OSGeo Web Mapping Typification: GeoMajas, Mapbender, MapFish and OpenLayers

Christoph Baudson

Arnulf Christl

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Disclaimer

- All information contained in this presentation has been compiled to the best of our knowledge and presents an ad-hoc snapshot of current state of the art web mapping client frameworks and portals.

- Christoph Baudson and Arnulf Christl are deeply involved in developing the Mapbender project since many years.

- For further information and help on how to select the best option for your needs ask your consultant and service provider.

Introduction

This presentation differentiates four of the web mapping projects of OSGeo. They can be roughly split into four categories although there is a lot of overlap.

- GeoMajas is a self contained, ful fledged Web-GIS
- OpenLayers is a JavaScript client library
- Mapbender is a geoportal management software
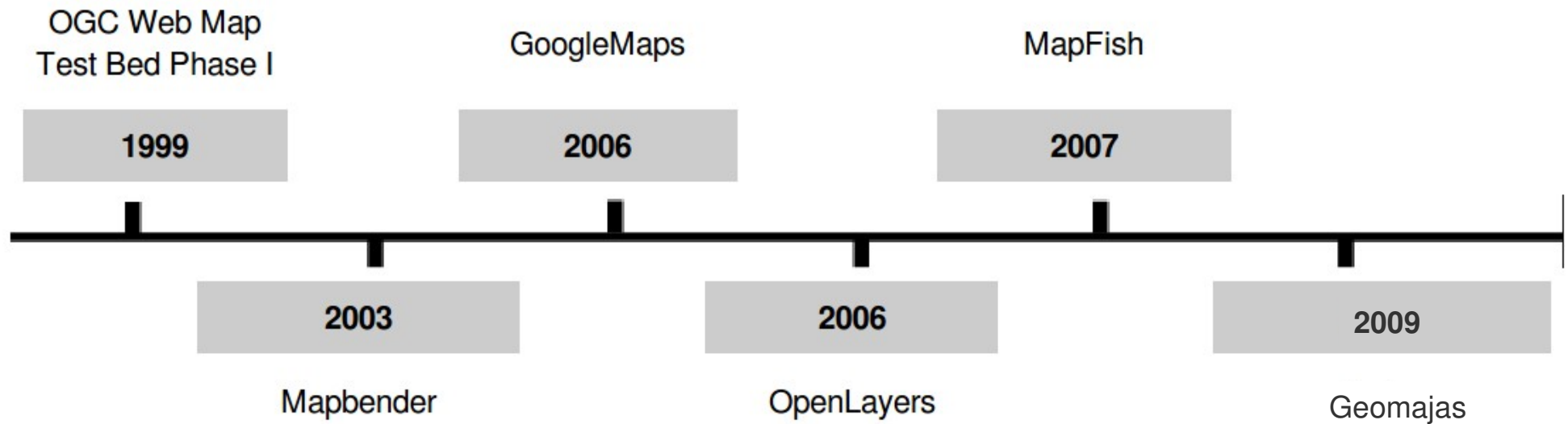- MapFish is a web mapping developer framework

All projects have server side components except for OpenLayers. Both MapFish and Mapbender integrate OpenLayers as viewer.

On Diversity

We all know the term in the context of bio-diversity. Mono-cultures (the opposite of diversity) are well known to be associated with all kinds of problems and issues. Therefore OSGeo strives for diversity in it's projects.

Diversity comes with competition, which is sometimes good and sometimes also has a negative touch. To better understand how the Open Source community works **competition** is best mixed with **cooperation** to form the new word **coopetition** – which can be a great motivation for folks.

A History of Web Mapping

OGC Web Map Test Bed Phase I — 1999

GoogleMaps — 2006

MapFish — 2007

2003 — Mapbender

2006 — OpenLayers

2009 — Geomajas

Excursion: **GRASS** and the **OGC**

- 1992: The OGF (Open GRASS Foundation) forms to:

  (1) make more geoprocessing choices available

  (2) act as sounding board for the user community to articulate its requirements to the developer community

  (3) speed up procurement by aligning the needs of the users with the product plans of the vendors

- 1994: "Open Geodata Interoperability Specification" started

- 1994: Change into a consortium (proprietary vendors' needs)

- 1999: OpenGIS WMS Interface Specification

Interesting read, The history of the OGC: http://www.opengeospatial.org/ogc/history

Mapbender

- 1999: experimental Perl client for OGC WMT 1.0

- 2001: re-implementation in PHP, operational users

- 2003: Adoption of Open Source license and development

- 2006: OSGeo foundation project, Incubation passed.

