



Development of a European
information system for
CWR and LR
Conservation and use data
and implementation of the
Trait Information Portal

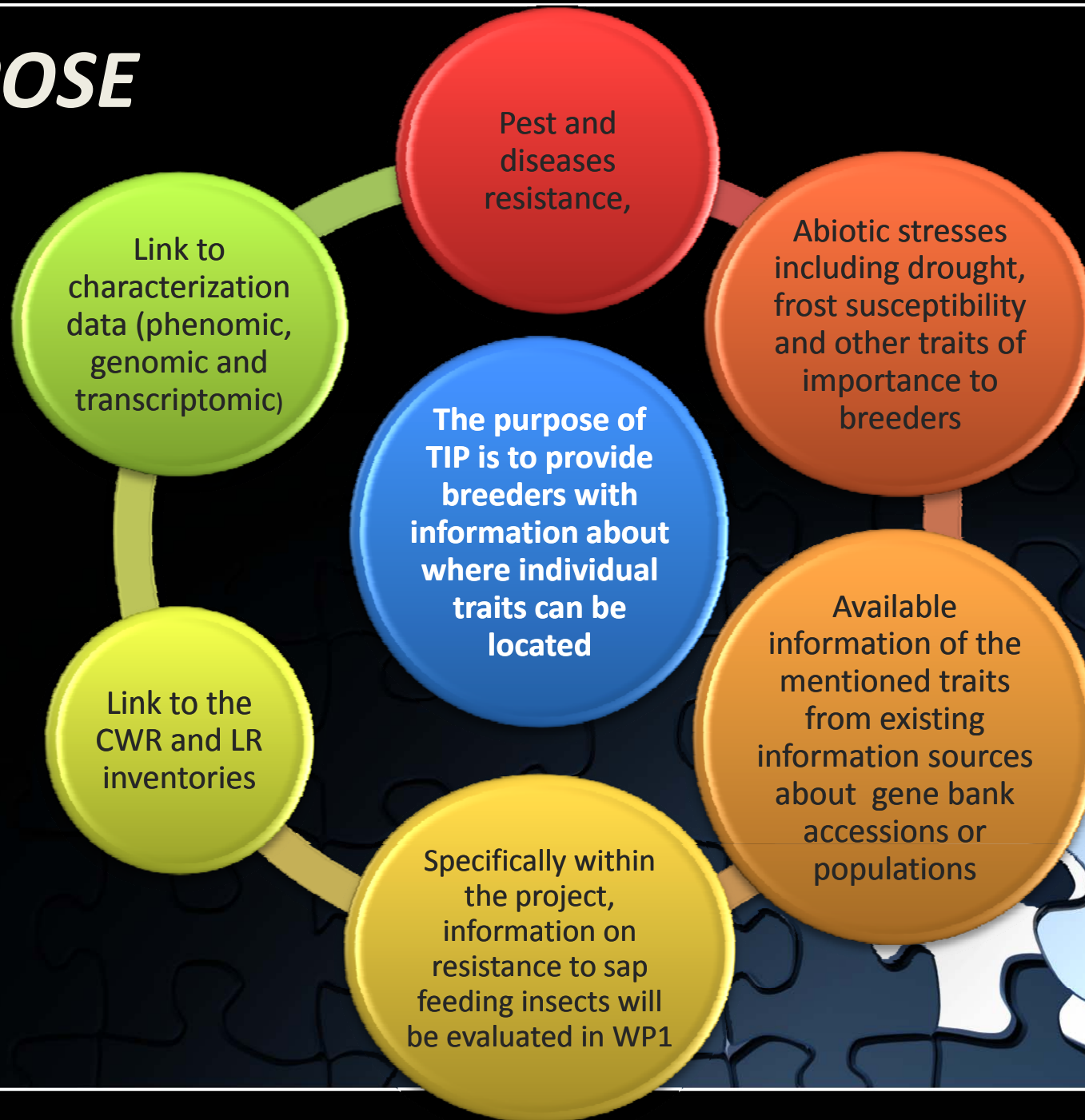
Pieces of the Puzzle

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Biodiversity International

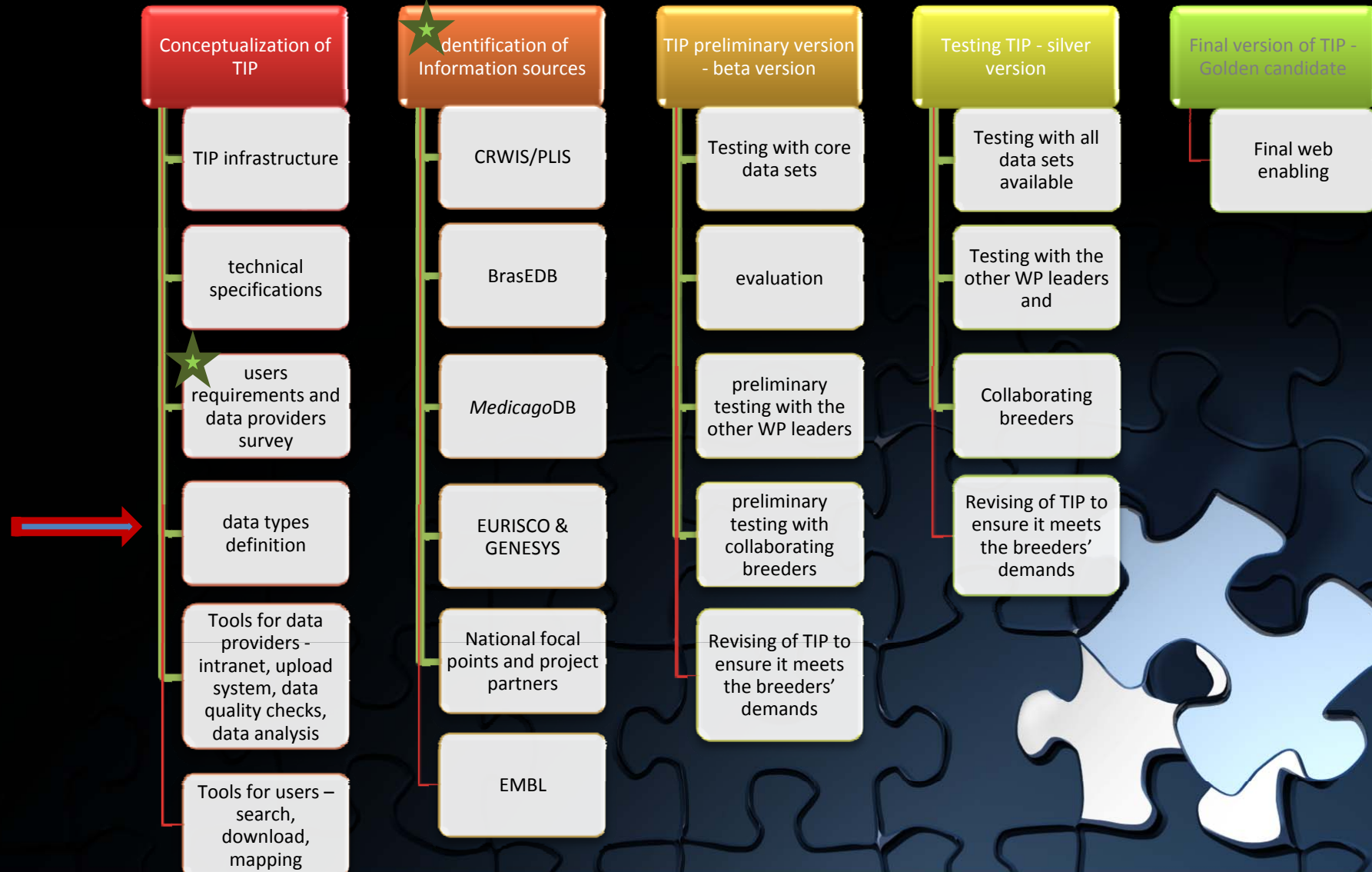
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PURPOSE



OBJECTIVES

- To produce a web-based CWR and LR Trait Information Portal – TIP (Task 2.1)



Some of the main sources of information identified

CWRIS/PLIS

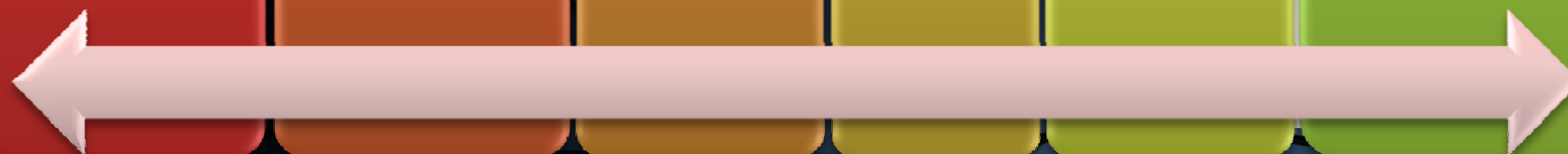
EURISCO
&
GENESYS

ECCDB -
Avena,
Beta,
Brassica
and
Medicago
databases

EMBL

Crop Wild
Relative
Informati
on System
(CWRIS)
(PGRForum)

CWRIS-AEGRO-
Population
Level
Information
System (PLIS)



Users requirements and data providers survey

- Survey results -

Plant breeders

- Which are the CWR/LR of Medicago that bear specific traits (one or more traits together)? Where are they maintained? Who is the contact person for information or seed samples? Are seed samples freely available?
- Where does the material originate? What is the phenotype of the material (including photos if possible)? How to find material with specific traits (diseases, pests etc)?

Use in plant improvement – other information type on the accession/population

- Location of origin (country, map) Phenotype (photo) Any self-incompatibility (seed testing) Used in genetic studies (genetic maps available?) Availability of seeds
- Data about seed sample quantity and quality (germinability, purity) Uniformity and stability of the genotype Cross compatibility

