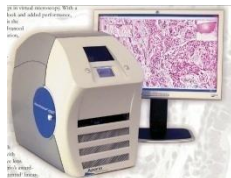


# COST IC0604 – WG2 Standards IHE/HL7 Anatomic Pathology

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C.Daniel  
August 27, 2011  
Helsinki



Meeting material:  
[http://wiki.ihe.net/index.php?title=Anatomic\\_Pathology](http://wiki.ihe.net/index.php?title=Anatomic_Pathology)

# Agenda

- Change proposals (3:00 – 3:30)
  - Electronic request (M.Garcia)
    - Castilla de la Mancha experience (ISOFT) & discussion about the structured content
  - New APSR templates (for biobanks, M.Kennedy – NCI)
- Integration profile : Reporting workflow (G.Rodriguez – SATEC) (3:30 – 3:45)
- White paper : enhanced imaging workflow (T.Schrader) (3:45 – 4:00)
- PathLex (4:00 – 5:00)
- Next steps (5:00-5:30)
  - Road map – Next meetings – Co-chair election
  - Deployment & Governance

# IHE Anatomic Pathology TF

- Current Technical Framework - Revision 2.0  
July 23, 2010
  - Vol. 1 (PAT TF-1): Integration Profiles
  - Vol. 2 (PAT TF-2): Transactions
  - **Anatomic Pathology Workflow (APW)**
- Supplements for Trial Implementation
  - will be tested at subsequent IHE Connectathons
  - Anatomic Pathology Reporting to Public Health (ARPH) - Published 2010-07-23
  - Anatomic Pathology Structured Reports (APSR)
    - Published 2011-03-31
    - APSR Value Sets Appendix - Published 2011-03-31

Change proposal  
**Electronic request**  
PAT-1 Placer Order Management (HL7)

M.Garcia

# Change proposal New APSR templates

# Background (templates 2010-11

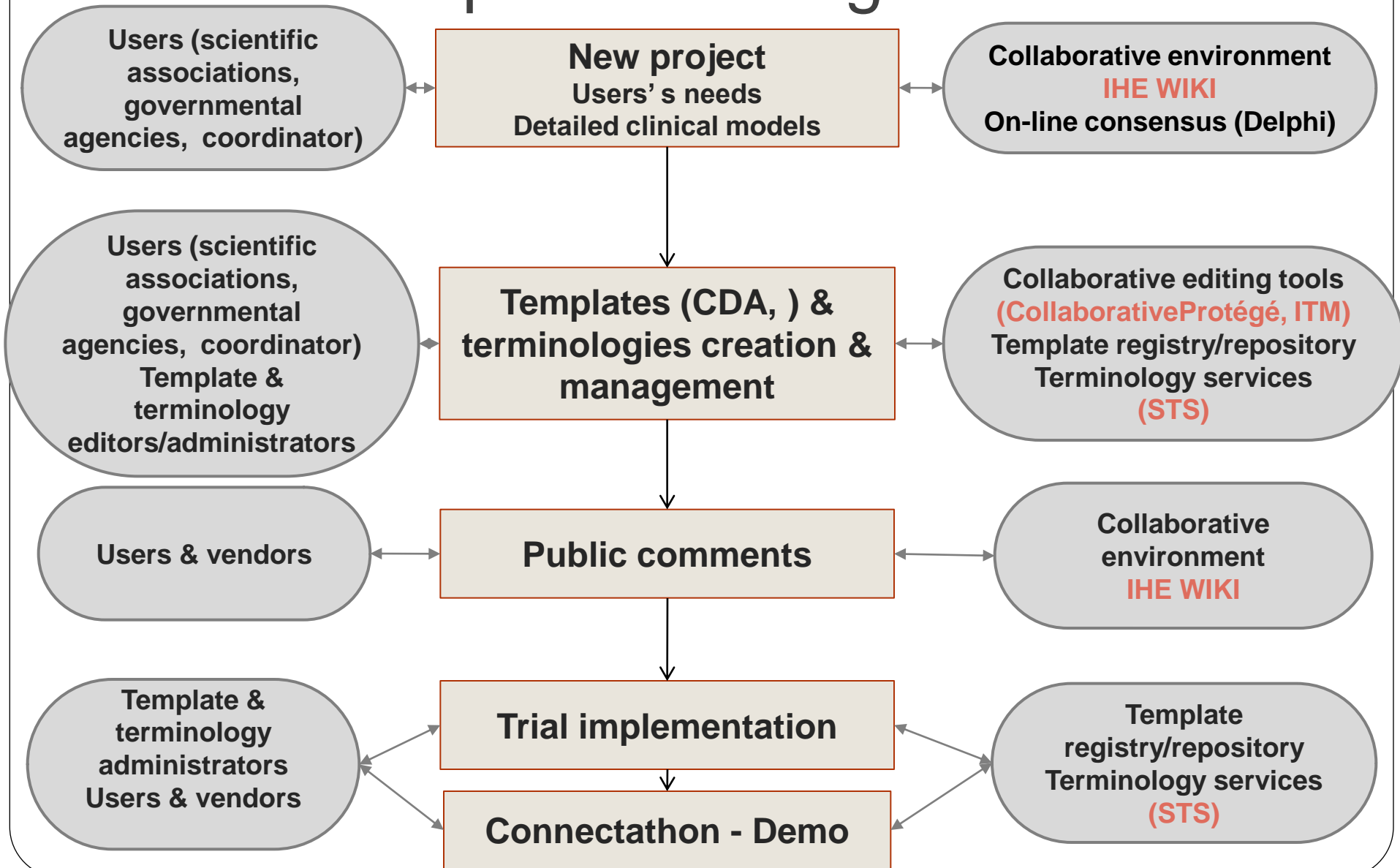
## From clinical document models...

- Recent recommendations for required, preferred, and optional elements for any APR of surgical pathology, regardless of report types [Goldsmith 08]
- National initiatives
  - Anatomic Pathology SR (Netherlands, Germany, Australasia)
  - Cancer APSR
    - US - CAP (College of American Pathologists)
      - 67 cancer checklists and protocols (October 2009)
    - France - SFP (French society of pathology) – INCa (French National Cancer Institute)
      - Minimum data sets for cancer APSR in 20 locations (85% of new cancers in France) (required by accrediting bodies)
    - Australasia
      - 6 templates for cancer APSR
    - UK Royal college