- 2007: Introducing jQuery-library to Mapbender

- 2008: Modularization, first steps using OpenLayers

- 2009: Version 2.6 with lots of new features

- 2010: Version 3.0 re-engineering with REST principles

Excursion: GoogleMaps

- 2006: The tile is back. The long overcome legacy technology of pre tiled maps is back – with lots of accompanying noise. This technological regression is celebrated as the GIS Revolution. GIS professionals start to fear Google.

- 2007: "Mashup" becomes bullshit bingo winner at Where 2.0.

- 2008: All maps have become static and street maps.

- 2009: "Vounteered Geographic Information" (VGI) misunderstood as exploiting volunteers without giving back.

- 2010: OpenStreetMap is getting better than the Big Three.

Openlayers

- 2005: First ideas for a JavaScript mapping library form at the Where 2.0 conference by O'Reilly in Silicon Valley

- 2006: Presentation of OpenLayers 1.0 at Where 2.0 conference targeted at Web developers who simply need a map in their web site.

- 2007: Introduction of the slippy map

- 2008: OpenLayers Release 2.7

- 2010: More and more web mapping software uses OpenLayers as their viewer.

Geomajas

- 2006: The origin lies in geGIS (www.gegis.org) the result of a tender for the Flemish government and company DFC

- 2008: geGIS project ends. Start from Scratch as Geomajas.

- 2009: Folks from DFC found GeoSparc to support Geomajas

- 2010: Geosparc owns Geomajas IP

- 2010: Geomajas enters OSGeo Incubation. Support and use grows beyond th scope of the original developing company.

MapFish

MapFish is a new development initiated by camptocamp.

- Prior art can be found in Cartoweb, MapBuilder, and others

- 2007: first source code available in an open repository

- 2008: the developer community grows beyond the initiator (company camptocamp)

- 2009: MapFish starts OSGeo Incubation

- 2010: Several large productive systems go online.

Excursion: on Tiling

Tiling pros and cons:

- Tiles are a perfect fit for Internet technology.

- Associated technology is very robust and scalable.

- Every coordinate system and scale level needs it's own set of tiles: This makes data management a real issue.

- Tiled maps are static.

- Most servers are purposefully not standardized in an open and consensus based process

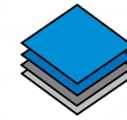# Functionality in all frameworks is very similar.

Let's take a look at...