Brassica and Medicago – Traits of interest

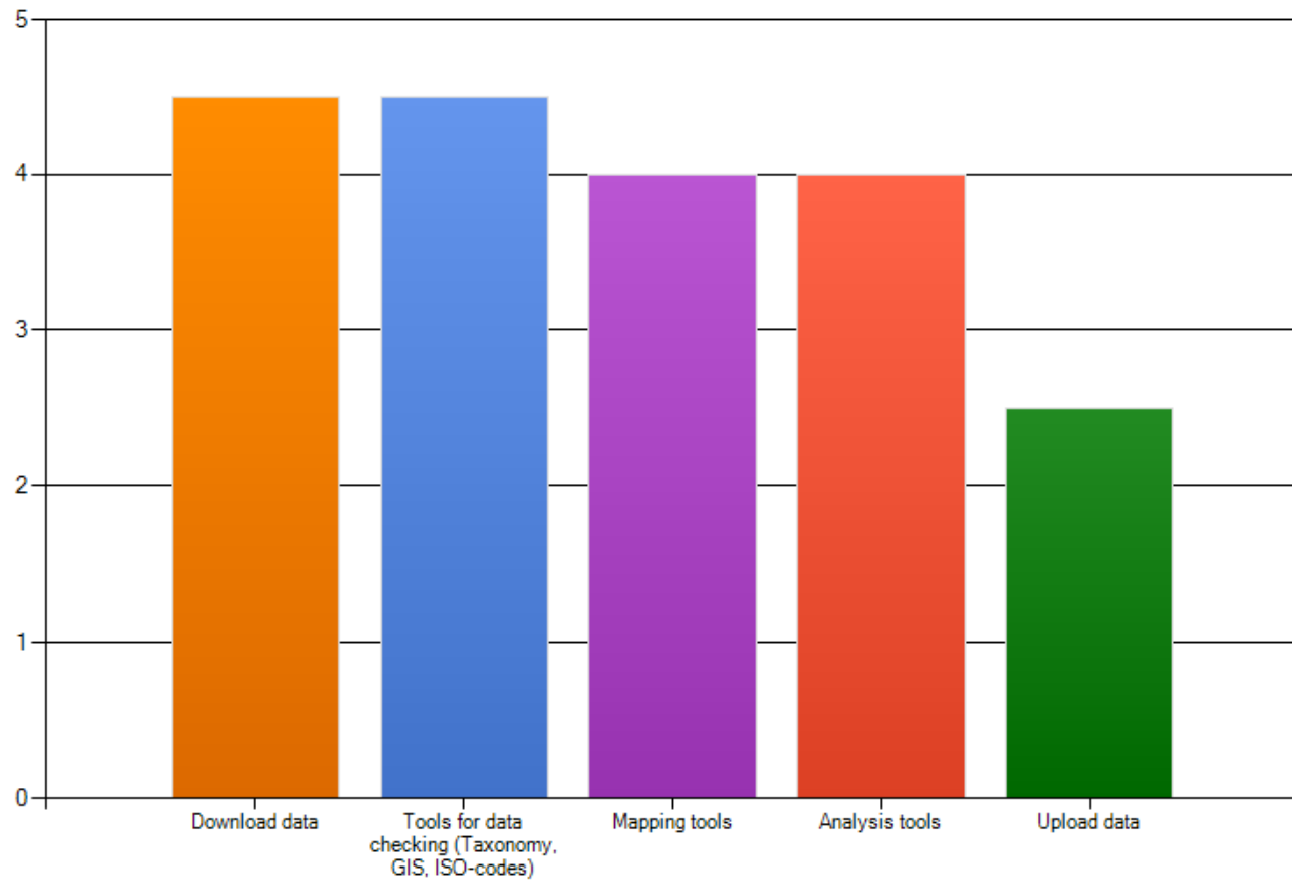
- Brassica- Disease resistance, insect resistance, drought tolerance, salt tolerance, stress tolerance, new morphological characters
- Medicago- origin (geographic, environment); ploidy; plant size; growth habit; dormancy; pest and pathogen resistances; flower colour; protein and fiber content; phenotypic and genetic markers

Other ideas

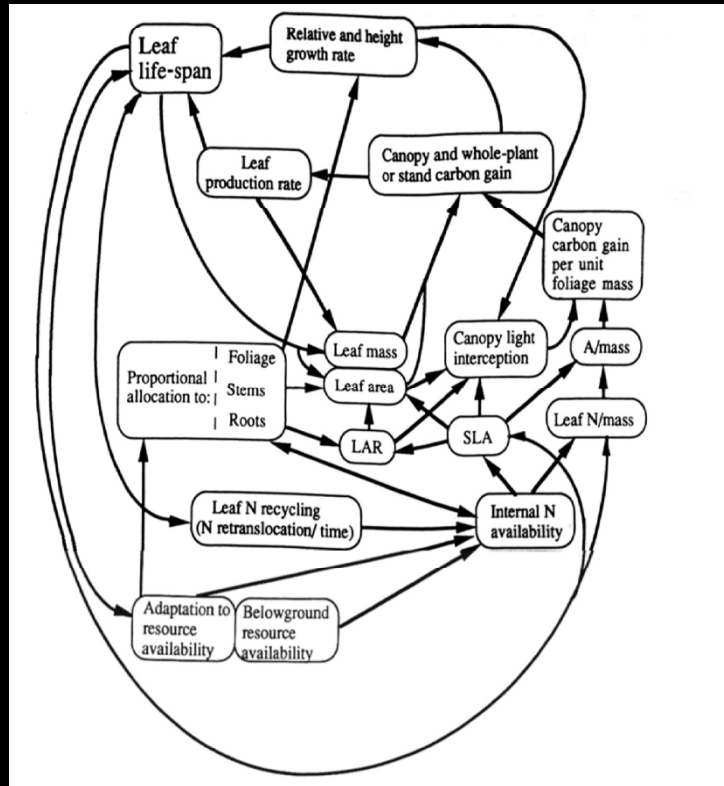
- It could be interesting to have the opportunity to receive and test a choice of the available genotypes, to see characteristics and performances in the different areas; results could be returned and used to enrich the information on the portal

