

GIS goes 3D : an OpenSource stack

Oslandia Team

FOSS4G 2014 - Portland

E-PLU Project



Direccte
ÎLE-DE-FRANCE

Direction régionale des entreprises,
de la concurrence, de la consommation,
du travail et de l'emploi

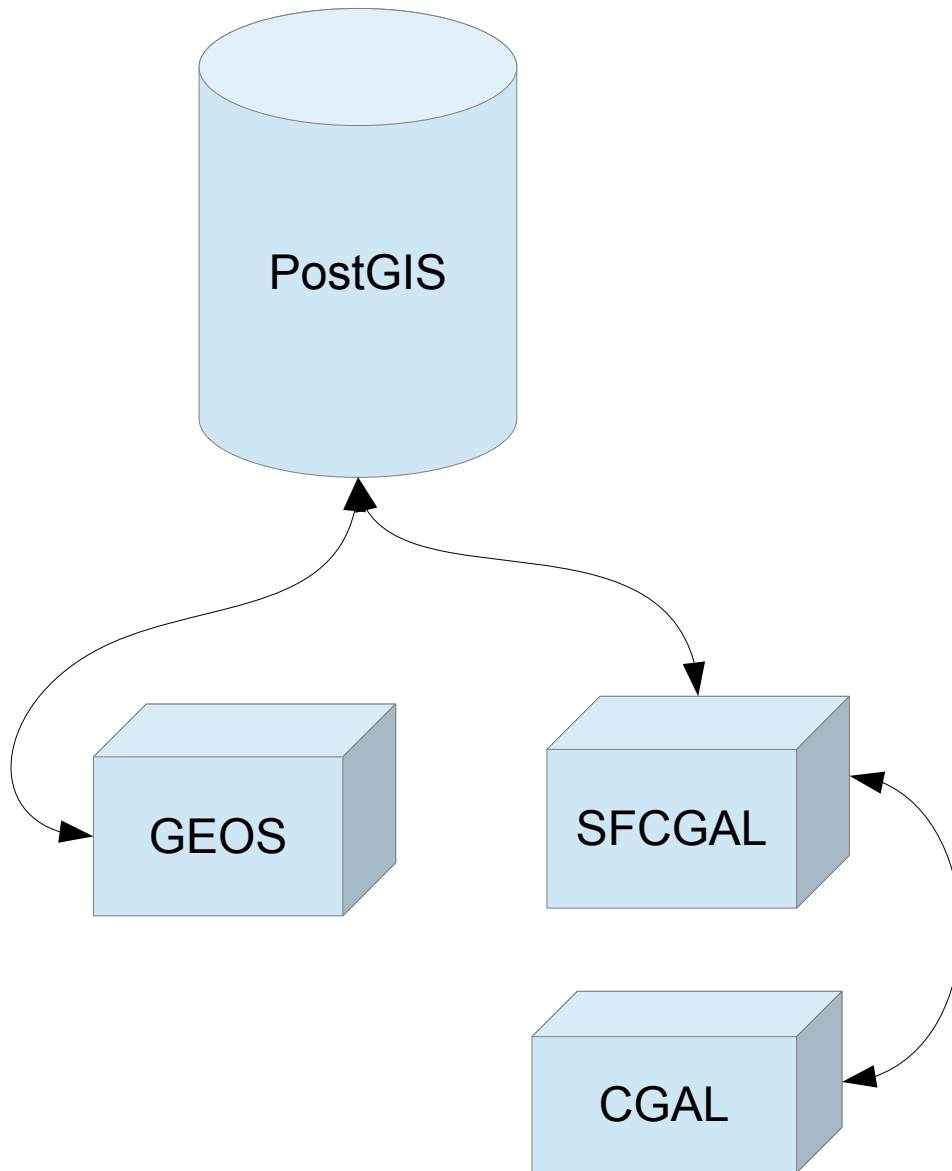




2010

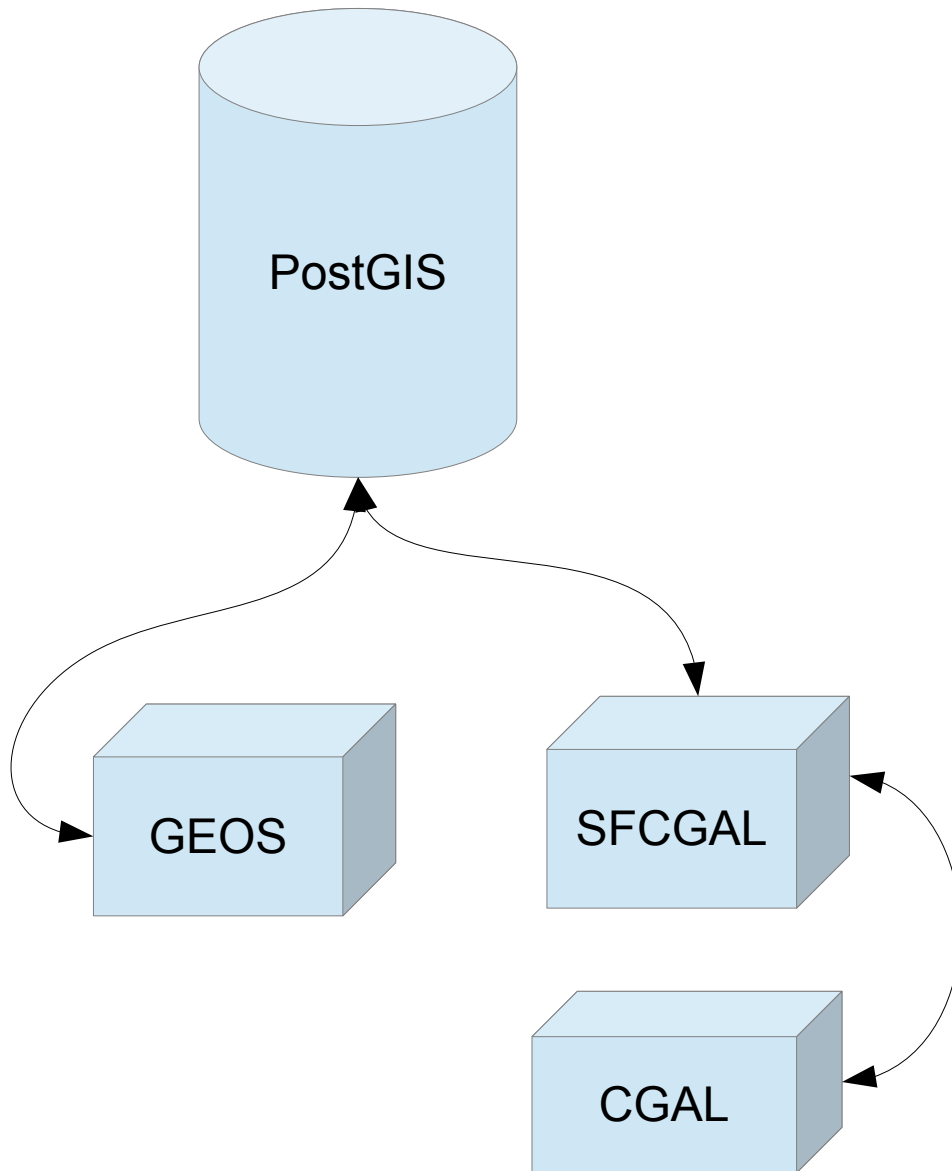
2014

2015





CGAL



ST_3DIntersection

ST_Tessellate

ST_3DArea

ST_Extrude

ST_ForceLHR

ST_Orientation

ST_MinkowskiSum

