when the interactionType is *other* and the value of result.response would otherwise be an unknown type.	2.2.5.2.5. Result Extensions 2.3.5.1.2.4.3.1. Responding to an Assessment Question
Scale (for Likert Questions)	A representation of the scale available during a likert question.	2.3.5.3.9.2.4.3.2.8. Likert
Score (Max)	A number representing the maximum score on the assessment	2.3.5.1.2.4.3.1. Responding to an Assessment Question 2.3.4.3.2.4. Terminating an Assessment
Score (Min)	A number representing the minimum score on the assessment	2.3.5.1.2.4.3.1. Responding to an Assessment Question 2.3.4.3.2.4. Terminating an Assessment
Score (Raw)	A number representing the learner's performance on the assessment between the min and max values	2.3.5.1.2.4.3.1. Responding to an Assessment Question 2.3.4.3.2.4. Terminating an Assessment
Score (Scaled)	A normalized score between -1 and 1 representing the learner's performance on the assessment	2.3.5.1.2.4.3.1. Responding to an Assessment Question 2.3.4.3.2.4. Terminating an Assessment

Source List (for Matching Questions)	A representation of the sources available during a matching question. See "Target List" for the targets in a matching question.	2.3.5.3.6.2.4.3.2.5. Matching
Steps (for Performance Questions)	A representation of the steps available during a performance question.	2.3.5.3.7.2.4.3.2.6. Performance
Success (Pass/Fail)	Indicates if the activity is passed	2.3.5.1.2.4.3.1. Responding to an Assessment Question 2.3.4.3.2.4. Terminating an Assessment
Target List (for Matching Questions)	A representation of the targets available during a matching question. See "Source List" for the sources in a matching question.	2.3.5.3.6.2.4.3.2.5. Matching
Uploaded Response	Identifies the attachment as an interaction response from the learner in the form of an uploaded file.	2.2.6. Attachment Usage Type

2.4 Navy E-learning Profile

The Navy E-learning Profile provides the xAPI Concepts and Statement requirements for single-learning (self-paced or self-directed) e-learning content that must generate data that aligns with the structure and granularity as required by Navy policy or existing Navy SCORM courses (e.g., TLOs, ELOs, courses, lessons, sections).

2.4.1. Events

Name	Description	Reference(s)[6]
Completed	Indicates the Actor finished or concluded the Activity normally.	2.3.3.4. Completing a Lesson 2.3.5.1. Completing a Section 2.3.2.2. Terminating a Course (See this Section for Completing a Course)
Failed	Indicates the Actor did not successfully pass an Activity to a level of predetermined satisfaction.	2.3.3.7. Failing a Lesson

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[6] See *Navy E-learning Profile.pdf* for table references

Initialized	Indicates that the Actor successfully started an attempt on an Activity.	2.3.2.1. Initializing a Course 2.3.3.1. Initializing a Lesson
Passed	Indicates the Actor successfully passed an Activity to a level of predetermined satisfaction.	2.3.3.6. Passing a Lesson
Resumed	Indicates that the Actor continued or reopened a suspended attempt on an Activity.	2.3.3.3. Resuming a Lesson
Scored	Indicates a numerical value related to an Actor's performance on an Activity.	2.3.3.5. Scoring a Lesson
Suspended	Indicates that the Actor suspended an attempt on an Activity with the intent to return at a later time.	2.3.3.2. Suspending a Lesson
Terminated	Indicates that the Actor successfully ended an attempt on an Activity.	2.3.2.2. Terminating a Course 2.3.3.8. Terminating a Lesson

2.4.2. Data

Name	Description	Reference(s)[7]
Activity State Resource	Used to store state data about an Activity and also state data about the attempts on an Activity.	2.4.2.1. Using the Activity State to Store a Bookmark and Attempt Specific State 2.4.2.2. Using the Activity State to Retrieve a Bookmark and Attempt Specific State
Attempt	A unique identifier for the current attempt on an activity	2.3.2.1. Initializing a Course 2.3.3.1. Initializing a Lesson
Success (Pass/Fail)	Indicates if the activity is passed	2.3.2.2. Terminating a Course 2.3.3.8. Terminating a Lesson
Completion	Indicates if the activity is complete	2.3.2.2. Terminating a Course 2.3.3.8. Terminating a Lesson
Duration	The duration, in ISO 8601, representing the total time spent in the activity	2.3.2.2. Terminating a Course 2.3.3.8. Terminating a Lesson
Score (Scaled)	A normalized score between -1 and 1 representing the learner's performance on the activity	2.3.2.2. Terminating a Course 2.3.3.8. Terminating a Lesson

