Improving the " FAIRness " of Inra's data for plant biology and breeding

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Improving the « FAIRness » of Inra's Data for Plant Biology and Breeding

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PAG 2018, WS Challenges and Opportunities in plant science data management,
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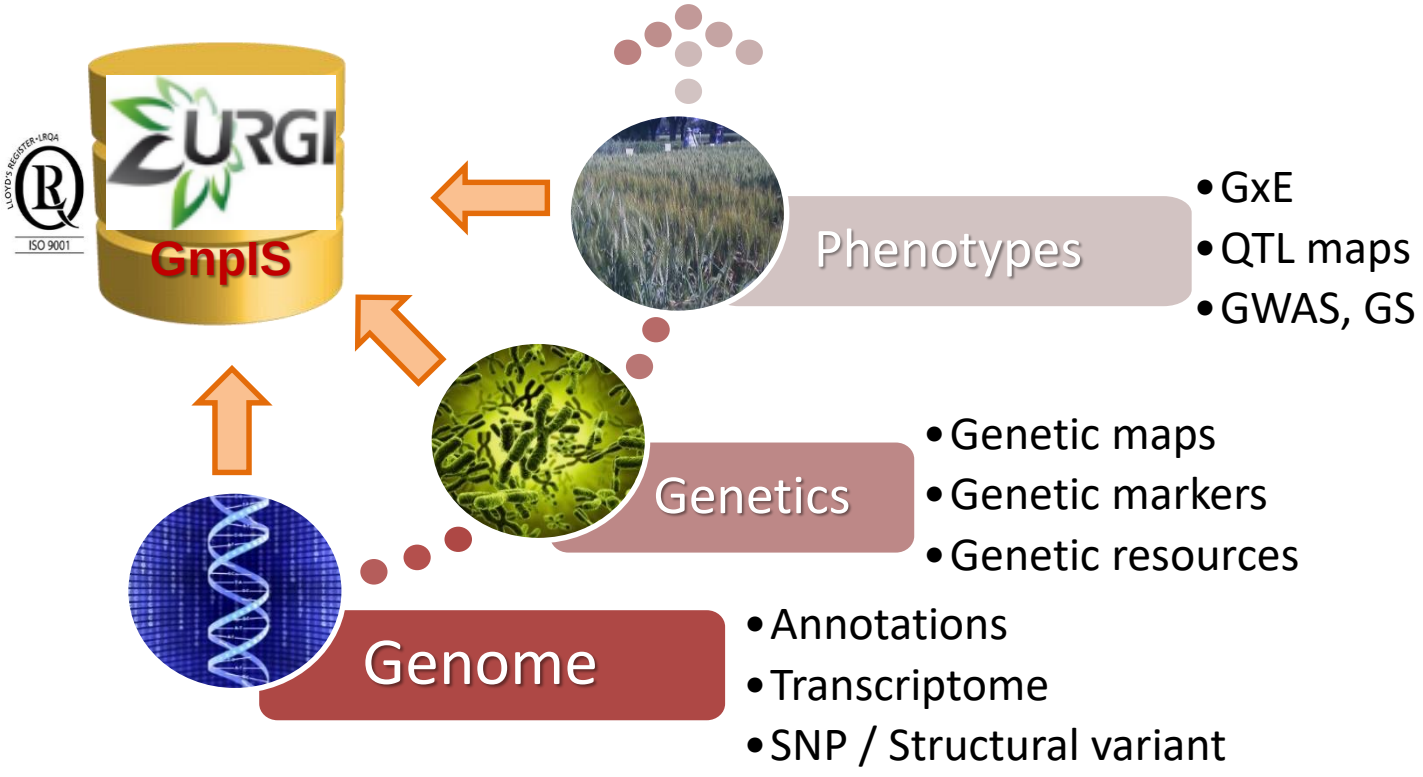
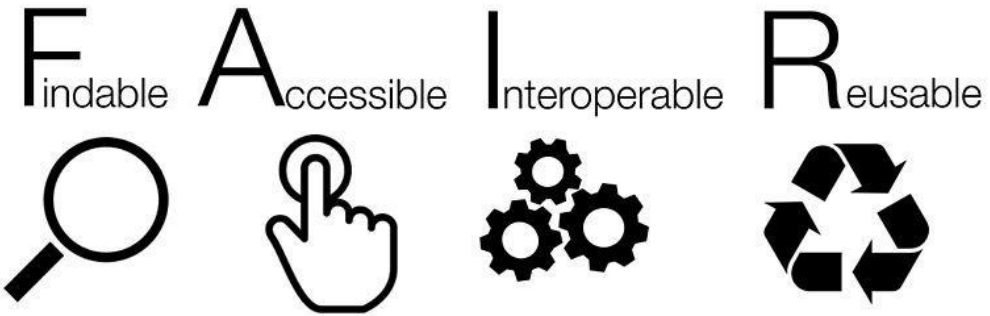
GnpIS: INRA IS for crops, forest trees and pathogens



