# Open PHACTS | Architecture
## Building the extensible platform

## About

Open PHACTS is a 3-year project of the Innovative Medicines Initiative (IMI), aiming to reduce the barriers to drug discovery in industry, academia and for small businesses. The Open PHACTS consortium is building a freely available platform, integrating pharmacological data from a variety of information resources, and providing tools and services to question this integrated data to support pharmacological research.
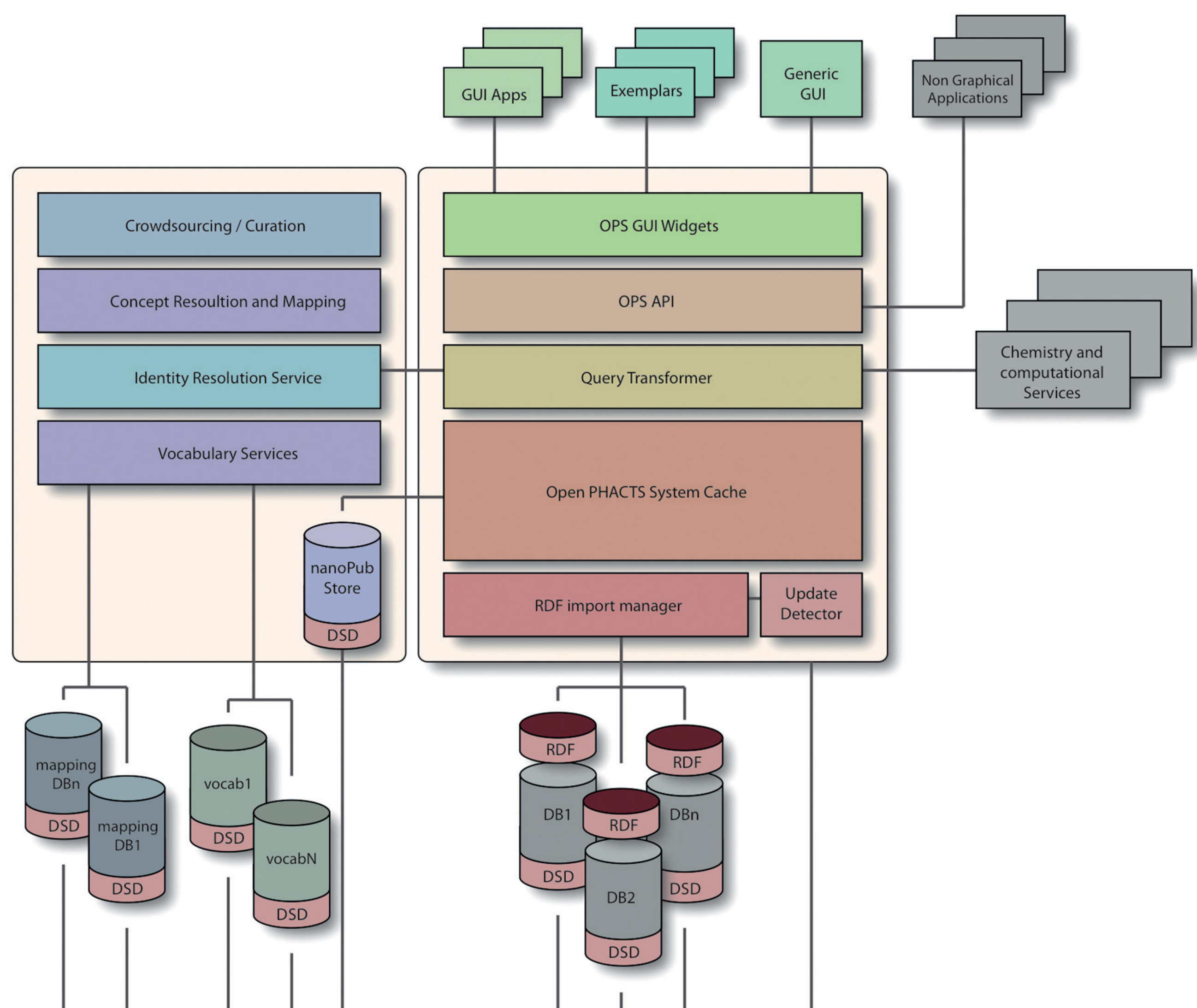
### Why do we need Open PHACTS?

