Deployment of the Finnish Interoperability Platform in the Design of the Research Information Hub

euroCRIS conference 20.11.2019, Münster, Germany

Tommi Suominen, Information Architect, CSC - IT Center for Science, Finland
1. The details of researchers, publications, research datasets, research projects and research infrastructures will soon be available in one place.

2. There will be less reporting and administrative work as the data is available in a single location and information flows freely between services.

3. Results of both publicly and privately funded research will be openly accessible.

4. This will benefit researchers, research organizations, funding agencies, public administration and citizens.
Interoperability platform and method: yhteentoimiva.suomi.fi/
Interoperable Finland – background

• **CSC** initiated the development of the interoperability platform. Nowadays the **Population Registry Center of Finland** maintains and develops the service as a part of the national Suomi.fi-service concept.

• Thought has gone into how collaborative public IT service development should work in principle – this process of coordinated collaboration is the **interoperability method** – while the IT solution operationalising this method is termed the **interoperability platform**.

• One end goal is to change organisational behaviour in the public sector, break out of silo-thinking

• The rate of uptake varies in different fields of public administration
Interoperability platform and method: yhteentoimiva.suomi.fi/

- [https://sanastot.suomi.fi/](https://sanastot.suomi.fi/) - in order for us to be able to use the same terms when utilising shared concepts – promotes human readable interoperability

- [https://koodistot.suomi.fi/](https://koodistot.suomi.fi/) standardised lists of values (& codes) e.g. all Finnish academic institutions, Finnish municipalities, fields of science – from a single shared and updated source – so that interoperability does not suffer from conflicting or outdated written forms.

- [https://tietomallit.suomi.fi/](https://tietomallit.suomi.fi/) - transparency and openness in information system design – reusing components of pre-existing data models in own product development, is resource efficient and furthers interoperability between systems of diverse actors.
The Finnish Public Sector Terminological Glossary is a controlled vocabulary consisting of terms representing concepts that are defined in accordance with the Finnish Public Sector Recommendation JHS175. The concepts form a shared and harmonized core vocabulary for all public sector organizations.
National classification of education 2016

- 03 - Social sciences, journalism and information
- 04 - Business, administration and law
- 05 - Natural sciences, mathematics and statistics
  - 050 - Broad programmes and qualifications involving natural sciences, mathematics and statistics
  - 051 - Biological and related sciences
  - 052 - Environment
  - 053 - Physical sciences
  - 054 - Mathematics and statistics
An individual reference data item (list of research organisations)
Example – data model
• Using UML schemas to describe data structures

• We can also utilise ontological relationships to describe information and export schemas as e.g. Turtle/RDF
When creating a new information model, we can utilise the previously defined **terminologies**, reference data and model components.

The Finnish Public Sector Terminological Glossary is a controlled vocabulary consisting of terms representing concepts that are defined in accordance with the Finnish Public Sector Recommendation **JHS175**. The concepts form a shared and harmonized core vocabulary for all public sector organizations. (en)  

http://uri.suomi.fi/terminology/jhs/terminological-vocabulary-1
• When creating a new information model, we can utilise the previously defined terminologies, **reference data** and model components.
https://tietomallit.suomi.fi/

Linking with:
1. Terminologies/controlled vocabularies
2. Reference data

**Information domains**

<table>
<thead>
<tr>
<th>Name</th>
<th>Add domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education and training</td>
<td></td>
</tr>
</tbody>
</table>

**Contributors**

<table>
<thead>
<tr>
<th>Name</th>
<th>Add contributor</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSC - IT Center of Science</td>
<td></td>
</tr>
</tbody>
</table>

**Terminologies**

<table>
<thead>
<tr>
<th>Terminology name</th>
<th>Status</th>
<th>Modified at</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finnish Public Sector Terminological Glossary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Controlled Vocabulary)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OKSA - Opetus- ja koulutussanasto (fi)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Reference data**

<table>
<thead>
<tr>
<th>Reference data name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research organizations</td>
<td>Draft</td>
</tr>
<tr>
<td>Tutkimusaktiviteettien tyypit (fi)</td>
<td>Draft</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Designing CERIF compatibility - interoperability
Designing CERIF compatibility – interoperability
Linking with: 3. other internal models or external namespaces

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Namespace label</th>
<th>Namespace</th>
</tr>
</thead>
<tbody>
<tr>
<td>cerif</td>
<td>The Common European Research Information Format (CERIF) Ontology Specification</td>
<td><a href="http://www.eurocris.org/ontologies/cerif/1.3#">http://www.eurocris.org/ontologies/cerif/1.3#</a></td>
</tr>
<tr>
<td>edu</td>
<td>Core Vocabulary of Education</td>
<td><a href="http://uri.suomi.fi/datamodel/ns/edu#">http://uri.suomi.fi/datamodel/ns/edu#</a></td>
</tr>
<tr>
<td>jhs</td>
<td>Finnish Public Sector Core Data Components</td>
<td><a href="http://uri.suomi.fi/datamodel/ns/jhs#">http://uri.suomi.fi/datamodel/ns/jhs#</a></td>
</tr>
</tbody>
</table>
Referencing CERIF in defining a class for the Research Information Hub

- Researcher

Class attributes and associations

Class attribute label

Identifier

Description
An unambiguous reference to the resource within a given context.

Range
URI (xsd:anyURI)

Reference data
Not defined

Optional metadata

Class attribute localname
identifier
Exporting the defined model as RDF

Namespace export

```xml
<rdf:RDF xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:xsd="http://www.w3.org/2000/01/XMLSchema#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"/>
```

Cerif mapping in the body

```xml
<sh:Name xml:lang="fi">Tutkija</sh:Name>
<sh:Description xml:lang="fi">Henkilö, joka ammattinaisesti tietyellisiä aseteita käyttäen tekee tutkimusta</sh:Description>
```

```xml
<rdfs:isDefinedBy rdf:resource="http://url.suomi.fi/datamodel/ns/tvtt"/>
<rdfs:isDefinedBy rdf:resource="http://url.suomi.fi/datamodel/ns/datamodel"/>
<rdfs:isDefinedBy rdf:resource="http://url.suomi.fi/datamodel/ns/js"/>
<rdfs:isDefinedBy rdf:resource="http://url.suomi.fi/datamodel/ns/jhs"/>
<rdfs:isDefinedBy rdf:resource="http://url.suomi.fi/datamodel/ns/cerif"/>
<rdfs:isDefinedBy rdf:resource="http://url.suomi.fi/datamodel/ns/kos"/>
```

```xml
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
<jhs:ns/>
Now we can work with the model in other environments..
Interoperability design evolution?

**Current**
- Customised data model
- Customised implementation
- Interoperability achieved through customized APIs, where the connections to other standards are created manually

**Under way**
- Customised data model on interoperability platform, with mappings to selected standards
- Mappings to other standards preserved in the implementation
- Interoperability achieved through a generic API, that utilizes internal interoperability knowledge

**Future?**
- Importing external datamodels into the interoperability platform, utilising and extending the standard directly
- The mapping to other standards preserved in the implementation
- Interoperability achieved through a generic API, that utilizes internal interoperability knowledge
Thank you for your attention!

I am Tommi Suominen. I recently started at CSC as an information architect.
www.linkedin.com/in/tommi-suominen-935b5a8a

facebook.com/CSCfi
twitter.com/CSCfi
youtube.com/CSCfi
linkedin.com/company/csc-it-center-for-science
github.com/CSCfi