

# Recent advances in standards for collaborative pathology

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**IHE Anatomic pathology**

**July 1<sup>st</sup>, 2010 - Vilnius**



# Collaborative Digital Anatomic Pathology

- “The use of information technology to support the creation, sharing or exchange of information (data and images) during the Anatomic Pathology complex workflow from specimen reception to report transmission.”

# Why is it so difficult ?

- Different systems which do not interoperate.
  - Medical data (text, images, etc) scattered over a number of different systems
    - Anatomic Pathology information systems (APIS) & digital image acquisition modalities
    - Laboratory autostainer's automated image analysis tools, telepathology systems, biobank management systems, etc
- ☞ Integrating anatomic pathology to Healthcare Enterprise
  - Anatomic Pathology IT components able to **enrich efficiently EHR with pathological images (including WSI) & machine-readable structured reports**

# Integrating the Healthcare Enterprise (IHE)

## A forum

- Objective

- Specifying how data standards should be implemented to meet specific health care needs and make systems integration more efficient and less expensive.

- Neutral international forum for working on interoperability

- Working groups: both health care providers (“users”) and information systems “vendors”.

# Integrating the Healthcare Enterprise (IHE)

## A process – Annual cycles

### ● Technical frameworks

- User's needs
  - “Integration profiles” (real-world situations of the healthcare workflow)
  - “Transactions” & “Actors”
- Implementation guides for transactions using established industry standards such as DICOM or HL7

### ● “Connectathons”

- Rigorous neutral testing process

### ● Interoperability demonstrations

- Educational sessions & exhibits (RSNA, HIMSS)



*Noordwijkerhout 2005: 300 participants, 100 systems, 62 vendors*



# IHE : the beginning...

- Start on 1998 in US in the Radiology domain
  - Users
    - RSNA (Radiological Society of North America)
    - HIMSS (Healthcare Information and Management Systems Society)
  - Suppliers (Agfa, GE, Siemens, etc)
- First connectathon and demonstration (RSNA) on 1999
  - One integration profile : Radiology Scheduled WorkFlow (SWF)
  - 24 vendors demonstrating 47 systems

# IHE : ... the grows

## REGIONS

IHE North America

IHE Europe

IHE Asia-Oceania

RADIOLOGY: 1998

IT INFRASTRUCTURE: 2002

LABORATORY: 2003

CARDIOLOGY: 2004

NUCLEAR MEDICINE: 2004

**ANATOMIC PATHOLOGY: 2005**

RADIATION ONCOLOGY: 2005

PATIENT CARE COORD: 2005

DOMAINS

IHE Anatomic pathology -  
Vilnius, 1<sup>st</sup> July, 2010

**IHE** Changing the Way Healthcare **CONNECTS**

# IHE anatomic pathology Users

- France
  - ADICAP (Association for the Development of Informatics in Cytology and Pathology), SFP (French Society of Pathology),
- Germany
  - Charité Universitätsmedizin Berlin
- Japon
  - IHE-Japan
- Italie
  - Udine University
- Spain
  - SEIS (Spanish Society of Health Informatics), SEAP (Spanish Society of Pathology), SESCAM, Servicio de Salud de Castilla-La Mancha
- US
  - CAP (College of American Pathologists)

# IHE anatomic pathology Vendors

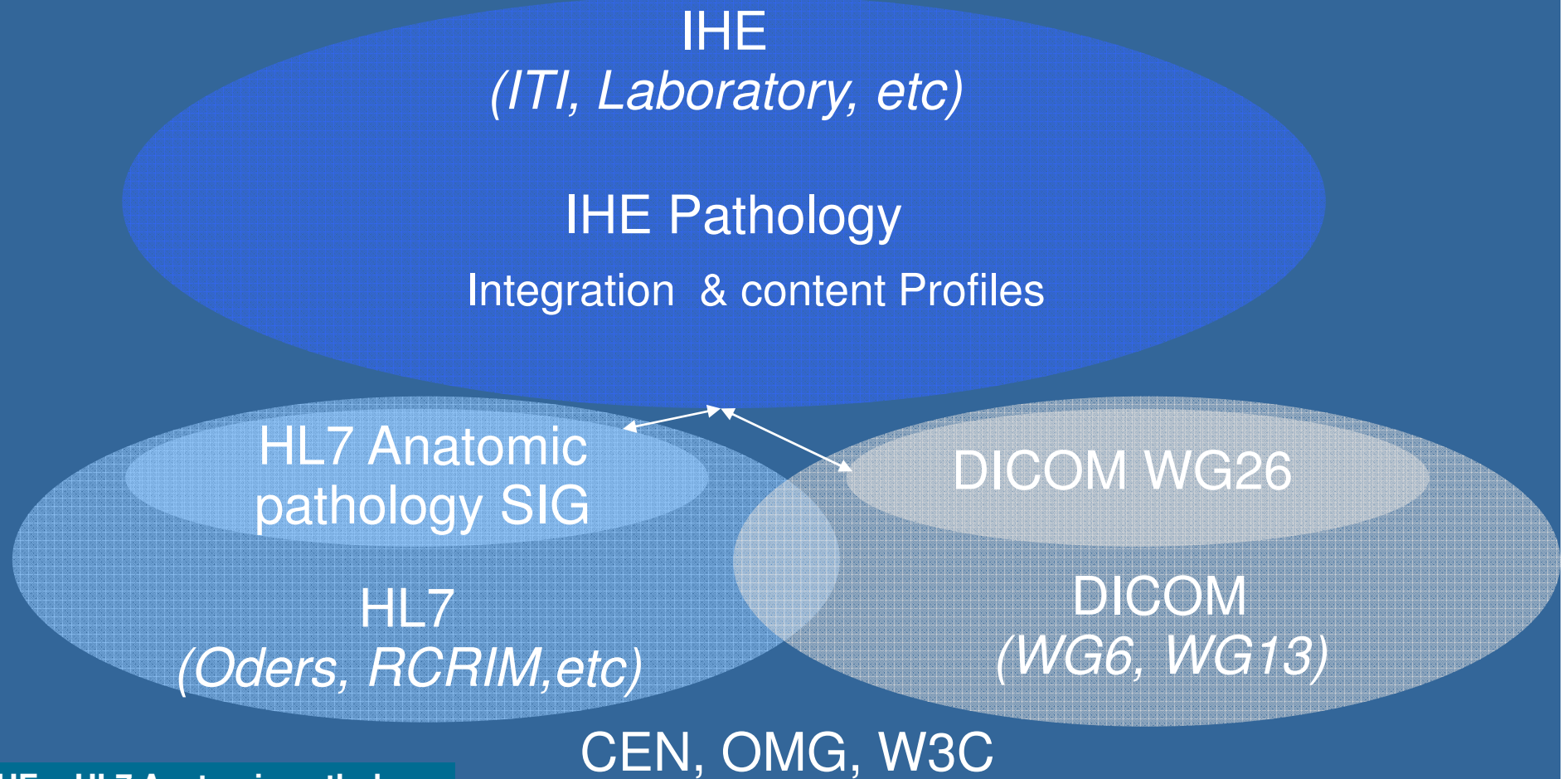
- Acquisition modalities
  - Tribvni/Aperio, Zeiss, VMScope, Hamamatsu, Aurora
- LIS/APIS
  - Technidata, Infologic, Satec, Isoft, Nexus, Paschmann GMBH, Medasys
- PACS Vendors
  - Agfa, GE, ETIAM
- EHR
  - Medasys, Agfa

# Objective

- To define the best use of medical informatics standards for Collaborative Digital Anatomic Pathology

# Method : IHE process

- Working groups: both health care providers (“users”) and information systems “vendors”.



## Method : IHE process

- Modeling end-users' information needs
- Defining standard-based informatics transactions to integrate Anatomic Pathology information into the electronic healthcare enterprise.