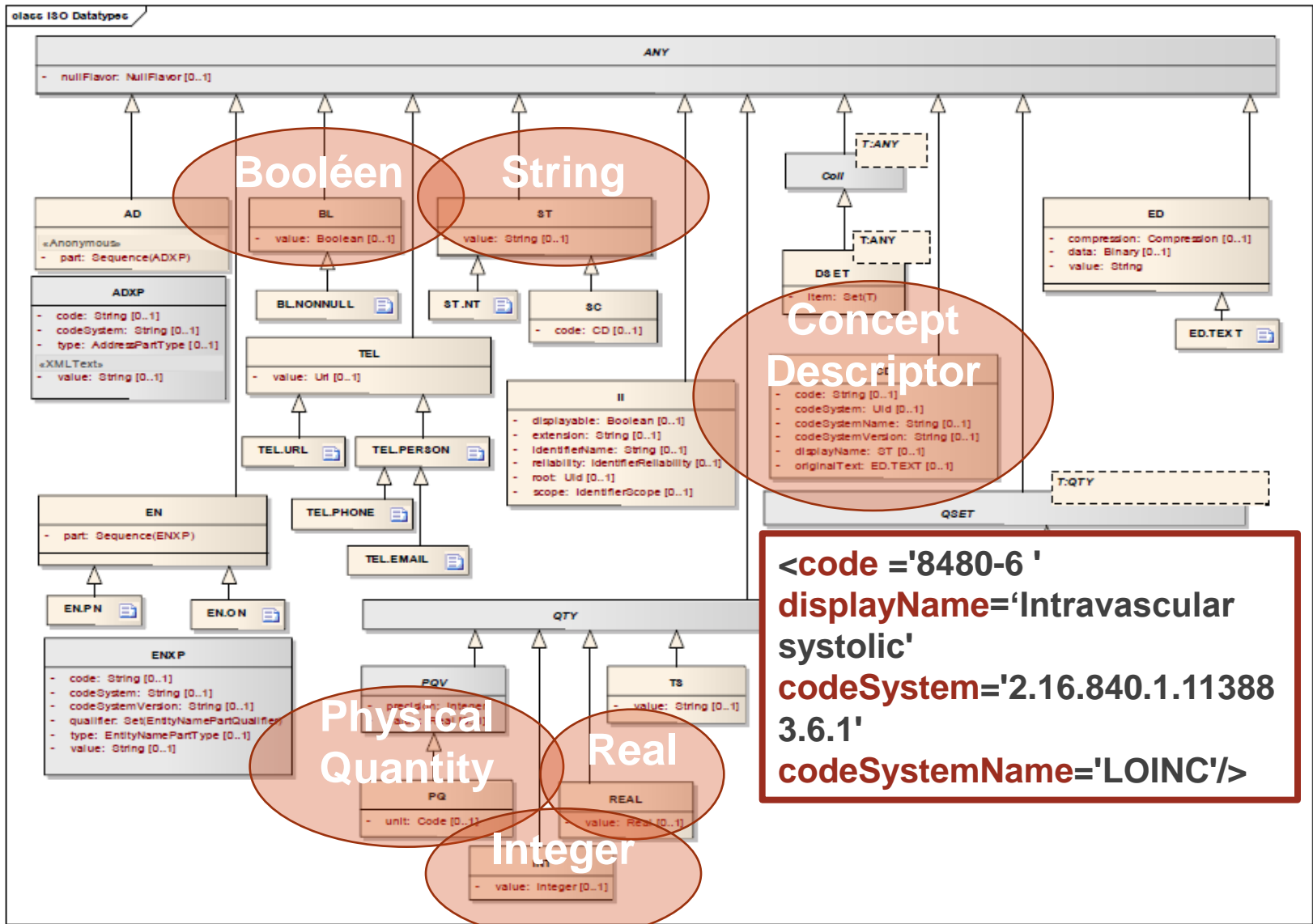
# New APSR templates

- Thematic needs
  - Patient care coordination
    - Surgical pathology
      - New organ-specific templates (n=20 -> 80)
      - All specimen types (biopsies, cytology, etc)
    - Autopsy
  - Public health (e.g screening)
  - Research (e.g bio-banking)
    - AP observations for biomarkers
- National needs
  - France : 7 new locations
- International governance?
  - Building and maintaining templates & their semantic is far from being only an “implementer’s issue”
  - Harmonization?
    - US CAP Cancer checklist/ RCPA (Australasia)/UK RCP

# Governance, methodology & tooling for templates management



# HL7 Data types





# STS (Standard Terminology Server)

## WebService

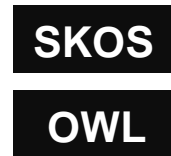
Phast RLIO - Webservice - Version 2.1.25 du 04/03/2011

Les opérations suivantes sont prises en charge. Pour une définition formelle, prenez connaissance de la [Description du service](#).

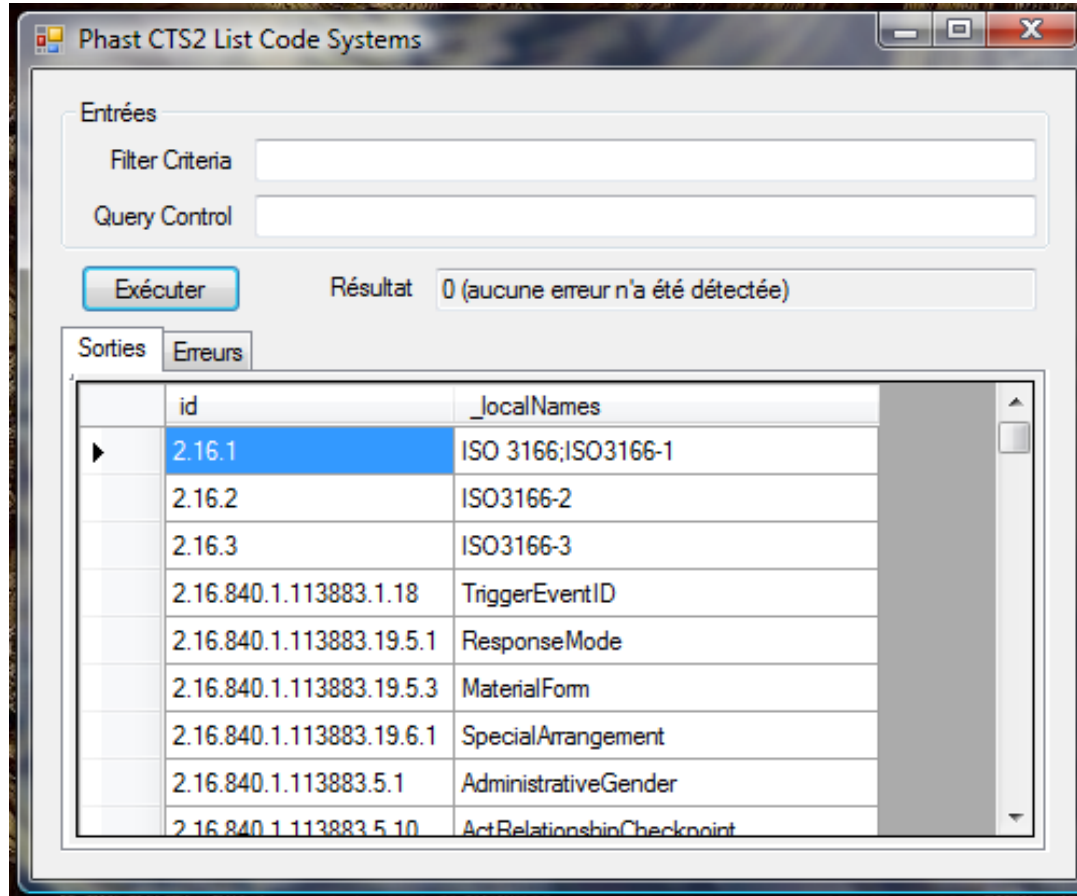
- [CTS2 Beta ChangeCodeSystemStatus](#)  
Changes the state of a code system (includes inactivation, activation etc.)
- [CTS2 Beta CheckConceptToConceptDomainAssociation](#)  
Determine whether the supplied coded concept exists in a code system in use for the specified concept domain
- [CTS2 Beta CheckConceptValueSetMembership](#)  
Determine whether the supplied coded concept exists in the supplied value set
- [CTS2 Beta CheckValueSetSubsumption](#)  
Determine whether one of the two supplied value sets subsumes the other
- [CTS2 Beta ComputeSubsumptionRelationship](#)  
Subsumes tests whether the parent coded attribute subsumes (is implied by) the child
- [CTS2 Beta CreateAssociation](#)  
Relates a single specific coded concept (source) to a corresponding single specific coded concept (target) within the same or another code system
- [CTS2 Beta CreateAssociationType](#)  
Create a new relationship type, an instance of which may be used to link two concepts
- [CTS2 Beta CreateCodeSystem](#)  
Create a new Code System to contain a set of new coded concepts

- About 20 « read only » services are available
- Testables via STS web site

CTS2



# STS (Standard Terminology Server)



CTS2



SKOS  
OWL

Integration profile

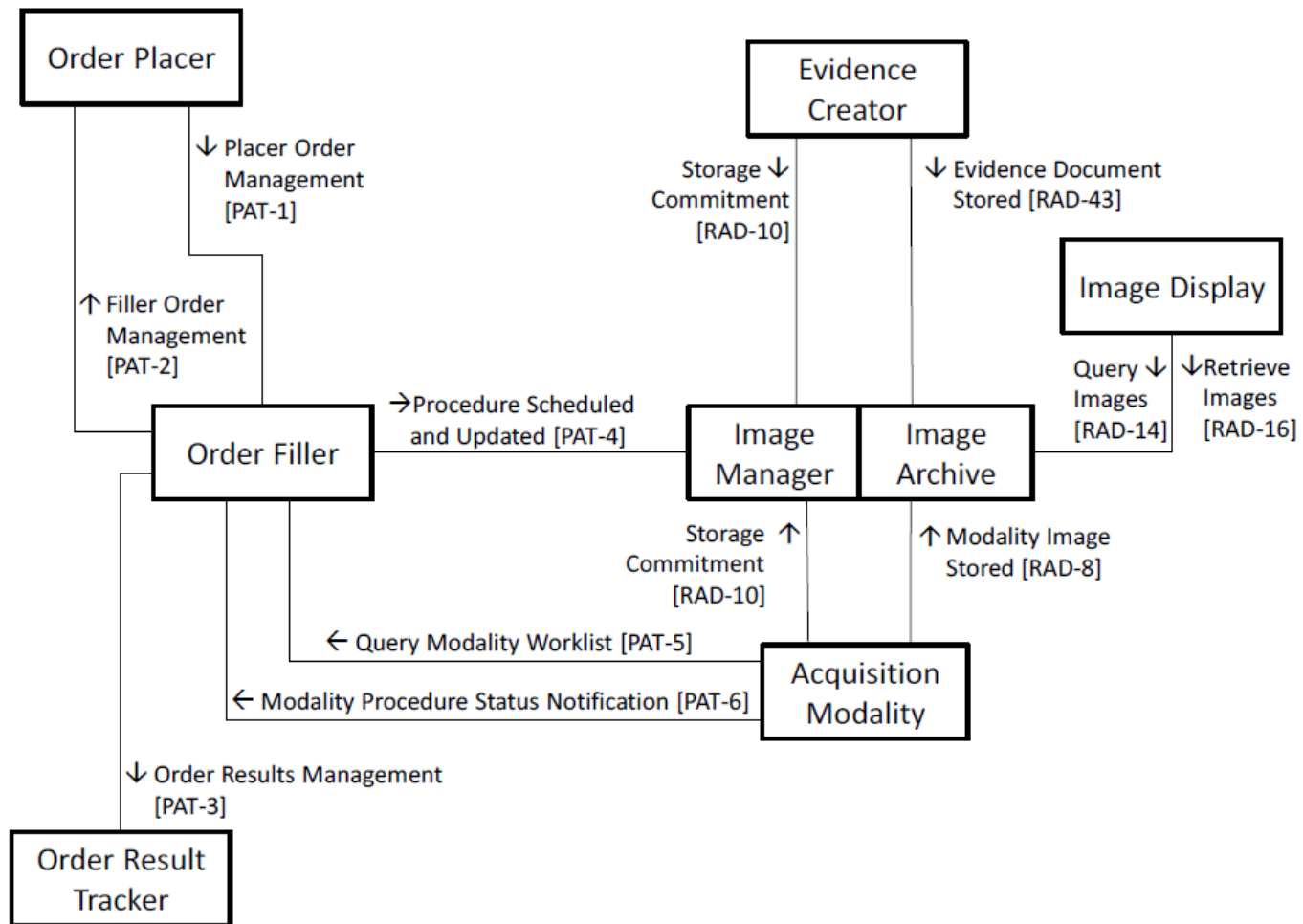
# Anatomic Pathology Reporting Workflow (ARW)

