XML: Help or Hindrance?

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Overview

- XML – a self describing format?
- Version #2 in vertical bar and XML
- Version #3 in XML and vertical bar
- Schema
- How XML helps HL7
- How XML hinders HL7

Communication?

XML – Self describing?

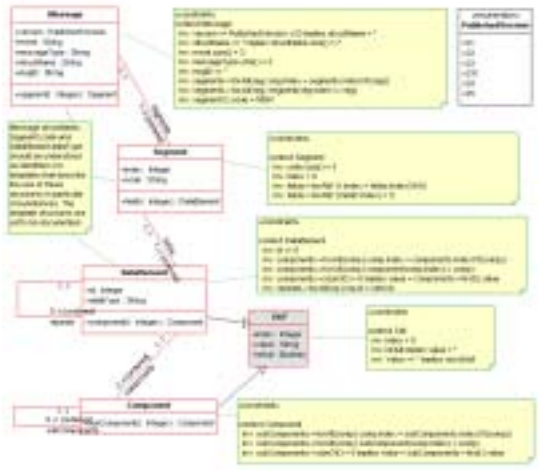
```
<?xml version="1.0" encoding="UTF-8"?>
<person>
  <name>
    <surname>Kestral</surname>
    <given>Hamish</given>
  </name>
  <address>
    <street>34 Nowhere St</street>
    <city>Erewhon</city>
    <postcode>4521</postcode>
  </address>
  <dob>23-Mar 1944</dob>
</person>
```

XML – Self describing?

```
<?xml version="1.0" encoding="UTF-8"?>
<person>
  <name>
    <surname>XXXX</surname>
    <given>XXXX</given>
  </name>
  <address>
    <street>XX XXXX XX</street>
    <city>XXXXX</city>
    <postcode>XXX</postcode>
  </address>
  <dob>XX XX XX</dob>
</person>
```

XML – Self describing?

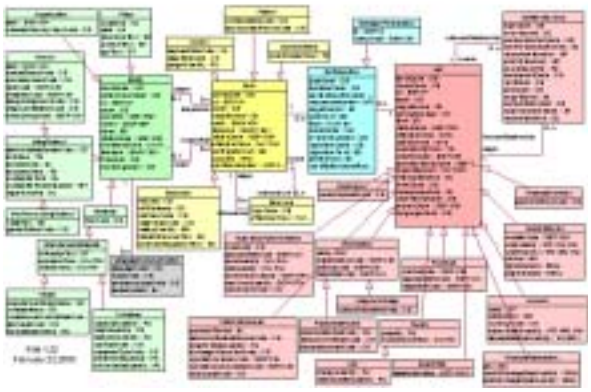
```
<?xml version="1.0" encoding="UTF-8"?>
<b:d10 xmlns:b="urn:something">
  <d54>
    <d2>XXXX</d2>
    <d3>XXXX</d3>
  </d54>
  <d32a>
    <b:d23.1>XX XXXX XX</b:d23.1>
    <b:d23.25>XXXXX</b:d23.25>
    <b:dx54>XX</b:dx54>
  </d32a>
  <r23>XX XX XX</r23>
</b:d10>
```

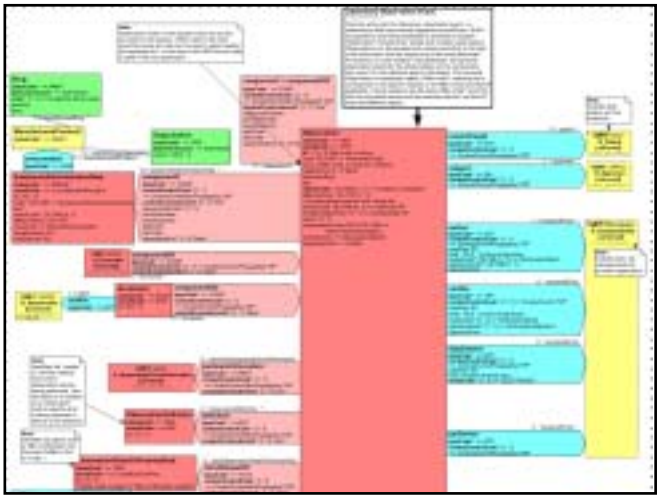


v2.xml

- XML Advantages
  - More robust encoding
  - Vast array of Tools
  - Schema validation
- XML Disadvantages
  - Message size is larger
  - HL7 V2 paradigm: cannot take advantage of XML

