

Inferno Tech Talk – November 2024

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Inferno Tech Talk Introduction

- Purpose: to provide regularly scheduled updates on the Inferno tool and its implementation of the (g)(10) test procedure
- Typical agenda to include:
 - Announcements about upcoming releases
 - Training on new features
 - Highlight outstanding issues or known problems
 - Open discussion
- Monthly recurrence: 2nd Wednesday at 1PM ET
- [This call is being recorded and will be posted on https://inferno.healthit.gov/events/](https://inferno.healthit.gov/events/)

Content reflects Inferno's implementation of applicable Test Procedure and does not necessarily reflect ASTP/ONC policy.

Today's Agenda

- (g)(10) Standardized API Test Kit v7.0.0
- Other Notable Test Kit Updates
 - Service Base URL Test Kit v0.11.1
 - UDAP Security Test Kit v0.10.0
 - SMART - UDAP Harmonization Test Kit (Experimental)
- Inferno Framework Improvements
- Discussions / Questions



ONC (g)(10) Standardized API Test Kit v7.0.0

- Test Update:
 - Support SVAP 2024
 - US Core IG v7.0.0
 - SMART App Launch IG v2.2.0
 - Terminology Updates
 - Changes that may result in new failure: 0
 - Changes that will not affect passing implementations: 3

SVAP 2024 Update

- Two updated standards for SVAP 2024
 - US Core IG v7.0.0
 - SMART App Launch v2.2.0

Note: When using US Core v7, the tester must select SMART v2 or above because SMART App Launch granular scopes are required by the US Core v7 and are not available in SMART v1.

← Options

US Core Version

- US Core 3.1.1 / USCDI v1
- US Core 4.0.0 / USCDI v1
- US Core 6.1.0 / USCDI v3
- US Core 7.0.0 / USCDI v4

SMART App Launch Version

- SMART App Launch 1.0.0
- SMART App Launch 2.0.0
- SMART App Launch 2.2.0

Bulk Data Version

- Bulk Data 1.0.1
- Bulk Data 2.0.0

START TESTING

US Core v7.0.0

- New Profiles
 - 12.23 Observation Treatment Intervention Preference Tests
 - 12.24 Observation Care Experience Preference Tests
 - 12.35 Observation Average Blood Pressure Tests
 - 12.43 Location Tests

Terminology Update

- This release also requires updates of Inferno Terminology Service.
- If running locally, it is necessary to re-run [the terminology build process](#) to add support for the terminology used by US Core 7.0.0.

(g)(10) CCG Updates: US Core v6.1.0 Patch (#588)

- [FHIR-46240](#): For purposes of certification, DiagnosticReport.media and DiagnosticReport.media.link from the US Core DiagnosticReport Profile for Report and Note Exchange are not required to be supported.
- What's changed:
 - DiagnosticReport.media and DiagnosticReport.media.link are removed from DiagnosticReport MustSupport test (10.10.08)
 - DiagnosticReport.media.link is removed from DiagnosticReport MustSupport Reference test (10.10.09).

(g)(10) Updates: Token Introspection Bug Fix (#572)

- In v6.03
 - Custom HTTP Headers, if specified, is used by test 9.11.2.01 but ignored by 9.11.2.02
- What changed:
 - Both 9.11.2 tests honors values provided in Custom HTTP Headers inputs.

Token Introspection

If the introspection endpoint is access controlled, testers must enter their own HTTP Authorization header for the introspection request. See [RFC 7616 The 'Basic' HTTP Authentication Scheme](#) for the most common approach that uses client credentials. Testers may also provide any additional parameters needed for their authorization server to complete the introspection request.

Note: For both the Authorization header and request parameters, user-input values will be sent exactly as entered and therefore the tester must URI-encode any appropriate values.

FHIR Endpoint (required) *
URL of the FHIR endpoint used by SMART applications
`https://inferno-qa.healthit.gov/reference-server/r4`

Token Introspection Endpoint
The complete URL of the token introspection endpoint. This will be populated automatically if included in the server's discovery endpoint.

