

***OSF (Open Semantic Framework):  
An Ontology-driven Semantic Platform for Enterprises***

**2014 Ontology Summit  
Track B "Tools, Services, Techniques"**



Michael K. Bergman

*March 13, 2014*



# Presentation Agenda

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- I. OSF Examples**
- II. OSF Purpose**
- III. OSF Premises**
- IV. OSF Architecture**
- V. Changes in OSF 3**
- VI. OSF Weaknesses**
- VII. OSF Resources**
- VIII. Open Discussion**



# OSF Examples

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- Peg
- NOW
- Healthdirect Australia:
  - ✓ Healthinsite
  - ✓ Pregnancy, Birth and Baby
- Citizen Dan sandbox



# Peg - Community Indicators

**peg**  
TRACKING PROGRESS. INSPIRING ACTION.

Home Map Indicators More Info About How to Contact Blog

## The stories behind the numbers

Explore the stories behind the statistics. This feature is unique to Peg

Select a Map

Choose a Theme

### What is Peg?

Peg measures the health of our community year over year – in ways that count. We tally studies on everything from the health of babies born in Winnipeg right through to how many of them graduate 18 years later. We track how much garbage we take to the landfill and how often we give up our cars to take public transit. We calculate how often citizens volunteer and if we're doing more or less of it. It's here at Peg that Winnipeggers can learn how their life, their neighbourhood and their city is changing – for the good and the bad. Peg is a starting place for Winnipeg

### About Peg



# NOW - Winnipeg Neighborhoods



neighbourhoods of Winnipeg  
• live • work • play

Search NOW portal 

HOME TOPICS MAPS HISTORY CENSUS ECONDEV IMAGES ABOUT



**Sports & Recreation**  
Recreation is the active expenditure of time in a manner designed for enjoyment of one's body or mind.

Find Your Neighbourhood  
ENTER YOUR ADDRESS



**Welcome to Winnipeg's 236 Neighbourhoods**  
Winnipeg is fortunate that it can historically be described as a community of communities; it is made up of many distinct and unique neighbourhoods, all woven together by a rich community spirit...[read more](#)

**Bienvenue aux 236 quartiers de Winnipeg**  
On peut dire que Winnipeg a la bonne fortune d'être, sur le plan historique, une collectivité constituée de communautés. En effet, cette ville est composée de quartiers différents et uniques tissés entre eux par un civisme remarquable... [En savoir plus](#)

Video - [Learn About NOW](#)

**Neighbourhoods**  
Select a Neighbourhood



**Topics**

- Leisure & Culture
- Life in our Community
- Sports & Recreation
- Safe Communities
- Transportation Network
- Economic Development



# HealthDirect - Health Info Portal



Search

[Health A-Z](#) | [Staying Healthy](#) | [Life Stages](#) | [Health Services](#) | [About Us](#)

[Home](#) > [Health A-Z](#) > [Conditions](#) > [Arthritis](#)

## Arthritis

### Overview

Arthritis is a very common condition that affects people of all ages and from all walks of life, including children.

There are many different types of arthritis that cause a wide range of symptoms which vary depending on the type of arthritis you have. Common arthritic symptoms include:

- joint pain, tenderness and stiffness
- inflammation in and around the joints
- restricted movement of the joints
- warmth and redness of the skin over the affected joint
- weakness and muscle wasting.

Two of the most common types of arthritis are osteoarthritis and rheumatoid arthritis.

[Osteoarthritis](#) is the most common form of arthritis. It occurs when the cartilage (connective tissue) between the bones gradually wastes away, leading to painful rubbing of bone on bone in the joints.

[Rheumatoid arthritis](#) is a more severe but less common form of arthritis than osteoarthritis. It occurs when the body's immune system attacks and destroys the affected joints, causing pain and swelling to occur.