G.Rodriguez – SATEC

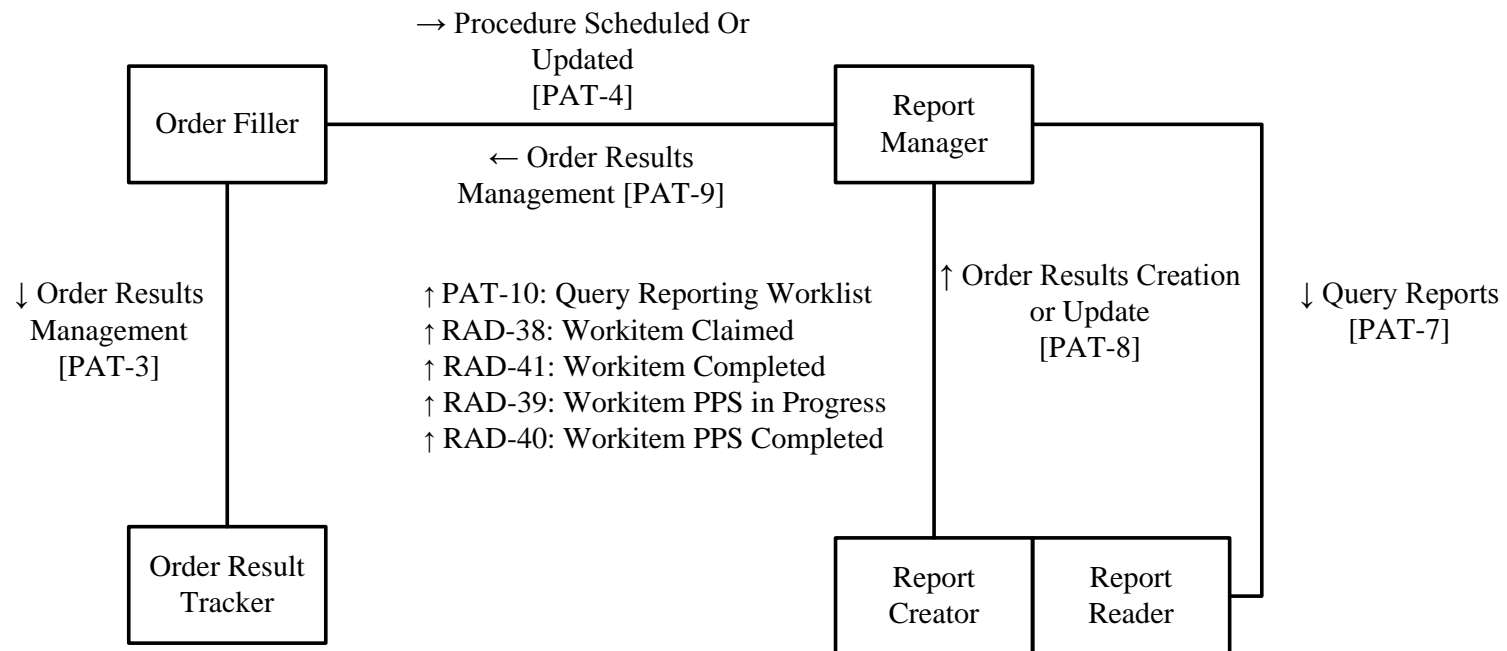
# New profile: Anatomic Pathology Reporting Workflow (APRWF)

- Issue
  - In the current Anatomic Pathology Workflow (APW) reports are treated as part of the order result tracking exchange information.
  - But there is no report oriented activity description, and thus it might be challenging for implementers to find scalable, easy to build architectures offering the capabilities to manage, store and retrieve report information.
  - The Order Filler is too tightly coupled with the reporting tasks so it also difficult for implementers to provide a scalable solution.
  - This proposal aims to solve the presented problems by providing a Reporting Workflow profile inspired by the similar one described in the Radiology Technical workflow.
- Expected benefits
  - The Reporting workflow will improve management of reporting tasks introducing reporting worklists and observation results queries as a method to perform order result consultation.
  - All this allows external systems to retrieve the report in a raw format allowing then to further process that information.
    - This will allow, for example, showing the report along with links to the DICOM images which could be opened with the chosen viewer.
- Proposal Editors
  - Gustavo Rodríguez ([gustavo.rodriguez@satec.es](mailto:gustavo.rodriguez@satec.es)) - Antonio González ([antonio.gonzalez@satec.es](mailto:antonio.gonzalez@satec.es)) - Date: 2009/12/17
  - Mtuitive?

# Anatomic Pathology Workflow (APW) Actors & transactions



# Anatomic Pathology Reporting Workflow (APRWF) – Actors & transactions



# PathLex

# PathLex, a single lexicon in the Anatomic Pathology domain

- Launched by IHE Anatomic Pathology
  - Collaboration of College of American Pathologists (CAP), ADICAP, French Society of Pathologists (SFP), SEAP (Spanish Society of Pathology).
  - Registered as external terminology used by HL7
- Purpose and scope (very similar to those of the RadLex project )
  - “designed to satisfy the needs of Anatomic Pathology information system vendors and users by **adopting the best features of existing terminology systems**
    - using if possible available concepts defined in reference biomedical terminologies or ontologies like SNOMED-CT or CIM-O (rather than “re-inventing the wheel”)
    - **while producing new terms to fill critical gaps.**

# PathLex, a single lexicon in the Anatomic Pathology domain

- The need is to guaranty that standard messages and document structures are semantically consistent within and across standards (HL7 v2.5, HL7 v3, DICOM).
- PathLex **unifies and supplements vocabulary tables defined by DICOM, HL7 and IHE**
- Current status & scope: IHE APSR supplement

# PathLex, an “interface terminology” mapped to “reference terminology”

- “Model of use” - PathLex
  - HL7/DICOM/IHE vocabulary tables contain **relatively common clinical terms** designed to improve **acceptability of information systems** to healthcare providers.
- Reference terminology (e.g SNOMED CT)
  - Emerging global health terminology standard published by IHTSDO
  - Provides unified meanings for clinical terms
    - from different languages by assigning them to language-independent concepts.
    - typically optimized to support the storage, retrieval, and classification of clinical data.
- **HYPOTHESIS: Mapping interface terminologies (as part of a model of use) to standard reference terminologies (as part of the model of meaning) is a reasonable strategy towards semantic interoperability**

# PathLex

## Current status

- Designed to support data capture of anatomic pathology findings accordingly to the IHE content profile “Anatomic Pathology Structured Report” (APSR).
- Terms or expressions (n= 1781) corresponding to :
  - Organ-specific elements (n=488)
    - Procedures (n=21)
    - Anatomic pathology observations (n=467)
      - post-operative staging of infiltrating cancer using the TNM staging system (n=63).
  - Value sets : all possible values coded elements (procedure target sites and qualitative observations (e.g Histologic type of Infiltrating malignant neoplasm of the breast))
    - US extension (n=924) – pTNM values (n=369/924)

