9º foro sobre el SISTEMA DE INFORMACIÓN del Sistema Nacional de Salud

Integración de sistemas de información.
Superando barreras para mejorar el resultado en salud de los pacientes.

IS IT NECESSARY TO CHANGE INFORMATION SYSTEMS TAKING INTO ACCOUNT PATIENT REPORTED HEALTH OUTCOMES: CONCEPTUAL BASIS

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Professor of Integrative Medicine
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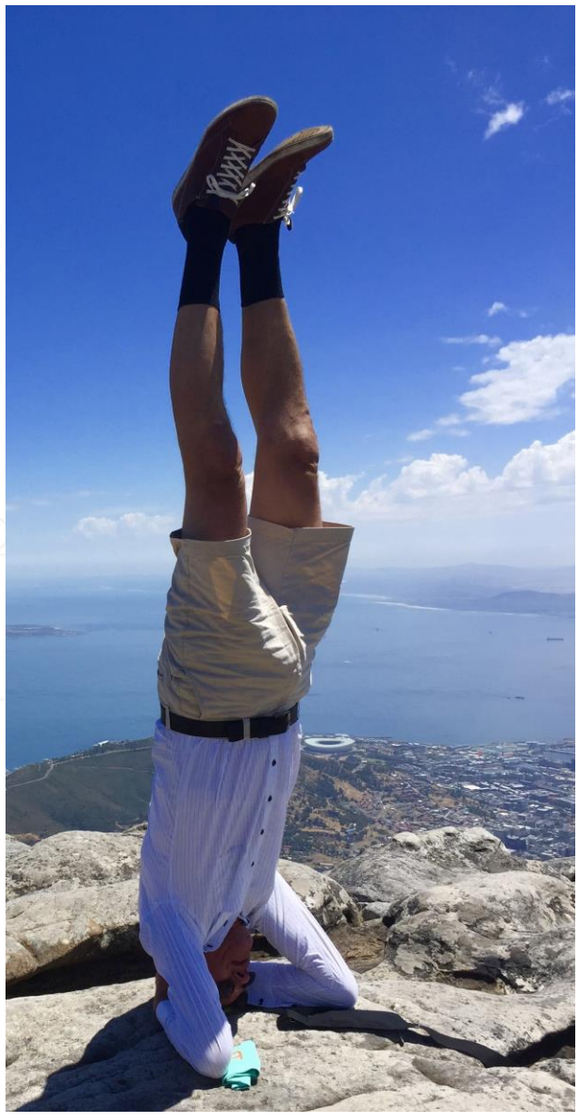
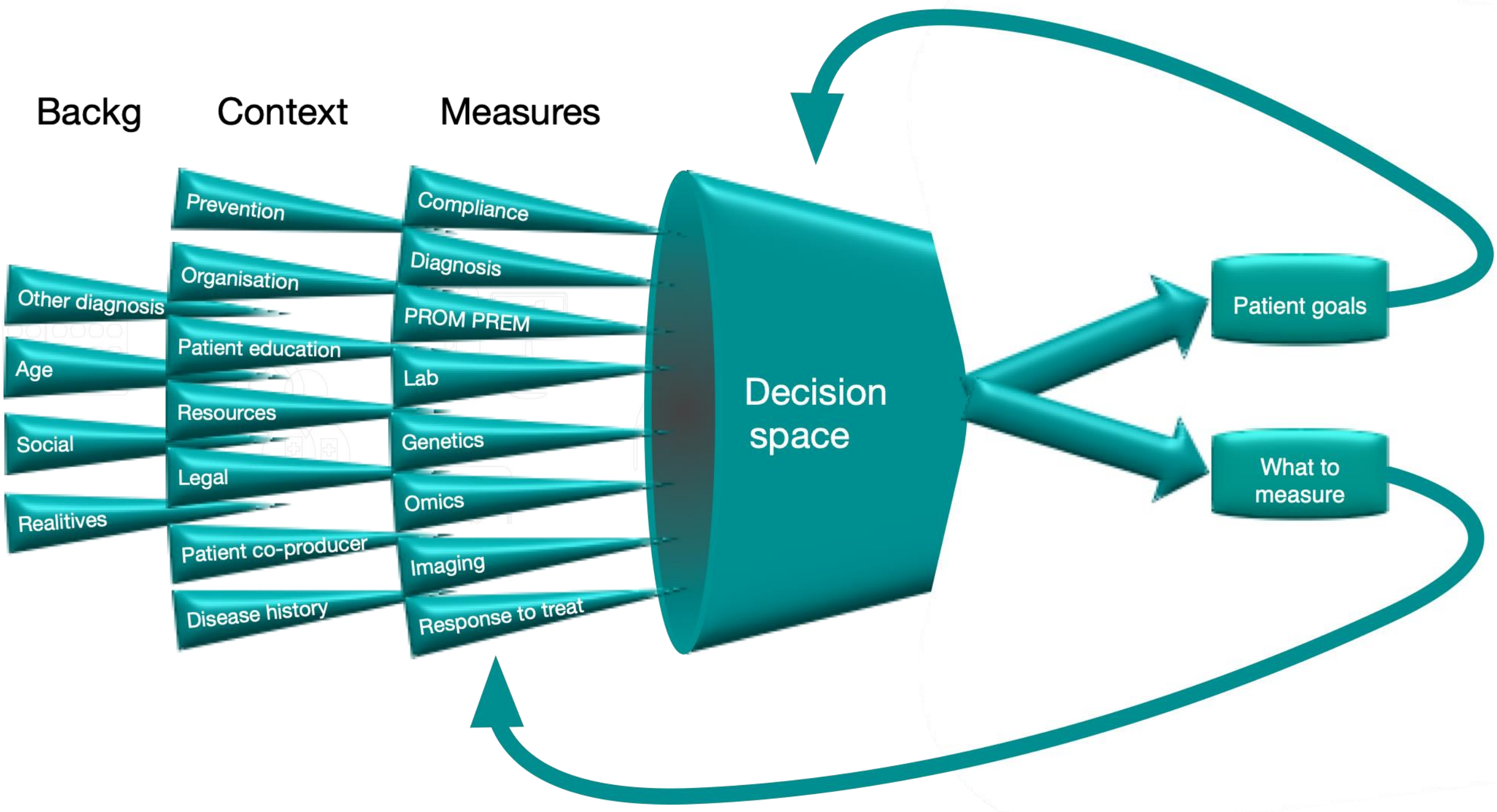
Thesis

» Modern health care need a patient centered information architecture to know what is working well for the patient

