CINTESIS
CENTER FOR RESEARCH IN HEALTH TECHNOLOGIES AND INFORMATION SYSTEMS

U. FMUP

Personalized Medicine

European Data Science Conference

2016 Nov 8

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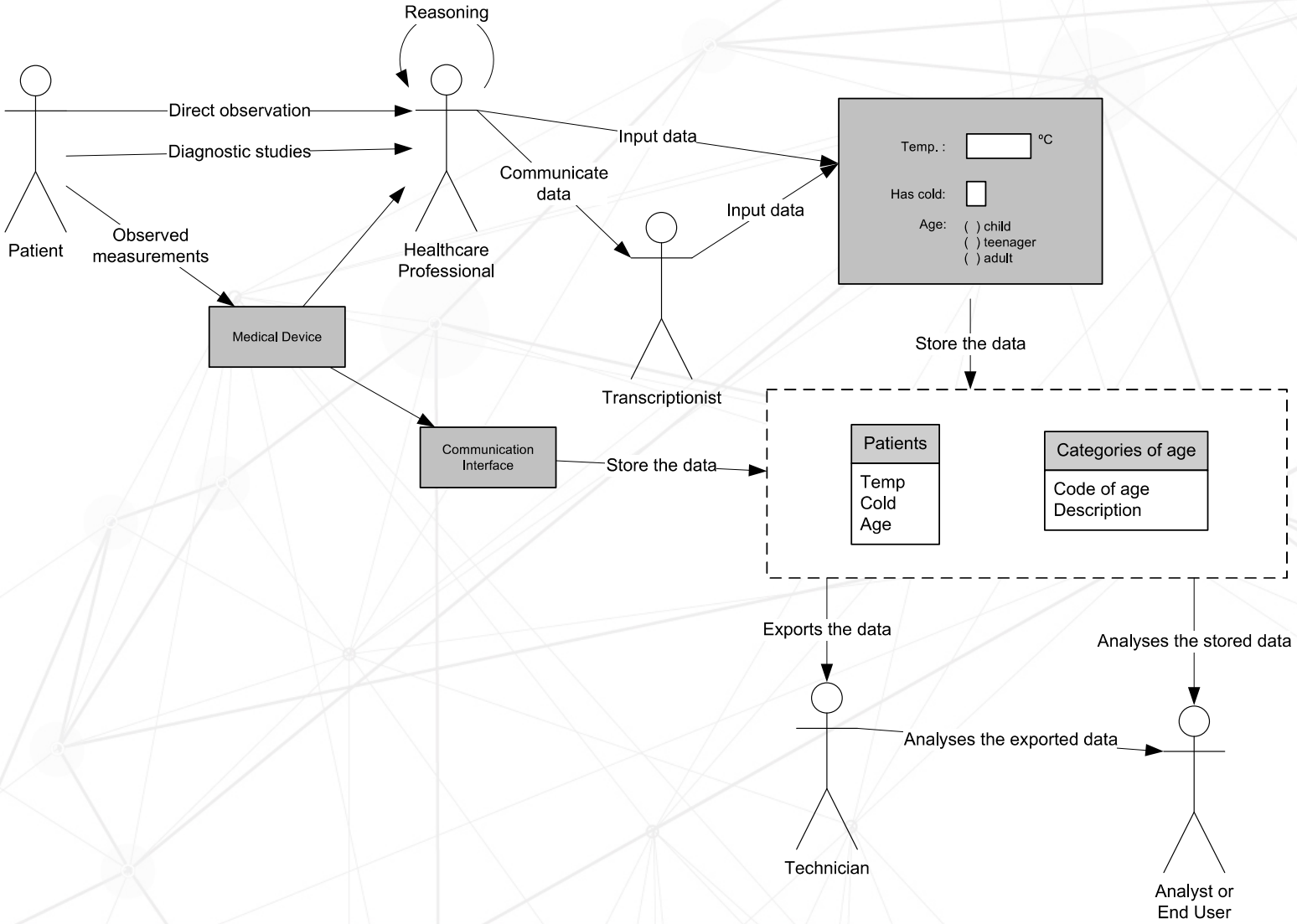
- Personalized Evidence-based-medicine uses stored health data
  - from patient diagnoses, lab work, insurance claims and general demographic information
- to move beyond the reactive approach of treating illness, allowing healthcare providers to predict and prevent future illnesses
- use past health data to help you in the future

- For how long do you expect to live?
- For how long do you expect your data to be readable and understandable?
- How should you store your health data (and context) to live that long?
  - In particular, should you store only the answers (in database fields) or should you also store the questions (user interface forms)?

Type of data	Examples	Collected by	
		Humans	Machines
Observations	- Temperature - Blood pressure	- Transcriptions - Subjective - Lack of standards	- Sensors data (ICU, fitness, …) - Lack of data collection protocol (device, local, …)
Evaluations	- Diagnosis - Adverse reaction risk	- Subjective - Protocols change - Need to teach terminology	
Instructions (orders)	- Lab orders	- More reliable	
Actions (result of an action)	- Lab reports - Surgery reports	- Incomplete data	- **Automatic analysis**
System usage (use process mining)	- Audit trails - Messaging logs	- Credentials sharing	- Time synchronization issues

Understanding Data



- Quality of data in healthcare is a big issue. We need:
  - Standardization in the way data is collected (protocol)
  - Standardization in the language (terminologies)
  - Standardization in the data structures

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Quality of data

- QoD changes throughout time
- Lack of collection protocols
- Difficulty in understanding too much, heterogeneous data, with different or unknown levels of confidence associated

Meaning of data

- Health Professionals education
  - Semantics / terminologies
  - We need an international language regarding medical terms