Trust Graphs Design
Hands On Technical Session

Nis Jespersen
About the Presenter

Nis Jespersen
● Solution Architect at Transmute
● Editor UN Linked Data Web Vocabulary
● nis@transmute.industries

Transmute
● Holds Editor and Author roles on the W3C Decentralized Identifiers and Verifiable Credentials Specifications
● Transmute contributes significant open source tooling in the Linked Data, DID and VC space

US DHS SVIP
● Transmute is contracted by US DHS SVIP to design Linked Data Verifiable Credential schemas, ensuring that appropriate UN terms are used in digital communication with the US government: https://w3id.org/traceability

Verifiable Data Platform
● Our Verifiable Data Platform guarantees standards compliance, sign up for free now and start building Trust Graphs immediately: https://platform.transmute.industries/
Ambition

- YOU are in the driver’s seat in this session, doing the work
- YOU will design a data graph
- YOU will issue a Verifiable Credential
**Agenda**

<table>
<thead>
<tr>
<th>LD</th>
<th>VC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Select a suitable message from the business domain you are used to. This could be an instance from the previous API session or anything else, as long as touches some UN/CEFACT BSP data elements.</td>
<td>1. Take your well-formed Linked Data and make it the credentialSubject of a Verifiable Credential.</td>
</tr>
<tr>
<td>2. Build a small JSON example of such a domain message. To begin with, just make a quick’n’dirty example, using whatever property naming you’re used to.</td>
<td>2. Verify the Verifiable Credential.</td>
</tr>
<tr>
<td>3. Go to <a href="https://vocabulary.uncefact.org/">https://vocabulary.uncefact.org/</a> and use the awesome search and filtering features find the UN/CEFACT definitions of some of the terms you were just using.</td>
<td>a. Reflect upon what it means that the VC verifies. What does it say about the relationship between the issuer and the credentialSubject?</td>
</tr>
<tr>
<td>4. Add the UN/CEFACT LD context to your data and change the property names in your object accordingly.</td>
<td>3. Fiddle with the data, confirm that the Verifiable Credential is no longer valid.</td>
</tr>
<tr>
<td>a. Confirm that you have build a data graph.</td>
<td>4. Add some more LD elements to the credentialSubject and re-issue. The main ones are:</td>
</tr>
<tr>
<td>b. Realize that you have changed your data message, broken your API contract.</td>
<td>a. @id field to the credentialSubject.</td>
</tr>
<tr>
<td>5. Ditch the UN/CEFACT LD context and define your own context instead, so you can change back to your original API structure.</td>
<td>b. @type field to the credentialSubject.</td>
</tr>
<tr>
<td>a. Confirm that the resulting graph is the same</td>
<td>c. What does this new information say about the verifiable data?</td>
</tr>
<tr>
<td>b. Realize that your API contract is now intact</td>
<td></td>
</tr>
<tr>
<td>c. Reflect upon the usage of your own vs a standard context</td>
<td></td>
</tr>
<tr>
<td>6. Extra credit: Include both contexts, make the graph change depending on the context order</td>
<td></td>
</tr>
</tbody>
</table>
### Tools of the Trade

#### LD

- **Our vocabulary:**
  - [https://vocabulary.uncefact.org/](https://vocabulary.uncefact.org/)

- **Linked Data:**
  - [https://v.jsld.org/](https://v.jsld.org/)
  - [https://json-ld.org/playground/](https://json-ld.org/playground/)

- **Graph Viewer:**
  - [https://issemantic.net/rdf-visualizer](https://issemantic.net/rdf-visualizer)

- **Graph Database:**
  - [https://neo4j.com/cloud/platform/aura-graph-database/](https://neo4j.com/cloud/platform/aura-graph-database/)

#### VC

- **Issue and Verify:**
  - [https://platform.transmute.industries/](https://platform.transmute.industries/)
  - [https://api.did.actor/](https://api.did.actor/)