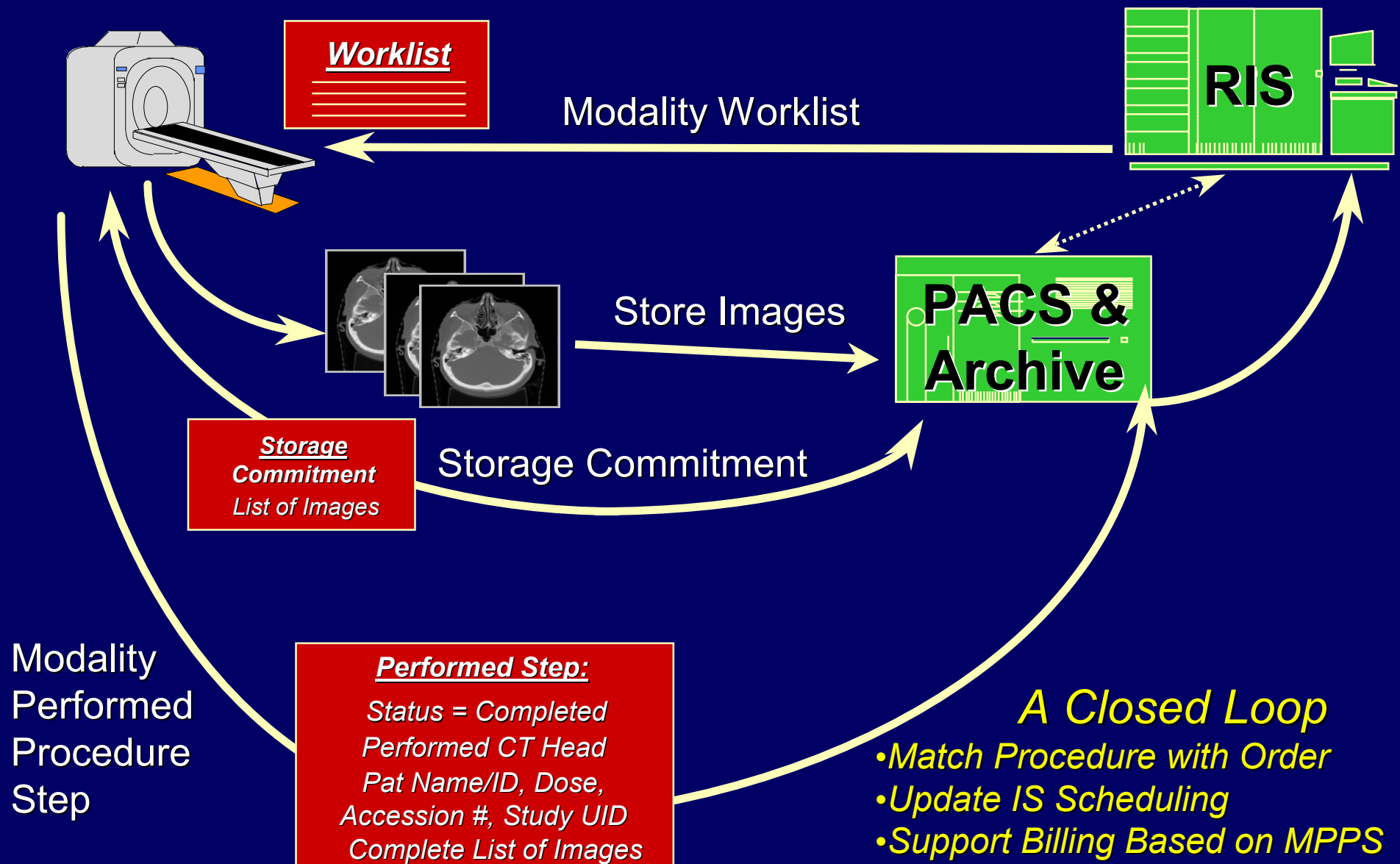# DICOM
General Perspectives

Charles Parisot, GE Medical Systems

SSRPM Course – Neuchâtel – June 2003

4 DICOM Service Classes for Integration
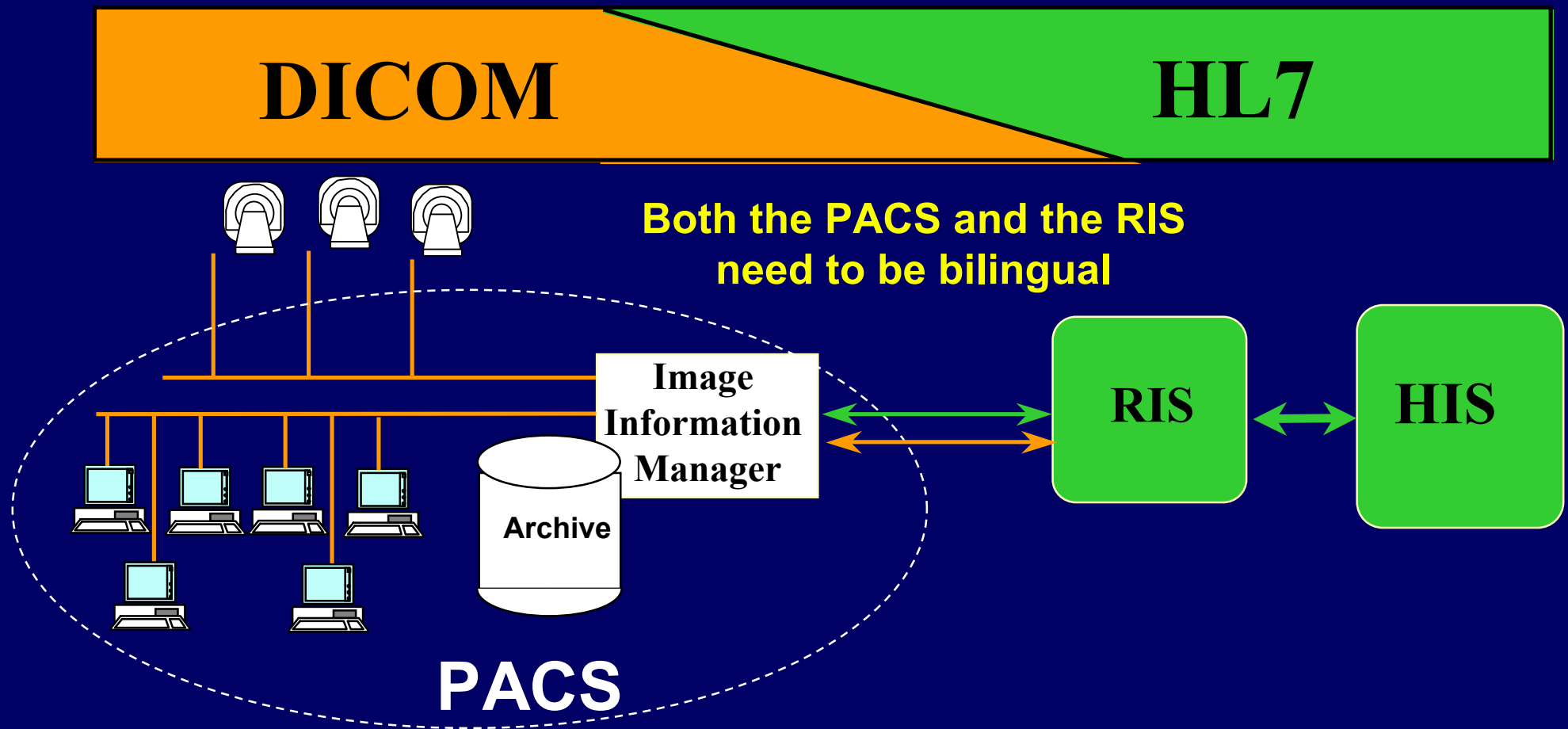

Worklist

Modality Worklist

RIS

Store Images

PACS & Archive

Storage Commitment
List of Images

Storage Commitment

Modality Performed Procedure Step

Performed Step:
Status = Completed
Performed CT Head
Pat Name/ID, Dose,
Accession #, Study UID
Complete List of Images