» This entails a completely new service model - turn it upside down



The decision space



The decision space

Manual Medicine → Shared Knowledge Medicine

EMR documentation → Health service support

Implicit decision structure → Explicit decision structure

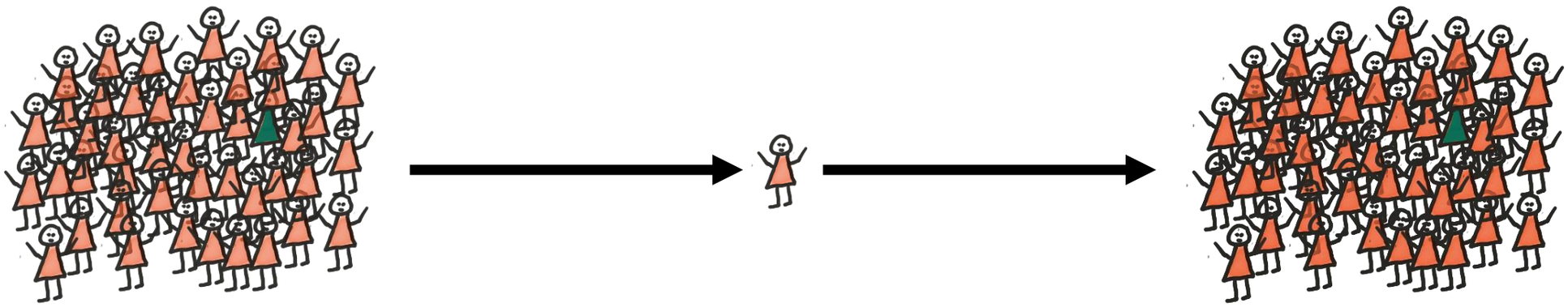
The concept of learning health care

Knowledge

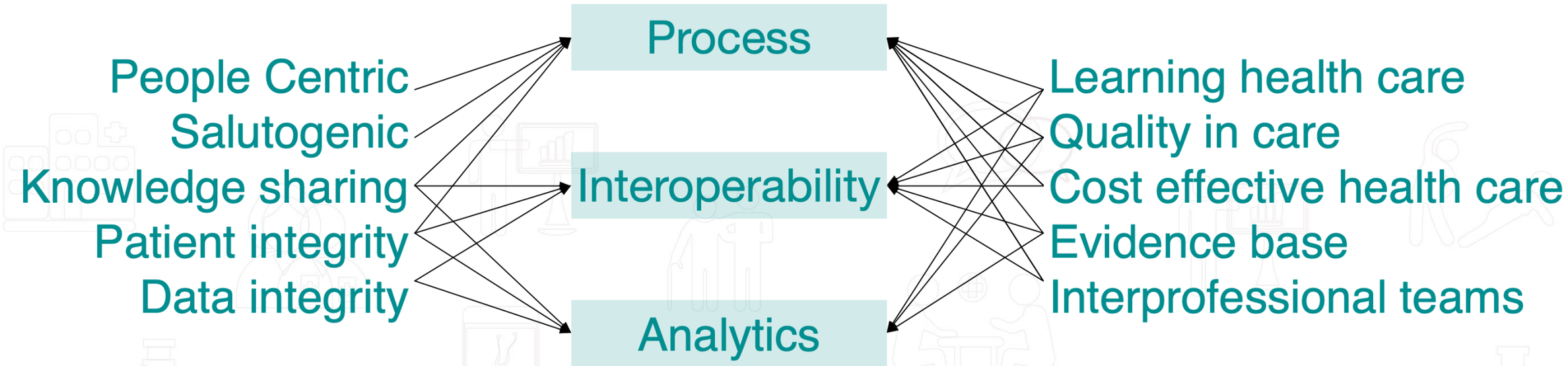
Planning measures with the group level in mind

Aggregating results for the group level - unit level

Personalised health care



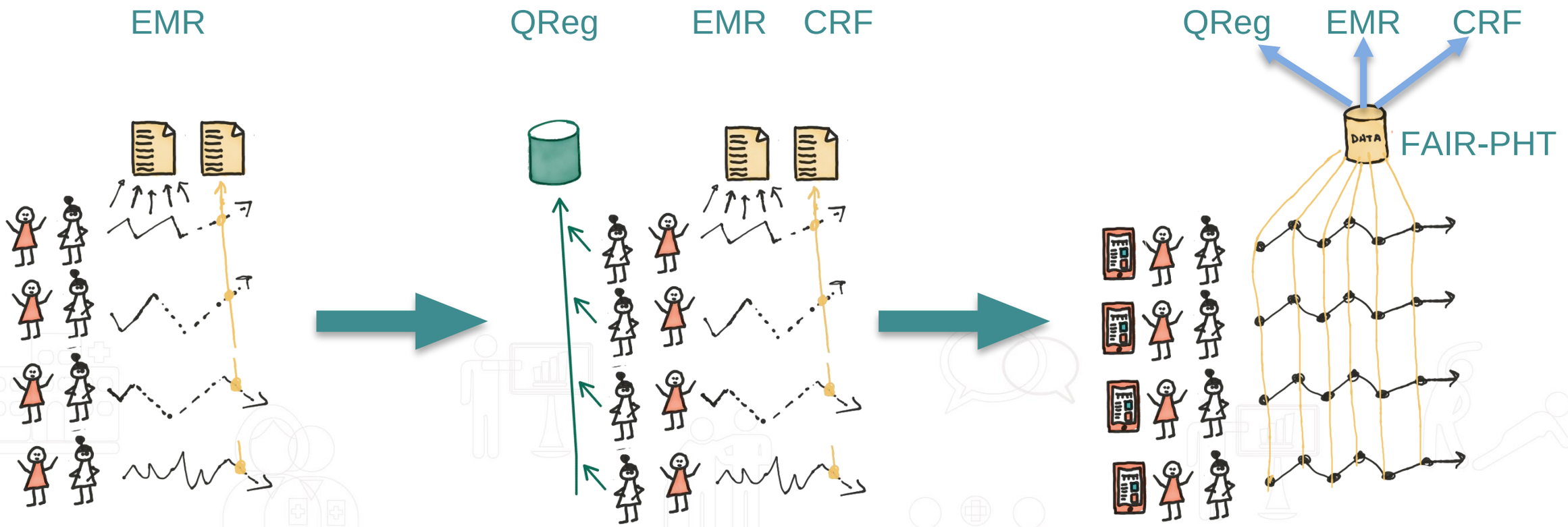
Can informatics help?



Patient centric

When professions and information systems are aligned with the patient trajectory and needs

Patient centric process



Where we were
- Manual medicine
- Free text documentation
- Self estimated quality
- No common terms
- No patient voice

Where we are
- Guidelines
- Manual quality registers
- No structure support
- Few standard terms
- Limited Patient Voice

Where we are going
- Nationally agreed processes
- Structure for multipurpose data
- Structural process support
- Full interoperability
- PROMS and co-decisions

