Bridging Patient Summaries across the Atlantic: The Trillium Bridge Project

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Trillium bridge has been co-funded by the EC under contract FP7-610756
eHealth market is demanding!

HL7 CDA is a powerful tool for incremental interoperability
- Endorsed and adopted by several governments
- Constrained with Templates and Implementation Guides
  - Developed independently... a cost to interoperability

eHealth market calls for agile processes
- Interoperability to lower costs
- plug-n-play interoperability assets

Can we do better?

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For Trillium to bloom, timing is everything!

EU and US Information and Communication Technology Policies embrace the triple win: quality, sustainability, innovation and growth:

- Digital Agenda for Europe 2020
- Affordable Care Act, HIEs, and Meaningful Use

Ensure **sustainability** of the healthcare system

Unlock the **market** for innovation

Deliver Quality Care - better care

EU/US Memorandum of Understanding & Roadmap on eHealth/Health IT collaboration

HL7 Foundation established in Brussels in 2010
HL7 Foundation in Europe: Projects & activities

Semantic Healthnet (2011-2014)
www.semantichealthnet.eu

eHGI (2012-2014)
www.ehgi.eu

Antilope (2013-2015)
www.antilope-project.eu

Trillium Bridge (2013-15)
www.trilliumbridge.eu

Expand (2014-2016)
www.expandproject.eu

Active in

- eHealth stakeholders group
- EFMI council – representative organizational members

European HL7 affiliate membership
957 orgs (2011)
Why Trillium Bridge?

What can we do to lower the cost of transatlantic business engagement in eHealth?

- Reduce barriers for transatlantic coordination, health care, trade
- Decrease standards development and implementation costs
- Accelerate convergence towards global standards
- Support right of citizens to their health data and safety

Well, perhaps we could try building...

...a Transatlantic Bridge for EHR summaries!

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Trillium Bridge Project

What:
- Pragmatic Feasibility study on the exchange of Patient Summaries across the Atlantic

How:
- Comparing, analyzing, and mapping patient summaries starting with Meaningful Use 2 C-CDA/CCD and EU patient summaries (epSOS)

When:
- From: July 2013 to February 2015

Who:
- A stellar consortium comprising EU member state ministries, provider networks, industry, associations, SDOs
Trillium Bridge constituency: a transatlantic community of Knowledge and Action

EpSOS National Bodies with Patient Access pilot
Objectives of Trillium Bridge

Building the Transatlantic bridge for patient summaries

- Use cases ➔ gap analysis ➔ demo->identify barriers /easy wins
- Interoperability assets ➔ Implementations ➔ Validation
- Policy alignment, future standardization, and sustainability
- Feasibility study to set the tone and pace for interoperability in the global eHealth ecosystem.

Attain the vision of EU-US eHealth MoU and roadmap!

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Milestones to success

Selecting the Grounds:
- Pilot Use Cases
- Business Architecture
- Gap Analysis

Building the Bridge:
- Aligning Structure & Terminology
- Trust Agreements
- Interoperability assets

Testing the Bridge:
- Testing Tools
- Data Sets
- Validation Reports

Pave the Bridge:
- Policy alignment
- Organizational, Legal, Regulatory Interoperability
- Feasibility Analysis
  - Cross-vendor integration
  - Incentives
  - Standardization
  - Innovative Business models
  - Education
  - Clinical Research
  - eIdentification, Security and privacy

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The patient feels sick and seeks healthcare in a country that is not his/her country of origin. As he/she frequently visits that country the health professional may have some clinical information about that patient in his/her own records. They will not normally have a language in common.
§ 170.205 Content exchange standards and implementation specifications for exchanging electronic health information.

170.205(a) Consolidated CDA (C-CDA):
(3) Standardized representation of the Consult Note, Diagnostic Imaging Report, Discharge Summary, History and Physical, Operative Note, Procedure Note, Progress Note, and Continuity of Care Document (CCD).

170.205(h) CDA Guide for Quality Reporting Document Architecture, Category I

170.205(i) CDA Guide for Reporting to Central Cancer Registries

170.205(k) CDA Guide for Quality Reporting Document Architecture, Category III (QRDA-III)
Meaningful Use Use Cases

§ 170.314(b) Care Coordination

   - Incorporate medications, problems, allergies
   - Create C-CDA
   - Medications, problems, allergies
7. Data portability.

§ 170.314(e) Patient Engagement

1. View, download, and transmit to 3rd party.
   - Patient’s ability to download clinical summary
2. Ambulatory setting only – clinical summary.
   - Patient receives patient summary after encounter
Trillium Bridge Use Cases

One Value proposition:
- When patient needs unplanned care overseas, a EHR summary fit for the purpose of safe and efficient health care is available.
- After the health care encounter, patient receives encounter report in a format and language that can be understood back home.