Main global objectives

- Be a robust and sustainable repository of FAIR data (Findable, Accessible, Interoperable, Reusable)
- Integrate GnpIS in sustainable and robust federations of information systems
- Facilitate knowledge development and data analysis



Acknowledgements

URGI team

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Financial supports

International infrastructures /initiatives

National and international crop projects

Making data and Information systems FAIR has a lot to do with community management

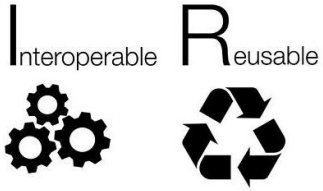
Within and between:

- Developpers
- Specialists of ontologies and standards
- Data managers
- Biologists (data producers)

(Global) Infrastructure projects

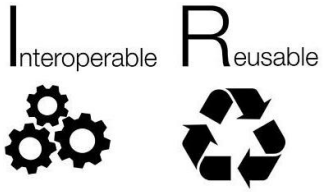
Crop/biology focused projects

And clarifying what is under the responsability of each community



Metadata : data about the phenotyping experiment

- MIAPPE: Minimum Information About Phenotyping Experiment
- Developed and maintained by an international community interested in plant phenotyping: large community of breeders and biologists, European infrastructure for Plant Phenotyping (EPPN/EMPHASIS), European infrastructure of Bioinformatics (ELIXIR), Planteome, Excellence in Breeding Plateform…
- www.miappe.org
- Steering comittee Emphasis, Elixir CGIARs



