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Motivation:

• Providing easy available information in a standardized form to support the development of models, to test ecological and evolutionary hypotheses that involve the use of plant functional traits.

Challenges:

- Highly dispersed information
- Fragmented to few major, numerous small datasets
- Most of the dataset are not public available, not online
- Low degree of data standardization
- No commitment to data sharing
- No direct incentives for sharing data

Concept:

- Integrated database for plant traits (data warehouse) with centralized data curation (Figure 1) linked to a Global Ecological Ontology Portal (Figure 2). This concept is consistent with Reichman et al. (2011).
- Database design based on a star-schema, consistent with the Extensible Observation Ontology (OBOE, Madin et al. 2007, Kattge et al. 2010, Figure 3)
- Second generation of data pooling: primary and secondary databases
- Data are owned by contributors, hosted at the integrated database
- Data availability (public vers. not-public) according to permission by contributors
- Incentives for data sharing:
 - Original references being cited
 - Option of authorship
 - Opportunity to receive data from the TRY database
- Transparent data exchange (internal area of TRY website: try-db.org)

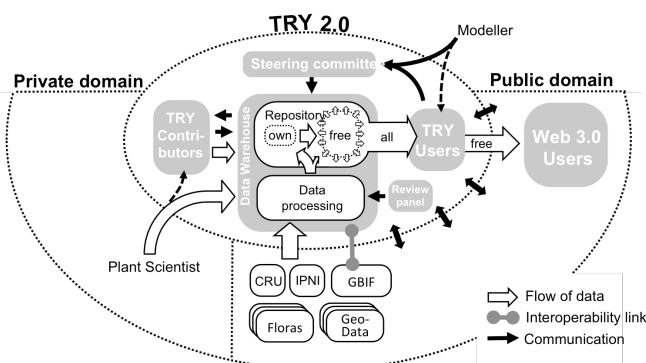


Figure 1: TRY as a 'conveyor-belt' mechanism to transport plant trait data from the private to the public domain (Kattge et al. accepted). TRY is the largest plant trait database worldwide: 100 contributed databases, a network of 200 contributors and users, 40 projects are supported by data from the TRY database (see www.try-db.org) TRY is being accepted as communal data repository.

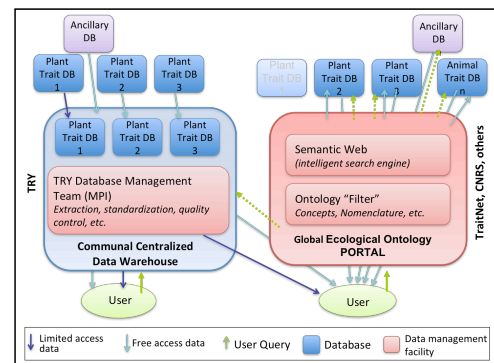


Figure 2: Coordination of TRY with the Global Ecological 'Ontology Portal', which is currently being developed by TraitNet (NSF project, US) and CNRS (French National Center for Scientific Research), to ensure data interoperability and up-to-date ontology.

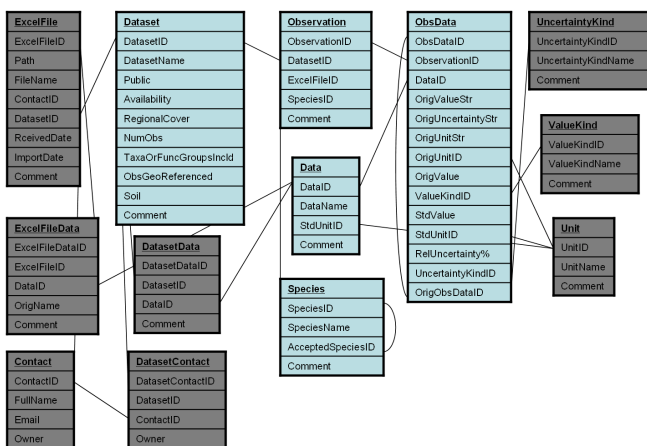


Figure 3: Database design.

The database design meets the following requirements (Kattge et al. 2010):

- Combine all possible species based trait datasets, make them intercomparable
- Accept all kinds of traits
- Accept all kinds of covariate data
- Allow continuous addition of traits, covariates
- Preserve original values
- Standardize values
- Provide efficient data input through generic upload procedure
- Allow for posterior correction of possible errors during data input

References:

Madin, J., S. Bowers, M. Schildhauer, S. Krivov, D. Pennington, and F. Villa. 2007. An ontology for describing and synthesizing ecological observation data. *Ecological Informatics* 2:279-296.

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