

Interoperability and Dynamic Aggregation of Medical Data

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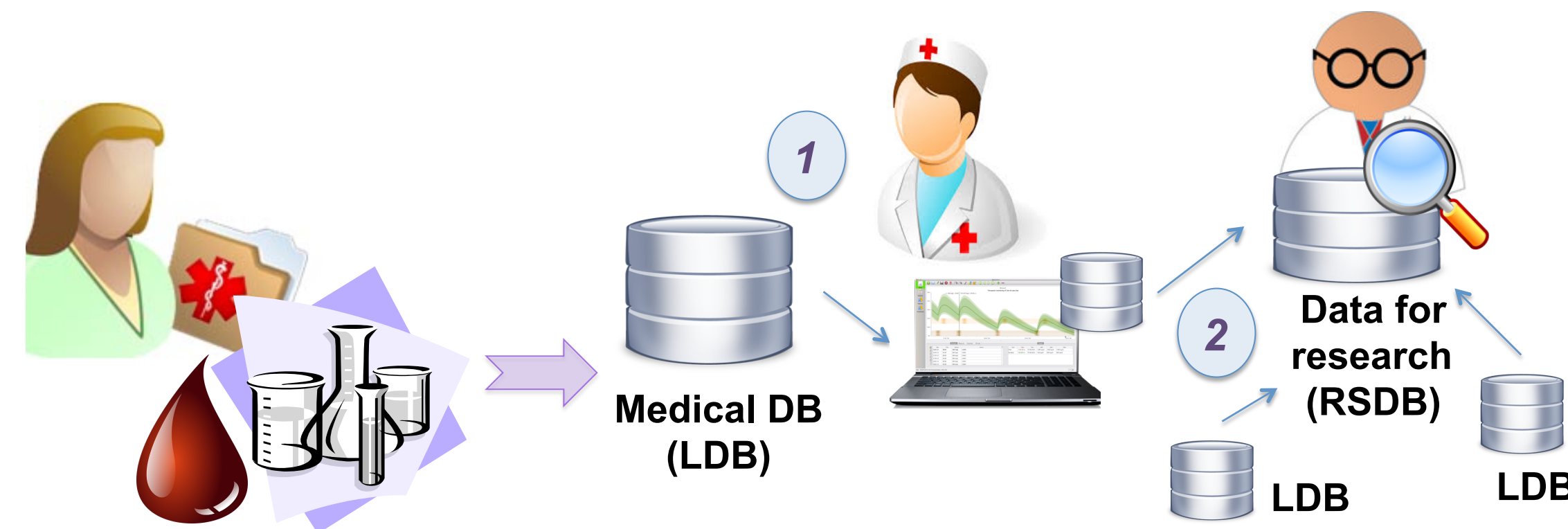
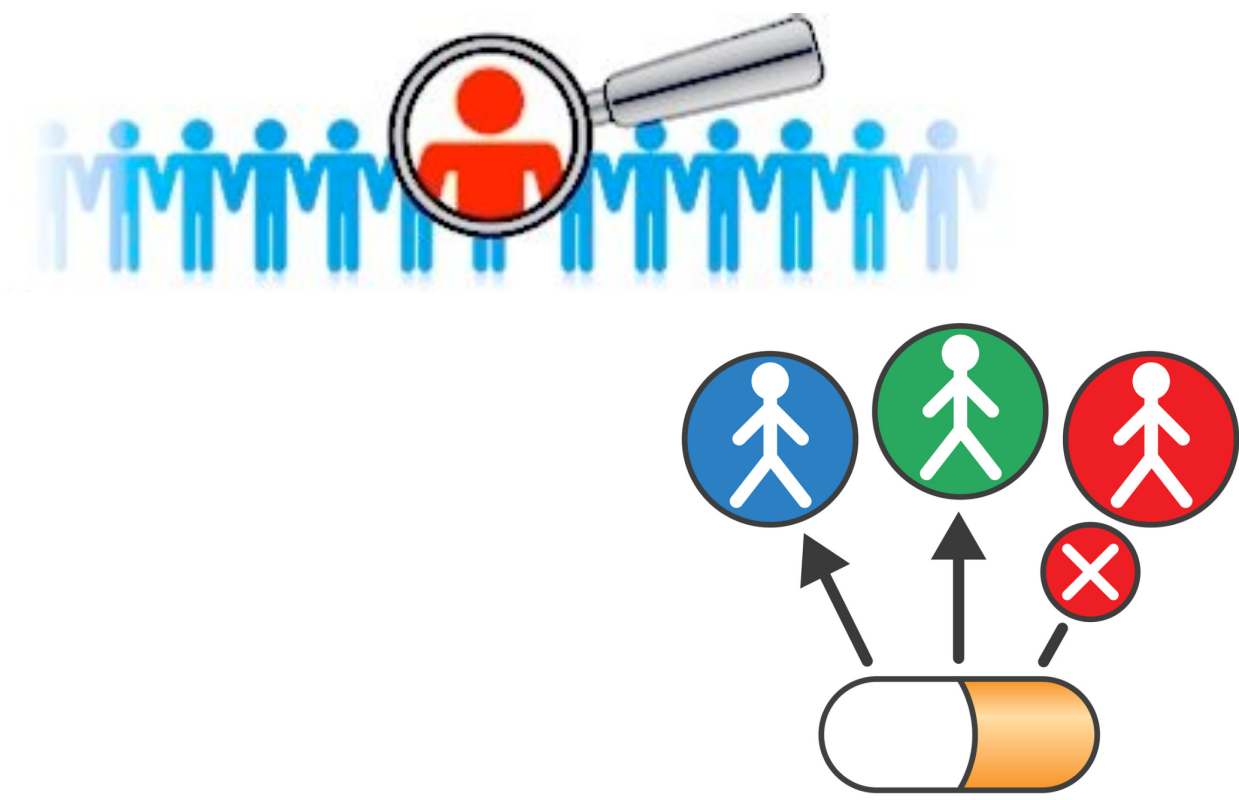
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How to exchange and aggregate medical data for personalized medicine?