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[7] See *Navy E-learning Profile.pdf* for table references

2.5 Performance Assessment Profile

The Navy Performance Assessment Profile extends the Navy Assessment Profile by identifying the data collection requirements and examples for both Scenario-Based Performance Assessment and survey-based performance assessments. All of the events (i.e., Initialized, Responded, Resumed, Suspended, and Terminated) and data identified previously in the tables above for the Navy Assessment Profile also apply to the Performance Assessment Profile, but the data elements are not repeated in the table below. Only the new data elements identified by the performance assessment profile are listed in the table below (Section 2.5.2 Data).

2.5.1. Events

Name	Description	Reference(s)[8]
Initialized	Indicates that the Actor successfully started an attempt on an Activity.	2.4.1.1. Initializing a Scenario-Based Performance Assessment
Responded	Indicates an Actor responded to a performance assessment question.	2.4.1.2. Responding to a Scenario-Based Performance Assessment Question
Resumed	Indicates that the Actor continued or reopened a suspended attempt on an Activity.	See 2.4.1.3. Resuming an Assessment in Navy Assessment Profile
Suspended	Indicates that the Actor suspended an attempt on an Activity with the intent to return at a later time.	See 2.4.1.2. Suspending an Assessment in Navy Assessment Profile
Terminated	Indicates that the Actor successfully ended an attempt on an Activity.	2.4.1.3. Terminating a Scenario-Based Performance Assessment Question

2.5.2. Data

Name	Description	Reference(s)[9]
Aggregate Performance Score	The aggregate score of performance competency scores and cognitive demand scores.	2.3.5. Result Extensions
Assessment Conditions	The limitations, constraints, resources, or special circumstances that pertain to the assessment.	2.3.4.2. Scenario-Based Context Extension Properties
Assessment Purpose	A description about the purpose of the assessment.	2.3.3. Activity Extensions
Assessment Scenario	Additional scenario context featured in the assessment.	2.3.4.2. Scenario-Based Context Extension Properties
Assessment Standards	The criteria used for scoring the overall assessment or a	2.3.3. Activity Extensions

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[8] See *Navy Performance Assessment Profile.pdf* for table references
[9] See *Navy Assessment Profile.pdf* for table references

	specific question.	
Attempt	A unique identifier for the current attempt on an activity	2.4.1.1. Initializing a Scenario-Based Performance Assessment 2.3.3.1. Initializing a Lesson
Cognitive Demand Scores	The scores for each cognitive demand (declarative knowledge, procedural knowledge, problem solving, communication, multi-tasking, written comprehension, estimating, interacting with computers).	2.3.5. Result Extensions
Completion	Indicates if the activity is complete	2.4.1.3. Terminating a Scenario-Based Performance Assessment
Context Agents	Collection of Objects describing relationship(s) between the Agent(s) and the current Statement. Zero or more Activity Type IRIs are used to categorize these relationship(s).	2.3.4. Context Extensions
Duration	The duration, in ISO 8601, representing the total time spent in the activity	2.4.1.3. Terminating a Scenario-Based Performance Assessment
On the Job Task Mapping	This property is used to map/relate the question or an assessment to an on-the-job task.	2.3.3. Activity Extensions
Performance Assessment Type	The value representing the type of performance assessment (i.e., instructor, scenario-based, self-reported, supervisor).	2.3.3. Activity Extensions
Performance Competency Scores	The scores for each performance competency. Each score must be mapped to the identifier for the competency or performance objective.	2.3.5. Result Extensions
Relevant Types	A collection of 1 or more relevant types used to characterize the relationship between the Statement and the Agent.	2.3.4.1 Context Agents Context Extension Properties
Scenario Based Activity	Used to define additional subproperties for a scenario-based assessment or interaction (i.e., assessmentPurpose, assessmentStandards, otjMapping, task, taskCategory, taskType, timeConstraint).	2.3.3. Activity Extensions
Scenario Based Context	This context extension is used to provide additional subproperties for a scenario-based assessment or interaction.	2.3.4. Context Extensions
Score (Scaled)	A normalized score between -10 and 1 representing the learner's performance on the activity	2.4.1.3. Terminating a Scenario-Based Performance Assessment
Success (Pass/Fail)	Indicates if the activity is passed	2.4.1.3. Terminating a Scenario-Based Performance Assessment
Task	An identifier and/or description of the actual task being performed.	2.3.3. Activity Extensions
Task Category	Common task category that is applicable to multiple Navy ratings.	2.3.3. Activity Extensions

Task Type	The type of task performed.	2.3.3. Activity Extensions
Time Constraint	Identifies the time limit for performing the task.	2.3.3. Activity Extensions

2.6 Simulation Base Profile

The Navy Simulation Base Profile provides the baseline Concepts and other technical requirements for any simulation content contractually required to support xAPI.