A Closed Loop
•*Match Procedure with Order*
•*Update IS Scheduling*
•*Support Billing Based on MPPS*
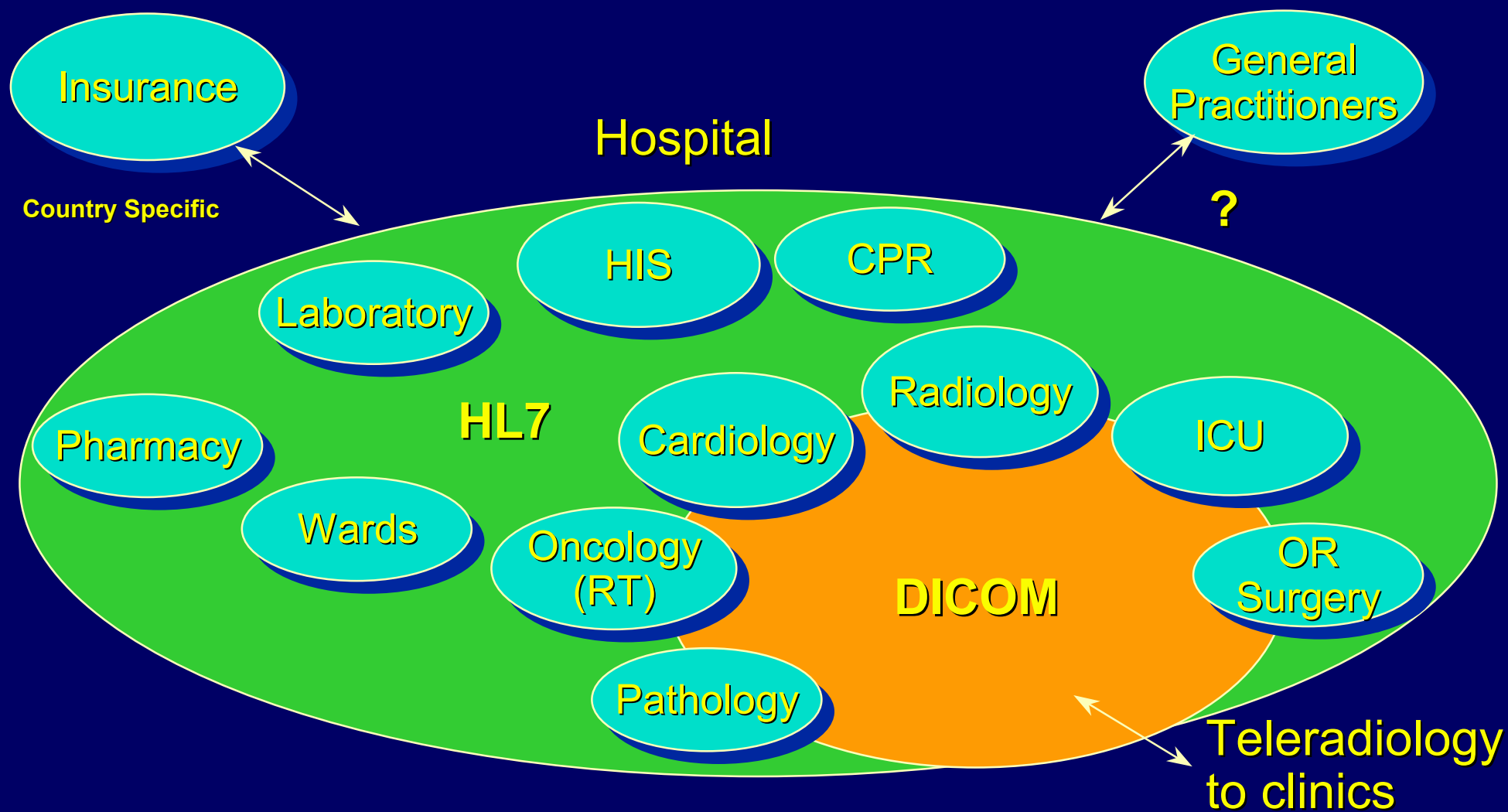
HL7 and DICOM
are not competing standards

- **DICOM is focused at "diagnostics" and "processable" imaging:**

    - within Imaging Acquisition Departments (Radiology, Cardiology, Oncology, etc.)

    - between those and Image Processing Departments (neurology, oncology, etc.)

    - The Clinical Patient Record will contain/reference DICOM images (diagnostics level)

- **HL7 is focused at "textual" structured information exchange within the hospital integrating its various Departments. It is increasingly used in Europe.**

- **HL7 and DICOM can co-exist and the cooperation between the two standard bodies is high to facilitate joint usage.**

Standards Domain of Application

DICOM   **HL7**

**Both the PACS and the RIS
need to be bilingual**

Image
Information
Manager

Archive

RIS   **HIS**

PACS

Integration of PACS and HIS/RIS

- **RSNA, HIMSS, SFR, DRG, GMSIH work with a group of leading HIS, RIS, PACS and Modality Vendors to support a joint Initiative called IHE.**