# Result: IHE Anatomic Pathology TF Overview

- Intra hospital integration profiles

- 1 - Anatomic Pathology Workflow (APW)
  - Ordering and performing anatomic pathology exams

- Community integration & content profiles

2010

- 2 - Anatomic Reporting for Public Health (ARPH)

2011

- 3 - Anatomic pathology Structured Reporting (APSR)

# Organization of Anatomic Pathology Technical Framework



2010

**IHE**

IHE Anatomic Pathology  
Technical Framework Supplement

**Anatomic Pathology Reporting to  
Public Health  
(ARPH)**

Draft for Trial Implementation

Date: August 27, 2009  
Authors:  
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2011

**IHE**

IHE Anatomic Pathology  
Technical Framework Supplement

**Anatomic Pathology  
Structured Reports  
(APSR)**

Draft

Date: January 18, 2010  
Authors:  
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IHE - HL7 Anatomic pathology  
Vilnius, 1<sup>st</sup> July 2010

**IHE** Changing the Way Healthcare **CONNECTS**

# 1 - Anatomic Pathology Workflow (APW)

- Establishes the integrity of basic pathology data shared/exchanged using standard transactions
- Ordering and reporting aspects of the workflow
  - Order entry, report creation and transmission.
- Imaging aspects of the workflow
  - Acquisition, storage and distribution processes of images among multiple systems.

# How to send an order?

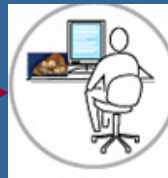
## Hospital

Care Ward

Anatomic Pathology  
Laboratory

*Order  
Mgmt*

Order Placer



Order Filler  
Report Sender

# How to query APIS for information about patient/specimen before image acquisition ?

## Hospital

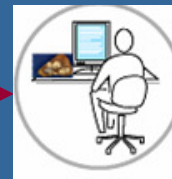
### Care Ward

### Anatomic Pathology Laboratory

Order Placer

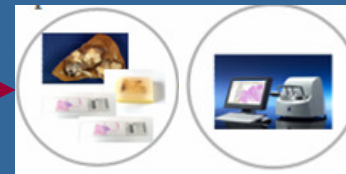


*Order Mgmt*



Order Filler  
Report Sender

*Query Modality  
worklist*



Acquisition Modality

# How to send & store digital images in PACS (including WSI) ?

## Hospital

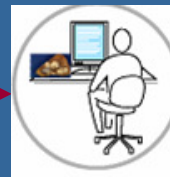
### Care Ward

### Anatomic Pathology Laboratory

Order Placer

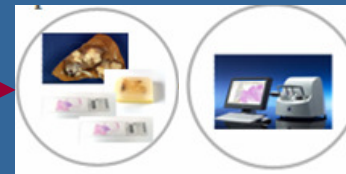


*Order Mgmt*



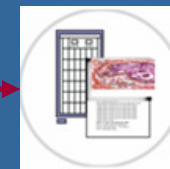
Order Filler  
Report Sender

*Query Modality  
worklist*



Acquisition Modality

Image Archive/  
Image Manager  
(PACS)



Report/result  
Repository

# How to send & store AP reports to the report repository?

## Hospital

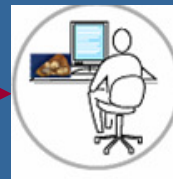
### Care Ward

### Anatomic Pathology Laboratory

Order Placer

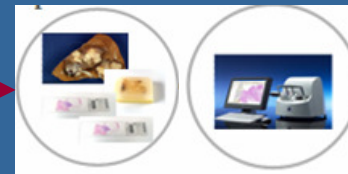


*Order Mgmt*



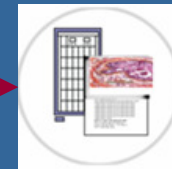
Order Filler  
Report Sender

*Query Modality  
worklist*

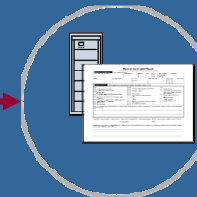


Acquisition Modality

Image Archive/  
Image Manager  
(PACS)



Report/result  
Repository

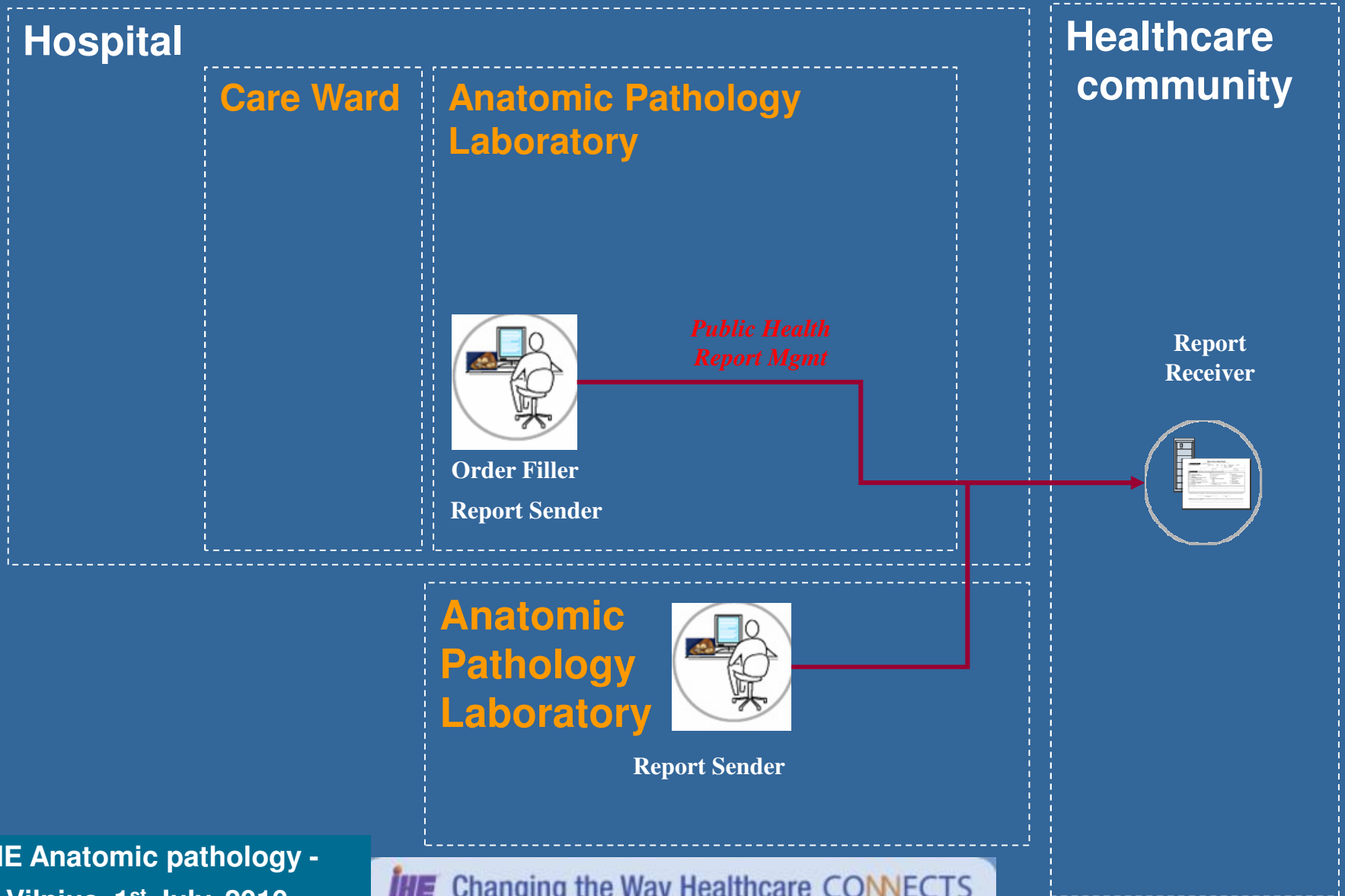


*Report Mgmt*

## 2 - Reporting Anatomic pathology to public health repositories (ARPH)

- Joint initiative : IHE AP, HL7 AP, NAACCR (North American Association of Central Cancer Registries), CDC (Centers for Disease Control).
- Defines the actors and transactions involved in anatomic pathology reporting to public health organizations.
  - *“This integration profile will make it easier for anatomic pathology laboratories, public health agencies, and software vendors to adopt a uniform method for data transmission and processing. It will facilitate international electronic reporting of anatomic pathology data in public health domain”.*

