

iTowns

WebGL 3D visualization framework

**Vincent Picavet
Oslandia**

Oslandia



- «Pure player» OpenSource
- Since 2009 (O. Courtin + V. Picavet)
- 11 collaborators (>+30% / year)
- French company
- FOSS4G contributions :
PostGIS, SFCGAL, QGIS, Tempus,
TinyOWS, GDAL/OGR, PgPointCloud,
iTowns...



iTowns ?

towns+

149, r du temple, Paris | Easting : 652959.62 - Northing : 6862849.45 (lambert 93)

PLAN

Couches



COUCHES

OUTILS

MESURE

Point Line Volume

Clear kml shp Export Classif

Classe: [Class Selection Box]

F Snap Sidewalk Zebra

DIAGNOSTIC PMR

GEOVELO

MODÈLES 3D



iTowns ?

WebGL / Javascript Framework

3D Visualization

Immersive navigation

All types of GIS data

OpenSource (Cecill-B & MIT)



Technical basis

(iTowns 1.0 & 2.0)

JavaScript
WebGL
THREE.JS
Shaders

iTowns : client-side only

three.js ^{r77}

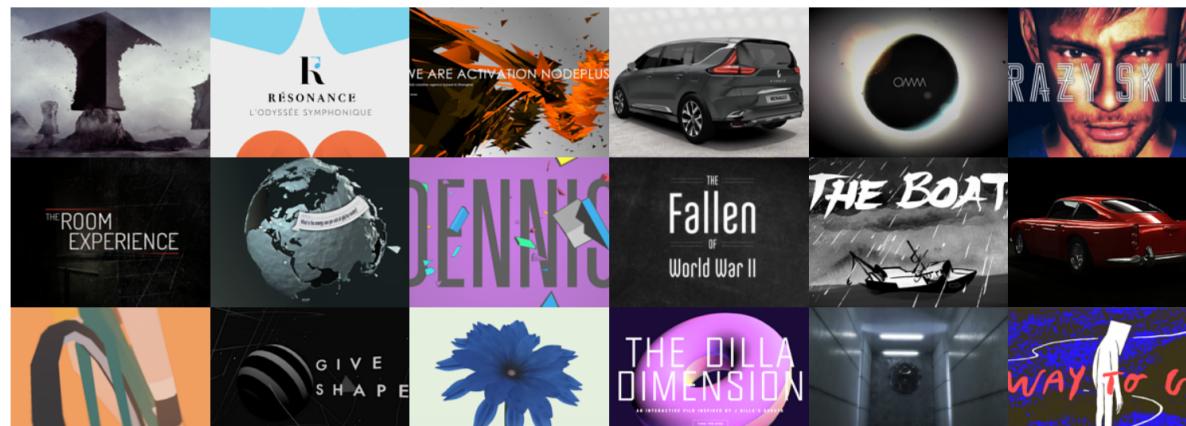
documentation
examples

download

github
stackoverflow
irc

editor

featured projects



iTowns project - step 1/4

IGN 2008

MATIS Research laboratory (IGN)
Flash application

- Panoramic images visualization
- Object annotations
- LIDAR PointClouds



iTowns project - step 2/4

2011 : new foundation
→ WebGL, GPU

- LIDAR / big volumes
- Mesh support

→ Stereopolis vehicle



Stereopolis (IGN)

«Mobile Mapping»

Sensors :