- **Integrating the Healthcare Enterprise has specified standards-based integration profiles, now supported in products.**

- **IHE is not a new standard. Its technical framework integrates standard DICOM and HL7 "transactions" across modalities, PACS, RIS and HIS:**
  www.rsna.org/IHE   www.ihe-europe.org

- **IHE is now in full swing in Europe:**
  - Many Sessions at ECR 2001-2002-2003.
  - IHE France by French Radiology Association and HIS Modernization Group. Demo at JFR 2001, Hosptial Expo 2002
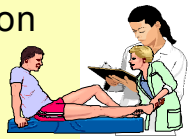 - IHE Deutschland, Demo at DRK 2002-2003. IHE in Italy too.
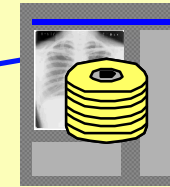
12a

IHE Workflow Events

www.rsna.org/ihe

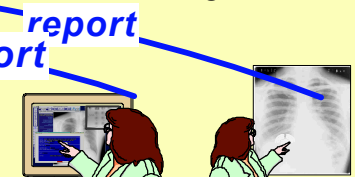Initial capture of patient demographic information

Registration

Goal:
Accurate, complete report accessible whenever the referring physician desires
referring physician desires

Radiology report stored for network access

Diagnostic image and demographic info presented to radiologist

Report Repository

report

HIS

patient information

Referring physician orders the desired radiology procedure

Orders Placed

Radiology report viewed by referring physician

report
report

Film Lightbox

Diagnostic Workstation

PACS

Diagnostic image and demographic info stored for network access

RIS

procedure scheduled
Prefetch any relevant prior studies

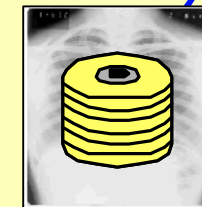*images retrieved*

examination orders

Orders Filled

Break down the entered order into specific radiology procedure steps to be performed

modality worklist
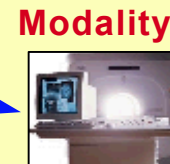*Patient and procedure information retrieved by the modality*

Image Manager and Archive

Film Folder

Modality

images stored

acquisition completed

acquisition completed

images printed

Position patient and acquire image
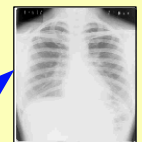
Film
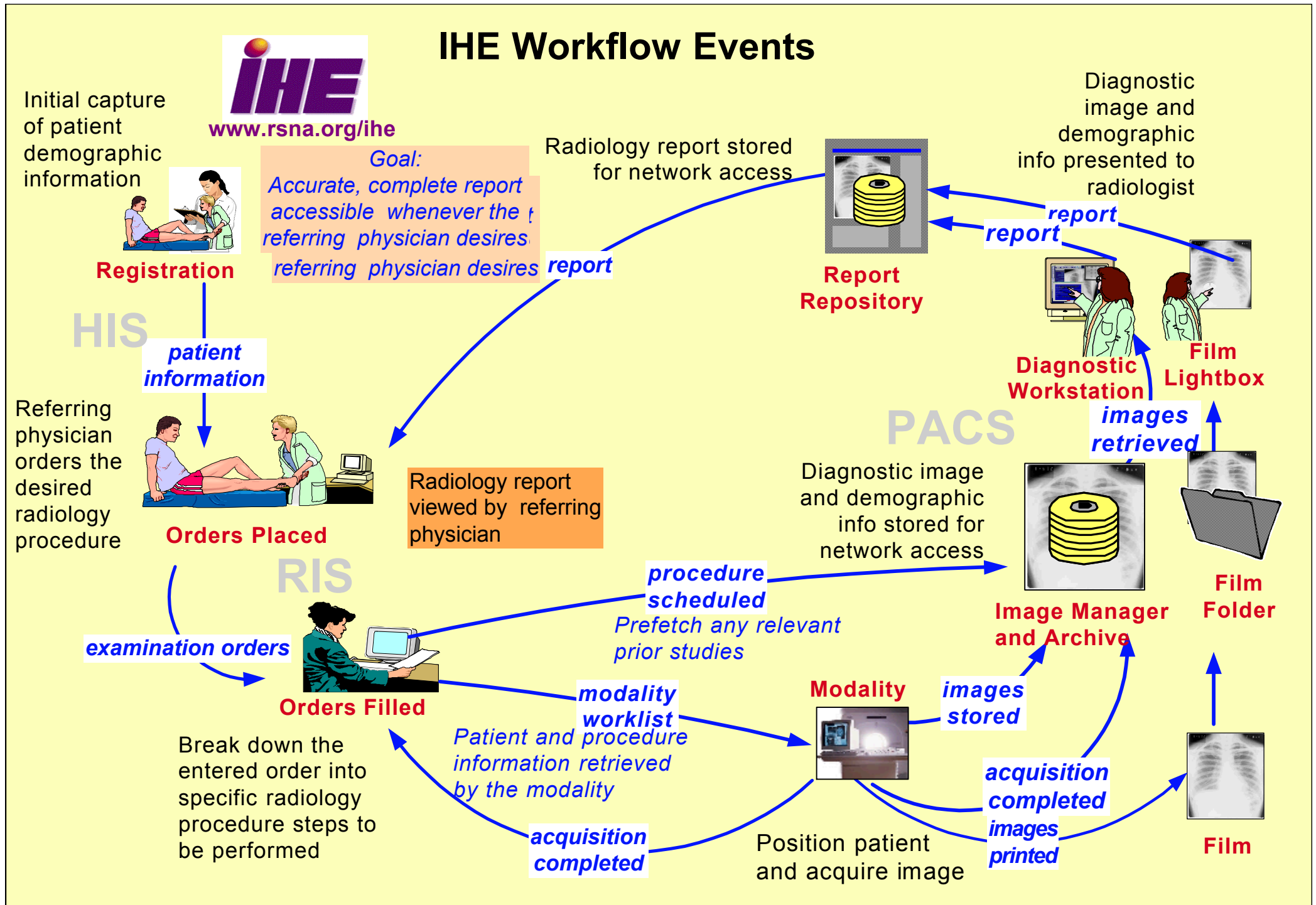
IHE has broad vendor support