2.6.1. Events

Name	Description	Reference(s)[10]
Initialized	Indicates that the Actor successfully started an attempt on an Activity.	2.3.2.1. Initializing a Simulation
Terminated	Indicates that the Actor successfully ended an attempt on an Activity.	2.3.2.2. Terminating a Simulation

2.6.2. Data

Name	Description	Reference(s)[11]
Attempt	A unique identifier for the current attempt on an activity	2.3.2.1. Initializing a Simulation
Completion	Indicates if the activity is complete	2.3.2.2. Terminating a Simulation
Duration	The duration, in ISO 8601, representing the total time spent in the activity	2.3.2.2. Terminating a Simulation
Element Nomenclature	A string value that provides the system or equipment type designation represented in the content.	2.2.3. Activity Extensions
Element Ref Des	A string value of the system or equipment reference designator represented in the content.	2.2.3. Activity Extensions
S1000D Data Module Code	A string value that provides the S1000D data module code of the procedural data module that is being used to support the content.	2.2.3. Activity Extensions
S1000D Standard Numbering System Code	A string value that provides the S1000D Standard Numbering System code for the system or equipment that is being used to support the content.	2.2.3. Activity Extensions

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[10] See *Navy Simulation Base Profile.pdf* for table references
[11] See *Navy Simulation Base Profile.pdf* for table references

Score (Scaled)	A normalized score between -10 and 1 representing the learner's performance on the activity	2.3.2.2. Terminating a Simulation
Simulation Mode	A string value used to determine the simulation mode in which the content is experienced.	2.2.4. Context Extensions
Success (Pass/Fail)	Indicates if the activity is passed	2.3.2.2. Terminating a Simulation

2.7 Task Trainer Simulation Profile

The Task Trainer Simulation Profile is an extension of the Navy Simulation Base Profile and provides the additional Concepts and Statement requirements that can be used for Navy Virtual Maintenance Trainers (VMT), Virtual Simulation (VSIM), Virtual Operator Trainers (VOT), and Part Task Trainers (PTT).

2.7.1. Events

Name	Description	Reference(s)[12]
Attempt	A unique identifier for the current attempt on an activity	2.3.2.1. Initializing a Task Trainer Simulation
Completed	Finished or concluded the Activity normally.	2.3.3.4. Completing a Task Trainer Scenario 2.3.4.4. Completing a Task Trainer Task 2.3.5.1. Completing Task Trainer Steps
Exited	Intentionally departed or left an object.	2.3.3.7. Exiting a Task Trainer Scenario 2.3.4.7. Exiting a Task Trainer Task
Failed	Unsuccessfully completed an Activity to a level of predetermined satisfaction.	2.3.3.6. Failing a Task Trainer Scenario 2.3.4.6. Failing a Task Trainer Task
Initialized	Started an attempt on an Activity.	2.3.2.1. Initializing a TT Simulation 2.3.3.1. Initializing a Task Trainer Scenario 2.3.4.1. Initializing a Task Trainer Task
Passed	Indicates the Actor successfully passed an Activity to a level of predetermined satisfaction.	2.3.3.5. Passing a Task Trainer Scenario 2.3.4.5. Passing a Task Trainer Task
Received	Presented with or given an object during a procedure.	2.3.6.1.1. Receiving Feedback 2.3.6.1.2. Receiving Corrective Feedback 2.3.6.1.3. Receiving Error Feedback 2.3.6.1.4. Receiving Safety Feedback
Responded	Reacted or replied to an Object.	2.3.7.1. Responding to a Graded Mode Performance Task

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[12] See *Navy Task Trainer Simulation Profile.pdf* for table references

