IHE
SERVICES

IHE Services portfolio, current activities and best practices in Europe

Alexander Berler
IHE Services Sales and Partners Director

IHE-Services

- Formally created in 2012
- Built upon a long experience in interoperability testing management and experience with epSOS.
- IHE-Services has the goal to offer <u>professional services</u> to support IHE Members as well as national/regional authorities, local projects or any other organisations deploying IHE profiles for their ehealth projects

IHE Services Catalogue

1. Connectathons and Projectathons

2. Gazelle Test Bed and Tools

3. Training

4. Virtual Connectathons

5. Consulting / IoP Specifications

6. Tailored Test Tools

New!

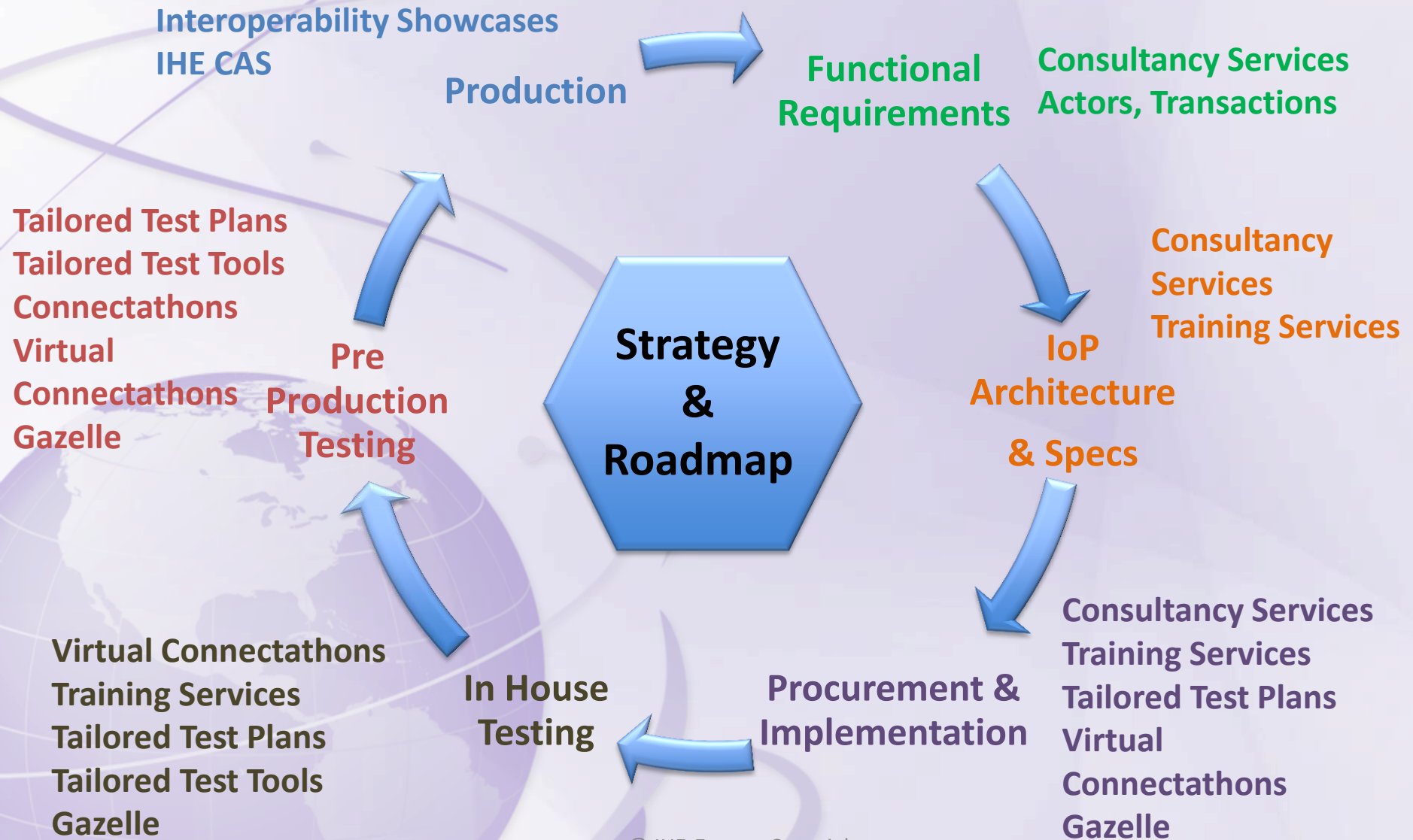9. Conformity Assessment/Report

8. Interoperability Showcases

7. Tailored Test Plans

IHE Service & Project Lifecycle

Interoperability Showcases
IHE CAS

Production

Functional
Requirements

Consultancy Services
Actors, Transactions

Tailored Test Plans
Tailored Test Tools
Connectathons
Virtual
Connectathons
Gazelle

Pre
Production
Testing

Strategy
&
Roadmap

IoP
Architecture

& Specs

Consultancy
Services
Training Services

Virtual Connectathons
Training Services
Tailored Test Plans
Tailored Test Tools
Gazelle

In House
Testing

Procurement &
Implementation

Consultancy Services
Training Services
Tailored Test Plans
Virtual
Connectathons
Gazelle

IHE Services Partner Network

Partners → **IHE services**

- Local/Regional Channels
- Manpower
- Knowledge of Regional Peculiarities
- Local / Regional Projects

Partners ← **IHE services**

- Test Management – Test Plans
- Gazelle infrastructure
- Expert Knowledge - Specifications
- Training

IHE Connectathon

- Open invitation to vendor and other implementers community

- Advanced testing tools (GAZELLE, a GITB platform)