The concept of learning health care

Knowledge

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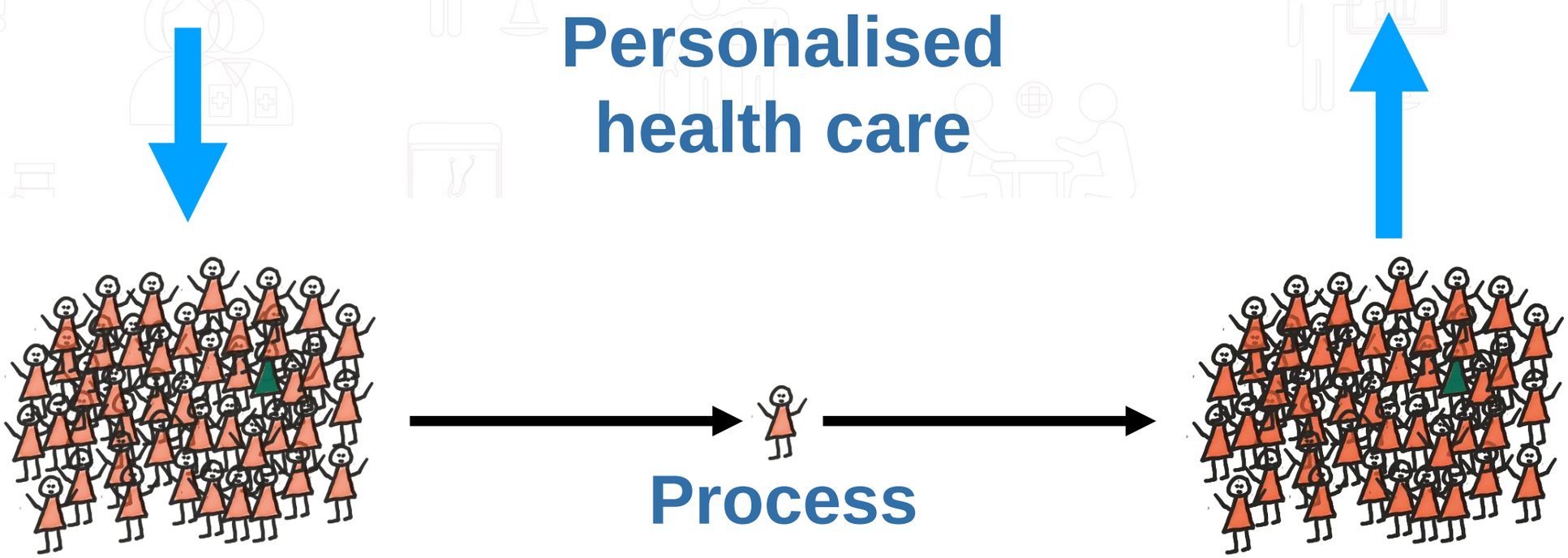
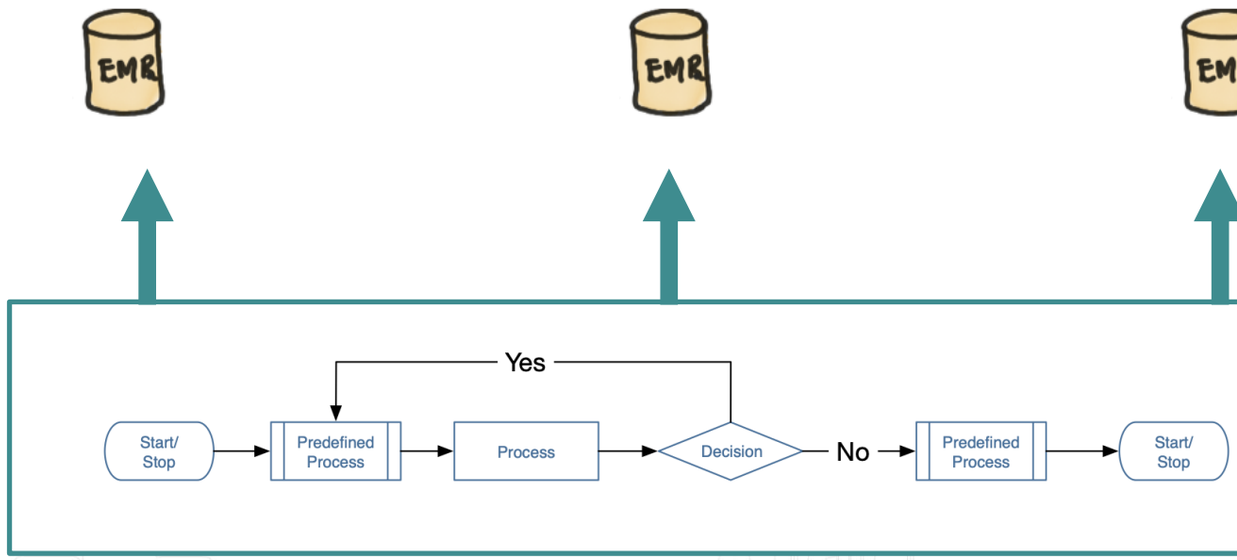
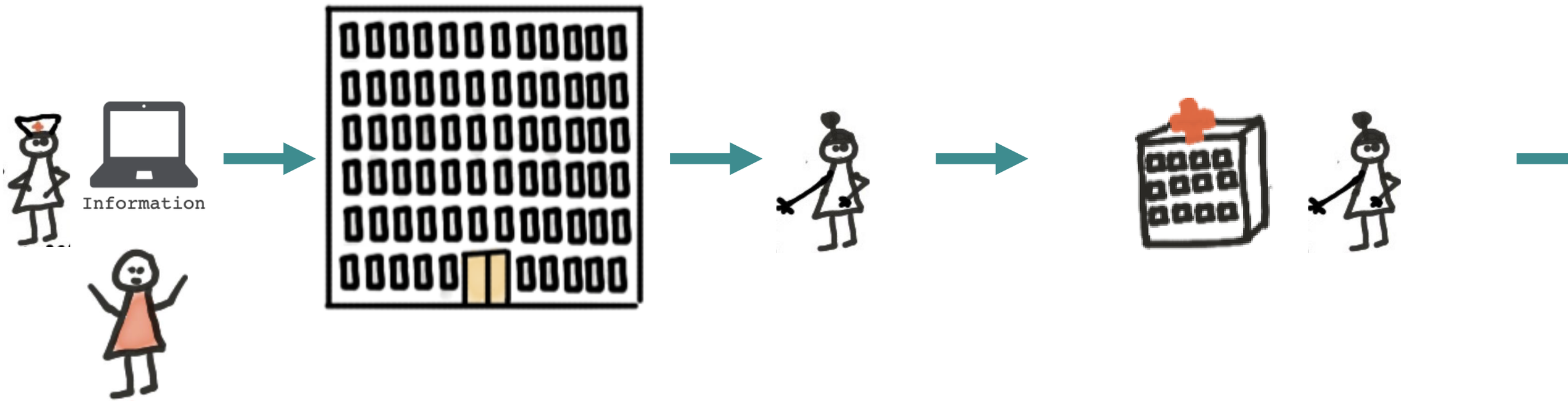
Aggregating results for the group level - unit level



Collaboration based on care plans





The concept of learning health care

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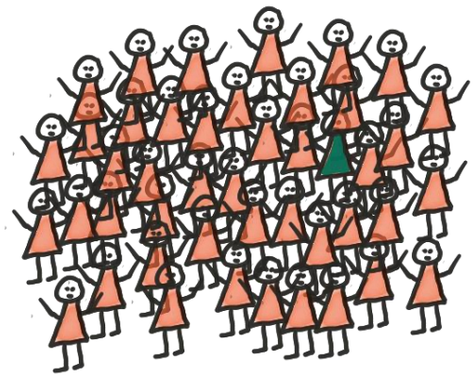
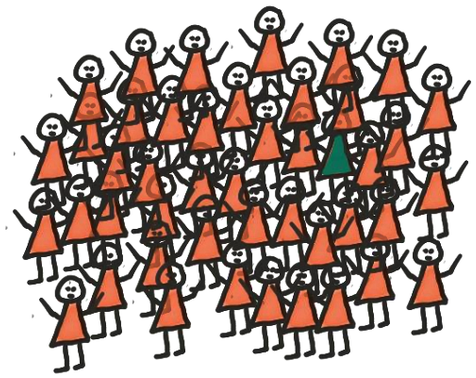