At the IHE Europe Connectathon:

13 Vendors - 20 Systems in 2001

33 Vendors - 60 Systems in 2002

47 Vendors - 85 Systems in 2003

Among these are (US & Europe) :

ADAC/Cerner, Agfa, AIS, Algotec, ALI/McKesson, Analogic, Applicare/GE, ATL, Aycan, Canon, Cedara, Convergence, Convis, Eastman Kodak, eBIT, EDL, Elfin, Emageon, Engisan, Esaote, Ferrania, Fuji Medical Systems, GAP, GE Medical Systems, GMD, GWI, Hologic-Direct Radiography, IASI, ICSF, IDX, Inovit, Instrumentarium, Image Devices, IMCO, Kodak, Konica, Marconi, Medasys, Medavis, Med2rad, Medigration, Medimon, Medos, Merge, Metafora, Minolta, Mitra, Philips, RASNA Imaging, Raynux, Raypacs, RIS Logic, Sectra, Siemens, Softmedical, SOL, Stentor, StorCOMM, Swissray, Toshiba, TSI, Tiani Medgraph, Vital Images, Waid, XRP.

IHE 7000 visitors at RSNA and HIMSS

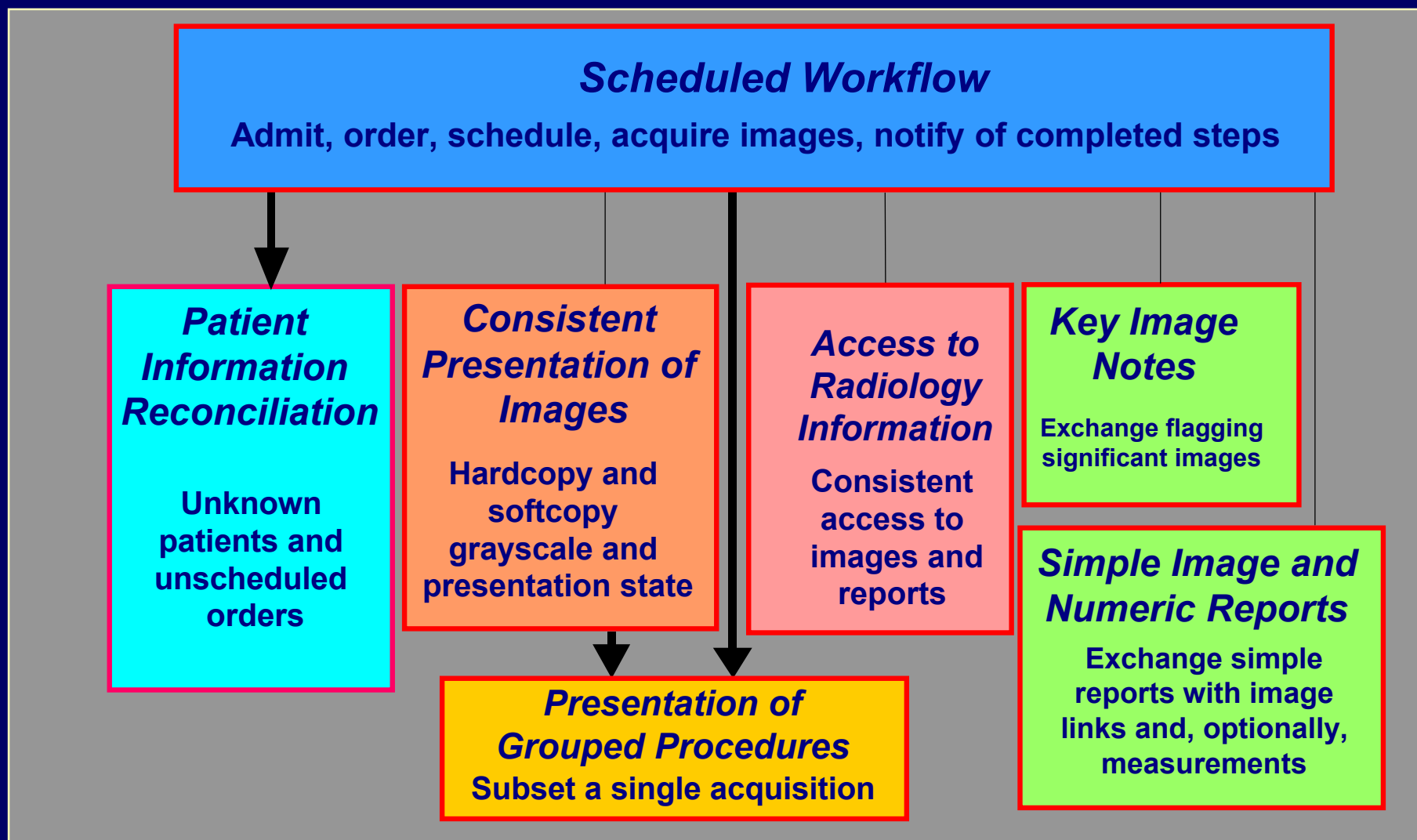# Live Integration of 66 HIS, RIS, PACS, and Modalities from 32 vendors !

Integrated Workflow from Patient Admission to Imaging Scheduling and Acquisition Complete

The IHE Integration Profiles

C. Parisot

DICOM, General Perspectives

IHE Integration Profiles : The language of integration

Scheduled Workflow

Admit, order, schedule, acquire images, notify of completed steps

Patient Information Reconciliation

Unknown patients and unscheduled orders

Consistent Presentation of Images

Hardcopy and softcopy grayscale and presentation state

Access to Radiology Information