what services should the TIP be providing

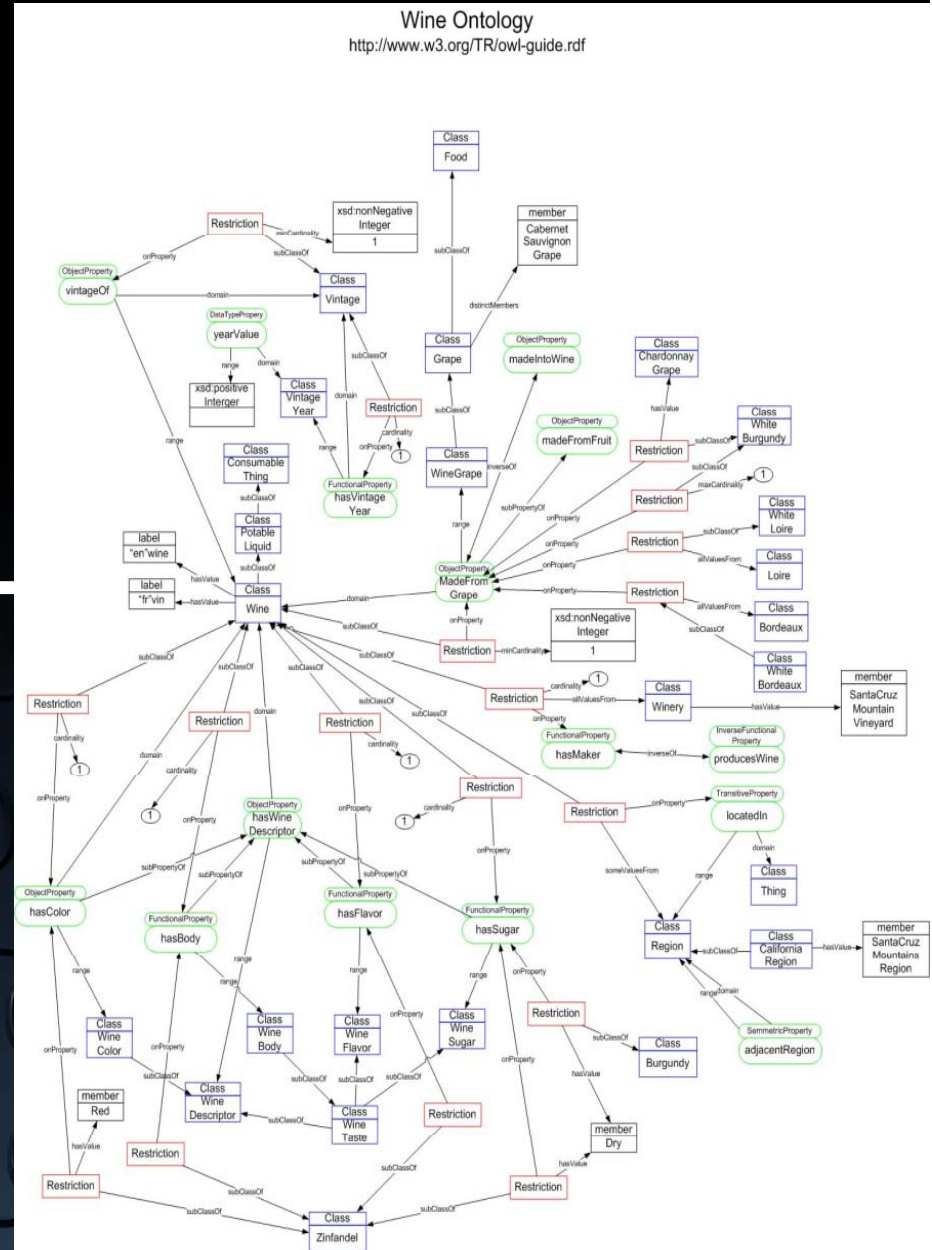
In your opinion, what services should the Trait portal provide? Rank the services by priority (1 low-5 high) and provide any other service of your interest.