# How to send AP reports to cancer registries ?



## 3 – **NEW!** : Anatomic Pathology Structured Reporting

- Anatomic pathology reports (APR) document the diagnostic findings observed in “all specimens that are delivered to the pathology department from one operation or patient visit to a single clinician on a particular day.”
- Information used for patient care, clinical research and epidemiology.
- Recent recommendations for required, preferred, and optional elements for any APR of surgical pathology, regardless of report types [Goldsmith08]

# National initiatives

## From clinical document models...

- 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 21 locations (85% of new cancers in France) (required by accrediting bodies)
- Australasia
  - 6 templates for cancer APSR
- UK Royal college

# National initiatives ... to IT templates

- Non healthcare IT standard
  - CAP electronic Cancer Checklist
- Healthcare IT standard
  - CEN archetypes
    - Australia
  - HL7 CDA
    - Most reliable standard for clinical document templates
    - Existing implementation guides for the APSR ?
      - Netherlands, Germany

# **New!:** IHE Content profile Anatomic Pathology Structured Reports

- Joint IHE and HL7 anatomic pathology initiative
- Standardizing Anatomic Pathology Structured Report using HL7 CDA
  - CDA documents including Anatomic Pathology observations bind to images or regions of interest
  - Shared or exchanged within a community of care providers
- Using existing integration profiles defined by IHE Information Technology Infrastructure

# Scope

## ● APSR for surgical pathology

- all fields of anatomic pathology (inflammatory diseases as well as cancer)
  - Current focus on cancer
    - Generic cancer template
    - 20 organ-specific cancer templates
- “Traditional” anatomic pathology observation using light microscopy (including immunohistochemistry, FISH, etc)

## ● Further cycles

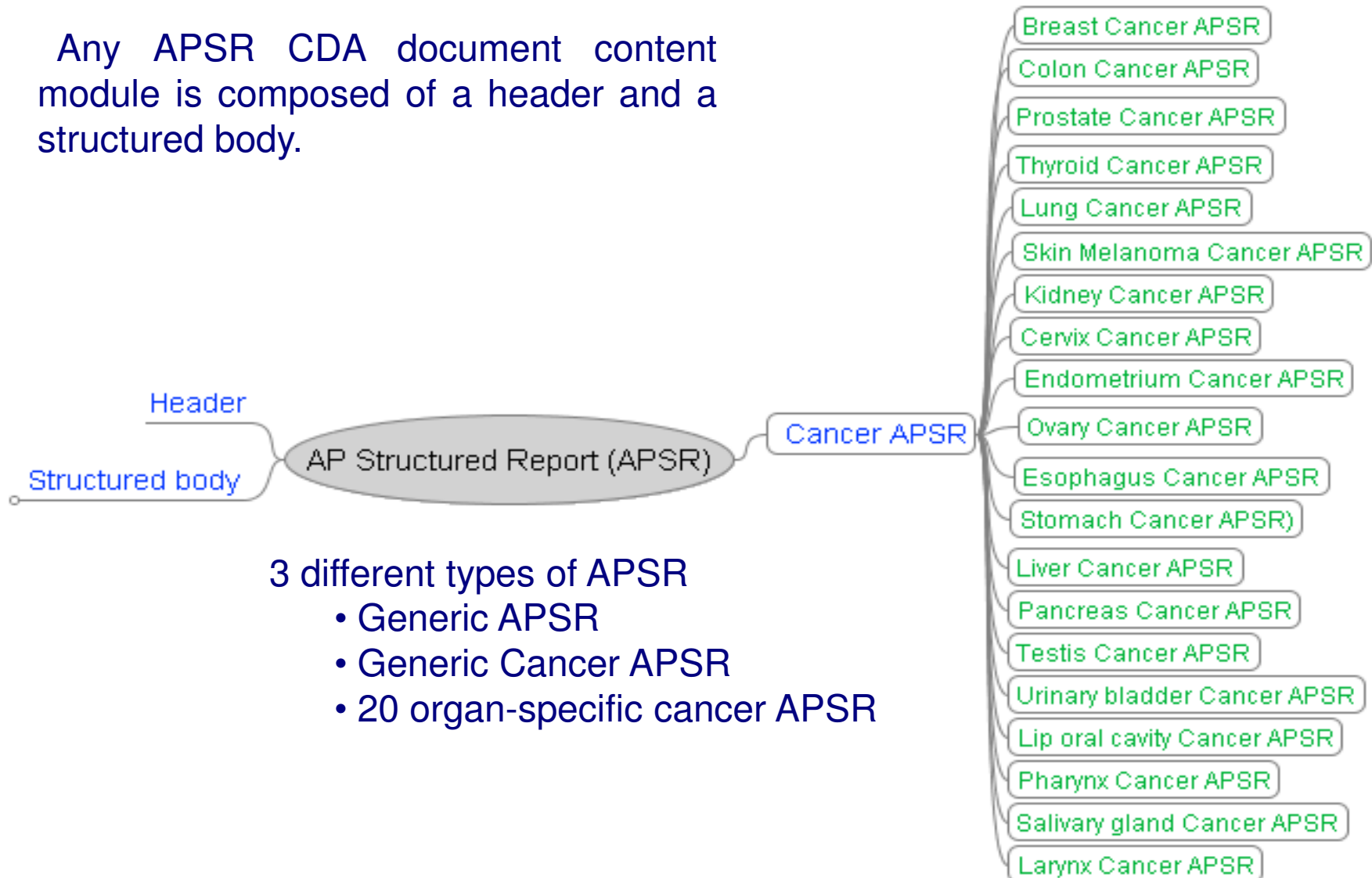
- Cytopathology, forensic (autopsy, toxicology)
- Special ancillary techniques (flow cytometry, cytogenetics, electronic microscopy)
- Research (TMA, etc)

## Example : Use case 1

- Barbara Breast visits Sammy Surgeon for removal of a breast tumor. Sammy Surgeon orders the Requested Procedure “Breast surgical specimen & pathological examination” and sends the specimen(s) to the anatomic pathology department.
- The specimen(s) are processed for microscopic examination and other special ancillary techniques if needed. During the imaging interpretation process, microscopic imaging is performed if needed.
- At the end of the interpretation process, pathologist queries the **Content Creator** for the appropriate APSR template, fills the form, binds some relevant images and/or regions of interest to specific observation(s), validates and signs the document.

