SEH 2021

Blockchains' federation for integrating distributed health data using a patient-centered approach

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Virtual, June 3

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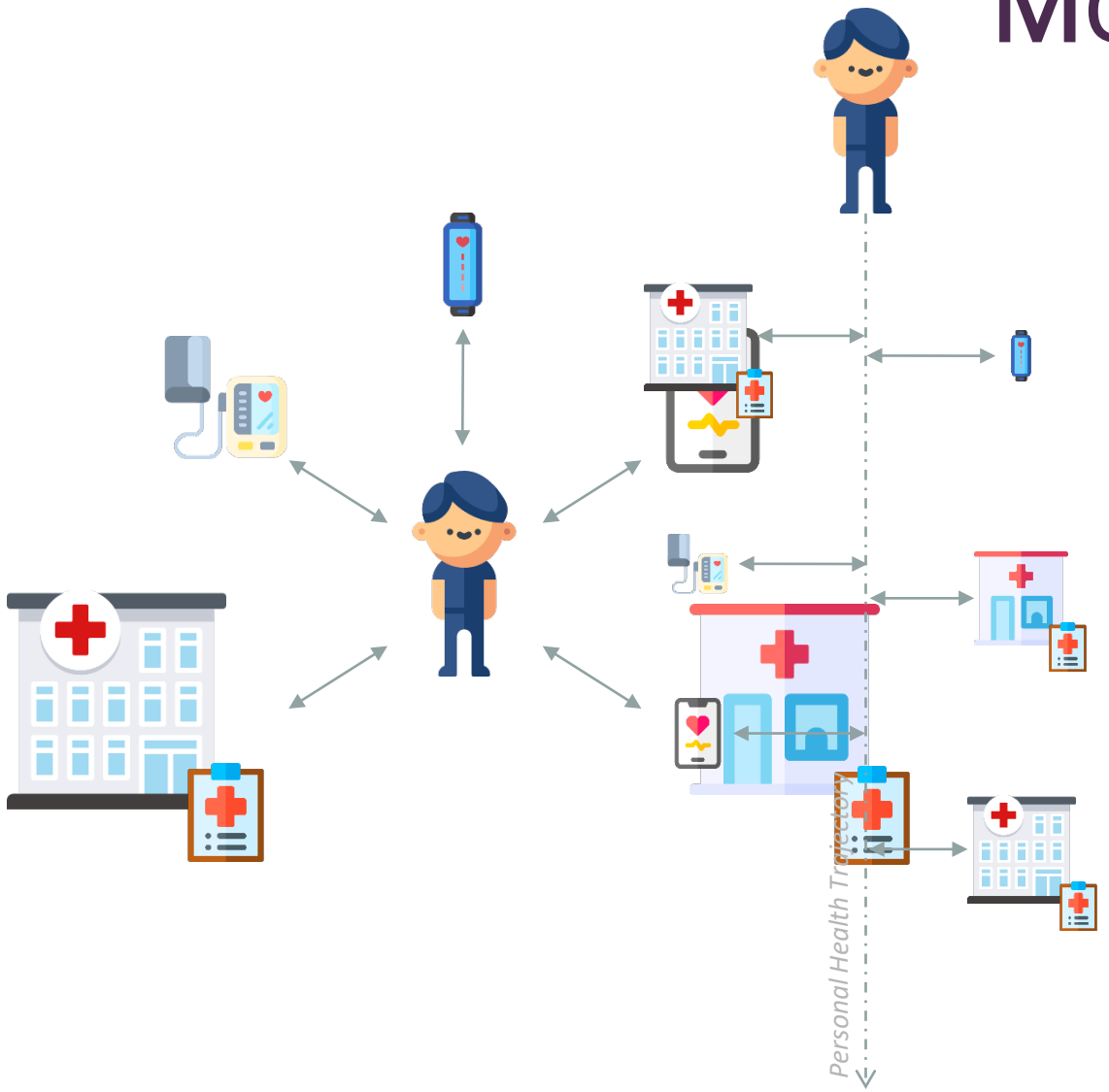
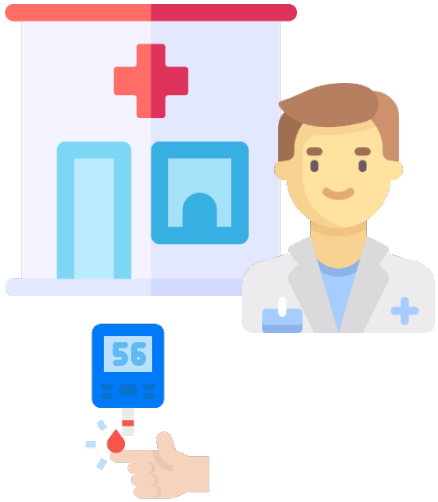
CONTEXTUALIZATION