Sources: [Arthritis Australia](#) (*Arthritis - homepage*), [NHS Choices, UK](#) (*Arthritis*)

<a href="#">▶ What is</a>	<a href="#">▶ Types</a>	<a href="#">▶ Causes</a>
<a href="#">▶ Symptoms</a>	<a href="#">▶ Treatments</a>	<a href="#">▶ Prevention</a>

### Related Video

**Personal story: rheumatoid arthritis**

[More videos](#) ▶

### Partners & Support

**Arthritis Australia**


[More partners](#) ▶





# Citizen Dan - Sandbox

Home Explorer Map Filter Stories Workbench Export MUNI More ▾



## Citizen Dan

Community Sandbox for the CDP Platform

**ABOUT THE PLATFORM**  
Learn about and how to get the **CDP** platform

[RSS](#) [Twitter](#) [LinkedIn](#)

### MUNI

The MUNI *ontology* [1] is an organized way to describe and relate the various concepts that describe local governments and communities. Here is an interactive, graphical representation of the MUNI ontology; when zooming or panning, wait a couple of seconds to get a clearer image refresh:



# OSF Purpose

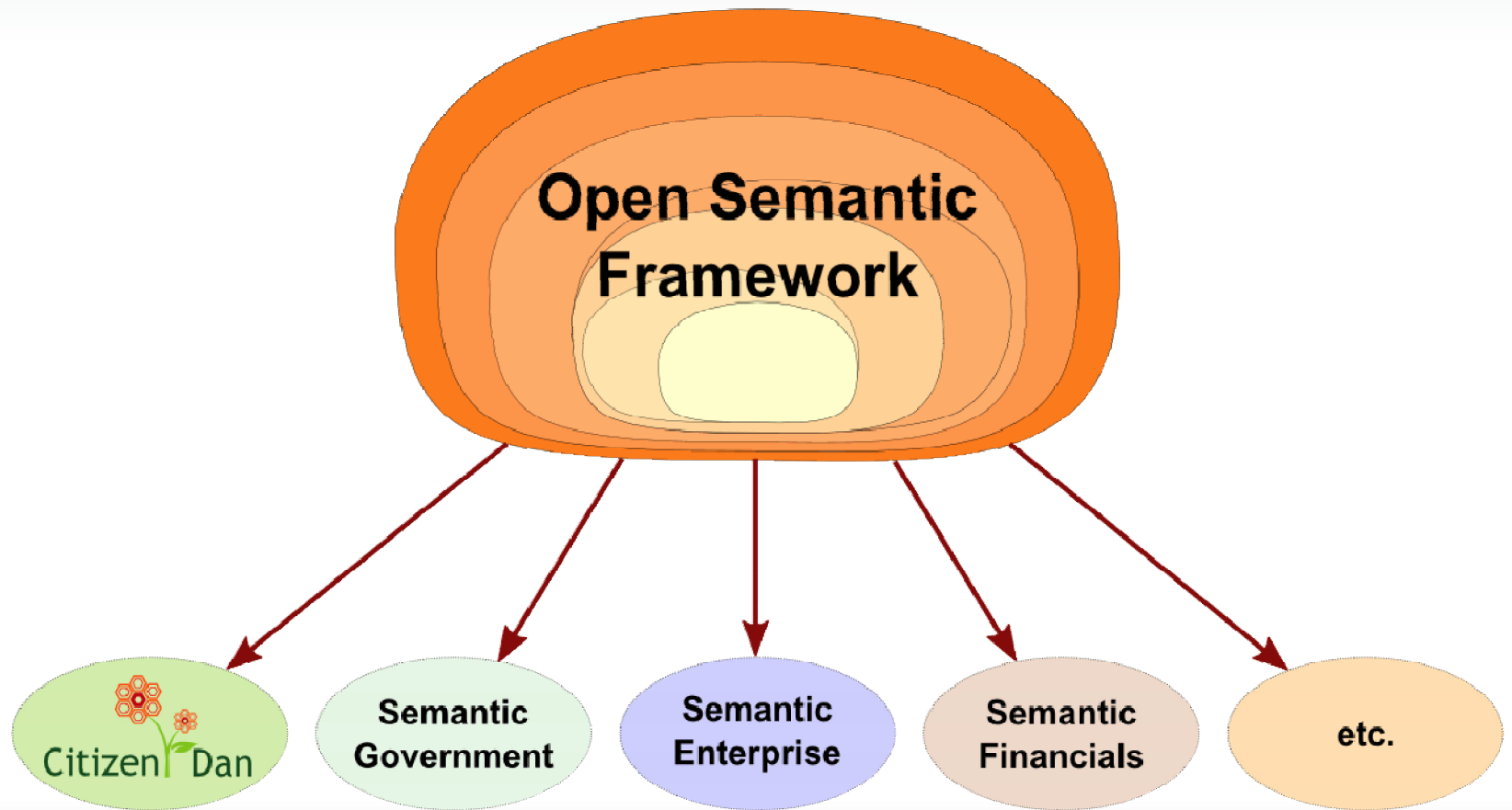
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- **Open-source, enterprise-scale platform**
- **Able to handle most common formats:**
  - ✓ Unstructured data
  - ✓ Semi-structured data
  - ✓ Structured data
- **Information integration + knowledge management**
- **Ontology-driven approach**
- **Thus, generic, with instantiations based on:**
  - ✓ Differences in data
  - ✓ Ontologies/vocabularies
  - ✓ Widgets
  - ✓ Layouts





