

Laika

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CEM IR&D



Problem



- **United States adoption of Electronic Health Records (EHRs) is poor compared to other developed countries.**

Use of EHRs by primary care physicians¹

Country	Percentage
Netherlands	98%
United Kingdom	89%
Australia	79%
United States	28%

Adoption of EHRs used in US hospitals²

EHR Capability	Percentage
Any form of EHR	78%
Basic EHR	12%
Comprehensive EHR	1.7%

- **Data interoperability with current EHR systems in use range from limited to none and is a barrier to broader U.S. adoption.**

1) http://www.commonwealthfund.org/usr_doc/Press_Release3.pdf?section=4056

2) <http://govhealthit.com/Articles/2008/11/Survey-Hospital-EHR-adoption-rate-is-below-12-percent.aspx><http://content.nejm.org/cgi/content/full/359/1/50>

Background



- **Accelerating the adoption of interoperable EHRs is in the national interest of the United States.**

“Our recovery plan will invest in electronic health records and new technology that will reduce errors, bring down costs, ensure privacy, and save lives.”

President Barack Obama – February 24, 2009*

- **Certification Commission for Healthcare Information Technology (CCHIT) is the sole body recognized by U.S. Health and Human Services for EHR system certification.**
- **In the fall of 2007, MITRE and CCHIT agreed to a partnership to create an open source EHR testing framework, “LAIKA.”**

* http://www.whitehouse.gov/the_press_office/Remarks-of-President-Barack-Obama-Address-to-Joint-Session-of-Congress/

Objectives



- **Lead the design and development of an open source EHR interoperability testing tool, Laika.**
- **Provide the Laika software and source code for the 2008 and 2009 CCHIT certification process of U.S. Electronic Health Record systems.**
- **Grow an open source community including government, industry, and academia dedicated to open source Healthcare Information Technology tools.**

Activities



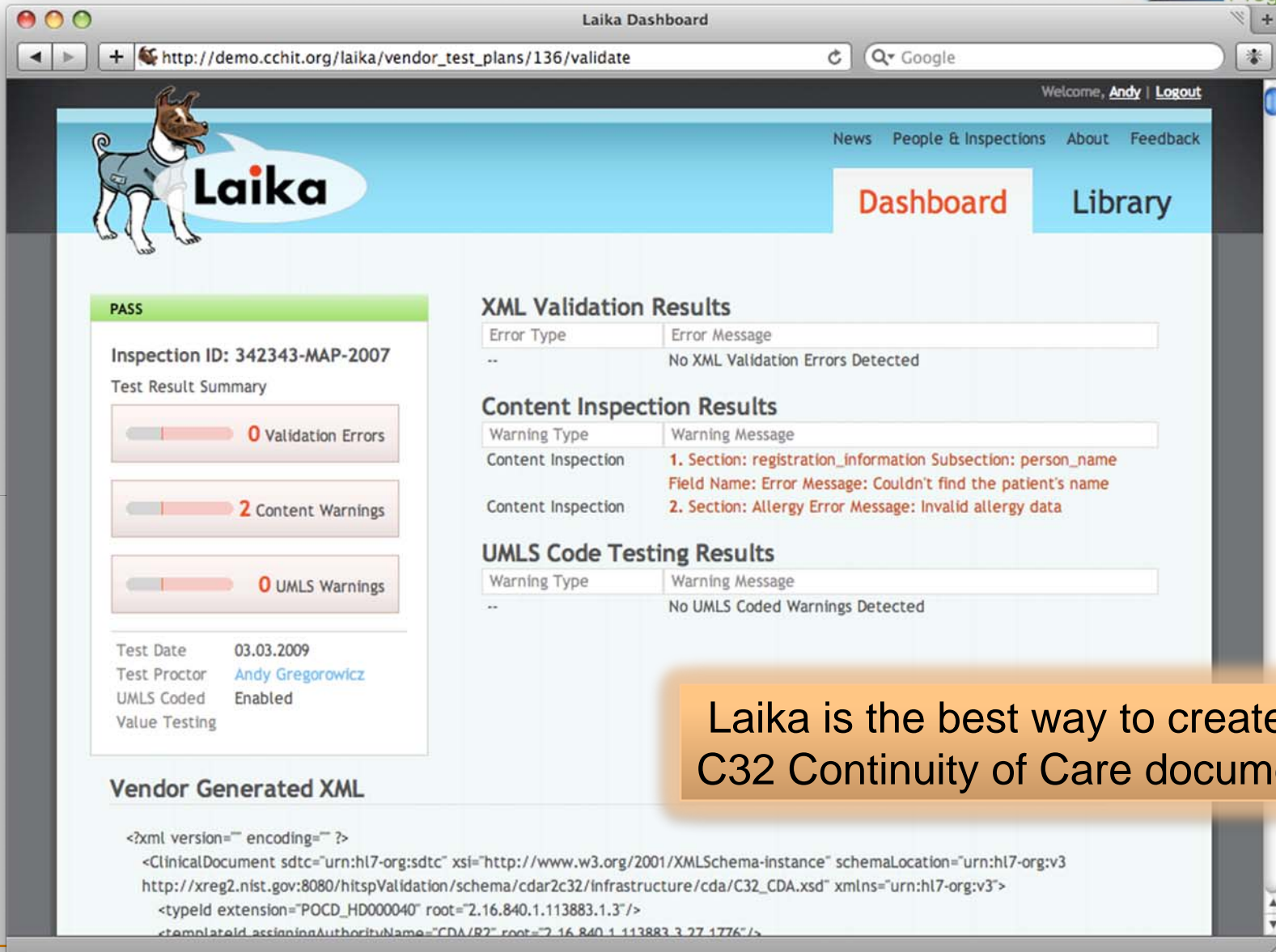
- Supported 2008 CCHIT EHR Certification process.
- Expanded Laika's capabilities to perform testing on XDS and PIX/PDQ.
- Provide system engineering guidance to the CCHIT Health IT testing processes.
- Released tools for Health Information Exchange (HIE) testing.
- Participated as monitors in 2009 IHE Connectathon event with the majority of the U.S. EHR vendor market.
- Presented LAIKA at the 2009 Healthcare Information and Management Systems Society (HIMSS) conference.