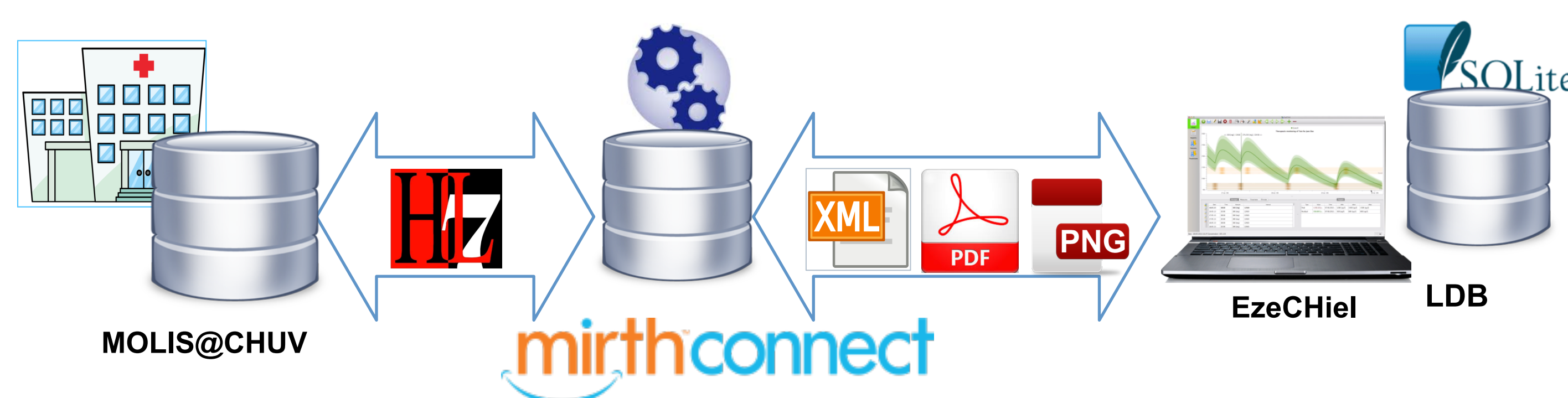
Therapeutic Drug Monitoring (TDM) aims at improving patient care by monitoring drug levels in the blood to **individually** adjust the dosage.