... the source code!
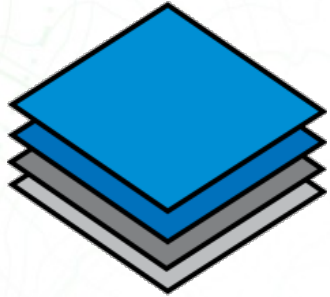
OpenLayers

Client	**JavaScript**
Server	-

mapfish

Client   JavaScript

Server   Python

Map**b**ender

Client	JavaScript	
Server	PHP	

Client Java

Server Java

Client components

OSGeo — Your Open Source Compass

mapfish

Mapbender

Ext Core

Core

jQuery

Widgets
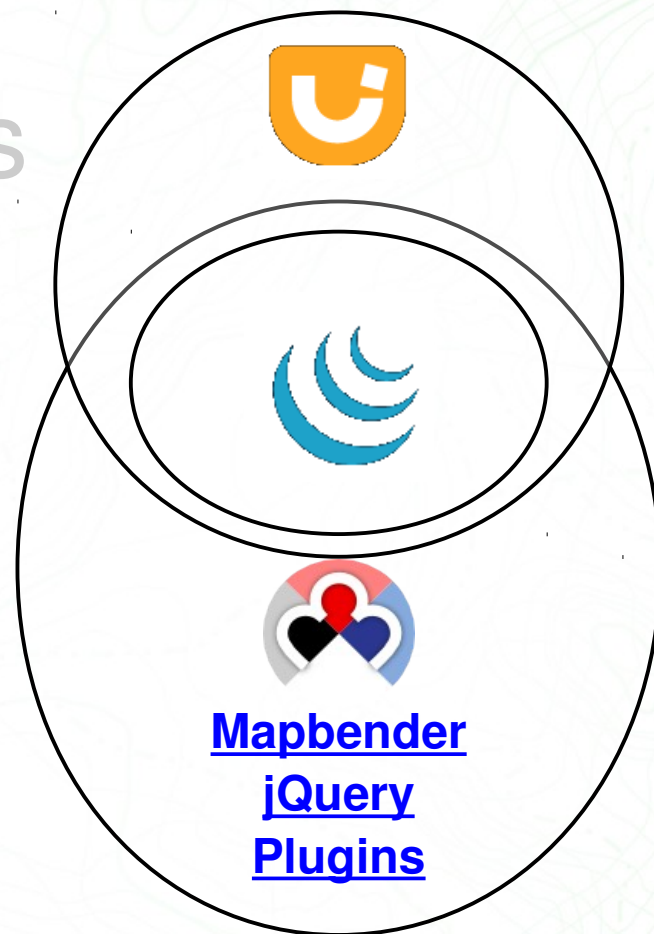
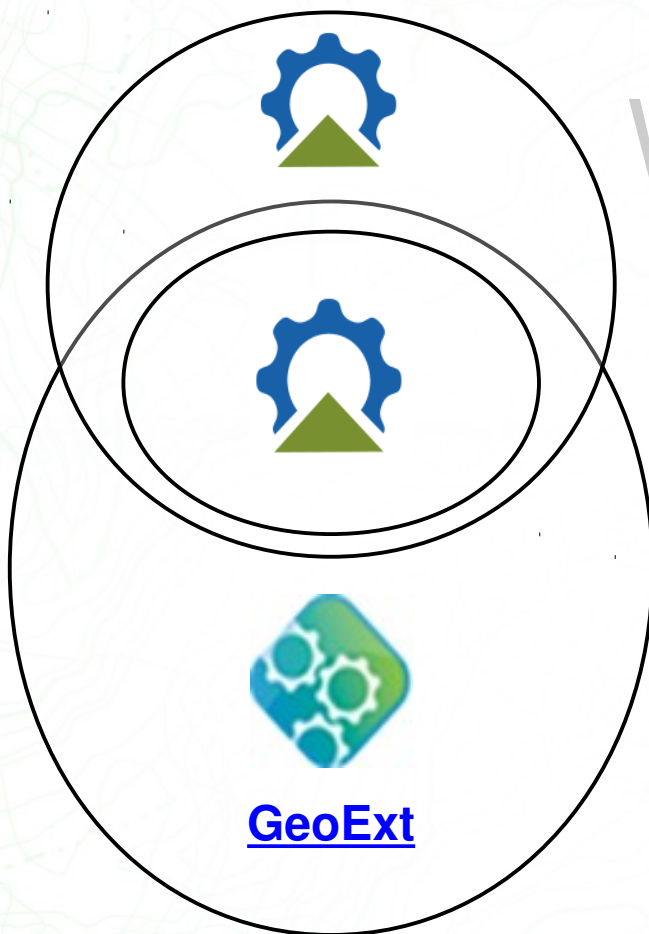Core