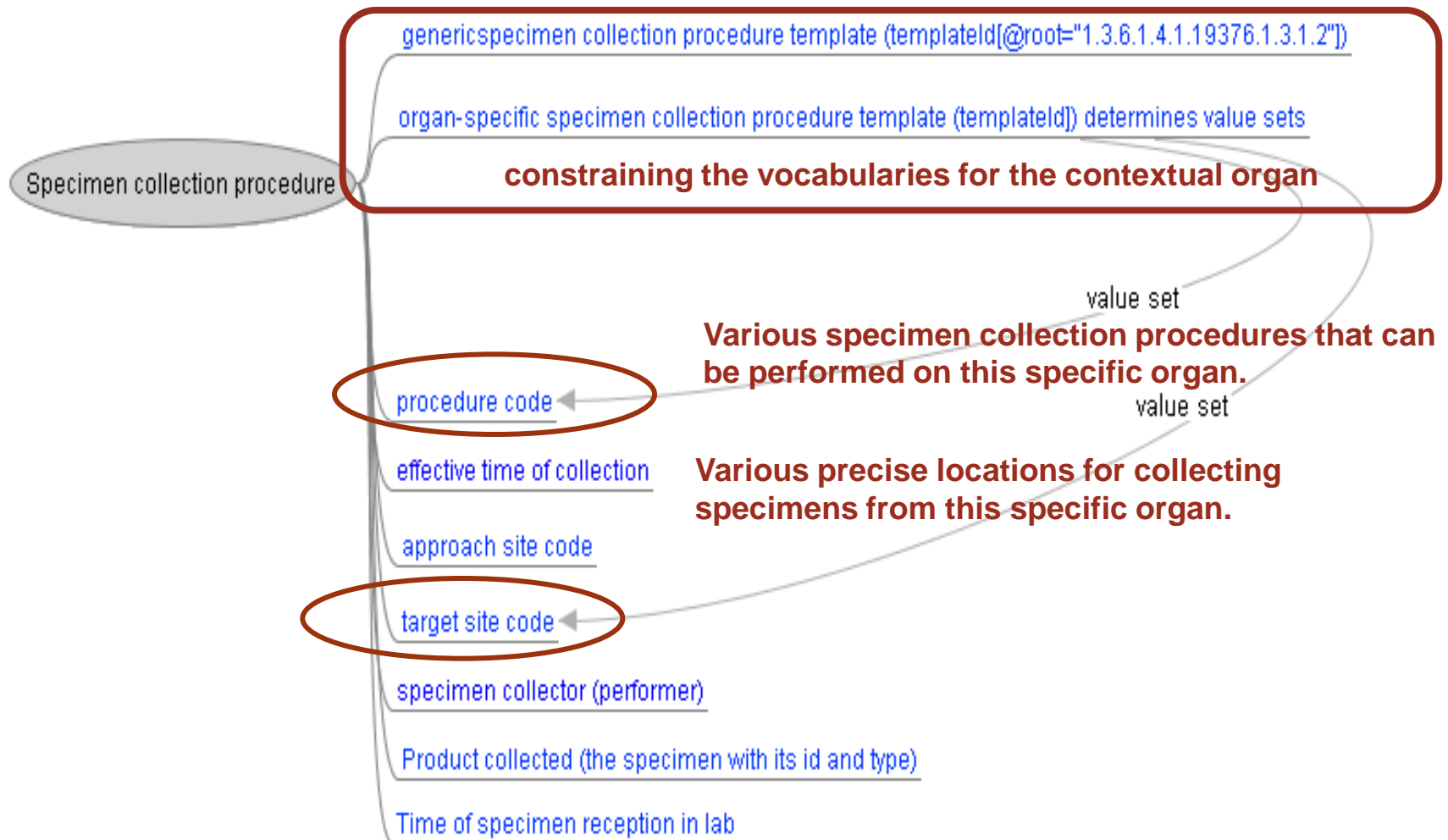
# Specimen Collection Procedure templates

- A specimen collection procedure within an organ-specific APSR Document Content Module represents
  - the characteristics of the specimen (identifiers and type)
  - the procedure that collected it
    - **Type of procedure**, time interval, performer (person and organization), approach site, **target site**.

# Specializing element Content Modules

- Header
  - Author 1.3.6.1.4.1.19376.1.8.1.4.2
  - Content Validator 1.3.6.1.4.1.19376.1.8.1.4.3
  - Informant 1.3.6.1.4.1.19376.1.8.1.4.6
  - Additional participant in an entry 1.3.6.1.4.1.19376.1.8.1.4.7
  - Specimen Collector in Header 1.3.6.1.4.1.19376.1.8.1.4.1
- Body
  - Specimen description
    - Specimen Information Organizer 1.3.6.1.4.1.19376.1.8.1.4.4
    - Specimen Collection Procedure generic template 1.3.6.1.4.1.19376.1.3.1.2
  - Problem Organizer 1.3.6.1.4.1.19376.1.8.1.4.8
  - AP Observation generic template 1.3.6.1.4.1.19376.1.8.1.4.9
  - Embedded Image 1.3.6.1.4.1.19376.1.8.1.4.10

# Specimen Collection Procedure templates



# List of Specimen Collection Procedure templates

1	Document template id	Document template name	Element template id	Element name	Element fully specified name
38	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.28	Specimen collection procedure	Breast-Specimen Collection Procedure
66	1.3.6.1.4.1.19376.1.8.1.1.2.8	Cervix APSR	1.3.6.1.4.1.19376.1.8.1.4.12	Specimen collection procedure	Cervix-Specimen Collection Procedure
95	1.3.6.1.4.1.19376.1.8.1.1.2.2	Colon APSR	1.3.6.1.4.1.19376.1.8.1.4.13	Specimen collection procedure	Colon-Specimen Collection Procedure
115	1.3.6.1.4.1.19376.1.8.1.1.2.9	Endometrium APSR	1.3.6.1.4.1.19376.1.8.1.4.14	Specimen collection procedure	Endometrium-Specimen Collection Procedure
136	1.3.6.1.4.1.19376.1.8.1.1.2.11	Esophagus APSR	1.3.6.1.4.1.19376.1.8.1.4.20	Specimen collection procedure	Esophagus-Specimen Collection Procedure
171	1.3.6.1.4.1.19376.1.8.1.1.1	Generic APSR	1.3.6.1.4.1.19376.1.8.1.4.1	Specimen collection procedure	Generic-Specimen Collection Procedure
189	1.3.6.1.4.1.19376.1.8.1.1.2.7	Kidney APSR	1.3.6.1.4.1.19376.1.8.1.4.27	Specimen collection procedure	Kidney-Specimen Collection Procedure

# Value set OIDs for each Specimen Collection Procedure templates

1	Element name	Element fully specified name	Rim source	Element type	Concept domain	Value set or code	Rim source	Element type	Value set (for CD element)
38	Specimen collection procedure	Breast-Specimen Collection Procedure	procedure.code	CD	specimen collection procedure	1.3.6.1.4.1.19376.1.8.5.11	procedure.targetSite	CD	1.3.6.1.4.1.19376.1.8.5.12
6	Specimen collection procedure	Cervix-Specimen Collection Procedure	procedure.code	CD	specimen collection procedure	1.3.6.1.4.1.19376.1.8.5.35	procedure.targetSite	CD	1.3.6.1.4.1.19376.1.8.5.36
9	Specimen collection procedure	Colon-Specimen Collection Procedure	procedure.code	CD	specimen collection procedure	1.3.6.1.4.1.19376.1.8.5.45	procedure.targetSite	CD	1.3.6.1.4.1.19376.1.8.5.46
11	Specimen collection procedure	Endometrium-Specimen Collection Procedure	procedure.code	CD	specimen collection procedure	1.3.6.1.4.1.19376.1.8.5.65	procedure.targetSite	CD	1.3.6.1.4.1.19376.1.8.5.66
13	Specimen collection procedure	Esophagus-Specimen Collection Procedure	procedure.code	CD	specimen collection procedure	1.3.6.1.4.1.19376.1.8.5.134	procedure.targetSite	CD	1.3.6.1.4.1.19376.1.8.5.135
17	Specimen collection procedure	Generic-Specimen Collection Procedure	procedure.code	CD	specimen collection procedure	1.3.6.1.4.1.19376.1.8.5.335	procedure.targetSite	CD	1.3.6.1.4.1.19376.1.8.5.370
189	Specimen collection procedure	Kidney-Specimen Collection Procedure	procedure.code	CD	specimen collection procedure	1.3.6.1.4.1.19376.1.8.5.117	procedure.targetSite	CD	1.3.6.1.4.1.19376.1.8.5.118