ST_StraightSkeleton



SFCGAL functions

ST_3DIntersection

ST_Tessellate

ST_3DArea

ST_Extrude

ST_ForceLHR

ST_Orientation

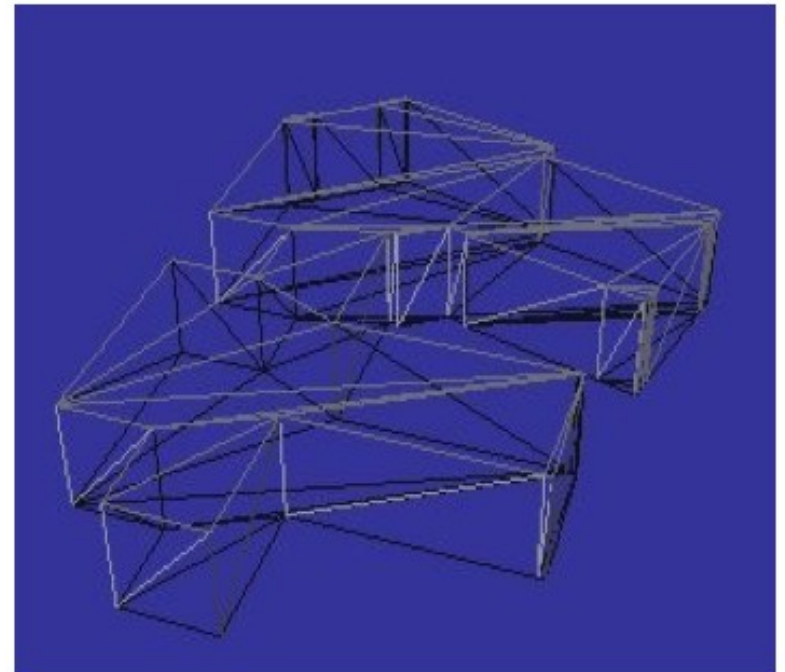
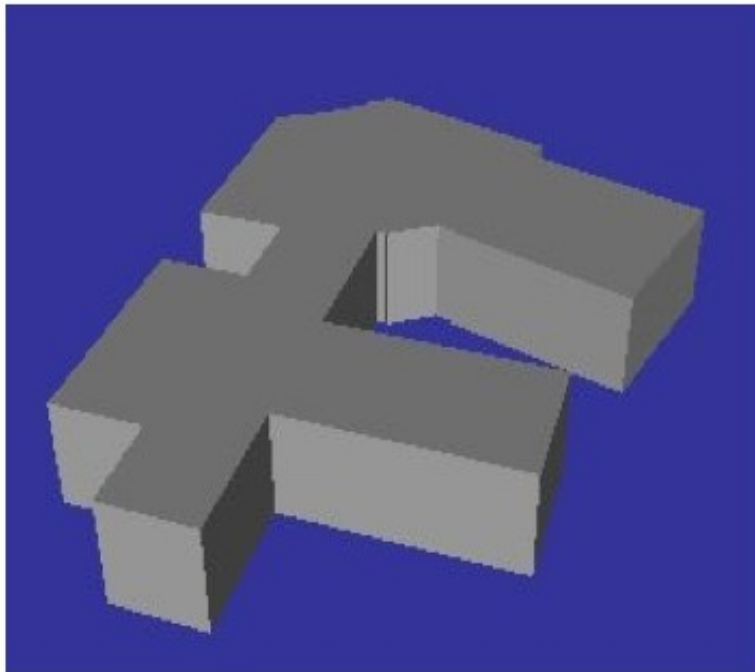
ST_MinkowskiSum