- Testing organized and supervised by project management team and monitors

  ISTQB
  International Software
  Testing Qualifications Board

- Thousands of cross-vendor tests performed

- Results recorded and published

Connectathons in Europe

European Connectathons

2001: Charenton-le-pont Paris, France
2002: Villejuif in Paris, France
2003: Aachen, Germany
2004: Padova, Italy
2005: Noordwijkerhout, The Netherlands
2006: Barcelona, Spain
2007: Berlin, Germany
2008: Oxford, UK
2009: Vienna, Austria
2010: Bordeaux, France
2011: Pisa, Italy
2012: Bern, Switzerland
2013: Istanbul, Turkey
2014: Vienna, Austria
2015: Luxembourg
2016: Bochum, Germany
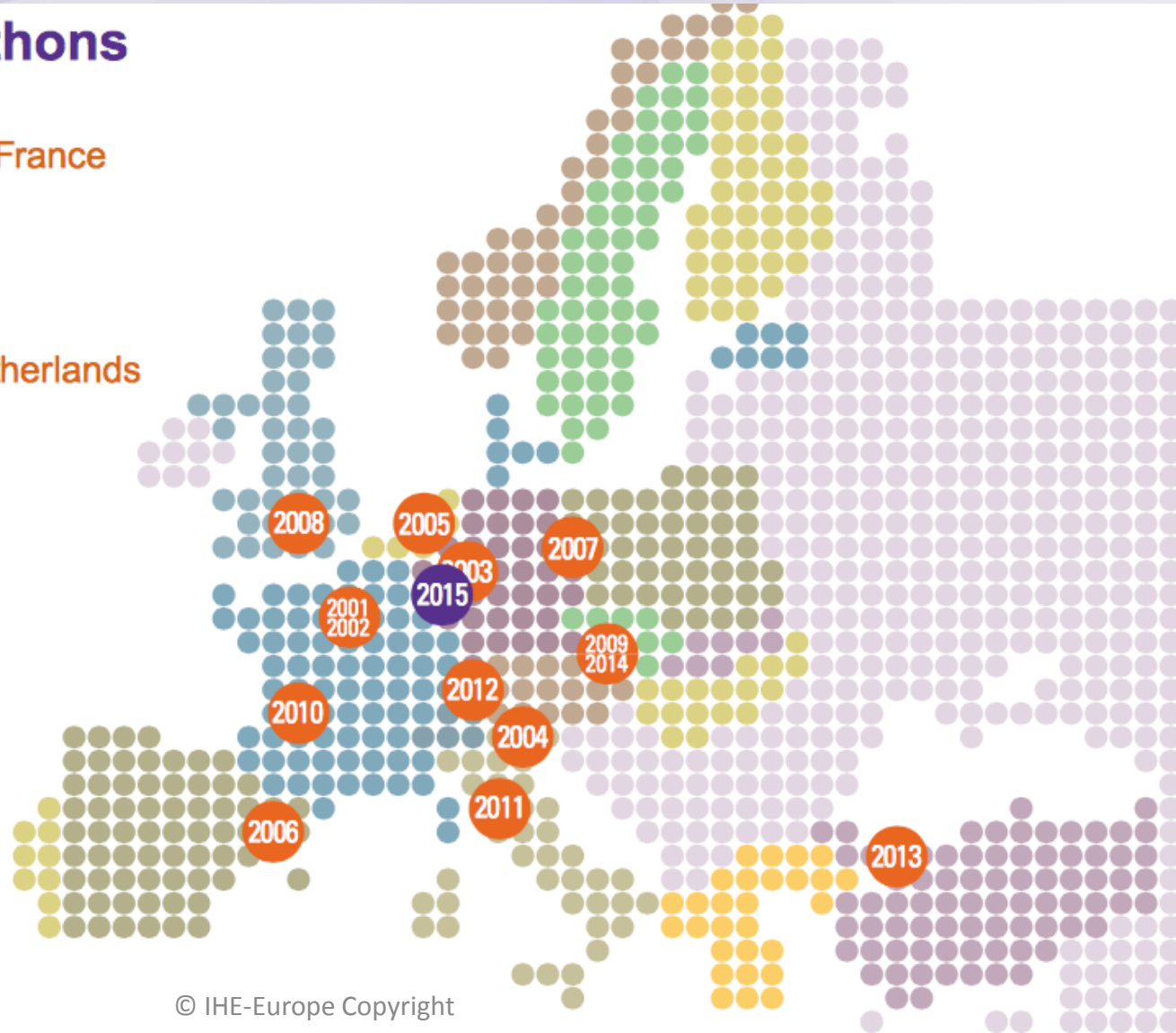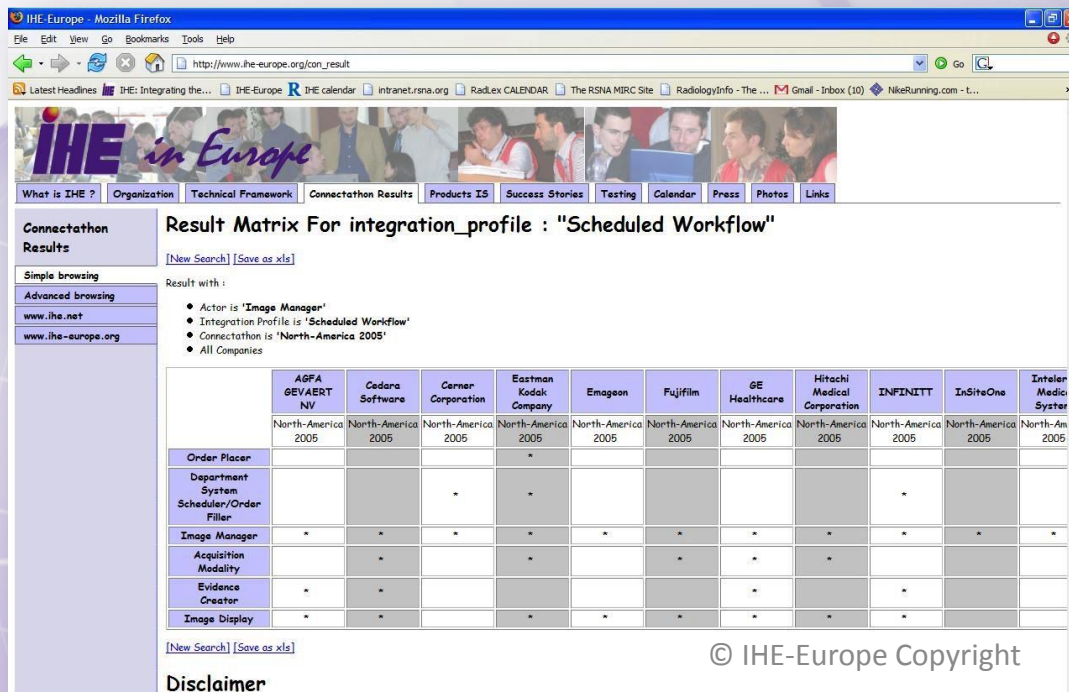
Connectathon Results Browser