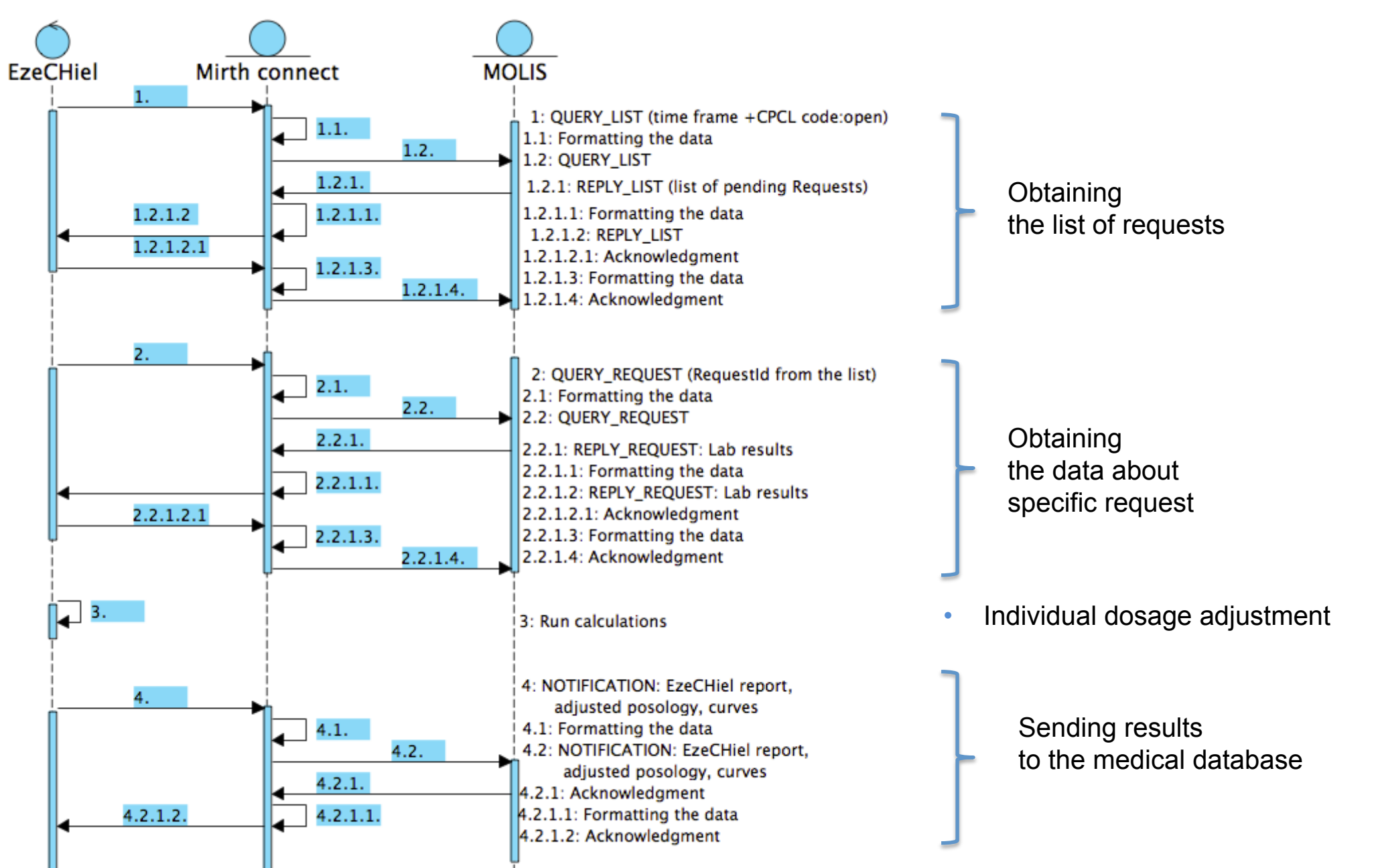
Challenges:

- Different data formats and interfaces
- Impossible to create a unique RSDB
- Data collection is a long-lasting process

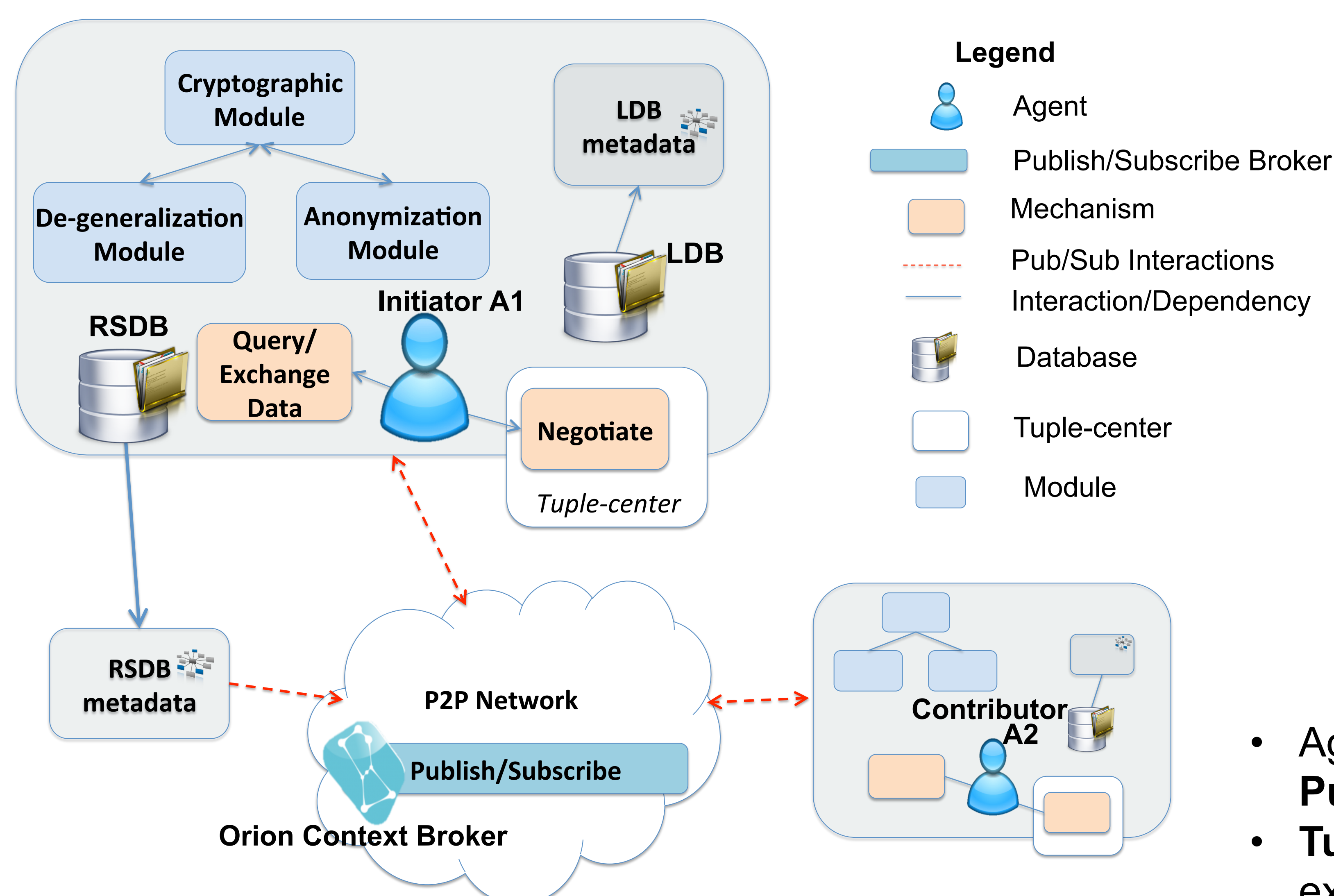
1 Interoperability for Data Exchange