- Images
- LIDAR
- IMU
- GPS
- Speed



Sensors

images



LiDAR



Platform / vehicle



IMU / GPS

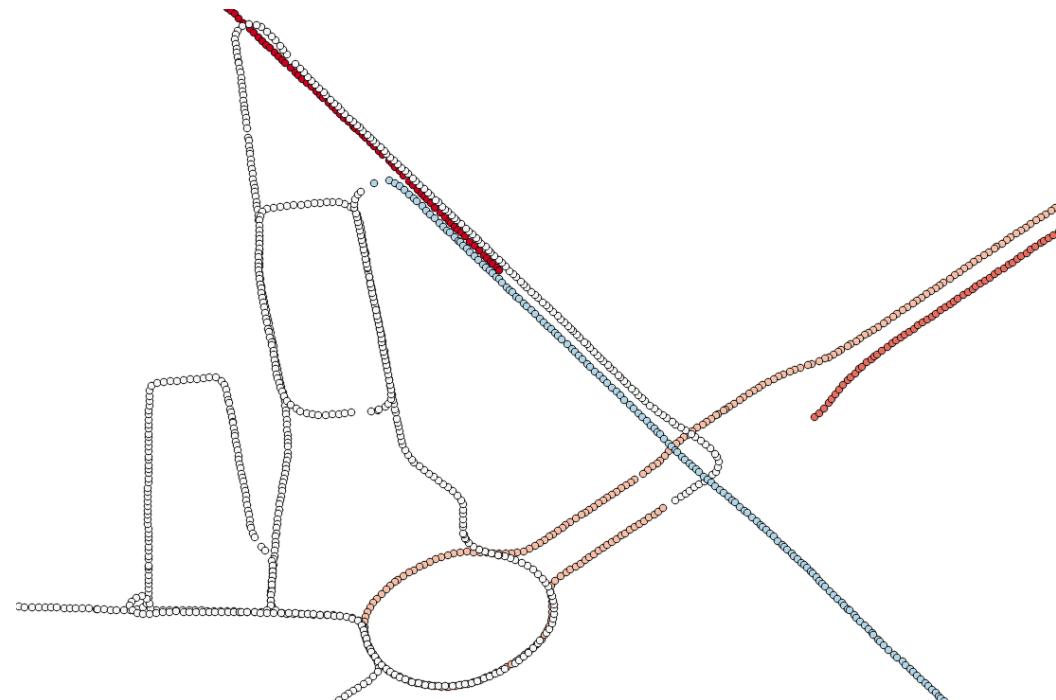
Sensors

Trajectory (IMU) + GPS + odometer
→ position + orientation @ 200Hz

Images
→ 9 Images / 2m

Laser
→ 300K points / s

iTowns goal :
Visualize these data !



iTowns OpenSource - step 3/4

08/2015 : decision to go opensource

.... : 1.0 source code cleaning

: first 2.x commits

02/2016 : Version 1.0 release

: PSC

1.0 → operational & «Technology preview»

2.x → under (heavy) development



This repository

Search

Pull requests Issues Gist



iTowns / itowns

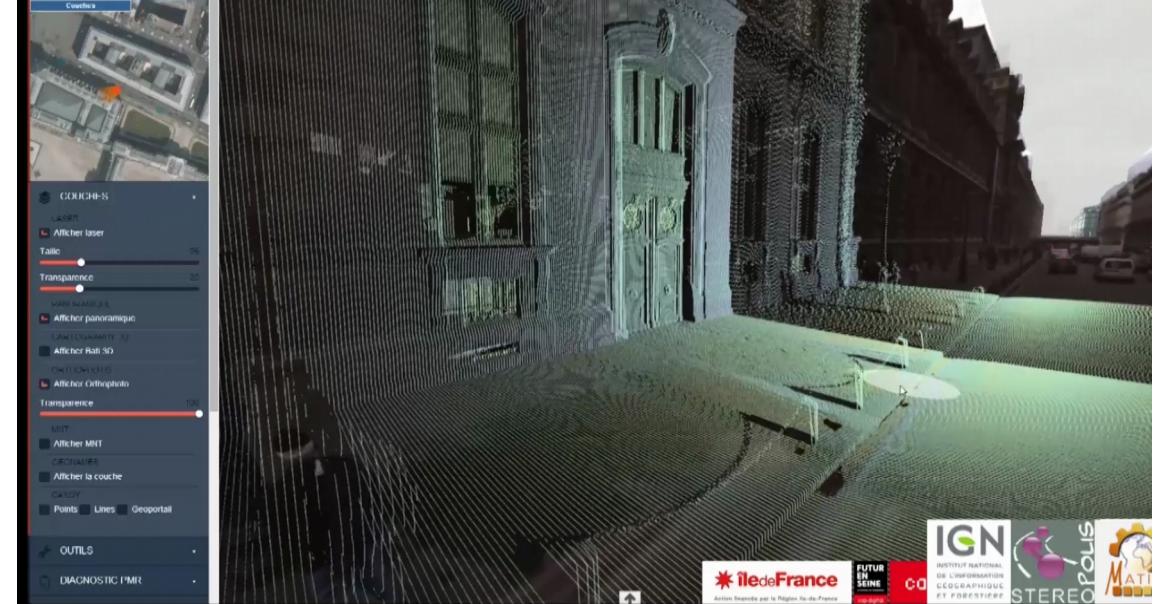
[Unwatch](#) 21[Unstar](#) 25[Fork](#) 11[Code](#)[Issues 8](#)[Pull requests 0](#)[Wiki](#)[Pulse](#)[Graphs](#)[Settings](#)iTowns is a JS/WebGL framework for 3D geospatial data visualization — [Edit](#)[83 commits](#)[3 branches](#)[1 release](#)[6 contributors](#)Branch: **master** ▾[New pull request](#)[New file](#)[Upload files](#)[Find file](#)[SSH](#) ▾[git@github.com:itowns/it](#)[Download ZIP](#) **nosy-b** nothingefe

