Data and Workflow Standardization

Impact on the economic efficiency of e-health

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HL7/IHE roles:
- **Co-chair of the international HL7 AID User Group**
- **Co-chair of various Committees, HL7 Netherlands**
- **Contributor to the IHE Laboratory Technical Framework**
- **HL7 Fellow, 2011**

Interoperability Standards

- Semantic interoperability requires
  1. Data structures
     - Syntax, objects, data types
  2. Unified terminology
  3. Unified identification schemes:
     - Identification of patients, organisations
  4. Agreed upon workflow

The need for 'Flexible' standards

- Standards have to be 'flexible', required in order to deal with variance in healthcare
- It's easier to standardize information models than workflow definitions
  - Bricks, shipping containers, information models

Why Data & Workflow standardization ?

- Drive down costs
  - Reduce duplicate data entry
  - Reduce duplicate clinical activities
  - Reduce costs associated with development and configuration of interfaces
- Increase quality of clinical care
  - Reduce patient safety issues, and associated costs
  - Support preventive activities -> prevention is the most effective cost saving mechanism

Departmental Workflow

Diagnostic Devices
Lab analysers
Imaging Modalities
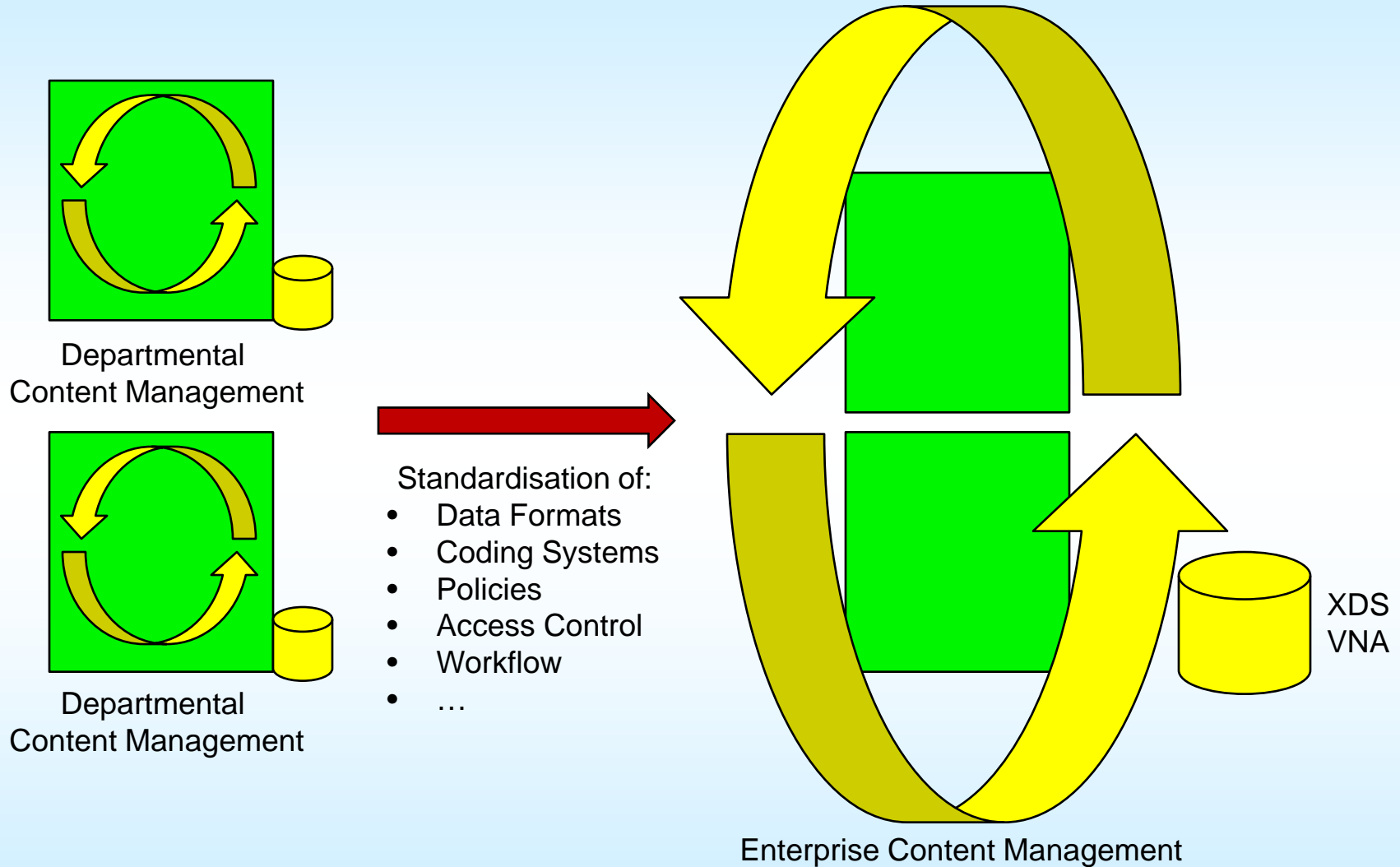
Departmental
Content Management
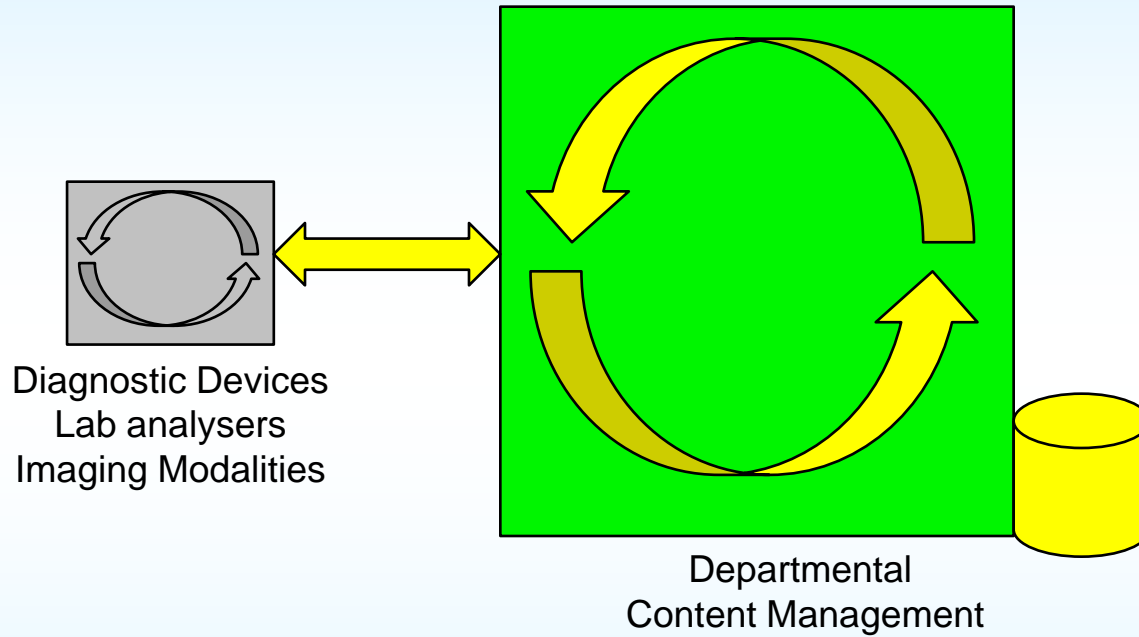
Departmental data exchange

- Device oriented order / results workflow
- Re-use of observations made by devices (analysers, modalities)

Origin of standards such as DICOM and ASTM 1238 (1980s)

Institutional Workflow

Departmental
Content Management

Departmental
Content Management

Standardisation of:
- Data Formats
- Coding Systems
- Policies
- Access Control
- Workflow
- …