Restarted	Started an exited attempt on an Activity	2.3.3.8. Restarting a Task Trainer Scenario 2.3.4.8. Restarting a Task Trainer Task
Resumed	Continued or reopened a suspended attempt on an Activity.	2.3.3.3. Resuming a Task Trainer Scenario 2.3.4.3. Resuming a Task Trainer Task
Skipped	Passed over or omitted an expected interaction in a sequence of defined interactions.	2.3.5.2. Skipping Task Trainer Steps
Suspended	Suspended an attempt on an Activity with the intent to return at a later time.	2.3.3.2. Suspending a Task Trainer Scenario 2.3.4.2. Suspending a Task Trainer Task
Terminated	Ended an attempt on an activity.	2.3.2.2. Terminating a TT Simulation 2.3.3.9. Terminating a Task Trainer Scenario 2.3.4.9. Terminating a Task Trainer Task
Used	Referenced or applied an object during a procedure.	2.3.6.2.1. Tools
Viewed	Arrived at, entered or visited an object.	2.3.6.3. Documents

2.7.2. Data

Name	Description	Reference(s)[13]
Attempt	A unique identifier for the current attempt on an activity	2.3.2.1. Initializing a TT Simulation 2.3.3.1. Initializing a Task Trainer Scenario 2.3.4.1. Initializing a Task Trainer Task
Success (Pass/Fail)	Indicates if the activity is passed	2.3.2.2. Terminating a TT Simulation 2.3.3.9. Terminating a Task Trainer Scenario 2.3.4.9. Terminating a Task Trainer Task
Completion	Indicates if the activity is complete	2.3.2.2. Terminating a TT Simulation 2.3.3.9. Terminating a Task Trainer Scenario 2.3.4.9. Terminating a Task Trainer Task
Duration	The duration, in ISO 8601, representing the total time spent in the activity	2.3.2.2. Terminating a TT Simulation 2.3.3.9. Terminating a Task Trainer Scenario 2.3.4.9. Terminating a Task Trainer Task
Score (Scaled)	A normalized score between -1 and 1 representing the	2.3.2.2. Terminating a TT Simulation

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[13] See *Navy Task Trainer Simulation Profile.pdf* for table references

	learner's performance on the activity	2.3.3.9. Terminating a Task Trainer Scenario 2.3.4.9. Terminating a Task Trainer Task

3. xAPI Code Libraries

Code libraries are reusable JavaScript wrappers for developers to reuse when building content that meets the Navy's xAPI Profiles. Each of the xAPI code libraries below are intended to be used when building custom content. The main NETC bitbucket repository containing all the xAPI code libraries is located at https://bitbucket.org/netc-lms-lrs.

- E-learning Code Library:
  https://bitbucket.org/netc-lms-lrs/e-learning-xapi-code-library-documentation/src/master
- Performance Support Code Library:
  https://bitbucket.org/netc-lms-lrs/performance-support-xapi-code-library-documentation/src/master
- Simulation Code Library:
  https://bitbucket.org/netc-lms-lrs/simulation-base-xapi-code-library/src/master/
- Task Trainer Code Library:
  https://bitbucket.org/netc-lms-lrs/task-trainer-simulation-xapi-code-library/src

4. xAPI Content Examples

Content examples are fully functional demonstrations of content that meets Navy's xAPI requirements. Each of the examples below were created with the above xAPI Code Libraries and are intended to be downloaded and evaluated by content developers. The main NETC bitbucket repository containing all the xAPI content examples is located at https://bitbucket.org/netc-lms-lrs.

- E-learning and Assessment Example:
  https://bitbucket.org/netc-lms-lrs/e-learning-and-assessment-xapi-content-example/src/master/
- Performance Support Example:
  https://bitbucket.org/netc-lms-lrs/performance-support-xapi-content-example/src/master/
- Simulation Example:
  https://bitbucket.org/netc-lms-lrs/simulation-base-xapi-content-example/src
- Task Trainer Simulation Example:
  https://bitbucket.org/netc-lms-lrs/task-trainer-simulation-xapi-content-example/src

5. Acquisition Resources

5.1. Data Item Description for xAPI Data

The following is a DID with requirements for xAPI data that can be used when procuring any type of xAPI content.

DATA ITEM DESCRIPTION

Title: EXPERIENCE API (XAPI) DATA

Number: TBD

AMSC Number: TBD

DTIC Applicable: TBD

Preparing Activity: TBD

Applicable Forms: TBD

Approval Date: TBD

Limitation: TBD

GIDEP Applicable: TBD

Project Number: TBD

Use/relationship: Experience API (xAPI) Data will be used for describing, reporting, and visualizing one's experience or performance within a formal or informal learning activity. Additional information is available at the DoDI xAPI Fungible Reference, https://adlnet.gov/policy/fungible.

a. Information to be recorded through xAPI data will include interactions and usage with e-learning content, performance support applications, and other related types of training content.

b. This DID contains the format, content, and intended use information for the data product resulting from DoD Instruction 1322.26 (Distributed Learning) and the work task described by the contract, and is applicable to the acquisition of any military learning and training content that requires xAPI for data collection.