Latest commit 9539180 on 30 Mar

 examples	Add all sources	3 months ago
 fonts	Add all sources	3 months ago
 icons	Add all sources	3 months ago
 images	Image mask support (single panoramic for now)	3 months ago
 nbproject	nothingefe	a month ago
 scripts	git push fix without ssh key setup in deploy script	3 months ago
 shaders	Add all sources	3 months ago
 src	correct bugs positionInit	a month ago
 .gitignore	Use webpack instead of RequireJS	3 months ago
 .npmignore	Use webpack instead of RequireJS	3 months ago
 LICENSE.md	Add all sources	3 months ago
 README.md	Update README following move of the demo to the sample-data repos	3 months ago
 package.json	adding string_format dependency for more powerfull url templates	3 months ago
 webpack.config.js	setting three r74 as a npm dependency. Textured buildings is still a ...	3 months ago

 [README.md](#)

Data types



- Oriented images
- PointClouds
- Extruded buildings (2D → 3D)
- Meshes (3D buildings with textures)
- Webservices
 - WMTS (terrain, aerial imagery...)

Data samples

Data subset

One neighborhood of Paris

Quality : high (600MB) & low (60MB)

CC-By-NC-ND-3.0

3D textured mesh (buildings)

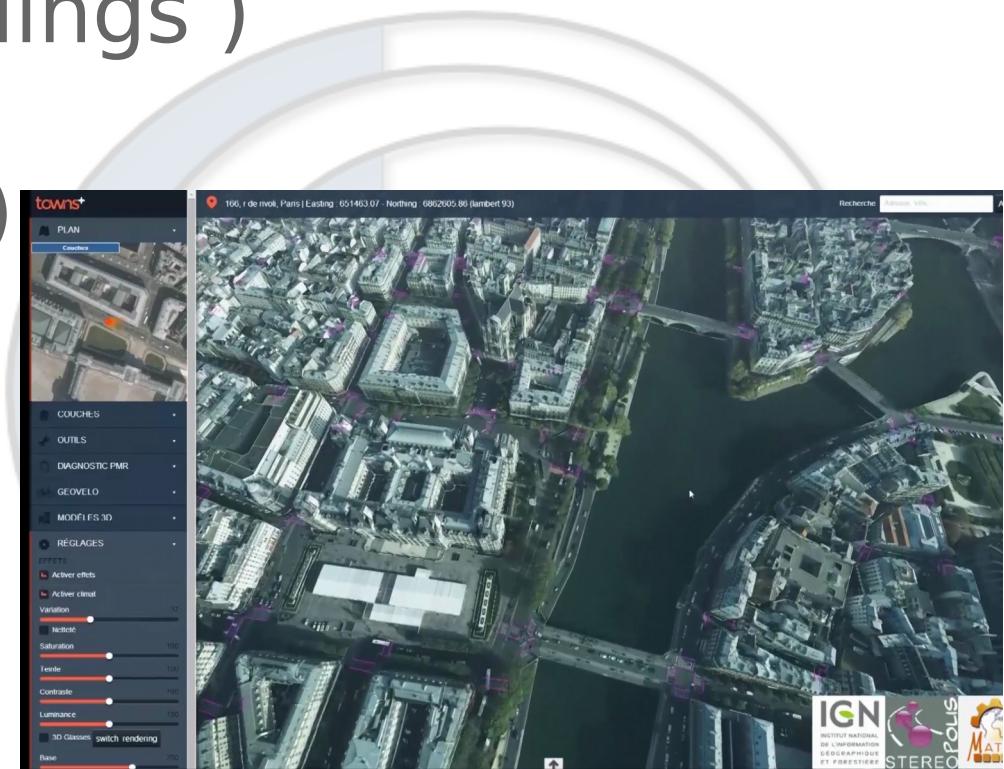
Oriented images

LIDAR (mobile mapping)