# Domain Instances from a Generic OSF





# Role of Ontologies in OSF

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- Define Records Descriptions
- Inform Interface Displays
- Integrate Heterogeneous Data Sources
- Define Component Selections
- Define Component Behaviors
- Guide Visualization Template Selection
- Provide Reasoning and Inference
- Guide Content Filtering
- Tag Concepts in Text Documents
- Help Navigate and Organize Web Portals



# OSF Premises

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- **Single, internal, canonical data model using RDF**
- **Schema based on OWL 2**
- **General reliance on open standards (W3C, mostly)**
- **Open world assumption**
- **Distributed (WOA) architecture**



# Advantages of a Canonical Model

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- All tools can be driven from a single data format basis
- Single converters can link in other hubs of data forms
- ‘Round-tripping’ thru the canonical form can bring consistency and cleanliness to inputted data
- **RDF is well-suited as the canonical form:**
  - ✓ Structured data
  - ✓ Semi-structured data
  - ✓ Unstructured data (after IE)
  - ✓ Simple-to-complex data structures
  - ✓ Logic and inferencing
  - ✓ Suitable to all input data formats
  - ✓ Many serializations possible



# OWA v. CWA

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## Open-World

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- ✓ Extensible
- ✓ Duplicate names/labels allowed
- ✓ Graph structure, multiple entry
- ✓ Incomplete information OK
- ✓ Logical axioms provide restrictions
- ✓ Multiple schema allowed
- ✓ Monotonic logic

## Closed-world

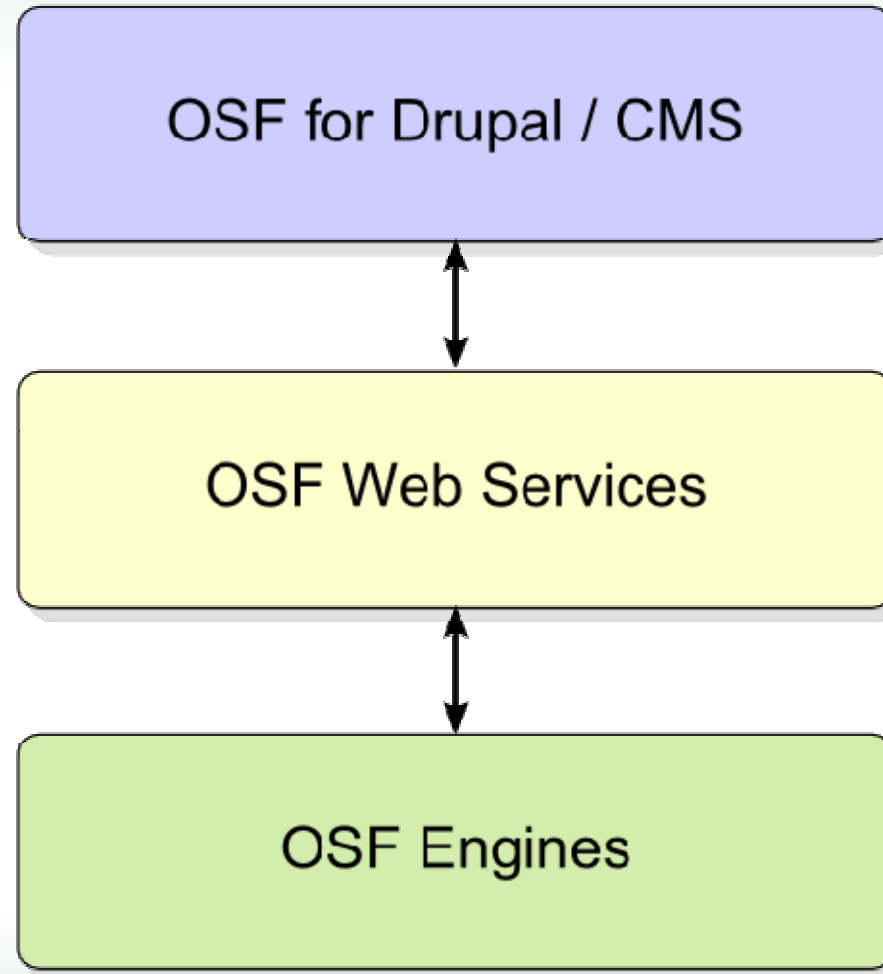
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- ✓ Fixed and brittle
- ✓ Unique names (mostly) assumed
- ✓ Flat, hierarchical structure
- ✓ Complete information assumed
- ✓ Integrity constraints used to prevent “incorrect” values
- ✓ Single schema assumed
- ✓ Non-monotonic logic