Process



Outcomes

Outcomes

- Outcome measurements should be done routinely
- International standards should be used
- Standard terminologies should be applied

Multimorbidity

Patient factors
Comorbidities
General health
Diagnose related

Patient factors
Comorbidities
General health
Diagnose related

=>

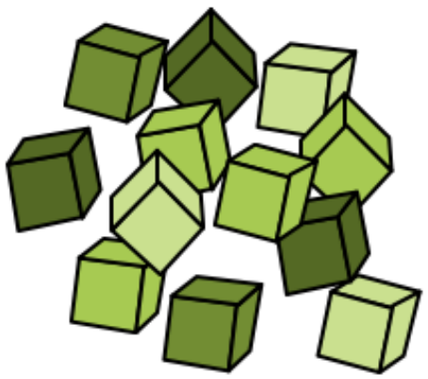
PlanDefs => Personalised Careplan

Harmonization

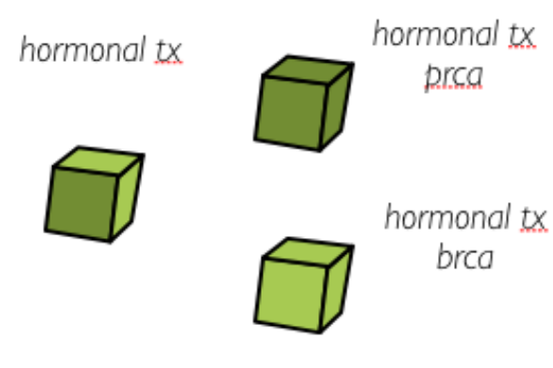
1A) Standardization: Develop an unambiguous term bank containing all ICHOM measures

ICHOM

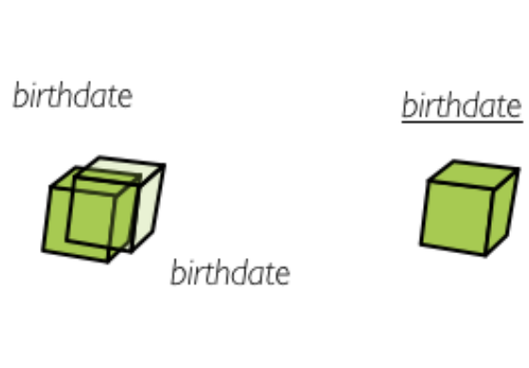
ICHOM concepts have been harmonized across all 28 standard sets published to date, and transferred to a machine readable repository. Clinical information models have been developed for 4 prioritized sets.



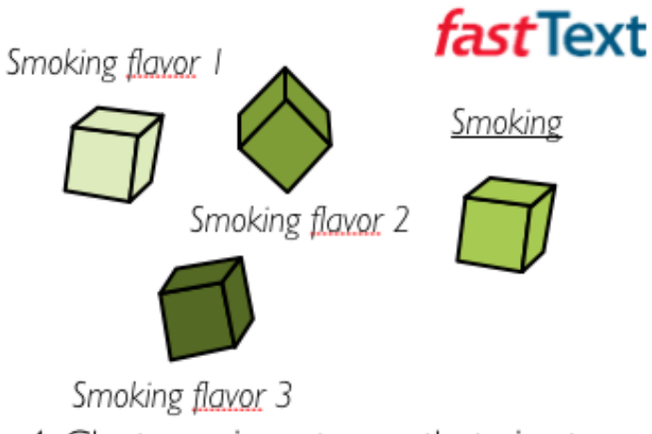
1. 3,000 terms defined by working groups across 28 conditions



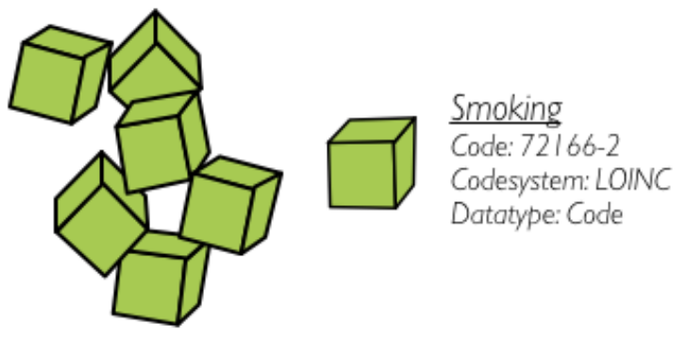
2. Split terms with identical ID but clearly different meaning



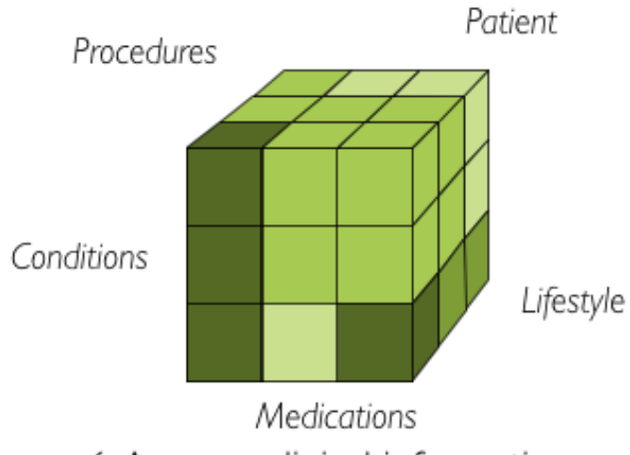
3. Merge terms with identical ID and less profound differences



4. Cluster unique terms that aim to capture the same clinical concept



5. Express data structures and semantic meaning explicitly in clinical information models



6. Arrange clinical information models in a machine-readable taxonomy

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Harmonization

1A) Standardization: Developing standard set execution models

ICHOM

In the harmonization and update of the ICHOM concepts, we have separated the description of what a concept is and how it should be measured, from the timing and inclusion criteria for measurement.