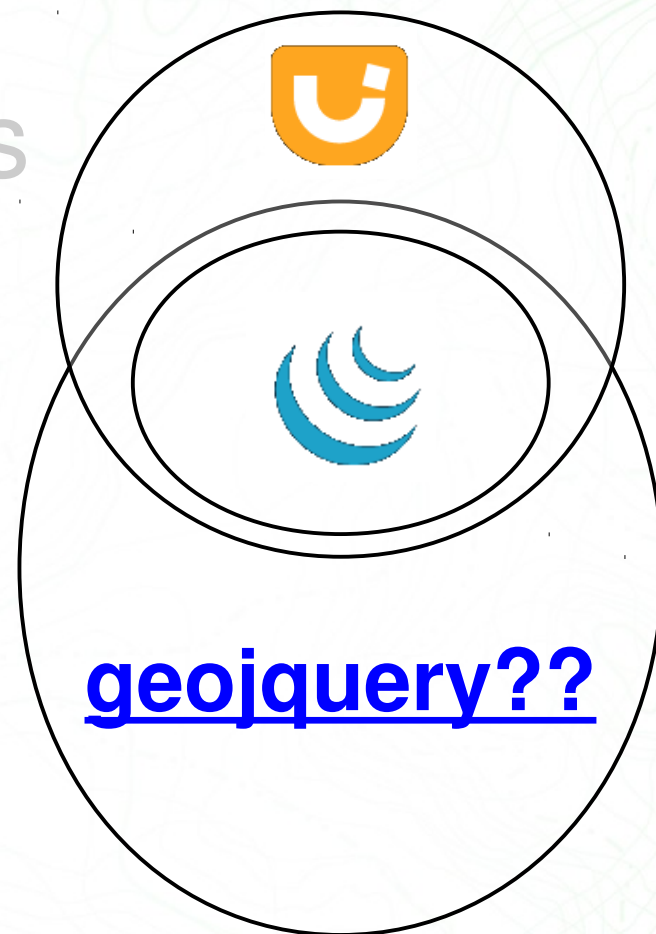ExtJS

Ext Core

jQuery UI

jQuery

Widgets

Core

Geo

GeoExt
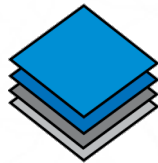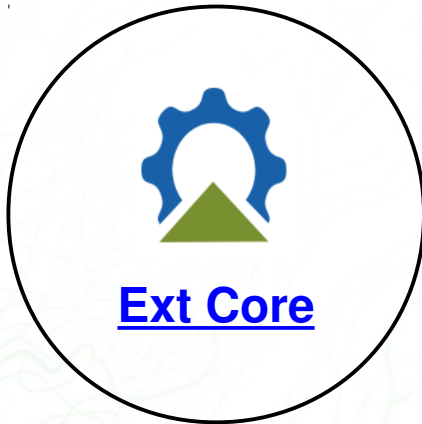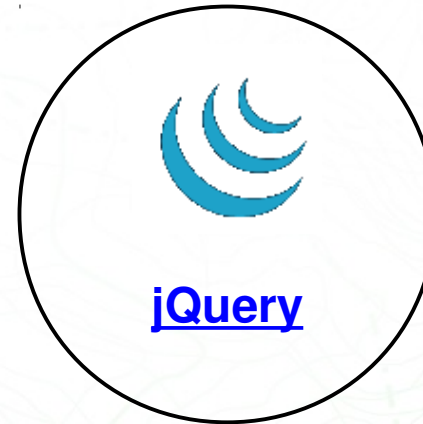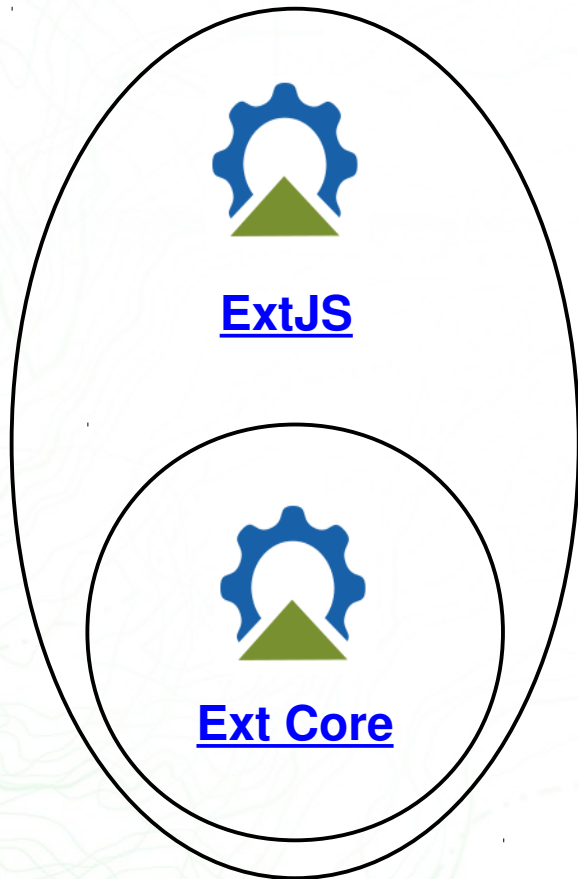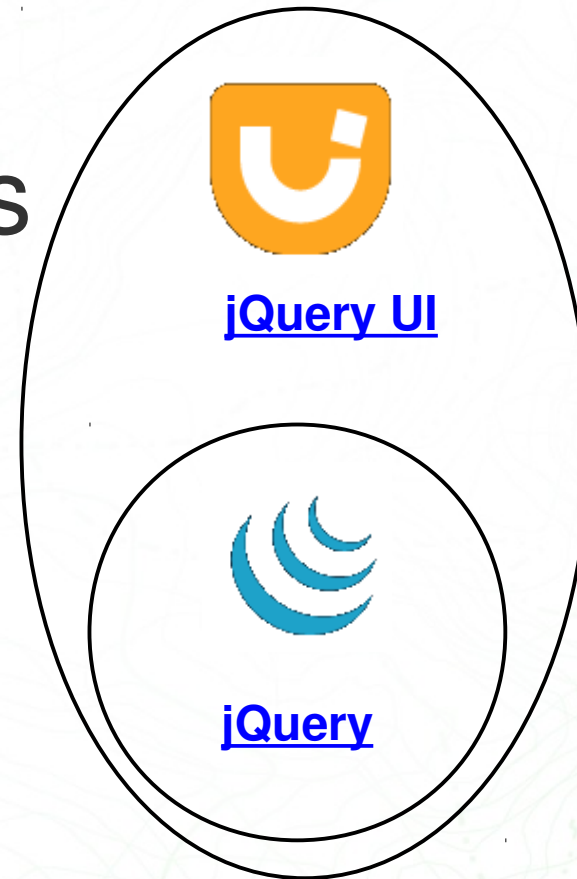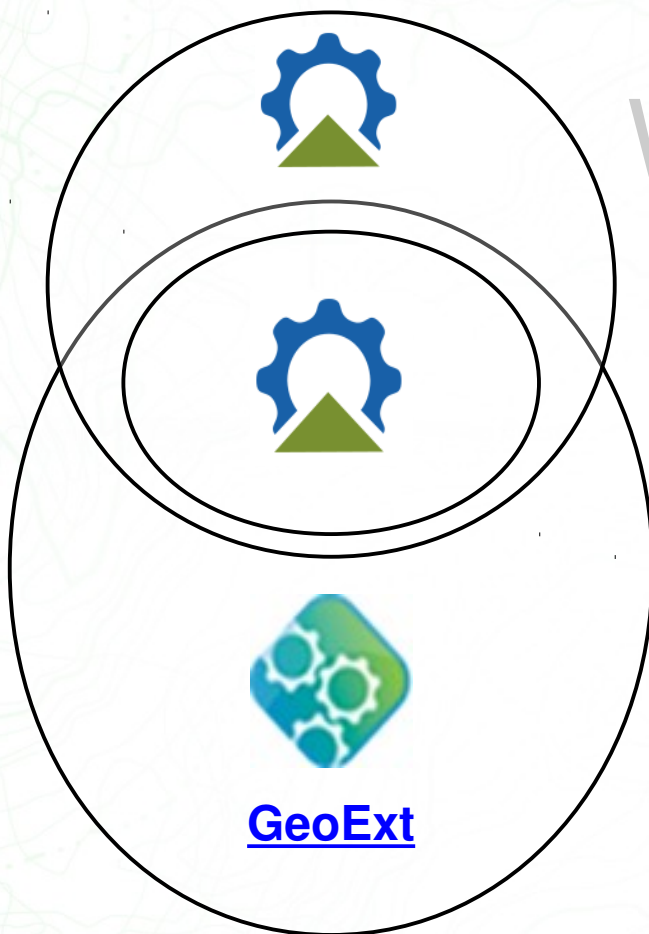
**Mapbender
jQuery
Plugins**