Vector data

elevation,

2D building footprints



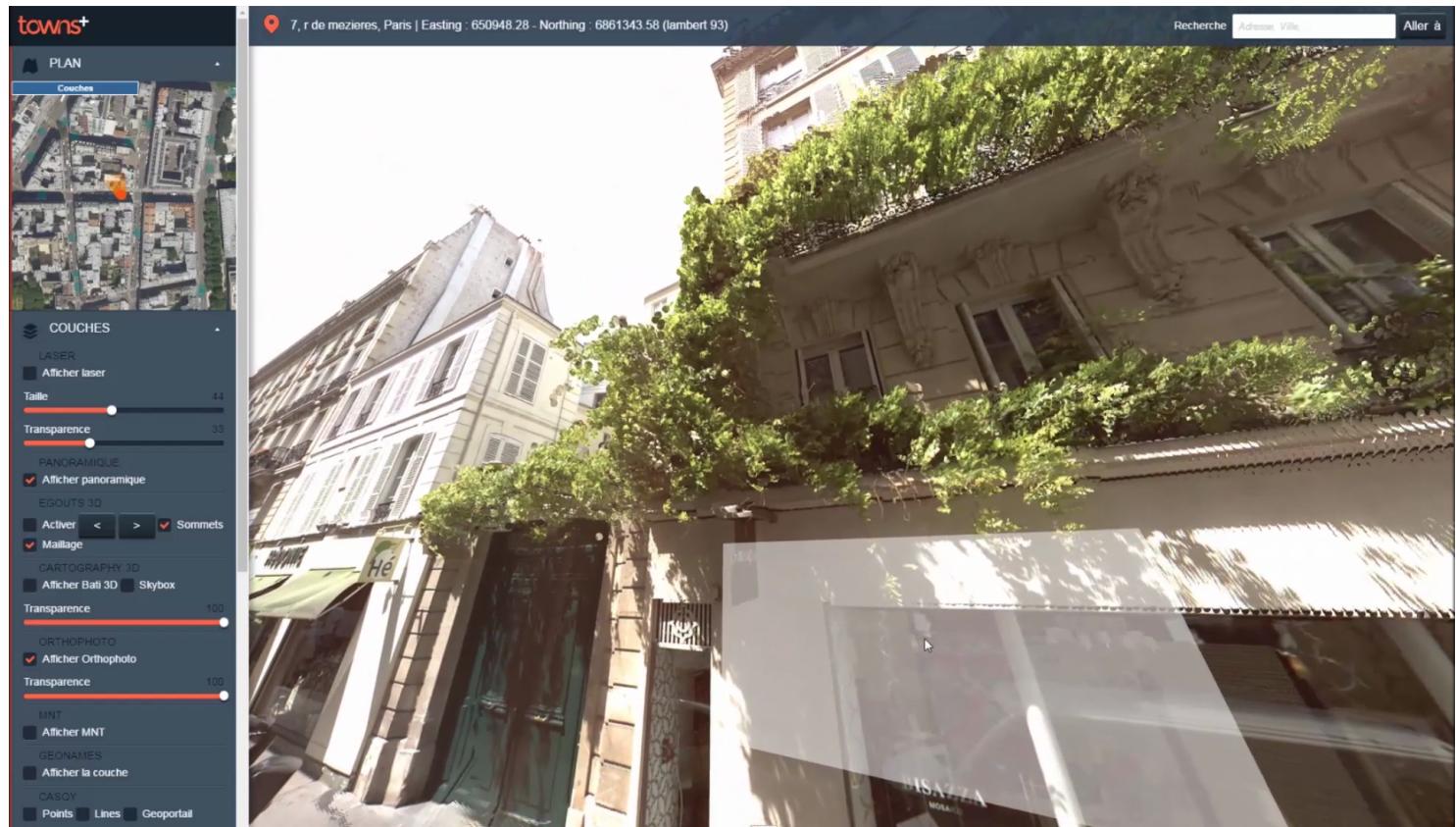