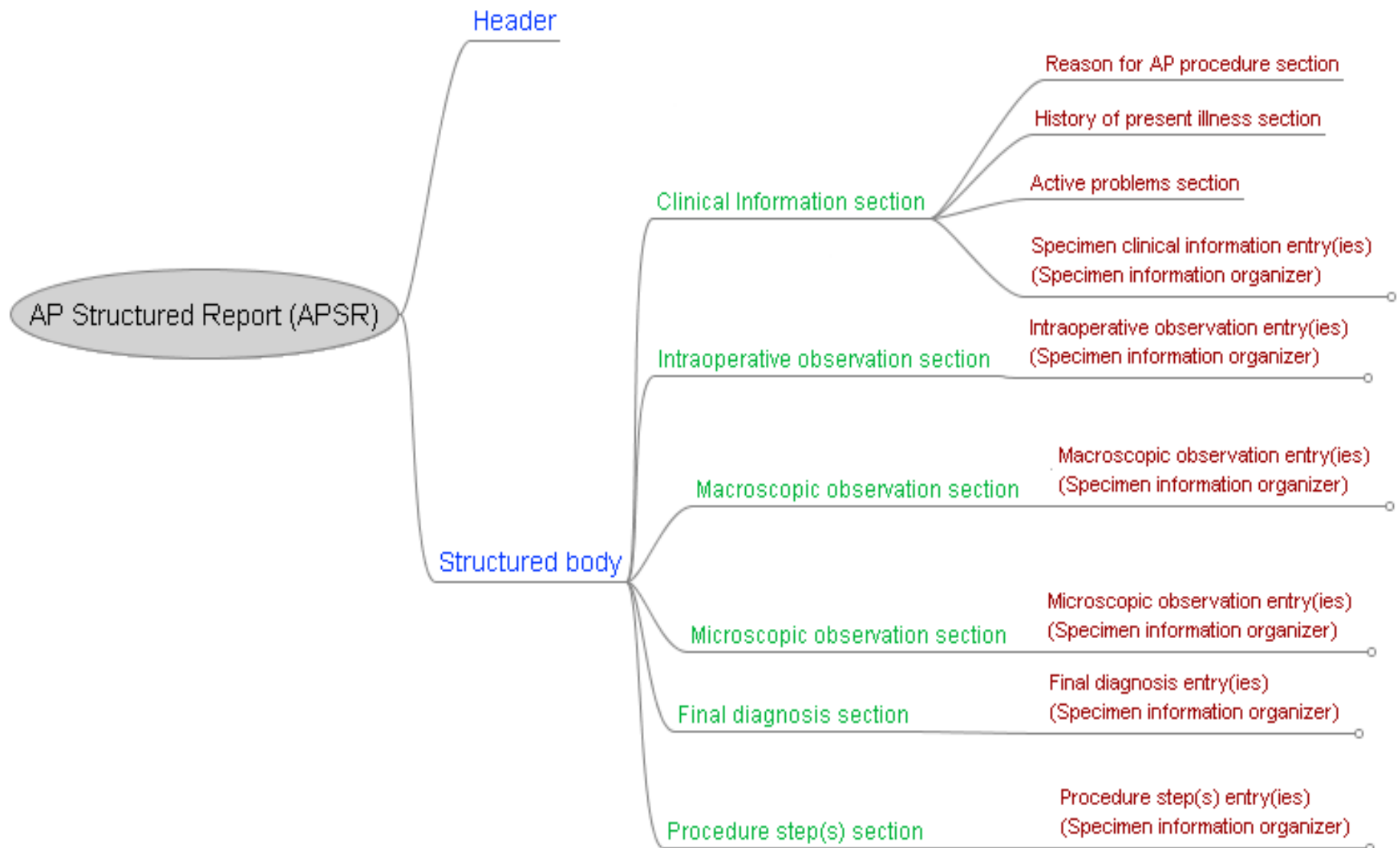
# CDA Document Content Modules

Any APSR CDA document content module is composed of a header and a structured body.



# AP Structured Report (APSR)

(1.3.6.1.4.1.19376.1.8.1.1.1)



# Cancer APSR

- Generic Cancer APSR (1.3.6.1.4.1.19376.1.8.1.1.2)
  - is a kind of AP structured report
    - Parent template is 1.3.6.1.4.1.19376.1.8.1.1.1
  - Defines the base set of constraints that apply to all cancer-related AP structured report.
- Organ-specific cancer APSR
  - is a kind of AP cancer structured report
    - Parent templates
      - 1.3.6.1.4.1.19376.1.8.1.1.1 (generic APSR content module)
      - 1.3.6.1.4.1.19376.1.8.1.1.2 (cancer APSR content module)

# CDA Section Content Modules

- Clinical Information Section (1.3.6.1.4.1.19376.1.8.1.2.1)
  - Reason for AP procedure (1.3.6.1.4.1.19376.1.5.3.1.3.2)
  - History of present illness (1.3.6.1.4.1.19376.1.5.3.1.3.4)
  - Active Problems (1.3.6.1.4.1.19376.1.5.3.1.3.6)
- Intraoperative observation section (1.3.6.1.4.1.19376.1.8.1.2.2)
- Macroscopic observation section (1.3.6.1.4.1.19376.1.8.1.2.3)
- Microscopic observation section (1.3.6.1.4.1.19376.1.8.1.2.4)
- Diagnosis section (1.3.6.1.4.1.19376.1.8.1.2.5)
- Procedure step(s) section (1.3.6.1.4.1.19376.1.8.1.2.6)

# CDA Section Content Modules

## Example (1/4)

- Clinical Information Section

- “Tissue submitted: left breast excision and apical axillary tissue”
- “47-years old female with left UOQ breast mass. Carcinoma of breast. Post operative diagnosis: same.”

- Intraoperative observation section

- Frozen section diagnosis of infiltrating duct carcinoma, left breast

# CDA Section Content Modules

## Example (2/4)

- Macroscopic observation section
  - Part #1 received fresh after frozen section preparation is labeled “left breast biopsy”. Single firm nodule measuring 3cm in circular diameter and 1.5cm in thickness surrounded by adherent fibrofatty tissue. On section a pale gray, slightly mottled appearance is revealed. Numerous sections are submitted for permanent processing.
  - Part #2 received fresh is labeled "apical left axillary tissue". Two amorphous fibrofatty tissue masses without grossly discernible lymph nodes therein. Both pieces are rendered into numerous sections and submitted in their entirety for history.

# CDA Section Content Modules

## Example (3/4)

- Microscopic observation section
  - Sections of part #1 confirm frozen section diagnosis of infiltrating duct carcinoma. It is to be noted that the tumor cells show considerable pleomorphism, and mitotic figures are frequent (as many as 4 per high power field). Total size of primary tumor is estimated to be 3cm in greatest dimension. Many foci of calcification are present within the tumor.
  - Part #2 consists of fibrofatty tissue and includes 18 lymph nodes. All lymph nodes are free of disease with the exception of one lymph node, which contains several micrometastases.