Widgets

Core

Geo

GeoExt

geojquery??

geojquery wants to bring the jQuery way of doing things to web mapping.

Mission: Implement a jQuery interface to OpenLayers, provide a rich set of UI widgets.

```
$(document).ready(function() {
  $('#map').geo()
    .geo('addLayer', 'OSM', 'OpenStreetMap')
    .geo('addLayer', 'KML', 'My Overlay', 'data.kml')
    .geo('setLLCenter', 2.151, 41.372, 5);
  // coming soon to a website near you!
});
```
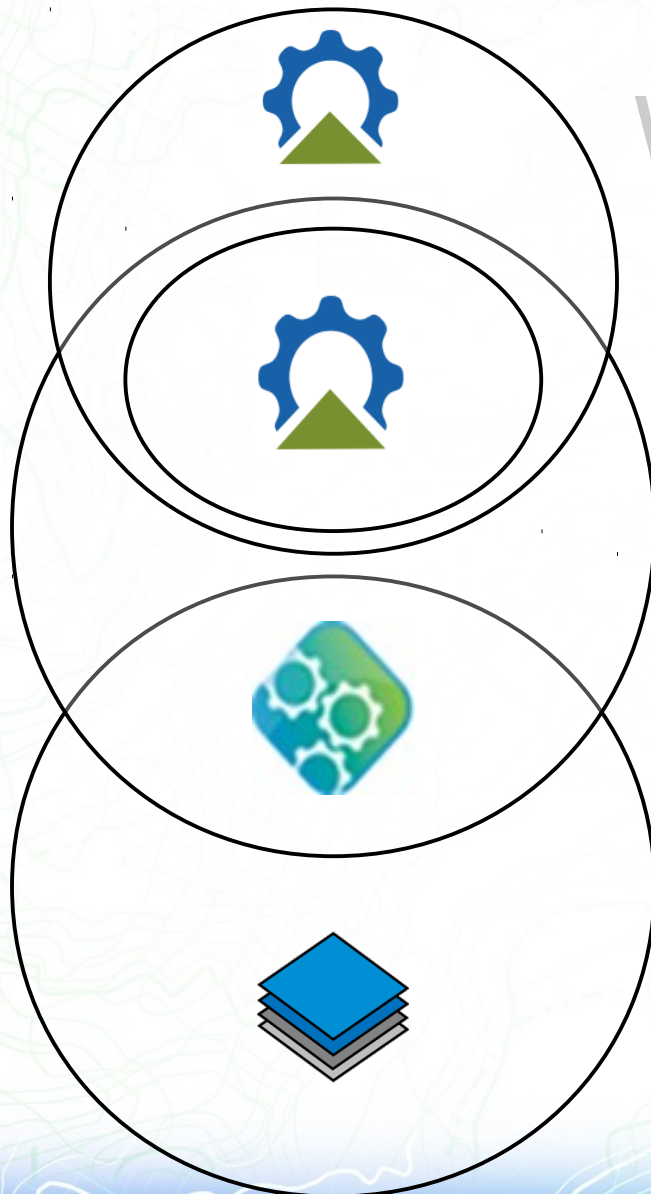
geo 🌐 jQuery