Oriented images

Images with position & orientation

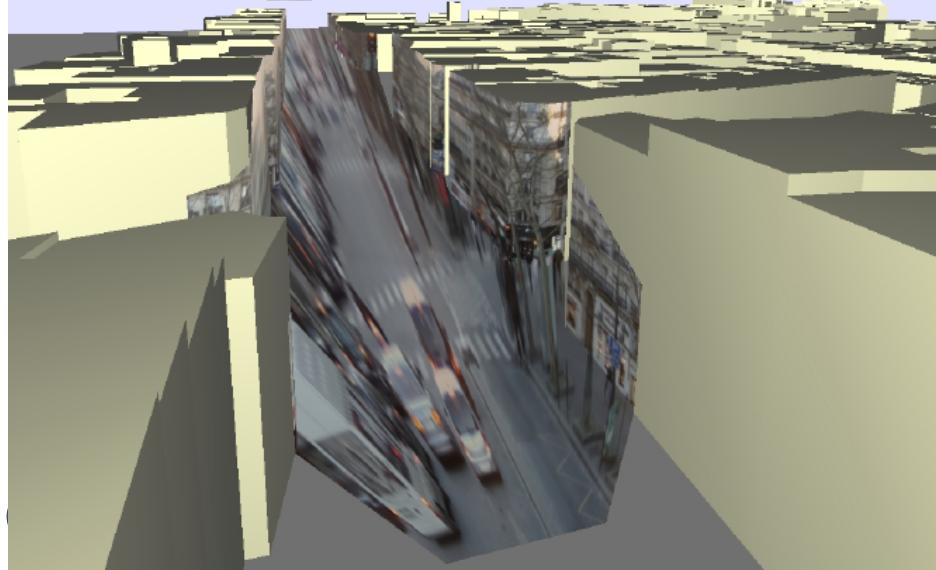