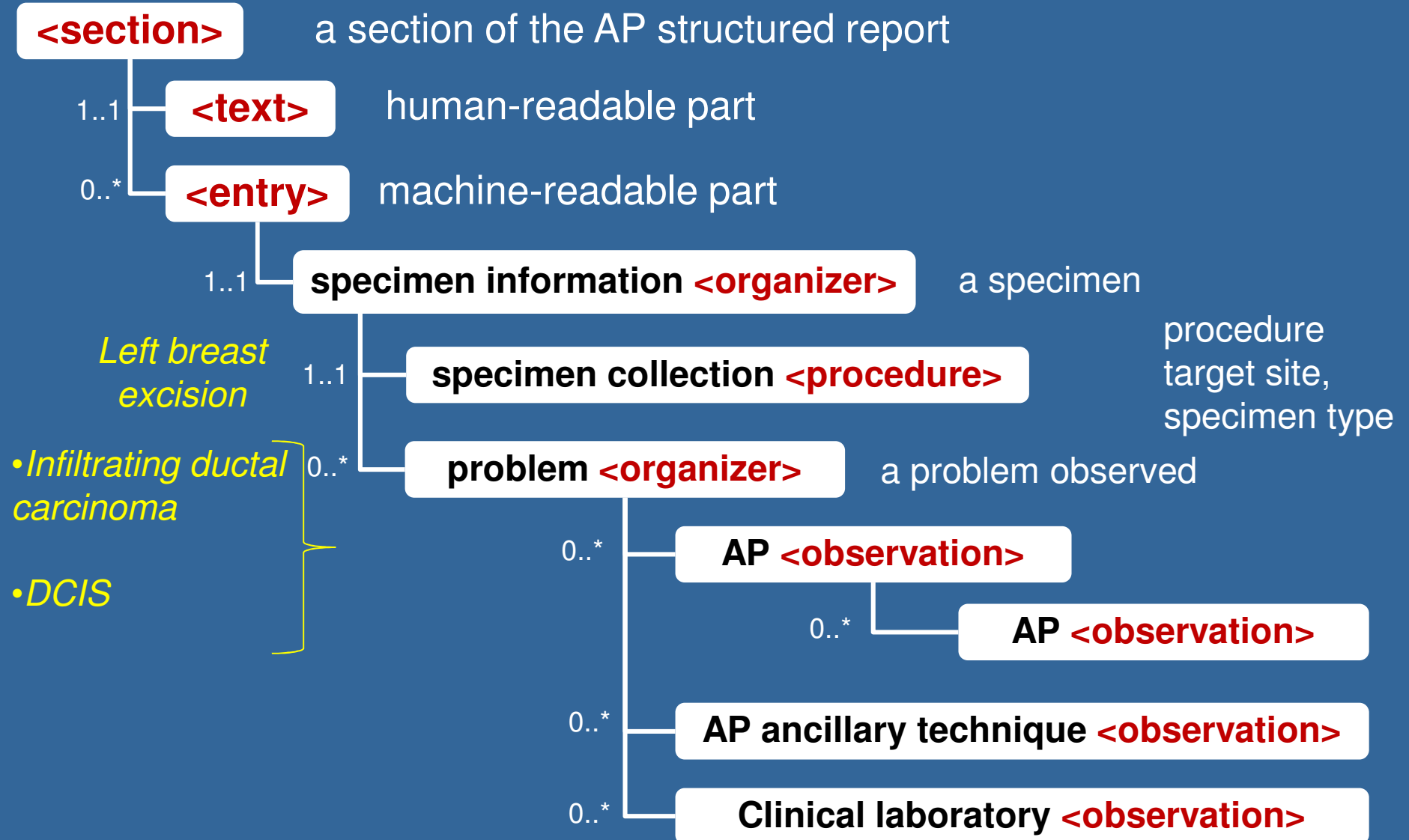
# CDA Section Content Modules

## Example (4/4)

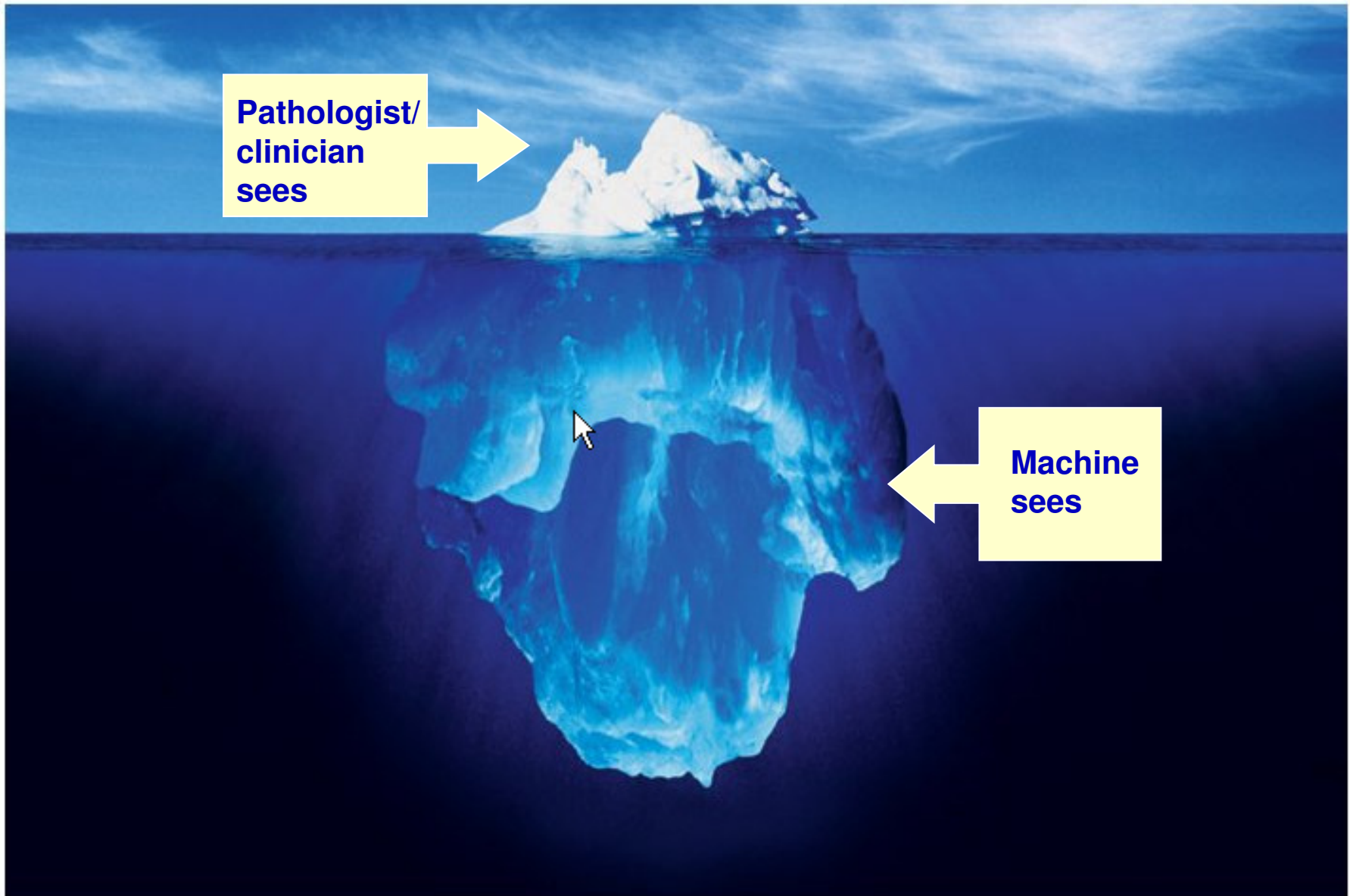
### ● Diagnosis section

- 1. Single intact complete excision of invasive ductal carcinoma. Upper outer quadrant, left breast. Nottingham Histologic Grade = 2 (Glandular differentiation: Score 2, Nuclear pleomorphism: score 3, Mitotic count: score 2). Margin uninvolved by invasive ductal carcinoma. No DCIS. pT2.pN1a.cM0.
- 2. Micrometastases, left axillary lymph node. Free of disease 17 of 18 lymph nodes

