Integrating the Healthcare Enterprise (IHE):
Enable Seamless and Secure Access to Health Information

IHE-Europe
Peter Mildenberger (User Co-Chair)
Real-World (outside Healthcare)
Use Cases in Healthcare (examples)

• Practitioner to Hospital Communication
  – Appointments, transfer and re-use of informations
• Access to Lab-Results
• Exchange of imaging studies
  – Avoiding additional radiation exposures and costs
  – Comparison in follow-up studies
• Discharge letters from Hospitals
• ePrescription
  – Improving quality and safety,
  – avoiding medication errors
IHE is a world-wide initiative that enables Healthcare IT system users and suppliers to work together to enable interoperability of IT systems to improve quality, ensure patient safety and reduce costs.
What is IHE

• IHE: Integrating the Healthcare Enterprise
• IHE uses an open, consensus-based process to engage users, providers and suppliers of health IT solutions to identify and solve interoperability problems
• IHE is an international SDO of users and vendors
• IHE is ISO Liaison A
What’s in it for Patients?

• **IHE** improves patient care by providing a common standards-based framework for seamless exchange of health information among care providers at a local, regional or national level.

• **Benefits:**
  – *Safety* through the reduction of medical errors with secure, interoperable health IT systems
  – *Satisfaction* through better informed medical decisions and timely presentation of up-to-date clinical information
  – *Savings* through lower implementation costs and more efficient workflow
Generic Process:

- First in Radiology, but not specific for Radiology
IHE Integration-Profile

- Based on Standards
- Critical Interoperability Issues
- Availability of Information
- Workflow-Support
- Security / Privacy
- Support for Administration
- IT – Infrastructure
- Definition of
  - Actors
  - Transactions
  - Information-Structure
IHE Technical Framework

- A common framework for harmonizing and implementing multiple standards
  - Application-to-application
  - System-to-system
  - Setting-to-setting
- Defines Integration Profiles, Actors and Transaction to enable seamless health information movement within and between enterprises, regions, nations
- Anatomy of an integration profile from need to solution
- Building blocks: available standards
  - HL7, Oasis, DICOM, etc.
- IHE has established a standard process for implementing multiple standards
IHE Technical Framework

Base Standards

IHE Projects

Profile Development

Project Specific Extensions

Profiling: Constraining “optionality”
IHE Domains
17 Years of Steady Evolution 1998 – 2014
IHE National Initiatives

• Essential part of the deployment process of IHE
• Know their local turf, help socialize IHE
• Cultivate relationships with local stakeholders
• Coordinate the deployment of IHE Integration Profiles and provide feedback to development committees
• Participate in the global IHE community
• Provide experts
IHE National Initiatives

• USA
• Canada
• Europe
  – Italy
  – Spain
  – Germany
  – Turkey
  – Switzerland
  – Austria
  – Luxembourg
  – Belgium
  – The Netherlands
  – UK
  – France

• China
• Saudi Arabia
• Colombia
• Korea
• Taiwan
• Australia
• Japan
• Under formation
  – India
  – South Africa
  – Brazil
  – Adriatic (former Yugoslavia)
  – Greece
  – Sweden
  – Finland
  – Portugal
IHE worldwide

- **IHE-Europe**
  - 5 User Organisations
  - 11 Vendors
  - 10 national IHE-Organisations (Deployment-Committees)
    - Austria, Belgium, France, Germany, Italy, Luxembourg, Netherlands, Spain, Suisse, Turkey, United Kingdom
    - “Adria“, Finland and Portugal in constitution

- **IHE International**
  - Central coordination
  - Publication of Profiles (available for free)
  - About 600 members
IHE-Europe

• **EU-Affairs Committee:**
  – To develop awareness of the European Commission, Policy Makers and Stakeholders on eHealth Interoperability and more specifically on IHE profiles by
    • Contributing to European projects
    • Developing support and training
  – To support IHE national initiatives.

• **IHE-Services:**
  – Test sessions
  – Gazelle testbed platform and testing tools
  – Support to implementers (national, regional and enterprise projects)
  – Conformity assessment testing
IHE-Europe

• Engaged in several EU-Projects
  – HITCH, Antilope, epSOS, EXPAND, TrilliumBridge...

• Growth of IHE-Services
  – New customers/users
  – Investments in operationalizing use of Gazelle for national projects

• Announcement on Gazelle ObjectsChecker
  – The next generation of CDA, DICOM, HL7 test tool
  – Use input from CDA specification tools (e.g. Art-Décor)
Use of IHE Profiles in eHealth Projects

Selecting Profiles for Interoperability Specification

Key health systems objectives

Business Use case A

IHE Profiles

Profiles for Use Case A

Content & Terms
- Patient summary
- Lab Report
- Imaging Info Exchange
- ECG Report
- . . .

