# Development, Specification and use of Healthcare Software Standards
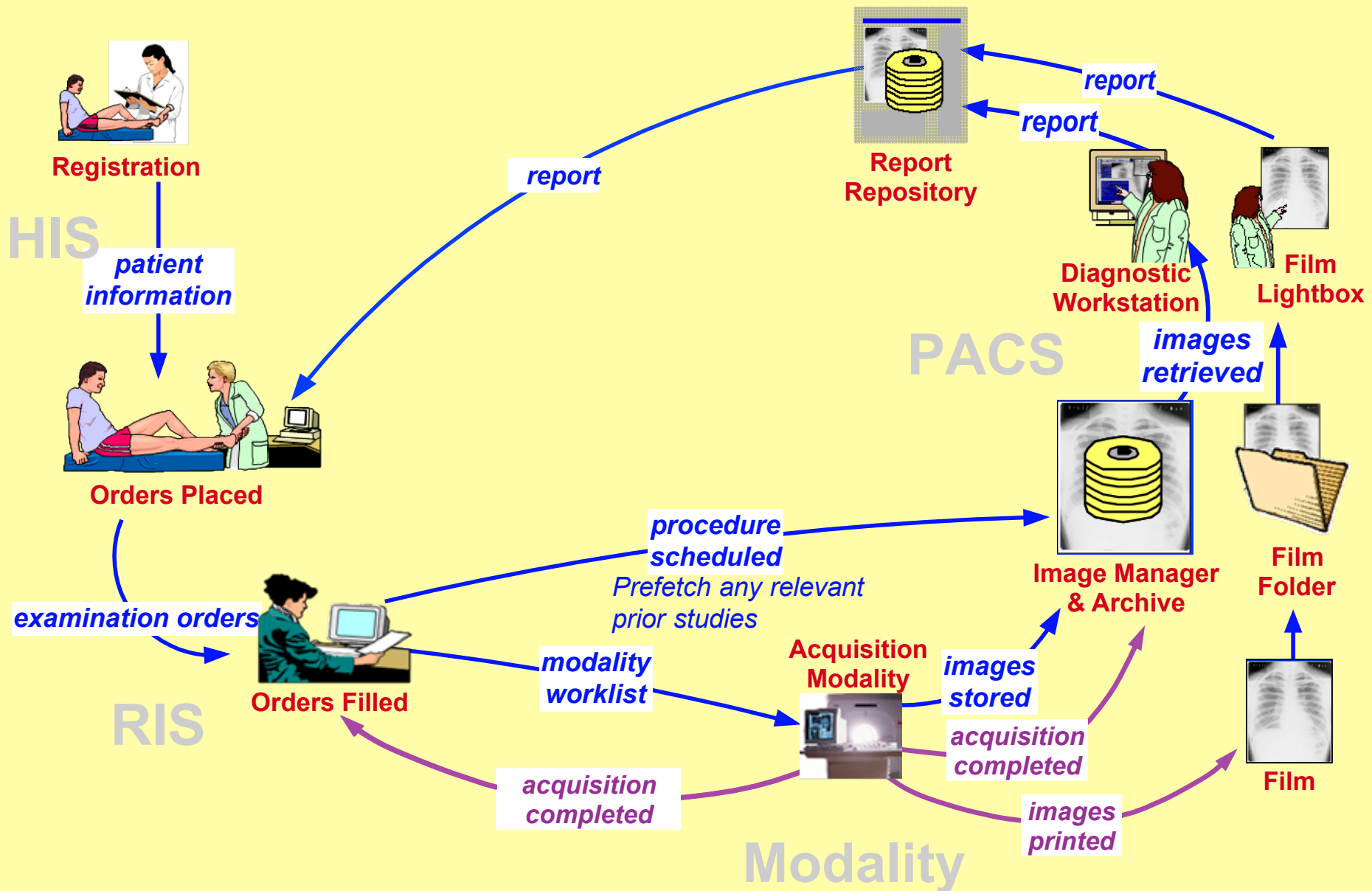
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# Healthcare IT is Complex!

Registration

HIS

patient information

Orders Placed

RIS

examination orders

Orders Filled

procedure scheduled
Prefetch any relevant prior studies

modality worklist

Acquisition Modality

Modality

acquisition completed

acquisition completed

images stored

images printed

Film

Image Manager & Archive

Film Folder

images retrieved

PACS

Report Repository

report

report

report

Diagnostic Workstation

Film Lightbox

# Scope

- Uses of standard
- Type of Data
- Type of Organisation
- Type of Standard

# Uses of Standards

- **Transmission**
- **Encoding**
- **Terminology**

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# Type of Data

- **Demographics**
  - Name, DOB, Address …
- **Administrative Data**
  - Admissions, discharges, GP…
- **Clinical Data**
  - Lab results
  - Notes
- **Images**
  - Worth a million words?

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# Type of Organisation – and speed of development!

- International
  - ISO etc.
  - Very little maintenance
- National
  - English national Programme!
  - Wales
  - Maintained by contractual changes
- Ad hoc / Industry
  - DICOM
  - IHE
  - Regular update/correction cycles

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# Type of Standard

- **Primary Standard**
  - JPEG
  - DICOM
  - HL7
- **Profile**
  - JPEG ➔ JFIF
  - 802.11b ➔ Wifi
  - HL7 / DICOM ➔ IHE

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# Common Healthcare IT Standards

- Demographics and Administrative data
  - HL7 V2
  - HL7 V3
- Clinical Data
  - XDS
  - OpenEHR
- Images
  - DICOM
- Others
  - FHIR
  - Continua

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# Terminology Standards

- SNOMED
  - UK Read codes + American College of Pathologists
  - Codes for everything from anatomy to diseases to operations
  - Commonly used in Europe
  - Licensing Issues
- LOINC
  - ALSO from American College of Pathologists
  - More commonly used in North America
  - License free
- Efforts are underway to harmonise them!

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# Using standards (1)

- Do you need them, and if so which ones?
  - Consult an expert
- Get the specifications
  - Some are free, some not
- Implement
  - From scratch, or use a toolkit

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# Using standards (2)

- Test
  - Internal
  - Test tools
  - Collaborative events
    - Company competence
  - Formal certification
    - Relatively new
- License
  - Mainly "free"
  - Charges for documentation
  - Charges for use (rare)

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# IHE Connectathon



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# Using standards (3)

- Market conformance as a sales feature

- Sell the products which use them

- Decide what to do when interoperation with others fails ☹

# Conclusions

- Interoperability in a heterogeneous Healthcare IT environment is absolutely dependent on standards

- Many of those you need are not simple – get help

- The great thing about standards is that there are so many to choose from!

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