Requirements:

1. Reference documents. The applicable issue of the documents cited herein, including their approval dates and dates of any applicable amendments, notices, and revisions, shall be as specified in the contract.

2. Format. The Experience API format that uses JavaScript Object Notation (JSON) will be used to represent learner experience data. All xAPI data must be conformant to the requirements identified in the xAPI Specification and applicable xAPI Profiles. If an object or property is listed as "optional" in the xAPI Specification, but that same object or property is listed as a requirement in a Profile, then the Profile takes precedence.

3. Content. The content will utilize existing xAPI Profiles to maximize interoperability and data portability. All content developed to track xAPI data will implement the requirements defined in the appropriate xAPI Profile documentation for each content type.

4. Log Files. The content of the log files will show evidence of successful communication of the xAPI statements to a Learning Record Store (LRS) and shall include any error codes. The content of the log files will also show evidence that the appropriate xAPI Profiles were referenced. The log files that show evidence of the successful xAPI statements storage and retrieval can be of any text format as long as the statements in the log file are the original xAPI JSON value.

End of DID#

5.2. General Contracting Requirements

The following requirements and sample contracting language should be included in all xAPI content acquisitions. This language provides a foundation for more detailed requirements provided by specific types of content types. The samples below can be used without modification, but it is expected that updates may be required based on specific requirements of the xAPI content.

ID	Requirement	Contracting Language Sample
AR-1.1	xAPI Specification Conformance	The Contractor SHALL develop the xAPI content such that it is conformant to the Experience API (xAPI) Specification version 1.0.3 (or latest version) by adhering to the Learning Record Provider (LRP) and Learning Record Consumer (LRC) requirements.

AR-1.2	Record of xAPI Specification Conformance	The Contractor SHALL provide logs of xAPI communications with an LRS by running the content several times through all potential paths. The tested paths should ensure that all potential xAPI features are exercised in the content. To assert conformance, the logs SHALL include the LRS response code "200 OK" for all xAPI communications and relevant details about the request. In some cases, a "404 Not Found" response code is also acceptable. The Contractor SHALL use an xAPI-conformant LRS to generate the test log. To verify that an LRS is conformant: - Request a JSON Web Token (JWT) certificate from the LRS vendor and verify the certificate at the Advanced Distributed Learning (ADL) LRS Test Site Certificate Verifier or - Ensure the LRS is listed in the ADL Conformant LRSs Adopters Site as an LRS conformant to the target xAPI version. Alternatively, the acquirer may be able to provide access to a test LRS representative of the production LRS.
AR-1.3	Activity ID Inventory List	The Contractor SHALL deliver an inventory of Activity information to avoid ID collisions and multiple IDs for the same activity. The inventory list document SHALL contain, at a minimum, the activity IDs (IRI), activity names, and activity descriptions. The inventory list document SHALL contain all activities that are the Object of an xAPI statement or contextActivities in an xAPI statement.
AR-1.4	Conformance with Navy xAPI Profiles	The Contractor SHALL implement all the relevant requirements in their respective Navy Profile(s). There is currently no automated test for profile conformance. The contractor SHALL prove conformance by providing sample xAPI statements for manual validation. The Contractor, at minimum, SHALL support the Navy Core Profile
AR-1.5	Content Delivery	The Contractor SHALL deliver all content to the Navy. Delivered files SHALL include, but are not limited to, the Activity ID Inventory List, LRS response code logs, executable content, content source files, and media source files.

AR-1.6	Content Prototype	The Contractor SHALL create and verify a prototype for each type of content that is required to implement a Navy xAPI Profile. All xAPI prototype content SHALL be deemed xAPI-conformant when all testable potential paths through the content are exercised and sample statements generated by the content are verified.