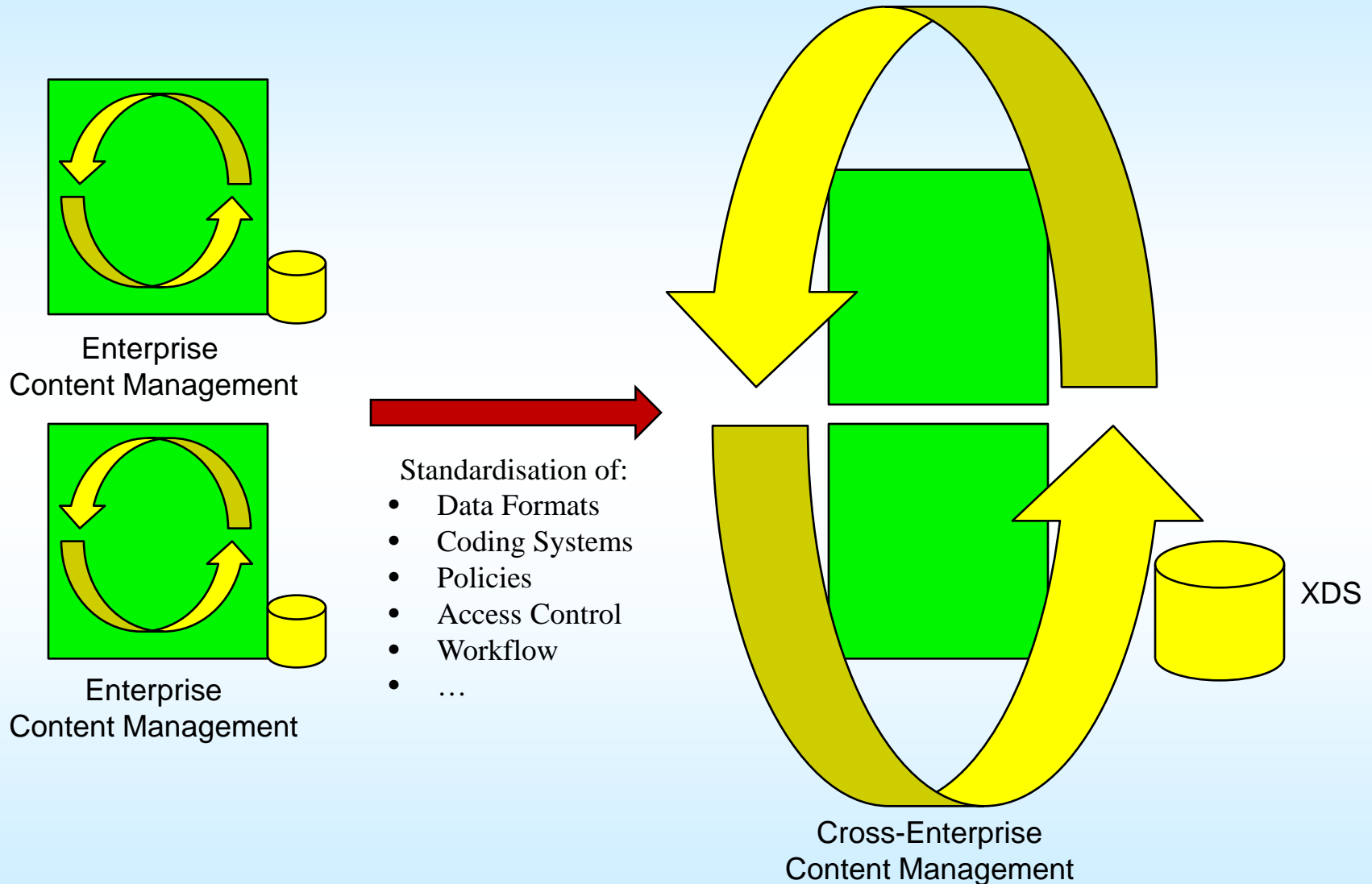XDS
VNA

Enterprise Content Management

Institutional data exchange

- Integrity of demographics data
- Financial (billing, controlling)
- Order / results workflow

Origin of standards such as HL7 version 2 and EDIFACT (1990s)

Cross-Institutional Workflows

Enterprise
Content Management

Enterprise
Content Management

Standardisation of:
- Data Formats
- Coding Systems
- Policies
- Access Control
- Workflow
- …