1. Clinical information models

Definitions of measurements

education
LOINC: 82589-3

sex
LOINC: 72143-1

birthdate
SCT: 184099003

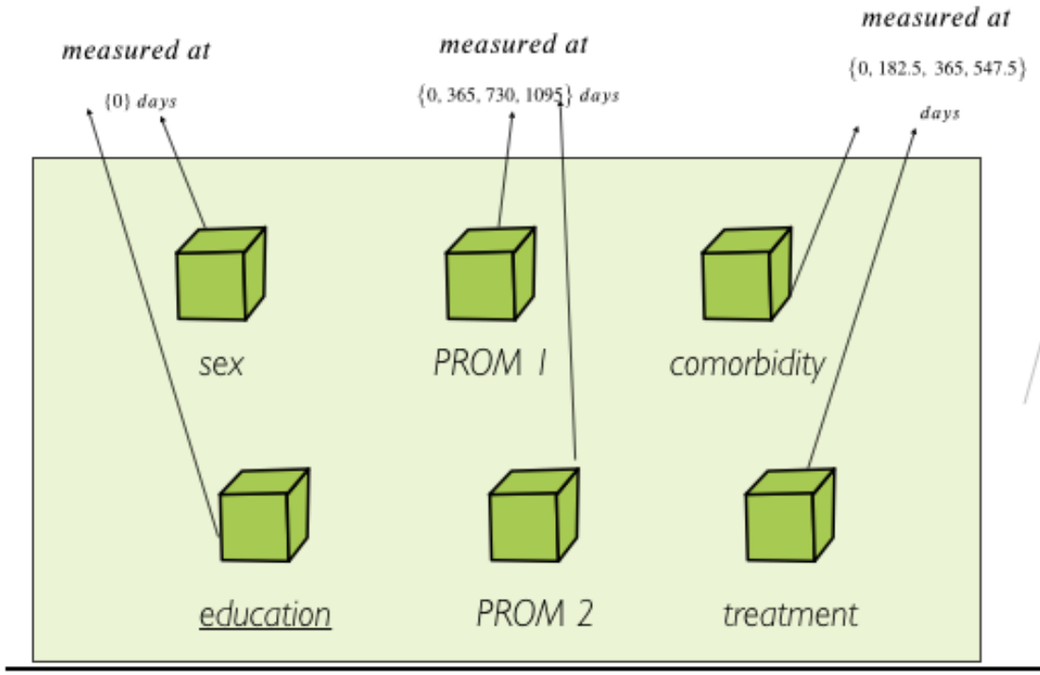
PROM 1

PREM 1

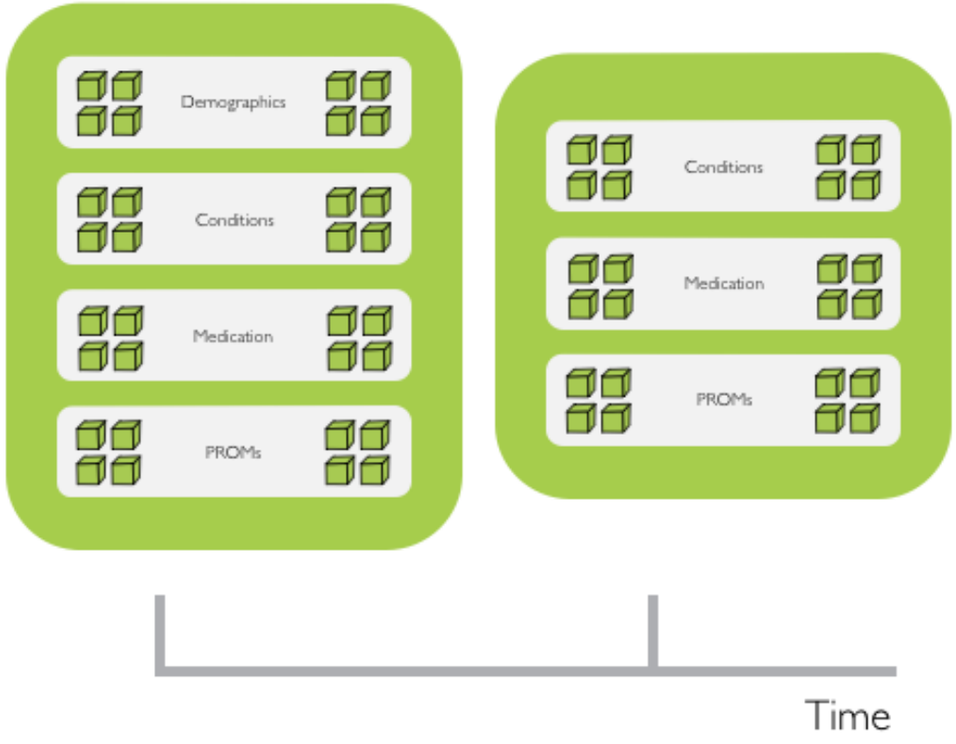
CROM 1
ICHOM defined

2. Context for collection

Definitions of timing for data collection



3. ICHOM execution model



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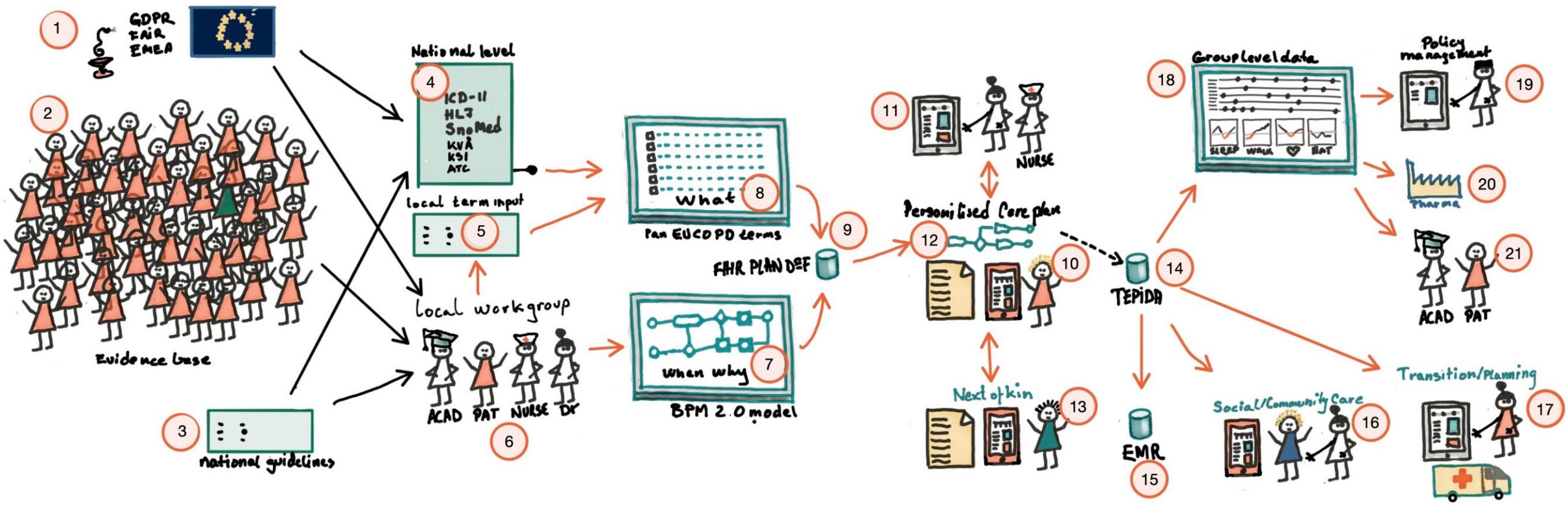
Organise for multi use of data

Setting the semantics Healthcare Use of data



Organise for multi use of data

Terms

Point in space
EMR data
What? When
Term standards

"me Tarzan you Jane"

Standard process

Vector properties
Process data
Rel When? Why?
PlanDef

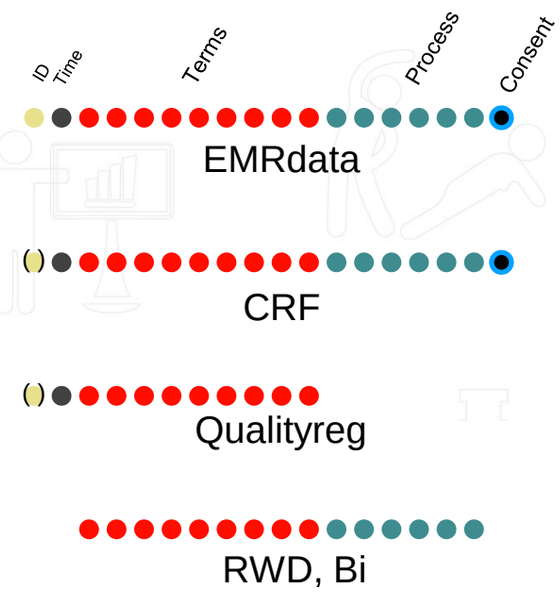
"We do this for reason"