On-line registry showing for all Connectathons worldwide which vendors have successfully passed the tests with their products for a selected set of IHE Profiles.

❖ Health IT suppliers have the opportunity to showcase the IHE competency of their company.

❖ Health IT buyers can easily search for evidence of supplier's IHE claims.

http://connectathon-results.ihe.net/

Product Registry

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Projectathons

- epSOS projectathons since 2011

- EXPANDATHON

  – Lisbon 9-11 December 2015

  – http://www.expandproject.eu/expand-final-event-lisbon-ehealth-week/

Gazelle Test Framework

- ❖ Test management tool oriented toward interoperability and conformance testing.
- ❖ Suite of conformance testing tools.
- ❖ Suite of simulators tools.

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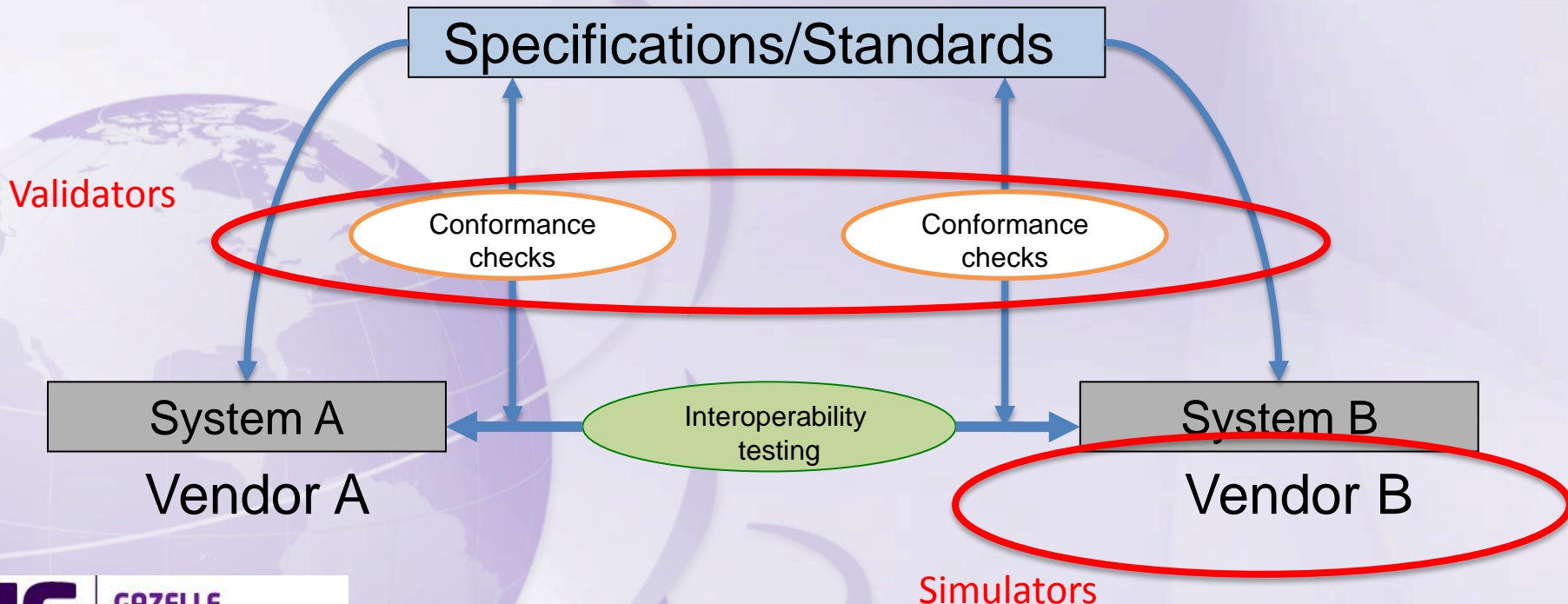
Available IHE Validation Tools

