THE LOGICAL RECORD ARCHITECTURE (LRA)

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KITH Conference

27 September 2011

Presentation Overview

- Overview of informatics in the NHS
- Brief background to the LRA
- Highlights of current activities
- Questions

NHS (England) Informatics

- NHS Data Standards & Products – develops and delivers
  - UK terminologies and classifications
    - Working with the IHTSDO (SNOMED CT) and the WHO (ICD)
  - Message specifications
    - NHS Interoperability Toolkit (including HL7 V3 CDA)
    - National Programme for IT Message Implementation Manual (HL7 V3)
  - Data standards for centralised data collections and population analyses
    - NHS Data Dictionary

NHS Informatics (continued)

- Currently with a dual reporting role within the agency called NHS Connecting for Health, as well as the Department of Health Informatics Directorate in England
  - Major NHS organisational changes are currently under discussion
    - In principle, NHS data standards will fall under the responsibility of a future body called the NHS Commissioning Board
    - Organisational details are currently in development

LRA – Addressing gaps

INTEROPERABILITY

A shared detailed data architecture

- Reference for meaning and structure
  - e.g. 'Smoking status', 'Gender', 'Current medications', etc.
- A potential cross-mapping tool between systems
  - Connecting existing
  - Incremental interoperability / information integration

EFFICIENCY

Clear, professionally-driven data use requirements

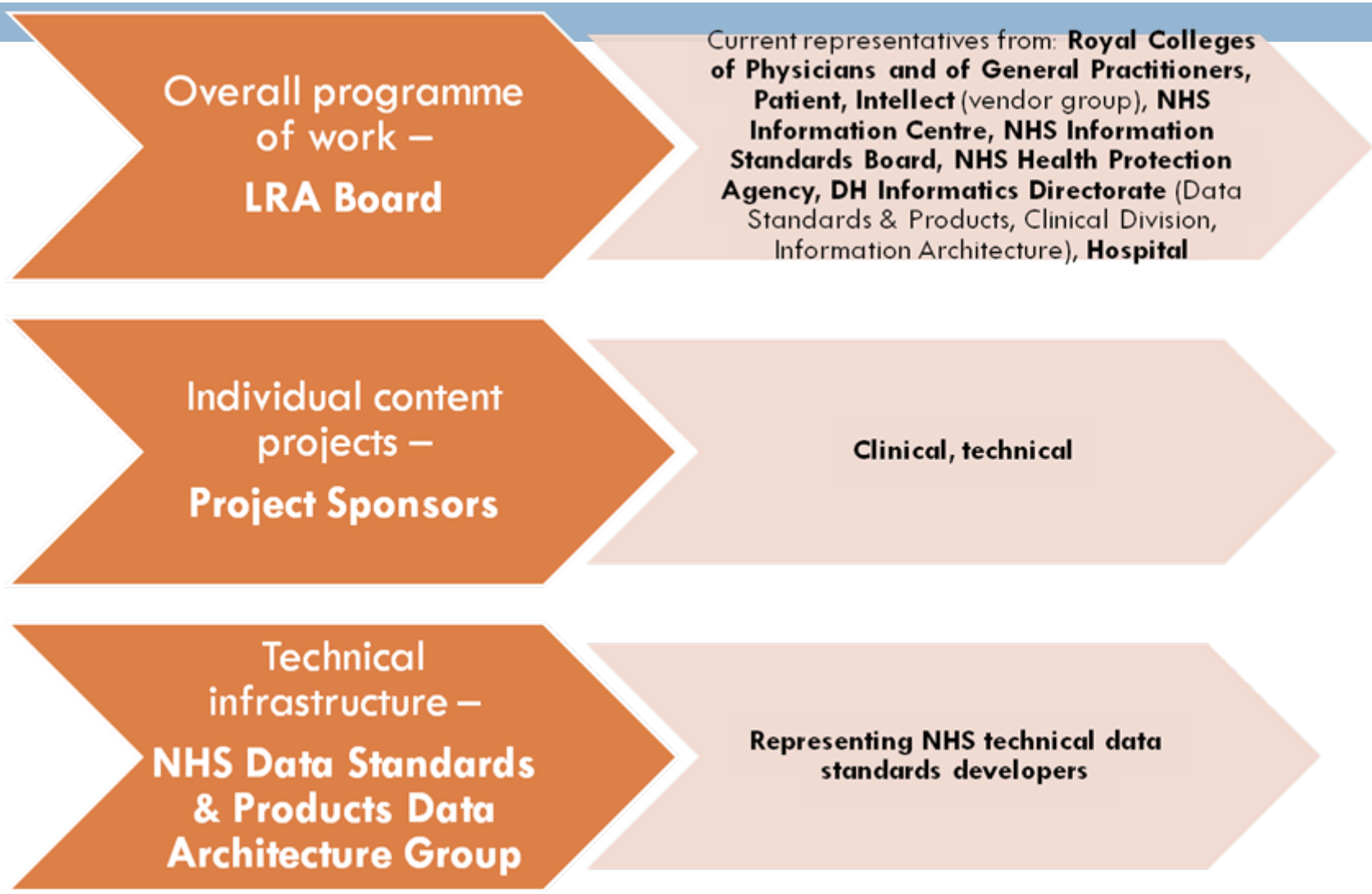
- Allowing joins and re-use in requirements for different purposes
  - Data recording, messaging, display
  - For care (between care settings) + audits, research, management
- Joins multiple professional guidelines, standards, policies, etc., and open professional input
- A focus for debate

