

Flexible scientific data management for plant phenomics research

Dr Peter Ansell

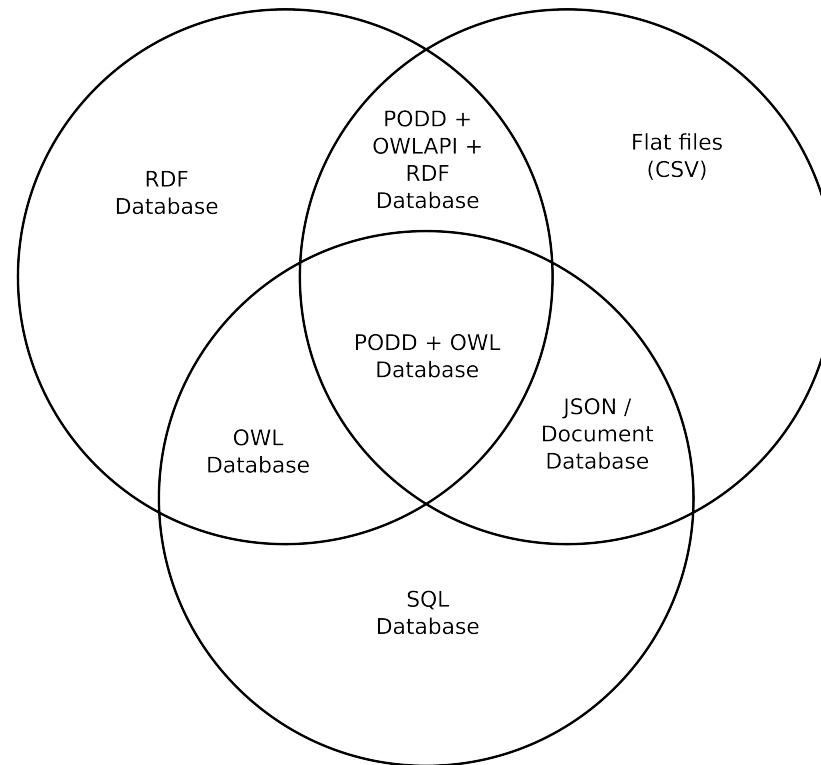
CSIRO Plant Industry
www.csiro.au



Database Management Tradeoffs

Quality

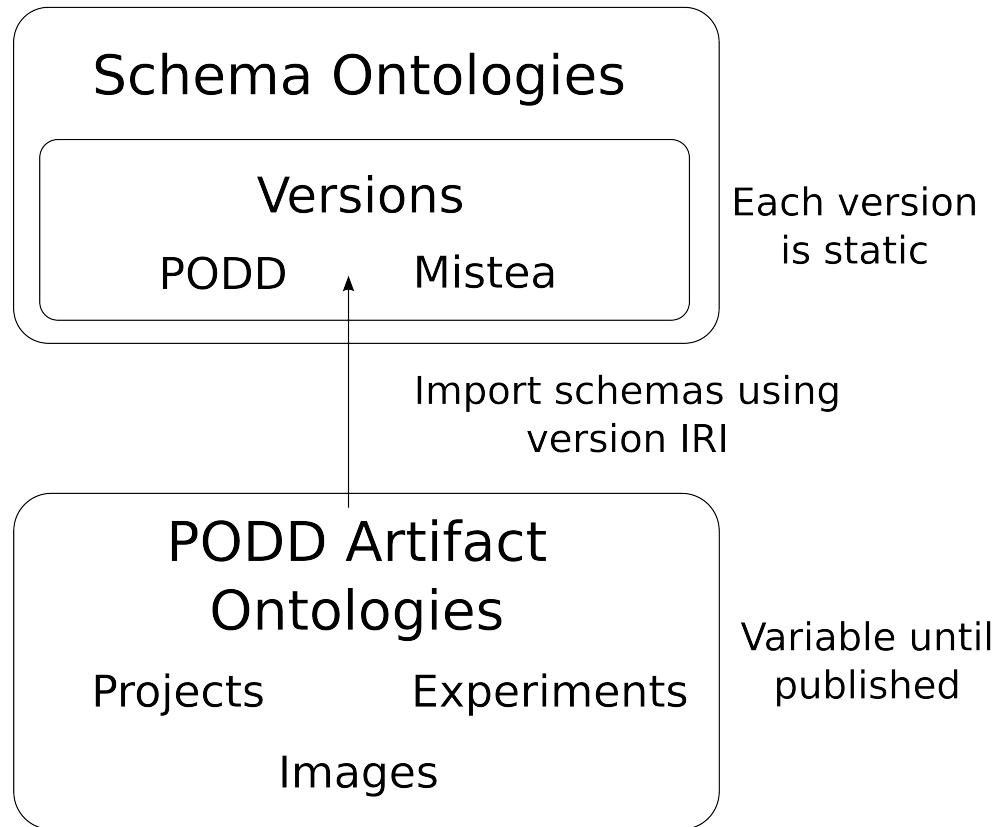
Flexibility



Performance

PODD Object Model

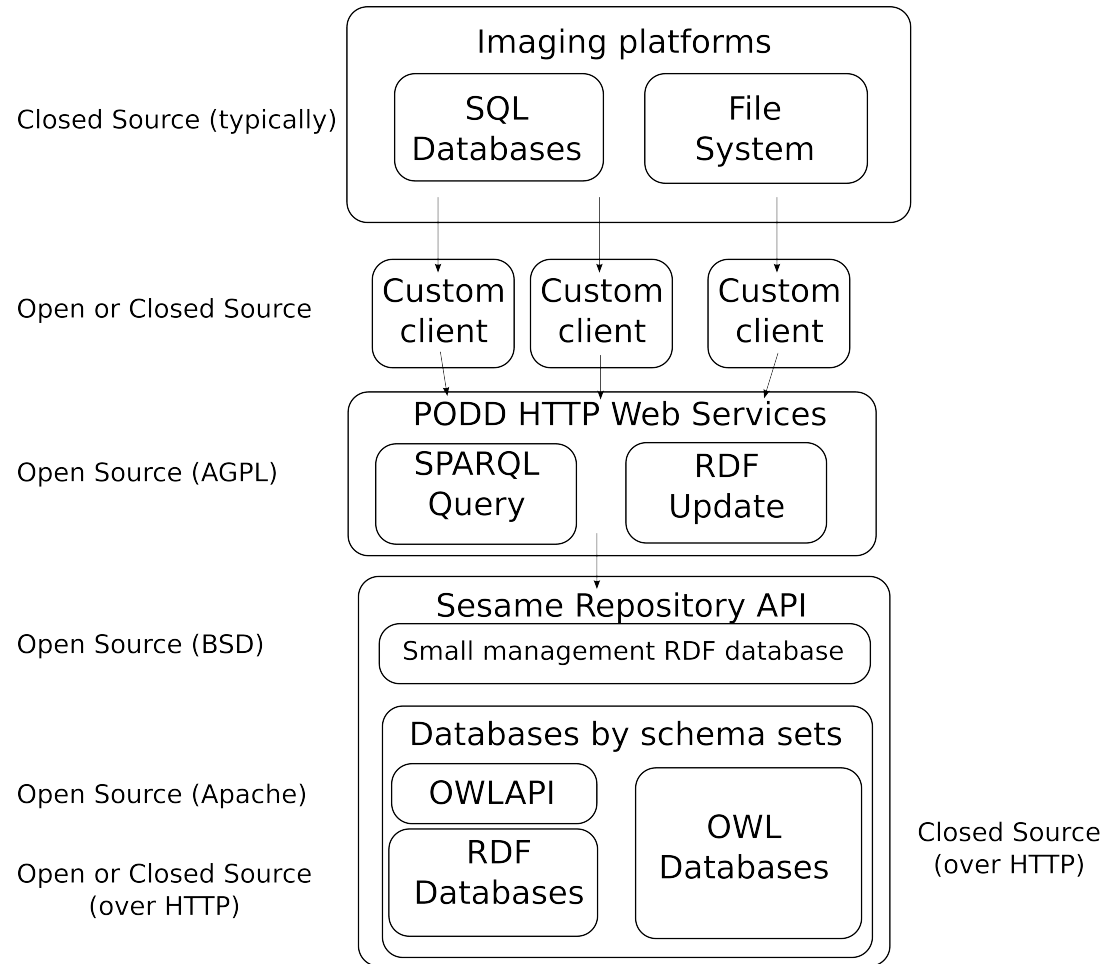
OWL, stored as RDF Graphs,
named using version IRIs



PODD Data Management

- Quality
 - Semantic and structural
 - Both correct and complete
- Flexibility
 - Controlled, optional migration of data
 - Based on OWL Version IRIs and OWL Imports
- Performance
 - Scales by OWL performance for updating
 - Scales by SPARQL performance for querying

PODD Workflow



PODD Events

- Event created in PODD for each set of images from a platform
- Pots linked to images using events
- Pots currently linked to:
 - Genus, species, and wild type
 - Planting date
- Pots will be linked to more events in future:
 - Watering
 - Client reviews

Conclusion

- Overall goal to allow for federated SPARQL queries across PODD instances to reuse existing plant phenomics data wherever possible
 - Already implemented, but datasets are small so far
- Flexible integration of all project management data for a research group in a single PODD instance using the most relevant schema ontologies in each project
- Similar SPARQL queries across all artifacts, regardless of the schema ontologies they are currently using
 - Results would be limited of course by the practicality of the query for the particular schema ontologies in use