PODD Ontology Driven Database

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13 March 2012

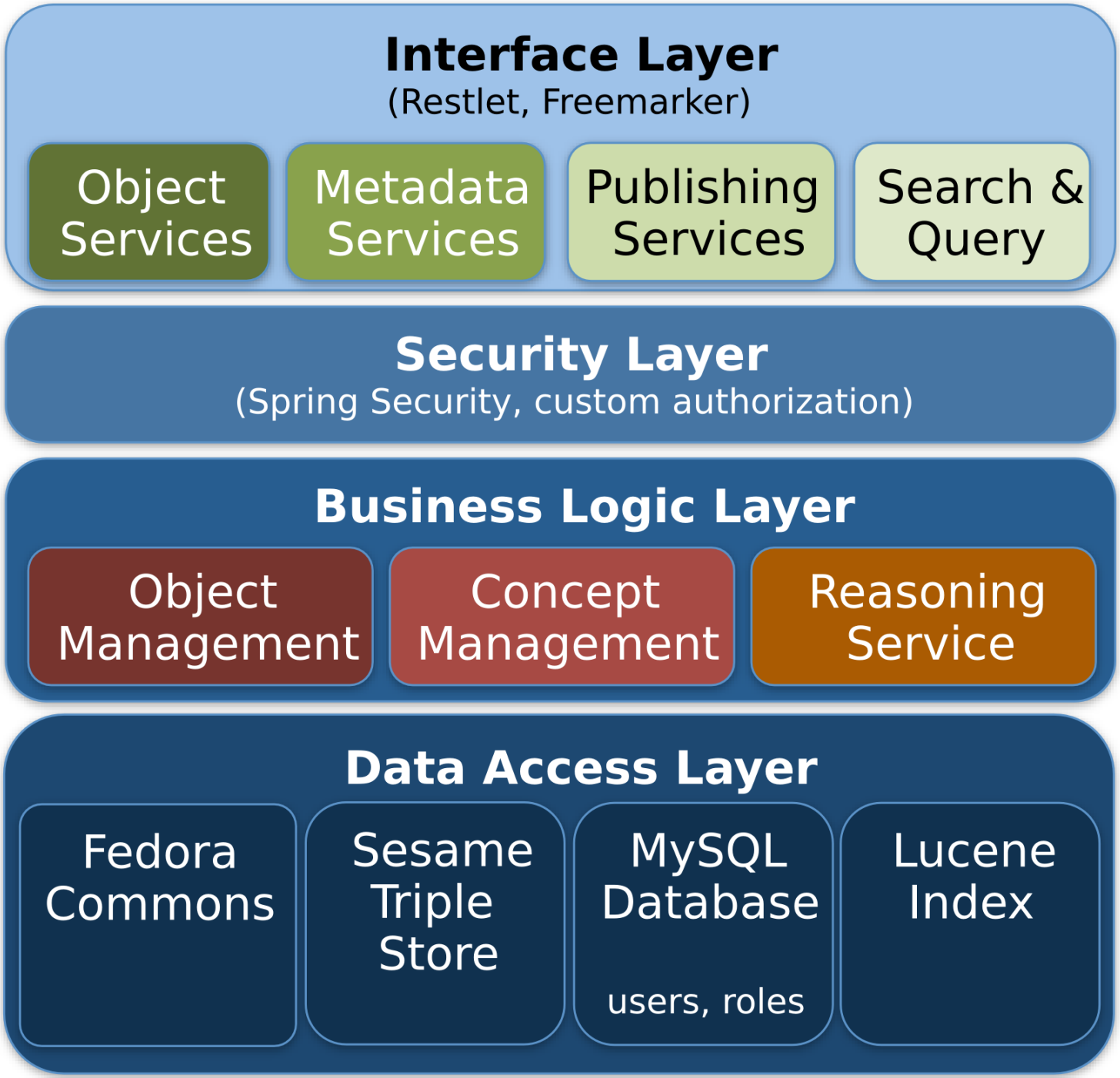
Background

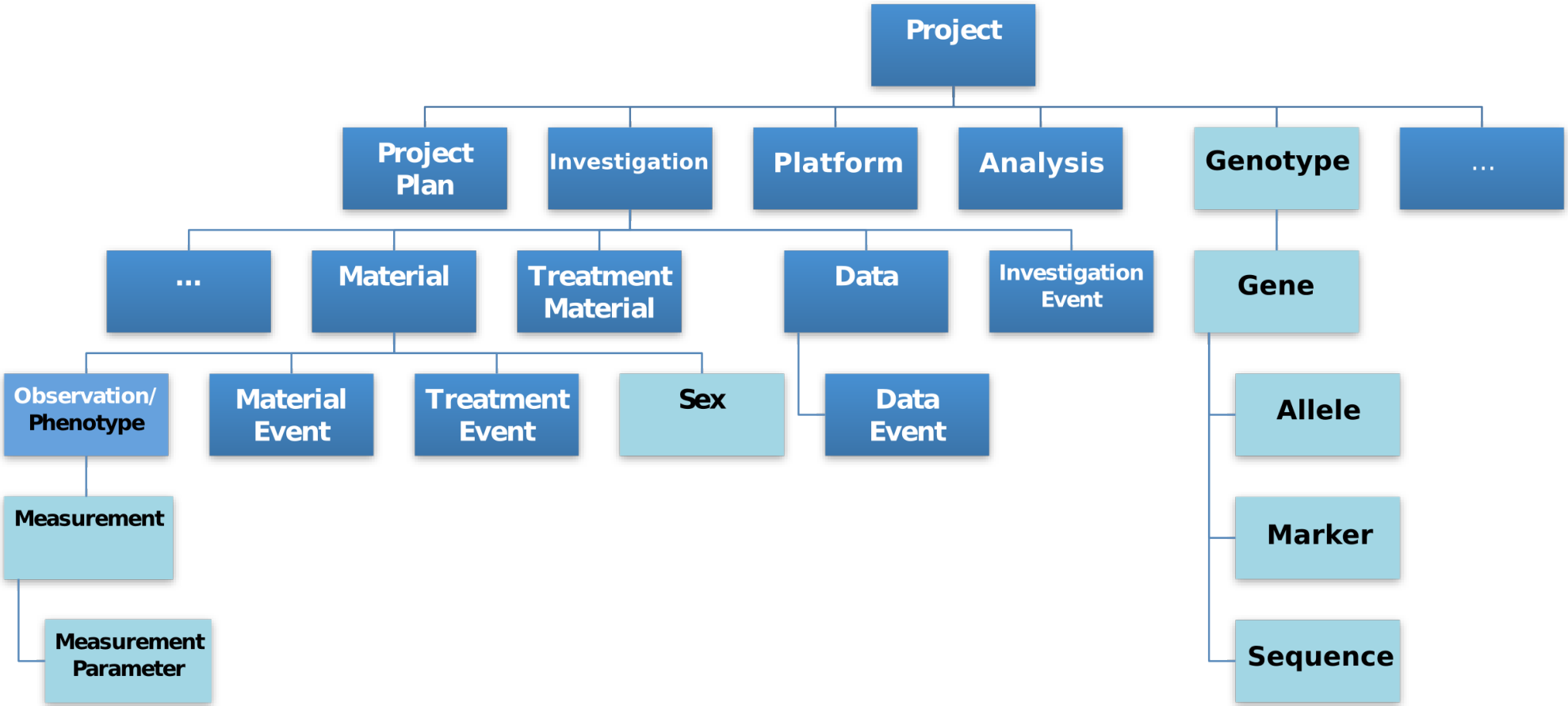
- PODD implemented between 2009 and 2011
- Design by Yuan Fang Li and Gavin Kennedy

Motivation

- Flexible scientific experiment management
- Use RDF and OWL technology to support science

Example


Interface Layer
(Restlet, Freemarker)
Object Services
Metadata Services
Publishing Services
Search & Query
Security Layer
(Spring Security, custom authorization)
Business Logic Layer
Object Management
Concept Management
Reasoning Service
Data Access Layer
Fedora Commons
Sesame Triple Store
MySQL Database
users, roles
Lucene Index


Project
Project Plan
Investigation
Platform
Analysis
Genotype
...
...
Material
Treatment Material
Data
Investigation Event
Gene
Observation/ Phenotype
Material Event
Treatment Event
Sex
Data Event
Allele
Measurement
Marker
Measurement Parameter
Sequence

Demo

Evaluation

Good:

1. Flexible : Simultaneously support different experiments
2. Adaptable : Additions and changes to schema ontologies

Bad:

1. Current implementation does not scale
2. Object oriented, pulling document into memory
3. Dependencies not supported anymore, including OWL-1.1, Fedora-3.2 and Spring-2

Next steps

Redesign of the internal implementation:

- Single database, currently 4 databases
- Only query data as needed
- Use upcoming SPARQL 1.1 Query and Update standards
- Use OWL-2
- Support links from experiments to other RDF documents

Questions

Open source code can be found online at:
`https://github.com/podd`

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