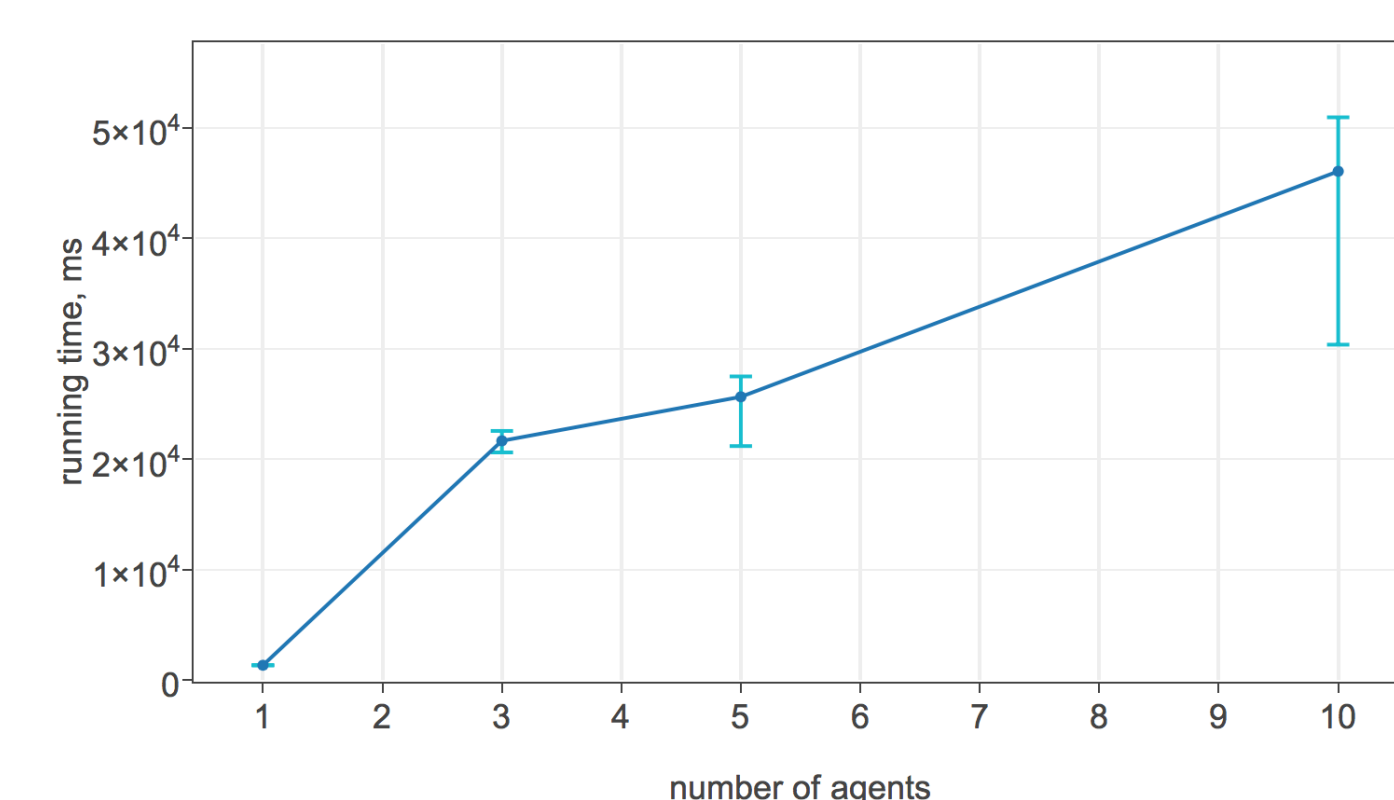
- Web interface specification is developed to define the communication protocols and the format of the messages to be exchanged between the systems.