Not a GeoExt clone.

Write less, do more.

Join code sprint on Friday:

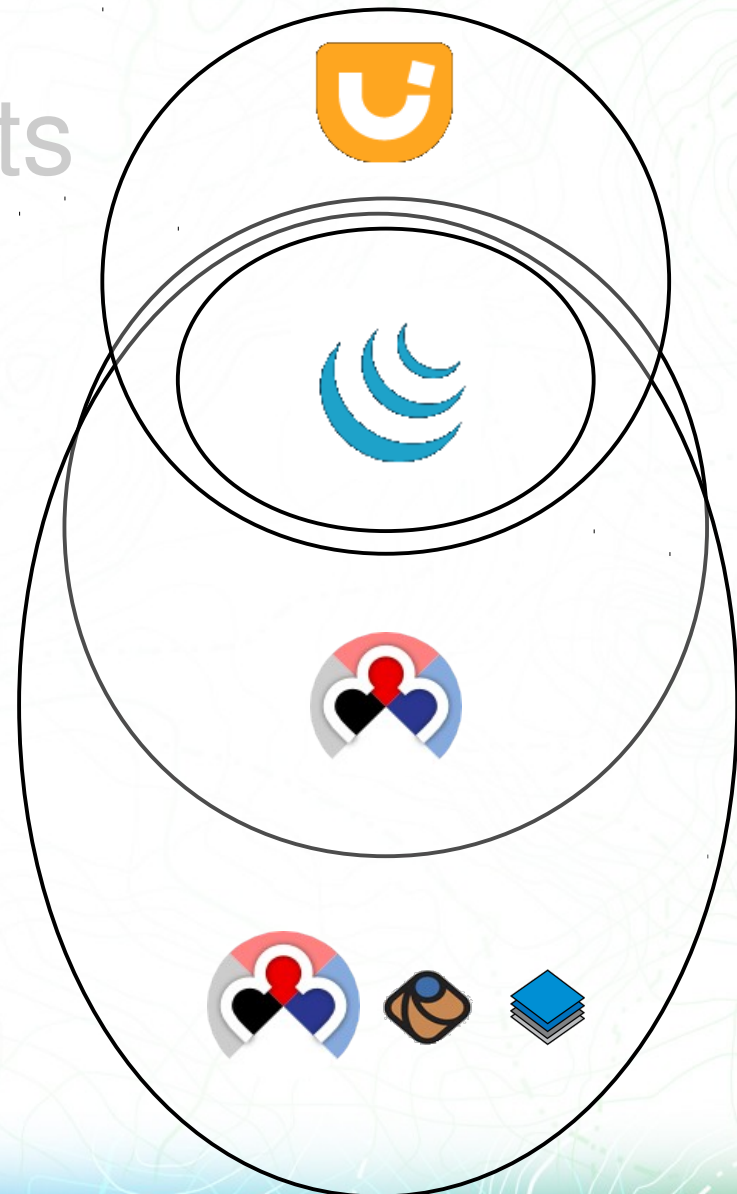http://wiki.osgeo.org/wiki/FOSS4G_2010_Code_Sprint

Widgets

Core

Geo

Map

ExtJS / jQuery – License

- ExtJS: <u>Dual</u> ("Commercial" and GPLv3)

- jQuery / jQuery UI: <u>Dual</u> (MIT and GPLv3)

ExtJS / jQuery – Copyright

- ExtJS: Copyright lies with Ext JS, LLC

- jQuery: Copyright lies with creator John Resig

- jQuery und jQuery UI: Copyright lies with the team of the jQuery Project

- Thoughts to transfer rights to the non-profit organization Software Freedom Conservancy