Two use cases:
- Provider mediated (citizen controlled, provider initiated)
- Patient mediated (citizen initiated, citizen controlled)

Blazing the transatlantic path – constraints and assumptions
- Translation of narrative unstructured content (not in scope)
- Incorporate patient summary elements in EHR or PHR (not in scope)
- Preconditions: citizen empowerment
  - EU Citizens have access to their EU Patient Summary (e.g. epSOS PAC)
  - US Citizens have access to their Clinical Summary in C-CDA/ CCD

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Provider Mediated Case: Technical Architecture Overview

National Contact Point (Italy)

National Contact Point (Spain)

National Contact Point (Portugal)

National Contact Points other interested MS

Lux, Finland, Greece, Slovenia...

IHE XCA
IHE XCPD
IHE ATNA
(epSOS)

Trillium Bridge Gateway
(based on the epSOS Open NCP)

Local Connector & eHealth Exchange Gateway

MU2
C-CDA/CCD

Transformer

Terminology Services
- EU epSOS master value sets (MVC/MTC)
- US core value sets (NLM)

MU2
C-CDA/CCD
Patient Mediated Case:
Technical Architecture Overview

- Italian (Lombardy) Portal (epSOS Patient Access)
- Spanish Portal (epSOS Patient Access Service)
- Portuguese Portal (epSOS Patient Access)
- Portal of other interested EU MS (Lux, Finland, Greece, Slovenia..)

Trillium Bridge Gateway (based on the epSOS Open NCP)

- MU2 C-CDA/CCD
- Tethered Personal Health Record or Health App or BlueButton+

Transformer

CTS-2

Terminology Services
- EU epSOS master value sets (MVC/MTC)
- US core value sets (NLM)

EU Patient Summary [epSOS Pivot (EN, PT, ES, IT)]
Trillium Bridge Gateway

EU citizen receiving unplanned care in the US
- EU Patient Summary [from the epSOS Patient Access Service]
- Input EU patient Summary [epSOS pivot document (EN)]
- Output MU2 C-CDA/CCD 1.0

US Citizen receiving unplanned care in the EU
- C-CDA/CCD [from Tethered/ Standalone PHR or Bluebutton+]
- Inputs C-CDA/CCD 1.0
- Output EU patient Summary [epSOS pivot document (EN, PT, ES, IT)]
- Web service or portal
- Patient Summary
- Encounter Report

Trillium Bridge Gateway (based on the epSOS Open NCP)

Transform between CDA/CCD and EU Patient Summary epSOS pivot (EN)

Translate EU Patient Summary epSOS pivot (EN) to Other epSOS Languages

Terminology Services
- EU epSOS master value sets (MVC/MTC)
- US core value sets (NLM)

CTS-2

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Comparing EHR Summaries:
EU Patient Summary vs US Clinical Summaries

- Same base Standard (HL7 CDA)
- Different philosophy: capture vs continuity of care
- Different IGs: C-CDA/CCD (US realm) vs epSOS IG
- Different technical approach: Open vs Closed Template
## Gap Analysis: Clinical Comparison (Body)