XDS

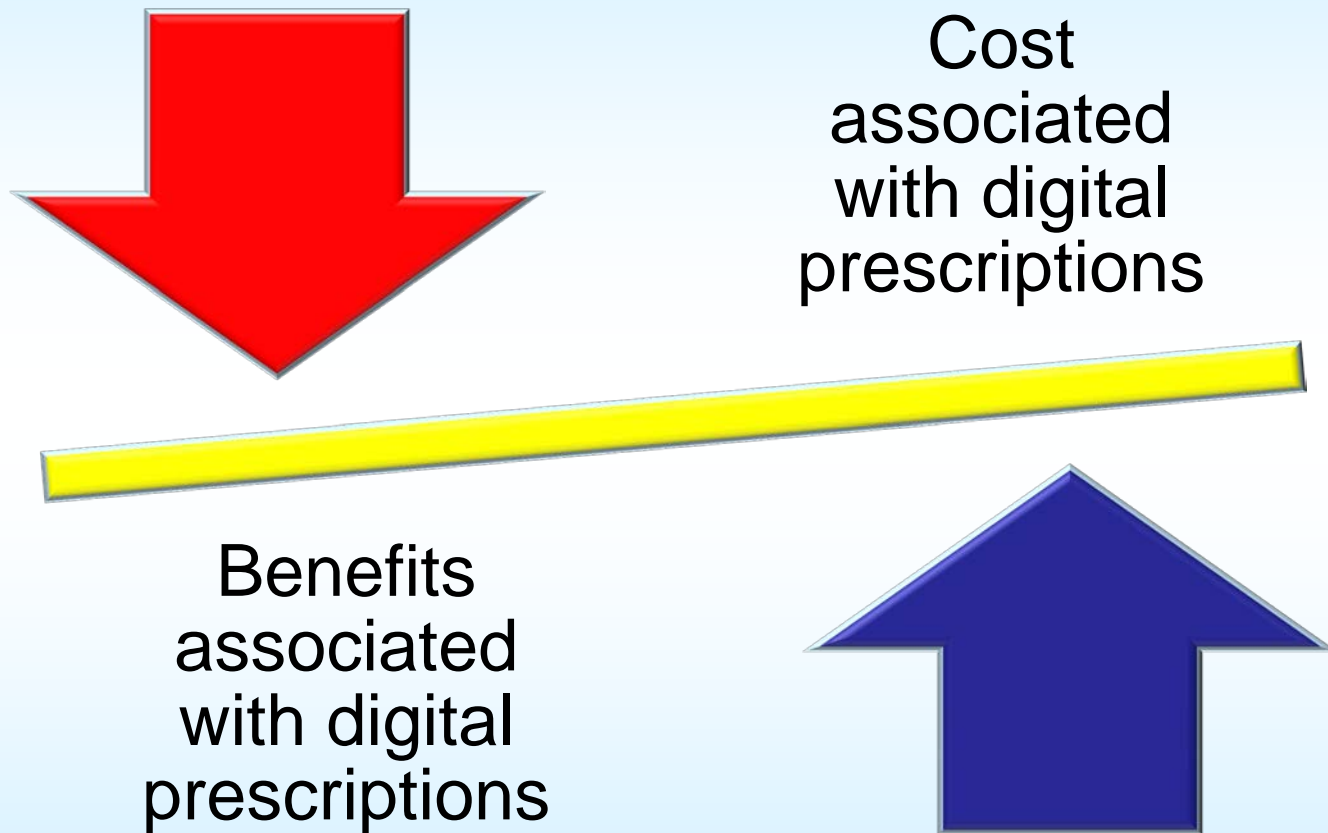Cross-Enterprise
Content Management

Cross-institutional exchange

- Quality Control (centralized)
- Financial (insurance, controlling)
- Collaborative care (e.g. referrals)
- Requirement for formal terminologies

Origin of standards such as CDA, IHE XDS and SNOMED (2000s)

Cost/benefits of electronic data interchange – a Danish Example

Cost associated with digital prescriptions

Benefits associated with digital prescriptions

Towards 'open data'