Highlights



- **Laika is a suite of open source tools that are freely available for testing conformance to specifications across a number of Health IT Domains**
 - **Continuity of Care (HITSP C32)**
 - **Patient ID (IHE PIX/PDQ)**
 - **Cross Enterprise Document Sharing (IHE XDS.b)**
 - **Legacy Health Information Exchange (HL7 V2 Messaging).**
- **Laika is being used by Health IT vendors, non-profits (CCHIT, IHE), and government (FHA Federal Partners) to support the adoption of interoperable systems.**

Demonstration



The screenshot shows the Laika Dashboard in a browser window. The browser address bar shows the URL: `http://demo.cchit.org/laika/vendor_test_plans/136/validate`. The page header includes a navigation menu with "News", "People & Inspections", "About", and "Feedback". The main content area is divided into several sections:

- Laika Logo:** A cartoon dog wearing a blue vest with the word "Laika" written on it.
- Navigation:** "Dashboard" (highlighted) and "Library" buttons.
- Test Results Summary:**
 - PASS** (indicated by a green bar)
 - Inspection ID: 342343-MAP-2007
 - Test Result Summary
 - 0 Validation Errors
 - 2 Content Warnings
 - 0 UMLS Warnings
 - Test Date: 03.03.2009
 - Test Proctor: Andy Gregorowicz
 - UMLS Coded: Enabled
 - Value Testing: (checkbox)
- XML Validation Results:**

Error Type	Error Message
--	No XML Validation Errors Detected
- Content Inspection Results:**

Warning Type	Warning Message
Content Inspection	1. Section: registration_information Subsection: person_name Field Name: Error Message: Couldn't find the patient's name
Content Inspection	2. Section: Allergy Error Message: Invalid allergy data
- UMLS Code Testing Results:**

Warning Type	Warning Message
--	No UMLS Coded Warnings Detected
- Vendor Generated XML:**

```
<?xml version="" encoding="" ?>
<ClinicalDocument sdtc="urn:hl7-org:sdtc" xsi="http://www.w3.org/2001/XMLSchema-instance" schemaLocation="urn:hl7-org:v3
http://xreg2.nist.gov:8080/hitspValidation/schema/cdar2c32/Infrastructure/cda/C32_CDA.xsd" xmlns="urn:hl7-org:v3">
  <typeId extension="POCD_HD000040" root="2.16.840.1.113883.1.3"/>
  <templateId assigningAuthorityName="CDA/R2" root="2.16.840.1.113883.3.27.1776"/>
```

Laika is the best way to create a C32 Continuity of Care document

Impacts



- **To date, 21 EHR systems certified as interoperable by CCHIT using Laika**
 - **More certifications to follow.**
- **FHA Federal Partners used Laika to create test cases for the NHIN October 2008 Milestone.**
- **Laika team participated as test monitors at 2009 IHE Connectathon.**

- **Building an open source business model for MITRE research**
 - **New support model for our partners**
 - **Industry contributions providing value for our sponsors while increasing business opportunities for contributors.**

Future Plans



- **Support for testing of Health Information Exchanges using XDS**
 - Current focus on EHRs using XDS to store and retrieve documents
 - HIE testing will focus on XDS Registries and Repositories.
- **Assist MITRE Sponsors integrating with the Nationwide Health Information Network (NHIN)**
 - NHIN is based on the same standards uses CCHIT in certification.
- **Provide tools for managing testing and certification in the cloud**
 - CCHIT is performing 2009 certification in Amazon's Cloud Computing infrastructure (EC2 and S3).
- **Continue work with NIST to provide solutions for the IHE Connectathon and other Health IT testing efforts.**