MOTIVATIONS

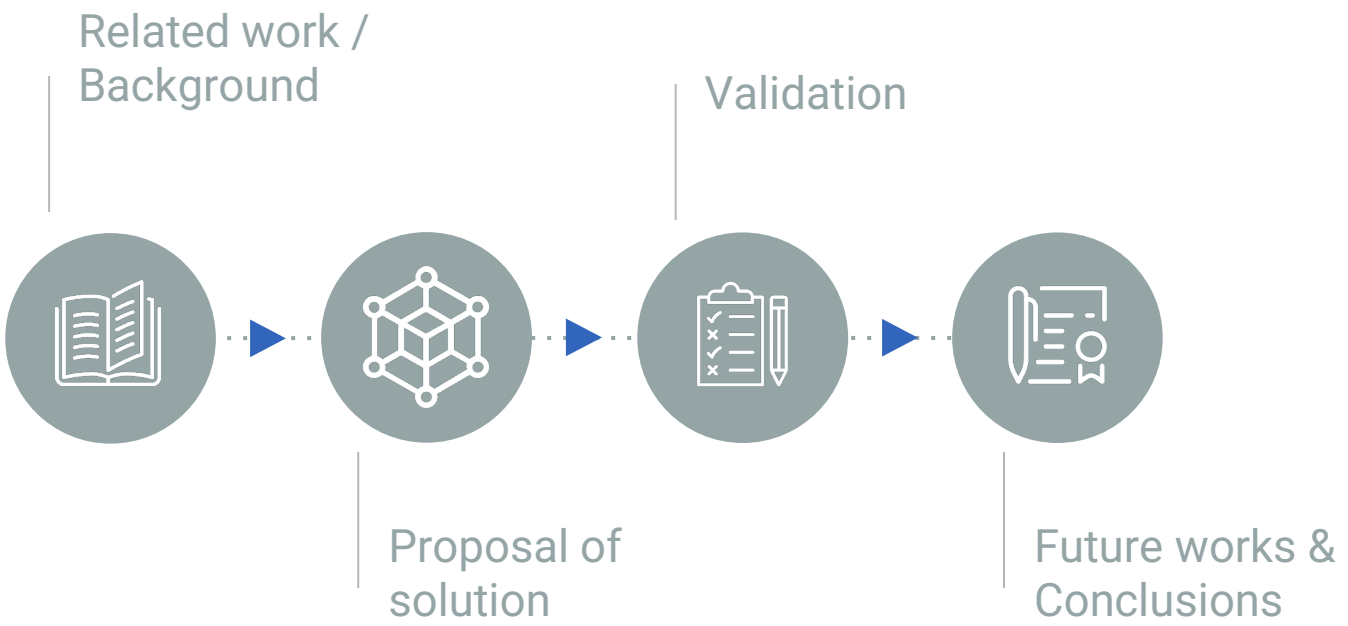


MOTIVATIONS

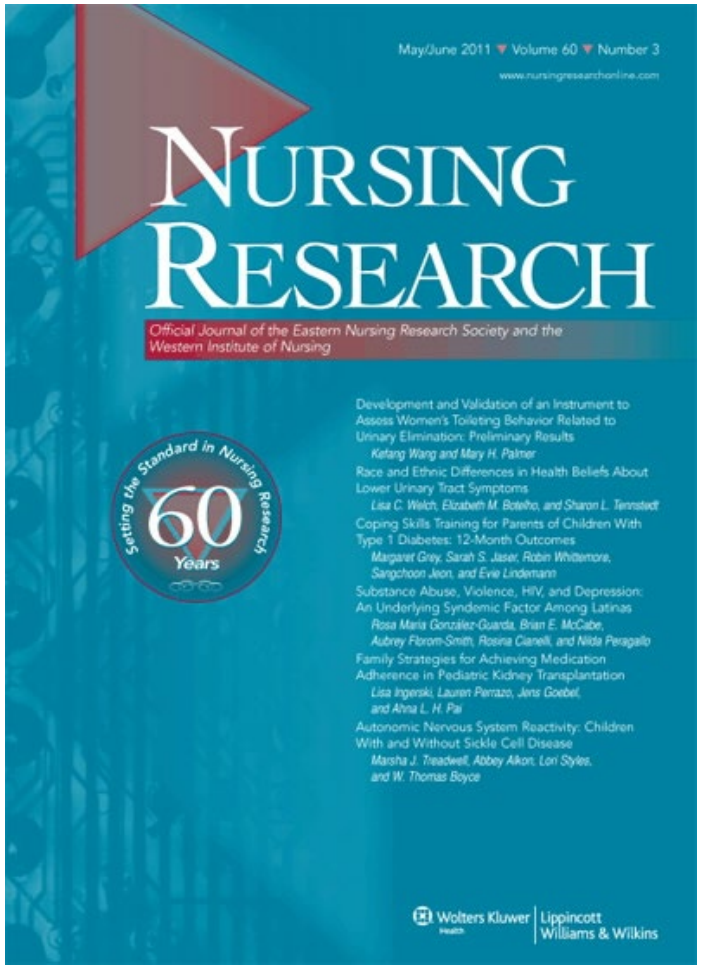
PAULA'S CASE



INDEX