5.3. E-learning xAPI Contracting Requirements

While this resource specifies only xAPI contracting requirements and does not address contracting requirements for SCORM, it's important for acquisition professionals to determine when xAPI is a contract requirement compared to SCORM. The distinguishing factors for when xAPI is required compared to SCORM are as follows:

1. SCORM - If ANY of the following contracting requirements for the e-learning content are true:
   ○ delivered only in web browser on a desktop or laptop computer
   ○ makes use of commercial authoring tools that only export to SCORM
   ○ custom content with a dependency on SCORM-specific LMS capabilities such as sequencing and navigation
   ○ hosted in the LMS and uses the LMS for reporting
2. xAPI - if ANY of the following contracting requirements for e-learning content are true:

   ○ delivered on any device (e.g., desktop, mobile)
   ○ custom content that implements the Navy xAPI Profiles
   ○ no dependencies on SCORM features in an LMS
   ○ hosted anywhere (e.g., distributed content server, LMS, CMS, private network)
   ○ accessed from anywhere, not just an LMS (e.g., personal device/BYOD, disconnected/off-line)
   ○ must have better resolution into the data and associated analytics

The LMS will be configured to automatically track xAPI for #1 (SCORM) above hosted in the new learning stack LMS (Moodle). If content is required to be contracted as SCORM, then acquisition professionals should continue to include the Navy's usual requirements for SCORM. The e-learning contracting requirements and sample language provided below is for native xAPI content only. These e-learning requirements and sample contracting language SHALL be referenced when a contract has any of the #2 (xAPI) requirements above.

The following requirements and sample contracting language should be included in all web-based xAPI E-Learning content acquisitions. The samples below can be used without modification, but it is expected that updates may be required based on specific requirements of the xAPI content.

ID	Requirement	Contracting Language Sample
AR-2.1	Conformance with the E-Learning Profile	The Contractor SHALL implement all the relevant requirements in the E-Learning Profile. There is currently no automated test for E-Learning Profile conformance. The contractor SHALL prove conformance by providing sample xAPI statements for manual validation.
AR-2.2	Initialize Values via Launch	The Contractor SHALL develop the content such that it supports the web-based launch mechanism and associated data initialization requirements defined in the Navy Core xAPI Profile.
AR-2.3	Attempt Management and Tracking	The Contractor SHALL develop the e-learning content such that it manages attempts and sessions as defined in the E-Learning Profile. This includes, but is not limited to, tracking an Initialize Statement when the e-learning content begins and a Terminate Statement when the e-learning content ends.
AR-2.4	Learner Interaction Data Tracking	If the content contains scores, completion, success, questions, or other learner experience data, the Contractor SHALL track these values with xAPI Statements as defined in the E-Learning Profile
AR-2.5	Content State Data Tracking	If the content uses bookmarking or other data about a learning activity or attempt on a learning activity, the Contractor SHALL track these values using the xAPI Document Resources as defined in the E-Learning Profile

5.4. Performance Support xAPI Contracting Requirements

The following requirements and sample contracting language should be included in all xAPI Performance Support content acquisitions. The samples below can be used without modification, but it is expected that updates may be required based on specific requirements of the xAPI content.

ID	Requirement	Contracting Language Sample
AR-3.1	Conformance with the Performance Support Profile	The Contractor SHALL implement all the relevant requirements in the Performance Support Profile. There is currently no automated test for Performance Support Profile conformance. The contractor SHALL prove conformance by providing sample xAPI
AR-3.2	Initialize Values via Launch	If the performance support application is web-based and will be launched from the LMS, the Contractor SHALL develop the content such that it supports the web-based launch mechanism and associated data initialization requirements defined in the Navy Core xAPI Profile.
AR-3.3	Authentication, Authorization, and xAPI Actor Initialization	If the performance support content is a native application and/or will not be launched from the LMS, the Contractor SHALL authenticate the user via the Authentication and Authorization System (AAS) and use the data returned to create the xAPI Actor as defined in the Navy Core xAPI Profile.
AR-3.4	Initialize and Terminate Tracking	The Contractor SHALL develop the performance support content such that it tracks an Initialize Statement when the performance support content begins and a Terminate Statement when the performance support content ends as defined in the Performance Support Profile.
AR-3.5	User Interaction Data Tracking	If the performance support application allows the user to interact with the content based on use cases defined by the performance support profile, the Contractor SHALL track these values with xAPI Statements as defined in the Performance Support Profile

5.5. Simulation xAPI Contracting Requirements

The following requirements and sample contracting language should be included in all xAPI Simulation content acquisitions. The samples below can be used without modification, but it is expected that updates may be required based on specific requirements of the xAPI content.