<table>
<thead>
<tr>
<th>epSOS/EU Patient Summary Guideline</th>
<th>EU PS Guideline</th>
<th>epSOS PS</th>
<th>CCD</th>
<th>Optionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section</td>
<td>Optionality</td>
<td>Optionality</td>
<td>Section</td>
<td>Optionality</td>
</tr>
<tr>
<td><strong>Allergy</strong></td>
<td>R</td>
<td>R</td>
<td>Allergies</td>
<td>R</td>
</tr>
<tr>
<td>Medical Alert Information</td>
<td>R</td>
<td>R</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>(other alerts not included in allergies)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccinations</td>
<td>O</td>
<td>O</td>
<td>Immunizations</td>
<td>O</td>
</tr>
<tr>
<td>List of resolved, closed or inactive problems</td>
<td>O</td>
<td>O</td>
<td>Problem</td>
<td>R</td>
</tr>
<tr>
<td>Surgical Procedures prior to the past six months</td>
<td>R</td>
<td>O</td>
<td>Procedures</td>
<td>O (R only for inpatients)</td>
</tr>
<tr>
<td>List of current problems / diagnoses</td>
<td>R</td>
<td>R</td>
<td>Problem</td>
<td>R</td>
</tr>
<tr>
<td>Medical Devices and implants</td>
<td>R</td>
<td>R</td>
<td>Medical Equipment</td>
<td>O</td>
</tr>
<tr>
<td>Major Surgical Procedures in the past six months</td>
<td>R</td>
<td>R</td>
<td>Procedures</td>
<td>O (R only for inpatients)</td>
</tr>
<tr>
<td>epSOS/EU Patient Summary Guideline</td>
<td>EU PS Guideline</td>
<td>epSOS PS</td>
<td>CCD</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------------</td>
<td>----------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>Treatment Recommendations</td>
<td>R</td>
<td>O</td>
<td>Plan of Care</td>
<td></td>
</tr>
<tr>
<td>Autonomy / Invalidity</td>
<td>R</td>
<td>O</td>
<td>Functional Status</td>
<td></td>
</tr>
<tr>
<td>List of current medicines</td>
<td>R</td>
<td>R</td>
<td>Medications</td>
<td></td>
</tr>
<tr>
<td>Social History Observations</td>
<td>O</td>
<td></td>
<td>Social History</td>
<td></td>
</tr>
<tr>
<td>Pregnancy history (Expected date of delivery)</td>
<td>O</td>
<td>O</td>
<td>Pregnancy Observation of the Social History</td>
<td></td>
</tr>
<tr>
<td>Physical findings (Vital Signs Observations)</td>
<td>O</td>
<td>O</td>
<td>Vital Signs</td>
<td></td>
</tr>
<tr>
<td>Diagnostic tests (Blood group)</td>
<td>O</td>
<td>O</td>
<td>Results Section</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td></td>
<td></td>
<td>Advance Directives</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td></td>
<td></td>
<td>Family History</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td></td>
<td></td>
<td>Payer</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td></td>
<td></td>
<td>Encounters</td>
<td></td>
</tr>
</tbody>
</table>

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## Gap Analysis: Sample Sections & Terminologies

<table>
<thead>
<tr>
<th>Coded Section (C-CDA/CCD)</th>
<th>C-CDA Code System</th>
<th>epSOS Value Set Name</th>
<th>epSOS terminology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergy/Adverse Event Type</td>
<td>SNOMED CT</td>
<td>epSOSAdverseEventType/epSOSReactionAllergy</td>
<td>SNOMED CT</td>
</tr>
<tr>
<td>Medication Clinical Drug Name Value Set</td>
<td>RxNORM</td>
<td>epSOSActiveIngredient</td>
<td>ATC</td>
</tr>
<tr>
<td>Vaccine Admin Value Set</td>
<td>CDC Vaccine Code (CVX)</td>
<td>epSOSVaccine</td>
<td>SNOMED CT</td>
</tr>
<tr>
<td>Problem</td>
<td>SNOMED CT</td>
<td>epSOSIllnessesandDisorders</td>
<td>ICD-10</td>
</tr>
<tr>
<td>Medical Equipment</td>
<td>N/A</td>
<td>epSOSMEDicalDevices</td>
<td>SNOMED CT</td>
</tr>
<tr>
<td>Medication Route FDA</td>
<td>FDA RouteofAdministration</td>
<td>epSOSRouteofAdministration</td>
<td>EDQM</td>
</tr>
<tr>
<td>UnitsofMeasureCaseSensitive</td>
<td>UCUM</td>
<td>epSOSUnits</td>
<td>UCUM</td>
</tr>
<tr>
<td>Vital Sign</td>
<td>LOINC</td>
<td>epSOSBloodPressure</td>
<td>LOINC</td>
</tr>
</tbody>
</table>

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Trillium Bridge: work ahead

- Complete initial Gap analysis (Mid March)
  - Align with S&I WG EHR Interoperability work stream
  - Release Deliverable D2.2: Comparing Patient Summaries in the EU and US: Gap Analysis and Pilot Use Case Definition

- Identify interoperability Assets
  - Deliver specs for Trillium Gateway and transformer
  - Provide prototype CTS-2 service

- Inform and support ONC S&I-led effort towards an HL7 SD WG project and JIC work item

- Demonstrate our early wins
  - eHealth Forum in Athens May 12-14, 2014
Next stop: Athens May 12-14, 2014

Looking forward to welcome you to Athens and meet Martha and Paolo crossing the Trillium Bridge with their patient summary

www.ehealth2014.eu
Parting Thoughts...

≥ eHealth standards are the safety net that strengthens the fabric of the global eHealth infrastructure.
  - Interoperability at affordable cost
  - Built once used anytime and anywhere
  - Working across cultures and borders

≥ Trillium Bridge leads health IT in enabling safe informed health care
  - Key to new market opportunities
  - Milestone in the path to a healthier world
  - Culture of collaboration, creativity, and understanding for the eHealth ecosystem.

Join us to engage, to benefit, to make a difference!

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More Than You Think

HL7 is people, HL7 is ideas, HL7 is collaboration