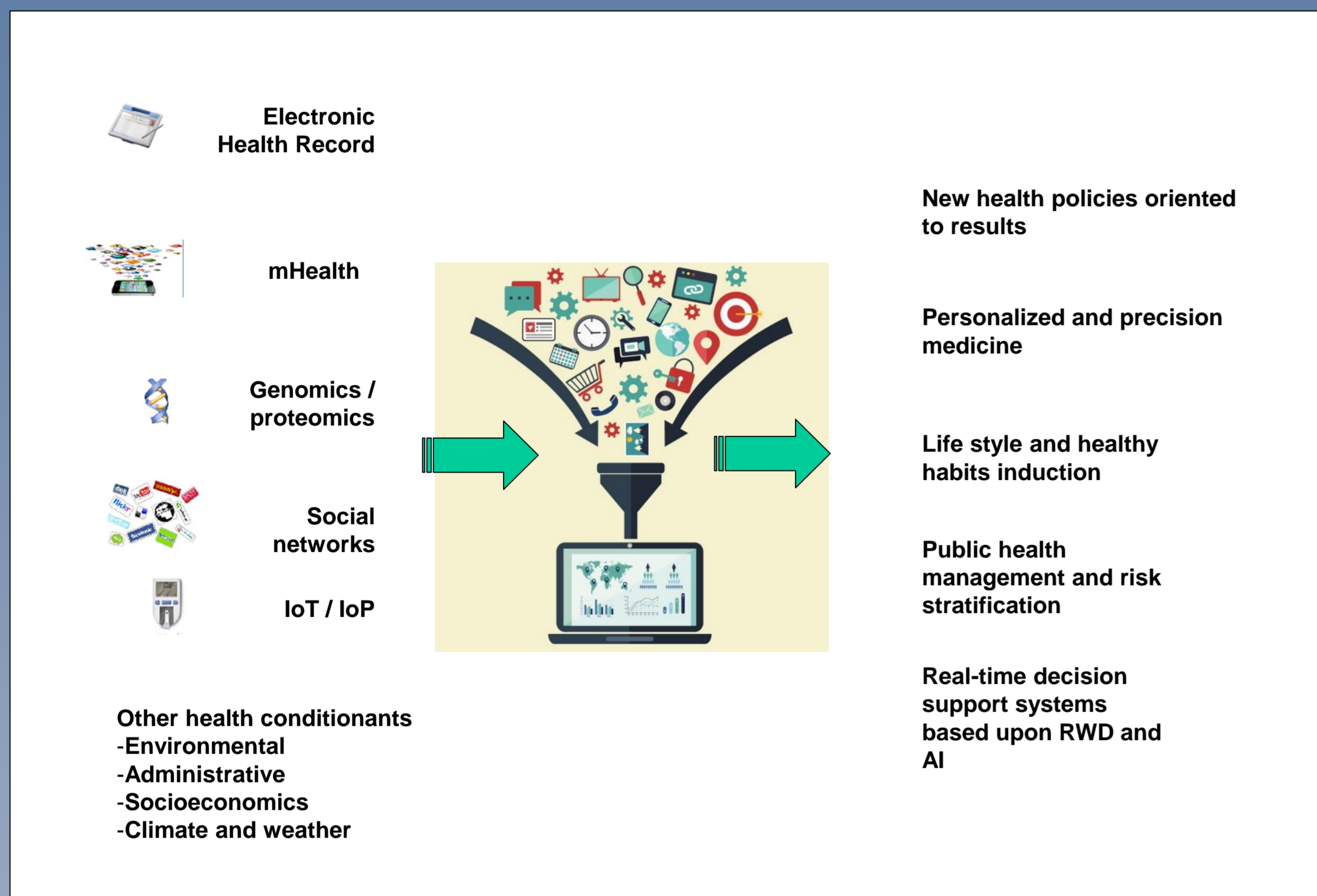


Towards the Exploitation of Data 4.0 in Health Environments

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Motivation

Designing appropriate techniques and methodologies to exploit Real-World Health Data is essential to improve the performance and sustainability of health systems, the well-being of patients, and the value of the data collected.