# OSF Simple Architecture

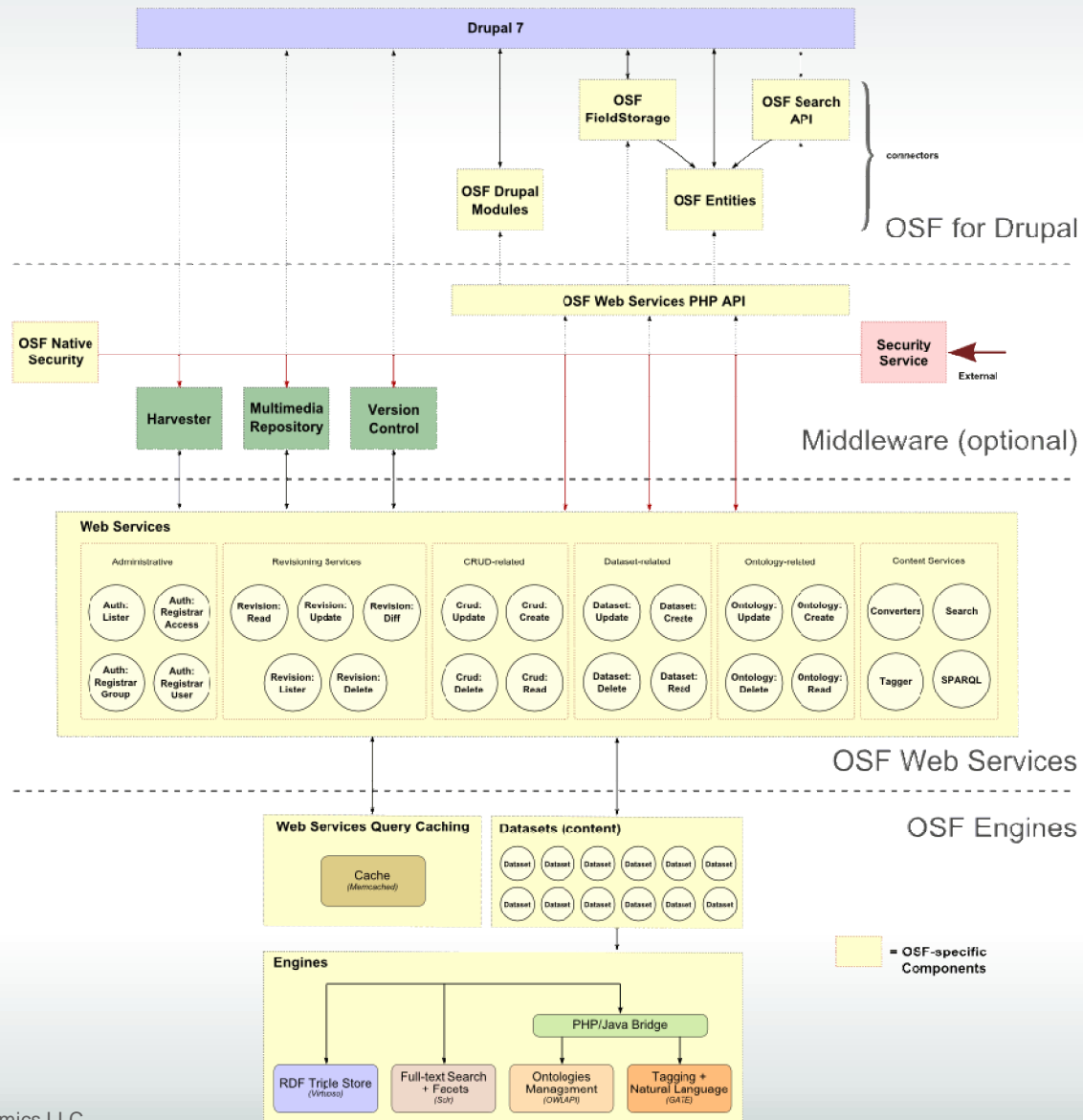