ST_StraightSkeleton

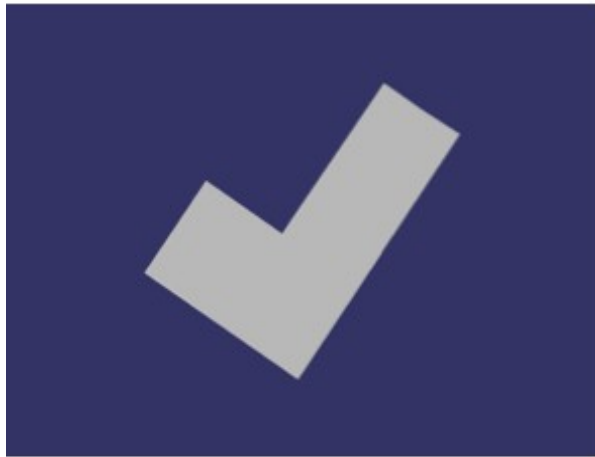


SFCGAL functions

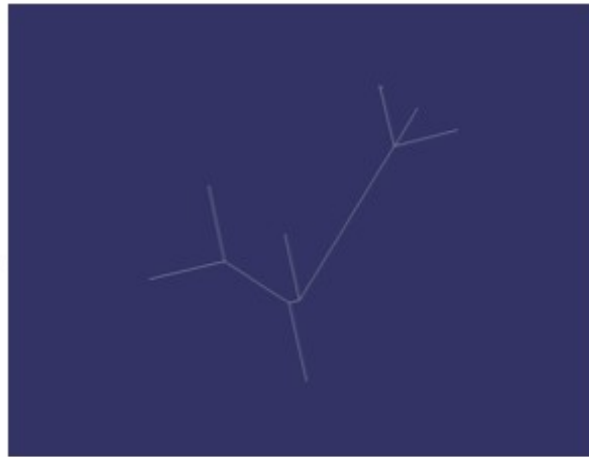
ST_Tessellate



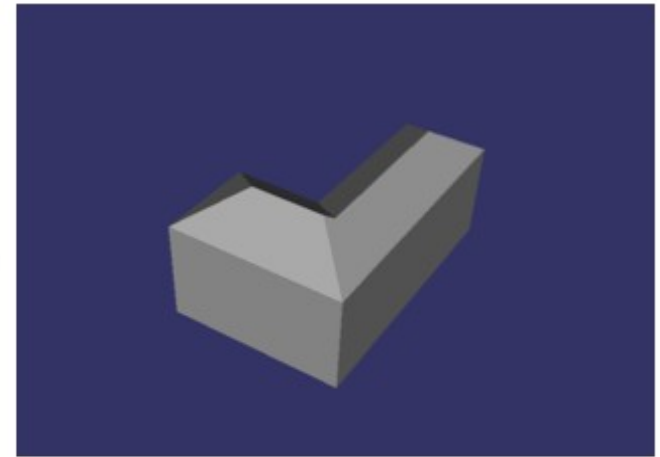
ST_StraightSkeleton



2D Building
Footprint



Straight Skeleton



Extrusion
& roof computation

ST_Intersects

ST_3DIntersects

ST_Intersection

ST_Area

ST_Distance

ST_3DDistance



Both GEOS & SFCGAL

```
SET postgis.backend = 'geos' ;
```

```
SET postgis.backend = 'sfcgal' ;
```

Regress tests PostGIS for GEOS

OK

GardenTest PostGIS

OK

3D Invalid geometry proof

OK

Wide user community

not yet

SFCGAL performances similar to GEOS ones for 2D
(but with SFCGAL we gain arbitrary precision)

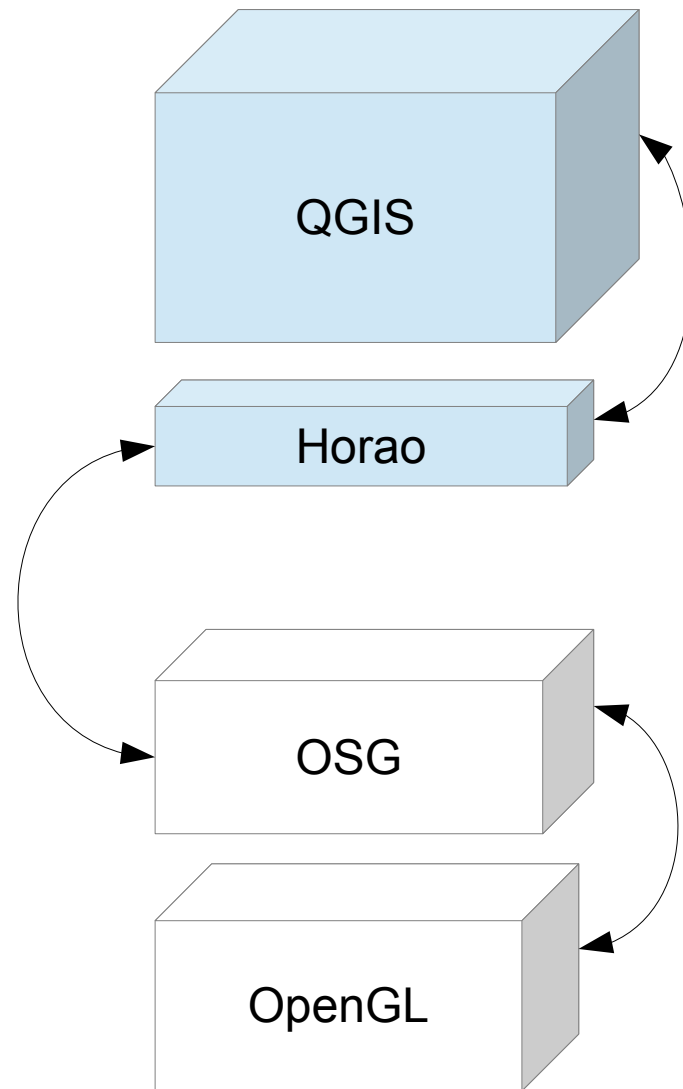
SFCGAL performances similar to GEOS ones for 2D
(but with SFCGAL we gain arbitrary precision)

But some 3D computation could take time.