STANDARDS QUALITY

More consistent future data standards

- Shared definitions
  - Fitting different technical standards together
- Shared technical structures
  - As structured as possible, to allow for more intelligent computer-assisted record-keeping, decision support, communications

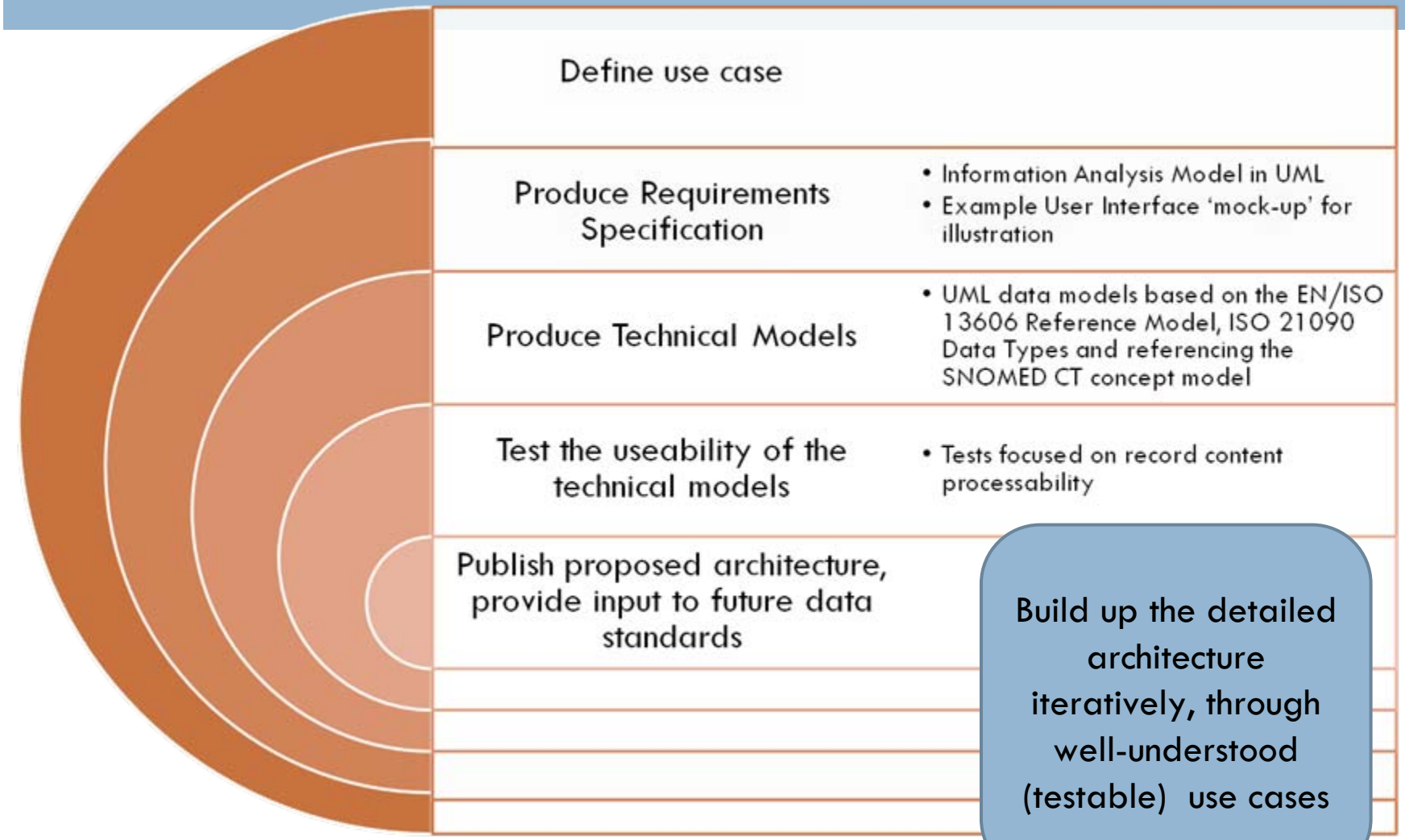
LRA Governance



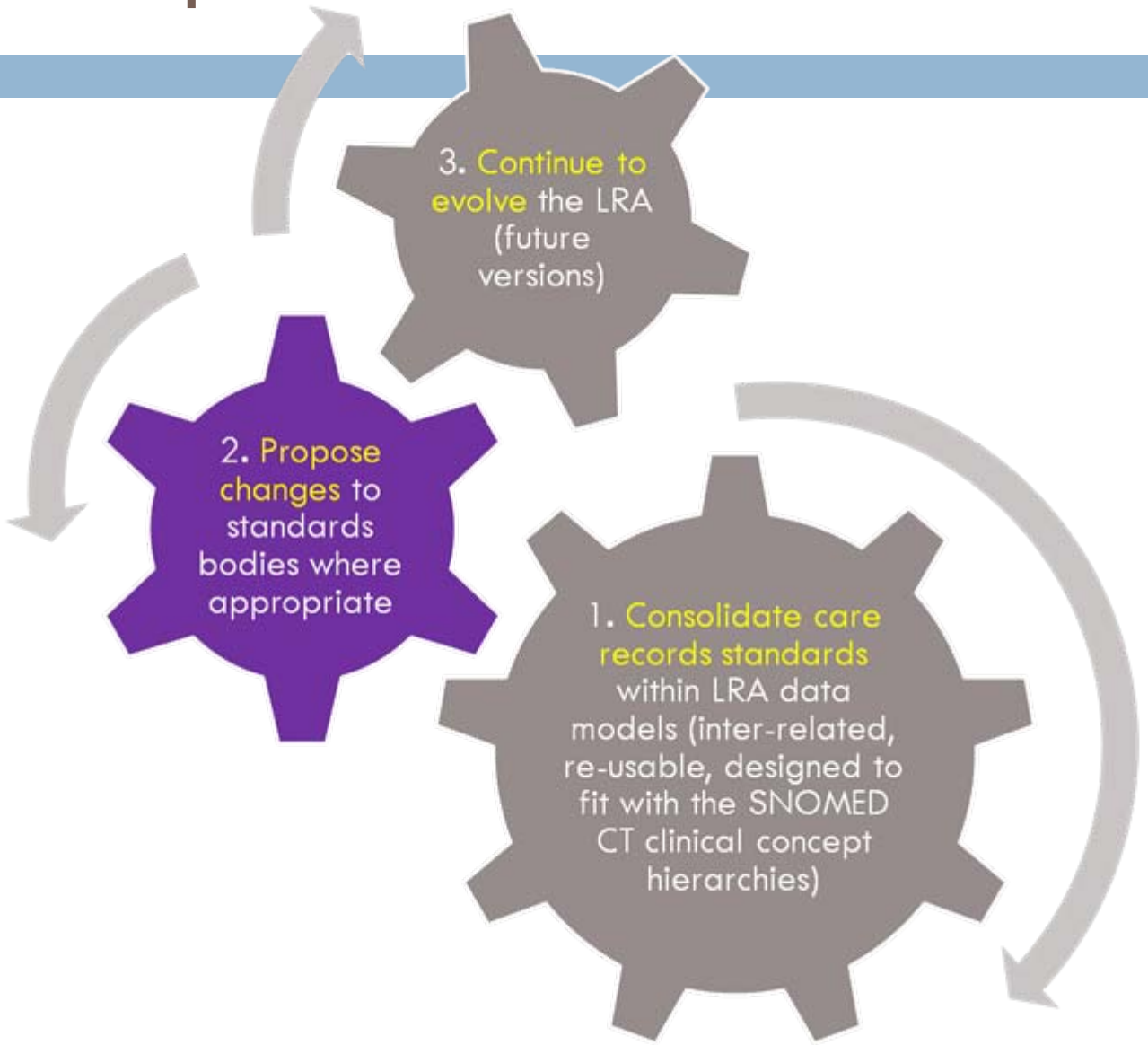
Some LRA Design Principles

- 'Driven by' clinical and patient data requirements
- Adopt, adapt or create anew in that order of preference
- Adopt existing international standards, national standards and local standards in that order of preference
  - Begin requirements discussions following an 'environment scan' of currently available standards on a given subject

Development process



Relationship to standards



LRA and Technical Standards

- The LRA conforms to:
  - ISO/EN 13606:1 (Reference Model)
  - ISO 21090 (healthcare informatics data types)
- The LRA makes maximal use of the SNOMED CT clinical concept model / hierarchy
- Currently, the LRA uses XML and Object Modelling Group (OMG) standards (UML, OCL) for both requirements and technical data models

Not a standard itself

- Multiple ways of 'conforming' to a logical architecture in physical systems (not conformance-testable)