1. Data centric archival
   - ECM, VNA, IHE XDS
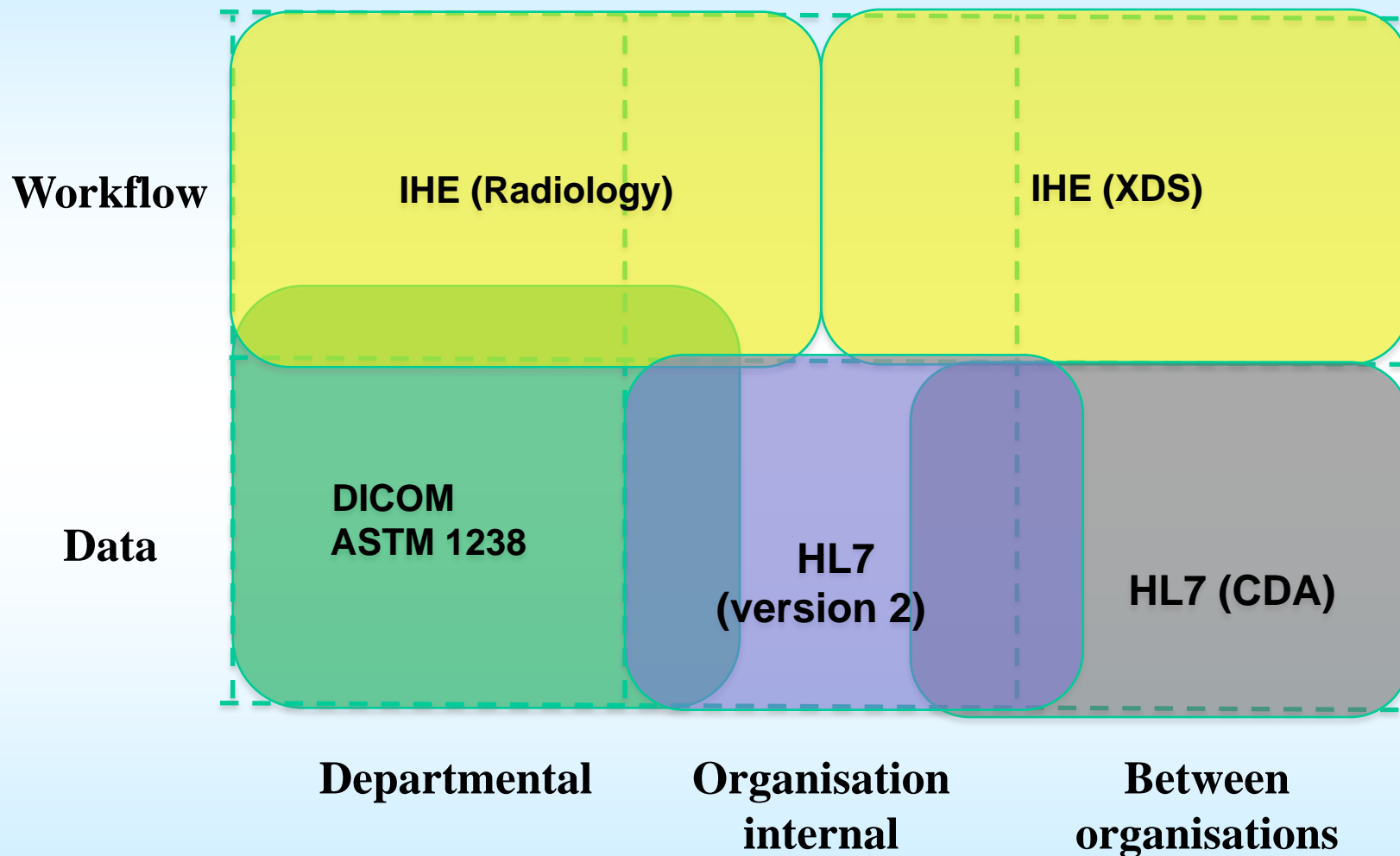   - Vendor Neutral (=standard) storage format
2. PublicAPIs/OpenAPIs
3. BYOD
   - Patients, Providers

Origin of standards such as HL7 FHIR (2010s)

Summary: existing standards

Workflow

IHE (Radiology)

IHE (XDS)

Data

DICOM
ASTM 1238

HL7
(version 2)

HL7 (CDA)

Departmental

**Organisation
internal**

**Between
organisations**

Summary

- Standards ('flexible standards') exist for data structures (e.g. HL7. DICOM) as well as workflows (e.g. IHE).

- Incentives/motivations for using standards depends on the kind of workflow

Thank you..

Questions ?

See www.ringholm.com for HL7 v2, v3, CDA / IHE Radiology, XDS / DICOM / SNOMED training courses

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