❖ HL7v2 messages

❖ DICOM objects

❖ XML documents/messages

  ➢ HL7 CDA Structured Document

  ➢ HL7v3 messages

  ➢ IHE XD* transactions metadata

  ➢ DSUB metadata

  ➢ HPD messages

  ➢ Sharing Value Set messages content (SVS)

  ➢ Workflow documents (XDW)

  ➢ ATNA audit messages

  ➢ X509 certificates

  ➢ SAML Assertions

GAZELLE
eHealth test framework
for interoperability

Available IHE Simulators

❖ Patient Manager

  ➢ ITI profiles relative to patient demographics exchange

  ➢ PAM, PIXv2, PDQv2, ADT part of SWF

❖ Order Manager

  ➢ Profiles dealing with management of orders

  ➢ LAW, LTW, SWF, EYECARE workflow

❖ XD* Client : Initiators from the XD* profiles, DSUB, XDS-I.b

❖ Sharing Value Set

❖ Healthcare Provider Directory

❖ Hospital Medication Workflow (Pharmacy)

❖ Lab Barcode Labelling

❖ Lab Code Set Distribution

Gazelle Support Tools

- Sharing Value Sets
  - http://gazelle.ihe.net/RetrieveValueSet?id=1.3.6.1.4.1.21367.101.103
  - http://gazelle.ihe.net/RetrieveValueSet?id=1.3.6.1.4.1.21367.101.103&random=true
  - http://gazelle.ihe.net/RetrieveValueSet?id=1.3.6.1.4.1.21367.101.103&code=A

- Generation/signature of certificates for testing purposes
  - http://gazelle.ihe.net/pki

- Security - Front-end to simulate a TLS connection (HL7v2, DICOM, WS, Syslog
  - http://gazelle.ihe.net/tls

- Gazelle Proxy: Capturing messages exchanged between partners
  - http://gazelle.ihe.net/proxy

- Demographic Data Server: On demand generation of demographic data
  - http://gazelle.ihe.net/DDS

- Assertion Manager: Manage requirements
  - http://gazelle.ihe.net/AssertionManagerGui

GAZELLE
eHealth test framework
for interoperability

Gazelle *ObjectsChecker new!*

- A methodology to describe informal requirements in healthcare IT specifications based on CDA standard, into a formal description