Consistent access to images and reports

Key Image Notes

Exchange flagging significant images

Presentation of Grouped Procedures

Subset a single acquisition

Simple Image and Numeric Reports

Exchange simple reports with image links and, optionally, measurements

A Sample IHE Integration Statement

IHE Integration Statement			
Vendor	**Product Name**	**Version**	**Date**
GE Medical Systems	**Centricity PACS**	**V1.0**	**12 Oct 2002**

Integration Profiles Implemented	Actors Implemented	Options Implemented
Scheduled Workflow	Image Manager/Archive	*none*
	Image Display	none
Patient Information Reconciliation	Image Manager/Archive	*none*

Link to vendor IHE page	ge.com/ihe
Links to Standards Conformance Statements of the Implementation	
HL7	
DICOM	ge.com/dicom/Centricity1.0.pdf

IHE in Radiation Therapy ?

1. A good standards base needs to be available. Data Objects are solid, worklow needs work (reuse MWL/PPS ?)

2. Professional Societies need to be ready to shape common workflows, expand resources and gather industry support. Physicist & Oncologists ?

3. Effort should leverage radiology's experience. Infrastructure in place in the USA and in Europe.

4. For market credibility, it should involve several countries. Links between US & Europe ?

Needs to be user-driven & vendor-supported

Thank You !

charles . parisot @ med . ge . com

IHE Integration Statements :

www . rsna . org / ihe
g e . c o m / i h e