  - The LRA does not dictate physical codes, field lengths, what data is mandatory / optional, how it should be displayed / messaged, etc.
  - The LRA proposes meaning and structure for reference in data interpretation when sharing between systems

- Intended as a practical view or bridge between independent standards (professional, technical), each with its own community of practice / scope of authority, rate of change
  - Currently, there is no overarching national governance across all health informatics standards development

The LRA and Professional Standards

- A reference for initial input (when developing a new standard)
- A way of making new standards accessible to a broad EHR implementation community

- A bridge
  - Between pre-existing and new standards
    - E.g. NICE guidelines, NHS contracts, RCP-developed standards, etc.
  - Between professional and technical standards
    - A guide for how to implement professional standards
    - A way of assuring that standards operate at a common level of detail

LRA Discharge Summary Project Objective

- To propose detailed definitions for meaning and electronic data structure for improved communications to support
  - continuing care
  - improved technical communication between hospitals and general practice information systems

General Review Notes for Discharge Summary Requirements (1 of 2)

- Data content requirements to support **continuing care** were prioritised, particularly from the Discharge Summary receivers' perspectives (e.g. Patients, carers, family doctors, community services, etc.)
  - Other types of data use were secondary
- Based on input regarding what **patients and clinicians** would like to see in Discharge Summaries in the future, providing a **target** for information systems development design, planning and migration

General Review Notes for Discharge Summary Requirements (2 of 2)

- Encoded data (using the SNOMED Clinical Terminology) is proposed wherever appropriate to enable automated support for:
  - authoring (supporting fast and legible clinical record-keeping)
  - interpreting (e.g. for alerts or decision support)
  - updating (e.g. in systems receiving new data about the patient in the Discharge Summary that should be added to their patient records)
  - reporting (e.g. for research, operations management or other analyses)

- NOTE: The SNOMED Clinical Terminology will in future be the only clinical terminology standard supported on a national basis (for maintenance, etc.) in the UK (starting April 2013).

Illustrative Data Display Example

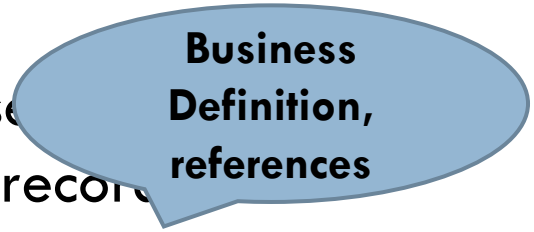
6. All Current Diagnoses at Discharge (6 recorded)