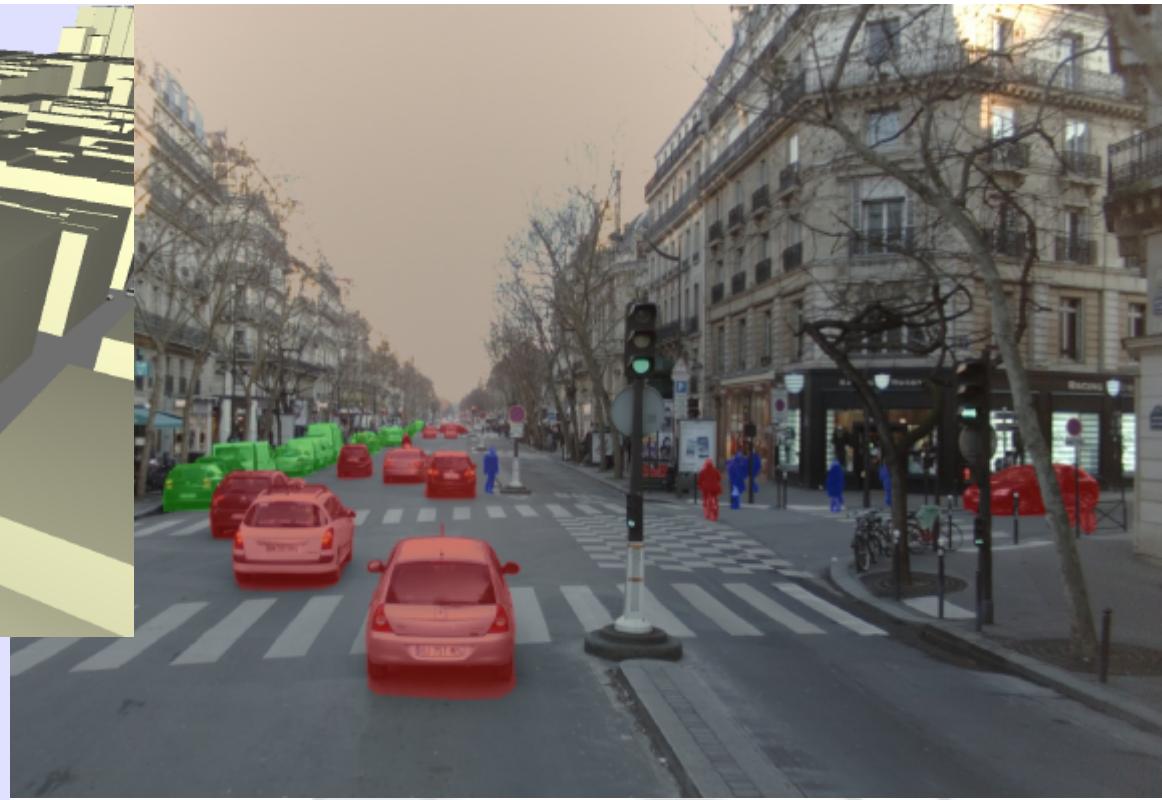
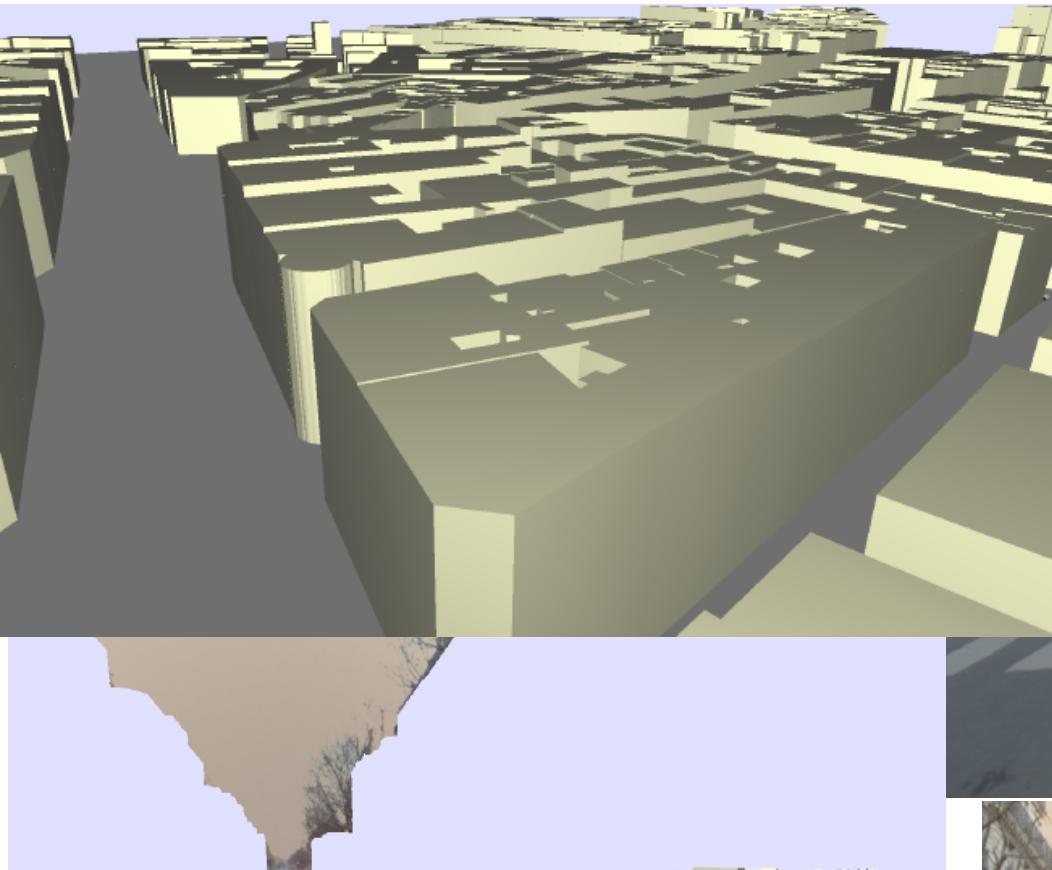
Projection on :