- An architecture that allows :
  - The validation of the conformance of **any kind of XML requirements**
  - Provide metrics and documentary features
  - Improve the **coupling between rules and requirements**
  - Support the **validation of inheritance** between specifications
  - Coupled with **Art Décor** CDA tool
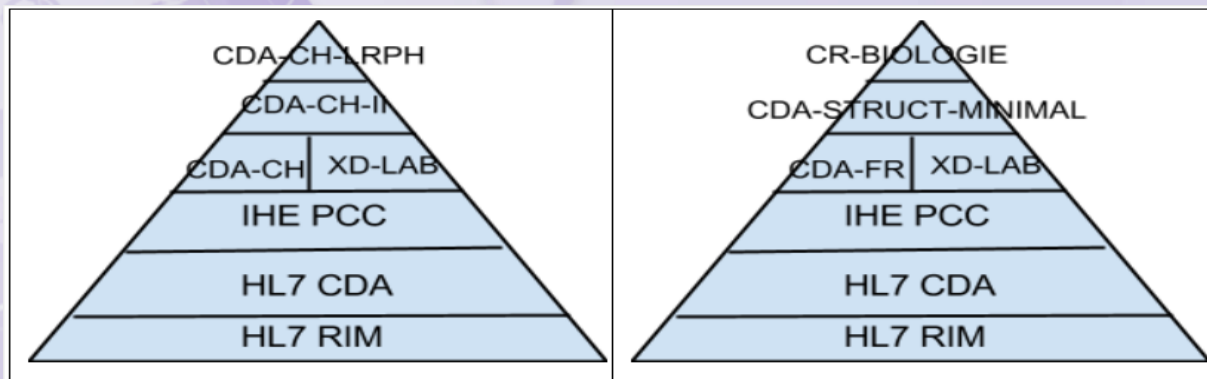
Gazelle Maintenance Packages

- **Two** versions of Gazelle (Open source)
  - Community (non-supported)
  - Enterprise (supported + validated)
- **Enterprise** Versions
  - In House
  - Cloud Basic
  - Cloud Premium
  - Cloud EVS
- Maintenance Packages are a **combination of maintenance and additional services tailored to customer's needs** (specification creation, training, consultancy, custom test tools, custom test plans, virtual connectathons, projectathons etc.)

Community Edition	Enterprise Editions			
	Cloud Basic	**InHouse Edition**	**Cloud Premium**	**Cloud EVS**
Downloadable public domain files	Hosted @ IHE Services Basic Pack	Onsite Installation	Hosted @ IHE Services Premium Pack	Hosted @ IHE EVS Services only

Gazelle Usage by Veneto Region, Italy

arsenàl.IT
centro veneto ricerca e innovazione
per la sanità digitale

- Suitable tool for the certification process for systems involved in the regional HIE

- Used in the context of ePrescription, eDispensation, Patient management, laboratory Information system

- 67 systems with 118 users

Proxy Tool: Allows to view the list of messages passing from the initiator system to the responder one and to analyze them. In total, 29322 messages passed through the proxy tool.

Feedback on Gazelle

arsenàl.IT
centro veneto ricerca e innovazione
per la sanità digitale

- A valid and structured **method for certification** of software systems (keeping log files, timing, etc.)

- Configurable to **add regional technical specs** as new integration profiles

- Organize **use cases in test cases** and test steps giving a clear and structured process to vendors

- **Guidance to developers**

- Keeps **track of test execution**, test status evolution

- **Proxy tool** shows the real sequence of transactions between systems, the actual exchange of messages and possible errors

- **EVS Client Validator** gives vendors a rapid feedback about the correctness of messages providing a precise result, with the details of errors or the positive outcome.

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Training

- IHE Service in association with expert partners supports training sessions
  - IHE profiles training
  - IoP Basics
  - Tailored training
  - National/Regional strategy support
  - End user engagement – awareness
  - Vendor training

Training course
IHE XDS Advanced

- **What is covered**
  - This training course provides the attendee with hands-on troubleshooting experience. It also offers guidance on how to design, develop and test software that uses the XDS/XDS-I/XCA specifications. Available XDS/XDS-I/XCA implementation toolkits (public domain, commercial) is covered as well. This is a hands-on training course; at least 50% of the time is spent on hands-on exercises.
  - Number of Days: 2 days, 09:30 to 17:00.

- **Learning goals**
  - After this training course the attendees will be able to:
  - Troubleshoot XDS/XDS-I/XCA connectivity issues
  - Use XDS/XDS-I/XCA simulation and validation tools
  - Help their organization to determine how they might implement XDS/XDS-I/XCA
  - Understand how XDS/XDS-I/XCA fit within common software-engineering principles.