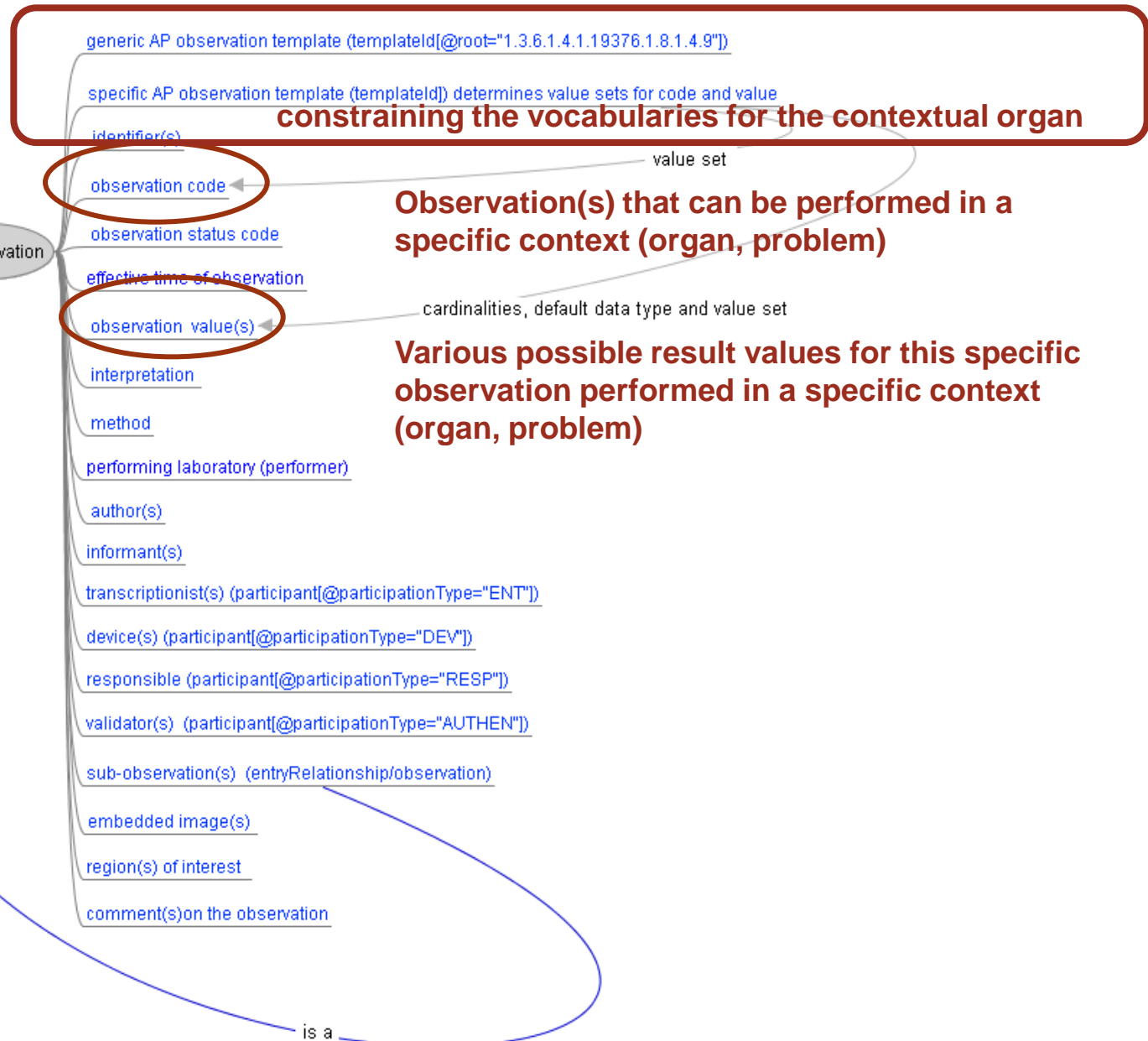
procedure.code

procedure.targetSite

# AP Observation Template

- An AP observation within an organ-specific APSR Document Content Module represents
  - the value of the AP observation
  - Its status, effective time
  - various participants (persons, devices, organizations)
  - a number of additional properties (method, interpretation, text),
  - embedded images, comments, and sub-observations, which are also AP observations.

# Conformance of an AP observation



# List of AP Observation Templates per Document template

1	Document template id	Document template name	Element template id	Element name	Element fully specified name
2	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.419	Distance of lesion from closest uninvolved margin	Breast-In situ neoplasm-Distance of lesion from closest uninvolved margin
3	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.444	Histologic grade of ductal carcinoma in situ (DCIS)	Breast-In situ neoplasm-Histologic grade of ductal carcinoma in situ (DCIS)
4	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.446	Histologic type	Breast-In situ neoplasm-Histologic type
5	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.445	Lesion site	Breast-In situ neoplasm-Lesion site
6	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.442	Lesion size, largest dimension	Breast-In situ neoplasm-Lesion size, largest dimension
7	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.414	Margins involvement	Breast-In situ neoplasm-Margins involvement
8	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.429	Necrosis of ductal carcinoma in situ (DCIS)	Breast-In situ neoplasm-Necrosis of ductal carcinoma in situ (DCIS)
9	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.418	Distance of lesion from closest uninvolved margin	Breast-Infiltrating malignant neoplasm-Distance of lesion from closest uninvolved margin
10	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.439	Estrogen receptor	Breast-Infiltrating malignant neoplasm-Estrogen receptor
11	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.415	Extensive intraductal component	Breast-Infiltrating malignant neoplasm-Extensive intraductal component
12	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.416	HER2/neu (FISH method)	Breast-Infiltrating malignant neoplasm-HER2/neu (FISH method)
13	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.417	HER2/neu (immunoperoxidase study)	Breast-Infiltrating malignant neoplasm-HER2/neu (immunoperoxidase study)
14	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.422	Histologic grade (Nottingham Histologic Score-Glandular component)	Breast-Infiltrating malignant neoplasm-Histologic grade (Nottingham Histologic Score-Glandular component)
15	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.423	Histologic grade (Nottingham Histologic Score-Mitotic count)	Breast-Infiltrating malignant neoplasm-Histologic grade (Nottingham Histologic Score-Mitotic count)
16	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.424	Histologic grade (Nottingham Histologic Score-Nuclear pleomorphism)	Breast-Infiltrating malignant neoplasm-Histologic grade (Nottingham Histologic Score-Nuclear pleomorphism)
17	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.425	Histologic grade (Nottingham)	Breast-Infiltrating malignant neoplasm-Histologic grade (Nottingham)
18	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.443	Histologic type	Breast-Infiltrating malignant neoplasm-Histologic type
19	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.427	Lesion site	Breast-Infiltrating malignant neoplasm-Lesion site
20	1.3.6.1.4.1.19376.1.8.1.1.2.1	Breast APSR	1.3.6.1.4.1.19376.1.8.1.4.441	Lesion size, largest dimension	Breast-Infiltrating malignant neoplasm-Lesion size, largest dimension

**Breast**

1	Document template id	Document template name	Element template id	Element name	Element fully specified name
68	1.3.6.1.4.1.19376.1.8.1.1.2.2	Colon APSR	1.3.6.1.4.1.19376.1.8.1.4.68	Distance of lesion from closest uninvolved margin	Colon-Infiltrating malignant neoplasm-Distance of lesion from closest uninvolved margin
69	1.3.6.1.4.1.19376.1.8.1.1.2.2	Colon APSR	1.3.6.1.4.1.19376.1.8.1.4.70	Extent	Colon-Infiltrating malignant neoplasm-Extent
70	1.3.6.1.4.1.19376.1.8.1.1.2.2	Colon APSR	1.3.6.1.4.1.19376.1.8.1.4.80	Histologic Features Suggestive of Microsatellite Instability	Colon-Infiltrating malignant neoplasm-Histologic Features Suggestive of Microsatellite Instability
71	1.3.6.1.4.1.19376.1.8.1.1.2.2	Colon APSR	1.3.6.1.4.1.19376.1.8.1.4.71	Histologic grade (Two-Tier Grading System)	Colon-Infiltrating malignant neoplasm-Histologic grade (Two-Tier Grading System)
72	1.3.6.1.4.1.19376.1.8.1.1.2.2	Colon APSR	1.3.6.1.4.1.19376.1.8.1.4.83	Histologic type	Colon-Infiltrating malignant neoplasm-Histologic type
73	1.3.6.1.4.1.19376.1.8.1.1.2.2	Colon APSR	1.3.6.1.4.1.19376.1.8.1.4.66	KRAS mutational analysis	Colon-Infiltrating malignant neoplasm-KRAS mutational analysis
74	1.3.6.1.4.1.19376.1.8.1.1.2.2	Colon APSR	1.3.6.1.4.1.19376.1.8.1.4.74	Lesion site	Colon-Infiltrating malignant neoplasm-Lesion site
75	1.3.6.1.4.1.19376.1.8.1.1.2.2	Colon APSR	1.3.6.1.4.1.19376.1.8.1.4.81	Lesion size, largest dimension	Colon-Infiltrating malignant neoplasm-Lesion size, largest dimension
76	1.3.6.1.4.1.19376.1.8.1.1.2.2	Colon APSR	1.3.6.1.4.1.19376.1.8.1.4.69	Lymph-vascular invasion	Colon-Infiltrating malignant neoplasm-Lymph-vascular invasion