Metadata : data about the phenotyping experiment

Crop Ontology
Variable=trait + method + scale

Identification : MultiCrop Passport Data Standard

Phenotype 1 = measurement on a cultivar in an environment-GPS1-time1

Phenotype 2 = measurement on a cultivar in an environment-GPS2-time2

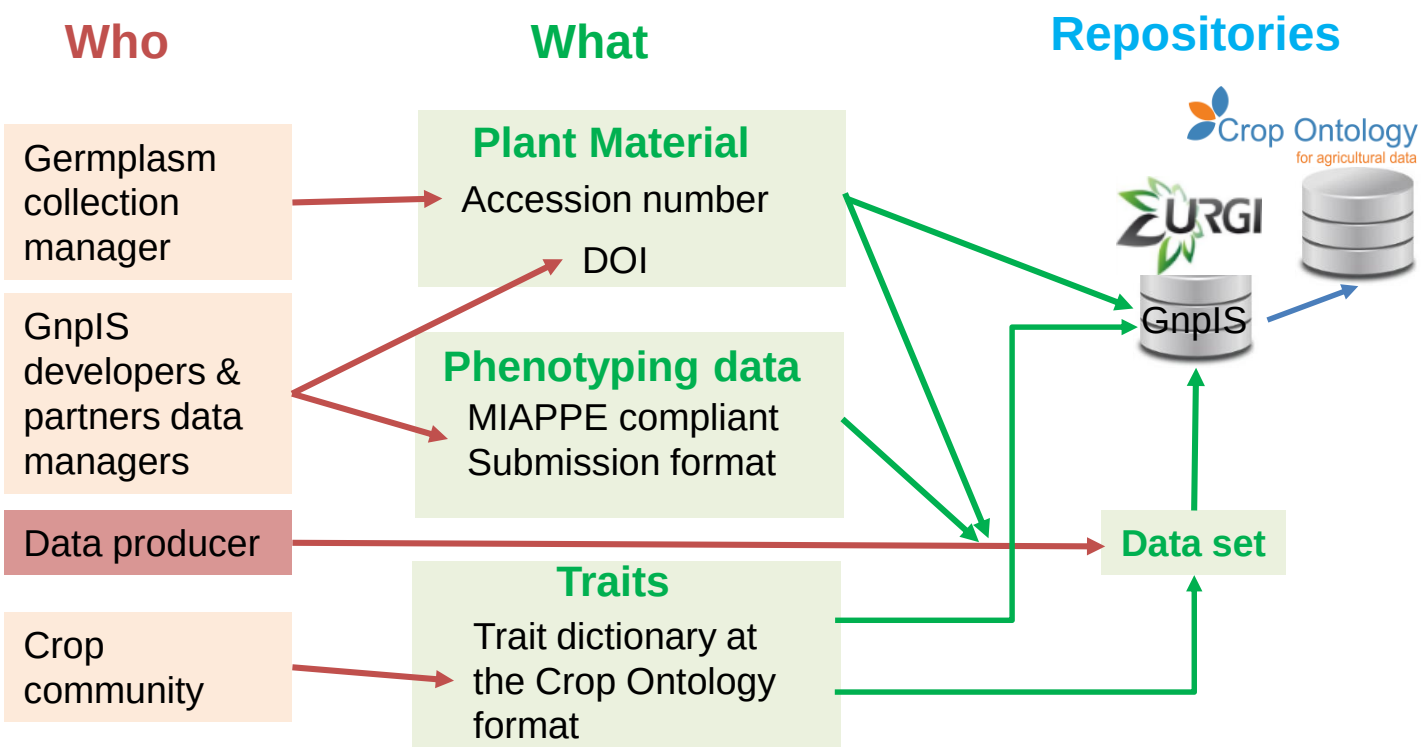
Genotype = observed marker's alleles on a cultivar

Climate 1 = climatic data at GPS1-time1

MIAPPE standard aligned with MCPD and Crop Ontology standards

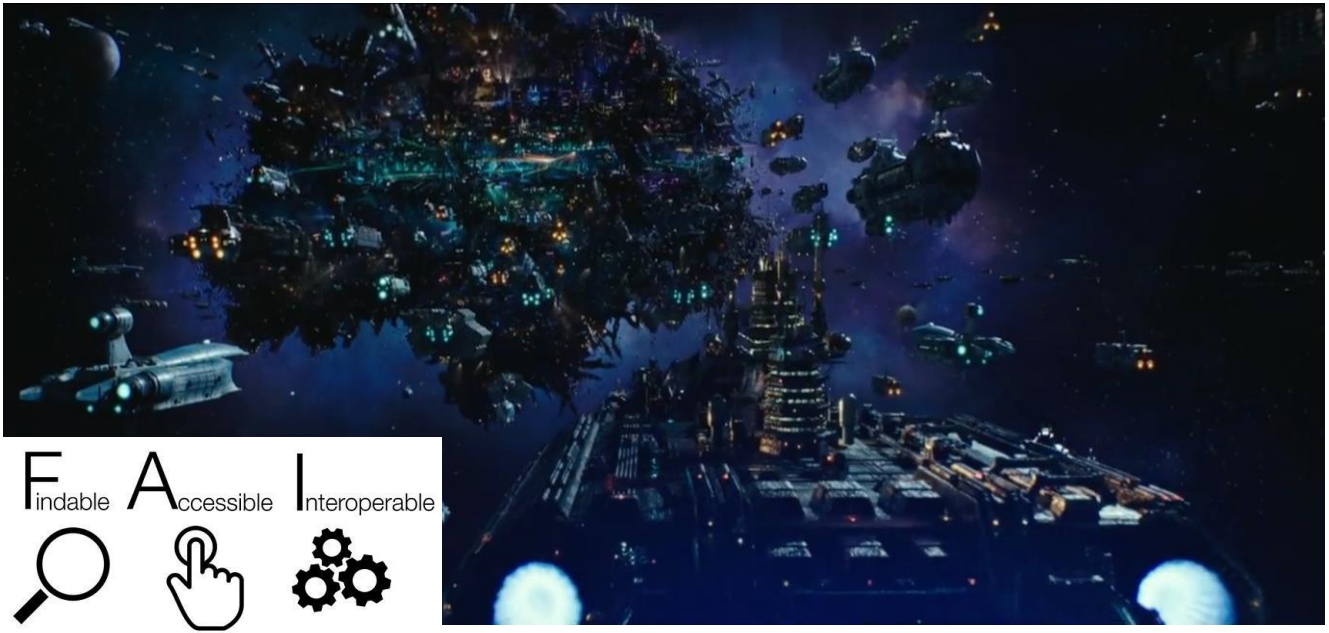
Inspire EU directive?

