



# Semantify.IO

A web-based tool to semantify the knowledge of standards

Shinho Kang, Aleksandr Korovin, Omar Gutiérrez, Alexey Karpov

## The role of OPC UA

- OPC UA is playing a key role the Industry 4.0 (i4.0), the so called fourth industrial revolution whose purpose is to make reality the vision of smart factories.
- It is the leading standard for interoperability and data exchange.
- Even more, OPC UA is becoming popular in other markets like the Internet of Things (IoT).



## Challenges we faced

- Few relevant works managing the conversion from the standard into semantic formats.
- Understand some details from OPC UA documentation.
- The access to the original files was restricted and private. We had few (but enough) material to work with.
- Plug different technologies in the front-end and back-end.

## Results and conclusions

- A method to transform OPC UA schemas and instances into ontologies.
- The above method was created taking advantage of the tool Ontmalizer (<http://github.com/srdc/ontmalizer>). A modified version was created.
- To ensure the compliance of requirements tests of the main methods were implemented in server and client application.
- A production deployment was done using Docker.
- It is possible to improve the current product in later stages.

## Virtual Machine Settings

Hostname: EIS03

Software installed: Apache Tomcat 7.0, Java 8.0, Node.js.

RAM: 2GB

How to access to the app? Open the browser and go the address:  
<http://localhost:3000>



Local Access:  
OS User: **semantifyio**  
Password: **15team}**

Remote Access:  
Partner ID: **905 399 395**  
Password: **15team}**

## Github links:

Webpage: <https://bonnwestcoast.github.io/ontologize-standards>

Back-end: <https://github.com/BonnWestCoast/Semantify.io-jena>

Front-end: <https://github.com/BonnWestCoast/Semantify.io>

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

## What we did...

- A web tool to transform the schema and instance XML files from OPC UA into semantic ontologies.
- This translation matters because adds the ability to express not only data but also the meaning of this data. It is a key piece in the quest to make a system more intelligent.

## Architecture

- Web Service to access the features of Apache Jena and other Java libraries.
- A Web application developed in Node.js to interact with the web service above.