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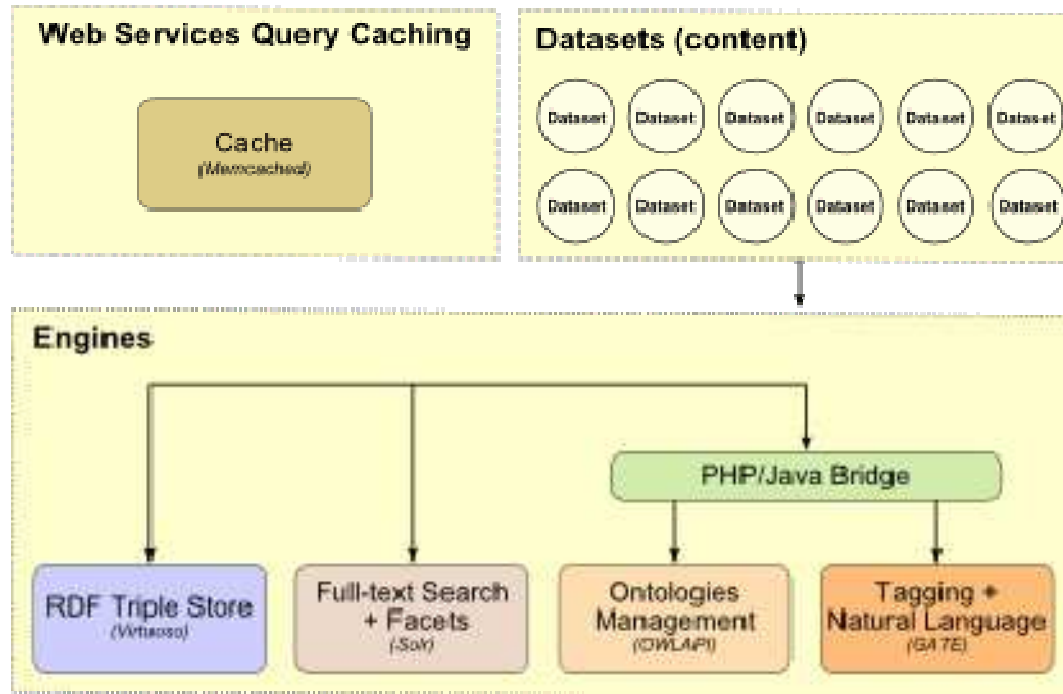