Extruded 2D buildings
meshes

Free navigation
More precision



Oriented images



iTowns v2.x - step 4/4

Full refactoring

Globe

High level API

Webservices : WMTS, WMS, WFS

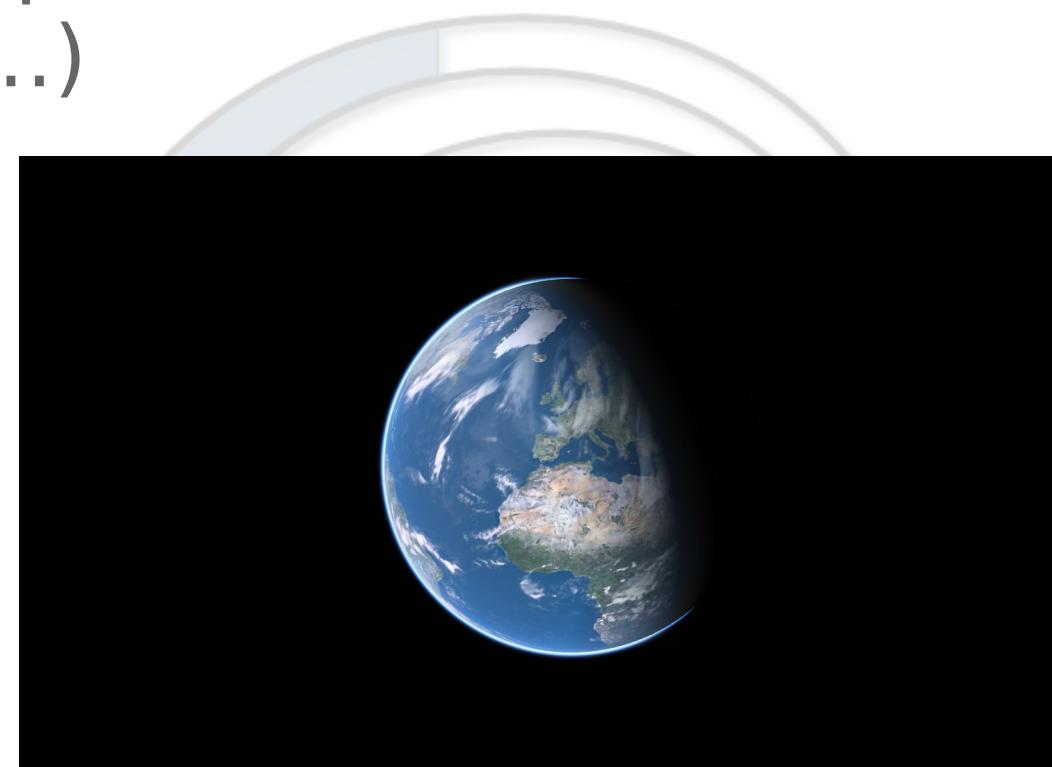
Documentation & exemples

3D Meshes (KML, glTF...)