Who provides the metadata – e.g. phenotyping data



Data managers: important role in facilitating flows between registries of identifiers, data set repositories and data producers

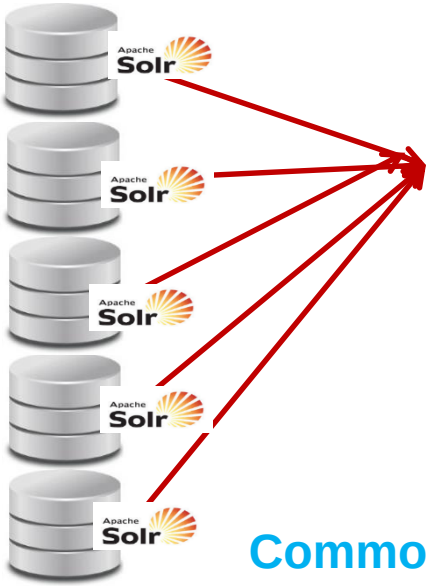
Develop a sustainable and robust federation of plant information systems



Data is scattered in many information systems

Findability: Data discovery through a common portal

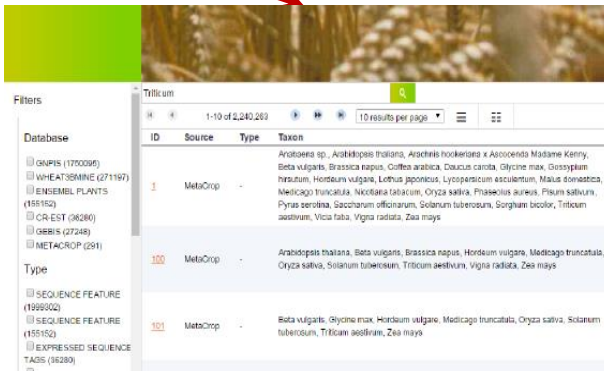
Spannagl et al 2016, doi: 10.3835/plantgenome2015.06.0038