Services
- Patient Demographics
- X Document sharing
- Health Provider Directory
- . . .

Security and Privacy
- Consent management
- Audit Trail
- . . .

Interoperability Testing
Use of IHE Profiles in eHealth Projects

Selecting Profiles for Interoperability Specification

Key health systems objectives

Business Use case A

Technical Use case 1
Technical Use case 2
Technical Use case 3

IHE Profile for Content
IHE Profile Sharing Doc Services
IHE Profile Patient Id Mgt
IHE Profile for Security
IHE Profile for Privacy
Custom Profile for Terms

IHE Profiles

Combination / Glue

IHE Profile for Content
Custom Profile for Terms
IHE Profile Sharing Doc Services
IHE Profile Patient Id Mgt
IHE Profile for Security
IHE Profile for Privacy
IHE Europe Connectathon 2015

Ongoing in Luxembourg this week, in Luxexpo!
What is a Connectathon?

- Cross-vendor, live, supervised, structured tests
- Testing of real-world clinical scenarios using IHE Integration Profiles
- Supervised by Technical Project Management team
- Attending vendor’s products are tested in the same place and time
- Each vendor tests with multiple trading partners/vendors
  - actual product to actual product
- Vendors experts are available for immediate problem resolution...
  - fixes are done in minutes, not months!!
- IHE provides the Test Management Tool
  - Gazelle, NIST (test management, execution, results)
- Successful results are recorded and available using automated tools, and are published by IHE sponsors
Did you know...

• The first Connectathon
  – Was held in 1999 in Chicago
  – 23 vendors, 47 systems tested, 1 Integration Profile

• The European Connectathon in 2015
  – Is here in Luxembourg!
  – 89 systems from 76 vendors tested (2.000+ tests)
  – 300 overall participants
  – 50 monitors
  – epSOS Projectathon, testing cross-border patient data exchange among 6 EU member states
  – Conformity Assessment Testing
# IHE Integration Statement

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Product Name</th>
<th>Version</th>
<th>Date (dd/mm/yyyy)</th>
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<tr>
<td>Big Medical Buisness</td>
<td>RIS2003</td>
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<td>15/10/2003</td>
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<table>
<thead>
<tr>
<th>Integration Profiles Implemented</th>
<th>Actors Implemented</th>
<th>Options Implemented</th>
</tr>
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<tbody>
<tr>
<td>Scheduled Workflow</td>
<td>Department System Scheduler/Order Filler</td>
<td>None</td>
</tr>
<tr>
<td>Scheduled Workflow</td>
<td>Performed Procedure Step Manager</td>
<td>None</td>
</tr>
<tr>
<td>Patient Information Reconciliation</td>
<td>Department System Scheduler/Order Filler</td>
<td>None</td>
</tr>
</tbody>
</table>

**Internet address for vendor’s IHE information:**

http://www.big-buisness.com

**Links to Standards Conformance Statements for the implementation**

- Health Level 7: http://www.big-buisness.com/HL7
- Dicom: http://www.big-buisness.com/DICOM

**Links to general information on IHE**

- In North America: http://www.rsna.org/IHE
- In Europe: http://www.ihe-europe.org
- In Japan: http://www.jira-net.or.jp/ihe-j
IHE Advantages

• International in scope
• Pragmatic, solve real-world problems
• Broadest scope of expertise
  – internationally, with the domains, and the breadth of volunteer and vendor involvement
• Open access, “free” resource
• Transparent, accessible organization
  – wealth of information in wiki
• Unique testing processes, methodology, tool set
• Offerings are comprehensive - “the whole package”
Today 14:00-17:30

IHE Symposium: Interoperability in Practice for eHealth and mHealth

Presented by IHE-Europe and Agence eSanté Luxembourg

Welcome Addresses
Xavier Bettel (Prime Minister & Minister for Communications and Media, Luxembourg)
Lydia Mutsch (Minister of Health, Luxembourg)

IHE Overview and New Directions
Quality in eHealth Interoperability: IHE Conformity Assessment
Interoperability for mHealth Applications: New IHE Profiles for Mobile Use
Unwired Health: Create Step-change Innovations in Mobile Patient ICTs
eHealth in the European and International Landscape
Outcome & Continuation European Projects (EPSOS/EXPAND)
Portugal-Luxembourg Example
EU-USA Trillium Bridge

Changing the Way Healthcare Connects
Providers and Vendors Working Together to Deliver Interoperable Health Information Systems in the Enterprise and Across Care Settings

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