Semantify.IO

A web-based tool to add meaning to the knowledge of standards

Mentor: Irlán Grangel Gonzalez

Group members:

Aleksandr Korovin

Alexey Karpov

Shinho Kang

Omar Gutiérrez

Outline

- ▶ Motivation
- ▶ Overview
- ▶ Architecture and tools
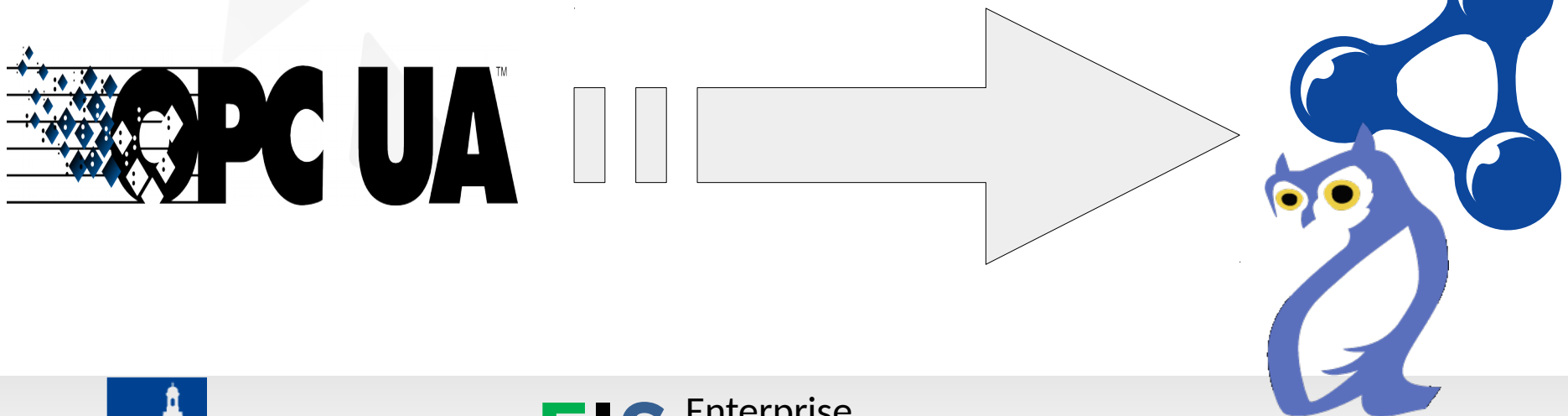- ▶ Results
- ▶ Open problems
- ▶ References

universität**bonn**

E|**S** Enterprise Information Systems

Motivation. Which is the role of OPC UA?

▶ The leading standard of interoperability and data exchange
▶ Playing a key role in the Industry 4.0.
  ▶ Smart factories
  ▶ Internet of things

universität**bonn**

E|S Enterprise
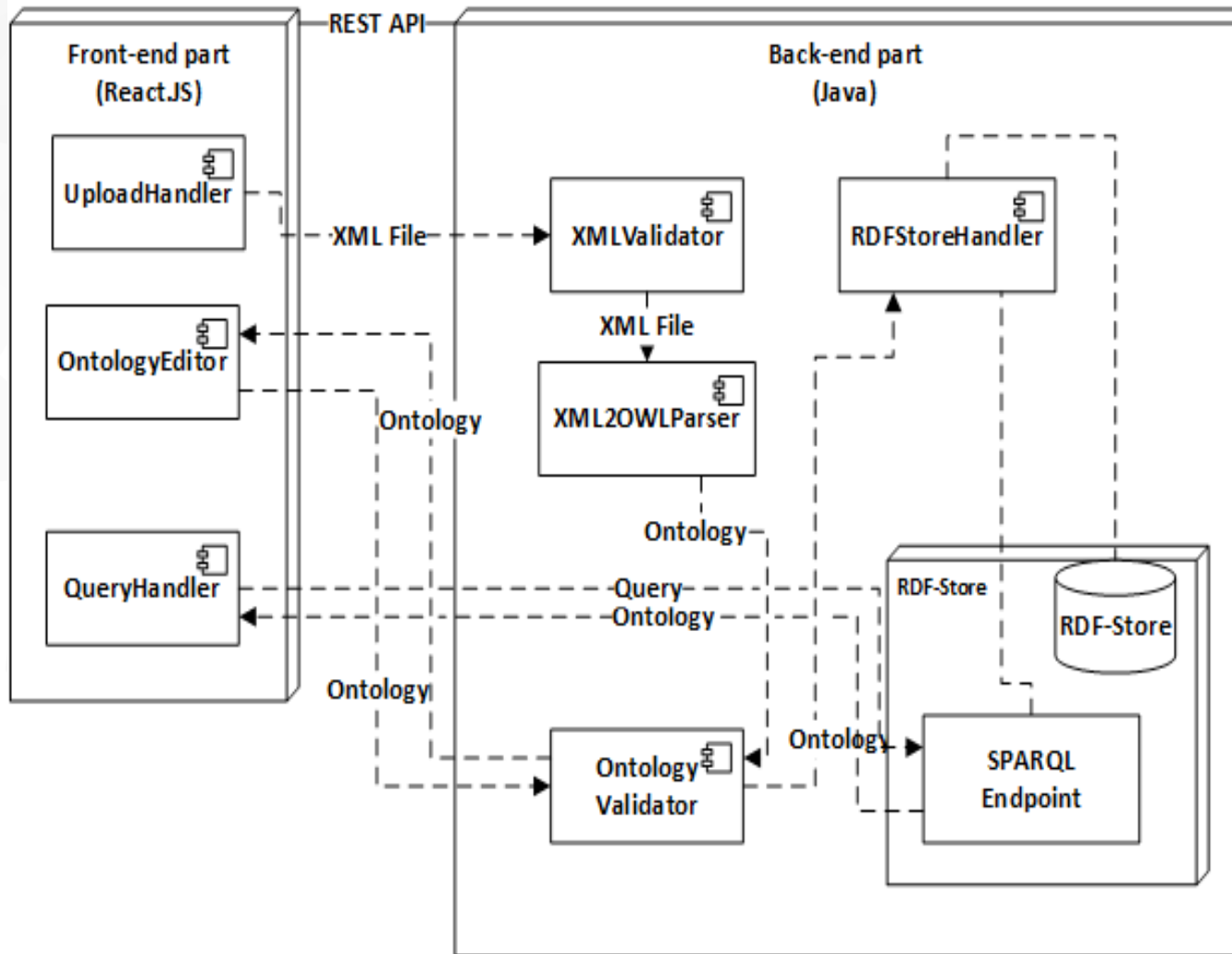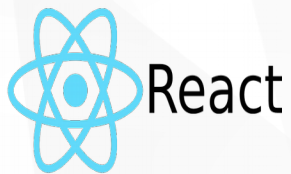Information Systems