Individualised process

Vector properties
Process data
Rel When? Why?
CarePlan

"This is my needs in combination with the common PlanDef"

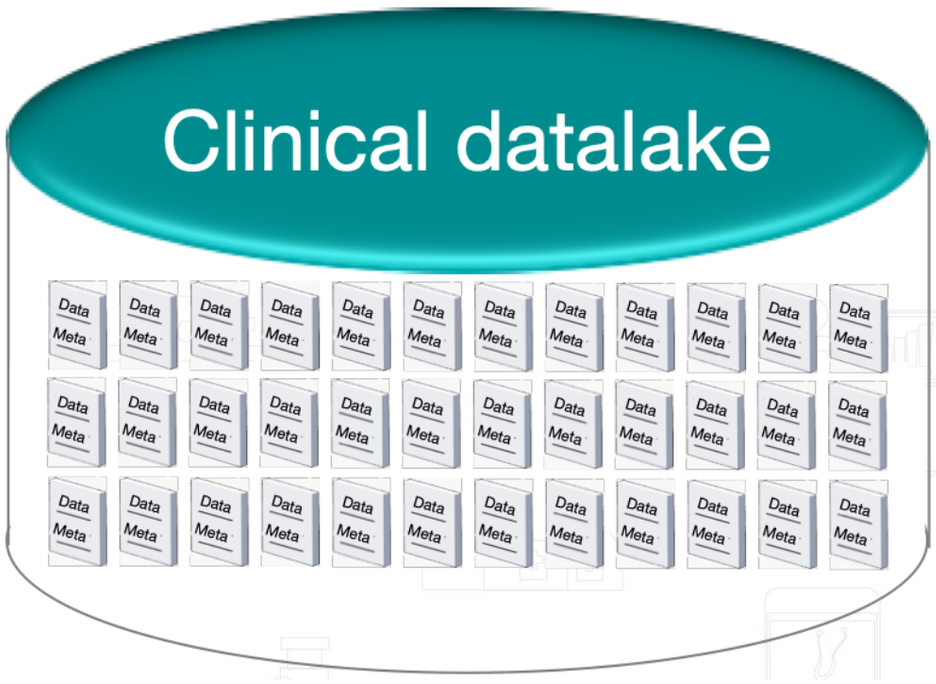
Data



Common model across ontological domains

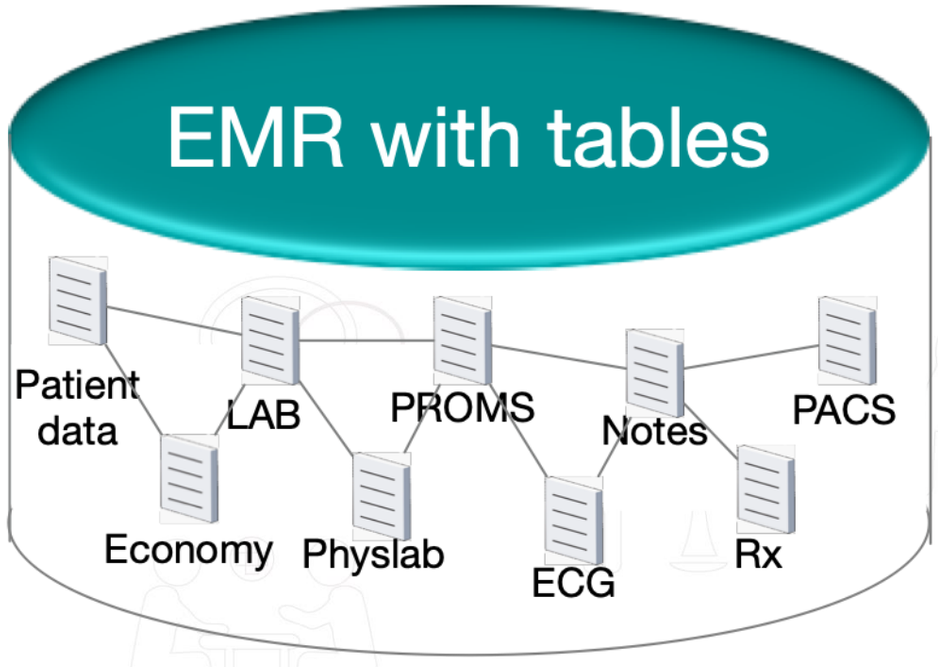
Organise for multi use of data

Metadata is co-stored
Data reachable by multiple keys



Mapping

Metadata is location specific
Data reachable only by PID/time stamp



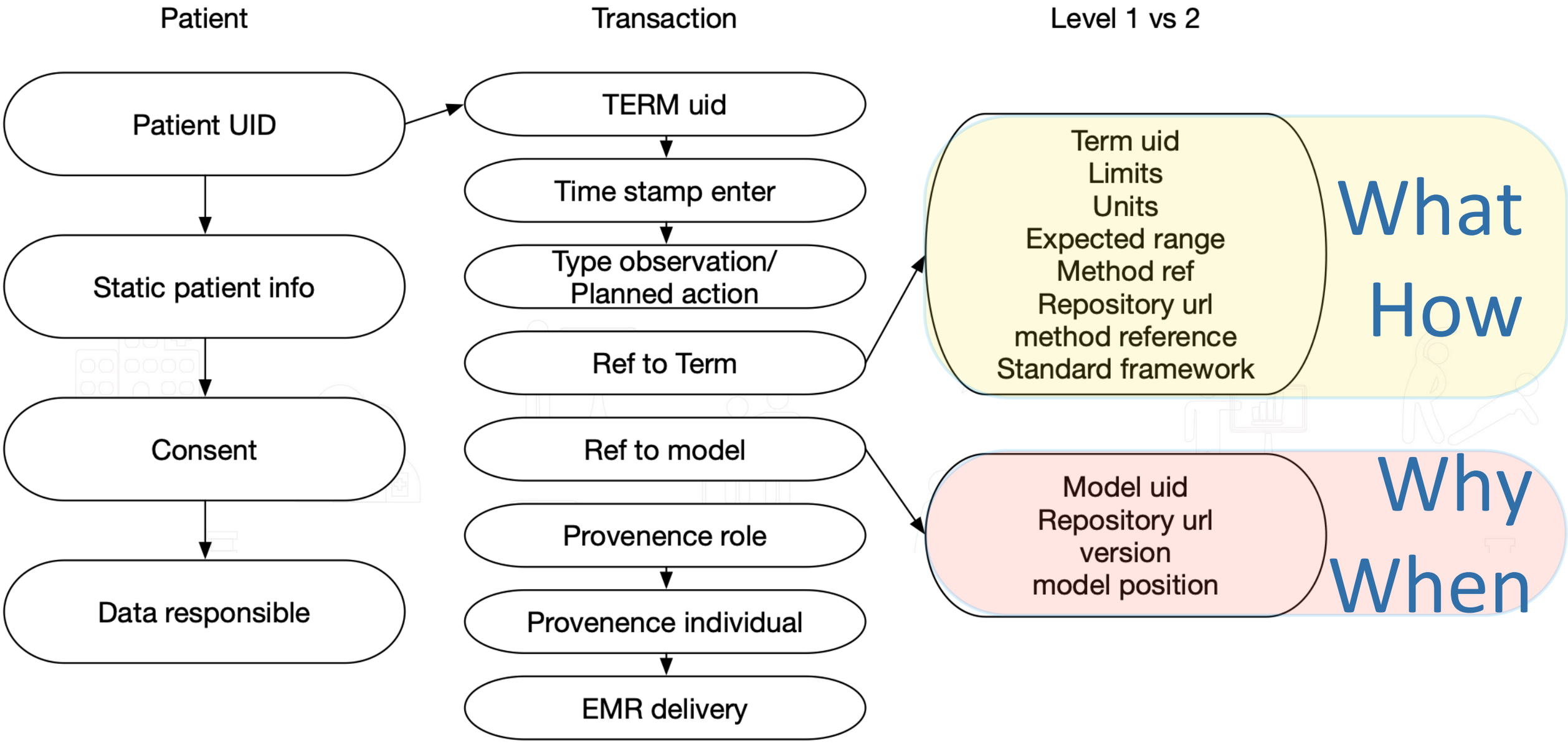
Typical query:
All second visit bloodpreassures for care plan chronic heart failure

