Transforming Electronic Credentials Between Schemas

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Motivation

Electronic credentials play an important role in today's world. University diplomas, course certificates, driving licenses and identity cards can all be issued in digital form. Thanks to this, it is possible to carry many credentials on a phone, having them available whenever needed.

To transmit credentials between people and entities, they must be encoded using a format that all involved parties understand – such as JSON or XML following a specific schema. While it might seem easy to agree on a common format inside a country, this gets more complicated on EU or global level.
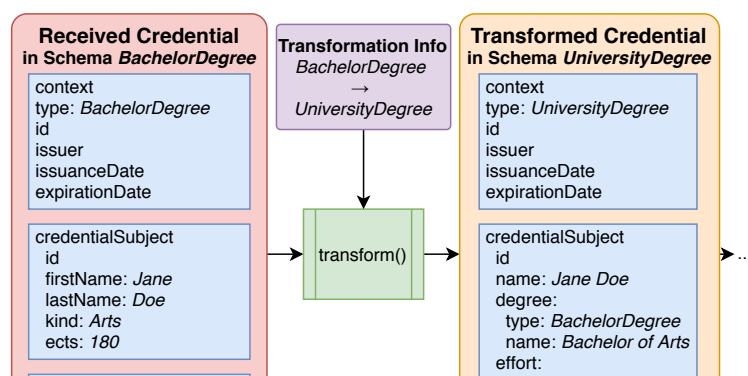
Goals and Tasks

In this project we implement a system which helps credential verifiers to transform an incoming credential into a format which they understand. Using our system, users can create information about how to transform between formats, and publish it on the **InterPlanetary File System (IPFS)**. To help verifiers discover this information, we create a smart contract on a **distributed ledger/blockchain** which serves as a public registry.

- Understand JSON schemas and how to transform between them

- Play with smart contracts and IPFS

- Implement tool to publish data to IPFS

- Implement client to discover and retrieve data

Literature

> David Lane
  jsonpath-object-transform
  https://github.com/dvdln/jsonpath-object-transform

> Stefan More et al.
  Trust Me If You Can: Fighting Counterfeit Diplomas and Fake Universities Using Distributed Ledgers
  in submission 2021

Courses & Deliverables

☑ **Introduction to Scientific Working**
  Short report on background
  Short presentation

☑ **Bachelor Project**
  Project code and documentation

☑ **Bachelor's Thesis**
  Project code
  Thesis
  Final presentation

Recommended if you're studying

☑ CS   ☑ ICE   ☑ SEM

Prerequisites

> Java programming

> Basic understanding of blockchains/distributed ledgers is beneficial

Advisor / Contact

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