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# Data models, standards and interoperability

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DDH – Module A – lecture 4

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# Standard – a definition

A standard is the technical specification approved by a body recognized to carry out regulatory activities for repeated or continuous application, compliance with which is not mandatory (voluntary) and which belongs to one of the following categories:

- International Standard (ISO)

- European Standard (EN)

- National standard (UNI)

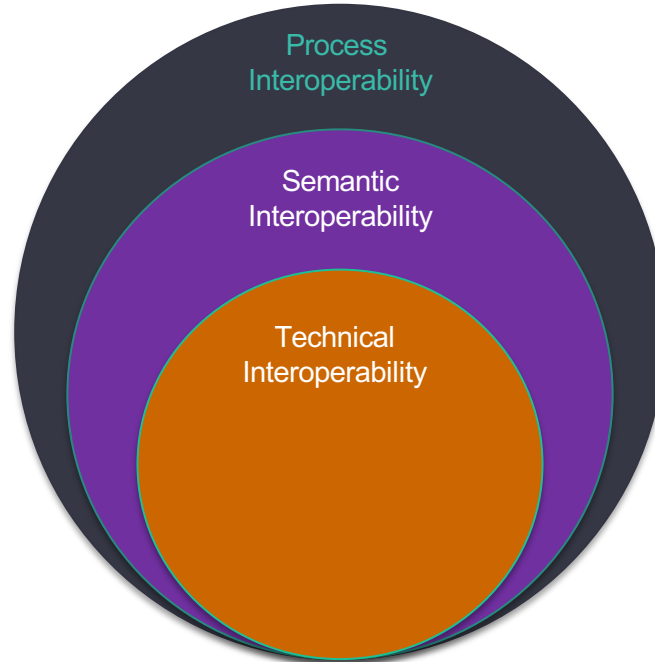
Standards are thus documents that define the characteristics of a product, process or service according to the state of the art. They serve to be used as rules, guidelines or definitions.

# Interoperability – a definition

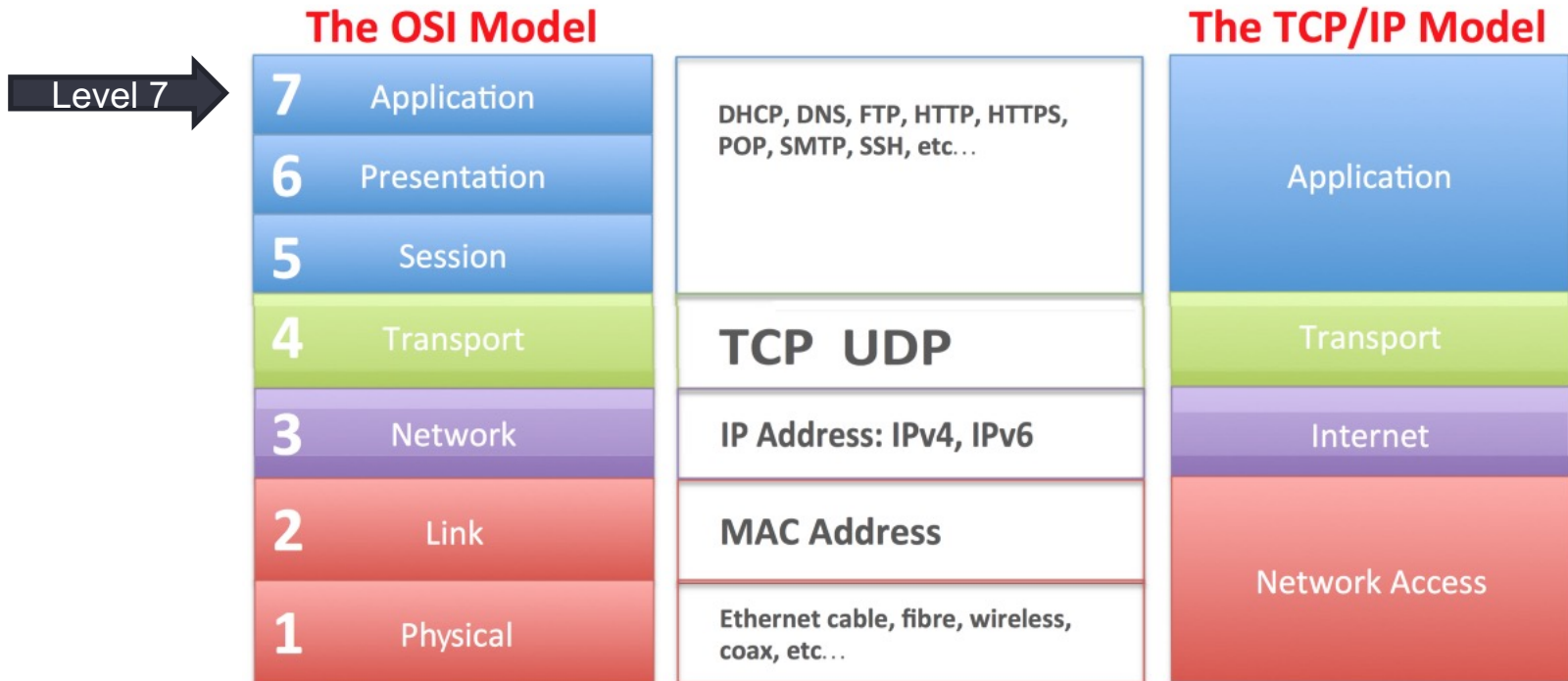
"The IEEE Standard Computer Dictionary defines interoperability as **"the ability of two or more systems or components to exchange information and to use the information that has been exchanged."** (IEEE Standard Computer Dictionary: A Compilation of IEEE Standard Computer Glossaries, New York, NY: 1990).