# OSF Detailed Architecture



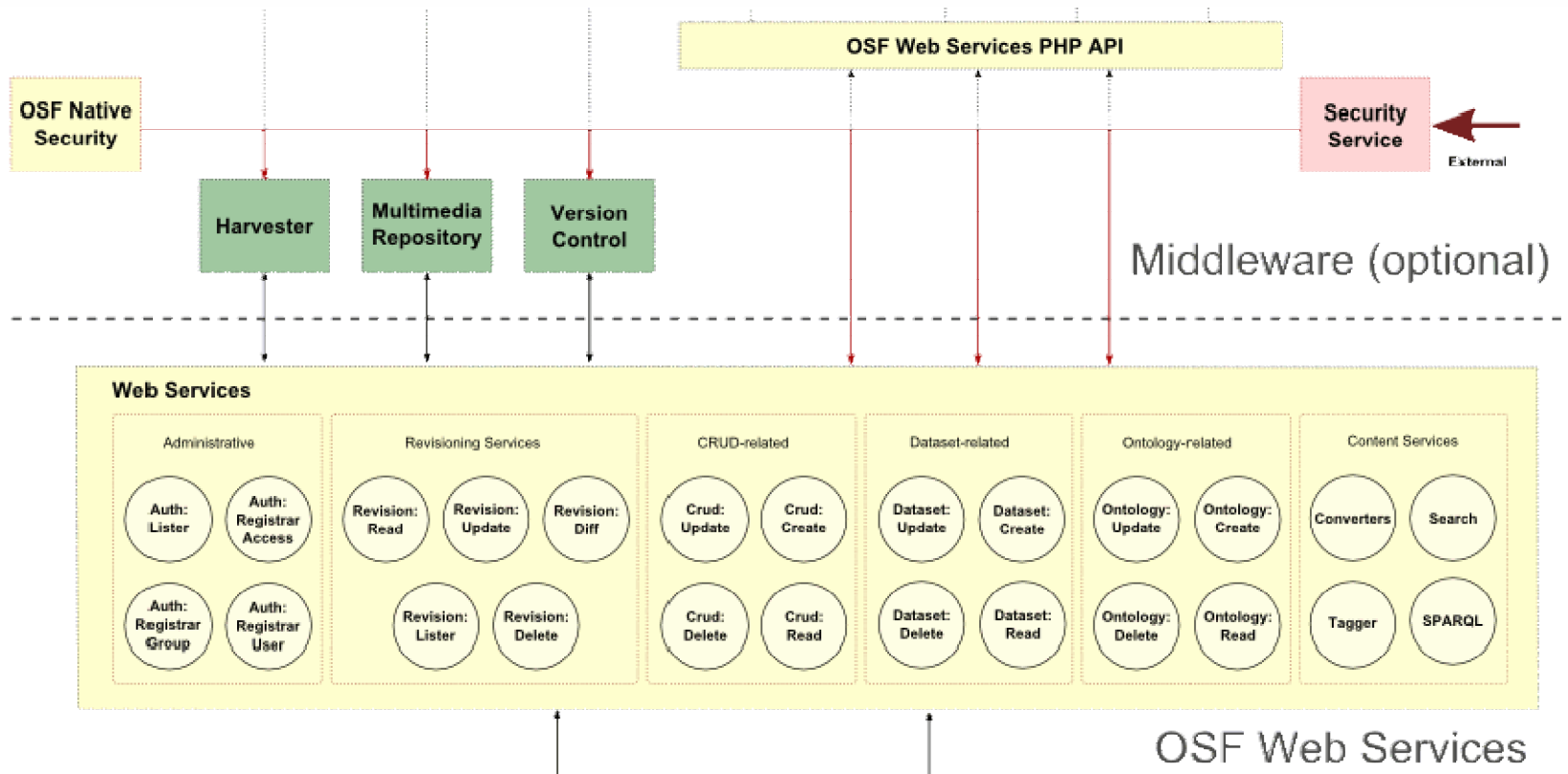


# OSF Engines



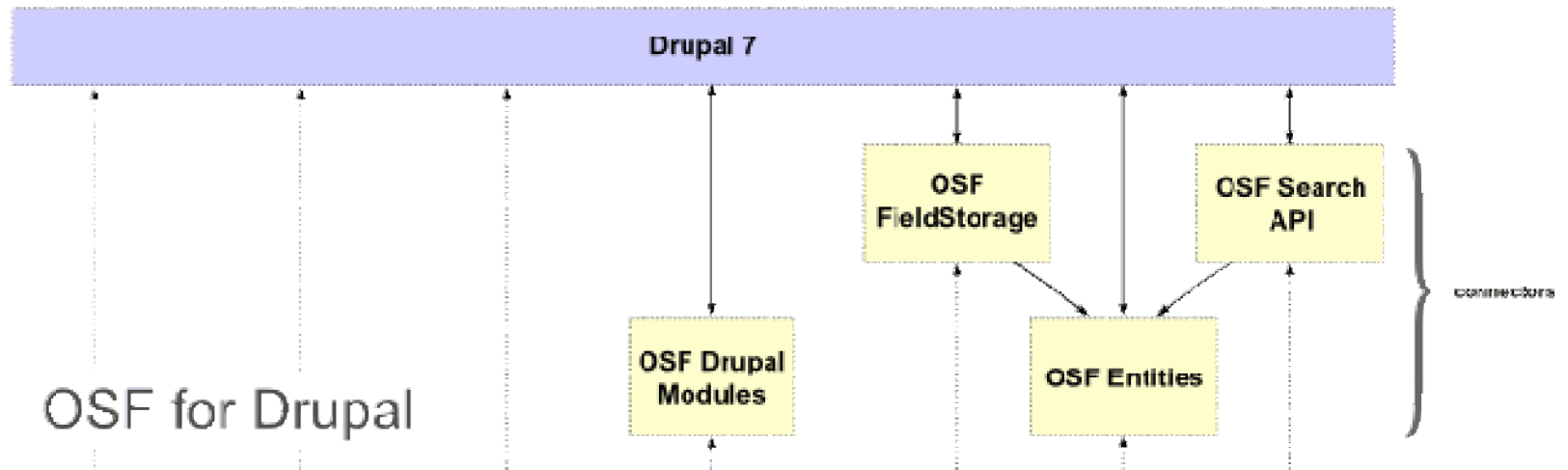


# OSF Web Services (middleware)



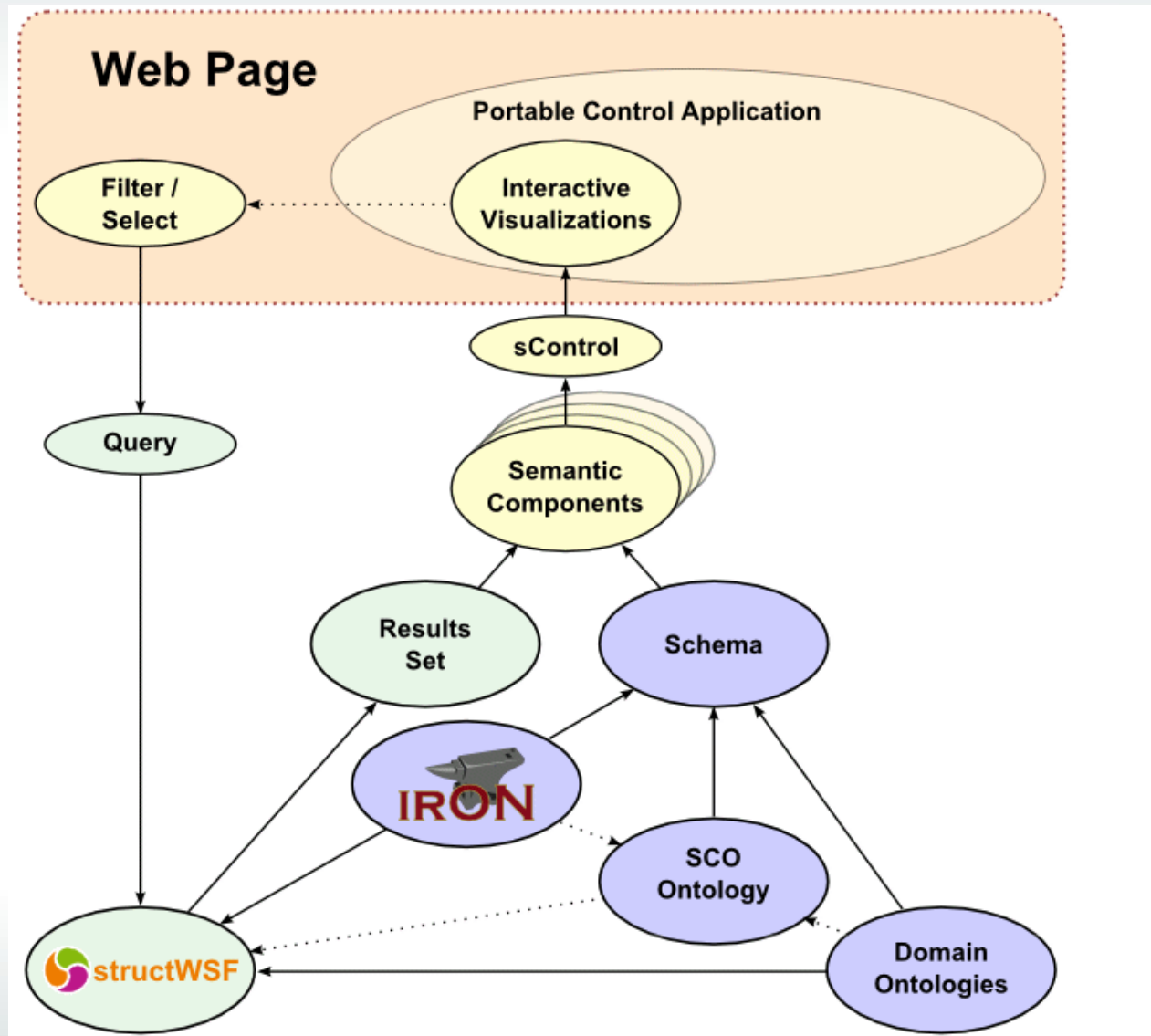


# OSF for Drupal





# Dynamic Mashups





# Changes in OSF 3

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- **Tighter coupling with Drupal**
- **Streamlined branding**
- **Test suites**
- **Command-line tools**





# OSF Weaknesses

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- **Use of Flash/Flex for visualization**
- **Incomplete functionality in some areas**