- **Stay tuned for next training session!**

4. Virtual Connectathons

Virtual Connectathons

- IHE Services can establish and operate a virtual testing session for
  - Educational purposes
    - IICC
  - Pre-procurement purposes
  - Vendor engagement
    - Arsenal.IT
  - Pre Connectathon Testing
    - Expandathon
  - Pre production testing
    - epSOS
  - In House testing
  - Testing support for a specific certification/labelling scheme

IVD Industry Connectivity Consortium (IICC)

- Establishing a Virtual Connectathon Facility for IICC and its supporters

  – Helpdesk, training, support to participants

- Update the Gazelle tools to meet the latest version of the LAW supplement (1.4)

- 6 International participants

- Self financed by participants

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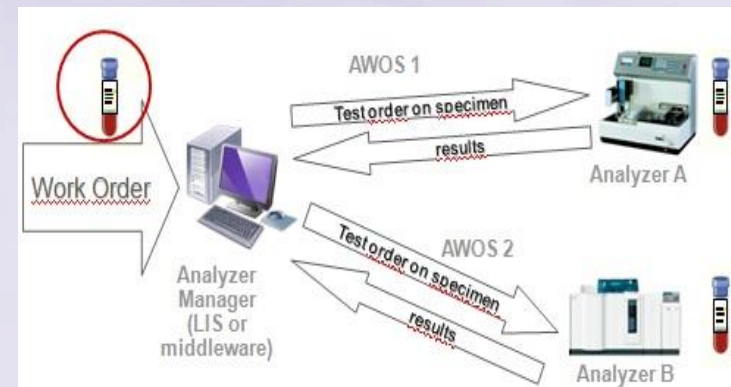
Consultancy – IoP Specifications

- IHE Services provides expert support for:
  - Interoperability specifications
  - Interoperability Architecture design
  - Test Tools
  - Test Plans
  - Training Programs
  - Healthcare information Exchange Governance
- IHE Services support the lifecycle of project and enhances quality and rigor in the cycle of healthcare related software
  - Specifications linked to test plans, test tools, labeling or certification schemes.
  - Then supported by Gazelle platform

Greek Patient Summary Core Interoperability Specifications
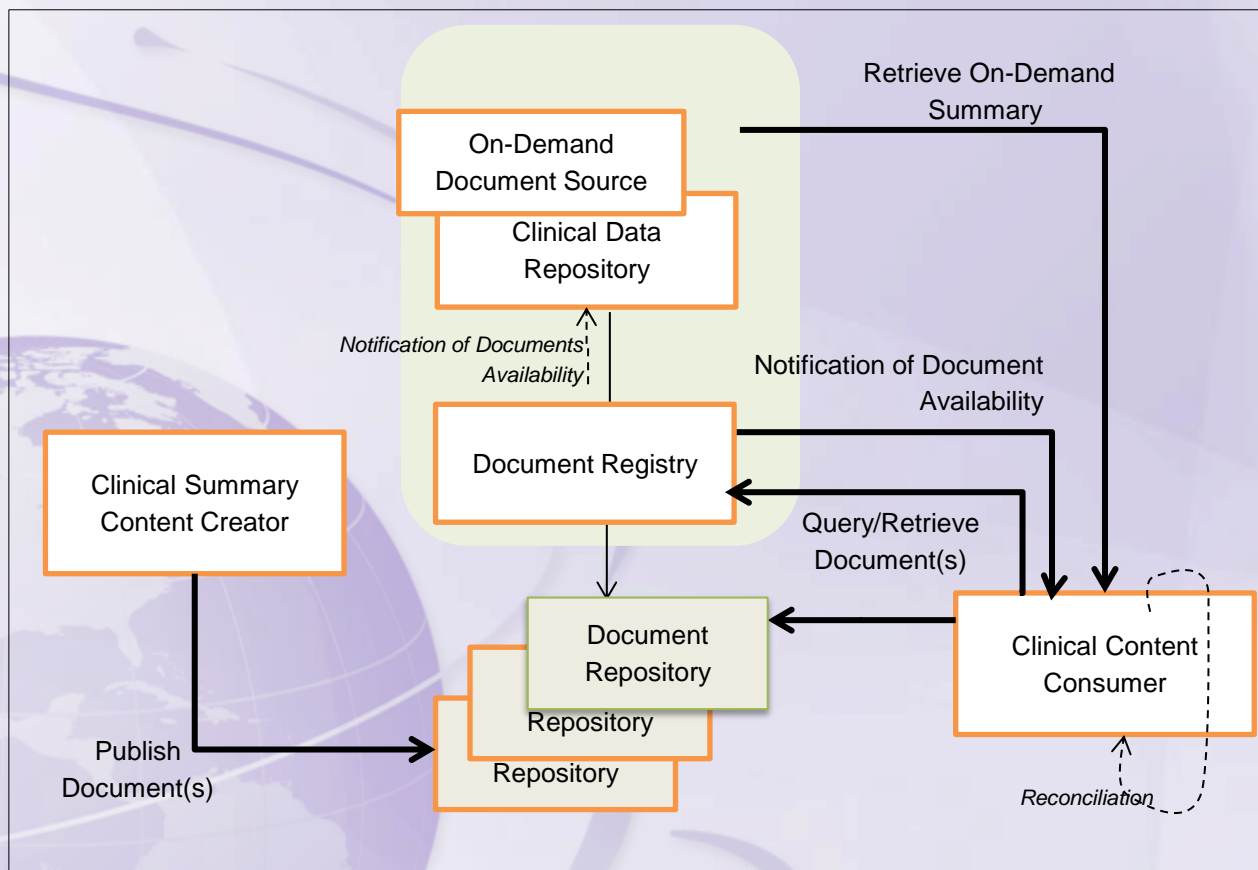
Tailored Test Tools