GDPR compliant by design

Typical query:
Defined Patient ID
If patient has ICD-10 Code 356.10
Find index date
Find blood pressure (index date +20-30)
Retrieve data, re-annotate data according to CRF

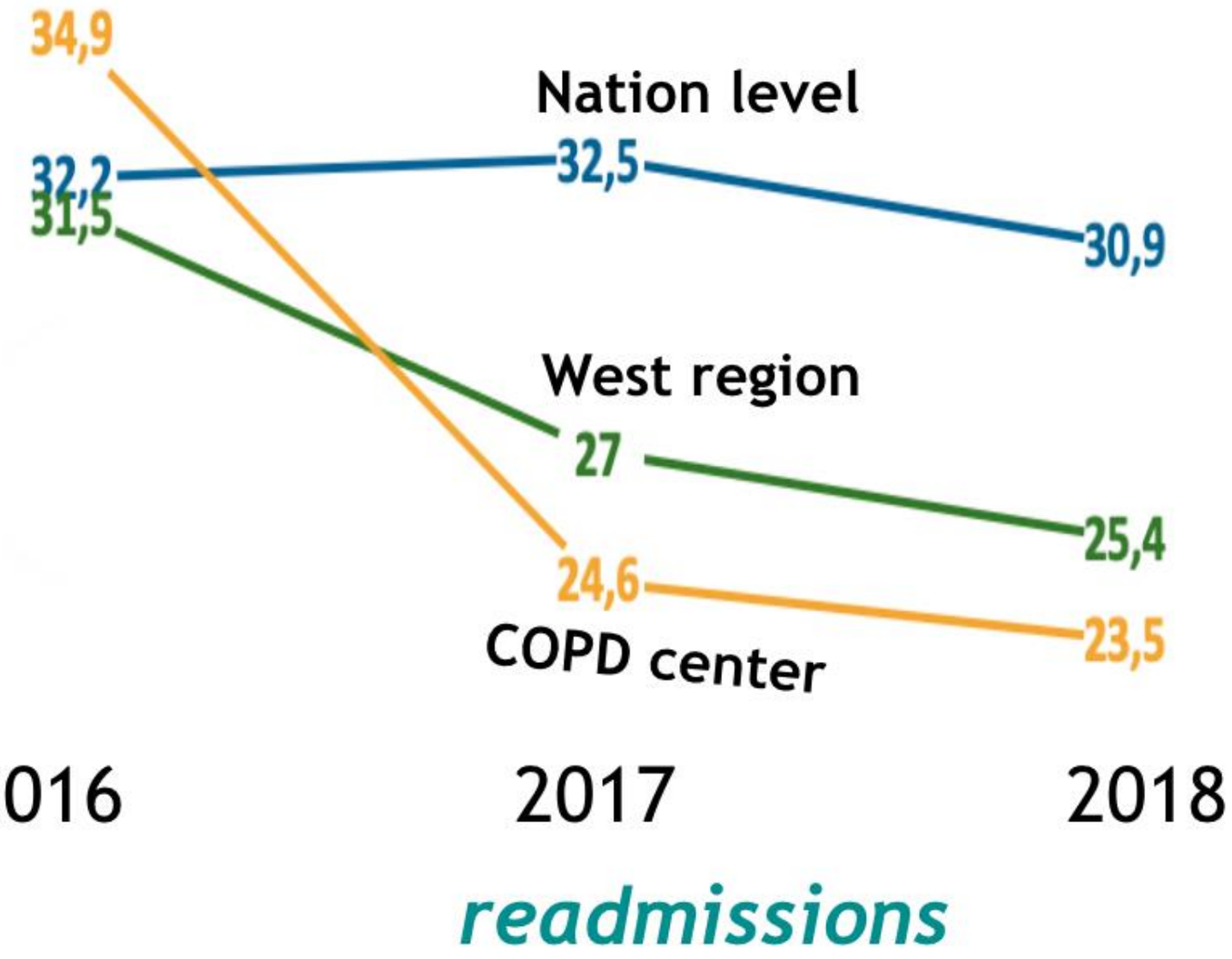
GDPR compliance difficult

Information model



Results: COPD

Effects of care plans in COPD - VGR (>2 hospitalisations for exacerbations last year)