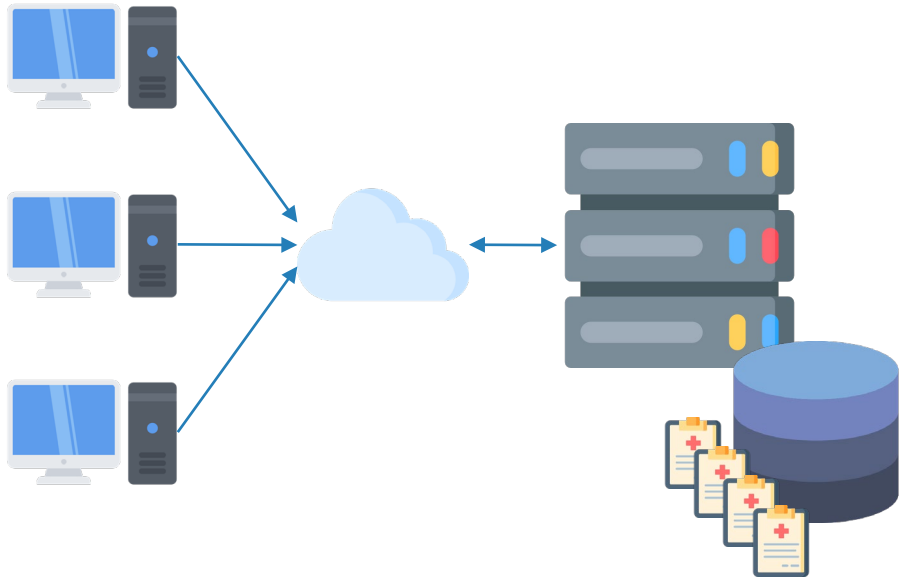

Related work / Background
Validation
Proposal of solution
Future works & Conclusions