# Organizing observations in sections



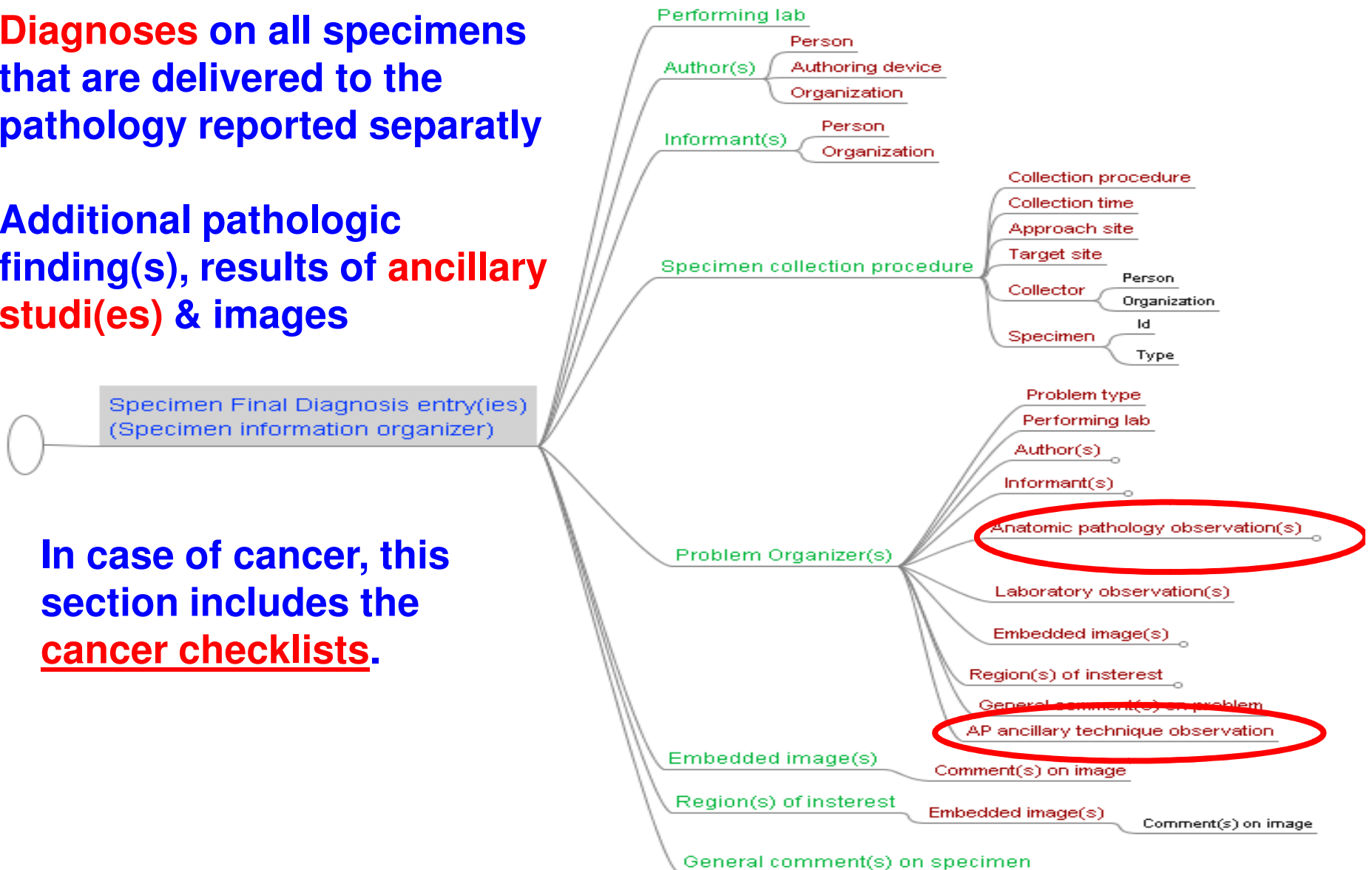
# The CDA Iceberg



# Diagnosis entry

**Diagnoses** on all specimens that are delivered to the pathology reported separately

Additional pathologic finding(s), results of **ancillary studi(es)** & images



In case of cancer, this section includes the **cancer checklists.**

# Anatomic pathology observations (16/79)

- Specimen weight
- Specimen size
  - largest dimension
  - additional dimension
- Specimen integrity
- Macroscopic type
- Lesion site
- Tumor site
- Lesion focality
- Tumor focality
- Lesion size
  - largest dimension
  - additional dimension
- Tumor size
  - largest dimension
  - additional dimension
  - Radical prostatectomy
  - Enucleation Specimens
  - TUR Specimens

# Anatomic pathology observations (17/79)

- Histologic type of DCIS
- Histologic type of DCIS - Architectural pattern
- Histologic type of DCIS - Necrosis
- Histologic type of in situ neoplasm
- Histologic type of infiltrating malignant neoplasm
- Histologic type of LCIS
- Histologic type of morphologic abnormality
- Histologic Type of polyp in which invasive carcinoma arose
- Histologic grade
- Histologic grade - Gleason
- Histologic grade - Nottingham
- Histologic grade - Nottingham - Glandular (Acinar)/Tubular Differentiation
- Histologic grade - Nottingham - Mitotic Count
- Histologic grade - Nottingham - Nuclear Pleomorphism
- Histologic grade - World Health Organization (WHO) Grading System
- Histologic grade of DCIS
- Histologic grade of LCIS

# Anatomic pathology observations (12/79)

- Histologic Features Suggestive of Microsatellite Instability

- Tumor deposits

- Macroscopic and Microscopic Extent of Lesion

- Macroscopic and Microscopic Extent of Tumor

- Number of lymph nodes

- examined

- involved

- with isolated tumor cells ( $< 0.2$  mm and  $< = 200$  cells)

- with macrometastases ( $>0.2$  cm)

- with micrometastases ( $>0.2$  mm to 0.2 cm and/or  $>200$  cells):

- Lymph node metastasis size

- Lymph node capsule involvement

- Lymph node site

# Anatomic pathology observations (18/79)

- Margins involvement by
  - invasive carcinoma
  - adenoma
  - carcinoma in situ
  - DCIS
  - dysplasia
  - intestinal metaplasia (Barrett's esophagus) with dysplasia
  - intestinal metaplasia (Barrett's esophagus) without dysplasia
  - invasive melanoma
  - infiltrating malignant neoplasm
  - lesion
  - melanoma in situ
- Margin site
- Distance of DCIS from closest uninvolved margin
- Distance of in situ carcinoma from closest margin
- Distance of infiltrating malignant neoplasm from closest uninvolved margin
- Distance of lesion from closest uninvolved margin
- Lymph-vascular invasion
- Perineural invasion

# Anatomic pathology observations (5/79)

- TNM Descriptors
- pT
- pN
- pM
- Treatment effect

# AP ancillary technique observations (n=12)

- Estrogen Receptor
- Progesterone Receptor
- HER2/neu (FISH)
- HER2/neu (immunoperoxidase studies)
- Immunohistochemistry Study for Mismatch Repair Proteins-MLH1
- Immunohistochemistry Study for Mismatch Repair Proteins-MLH2
- Immunohistochemistry Study for Mismatch Repair Proteins-MLH6
- Immunohistochemistry Study for Mismatch Repair Proteins-PMS2
- BRAF V600E mutational analysis
- KRAS mutational analysis
- Microsatellite instability
- Epidermal growth factor receptor (EGFR)

# Relevant AP observation for the entry & their status (O, R, R2)

	Document Content Modules																					
Anatomic pathology observations	APSR	cancer APSR	breast cancer	cervix cancer	colon cancer	endometrium	esophagus	kidney	larynx cancer	lip oral cavity	liver cancer	lung cancer	ovary cancer	pancreas	pharynx	prostate	salivary	skin	stomach	testis cancer	thyroid	urinary
Name	APSR	cancer APSR	breast cancer	cervix cancer	colon cancer	endometrium	esophagus	kidney	larynx cancer	lip oral cavity	liver cancer	lung cancer	ovary cancer	pancreas	pharynx	prostate	salivary	skin	stomach	testis cancer	thyroid	urinary
Lesion site	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tumor site	O	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
....																						
Histologic type of DCIS	O	O	R2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
....																						
Microsatellite instability	O	O	X	X	R2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

# AP observation

e.g histologic type, number of involved lymph nodes

## ● <observation>

- [1..1] <code> *the item*
- [1..1] <statusCode> *(completed | aborted)*
- [1..1] <effectiveTime>
- [0..\*] <value> *(zero to many response)*
  - coded *(code, coding system, version, display name)*
    - [0..\*] <qualifier> *(postcoordinated expression)*
  - numeric *(integer or real, unit)*
  - textual
- [0..1] <interpretationCode> *(e.g. “normal”, “low”)*
- [0..1] <methodCode>
- [0..1] <performer> *(performing lab if different)*
- [0..\*] <author> *(dictated or authored the result)*
- [0..\*] <informant> *(provided useful information)*
- [0..\*] sub-observation *(e.g. distance to margin)*
- [0..\*] embedded image
- [0..\*] comment

# AP observation (Coded Descriptor) Generic value set

- Specimen integrity (all APSRs)

	Code	Comment
Intact specimen(s)		Unopened, Intact capsule, Single intact specimen, Multiple intact designated specimens (margins can be evaluated)
Non intact specimen		(Open, Ruptured capsule, Multiple non designated specimens, Fragmented, Morcellated (margins cannot be evaluated with certainty))

# AP observation (Coded Descriptor)

## Generic value set

- Treatment effect (all cancer APSRs)

	Code	displayName
No prior treatment		
Treatment history not known		
No residual tumor (complete response, grade 0)		
Marked response (grade 1, minimal residual cancer)		
Moderate response (grade 2)		
No definite response identified (grade 3, poor or no response)		

- ***Admitted exceptions: Unknown, other (specify)***

# AP observation (Coded Descriptor)

## Specific value set

- SpecimenCollectionProcedure\_procedureCode (Breast Cancer APSR)