readmissions

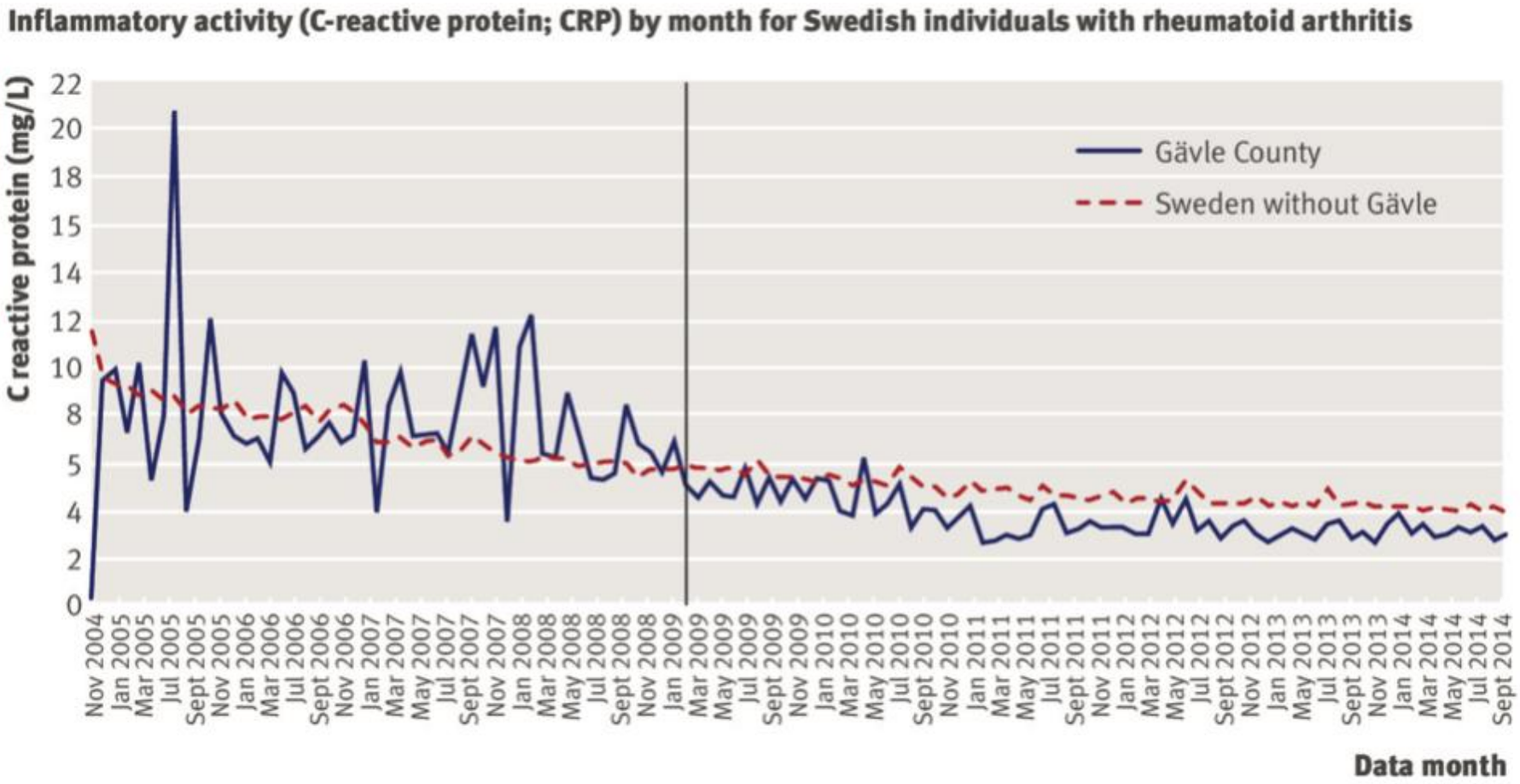
Results: Cardiac Congestion

Reference: 4D project Stockholm County and Karolinska Institutet 2 million catch area

Health economics: Payback 8/1 the first 4 years

Linde/Persson in press

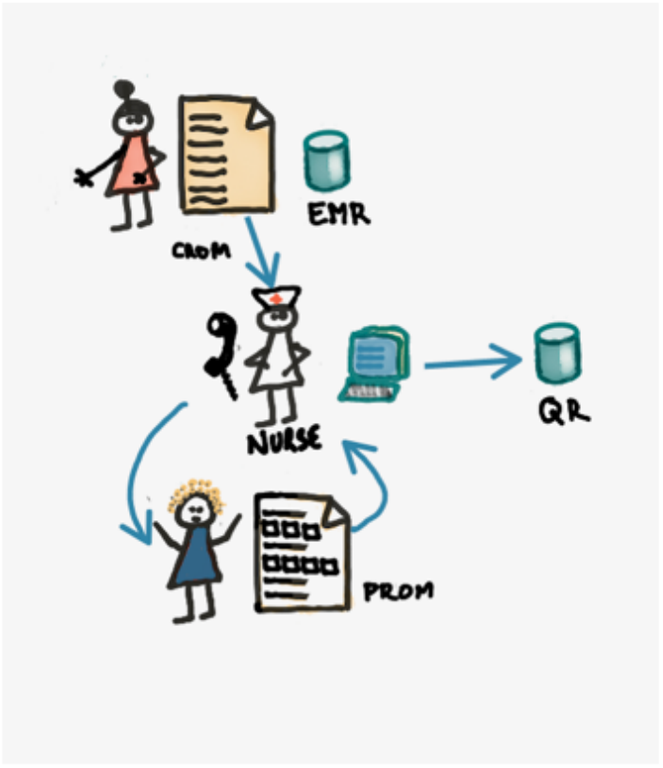
Results: Reumatology



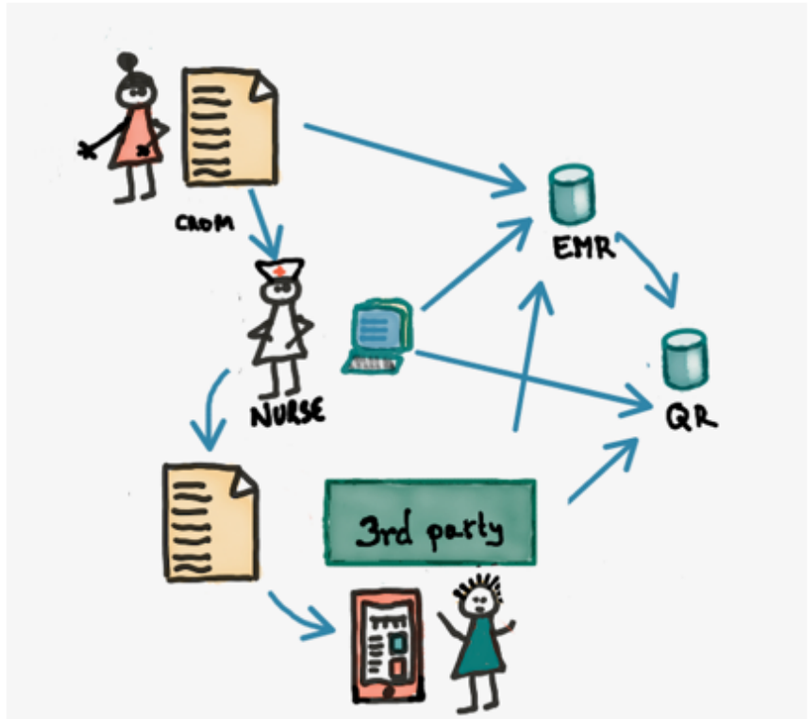
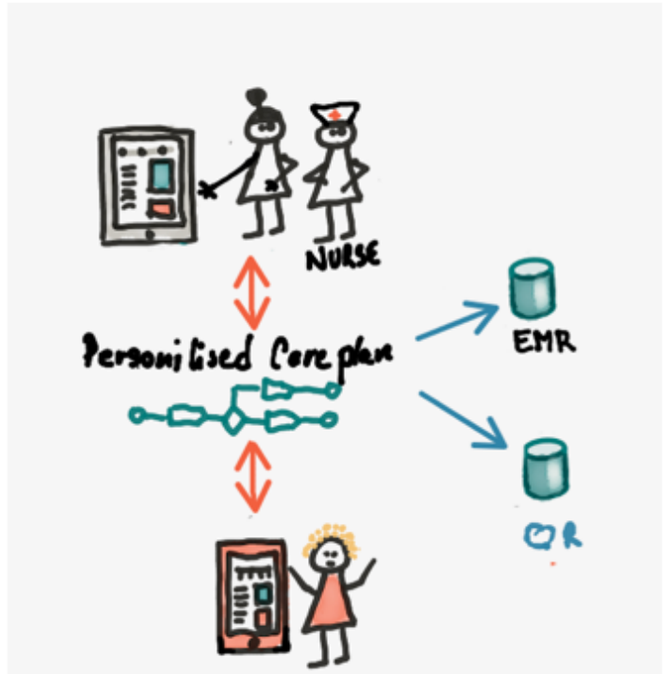
Lindbladh et al 2018

Conclusion: Where we are going

Today



Modern Today



Tomorrow