HL7 CDA (Clinical Document Architecture) in Structured Diagnostic Reporting

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Goals of this talk

- Promote use of standards for SR results
  - Reporting results are needed in many environments and at future times
  - Standards facilitate communication across proprietary boundaries and through time
- Not to teach the CDA standards, but let you know what's there, what it's for, when to use it, how to get it.

Role of CDA

- CDA is for exchange
  - Not an authoring template. Original design of CDA always envisioned that applications would use some internal document template and then transform to CDA for exchange
- CDA is for representing medical data in permanent records.
- CDA is a key part of HL7 V3
  - V3 messaging uptake mostly in government projects
  - CDA is finding much wider use

CDA Use Cases

- Diagnostic and therapeutic procedure reports
- Encounter / discharge summaries
- Patient history & physical
- Referrals / prescriptions

- Uniform format for all clinical documents
  - Fairly strict for header
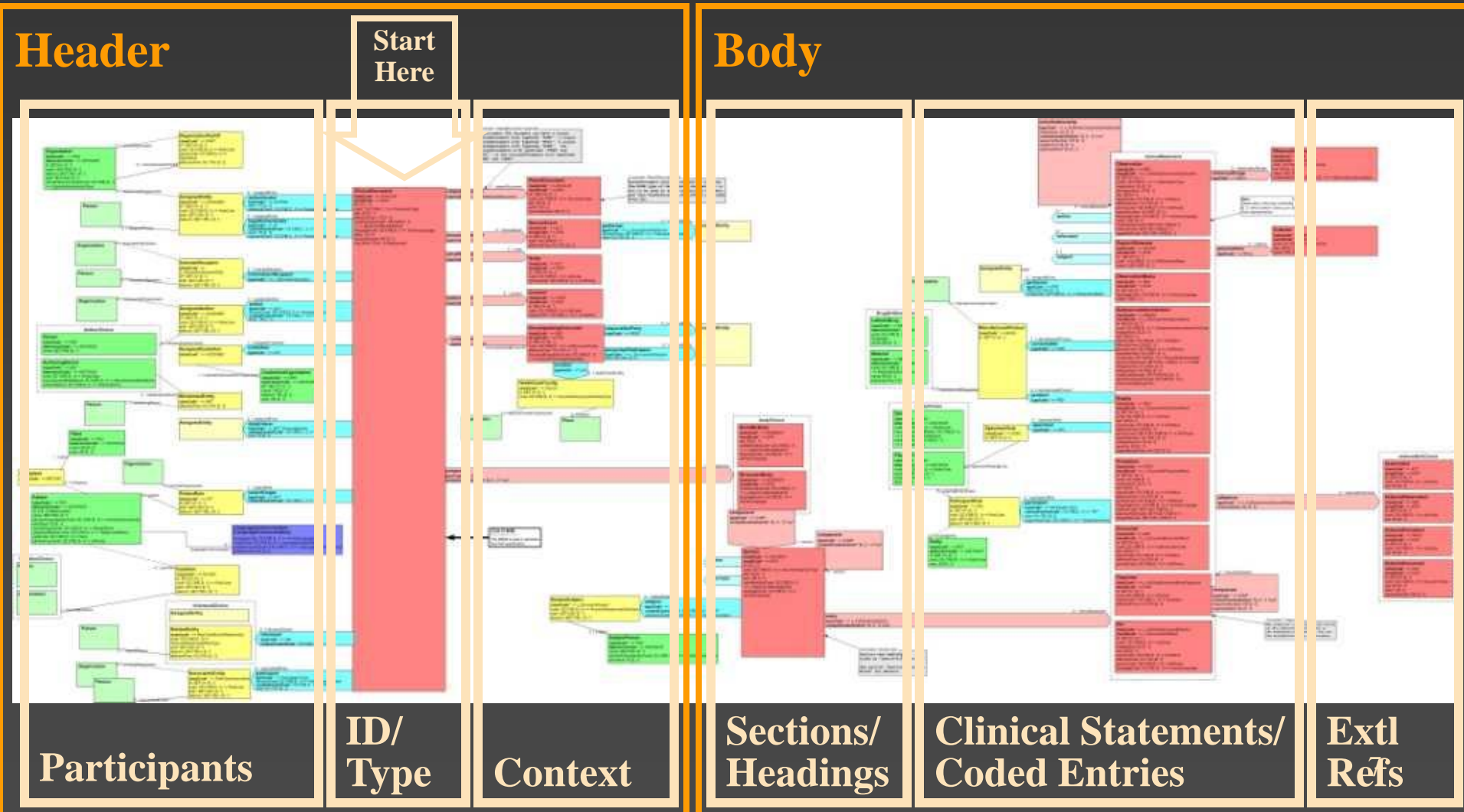 - Flexible for body content

Sending & Storing CDA

- HL7 V.2
  - MDM messages
  - ORU messages
- DICOM
  - Storage on DICOM media
  - 1.2.840.10008.5.1.4.1.1.104.2 (Encapsulated CDA Storage SOP Class)
- IHE
  - XDS

Key Aspects of the CDA

- CDA documents are encoded in XML

- CDA documents derive their meaning from the HL7 Reference Information Model (RIM) and use HL7 V3 data types

- A CDA document consists of a header and a body
  - Header is consistent across all clinical documents - identifies and classifies the document, provides information on patient, provider, encounter, and authentication
  - Body contains narrative text / multimedia content (level 1), optionally augmented by coded equivalents (levels 2 & 3)