What we need is this - ontologies -

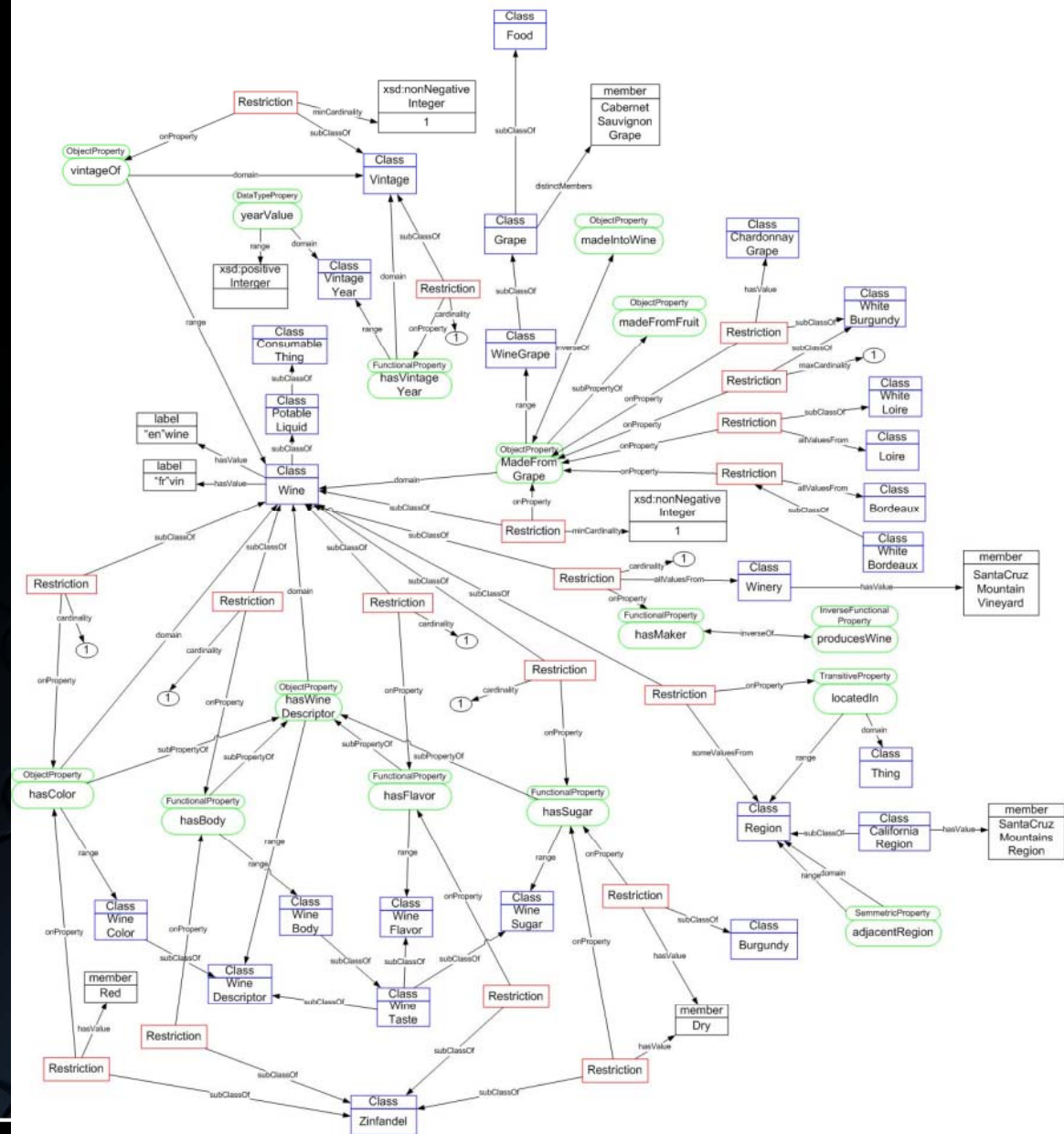


From the paper to the computer



Wine ontology

Wine Ontology
<http://www.w3.org/TR/owl-guide.rdf>



Ontologies for PGRSecure

Triontology



- A CWR ontology
 - If needed work on the existing CWR Ontology defining the CWR inventory
- LR ontology
 - Ontology defining the LR inventory
- CROP ontologies –Trait ontology
 - *Avena* ontology
 - *Beta* ontology
 - *Brassica* ontology
 - *Medicago* ontology



The goal is to:

- Develop a controlled vocabulary (ontology) that describes the crops, themes, traits, anatomical and morphological structures and growth and developmental stages, etc.
- To establish a semantic framework for meaningful cross-species queries across crops, inventories and traits (genotyping and phenotype datasets).
- Describe crops, CWR and LR structures and entities and the relationships between them.

Examples :

- Population, site, unit, whole plant, portion of plant tissue, vascular system, seedling growth, plant growth, leaf development stages, embryo development stages, flower development stages, etc.





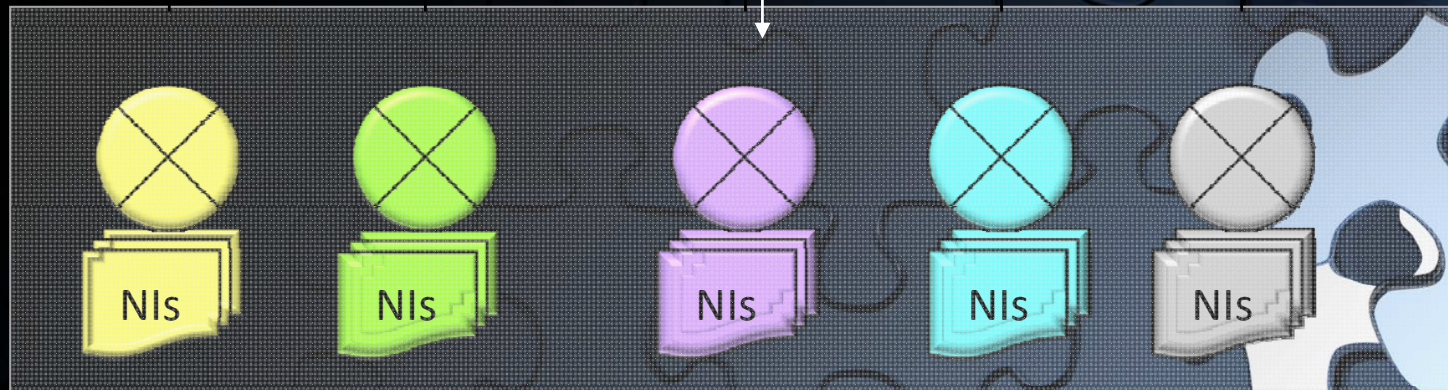
Ontology Curation tool - GCP Sample

✓Demo

<http://www.cropontology-curationtool.org/>

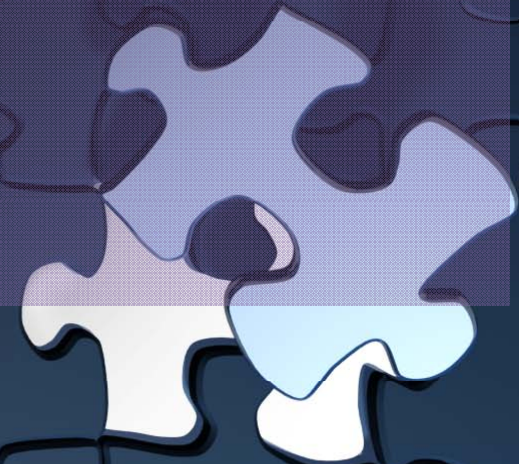
In situ and on farm concepts

In situ
On-farm



Special resources available

- ✓ Curation & Annotation tool
- ✓ CWR descriptors (PGRFORUM and CWR UNEP project)
- ✓ LR descriptors (developed under the ECPGR network)
- ✓ CWR ontology
- ✓ Trait ontology
- ✓ Plant ontology
- ✓ Ex situ platform
- ✓ Etc...



