RDA P14 2019 poster session

WINNER AWARD

AWARDS

RDA's 14th Plenary - Helsinki, Finland. Data Makes the Difference - 23-25 October 2019

Identifying, naming and interoperating data in a phenotyping platform network: the GOOD, the BAD and the UGLY.

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The EPPN^{2020} is a research project funded by Horizon 2020 Programme of the EU that will provide European public and private scientific sectors with access to a wide range of state-of-the-art plant phenotyping installations, techniques and methods. Specifically, **EPPN^{2020} includes access to 31 plant phenotyping installations**, and joint research activities to *develop novel technologies and methods for environmental and plant measurements*.

Here we present the **results of the discussions** of the 2019 annual project meeting to adopt community-approved architectural choices. It focuses on **persistent identification of data** and real objects, the **naming of variables** and the **priorities for increasing interoperability** among phenotyping installations. We describe the main elements to prioritize (the good) in order to enhance Findable, Accessible, Interoperable and Reusable (FAIR) quality for each data management system with a *pragmatic concern for all partners*.

Focus on identification...

The plant phenotyping community gathers different actors with various means and practices. Among all the recommendations, the community requests identification methods (including the use of ontologies) *compatible with the 'local' pre-existing ones*. The identification scheme being adopted is based on Uniform Resource Identifiers (URIs) with independant left and right parts for each identifier. (based on ePID recommendations)

https://www.pidconsortium.eu/?page_id=122

The GOOD

- Use **non ambiguous and persistent identifier**
- Use **minimal information**, get rid of everything that may change.
- Require **external identifier (B2HANDLE, e-PIC...)** if your authority is not persistent enough.
- Provide **multiple output format** (.txt, .html, .csv, etc.) and link them together, so the user will have the choice.
- Integrate/upgrade already existing identifiers in a URI.
- Use persistent-URL with 303 redirect status.
- Associate creation date to help understanding.

The BAD

- Unnecessary metadata in the identifier
- Ownership and other information that are likely to change over time, prefer nature of the resource
- Unnecessary long identifiers with too much semantic
- Entirely opaque identifier
- Files extension in the URI (no .extension in the URI)
- Query (no "?" in the URI)
- Misleading characters such as O and 0 or I and l, etc.
- URI that are not the best way to identify the object you are looking at

Focus on naming...

Naming variables need to share a community approved vocabulary, and to build or reuse appropriate ontologies.

Some questions like how to choose them, how to implement and update them and with which means are recurrent challenges in the EPPN^{2020} Phenotyping network. First work focuses on the associated objects and variables common to all EPPN^{2020} members, namely **the scientific object** (*which can be a plant in a pot or a plot*)**, sensors and variables**.

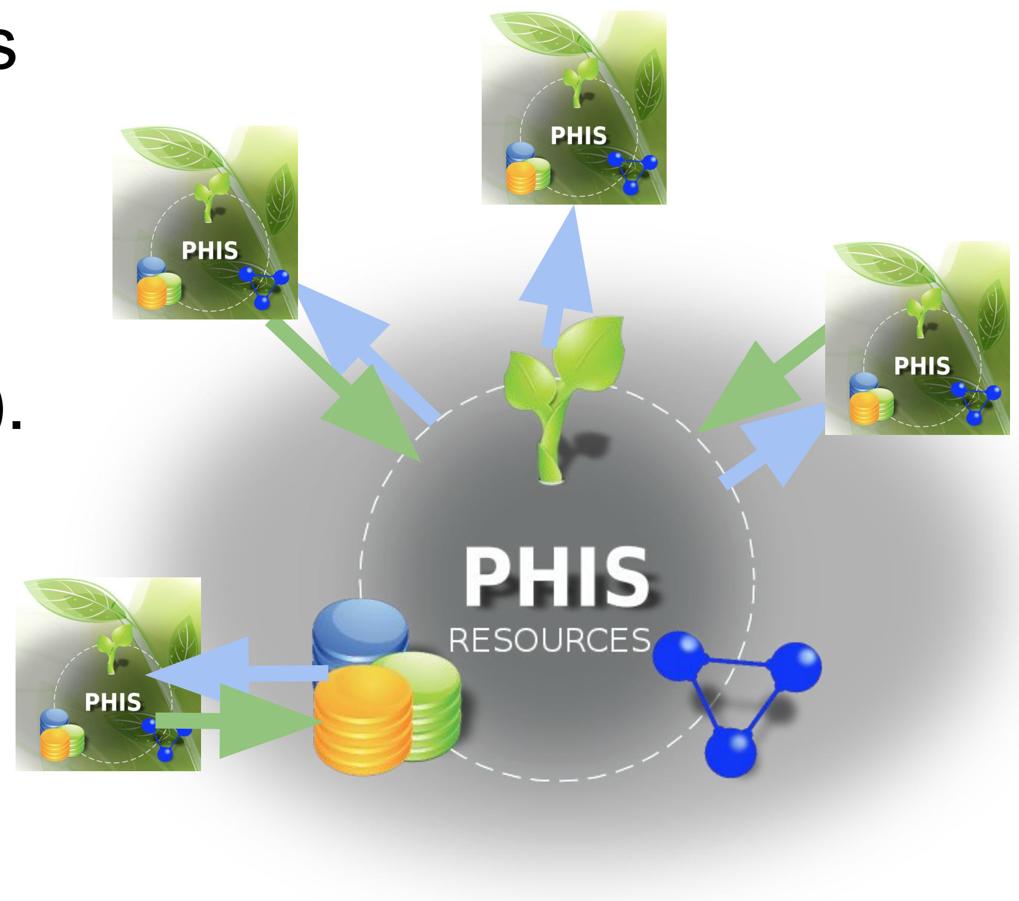
The GOOD

- Look for **"reference ontologies"**, first in the dataweb stacks
- Be careful of needs and implementation capacities to manage ontology links on the long term
- Look for concepts related to **your phenotyping experiments available in "application ontologies"** in your disciplinary domain first, before creating new ones.
- Ontologies should **never be developed isolated**. Use SKOS to link as much data as possible to reference ontologies first, and to trade/application ontologies with "exact match" then "close match" SKOS predicates
- If you need a **new concept, try to do it in concertation with the larger community** (as far as possible)

The BAD

- To create an ontology before prospecting an existing one
- To create an ontology without a community approving process
- To give a URI for an ontology with date or version in the persistent link
- To use first a species specific ontology before considering concepts from general and recommended plant ontologies
- To use approximated data type
- To refer to approximated data concept in your specialized ontology

A common architecture for identifiers and variable names is being built in order to enable a first level of interoperation between Phenotyping Hybrid Informations Systems (PHIS). All instances are connected to a PHIS Resource center **using ontologies** and enabling sharing between each instance of PHIS.



The UGLY

Next challenges that need to be addressed by the EPPN^{2020} community are related to:

- the **partial reuse** of pre-existing ontologies,
- the **persistence of long-term access** to data,
- interoperation **between all potential users** of the phenotyping data.

Reference: Pascal Neveu, Anne Tireau, Nadine Hilgert, Vincent Nègre, Jonathan Mineau-Cesari, Nicolas Brichet, Romain Chapuis et al. "Dealing with multi-source and multi-scale information in plant phenomics: the ontology-driven Phenotyping Hybrid Information System." *New Phytologist* (2018). DOI : **10.1111/nph.15385**

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