**Colon**

# IHE PAT Element templates

## AP Observation Templates

1	Element name	Element fully specified name	Rim source	Element type	Concept domain	Value set or code	Rim source	Element type	Value set (for CD element)
2	Distance of lesion from closest uninvolved margin	Breast-In situ neoplasm-Distance of lesion from closest uninvolved margin	observation.code	CD	anatomic pathology observation	414	observation.value	PQ	
3	Histologic grade of ductal carcinoma in situ (DCIS)	Breast-In situ neoplasm-Histologic grade of ductal carcinoma in situ (DCIS)	observation.code	CD	anatomic pathology observation	417	observation.value	CD	1.3.6.1.4.1.19376.1.8.5.23
4	Histologic type	Breast-In situ neoplasm-Histologic type	observation.code	CD	anatomic pathology observation	436	observation.value	CD	1.3.6.1.4.1.19376.1.8.5.254
5	Lesion site	Breast-In situ neoplasm-Lesion site	observation.code	CD	anatomic pathology observation	1906	observation.value	CD	1.3.6.1.4.1.19376.1.8.5.371
6	Lesion size, largest dimension	Breast-In situ neoplasm-Lesion size, largest dimension	observation.code	CD	anatomic pathology observation	435	observation.value	PQ	
7	Margins involvement	Breast-In situ neoplasm-Margins involvement	observation.code	CD	anatomic pathology observation	413	observation.value	BL	
8	Necrosis of ductal carcinoma in situ (DCIS)	Breast-In situ neoplasm-Necrosis of ductal carcinoma in situ (DCIS)	observation.code	CD	anatomic pathology observation	1901	observation.value	CD	1.3.6.1.4.1.19376.1.8.5.253
9	Distance of lesion from closest uninvolved margin	Breast-Infiltrating malignant neoplasm-Distance of lesion from closest uninvolved margin	observation.code	CD	anatomic pathology observation	70	observation.value	PQ	

observation.code

observation.value

# Vocabulary constraints

## IHE\_PAT\_Suppl\_APSR\_AppendixValue\_Sets

<http://www.ihe.net> (excel file)

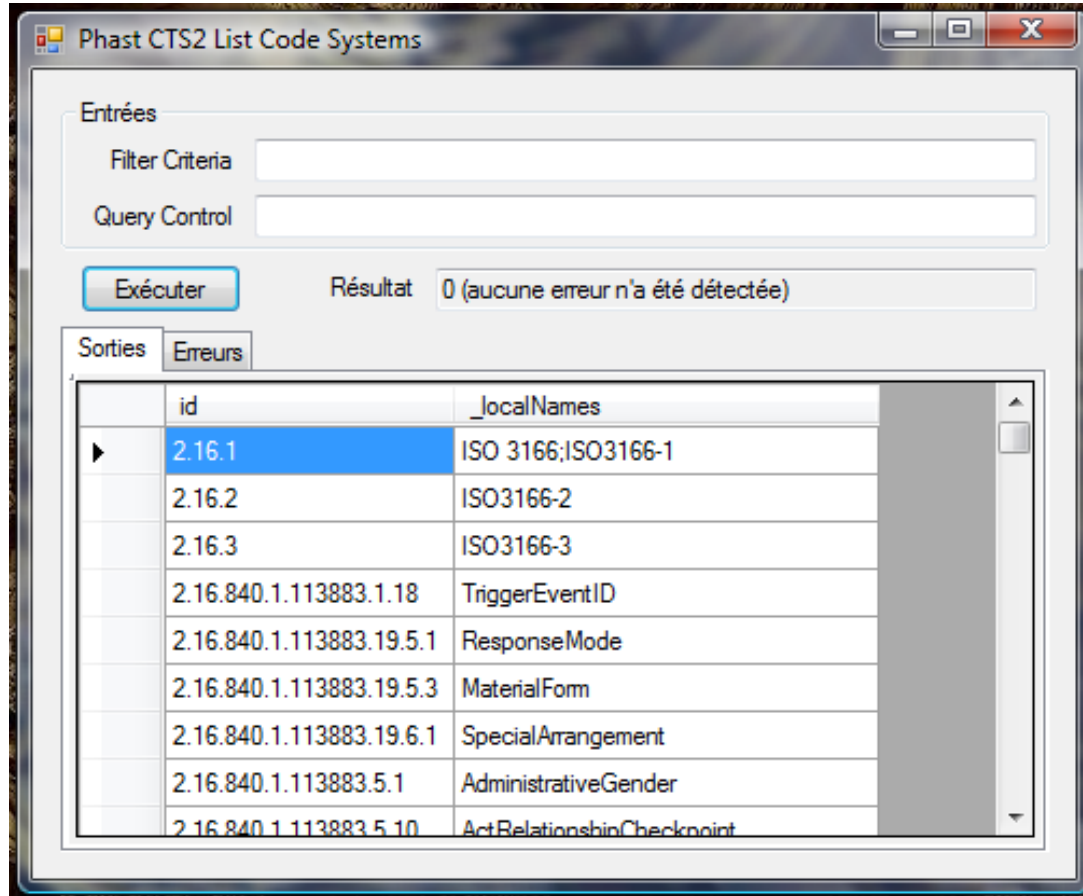
**IHE Anatomic Pathology Technical Framework Supplement  
Appendix Value Sets for APSR**  
value sets bound to the content modules described in the “Anatomic Pathology Structured Reports” (APSR) supplement to the AP TF

Document identification		
Name	IHE_PAT_TF_Supplement_APSR_Appendix_Value_Sets	
Creation date	30/07/2010	
Version	Trial Implementation	

Historique			
Version	Date	Changes from Previous Release	Action
Draft for public comment	30/07/2010		Publication
Trial Implementation	March 3, 2011	Change of publication format (from word document to excel file) in order to ease import in Terminology Servers Updated of value sets Explicit links between element templates and value sets	Publication in ihe.net

- Scope : Element Content Modules
  - Specimen collection procedure
  - AP observation

# STS (Standard Terminology Server)



CTS2



SKOS  
OWL

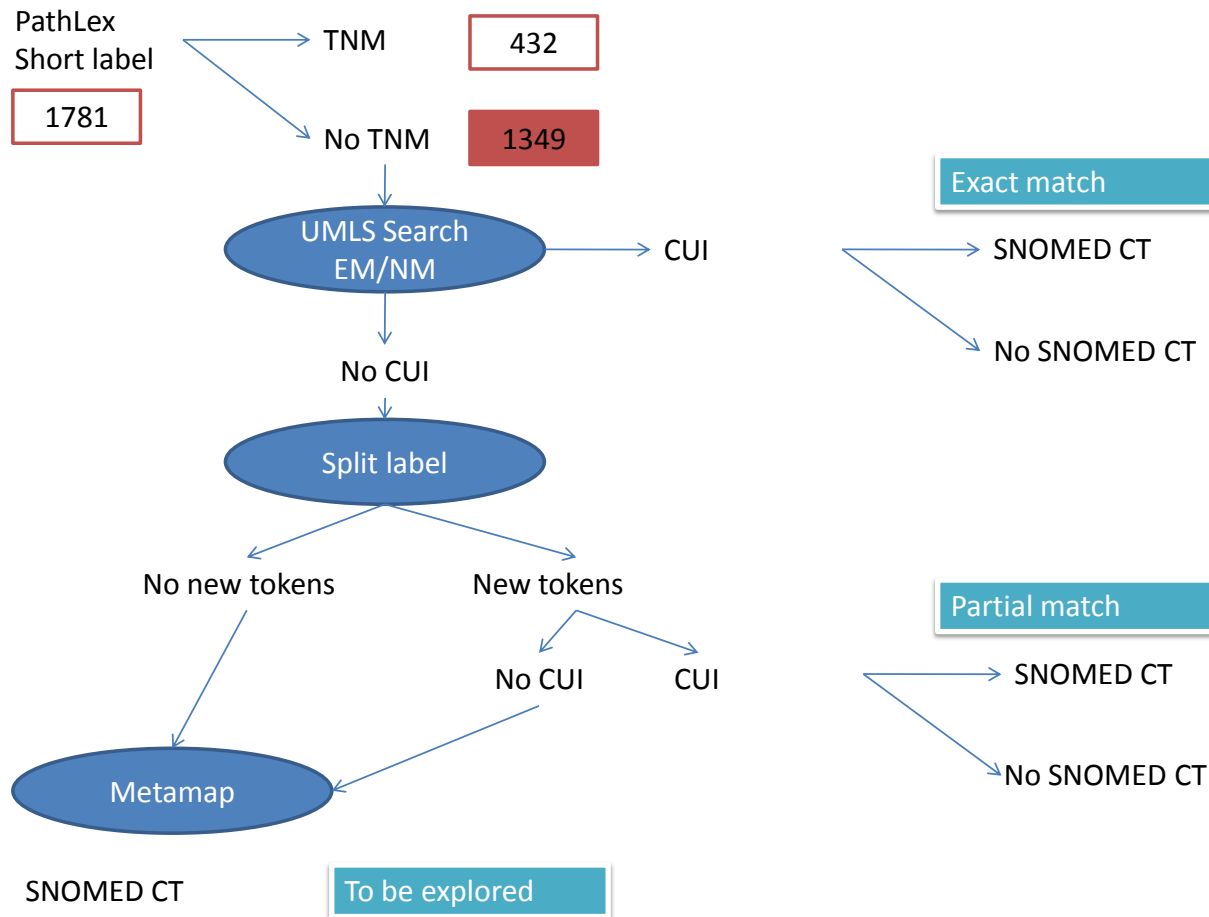
# PathLex

## Current status

- Structure
  - Permanent identifiers (codes) are meaningless
  - PathLex preferred terms are organized into a is-a hierarchy
    - Histological type
      - Histological type of breast neoplasm
        - Histological type of in situ neoplasm of the breast
  - Multilingual : universal value sets include all possible values available in the local extensions.
    - Common values are therefore available in multiple languages (currently English and French).
- Open access
  - “Appendix Value Sets for APSR” as part of the IHE content profile “Anatomic Pathology Structured Report” (APSR) (<https://ihe.net>)
  - STS (PHAST, France) (CTS2 services)