EctJS / jQuery – Distribution

- Google Trends
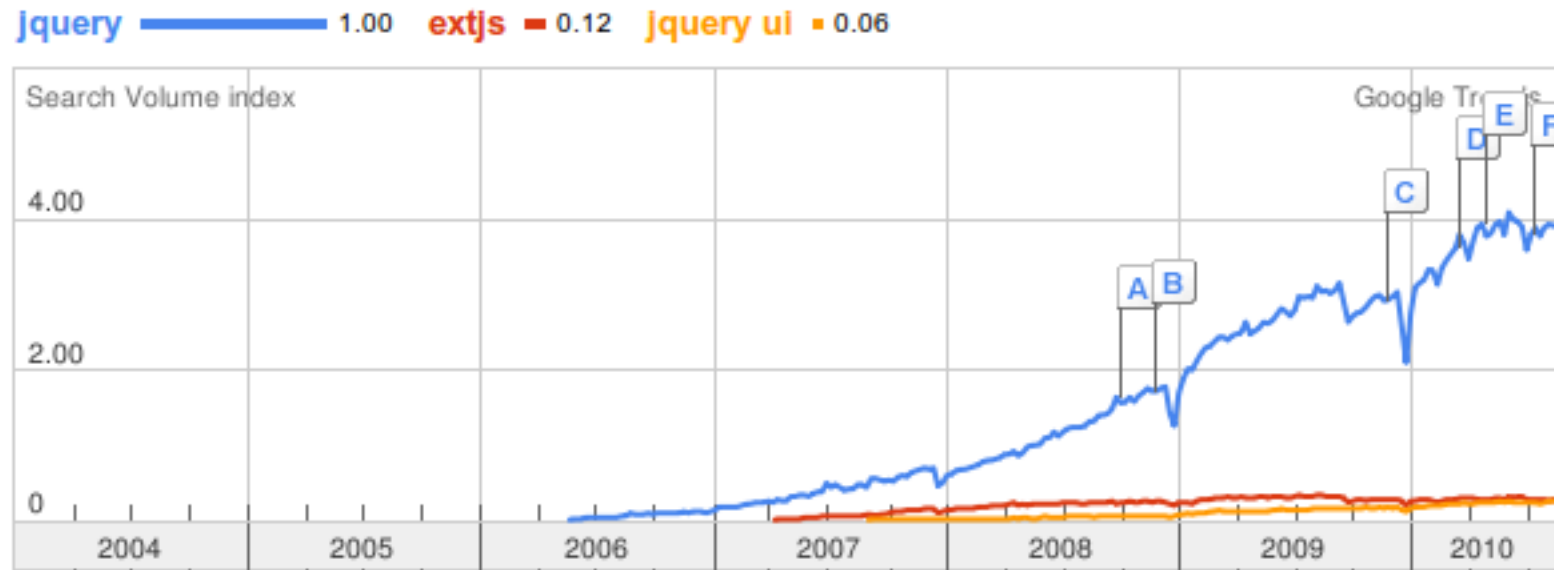
EkJS / jQuery UI – Distribution

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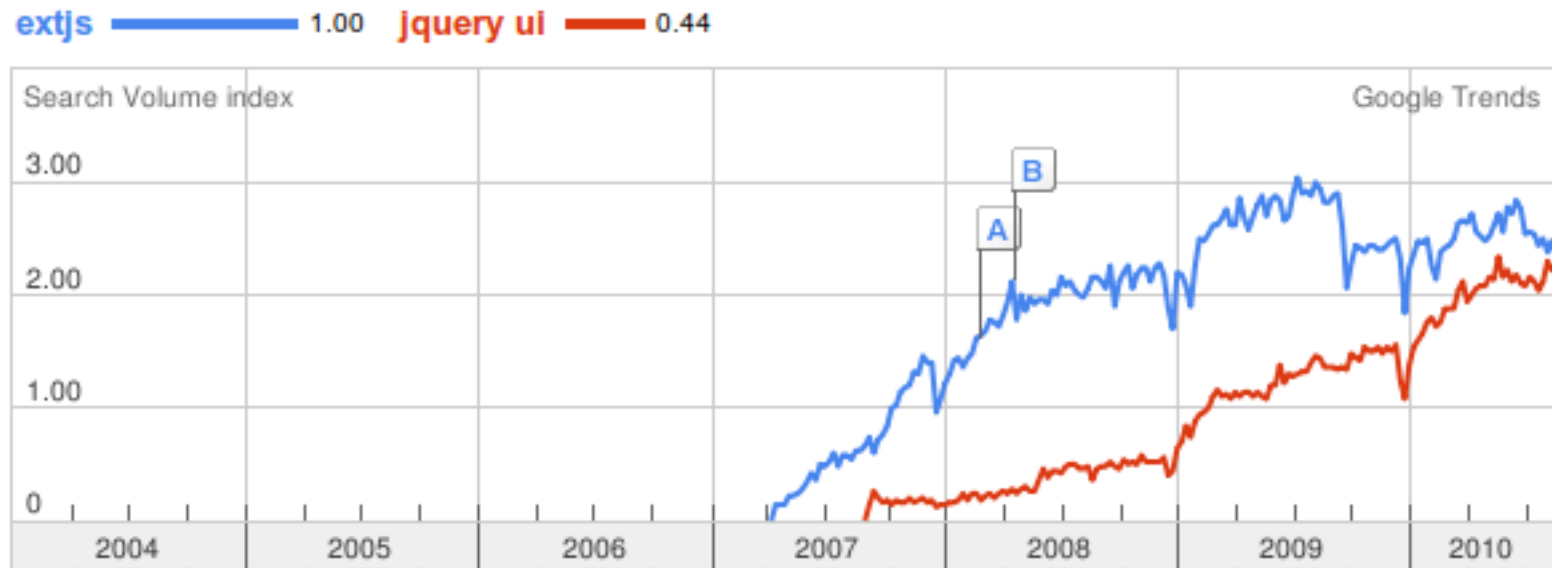
Client summary