	Code	displayName
Excision without wire-guided localization	116219004	Excisional biopsy of breast mass with axillary contents (procedure)
	10940003	Excisional biopsy of breast mass without axillary contents (procedure)
Excision with wire-guided localization	10940003	Excisional biopsy of breast with preoperative localization (procedure)
Total mastectomy (including nipple and skin)	2150335013	Modified radical mastectomy (procedure)

- ***Admitted exceptions: Unknown, other (specify)***

# The pathologist/clinician sees...

Breast cancer AP report - Mozilla Firefox

Fichier Édition Affichage Historique Marque-pages Outils ?

file:///C:/Documents and Settings/fmacary/Mes documents/ASIP Cadre d'interop SIS/Test contenus CDA/APSR\_breastCancer.xml

Breast cancer AP report

## Breast cancer AP report

<b>Patient</b>	Miss BARBARA BREAST		
<b>Date de naissance</b>	21 Septembre 1971	<b>Sexe</b>	Féminin
<b>Coordonnées</b>	Domicile principal: 39 East Street 69499, Appleton, WI, United States	<b>Identifiant(s)</b>	Autre : 0411886319605719371016 [1.3.6.1.4.1.19376.1.8.9.2]

<b>Identifiant du document</b>	A7102400008_1 [1.3.6.1.4.1.19376.1.8.9.1]		
<b>Type de document</b>	(11526-1) Anatomic pathology structured report		
<b>Date de création</b>	4 Janvier 2010, 16:05 +0100		
<b>Domaine</b>	UV		
<b>Référence au modèle CDA</b>	POCD_HD000040 [2.16.840.1.113883.1.3]		
<b>Conformité</b>	1.3.6.1.4.1.19376.1.8.1.1.1 1.3.6.1.4.1.19376.1.8.1.1.2 1.3.6.1.4.1.19376.1.8.1.1.2.1		
<b>Langue principale</b>	en-US		
<b>Identifiant du lot de versions</b>	A7102400008 [1.3.6.1.4.1.19376.1.8.9.1]		
<b>Numéro de version</b>	1		

<b>Niveau de confidentialité</b>	Normal		
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<b>Acte principal documenté</b>	(xxxxxx) Pathology examination de 4 Janvier 2010, 09:22 +0100 à 4 Janvier 2010, 16:05 +0100		
<b>Exécutant</b>	801234567897 [1.3.6.1.4.1.19376.1.8.9.3] Organisation : Laboratoire du parc		

<b>Auteur</b>	Marcel French-Pathologist Ph D, Laboratoire du parc 1120456789 [1.3.6.1.4.1.19376.1.8.9.4]		
<b>Profession/spécialité</b>	(G15_10/R01_C01) Anatomie et cytologie pathologiques humaines		
<b>Coordonnées</b>	Tel: +33-602030499		

<b>Identifiant de la rencontre</b>	234567890 [1.3.6.1.4.1.19376.1.8.9.7]	<b>Type de rencontre</b>	(ACUTE) inpatient acute
<b>Date de la rencontre</b>			

# The pathologist/clinician sees...

<b>Prescripteur (PS)</b>	Doctor Eva Surgeon Ph D à 31 Décembre 2009
<b>Coordonnées</b>	Tel: 0147150000
<b>Approbateur</b>	JEAN Pathologist 801234567898 [1.3.6.1.4.1.19376.1.8.9.3] Approuvé le : 4 Janvier 2010, 11:20 +0100
<b>Coordonnées</b>	
<b>Signataire légal</b>	Marcel French-Pathologist 801234567897 [1.3.6.1.4.1.19376.1.8.9.3] Signé le 4 Janvier 2010, 15:25:03 +0100
<b>Destinataire</b>	Thomas WOULDLIKETOKNOW 987 [1.3.6.1.4.1.19376.1.8.9.3]
<b>Coordonnées</b>	1600 Clifton Road 30333, Atlanta, GA Tel: 404-639-3535
<b>Structure productrice</b>	Laboratoire du parc 1120456789 [1.3.6.1.4.1.19376.1.8.9.4]
<b>Coordonnées</b>	187 Rue du Parc est 38000, GRENOBLE, France
<b>Références prescriptions</b>	12345 [1.3.6.1.4.1.19376.1.8.9.8]

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- [FINAL DIAGNOSIS](#)

### CLINICAL INFORMATION

Tissue submitted: left breast biopsy and apical axillary tissue

#### **Reason for anatomic pathology procedure**

Breast mass - left breast

### FINAL DIAGNOSIS

1. Single intact complete excision of invasive ductal carcinoma. Upper outer quadrant, left breast. Nottingham Histologic Grade = 2 (Glandular differentiation: Score 2, Nuclear pleomorphism: score 3, Mitotic count: score 2). Margin uninvolved by invasive ductal carcinoma. No DCIS. pT2,pN1a,cM0.
2. Micrometastases, left axillary lymph node. Free of disease 17 of 18 lymph nodes

# The machine sees...

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<ClinicalDocument xmlns='urn:hl7-org:v3'>
  <typeId extension="POCD_HD000040" root="2.16.840.1.113883.1.3"/>
  <!-- conformance to a generic APSR content module -->
  <templateId root='1.3.6.1.4.1.19376.1.8.1.1.1'/>
  <!-- conformance to a cancer APSR content module -->
  <templateId root='1.3.6.1.4.1.19376.1.8.1.1.2'/>
  <!-- conformance to a breast cancer content module -->
  <templateId root='1.3.6.1.4.1.19376.1.8.1.1.2.1'/>

  ...remainder of the header not shown ...