To complement the special resources available need to establish:

PGRSECURE Crop ontology group

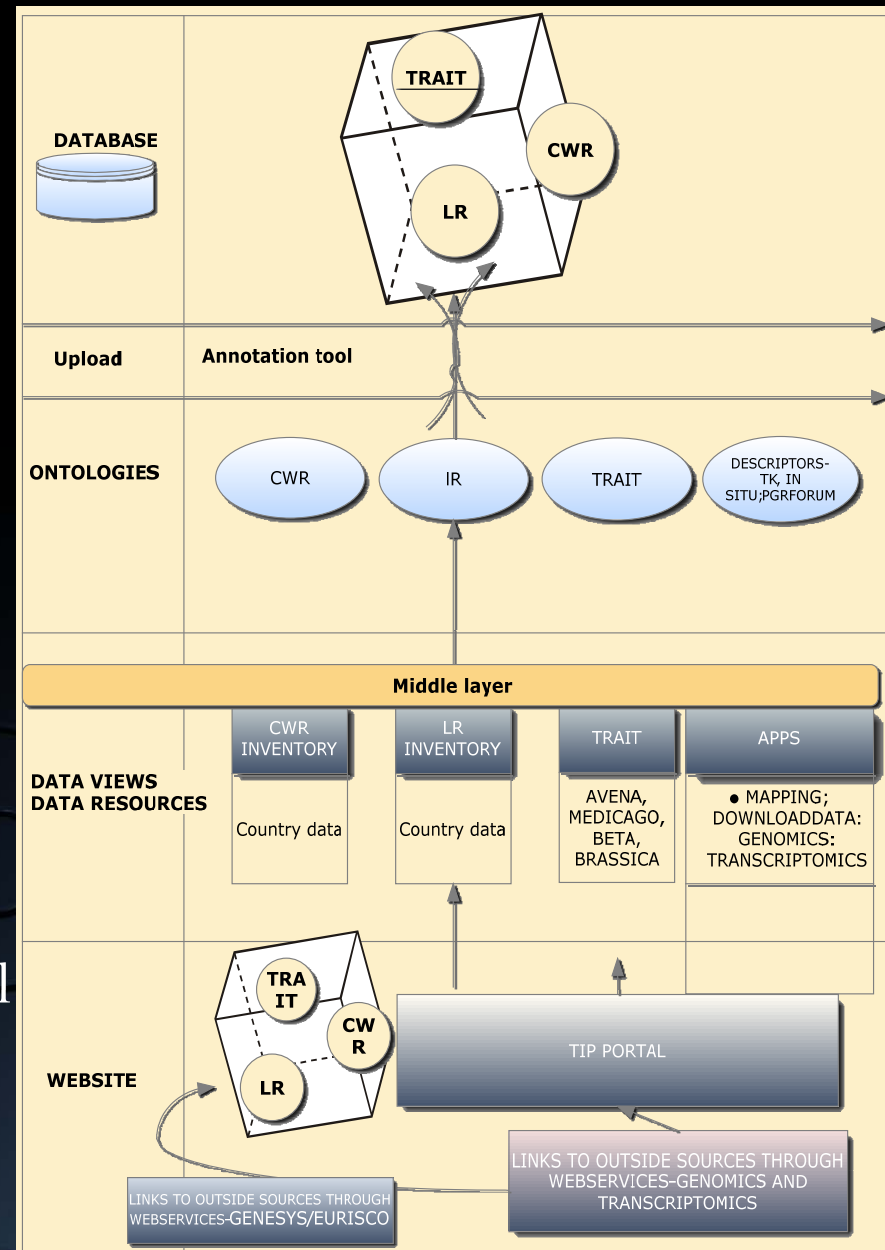
- ✓ *Avena*
- ✓ *Brassica*
- ✓ *Beta*
- ✓ *Medicago*
- ✓ CWR
- ✓ LR
- ✓ Links to Trait ontology



What we propose

Draft TIP concept

- Database - Mongo, Google, ...
- Upload system – CSV, Template driven (customized template options).
- Annotation tool- Use GCP curation/annotation tool for developing PGRSECURE ontologies.
- Data views – data types
- Web-enabled, (internal and external links).