Custom HTTP Headers for Introspection Request
Add custom headers for the introspection request by adding each header's name and value with a new line between each header. Ex:
<Header 1 Name>: <Value 1>

(g)(10) Updates: Fix Validation Error on Observation effectivePeriod (#573)

- In v6.0.3, with the US Core 6.1.0 Patch [FHIR-43355](#), certified system implementation could use either effectiveDateTime or effectivePeriod for Observation Smoking Status Must Support requirement.
 - FHIR validator throws validation error on Observation.effectivePeriod because Observation.effectiveDateTime is mandatory element in StructureDefinition
- What's changed:
 - Filter specific validation errors caused by Observation.effectivePeriod.

Name	Flags	Card.	Type
Observation		0..*	Observation
status	S	1..1	code
Slices for category	S	1..*	CodeableConcept
category:SocialHistory	S	1..1	CodeableConcept
coding		1..*	Coding
system		1..1	uri
code		1..1	code
code	S	1..1	CodeableConcept
subject	S	1..1	Reference(US Core Patient Profile)
effectiveDateTime	S	1..1	dateTime
value[x]	S C	1..1	

SMART App Launch Test Kit v0.4.6

- Add CORS Support tests

1.1 SMART on FHIR Discovery

About SMART on FHIR Discovery

1.1.01 FHIR server makes SMART configuration available from well-known endpoint

1.1.02 Well-known configuration contains required fields

1.1.03 *Optional* SMART .well-known/smart-configuration Endpoint Enables Cross-Origin Resource Sharing (CORS)

1.1.04 *Optional* SMART metadata Endpoint Enables Cross-Origin Resource Sharing (CORS)

Service Base URL Test Kit v0.11.1

- Incorporates the following CCG Clarification in Test 1.2.04:

For the purposes of Certification Program service base URL publication requirements, it is not required that a child "Organization" resource include an "Organization.endpoint" element if its parent "Organization" resource, referenced through the "Organization.partOf" element, already contains the applicable endpoint information in its own "Organization.endpoint" element.

- Grants additional flexibility to publication format
- Enable systems that implement the User Access Brands specification to meet the service base URL publication requirements.


1.2.04 Service Base URL Publication contains valid Organization resources

MESSAGES REQUESTS INPUTS OUTPUTS **ABOUT**

Verify that Bundle of Service Base URLs contains Organizations that are valid Organization resources according to the format defined in FHIR v4.0.1.

Each Organization must:

- Contain must have elements including:
 - active
 - name
- Include the organization's name, location, and facility identifier
- For Endpoint information, the Organization must either:
 - Use the endpoint field to reference Endpoints associated with the Organization
 - Must reference only Endpoint resources in the endpoint field
 - Must reference at least one Endpoint resource in the endpoint field
 - Must reference only Endpoints that are contained in the Service Base URL Bundle
 - Use the partOf field to reference a parent Organization that already contains the applicable endpoint information in its own "Organization.endpoint" element



UDAP Security Test Kit v0.10.0

- During dynamic client registration, allow more flexibility in the Registration Response for claims that may not match exactly what is registered by the client; including `scope` and `client_name`

UDAP Security v.0.10.0 NEW SESSION

UDAP Security

- 1 UDAP Authorization Code Flow
 - 1.1 UDAP Discovery
 - 1.2 UDAP Dynamic Client Registration**
 - 1.3 UDAP Authorization Code Authorization & Authentication
- 2 UDAP Client Credentials Flow
 - 2.1 UDAP Discovery
 - 2.2 UDAP Dynamic Client Registration
 - 2.3 UDAP Client Credentials Authorization & Authentication
- Report

1.2 UDAP Dynamic Client Registration RUN TESTS

Generate and sign a software statement to register the client with the authorization server as described in the [dynamic client registration requirements](#).