User web interface

http://www.wheatis.org/

Google like list of results



Common Data Model

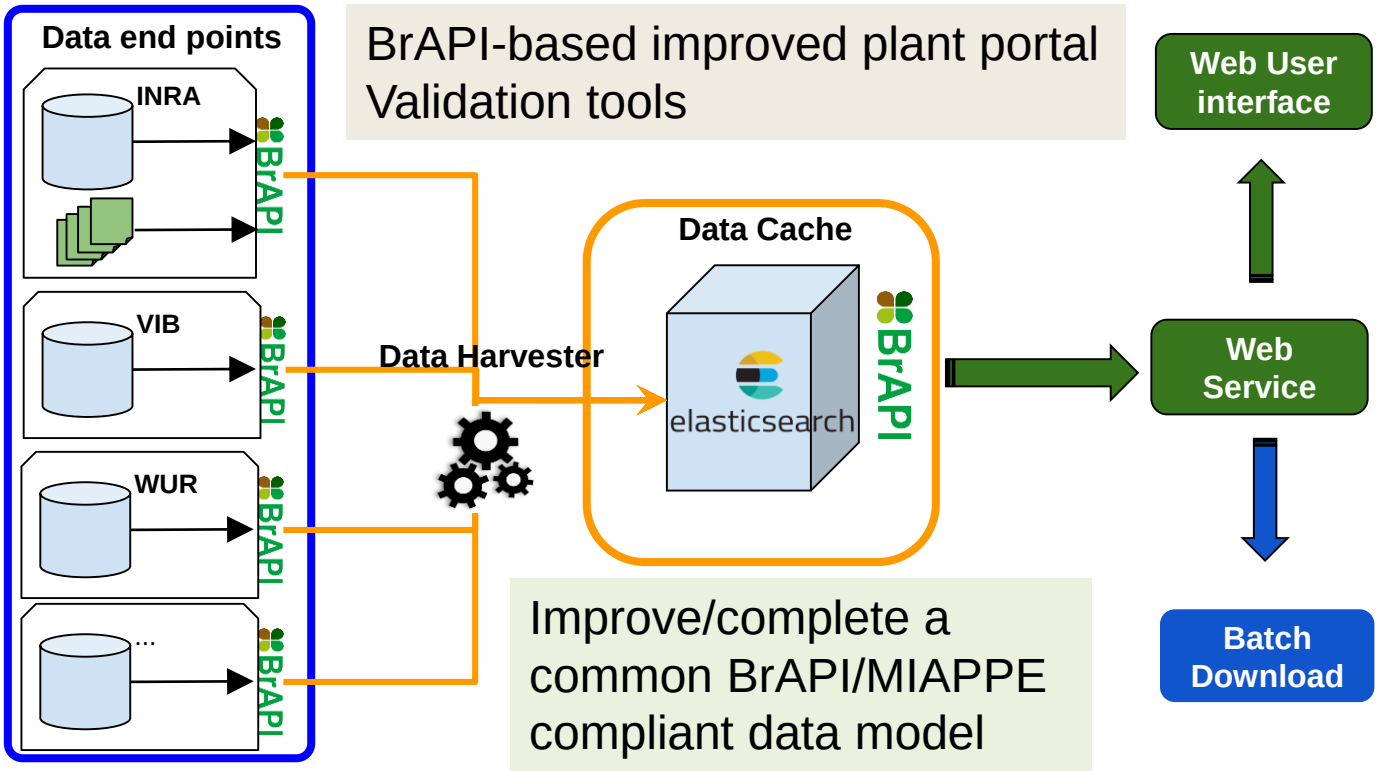
www.wheatis.org

Challenges:

- Synchronize technical updates of the infrastructure
- Synchronize improvements of the data model
- Searching with increasingly natural language (e.g. for traits)

Opportunity: great tool to build a community of developers, data managers and specialist of ontologies that work together

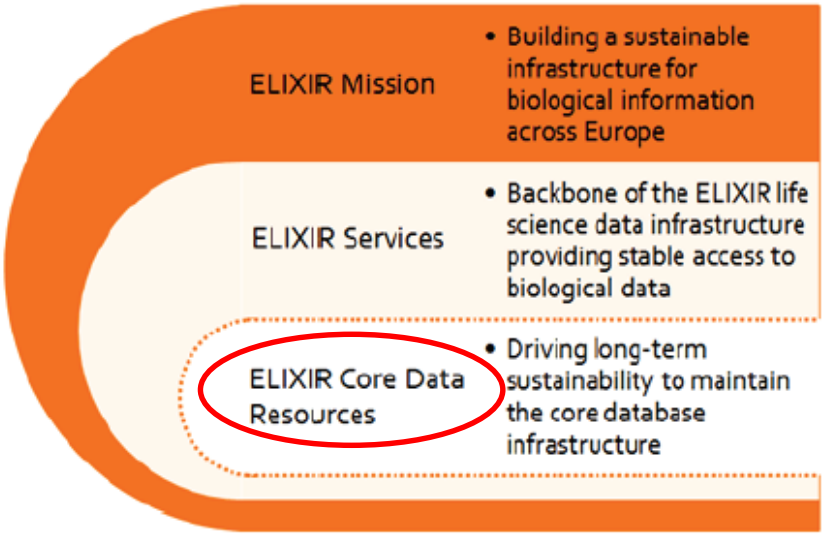
Federation of Plant Information systems



Federation(s) of plant information sytems

Development of a consistent and robust suite of open source tools based on common internationally agreed standards : one of the key elements of a sustainable federation

Durinx C, *et al.* **Identifying ELIXIR Core Data Resources** *F1000Research* 2016, doi: 10.12688/f1000research.9656.1



Thank you!