Data Sharing with Metadata

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slide: https://hackmd.io/

Who am I?

- Senior Researcher, NARO
  - Interest: Data Integration, Interoperability, IoT in Agriculture, Cyber Security
- FaceBook https://www.facebook.com/takuji.kiura/
- Co-chair APAN Agrciculture WG
- Co-chair APAN Open and Sharing Data WG

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- Linked Open Data (LOD)
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- Web Ontology Language (OWL)
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Linked Open Data (LOD)

https://www.w3.org/DesignIssues/LinkedData.html

1. Use URIs as names for things
2. Use HTTP URIs so that people can look up those names.
3. When someone looks up a URI, provide useful information, using the standards (RDF*, SPARQL)
4. Include links to other URIs. so that they can discover more things.

Is your Linked Open Data 5 Star?

https://www.w3.org/DesignIssues/LinkedData.html

★	Available on the web (whatever format) but with an open licence, to be Open Data
★★	Available as machine-readable structured data (e.g. excel instead of image scan of a table)
★★★	as (2) plus non-proprietary format (e.g. CSV instead of excel)

Is your Linked Open Data 5 Star? (cont)

★★★★	All the above plus, Use open standards from W3C (RDF and SPARQL) to identify things, so that people can point at your stuff
★★★★★	All the above, plus: Link your data to other people's data to provide context

FAIR Principles

https://www.go-fair.org/fair-principles/

1. Findable
2. Accessible
3. Interoperable
4. Reusable

FAIR Principles (Findable)

https://www.go-fair.org/fair-principles/

1. (Meta)data are assigned a globally unique and persistent identifier
2. Data are described with rich metadata (defined by R1 below)
3. Metadata clearly and explicitly include the identifier of the data they describe
4. (Meta)data are registered or indexed in a searchable resource

FAIR Principles (Accessible)

https://www.go-fair.org/fair-principles/

FAIR Principles (Interoperable)

https://www.go-fair.org/fair-principles/

1. (Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
2. (Meta)data use vocabularies that follow FAIR principles
3. (Meta)data include qualified references to other (meta)data

FAIR Principles (Reusable)

https://www.go-fair.org/fair-principles/

1. (Meta)data are richly described with a plurality of accurate and relevant attributes
    1. (Meta)data are released with a clear and accessible data usage license
    2. (Meta)data are associated with detailed provenance
    3. (Meta)data meet domain-relevant community standards

Resource Description Framework (RDF)

https://www.w3.org/RDF/

RDF is a standard model for data interchange on the Web. RDF has features that facilitate data merging even if the underlying schemas differ, and it specifically supports the evolution of schemas over time without requiring all the data consumers to be changed.

Web Ontology Language (OWL)

https://www.w3.org/OWL/

The W3C Web Ontology Language (OWL) is a Semantic Web language designed to represent rich and complex knowledge about things, groups of things, and relations between things.

Describe vocabularies!!

Example of OWL and RDF

https://www.w3schools.com/xml/xml_rdf.asp
https://www.w3.org/TR/owl-xmlsyntax/apd-example.html

Web of Things (WoT)

https://www.w3.org/WoT/

The Web of Things (WoT) seeks to counter the fragmentation of the IoT by using and extending existing, standardized Web technologies. By providing standardized metadata and other re-usable technological building blocks,

Web API (Server side)

https://en.wikipedia.org/wiki/Web_API

A server-side web API is a programmatic interface consisting of one or more publicly exposed endpoints to a defined request–response message system,

Resources? Security?

Web API (Client side)

https://en.wikipedia.org/wiki/Web_API

A client-side web API is a programmatic interface to extend functionality within a web browser or other HTTP client.

Reccomended

Proposal

1. Share/Open your data
    1. Locate your data somewhere (ex. GitHub)

Proposal (cont.)

2. Lined Open MetaData?
    1. Make your own vocabularies using OWL if nesseary
    2. Describe metadata in RDF using Web Ontologies
    3. Locate your OWL and RDFs somewhere (ex. GitHub)
    4. Regist in a searchable resource

Proposal (cont.)

3. Make JavaScript
    1. Define Client Side API and Share
    2. Implement the API using JavaScript
    3. Locate your JavaScript womewhrer (ex. GitHub)

Thank You!
Join APAN OSDWG!!