Related Works/Background

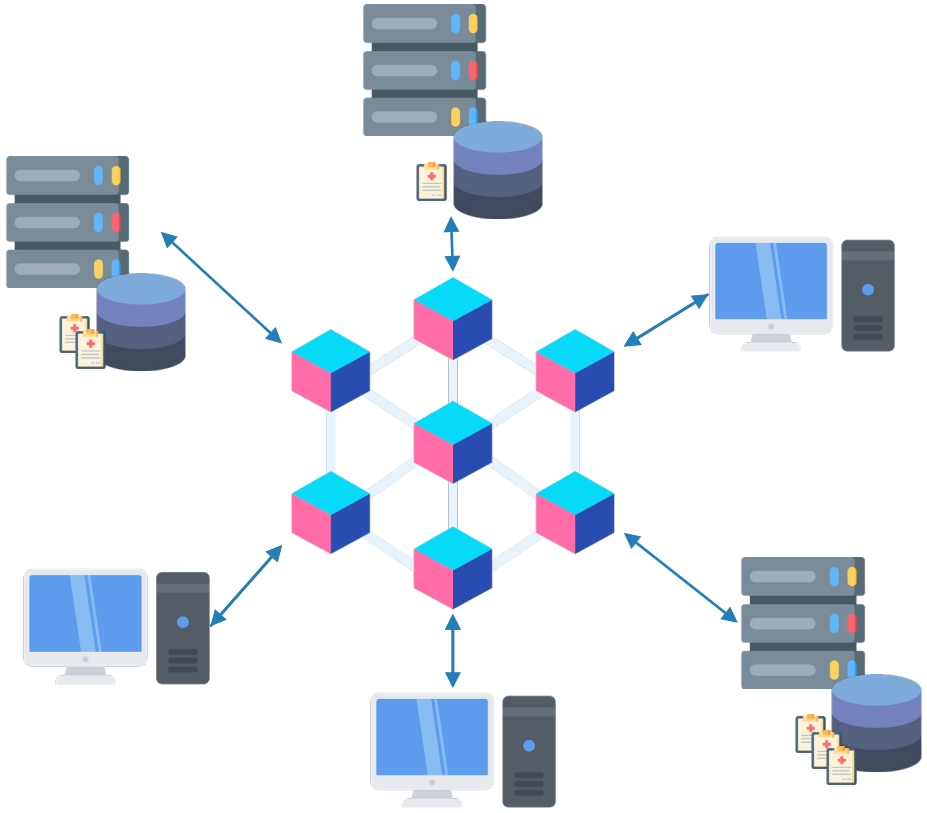


- Henly, S.J., Wyman, J.F., Gaugler, J.E.: Health trajectory research: A call to action for nursing science. *Nursing Research* 60 (3 SUPPL.) (may 2011). https://doi.org/10.1097/NNR.0b013e31821cc240