"The ability of different types of computers, networks, operating systems, and applications **to work together effectively**, without prior communication, **in order to exchange information in a useful and meaningful manner**" (ISO 15926 - Interoperability)

# Interoperability – at many levels



# HL7 – stands for health level seven



# HL7 standards... a time-ordered list

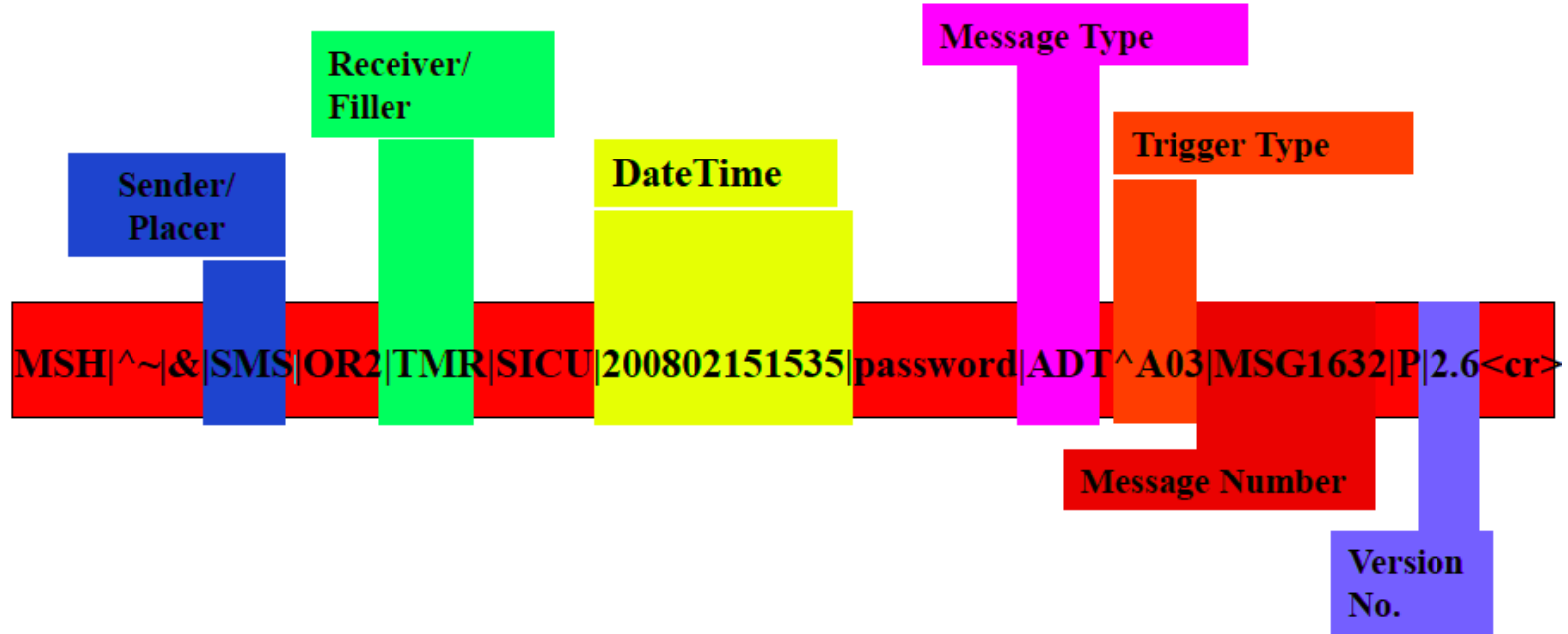
The most famous are:

- The HL7 V2 messaging suite (first version in 1985, still widely used today)
- HL7 V3 Reference Information Model (RIM) (since FHIR is emerging it less and less used)
- HL7 CDA
- HL7 FHIR

# ...and the corresponding paradigms

- 1985: messages (exchange of messages to allow duplication of data)
- 2000: documents (exchange of documents mainly for use by humans - human 2 human interoperability)
- 2002: services (services defined for specific purposes)
- 2012: resources (REST applications, distribution of resources within a network)