- **OpenLayers** does not compare to the others as it is limited to JavaScript and runs in the browser.

- **OpenLayers** is an integral part of **MapFish**, which relies on **GeoExt.**

- **Mapbender** can use **OpenLayers** and it's own WMS client with comprehensive layer and metadata management .

- **GeoMajas** is self contained and comes with it's own client and server.

Component Analysis Server

- **MapFish**

- REST API (MapFish protocol)

- Implemented in Python, based on Pylons

- Implementations in other languages exist (PHP, Java and Ruby) Version 2.0 status?

- Shapely or JTS provide spatial analysis methods

- Spatial SQLAlchemy extension GeoAlchemy

Component Analysis Server

- **Mapbender**

- Implemented in PHP

- No standardized API

- Version 3.0 with REST architecture

- PostgreSQL database to store users, applications and service repository

- Best of breed integration with OGC standards

Component Analysis Server

- **GeoMajas**

- Documented API (not standardized)

- Strong focus on server side

- Implemented in Java

- GeoTools allows powerful data analysis and manipulation

- Client/Server communication highly integrated

- Maps and clients in one framework

Administration

- **MapFish**: Administration requires source code and config file editing

- **Mapbender**: Administration via Web based interfaces.

- **GeoMajas**: Administration requires source code and config file editing

Database Component

- **MapFish**: SQLAlchemy (SQLite, Postgres, MySQL, Oracle, MS-SQL, …), GeoAlchemy for spatial databases.

- **Mapbender** exclusively PostgreSQL, PostGIS for spatial functionality.

- **GeoMajas**: via Hibernate, spatial databases via GeoTools.

License

- **OpenLayers**: The Clear BSD License

- **GeoMajas**: AGPL plus other options through vendor

- **Mapbender**: Dual: GPLv2 and Simplified BSD

- **MapFish**: GPLv3, except some libraries and modules

Copyright

- **Mapbender**: OSGeo

- **MapFish**: Camptocamp, SourcePole, others

- **OpenLayers**: OpenLayers contributors

- **GeoMajas**: Geosparc, Belgium

Which Software for which Task?

- **OpenLayers** currently is the best option for web developers who simply need a map.

- GeoMajas, MapFish and Mapbender with their server side components are too heavy for this job.

- OpenLayers is also used by developers of complex web mapping frameworks and geoportal software, for example MapFish and Mapbender.

Which Software for which Task?

- **MapFish** is a framework for Web GIS application developers.

- Well structured source code

- Modular architecture using OpenLayers and GeoExt

- Standardized API

- Supports several programming languages

Which Software for which Task?

- **Mapbender** is a software to create and operate SDI geoportals.

- Administration is optimized for standard services like OGC WMS, WFS and INSPIRE.

- User specific access control.

- Web interfaces to create applications.

- No need to write a single line of Code.

Which Software for which Task?

- **GeoMajas** is a self contained out-of-the-box Web GIS solution

- Includes client and server.

- User specific access control.

- Web interfaces to create applications.

- integrates powerful server side algorithms into the web browser.

Come to the OSGeo booth and talk to users and developers

FOSS4G Barcelona 2010 September 6th to 9th

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