- IHE services provides consultancy and implementation services to create new testing tools for
  - IHE profiles national/regional extensions
  - New IHE profiles
  - Custom / Local testing tools
  - National Program support
  - Validation tools - ObjectsChecker
  - Simulator tools
  - Continuous integration between specification – testing tools – test plans

Tailored Test Plans

- IHE Services can provide consultancy and expertise on creating
  - Analytical test plans
  - Link test plans to tools
  - Link test plans to specification
  - Link test plans to IHE profiles
  - Create test plans for IHE profile extensions

BP6 and PAM profile

Interop'Santé
Pour des systèmes d'information communicants

- Charte BP6 provide a methodology for the improvement of the interoperability in hospitals and more specifically for the patient venue in hospitals based on IHE profile

- InteropSanté published three documents:
  - Diagram of states for the patient venue
  - Messages Interaction list
  - Set of test scénarios for real business cases

- Use of Gazelle
  - To test the profiles PAM and its French extensions dedicated to the PMSI and T2A
  - Common understanding on messages and their uses
  - Support to
    - The implementers when developing their systems
    - Check the conformity of their software development
    - Validate the extensions (BP6 working Group)
    - Next step: Test sessions

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Interoperability Showcases

IHE Conformity Assessment

- Test Report provided by a trusted neutral organization (generally called testing laboratory) that guarantees that the IHE profile implementation in a commercial products is positively tested against an IHE intl conformity assessment scheme defined in term of ISO17025.
  - Specific version of a specific product
  - Requires vendor to pass connectathon for seeking profile conformity assessment
- 4 SUT's successfully tested in 2015 under CAS 2015

Links

- IHE-International: www.ihe.net
- IHE-Europe: www.ihe-europe.net
- Link to Product Registry :
    - http://product-registry.ihe.net
- Documentation :
    - http://gazelle.ihe.net/content/product-registry
- Conformity Assessment Program: http://ihe.net/Conformity_Assessment.aspx
- IHE Services web site: http://www.ihe-services.net
- Gazelle web site: http://gazelle.ihe.net

Any Question ?

www.ihe-Europe.net