RELATED WORKS/BACKGROUND



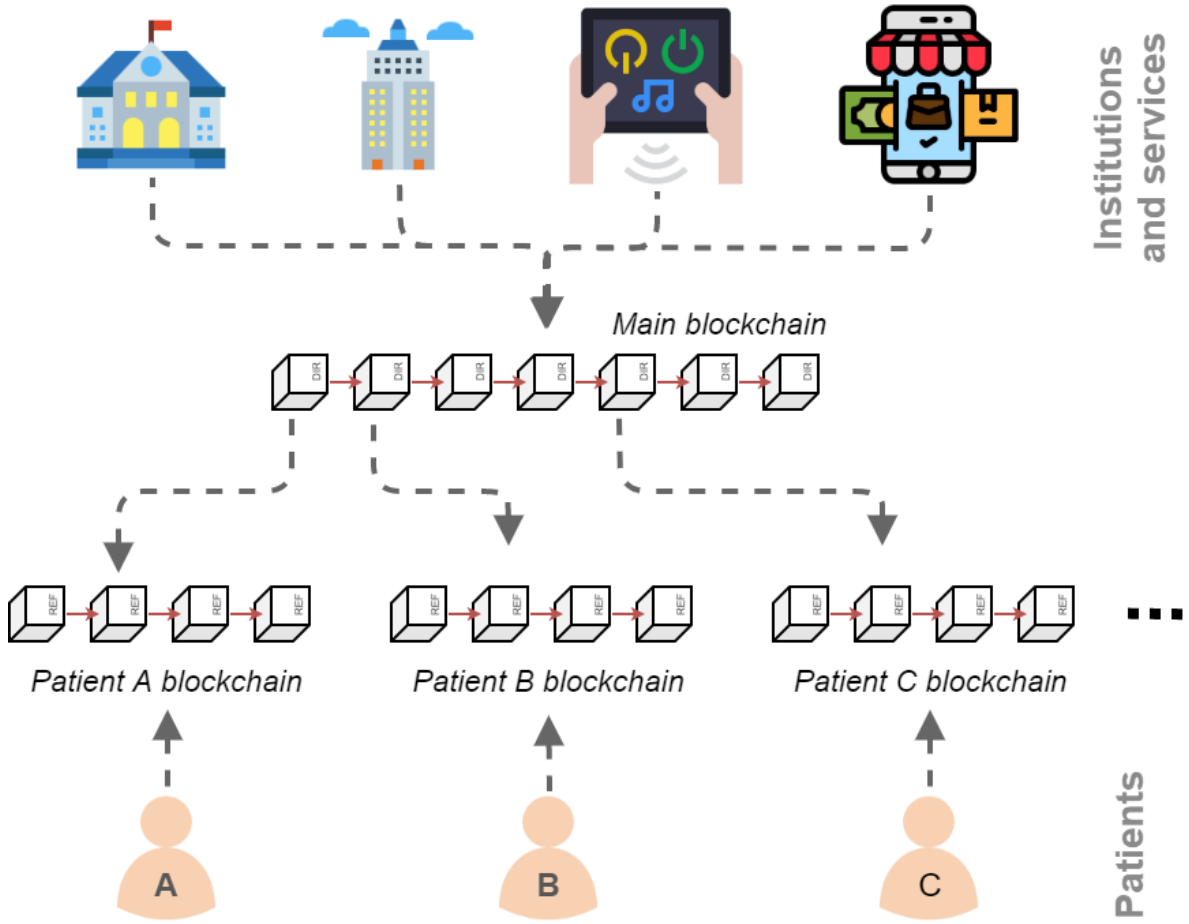
Centralized storage



Distributed storage

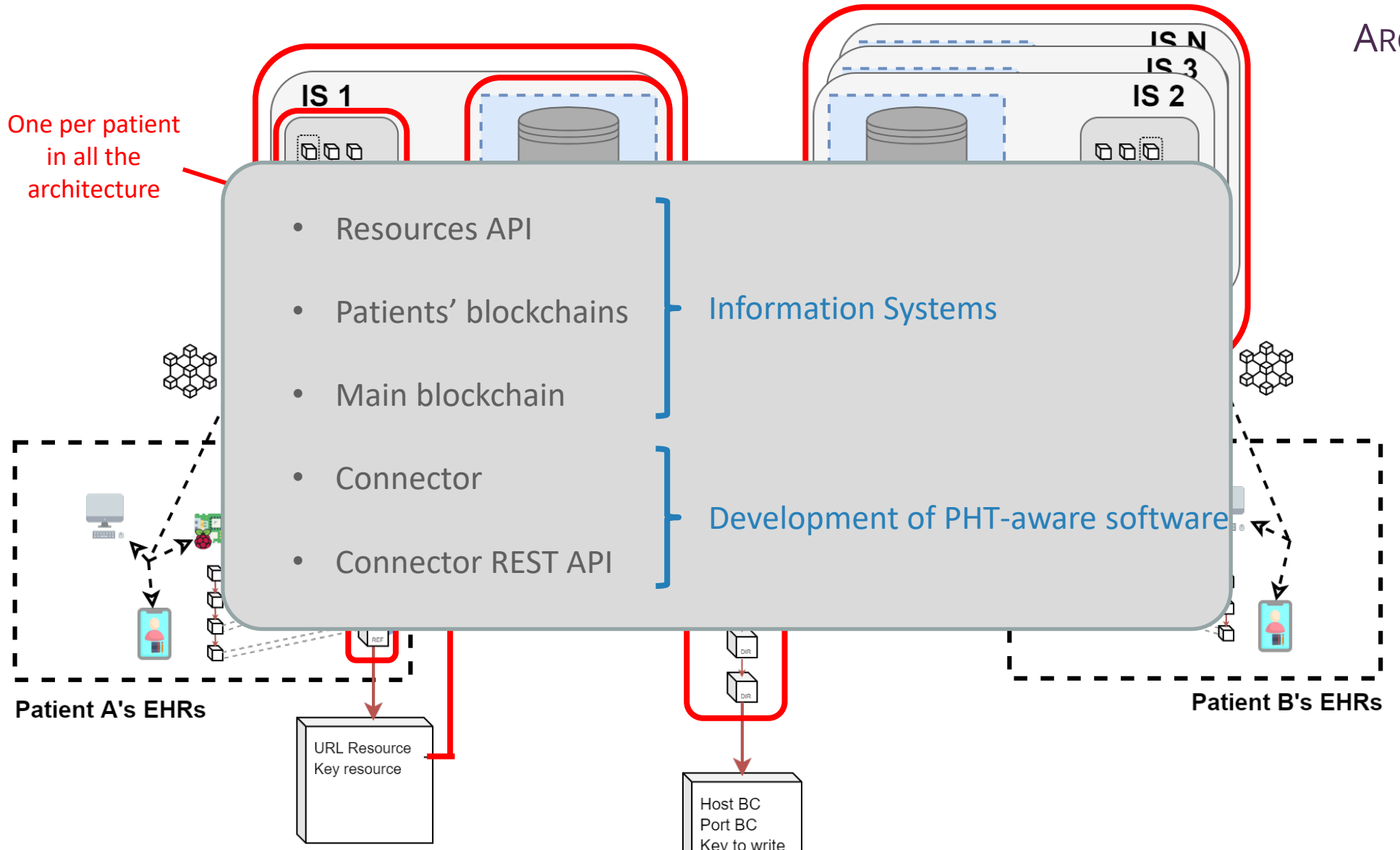
PROPOSAL OF SOLUTION

BLOCKCHAINS' FEDERATION



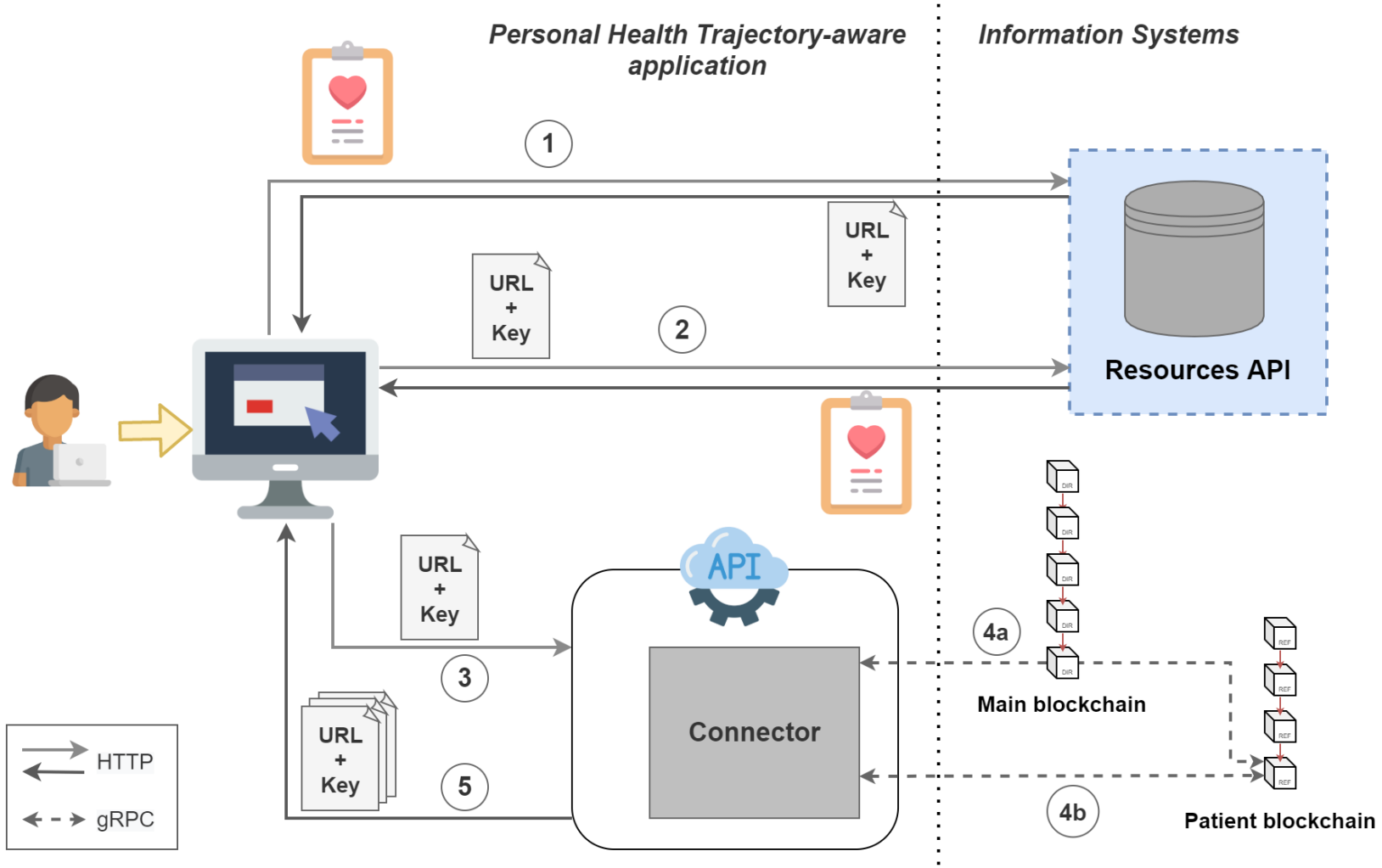
PROPOSAL OF SOLUTION

ARCHITECTURE



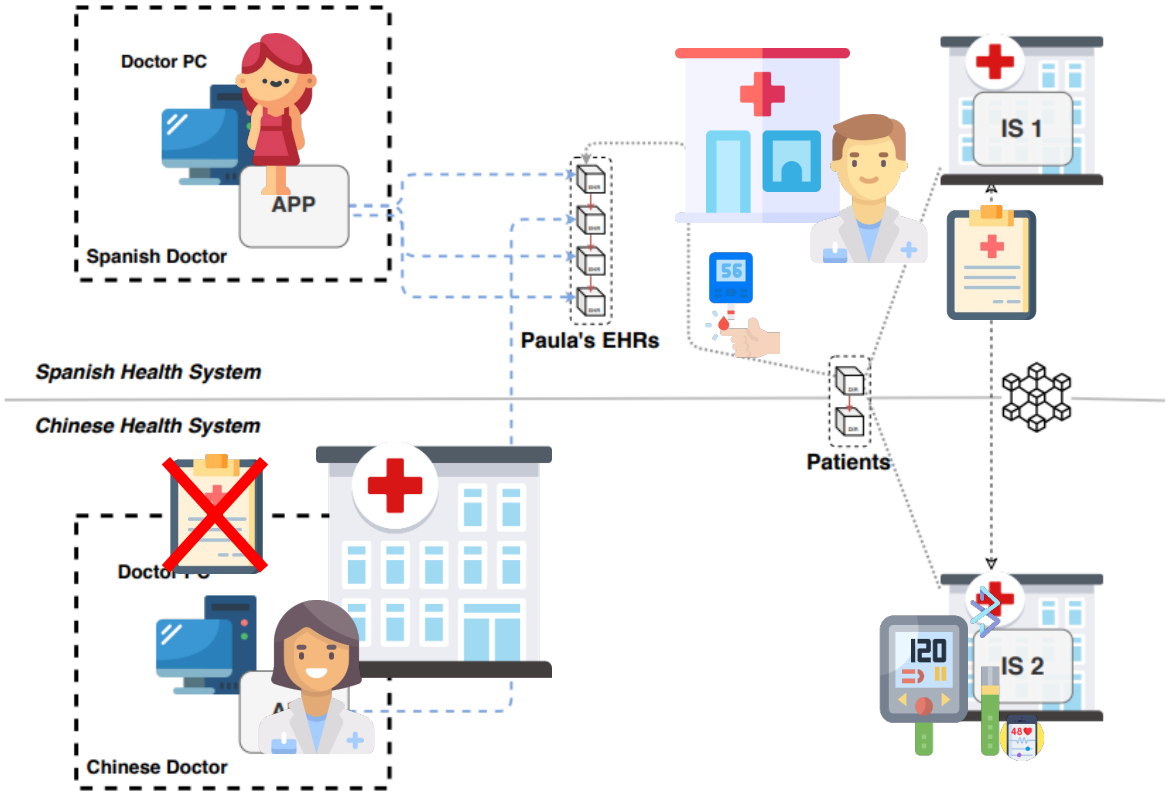
PROPOSAL OF SOLUTION

ENABLING PHT-AWARE SOFTWARE



VALIDATION

DESCRIPTION AND CASE STUDY