HL7 v3 – vastly more complex





V3 Vertical Bar Encoding

- Each line is a RIM class (except for the first line)
- RIM attributes are separated by |
- Properties of a data type are separated by ^
- Lists of data items are separated by ~
- Use {} to recurse use of ^ and ~ inside a data type
- Use abstract data types literal form for representation
- Indent with a single space to class relationships
- Use names of items from HMD for names of rows
- Message is Unicode - some form of UTF
- First line is "HL7V3" followed by encoding version, then RIM version (also identifies Data types version)

V3 Vertical Bar Example

```
HL7V3|1|2.02
Message|2.16.840.1.113883.1122^CNTRL-3456|20020816143035l6^- --->
                                    06:00|||3.0|2.16.840.1.113883^POLB_IN004410|||P|||ER|ER
 respondTo|RSP|tel:555-555-5555^^WP
  enttyRsp|||{FAM^^Hippocrates~GIV^^Harold~GIV^^H~SFX^AC^MD}|tel:555-555-5555^^WP
 sender|SND|nfs:127.127.127.255
  device|||2.16.840.1.113883.1122^GHH LAB|{GIV^^An Entty Name}^L|||tel:555-555-2005^^H
   agencyFor
    representedOrganization|||\NOTH\
   location|||2.16.840.1.113883.1122^ELAB-3|{^^GHH Lab}^TN
 receiver|RCV|nfs:127.127.127.0
  device|||2.16.840.1.113883.1122^GHH CE|{GIV^^An Entty Name}^L|||tel:555-555-2005^^H
   agencyFor
    representedOrganization|||2.16.840.1.113883.19.3.1001|{^^GHH Outpatient Clinic}^TN
   location|||2.16.840.1.113883.1122^BLDG4|{^^GHH Outpatient Clinic}^TN
```

V3 Vertical Bar Outcomes

- V3 can be encoded using Vertical Bar format
- Parsers would need to know RIM & Data Types Semantics
- But why not use XML?

XML Schema

Patient Appointment

- Identifier – Valid Patient ID# - numerical
- Clinic – Coded Entry - string
- Date – Future date, up to 12 months ahead

```
<appointment>
  <patient>123456</patient>
  <clinic>Ortho</clinic>
  <date>2004-04-14T09:00:00</date>
</appointment>
```

XML Schema

Patient Appointment

- Identifier – Valid Patient ID# - numerical
- Clinic – Coded Entry - string
- Date – Future date, up to 12 months ahead

```
<xs:element name="appointment">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="patient" type="xs:int"/>
      <xs:element name="clinic" type="xs:string"/>
      <xs:element name="date" type="xs:dateTime"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

XML Schema

- Clumsy Expression of Data Validation
- Unable to express Terminology and Business Rules
- Valid Expression of rules for a document encoding the data

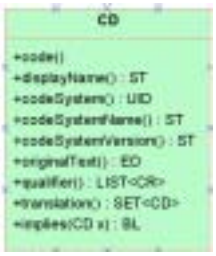
How XML helps HL7

- No problems with character sets, built in encoding limitations
- Provides HL7 analysts and implementers with lots of standard tools
- Sells HL7 as a modern relevant SDO

How XML hinders HL7

- Creation of unrealistic expectations
- Bugs in tools
- Fosters development of arcane tools/resources
- Impedence between XMLers and Modelers

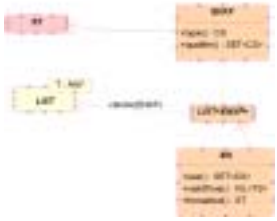
XML/Model Impedence




```
<x xsi:type="hl7v3:CD">
  <code>XX</code>
  <displayName>XX</displayName>
  <codeSystem>XX</codeSystem>
  <codeSystemName>XX</codeSystemName>
  <codeSystemVersion>XX</codeSystemVersion>
  <originalText>XX</originalText>
  <qualifier>
    <item xsi:type="hl7v3:CD"/>
  </qualifier>
  <translation>
    <item xsi:type="hl7v3:CD"/>
  </translation>
</x>
```

```
<x code="XX" displayName="XX" codeSystem="XX"
                codeSystemName="XX" codeSystemVersion="XX">
  <originalText>XX</originalText>
  <qualifier xsi:type="hl7v3:CD"/>
  <translation xsi:type="hl7v3:CD"/>
</x>
```

XML/Model Impedence



```
<name>
        <given>John</given>
        <given>W.</given>
        <family>Doe</family>
</name>
```

XML – Help or Hindrance?

It’s all about the meaning, Stupid