Trait Information Portal



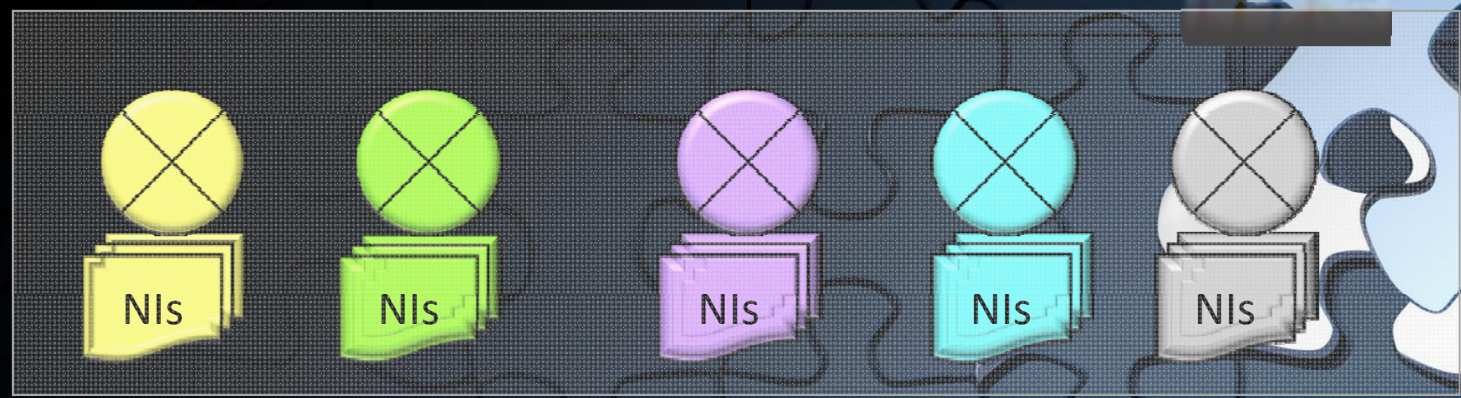
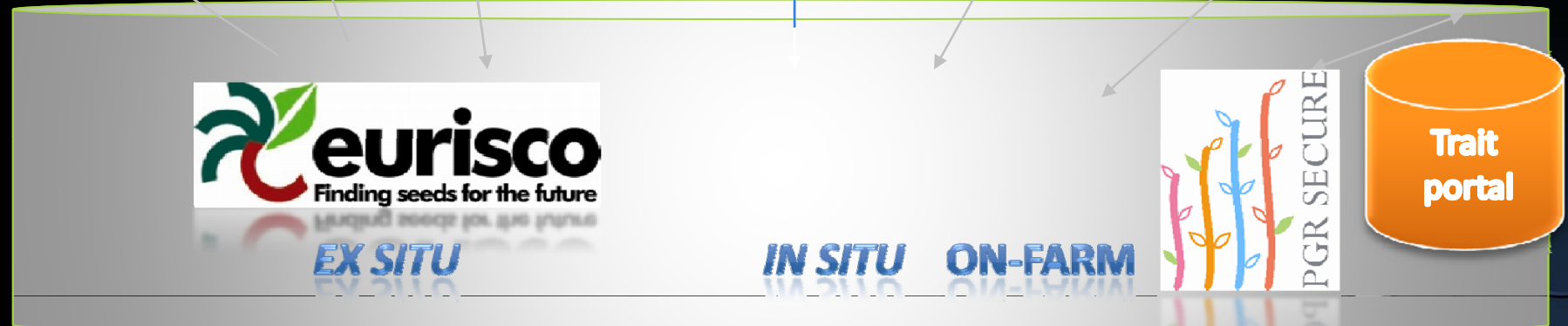
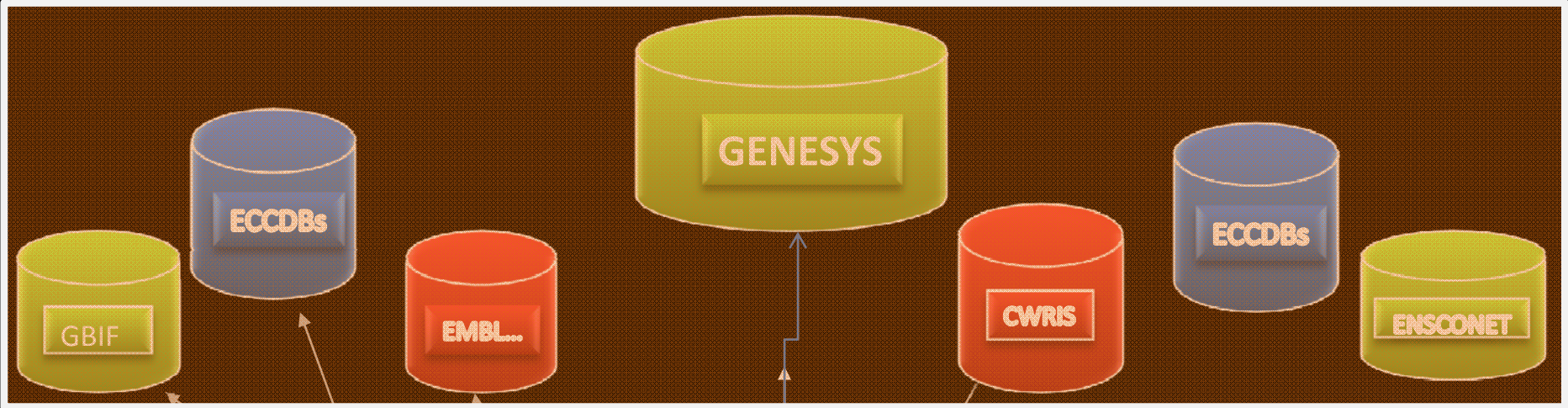
Landraces



**Crop
Wild
Relatives**

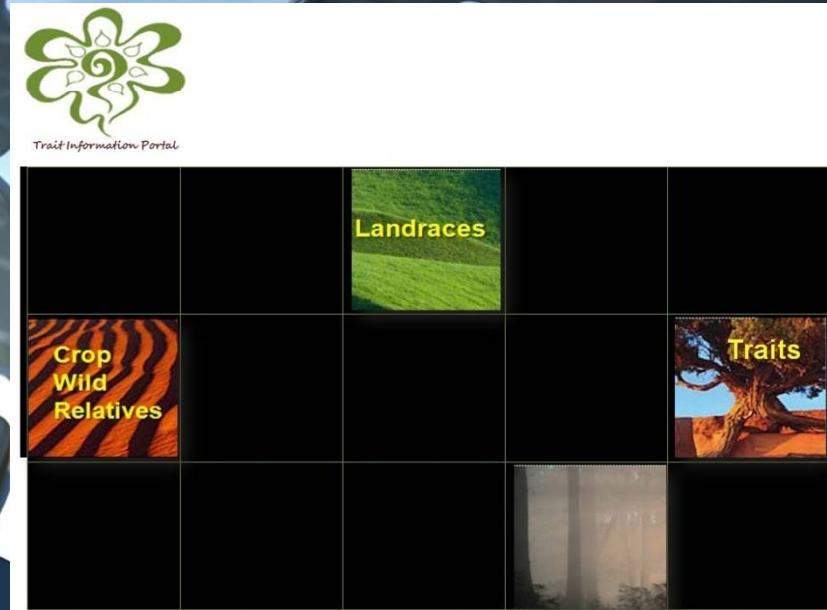


Traits



Will TIP be a part of or linked to these? How?