Semantify.IO

Overview. What is Semantify.IO?

A web tool to transform the schema and instance XML files from OPC UA into semantic ontologies.
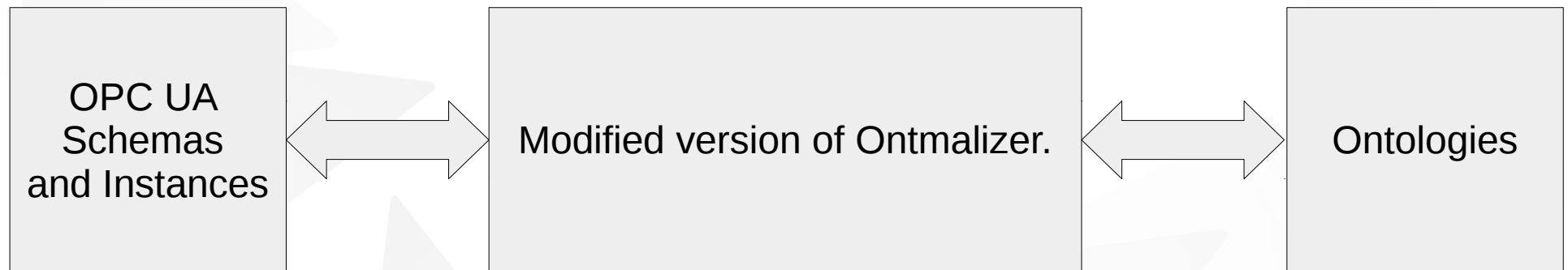
Architecture and tools

EIS Enterprise
Information Systems

Challenges we faced...

▶ Few relevant works dealing with the conversion from the standard into semantic formats.

▶ Understand some details from OPC UA.

▶ The access to the original files was restricted and private.

▶ Plug different technologies.

Enterprise
Information Systems

universität**bonn**

Semantify.IO

Results

▶ A method to transform OPC UA schemas and instances into ontologies.

▶ We took advantage of the tool Ontmalizer.

▶ And we have a demo!

| OPC UA Schemas and Instances | ⟷ | Modified version of Ontmalizer. | ⟷ | Ontologies |

Results (ii)

▶ A production deployment was done using Docker!

▶ As far as possible the code is well-commented and documented.

▶ As far as possible a code style guide was followed.

▶ Tests

  ▶ Both server and client application have implemented tests

Semantify.IO

Open problems

- ▶ In later stages, it will be possible to continue to build new features above what we did.
- ▶ Improve the transformation method.
- ▶ Implement continuous integration.
- ▶ Optimize the transformation and visualization.
- ▶ Test the product in a real environment!

References

▶ API JAVA: https://github.com/BonnWestCoast/Semantify.io-jena

▶ Client application: https://github.com/BonnWestCoast/Semantify.io

▶ Docs: https://github.com/BonnWestCoast/Semantify.io-docs

▶ Ontmalizer. https://github.com/srdc/ontmalizer

Enterprise
Information Systems