# Mapping PathLex to SNOMED CT (using UMLS)

in collaboration with NLM (B.Rance – O.Bodenreider)



# Results of the automatic mapping process

Matching situations	Number of labels	Percent ages of labels
Labels mapped to SNOMED CT through exact match (EM) or normalized match (NM) to UMLS	609	45%
Labels mapped to another terminology through exact match (EM) or normalized match (NM) to UMLS	79	6%
Tokens mapped to SNOMED CT through exact match (EM) or normalized match (NM) to UMLS	232	17%
Tokens mapped to another terminology through exact match (EM) or normalized match (NM) to UMLS	25	2%
Tokens without any match	80	6%
Labels without any match and that cannot be split in tokens	324	24%
TOTAL	1349	100%

# Examples of PathLex labels/expressions with automatic mappings

Categories of observations	PathLex label	CUI	SNOMED CT code
Examples of AP macroscopic observation types related to the specimen	Specimen size, largest dimension	C1273739	384627007
	Specimen size, additional dimension	C1273738	384626003
Examples of AP microscopic observation types related to a lesion related to a lesion	Lesion size, largest dimension	C1275593	396361002
	Lesion site	C0449685	246300000
	Histologic type	C0449574	263541007
	Histologic grade	C0919553	371469007
	Margins involvement	C1269794	371488000

# No automatic match

	Label
Types of ancillary techniques	HER2/neu (FISH method)
	Mismatch Repair Proteins-MLH1 (Immunohistochemistry Study)
Types of histologic grades	Histologic grade (Clark)
	Histologic grade (Gleason-Primary (Predominant) Pattern)
	Histologic grade (Gleason-Total Gleason Score)
Extension	Number of lymph nodes with isolated tumor cells ( $\leq 0.2$ mm and $\leq 200$ cells)

# No automatic match

	Label
Anatomic location	Anterior floor of mouth (qualifier : right, left, medial)
	Distal esophagus
Histologic types	Atelectasis Extends to the hilar region but does not involve entire lung
	Atypical squamous cells for which a high-grade lesion cannot be excluded (ASC-H)
	Cirrhosis/severe fibrosis (Ishak score 5-6) (F1)
	Combined small cell carcinoma (small cell carcinoma and non-small cell component)
	Complex hyperplasia without cytologic atypia
	DCIS Comedo
	Ductal carcinoma in situ involving nipple skin (Paget disease) with microinvasion

# No automatic match

	Label
Histologic grades	FIGO grade 1
	G1: Nuclei round, uniform, approximately 10 mm; nucleoli inconspicuous or absent
	Low-grade squamous intraepithelial lesion encompassing HPV infection or mild dysplasia (CIN 1)
	Score 2: 10% to 75% of tumor area forming glandular/tubular structures
Extension	<50% myometrial invasion
Results of AP ancillary techniques	Amplified (HER2 gene copy >6.0 or ratio >2.2)
	Equivocal (HER2 gene copy 4.0 to 6.0 or ratio 1.8 to 2.2)
	Immunoreactive tumor cells present (> = 1%) (Specify Quantitation)
	Mild to moderate (0-2 per high-power [X400] field) Intratumoral Lymphocytic Response (tumor-infiltrating lymphocytes)

# Shall we map TNM to SNOMED CT?

	Label
TNM values	pM1c: Metastasis to all other visceral sites or distant metastasis at any site associated with an elevated serum lactic dehydrogenase (LDH)
	pN2: Metastasis in a single ipsilateral lymph node, more than 3 cm but not more than 6 cm in greatest dimension, or in multiple ipsilateral lymph nodes, none more than 6 cm in greatest dimension, or in bilateral or contralateral lymph nodes, none more than 6 cm in greatest dimension
	pT2a: Tumor greater than 3 cm, but 5 cm or less in greatest dimension surrounded by lung or visceral pleura, without bronchoscopic evidence of invasion more proximal than the lobar bronchus (ie, not in the main bronchus); or Tumor 5 cm or less in greatest dimension with any of the following features of extent: involves main bronchus, 2 cm or more distal to the carina; invades the visceral pleura; associated with atelectasi or obstructive pneumonitis that extends to the hilar region but does not involve the entire lung

# PathLex as a thematic extension of SNOMED CT ? Next steps

- A joint IHE/HL7 Anatomic Pathology – IpaLM initiative
  - Governance & technical issues (tooling) for the management of PathLex.
- IPALM SIG
  - Rajesh Dash, M.D. ([r.dash@duke.edu](mailto:r.dash@duke.edu))
  - Andrea Pitkus, CAP ([apitkus@cap.org](mailto:apitkus@cap.org))
  - Technical assistance IHTSDO
    - Yohani Daruis ([yda@ihtsdo.org](mailto:yda@ihtsdo.org))([support@ihtsdo.org](mailto:support@ihtsdo.org))
- IPALM collaborative site
  - IC0604 members
    - Thomas Schrader (Germany) [thomas.schrader@computer.org](mailto:thomas.schrader@computer.org)
    - Bernd Blobel (Germany) [bernd.blobel@klinik.uni-regensburg.de](mailto:bernd.blobel@klinik.uni-regensburg.de)
    - Christel Daniel (France) [christel.daniel@spim.jussieu.fr](mailto:christel.daniel@spim.jussieu.fr)
    - Vincenzo Della Mea (Italy) [vincenzo.dellamea@uniud.it](mailto:vincenzo.dellamea@uniud.it)

# Deployment, Road map & Governance

# Significant Deployment Activity

- APW : implemented by vendors in "real world" in Spain (Hospital General de Ciudad Real) and on-going implementation in Paris (AP-HP)
- ARPH: North America (NAACCR, CDC)
  - Successfully tested at 2010 NA Connectathon (One sender, one receiver)
  - Successfully tested at 2011 NA Connectathon (one sender, same receiver as 2010)
- APSR : on-going implementation by vendors in "real world" in France (DMP & DCC project, ASIP Santé-INCa)

# Timeline/Milestones

Date	Activity	Location
Oct 2010	PC&TC meeting : discussion of 2010-11 Profiles/White papers	IHE AP & HL7 AP joint meeting (HL7 Meeting - Cambridge, MA)
Dec 2010	Selection of 2010-11 Profiles/White papers	
<b>2011</b>		
Jan 2011		US Connectathon
March 2011	Publication of trial implementation supplement	lhe.net
Jan 2011		European Connectathon
May 2011	PC&TC meeting	IHE AP & HL7 AP joint meeting (HL7 WG Meeting – Orlando)
June 20-21, 2011	PC&TC meeting	IHE/HL7 AP & IC0604 COST Action WG1/WG2 joint meeting (Paris)
Aug 27, 2011	PC&TC meeting	IHE/HL7 AP & IC0604 COST Action WG2 & DICOM WG26 joint meeting (Helsinki)
<b>Sept 13-15, 2011</b>	<b>Submission of of 2011-12 Profiles/White papers</b>	<b>IHE AP &amp; HL7 AP joint meeting (HL7 Meeting - San Diego)</b>
Dec 2011	Selection of 2011-12 Profiles/White papers	
<b>2012</b>		
Jan, 2011		IHE AP & HL7 AP & DICOM WG26 joint meeting (HL7 Meeting - San Antonio) (to be confirmed)
June 6-9, 2012	Publication of public comment supplement	Telepathology & Virtual - microscopy – Venice (to be confirmed)
August, 2012	Publication of trial implementation supplement	lhe.net