Currently, pharmaceutical companies expend significant and duplicated efforts aligning and integrating internal information with public data sources. This process is difficult and inefficient and the vast majority of drug discovery sources cannot easily interoperate. Open PHACTS is creating a precompetitive infrastructure to make these approaches available both to industry and to academia and smaller companies, who have historically not had access to large-scale integrated pharmacological data resources.

The public Beta of the Open PHACTS Explorer will be released in the 4Q 2012.

## Key Points

### Large scale data integration
- Focused on pharmacology
- We integrate so you don't have to
- Dealing with multiple identifiers for the same concept
- Always up-to-date
- State of the art and industrial strength

### Focus On Data Quality
- Provenance is critical – know where every data point comes from
- Google-style indexing; Data providers keep their own data
- Chemistry Standardization – enhancing chemistry connectivity
- Working with data providers to expose and enhance their data

### Flexible and adaptable
- Dynamic schema-less approach; rapidly incorporate new datasets
- Queries are adaptive, based on scientific profiles (e.g. chemist or biologist)
- Use-case driven & tested by users in industry and academia

### Great APIs for building apps
- JSON REST-style APIs
- Also supports XML, Turtle, etc
- Chemistry services
- Exemplars show how to take advantage of the platform
- Clear licensing details for all data in the system

## High-level Architecture

Summary of the individual components that make up the overall Open PHACTS System (OPS). Each component has been developed using existing software and/or open, public standards wherever possible. Data are loaded into a cache, upon which various components for chemistry normalisation, identifier mapping and human annotation are integrated and delivered through an Application Programmable Interface



## Implementation Architecture

The Open PHACTS platform uses semantic technologies to provide a robust, adaptable framework for integration of multiple data sources into one coherent API
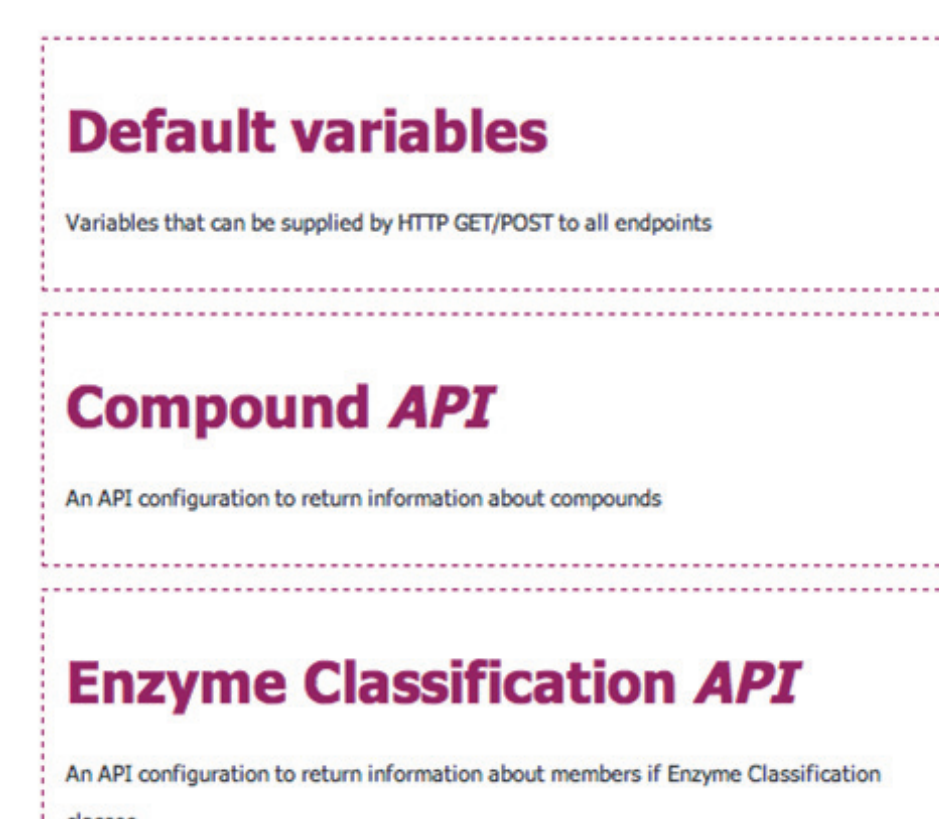