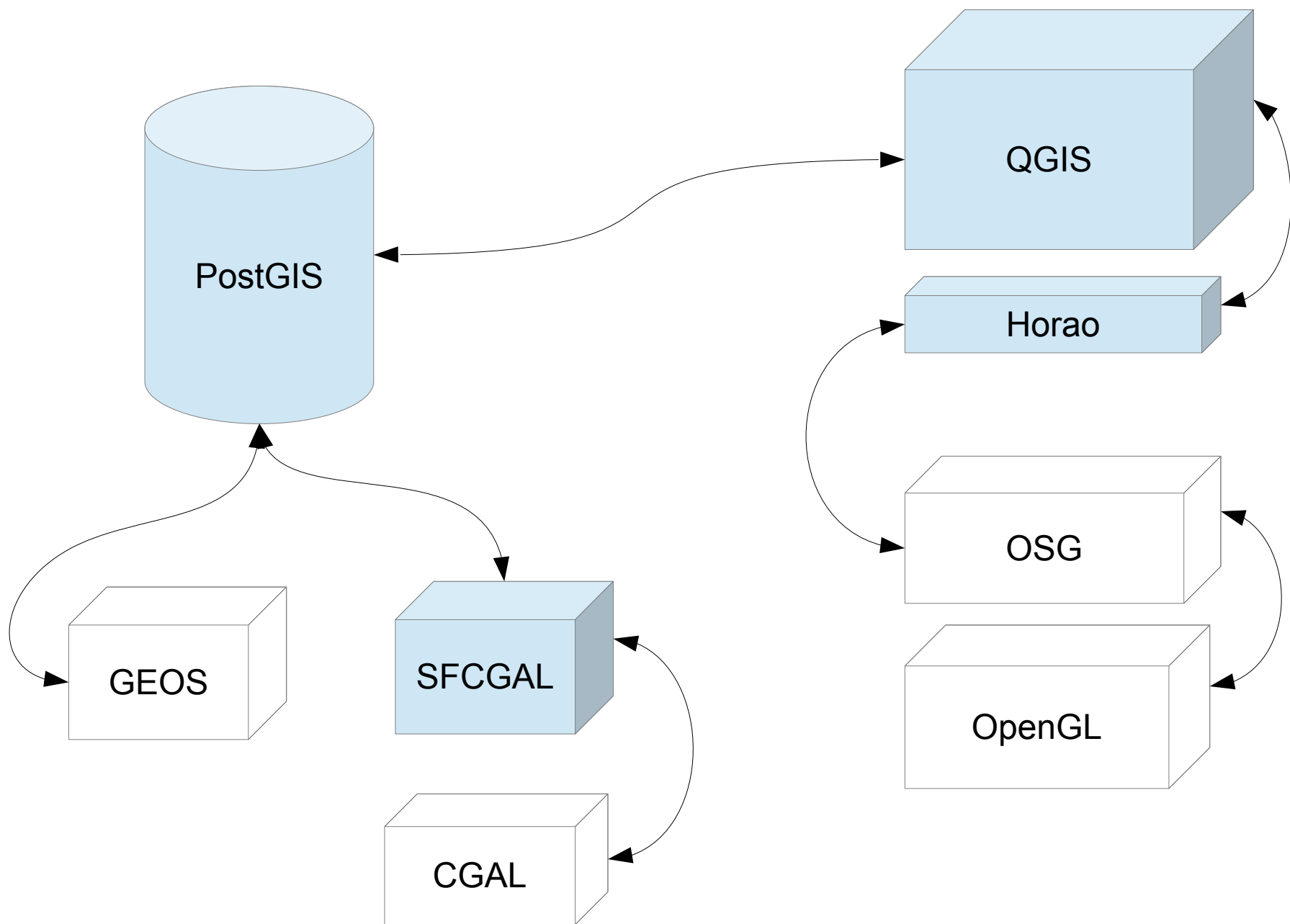
ISO 19107:2013

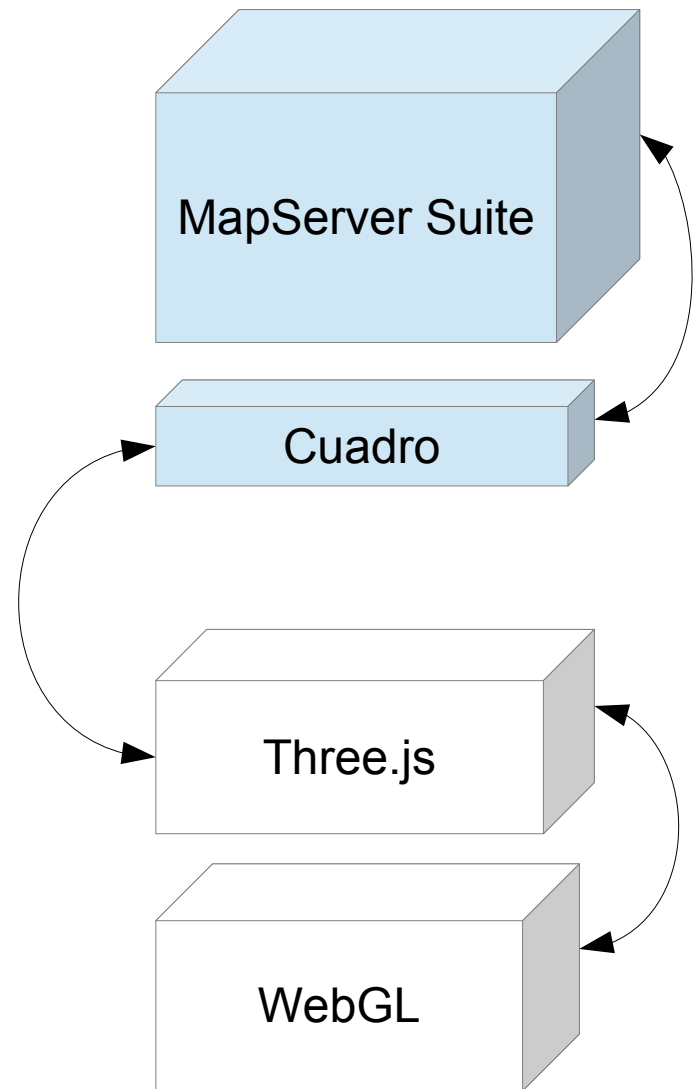
ISO 19125:2013

ὁράω



<https://vimeo.com/74869530>





```
CREATE TYPE texture AS (url text,uv float[][]);
```

3DCityDB-Importer-Exporter
to import Texture metadata in PostGIS

HTTP as static texture server

OGC WS Client (Features & DEM)