# Change proposals/Profiles/White papers

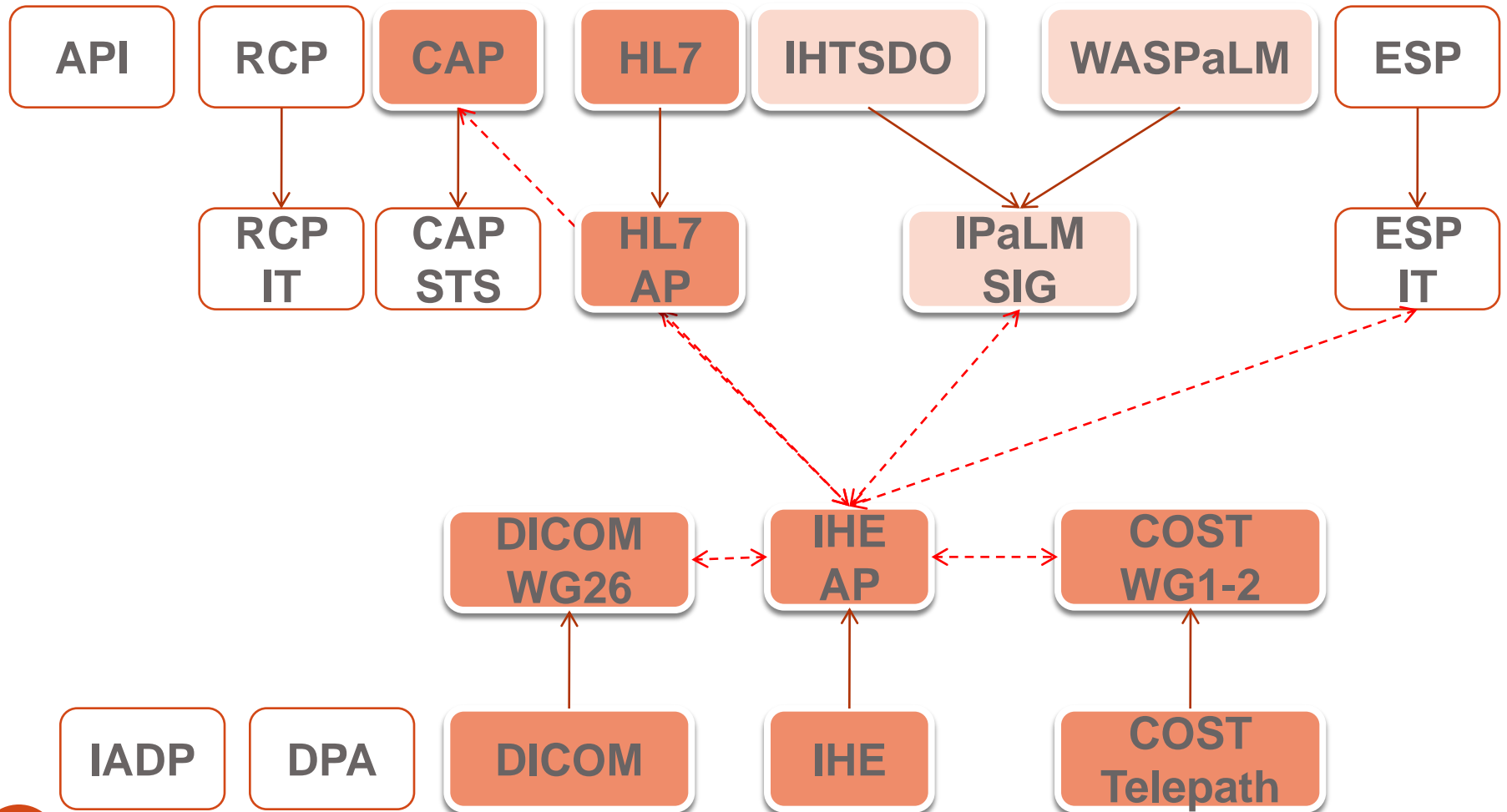
- 2010-11
  - *Change proposals*
    - **Integration : Anatomic Pathology Structured Order (APW - PAT-1)**
    - **Content: Anatomic Pathology Structured Reports (for Biobanks ) (APSR)**
  - *Integration Profiles*
    - **Anatomic Pathology Reporting Workflow (APRWF)(G.Rodriguez – Satec)**
  - *Content Profiles*
  - *White papers*
    - **Enhanced Imaging Workflow Integration Profile**
- 2011-12 ?
  - **Integration Profiles +++**
    - **Anatomic Pathology Reporting Workflow (APRWF)(G.Rodriguez – Satec)**
  - White papers ??
    - **Enhanced Imaging Workflow Integration Profile (-> IP)**
    - Device automation integration profile (with LAB, ITI)
    - Inter-departments workflow (with LAB ITI)
    - Telepathology (with ITI)
      - Opinion request (content and workflow)
    - Relationships between pathology/radiology/endoscopy
    - Sharing templates/terminology (with ITI)

# IHE AP sponsors & committees

## Co-chair election

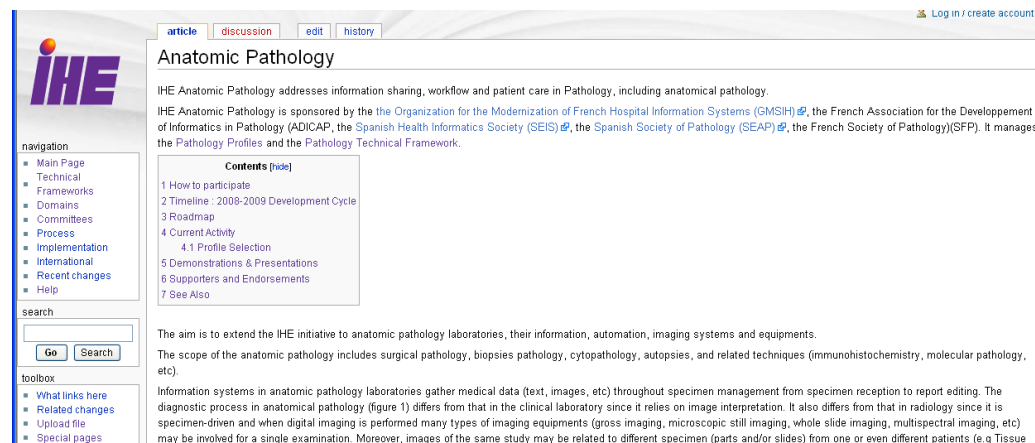
- Sponsors
  - French Association for the Development of Informatics in Pathology (ADICAP)
  - Spanish Health Informatics Society (SEIS)
  - Spanish Society of Pathology (SEAP)
  - CAP?
  - ESP? WASPaIM? etc
- Secretary
  - Christel Daniel (email: [christel.daniel@crc.jussieu.fr](mailto:christel.daniel@crc.jussieu.fr))
- Planning/Technical Committee Co-chairs
  - Dr Christel DANIEL (ADICAP)
  - Dr. Marcial García Rojo (SESCAM)
  - Dr Thomas Schrader
- CO-CHAIR ELECTION

# Clinical Governance of the Standards - Networking Needed



# More information

- Googlegroup : [ihe-anatomic-pathology-committee@googlegroups.com](mailto:ihe-anatomic-pathology-committee@googlegroups.com)
- Road map
  - [http://wiki.ihe.net/index.php?title=Anatomic\\_Pathology](http://wiki.ihe.net/index.php?title=Anatomic_Pathology)



The screenshot shows the IHE Anatomic Pathology wiki page. The page title is "Anatomic Pathology". The main content area contains a description of the initiative, a list of contents (How to participate, Timeline, Roadmap, Current Activity, Demonstrations & Presentations, Supporters and Endorsements, See Also), and a paragraph stating the aim to extend the IHE initiative to anatomic pathology laboratories. The page also features a navigation sidebar with links to Main Page, Technical Frameworks, Domains, Committees, Process, Implementation, International, Recent changes, and Help. A search box and a toolbox with links to What links here, Related changes, Upload file, and Special pages are also visible.

**IHE**

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## Anatomic Pathology

IHE Anatomic Pathology addresses information sharing, workflow and patient care in Pathology, including anatomical pathology.

IHE Anatomic Pathology is sponsored by the [Organization for the Modernization of French Hospital Information Systems \(GMSIH\)](#), the [French Association for the Development of Informatics in Pathology \(ADICAP\)](#), the [Spanish Health Informatics Society \(SEIS\)](#), the [Spanish Society of Pathology \(SEAP\)](#), the [French Society of Pathology \(SFP\)](#). It manages the [Pathology Profiles](#) and the [Pathology Technical Framework](#).

**Contents (hide)**

- 1 How to participate
- 2 Timeline - 2008-2009 Development Cycle
- 3 Roadmap
- 4 Current Activity
  - 4.1 Profile Selection
- 5 Demonstrations & Presentations
- 6 Supporters and Endorsements
- 7 See Also

The aim is to extend the IHE initiative to anatomic pathology laboratories, their information, automation, imaging systems and equipments.

The scope of the anatomic pathology includes surgical pathology, biopsies pathology, cytopathology, autopsies, and related techniques (immunohistochemistry, molecular pathology, etc).

Information systems in anatomic pathology laboratories gather medical data (text, images, etc) throughout specimen management from specimen reception to report editing. The diagnostic process in anatomical pathology (figure 1) differs from that in the clinical laboratory since it relies on image interpretation. It also differs from that in radiology since it is specimen-driven and when digital imaging is performed many types of imaging equipments (gross imaging, microscopic still imaging, whole slide imaging, multispectral imaging, etc) may be involved for a single examination. Moreover, images of the same study may be related to different specimen (parts and/or slides) from one or even different patients (e.g Tissue

navigation

- Main Page
- Technical Frameworks
- Domains
- Committees
- Process
- Implementation
- International
- Recent changes
- Help

search

Go Search

toolbox

- What links here
- Related changes
- Upload file
- Special pages