DIAGNOSIS	DATE DIAGNOSIS MADE	PERSON RESPONSIBLE	TREATMENT SPECIALTY	DATE OF FIRST PRESENTATION
Osteoarthritis of knee - right	10-Sep-2009	Mr Greg Cross	Orthopaedics	May-2009
A complication of Fractured knee-cap – right	*17-Jun-2006*	*Mr. Greg Cross*	*Orthopaedics*	*16-Jun-2006*
Anaemia	02-Oct-2008	Dr. Jane Anderson	General Practice	25-Sep-2008
COPD-Chronic obstructive pulmonary disease	07-Aug-2006	Dr. Jane Anderson	General Practice	Jun-2006
Post-operative pneumonia	08-Nov-2009	Mr. Jeremy Jones	Respiratory Medicine	08-Nov-2009
A complication of Primary cemented total knee replacement – right	*06-Nov-2006*	*Mr. Greg Cross*	*Orthopaedics*	
Hypotension	09-Nov-2009	Mr. Greg Cross	Orthopaedics	09-Nov-2009
Sensorineural hearing loss – left	Jun-2002	Dr. Anne Bond	Otolaryngology	Jan-2002

Requirement: Diagnoses at Discharge (1 of 6)

Business Description

- A description of a diagnosis that is prese
  discharge. Multiple diagnoses may be recor
- Diagnoses are 'labels for communication which after consideration include all relevant diseases, disorders and syndromes' (from Headings for Communicating Clinical Information from the Personal Health Record: A Position Paper, Crown Copyright June 1998).
- The level of detail provided in this description is at the author's discretion.



Requirement: All Diagnoses Current at Discharge (2 of 6)

Requirement References (that this data is needed in the Discharge Summary):

Professional guideline reference

- A Clinician's Guide to Record Standards – [illegible] standards for the structure and content of medical records and communications when patients are admitted to hospital (Academy of Medical Royal Colleges, October 2008).
- Requirement for 'a summary of the key diagnosis made during the Patient's admission' from 2011/12 Standard Terms and Conditions for Acute Hospital Services (Department of Health, April 2011).

Requirement: All Diagnoses Current at Discharge (3 of 6)

Proposed Data Values: Coded expression including Diagnosis name and other descriptors, qualifiers or status modifiers. The intent is to use codes wherever applicable (to allow automated record updates and analyses), but where authors want to add free text annotation, this should also be supported. Where no appropriate code exists, this value should be free text. (Note that free text data would not be accessible to automated interpretation / analysis, retrieval, etc.).

Requirement: All Diagnoses Current at Discharge

(4 of 6) – Proposed [encode-able] Data Values

- Name of diagnosis
- Site
- Laterality
  - Left or right, but no
- Episode
  - First episode
  - New episode
  - Old episode
  - Ongoing episode
- Clinical Course
  - Acute
  - Chronic
  - Transitory
- Severity
  - Mild
  - Moderate
  - Severe

Description of possible data values

- Status (assumed to cover both the degree of certainty and the presence/absence of conditions of significance to diagnostic/comorbidity labelling):
  - Known present
  - Known absent
  - Suspected
  - NOT suspected
  - Definitely/confirmed present
  - Definitely NOT present/excluded/ruled out
  - Probably/possibly present
  - Probably NOT present

Requirement: All Diagnoses Current at Discharge (5 of 6)

Likely data source

Data Source: Copied from previous inpatient record entry

Data Use: Information for patients and care providers, updates to the patient's primary or shared care records, use in primary care decisi algorithms

Description of use

- Note: The values proposed for clinical severity are those currentl in use in UK GP systems. These values may be encoded to support efficient and readable human record-keeping, but further guidance and training is likely necessary to enable very precise and consistent clinical interpretations. Designers of decision support systems must apply discretion about the use of this data based on the reliability of its interpretation. Some clinical specialties may have fully-specified severity scoring frameworks, and these may be referenced in the LRA in future versions.

Requirement: All Diagnoses Current at Discharge (6 of 6)

Examples:

- Acute myocardial infarction, first, confirmed
- Carcinoma of hepatic flexure, probably present, first episode
- Diabetes mellitus
- Asthma
- Chronic obstructive pulmonary disease
- RULED OUT ulcerative colitis