## API & Developer Support

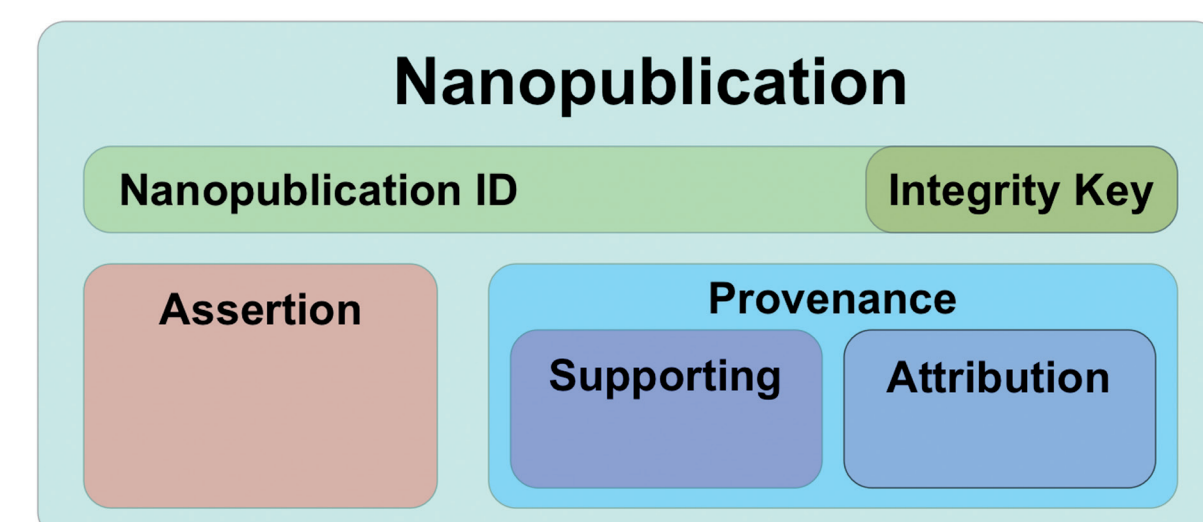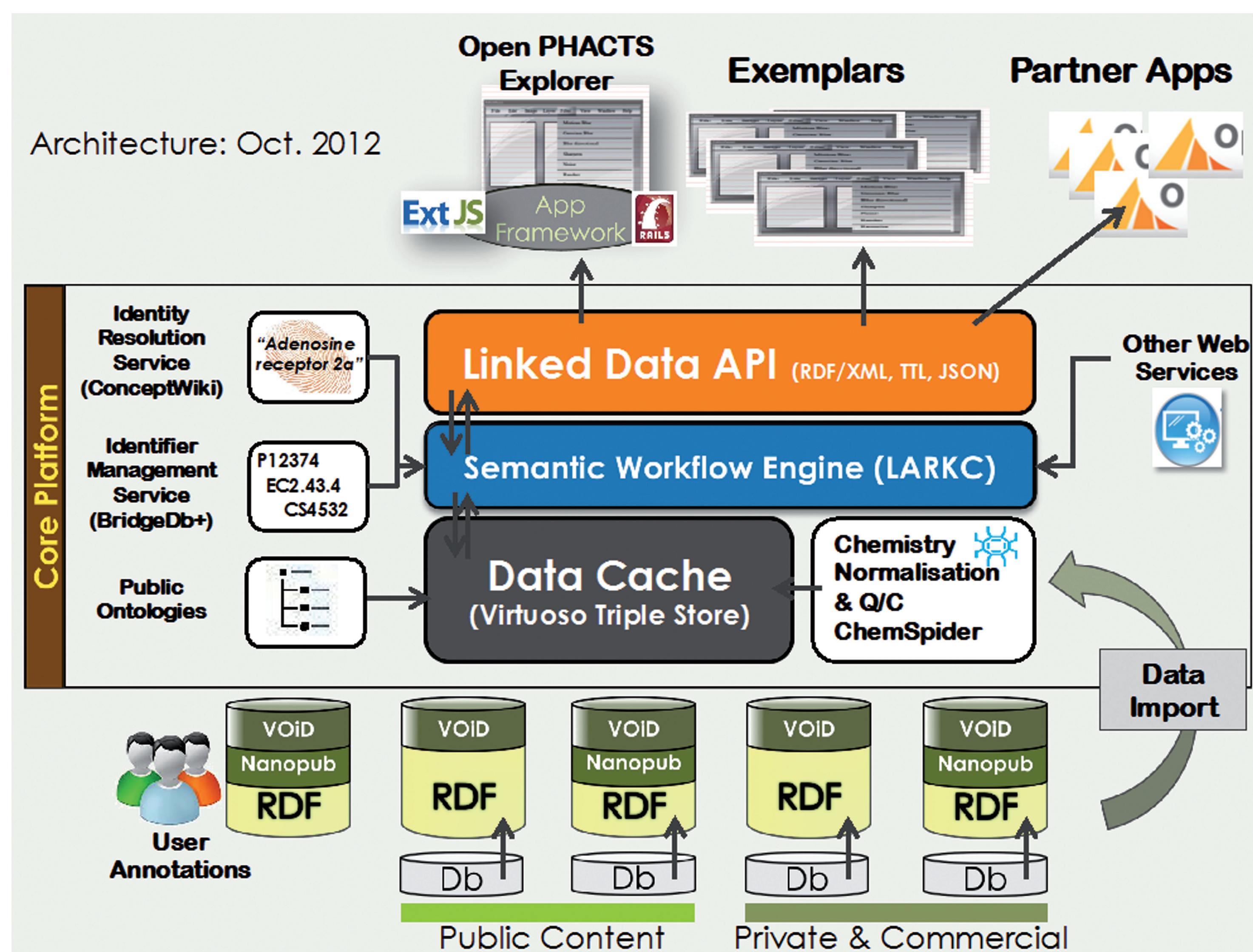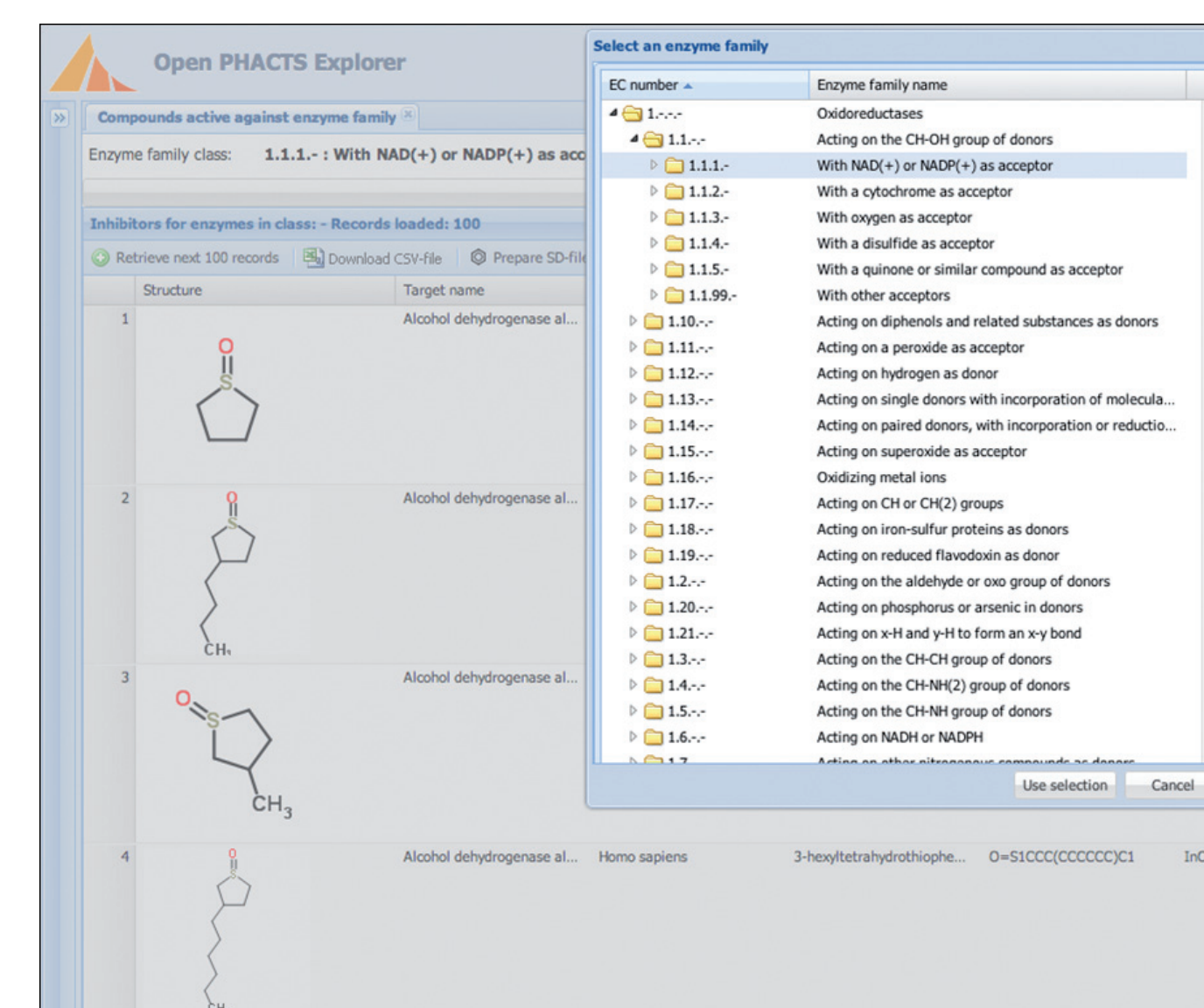APIs for General protein & compound information; Pharmacology by target or compound; Pharmacology by taxonomy, including ChEBI, GO, ENZYME and more.

### Open PHACTS linked Data Cache

Linked Data API Configuration APIs:

**Default variables**
Variables that can be supplied by HTTP GET/POST to all endpoints

**Compound API**
An API configuration to return information about compounds

**Enzyme Classification API**
An API configuration to return information about members of Enzyme Classification classes.

The Open PHACTS VoID Editor

Courtesy Of Alasdair Gray (UNIMAN). Based on ve2 editor http://lab.linkeddata.deri.ie/ve2/

### Nanopublication Specifications



Nanopublications provide support for provenance of data; credit to data providers and also allow user-annotations to be incorporated into the live system

## Open PHACTS Explorer

The Explorer demonstrates the use of the API, as well as providing a user interface to the Open PHACTS platform and answering key business questions.



The first version of the platform will include data from ChEMBL, ChEBI, Uniprot, Gene Ontology, ChemSpider, WikiPathways, ACD Labs, DrugBank, ENZYME, BridgeDB and more

## More Information

Visit the Open PHACTS website
(www.openphacts.org)

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