ID	Requirement	Contracting Language Sample
AR-4.1	Conformance with the Navy Simulation Profile	The Contractor SHALL implement all the relevant requirements in the Simulation Base Profile. There is currently no automated test for Simulation Profile conformance. The contractor SHALL prove conformance by providing sample xAPI statements for manual validation.
AR-4.2	Initialize Values via Launch	If the simulation is web-based and will be launched from the LMS, the Contractor SHALL develop the content such that it supports the web-based launch mechanism and associated data initialization requirements defined in the Navy Core xAPI Profile.
AR-4.3	Authentication, Authorization, and xAPI Actor Initialization	If the simulation is a native application and/or will not be launched from the LMS, the Contractor SHALL authenticate the user via the Authentication and Authorization System (AAS) and use the data returned to create the xAPI Actor as defined in the Navy Core xAPI Profile.
AR-4.4	Initialize and Terminate Tracking	The Contractor SHALL develop the simulation such that it tracks an Initialize Statement when the simulation begins and a Terminate Statement when the simulation ends as defined in the Simulation Base Profile.
AR-4.5	Learner Interaction Data Tracking	The Contractor SHALL track relevant learning and training related events as the learner experiences the simulation. These events SHALL be tracked in accordance with the best practices in the Simulation Base Profile for extending the profile for additional learner interaction data.

ID	Requirement	Contracting Language Sample
AR-4.6	Simulation State Tracking	The Contractor SHALL track simulation state that is relevant to learning and training events as the learner experiences the simulation. State SHALL be tracked in accordance with the best practices in the Simulation Base Profile for extending the profile for simulation state. The Contractor SHALL NOT use the xAPI to manage the overall simulation state or the syncing of simulation clients.

5.6 Task Trainer Simulation xAPI Contracting Requirements

Task Trainers comprise a category of simulation used to train maintenance or operation skills in accordance with documented, well-defined procedures. The three classes of Task Trainers include:

- Web-based or desktop virtual simulation (VSIM) maintenance task trainers

- Web-based or desktop VSIM operator trainers

- Part task trainers

The following requirements and sample contracting language should be included in all xAPI Task Trainer Simulation content acquisitions. The samples below can be used without modification, but it is expected that updates may be required based on specific requirements of the xAPI content.

ID	Requirement	Contracting Language Sample
AR-5.1	Conformance with the Task Trainer Simulation Profile	The Contractor SHALL implement all the relevant requirements in the Task Trainer Simulation Profile. There is currently no automated test for Task Trainer Simulation Profile conformance. The contractor SHALL prove conformance by providing sample xAPI statements for manual validation.
AR-5.2	LMS Launch Initialization Data	If the simulation is web-based and will be launched from the LMS, the Contractor SHALL develop the content such that it supports the web-based launch mechanism and associated data initialization requirements defined in the Navy Core xAPI Profile.

AR-5.3	Non-LMS Actor Initialization Data	If the simulation is a native application and/or will not be launched from the LMS, the Contractor SHALL authenticate the user via the Authentication and Authorization System (AAS) and use the data returned to create the xAPI Actor, as defined in the Navy Core xAPI Profile. OR (if the AAS is not accessible.) If the simulation is a native application and/or will not be launched from the LMS, the Contractor SHALL conform to the requirements in the Navy Core xAPI Profile for the xAPI Actor .
AR-5.4	Initialize and Terminate Task Trainer Simulation Tracking	The Contractor SHALL develop the task trainer simulation such that it tracks an Initialize Statement when the simulation begins and a Terminate Statement when the simulation ends, as defined in the Task Trainer Simulation Profile.
AR-5.5	Initialize and Terminate Task Trainer Scenario Tracking	The Contractor SHALL develop the task trainer simulation such that it tracks an Initialize Statement when a scenario begins and a Terminate Statement when the scenario ends, as defined in the Task Trainer Simulation Profile.
AR-5.6	Initialize and Terminate Task Trainer Task Tracking	The Contractor SHALL develop the task trainer simulation such that it tracks an Initialize Statement when a task begins and a Terminate Statement when the task ends, as defined in the Task Trainer Simulation Profile.
AR-5.7	Learner Interaction Data Tracking	The Contractor SHALL track relevant learning and training related events as the learner experiences the task trainer simulation. These events SHALL be tracked in accordance with the xAPI Statement Requirements & Examples documented in the Task Trainer Simulation Profile.

ID	Requirement	Contracting Language Sample
AR-5.8	Task Trainer Simulation State Tracking	The Contractor SHALL track task trainer simulation state data that is relevant to activities as the learner experiences the simulation. State SHALL be tracked in accordance with the xAPI Statement Requirements & Examples documented in the Task Trainer Simulation Profile. The Contractor SHALL NOT use the xAPI to manage the overall task trainer simulation state or the syncing of task trainer simulation clients.