2 Multi-Agent System for Dynamic Data Aggregation

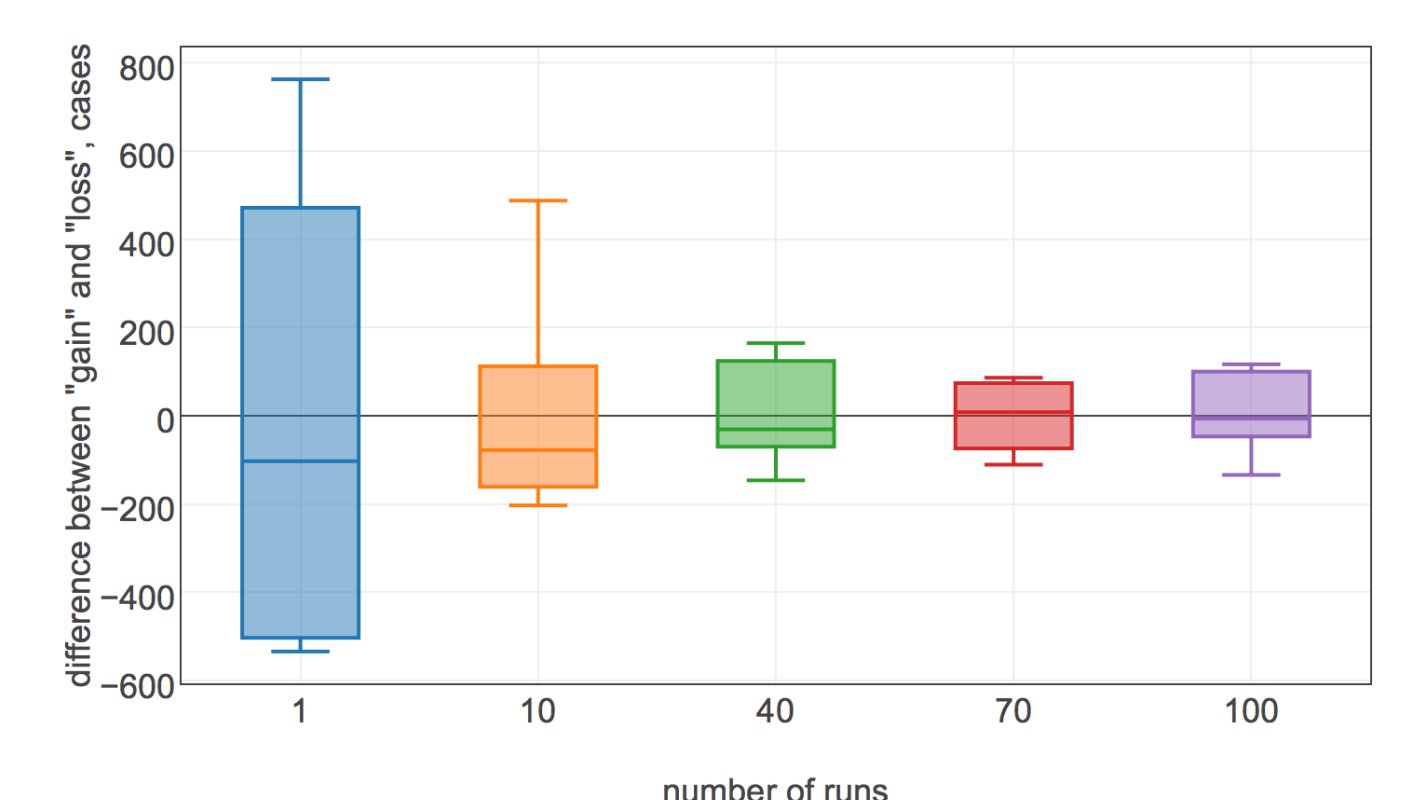


- Tests with the patients' data from CHUV (database with 9122 entries):



The system allows to save the time needed to collect significant amount of data into a research database

The more system is in use the more "fair" it is (with respect to the amount of provided and obtained data)



- Agents are connected into *P2P network* through the **Publish-Subscribe Broker** (based on the key-words)
- **TuCSon** – a coordination model for *negotiation* and data exchange through the tuple centers

Conclusion & Future Work

- ✓ Data structures are analyzed, interfaces are built.
- ✓ Functioning interoperable system is currently being evaluated.
- ✓ An agent framework for dynamic data aggregation is built and evaluated.
- ✓ Algorithms to improve the utility of the aggregated data from the research database are under development.
- ✓ Dynamic data aggregation from distributed sources allows building a database faster compare to the time required to collect the data in one institution.

Acknowledgments

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