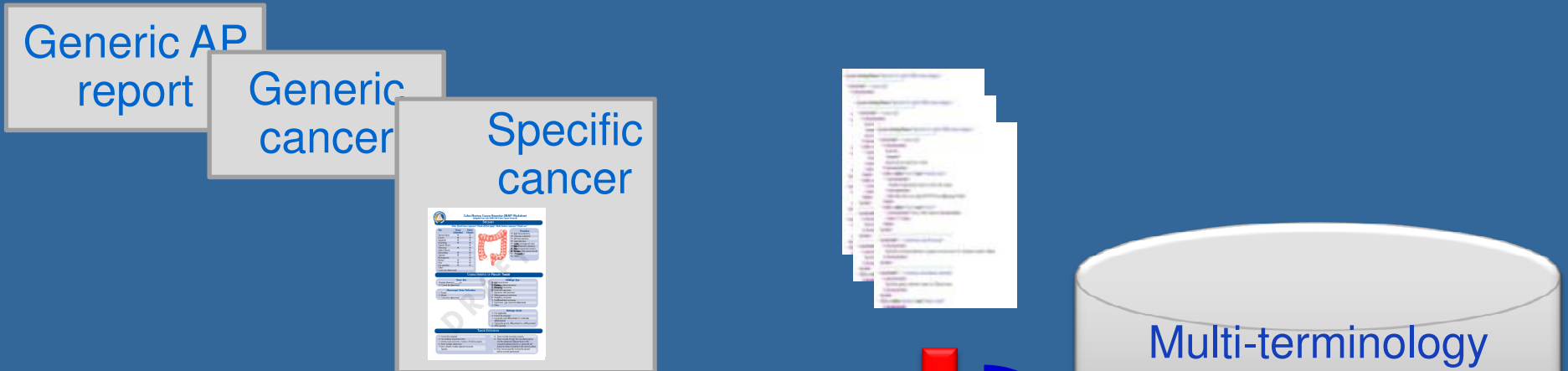
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    <structuredBody>
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        <section>
          <templateId root='1.3.6.1.4.1.19376.1.8.1.2.1'/>
          <code code='22636-5' displayName='Pathology report relevant history'
            codeSystem='2.16.840.1.113883.6.1' codeSystemName='LOINC'/>
          <title>Relevant information provided by the ordering physician</title>
          <text>
            Tissue submitted: left breast biopsy and apical axillary tissue
          </text>
          <entry> ... </entry>
        </component>
        <section>
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          <text>Breast mass - left breast</text>
          <entry> ... </entry>
        </section>
      </component>
    </component>
  </structuredBody>
</ClinicalDocument>
```

# **New!:** Content profile APSR

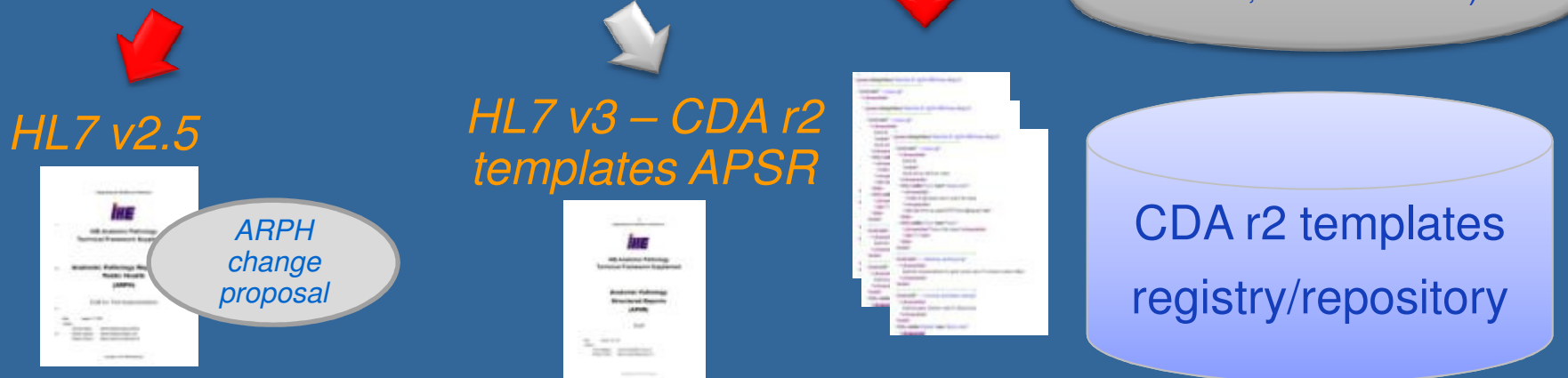
- Unique opportunity to share/exchange Anatomic Pathology Structured Reports that are interoperable at an international level
- Use machine-readable format of APSR
  - Decision support
  - Clinical data warehouses
    - appropriate content anonymization and patient identification pseudonymization

# Limits : Relationships to reference terminologies & existing standards

## Step 1: Detailed clinical models

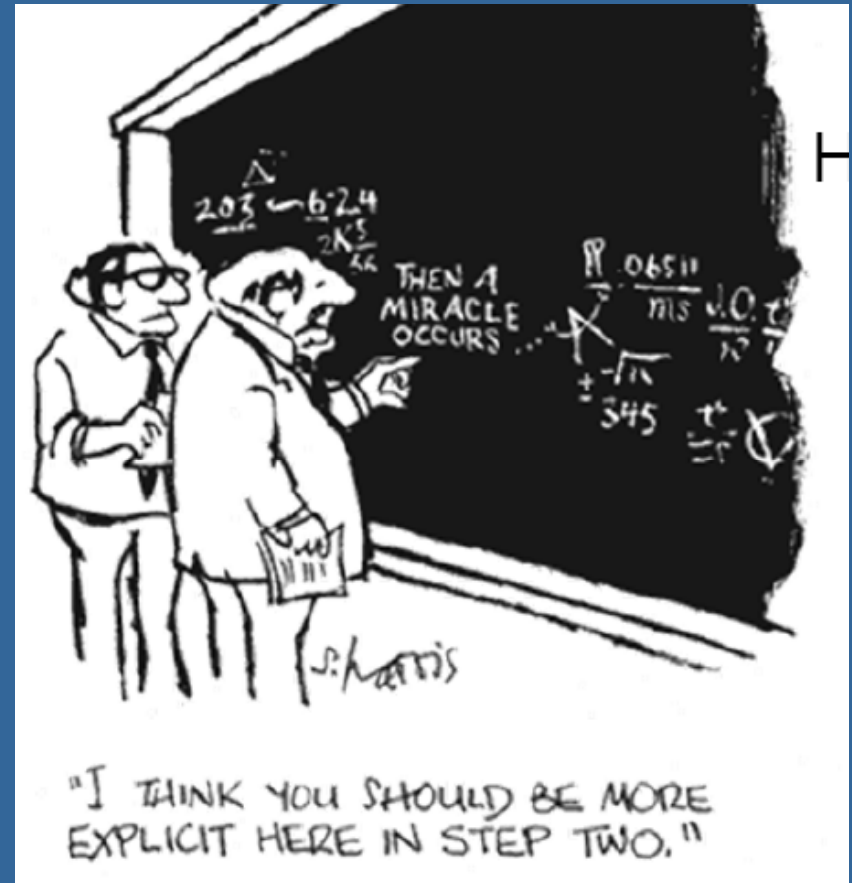


## Step 2: Implementation guides



# Conclusion

- Progress are made in the field of Integrating Anatomic Pathology machine-readable structured reports & their evidences ( (whole slide) images)
- Semantic interoperability remains a challenging issue
  - E.g binding anatomic pathology observations of structured reports templates to reference terminologies such as SNOMED CT



# Planning IHE Anatomic Pathology (connectathons 2011)

Date	Activity	Location
Jan 17-22	PC review of scope of integration profiles	IHE AP & HL7 AP joint meeting (HL7 WG meeting Phoenix)
April 12-16	IHE Europe Connectathon	Bordeaux, France
May	TC publishes AP TF supplement – vol1 & 2 for Public comment	
June 29-30th	<i>TC discuss AP TF supplement Public comment &amp; feedback from IHE connectathon</i>	IHE AP & IC0604 COST ActionWG2 joint meeting (Telepathology Congress - Vilnius)
July	TC publishes AP TF supplement – vol1 & 2 for Trial Implementation	
Sept 15 - Deadline	Submit Brief Profile Proposals 2011 to PC	
Oct 3-8	PC selects "Short List" of Profiles	IHE AP & HL7 AP joint meeting (HL7 23rd Annual Plenary & WG Meeting - Cambridge, MA)

# More information

- Googlegroup : [ihe-anatomic-pathology-committee@googlegroups.com](mailto:ihe-anatomic-pathology-committee@googlegroups.com)
- Road map & change proposals
  - [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 IHE Anatomic Pathology initiative, its sponsors (GMSIH, ADICAP, SEIS, SEAP, SFP), and a list of contents including "How to participate", "Timeline", "Roadmap", "Current Activity", "Demonstrations & Presentations", "Supporters and Endorsements", and "See Also". The page also includes a search box, a navigation menu, and a toolbox.

# Perspective: AP Advice Request Use Case

- A requesting pathologist ask a remote expert pathologist or network of expert pathologists for second opinion on specimen
- The specimen is sent to this remote site
  - Physically (blocks, slides)
  - Virtually (gross images, histological images including VS)
    - In that case, a “Manifest” document is sent, referencing the images that were either sent previously or made accessible remotely
- In every case the Advice Request and Response are communicated through IT
  - Asynchronous or synchronous communication is possible
- All the documents are managed in the context of the Anatomic pathology Workflow, from both sides

# AP Advice Request Context

- The Advice Request in Anatomic Pathology (APAR) is not different per se than other kind of Medical Imaging based Advice Request (primary diagnosis, therapeutic advice or second opinion)
- So it has to be described as a « content » profile of a more generic « Imaging Advice Request »
- The WSI (huge images) introduces some constraints that are emerging in other imaging use cases (CT, MR studies...)

# AP Advice Request Profile(s)

- The APAR Profile has to be built on a set of other profiles (from AP, ITI and RAD):
  - APW for the Workflow (when Advice Request is part of such a workflow)
  - AP Advice Request “content” profile for the request
  - Document interchange (based on XDM/XDR) or sharing (based on XDS)
  - XDS-I profile for access to images (at least the “Manifest” document and the “WADO” access)
    - A special extension of that one has to be created for accessing the WSI images
  - AP structured report “content” profile for the answer

# AP Advice Request Diagram