CDA Release 2 Information Model

Header

Start Here

Body

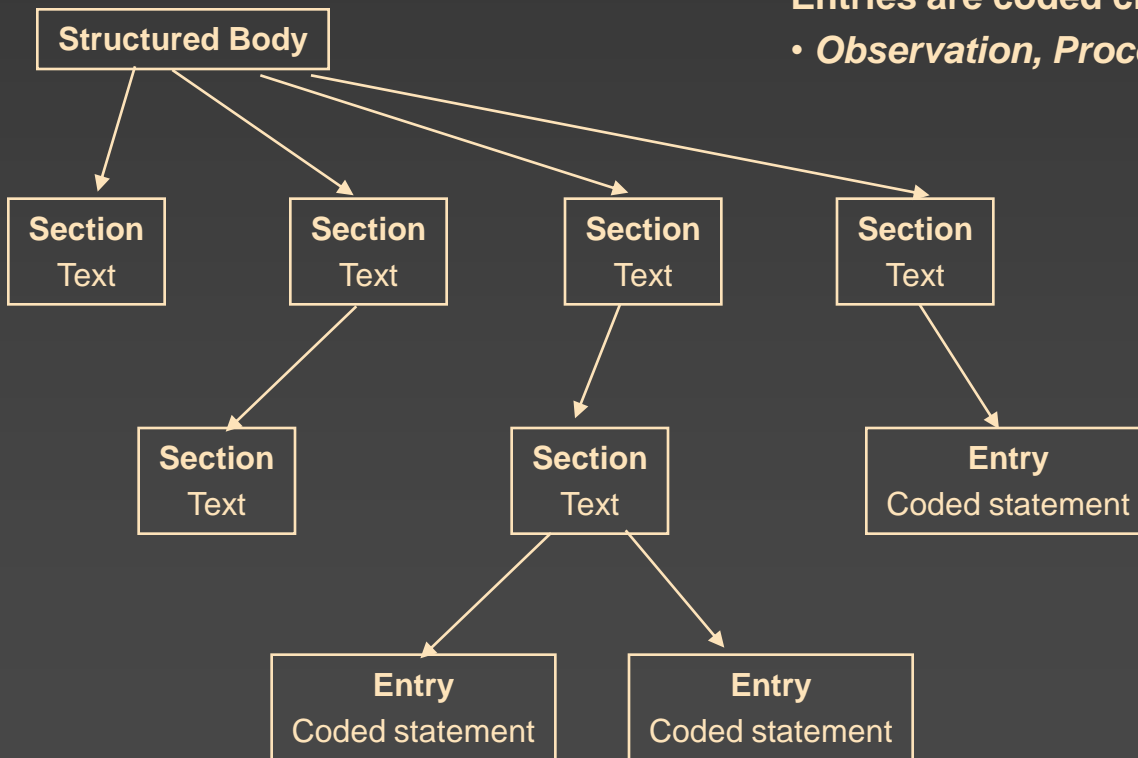| Participants	ID/ Type	Context	Sections/ Headings	Clinical Statements/ Coded Entries	Extl Refs

CDA Structured Body

Arrows are Act Relationships
- *Has component, Derived from, etc.*

Entries are coded clinical statements
- *Observation, Procedure, Substance administration, etc.*

Structured Body

Section
Text

Section
Text

Section
Text

Section
Text

Section
Text

Section
Text

Entry
Coded statement

Entry
Coded statement

Entry
Coded statement

Hard Pill to Swallow

- CDA *requires* human-readable "Narrative Block", all that is needed to reproduce the legally attested clinical content
- CDA allows *optional* machine-readable coded "Entries", which drive automated processes
- Narrative may be flagged as <u>derived</u> (act relationship code = DRIV) from Entries
  - Textual rendering of coded entries' content, and contains no clinical content not derived from the entries
- WHY: General method for coding clinical statements is a hard, unsolved problem
  - Very difficult to project rendering capability into all current and future viewing environments
- ➔ If you're creating a CDA report with coded content, you should know how to render it, so do it now and store it along with the coded content.
- **Attestation** applies only to the narrative content, *but that does not mean that the coded content is allowed to be wrong.*

Narrative and Coded Entry Example

History of Present Illness

Henry Levin, the 7th is a 67 year old male referred for asthma in his teens. He was hospitalized twic been able to be weaned off steroids for the p

Past Medical History

- Asthma
- Hypertension (see HTN.cda for details)
- Osteoarthritis, right knee

Medications

```xml
<title>Past Medical History</title>
- <text>
  - <list>
    - <item>
        <content ID="a1">Asthma</content>
      </item>
    + <item>
    + <item>
    </list>
  </text>
- <entry>
  - <observation classCode="COND" moodCode="EVN">
      <code code="39154008"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT" displayName="clinical
        diagnosis" />
      <effectiveTime value="1950" />
    - <value xsi:type="CD" code="195967001"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT" displayName="Asthma">
      - <originalText>
          <reference value="#a1" />
```

CDA Implementation Guides

- Balloted as HL7 Informative Documents
- Describe what amount to "templates" for CDA Documents.
  - Specify constraints on CDA content
  - Some provide Schematron tools for validation of instances
  - Each Implementation Guide has a Template ID attribute that is included in the root element of the conforming document
- Continuity of Care Document IG developed in cooperation with ASTM
- Diagnostic Imaging Report IG developed in cooperation with DICOM, together with SR$\rightarrow$CDA transformation in (pending) Supplement 135.

Summary

- CDA is a useful format for communicating structured diagnostic reports to clinical user and EHR settings

- CDA Diagnostic Report Implementation Guide provides direction for encoding of header components

- Pending DICOM Supplement 135 provides guidance for transformation of DICOM SR into CDA

- CDA Standards are available at http://www.hl7.org, but, yeah, HL7 will want you to join and/or pay.