



University of Twente

Domain Specific
Interoperability





Contents

- Problem identification
- Standards classification
- Interoperability in a domain
- Framework for standards



Problem identification

- Communication in a networked society
- Number of standards developed
- Capabilities versus usefulness
- ISO/OSI model
- Domain specific standards
- Lack of implementation details



Objective

- Exploration of standards
- Identifying the nature of standards
- Contribution to interoperability
- Within a specific domain

- Example domain: healthcare



Category	Description
Method	A common way of thinking, working, and modeling during the development or use of an artifact
Meta-model	A generic description of the domain, to be used in projects that adhere to a chosen method
Concrete model	A specific description of the interactions and data to be exchanged, having a one on one relationship with the relevant reality.
Operational standard	A detailed specification of the interactions and data to be exchanged, that can be used without further detailing or interpretation in the implementation of communication links between computer based patient record systems.

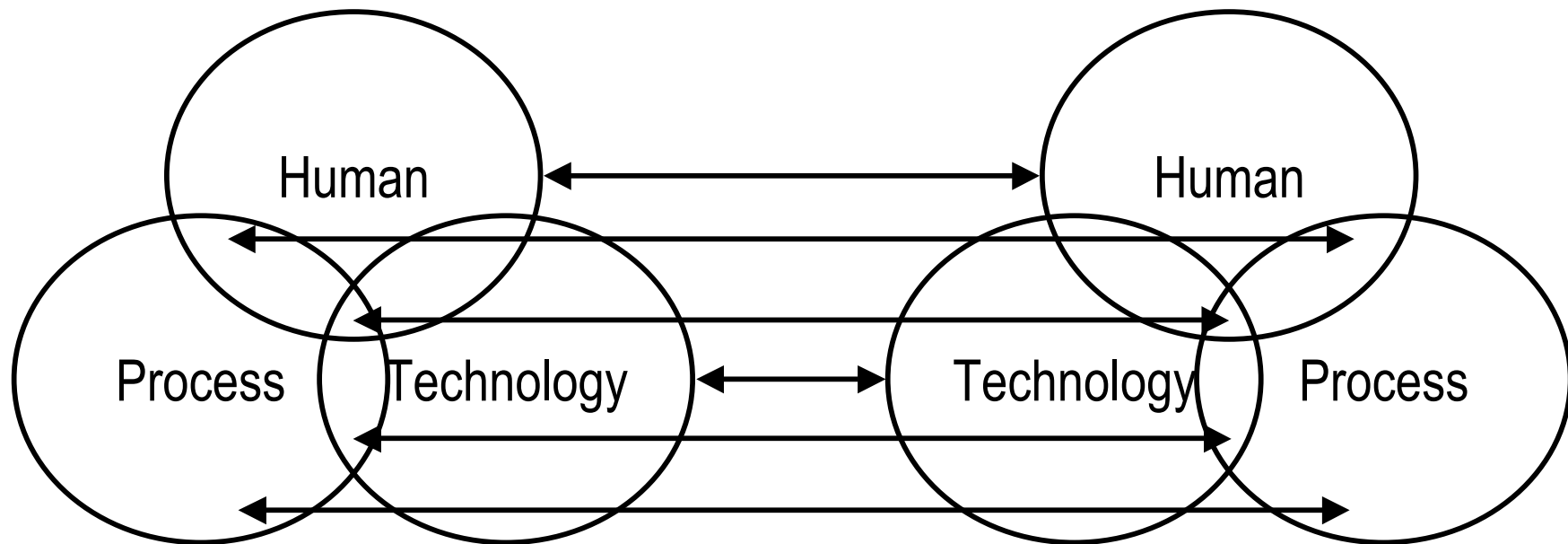


Interoperability

- Interoperability is defined by IEEE as:
 - “The ability of two or more systems or components to exchange information and to use the information that has been exchanged”
- Technical or organizational systems?



Communication between Organizational Systems





Technology

- ISO / OSI
 - Level 1-5: transfer of bits and bytes
 - Level 6: transfer of data (bits+presentation)
 - Level 7: transfer of information



Human

- Semiotic perspective
 - Syntactic (is it a proper phrase)
 - Semantic (is it properly interpreted)
 - Pragmatic (is the intention clear)



Process

- Workflow oriented research
 - Passing-on of control flow
 - Known pre- and post-conditions
 - Ability to influence process flow



Three layers for each aspect

- Interconnectivity
- Interchangeability
- Interoperability



Type	Purpose	Technical	Human	Process
Interconnectivity	Enables two systems to communicate with each other	Communication standards, like TCP/IP or X.25	Communication systems like speech and writing	Providing for external inputs and outputs
Interchangeability	Enables two systems to exchange information	Data representation standards, like ASCII or HTML	Language systems like natural language and vocabularies	Displaying the same behavior in terms of input/output
Interoperability	Enables two systems to operate together as one	Interaction standards like SMTP or SOAP	Behavioral scenarios and procedures, attached to e.g. military orders	Providing for external controls on process behavior



Conclusion

- Interoperability defined for organizations
- Preliminary classification of operational standards
- Focus standard-development efforts on specific types of standards