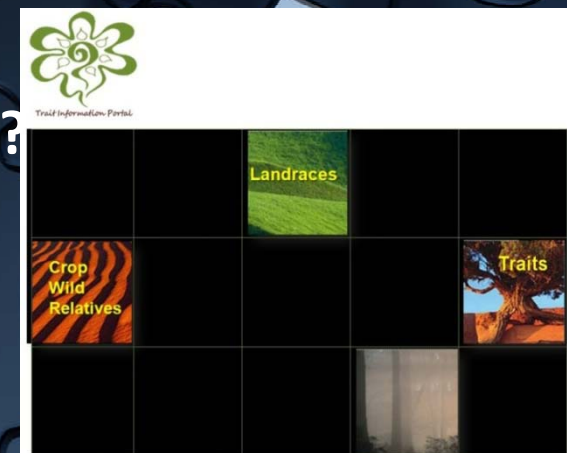
- ✓ EURISCO,
- ✓ relevant crop specific ECCDB (i.e., *Avena*, *Beta*, *Brassica* and *Medicago* databases)
- ✓ EMBL
- ✓ Crop Wild Relative Information System (CWRIS) (<http://www.pgrforum.org/cwriscwrisc.asp>)
- ✓ CWRIS–AEGRO–Population Level Information System (PLIS)
- ✓ GENESYS (<http://www.genesys-pgr.org>)



This system has firstly to serve you, the data provider, so it can efficiently serve the users.
Think about this we need your ideas and thoughts on it.

OUR questions?

1. Who will be hosting the TIP?
2. How do you see the links? Are they just re-directing the users to other sources?
3. Or are the links providing direct access to further information?
4. Is the proposed concept what you looking for?
5. What features besides the indicated ones would be needed (take into account the data types provided)?
6. Which data types should be downloadable?
On which formats?
7. What data sources are missing?
8. What kind of access to analysis tools is needed?

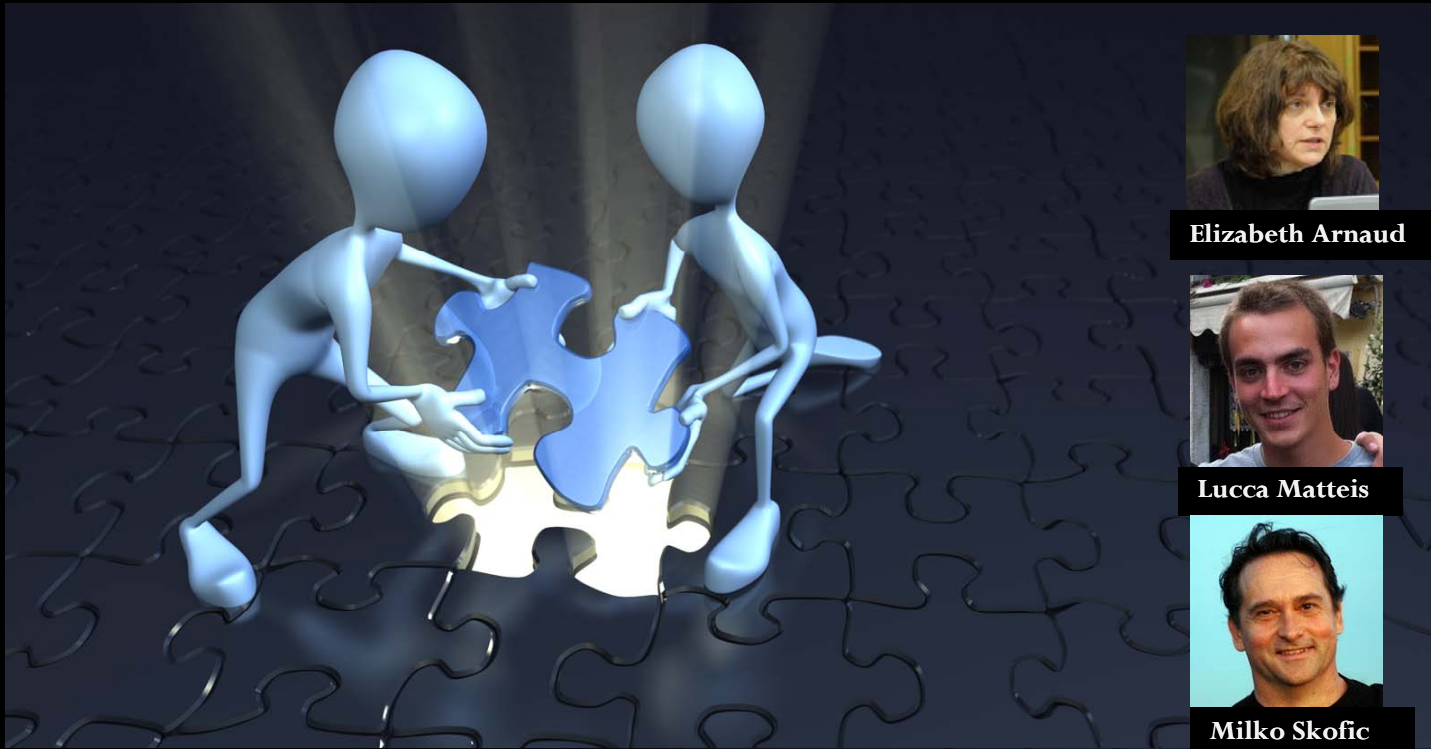


Conclusion

At the end of this workshop should have have an understanding on:

- ✓ **Data types to be used?**
- ✓ **Features envisaged ?**
- ✓ **Meaning and relation of the links**
- ✓ **Hosting of the TIP?**
- ✓ **TIP general concept endorsed**
- ✓ **Ontology groups established**

Feedback and guidance on the TIP



**Together we will put all pieces of
the puzzle in place.**