- 1.2.01 Dynamic Client Registration request fails with improper software statement contents
- 1.2.02 Dynamic Client Registration request fails when software statement JWT is improperly signed
- 1.2.03 Dynamic Client Registration request succeeds with valid software statement, JWT signature, and client certs
- 1.2.04 Successful Dynamic Client Registration request response contains required contents**

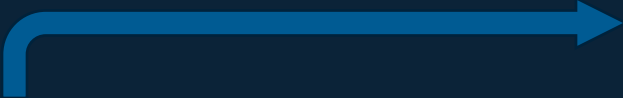
UDAP-SMART Harmonization Test Kit

- An experiment in creating tests for authorization systems that simultaneously support both UDAP and SMART App Launch
- Tests this assertion within the Security for Scalable Registration, Authentication, and Authorization IG:

This guide is also intended to be compatible and harmonious with client and server use of versions 1 or 2 of the HL7 SMART App Launch IG.

- Known assumptions and limitations are documented within the Test Kit
- Feedback welcome!

Inferno Framework Updates

- 1) Significant performance improvement loading web UI on existing sessions
 - 2) Introduced **inferno execute** CLI command to better support automated testing
 - Visit <https://inferno-framework.github.io/> for usage information
 - Inferno Reference Server automatically tested against (g)(10) Test Kit in CI and available as a reference
- 

```
test
succeeded 4 hours ago in 6m 55s

v [x] Run g10 test kit Single Patient API and Multi-Patient API with US Core 3.1.1 and Bulk Data 1... 2m 28s
pass
319 7.3.10 Device resources returned conform to the US Core Implantable Device Profile: ✓ pass
320 7.3.11 DiagnosticReport resources returned conform to the relevant US Core
DiagnosticReport Profile: ✓ pass
321 7.3.12 DocumentReference resources returned conform to the US Core DocumentReference
Profile: ✓ pass
322 7.3.13 Goal resources returned conform to the US Core Goal Profile: ✓ pass
323 7.3.14 Immunization resources returned conform to the US Core Immunization Profile: ✓ pass
324 7.3.15 MedicationRequest resources returned conform to the US Core MedicationRequest
Profile: ✓ pass
325 7.3.16 Observation resources returned conform to the relevant US Core Observation Profile:
✓ pass
326 7.3.17 Procedure resources returned conform to the US Core Procedure Profile: ✓ pass
327 7.3.18 Encounter resources returned conform to the US Core Encounter Profile: ✓ pass
328 7.3.19 Organization resources returned conform to the US Core Organization Profile: ✓ pass
329 7.3.20 Practitioner resources returned conform to the US Core Practitioner Profile: ✓ pass
330 7.3.21 Provenance resources returned conform to the US Core Provenance Profile: ✓ pass
331 7.3.22 Location resources returned conform to the HL7 FHIR Specification Location Resource
if bulk data export has Location resources: ✓ pass
332 7.3.26 Medication resources returned conform to the US Core Medication Profile if bulk
data export has Medication resources: * omit
333 7.4 Group Compartment Export Cancel Tests: ✓ pass
334 7.4.01 Bulk Data Server returns "202 Accepted" for delete request: ✓ pass
335 =====

> [x] Run g10 test kit Single Patient API and Multi-Patient API with US Core 6.1.0 and Bulk Data 2... 3m 16s
> [x] Stop server 2s
> [x] Stop Inferno services 4s
```

Open Discussion / Feedback

Resources and Contact Information

- <https://inferno.healthit.gov/>
 - General materials & live demonstration server
- <https://inferno-framework.github.io>
 - Create your own Inferno Test Kits!
- <https://github.com/onc-healthit/onc-certification-g10-test-kit/>
 - ONC Certification tests repository, downloads, issues
 - “Watch” repository to receive alerts (new releases, etc)
 - Note: this repository is specific to ONC Certification testing
- inferno@groups.mitre.org (or rscanlon@mitre.org)
- FHIR Zulip Chat: <https://chat.fhir.org/#narrow/stream/179309-inferno>

Upcoming Meetings

- Next Inferno Tech Talk: **Wednesday December 11** at 1 PM ET
- Please reach out with questions & issues