- *Scenario of Paula*
- Main hypothesis:
  - *Data integration is done correctly*
  - *Data accesible by the two institutions*
- Others measurements of performance

VALIDATION

RESULTS

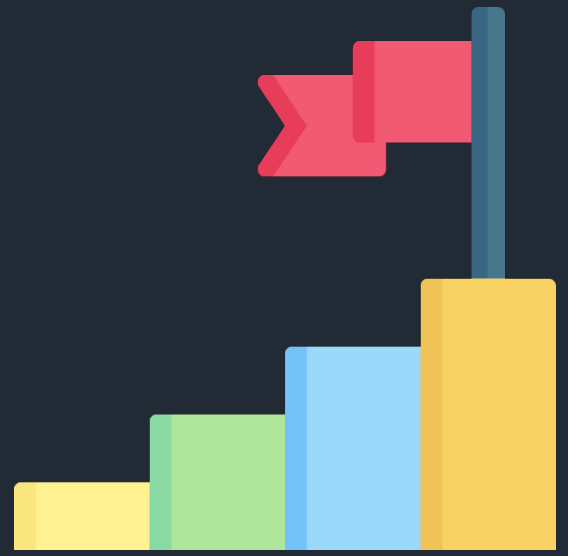
- Main hypothesis are corfirmed:
  - ✅ *Data integration is done correctly*
  - ✅ *Data accesible by the two institutions*

- Performance test:
  - *Times of table → Avg. of 20 executions*

Time measurement	Value (s)
Locate patient's blockchain	0.079
Save evidence's resource	0.21
Add evidence to patient's blockchain	4.784
Retrieve evidence's resource	0.209
Recover evidences from patient's blockchain	0.128

FUTURE WORKS

- A more complete validation:
  - Scalability tests
  - Stress tests
  - More performance tests
  - Formal comparison with other proposals



CONCLUSIONS

- Blockchains' federation concept
- Personal Health Trajectory achieved
  - Patient data correctly integrated
  - Data accessible by the institutions
- PHT-aware software development is possible!
- No new health systems are offered…

A way to develop new patient-centered systems is offered

THANKS FOR ATTENTION!

Contact information

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