# HI7 V2 – srings, positions and separators





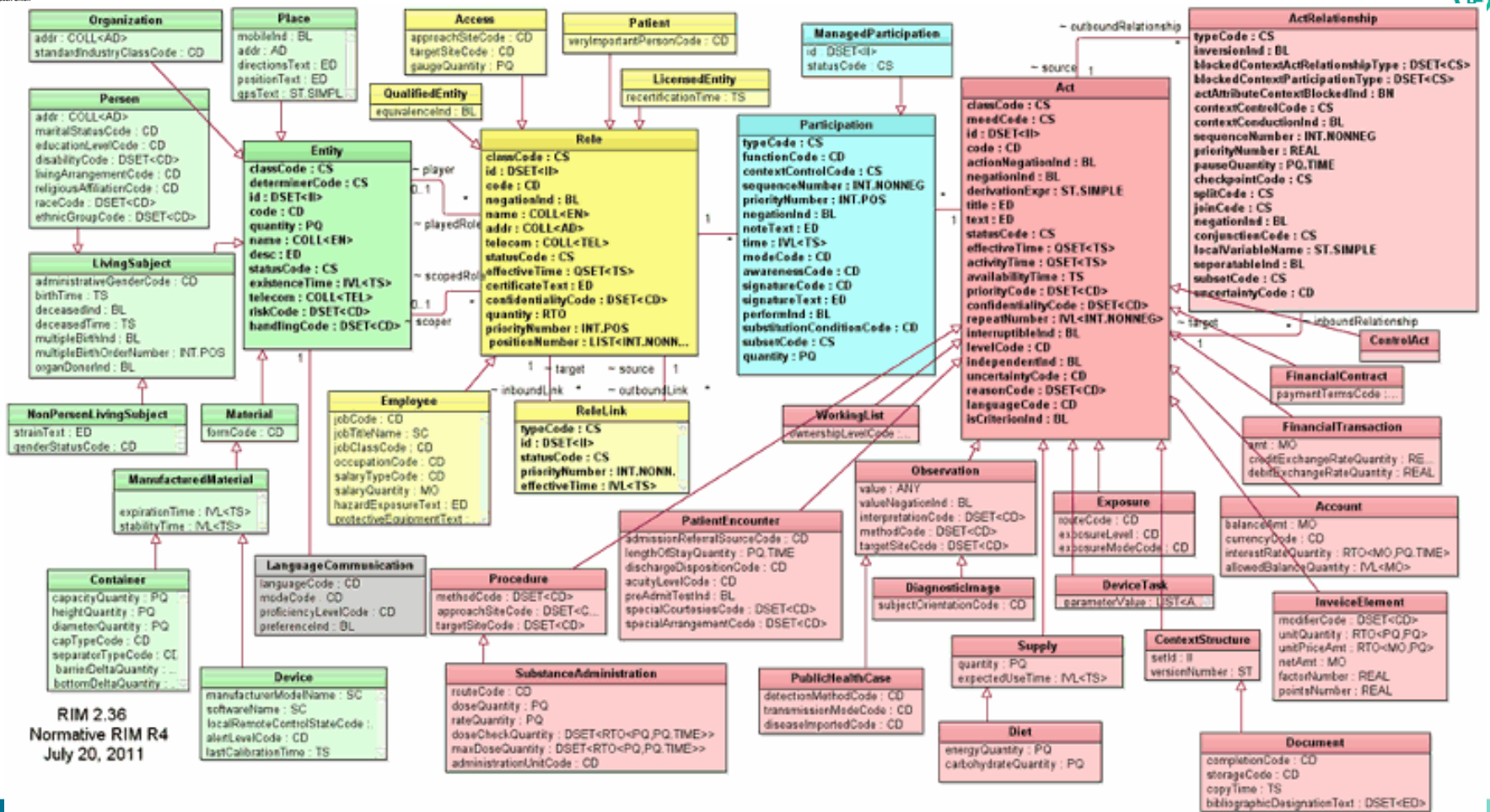
# HL7 V2 – example message

```
MSH|^~\&|LAB|767543|ADT|767543|20050201130405||ADT^A  
04|XX3657|P|2.4<CR>  
  EVN||20050201101314|||20050201095000<CR>  
  PID|||1234567891||EXAMPLE^DAVID^S||19590520|M|||23  
  MAINSTREET^^ANYTOWN^  
>  ^AN10 8SW||01234 567890<CR>  
  PD1|||DR A WELBY<CR>  
  PV1||0||NEW||DR K JONES<CR>
```

# HL7 V3 – Reference Information Model

*... the RIM is a large, pictorial representation of the HL7 clinical data (domains) and identifies the life cycle that a message or groups of related messages will carry. It is a shared model between all domains and, as such, is the model from which all domains create their messages. The RIM is an ANSI approved standard.*

*taken from: <http://www.hl7.org/implement/standards/rim.cfm>*



# HL7 CDA – markup

*HL7 CDA is a markup standard for representation of clinical documents...*

*from: Robert H. Dolin, The HL7 Clinical Document Architecture*

# HL7 FHIR... finally



HL7<sup>®</sup> FHIR<sup>®</sup>

More in the following videos...