Our proposal

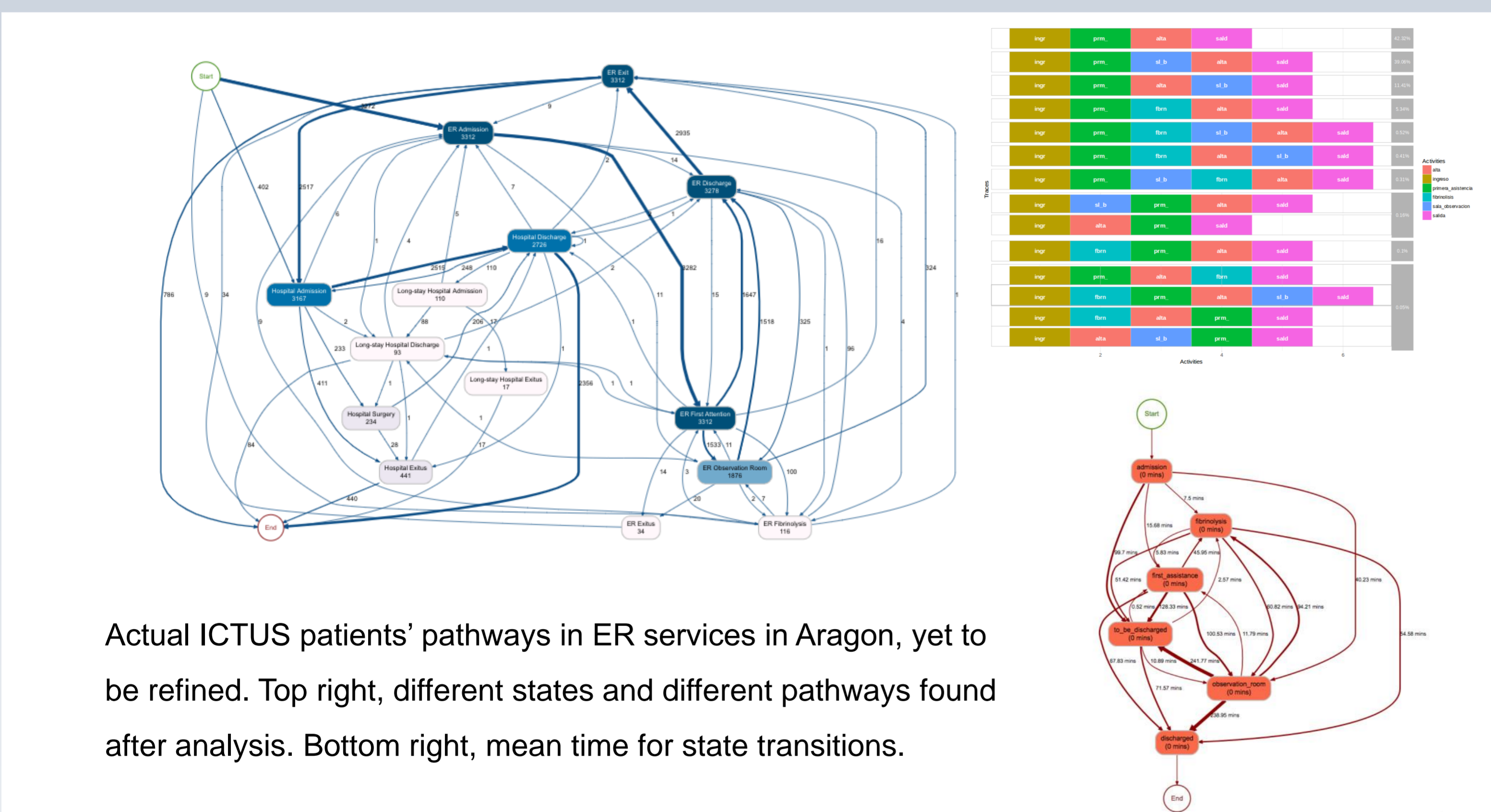
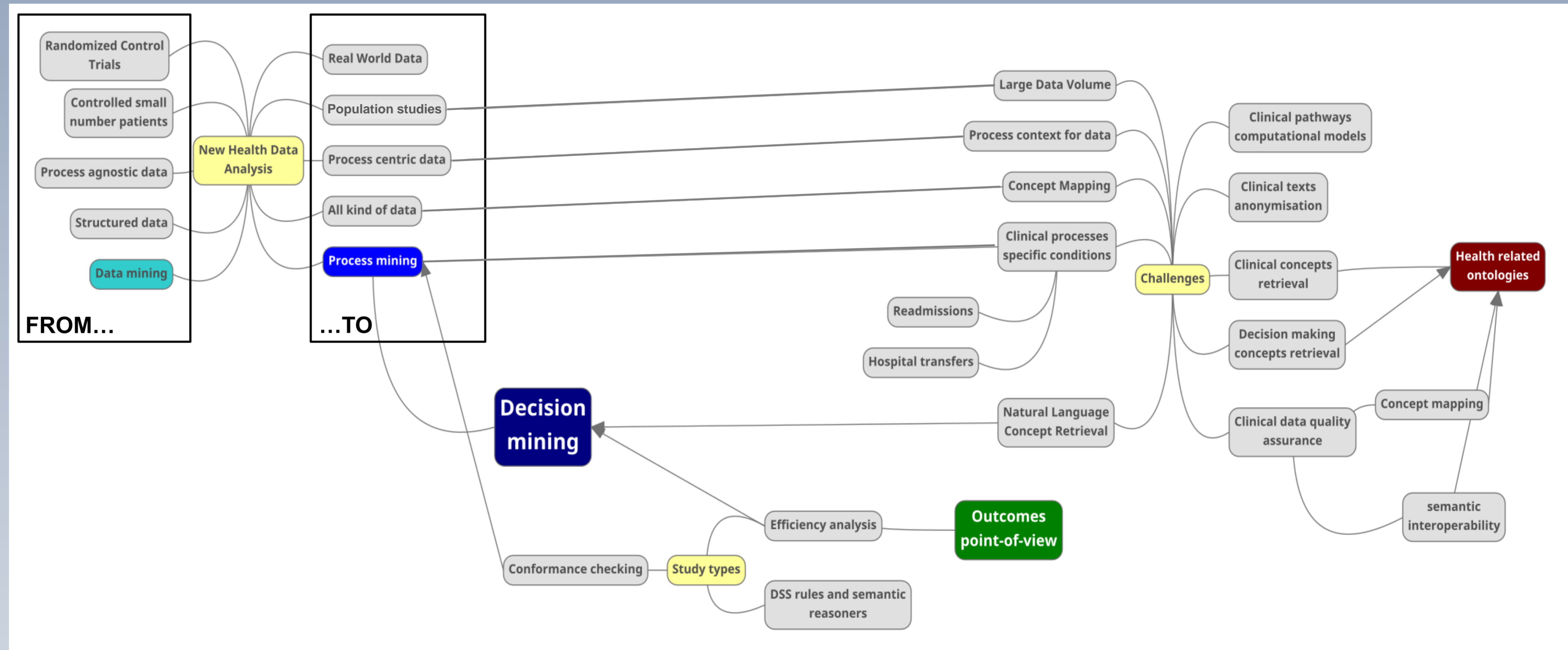
To develop new technologies to gather and analyse Real-World Health Data, based on Natural Language Processing, Process Mining and Machine Learning, as a base to build Decision Support Systems for clinics, managers and policy makers.

Opportunities

The availability of large amounts of structured and unstructured health data offers the possibility to develop new state-of-the-art analytical technologies to bring out new knowledge to Health Sciences.

Main challenges

- Data anonymization
- Concept mapping between sparse data sources. Semantic interoperability
- Natural Language concepts retrieval
- Clinical pathways computational modeling
- Decision Mining



From data mining to decision mining

Classical analytical techniques treat data in a process agnostic way. But the process is particularly important in a patient's clinical pathway. Clinical outcomes are very dependant on the clinical process as a whole.

Process mining is a good starting point for this analysis, but we need to go a step forward, including clinical results as a parameter in the analysis, as well as considering the clinical decisions made in every pathway fork. This way, we can evaluate not only conformance checking between actual processes and models, but also evaluate clinical results between similar processes. Information Technologies become then a suitable tool to help improve clinical protocols.

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