Illustrative data examples

Available Data Standards: SNOMED CT

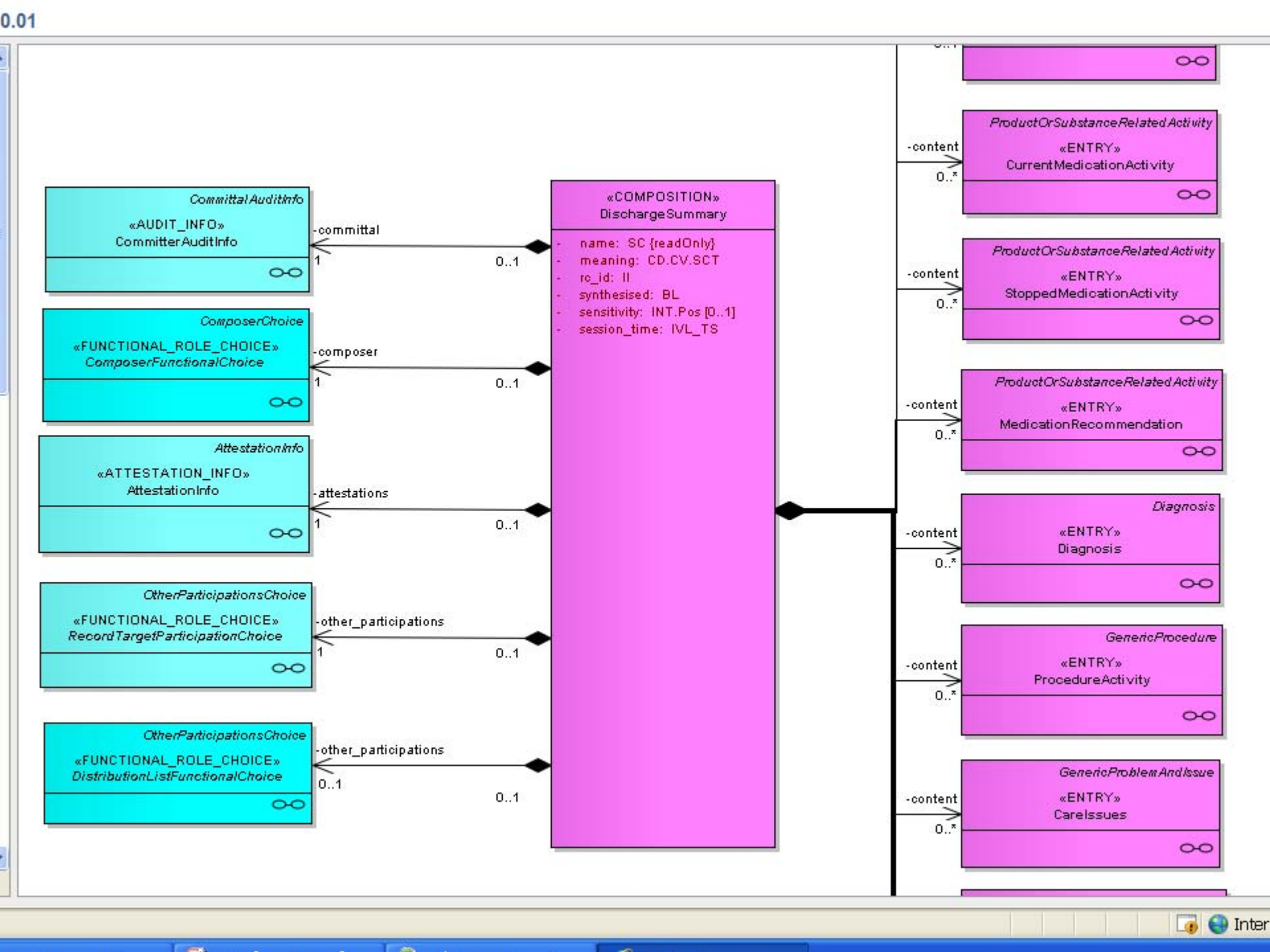
(with free text option by exception)

Reference to data standard that meets the requirement

Current content project – Discharge Summary

- Sponsored by Prof J. G. Williams (Royal College of Physicians) and John Thornbury (Worcestershire Health ICT)

- Initiated in October 2010, to complete in Nov. 2011
  - Full draft requirements specification available now
  - Draft technical models for a prioritised content subset now available for testing and comment
  - Publication November 2011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- sensitivity: INT.Pos [0..1]
- session_time: IVL_TS
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ProcedureActivity
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GenericProblemAndIssue
«ENTRY»
CareIssues
Inter

More information

- *Comments? Questions?*

- www.connectingforhealth.nhs.uk/systemsandservices/data/lra
- Email: cfh.lra-admin@nhs.net

THANK YOU!