- **Immature templating/layout system**
- **No formal workflow support**
- **Small user base**



# OSF Resources

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- [Main Web site](#)
- [Citizen Dan demo](#)
- [Technical documentation wiki](#)
- [OSF features](#)
- [OSF for Drupal User Manual](#)
- **Code**
  - ✓ [OSF for Drupal](#)
  - ✓ [Github](#)



# Contacts & Information

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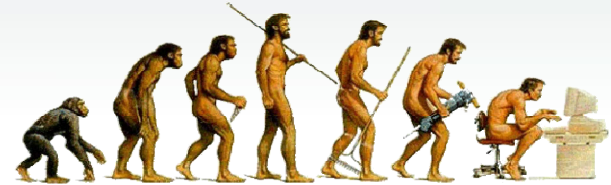
## Michael K. Bergman

CEO

319.621.5225

[mike@structuredynamics.com](mailto:mike@structuredynamics.com)

blog: [www.mkbergman.com](http://www.mkbergman.com)



## Frédéric Giasson

CTO

[fred@structuredynamics.com](mailto:fred@structuredynamics.com)

blog: [fgiasson.com/blog](http://fgiasson.com/blog)

## Web Sites

[structuredynamics.com](http://structuredynamics.com)

[civic-dynamics.com](http://civic-dynamics.com) (municipal open data)

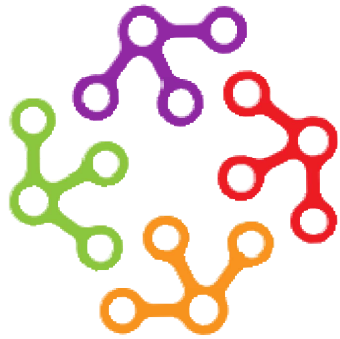
[opensemanticframework.org](http://opensemanticframework.org) (OSF)

[wiki.opensemanticframework.org](http://wiki.opensemanticframework.org) (OSF technical documentation)

[umbel.org](http://umbel.org) (UMBEL upper ontology)

# Discussion





STRUCTURED  
**DYNAMICS**