5.7. Assessment xAPI Contracting Requirements

Assessments may be stand-alone modules or embedded in other courses (e.g., a SCORM course). In the case that assessments are embedded in other content, additional contracting requirements for that particular content type may also apply. If the Learning Assessment System (LAS), Moodle, is used to author the assessment, then these requirements are handled automatically. The LAS is configured to automatically track xAPI for assessments authored and hosted in the LMS-LAS. The Navy LAS Authoring Guide should be referenced when contractually requiring use of the LAS to author assessments.

The following requirements and sample contracting language should be included in all custom xAPI assessment content acquisitions that do not rely on the LAS. The samples below can be used without modification, but it is expected that updates may be required based on specific requirements of the xAPI content.

ID	Requirement	Contracting Language Sample
AR-6.1	Conformance with the Navy Assessment Profile	The Contractor SHALL implement all the relevant requirements in the Navy Assessment Profile. There is currently no automated test for Assessment Profile conformance. The contractor SHALL prove conformance by providing sample xAPI statements for manual validation.

AR-6.2	LMS Launch Initialization Data	If the assessment is web-based and will be launched from the LMS, the Contractor SHALL develop the content such that it supports the web-based launch mechanism and associated data initialization requirements defined in the Navy Core xAPI Profile.
AR-6.3	Non-LMS Actor Initialization Data	If the assessment is a native application and/or will not be launched from the LMS, the Contractor SHALL authenticate the user via the Navy's Authentication and Authorization System (AAS) and use the data returned to create the xAPI Actor, as defined in the Navy Core xAPI Profile. OR (if the Navy AAS is not accessible.) If the assessment is a native application and/or will not be launched from the LMS, the Contractor SHALL conform to the requirements in the Navy Core xAPI Profile for the xAPI Actor .
AR-6.4	Initialize and Terminate Assessment Tracking	The Contractor SHALL develop the assessment such that it tracks an Initialize Statement when the simulation begins and a Terminate Statement when the assessment ends, as defined in the Navy Assessment Profile. Note: If the assessment is embedded in other content (e.g., a SCORM Course), these events may be replaced by a similar set of events in the encompassing profile.

ID	Requirement	Contracting Language Sample
AR-6.5	Learner Interaction Data Tracking	The Contractor SHALL track relevant assessment interaction events. These events SHALL be tracked in accordance with the xAPI Statement Requirements & Examples documented in the Navy Assessment Profile.

5.8. Performance Assessment xAPI Contracting Requirements

The following requirements and sample contracting language should be included in all custom xAPI performance assessment content acquisitions. The samples below can be used without modification, but it is expected that updates may be required based on specific requirements of the xAPI content.

ID	Requirement	Contracting Language Sample
AR-7.1	Conformance with the Navy Performance Assessment Profile	The Contractor SHALL implement all the relevant requirements in the Navy Performance Assessment Profile. There is currently no automated test for Performance Assessment Profile conformance. The contractor SHALL prove conformance by providing sample xAPI statements for manual validation.
AR-7.2	LMS Launch Initialization Data	If the performance assessment is web-based and will be launched from the LMS, the Contractor SHALL develop the content such that it supports the web-based launch mechanism and associated data initialization requirements defined in the Navy Core xAPI Profile.

AR-7.3	Non-LMS Actor Initialization Data	If the performance assessment is a native application and/or will not be launched from the LMS, the Contractor SHALL authenticate the user and use the data returned to create the xAPI Actor, as defined in the Navy Core xAPI Profile. OR If the performance assessment is a native application and/or will not be launched from the LMS, the Contractor SHALL conform to the requirements in the Navy Core xAPI Profile for the xAPI Actor.
AR-7.4	Initialize and Terminate Assessment Tracking	The Contractor SHALL develop the performance assessment such that it tracks an Initialize Statement when the simulation begins and a Terminate Statement when the performance assessment ends, as defined in the Navy Performance Assessment Profile.
AR-7.5	Learner Interaction Data Tracking	The Contractor SHALL track relevant performance assessment interaction events. These events SHALL be tracked in accordance with the xAPI Statement Requirements & Examples documented in the Navy Performance Assessment Profile.

6. Additional Resources

DoDI 1322.26 Distributed Learning Policy, https://adlnet.gov/policy/dodi

DoDI 1322.26 xAPI Fungible Reference, https://adlnet.gov/policy/fungible

ADL xAPI Specification v1.0.3, https://github.com/adlnet/xAPI-Spec

IEEE P92741.1 xAPI Base Standard, https://opensource.ieee.org/xapi

List of xAPI Conformant LRSes, https://adopters.adlnet.gov/products/all/0