Client Side Triangulation

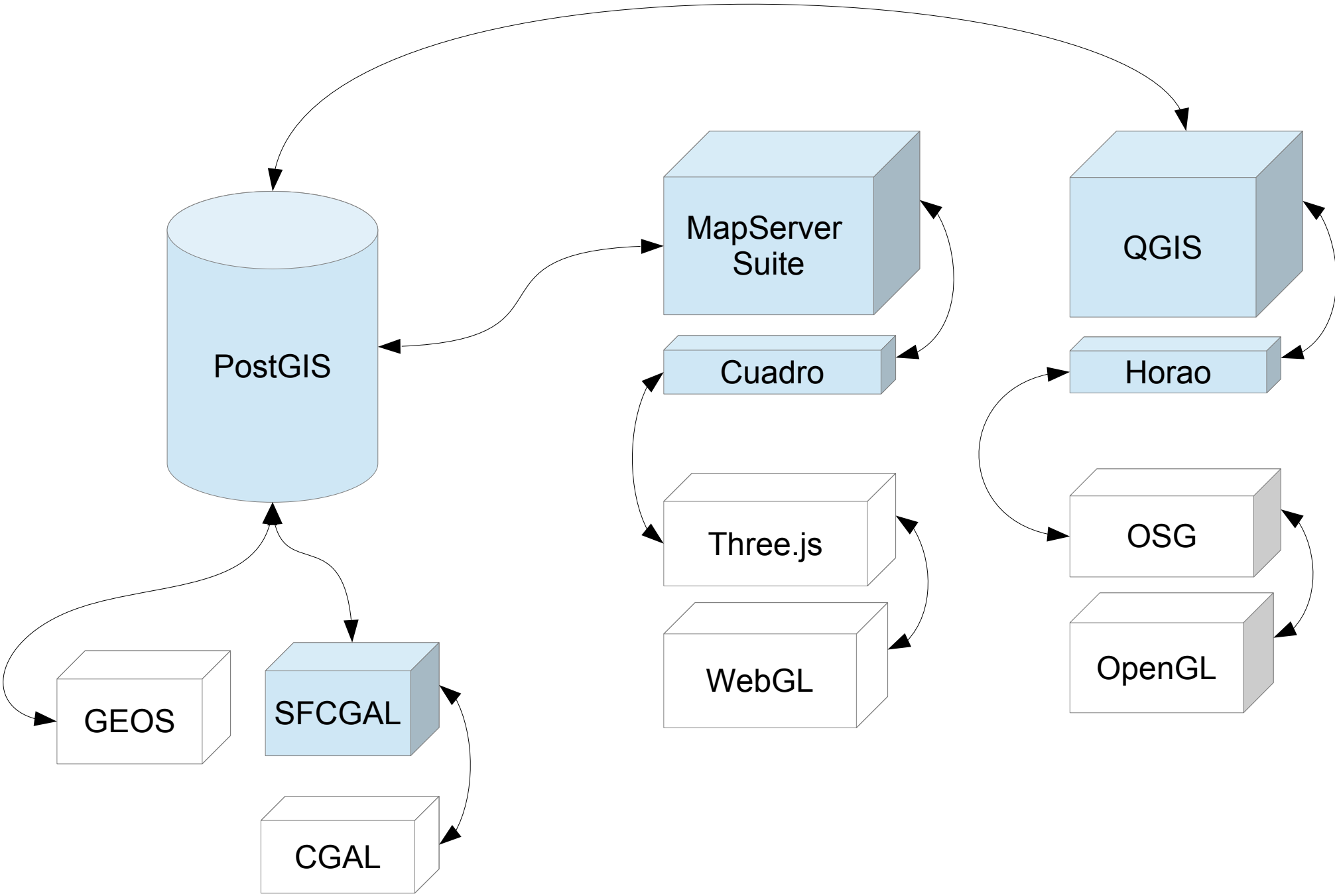
Basic Symbology Handling

Level Of Details

Texture

HTML UI

<http://vimeo.com/105323534>



www.sfcgal.org

www.horao.net

www.cuadro.org

www.postgis.org

www.qgis.org

www.mapserver.org



2010

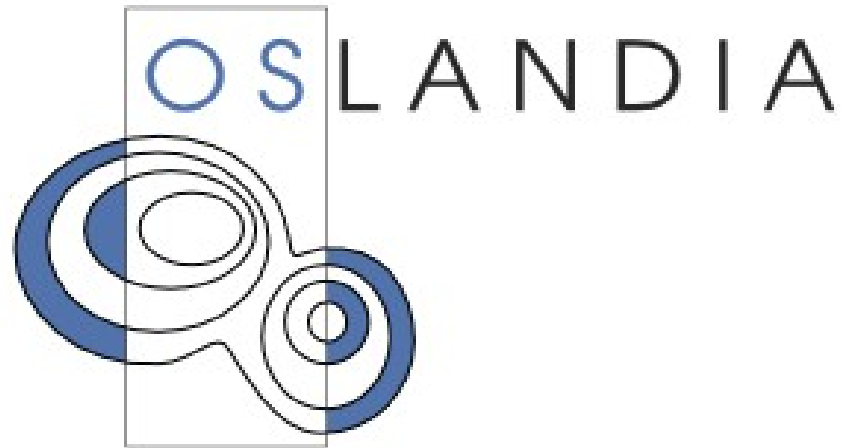
2014

2015

Vector Tile Cache Server

9DIM Full 3D Topology Functions

PostgreSQL Serialization Performance



www.oslandia.com

<https://github.com/Oslandia/presentations>

<https://github.com/Oslandia/Workshops>