Roadmap

Alpha : autumn 2016

2.0 : late 2016



Video

iTowns v1.0 + iTowns v2.0



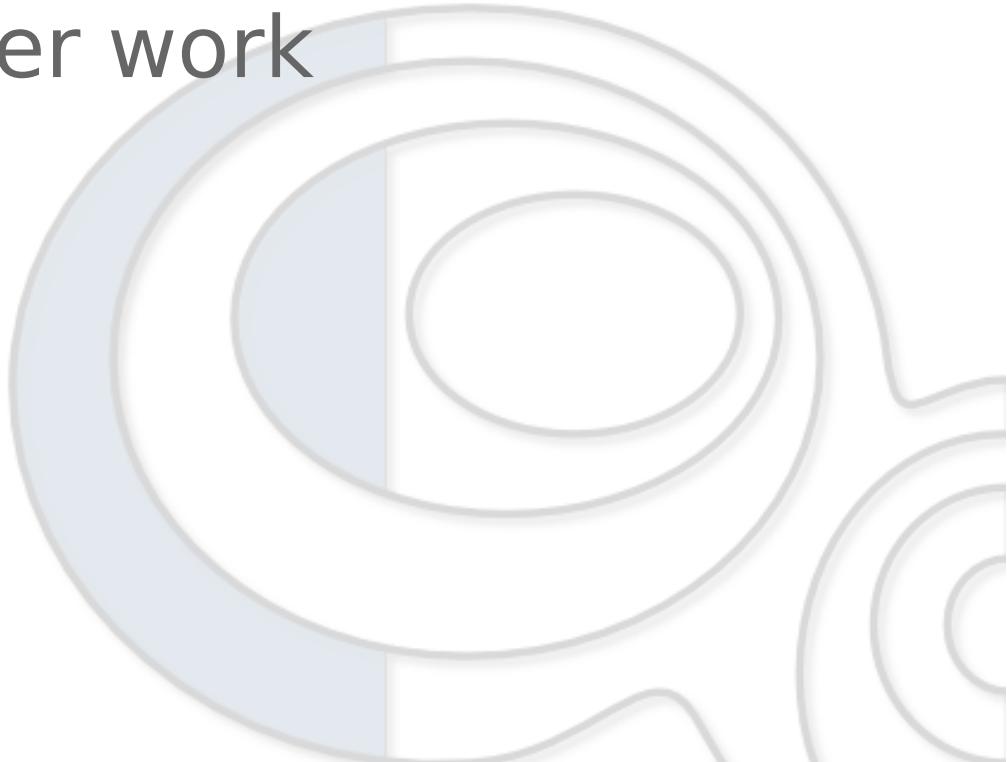
Future - features

Potree integration → almost done

Projected images on PointClouds → POC

Build system & CI → under work

End-user interface



Future - features

External API integration

- HERE
- Mapillary, others ?

Vector tiles support

3D services connection

- 3D Tiles support
- Greyhound / Entwine



Future - Server side

→ *Streaming*

 **LI³DS**
LI³DS is an OpenSource project by Oslandia and IGN for 3D scanning and data management
 France  infos+li3ds@oslandia.com

 **Repositories**  People 8  Teams 0  Settings

Filters  Find a repository... 

PDAL  C++  0  105

PDAL is Point Data Abstraction Library. GDAL for point cloud data.
Updated 8 days ago 

api-li3ds  Python  0  0
LI³DS Rest API
Updated 10 days ago

People 8 > 


Future - Server side

→ ***Streaming***

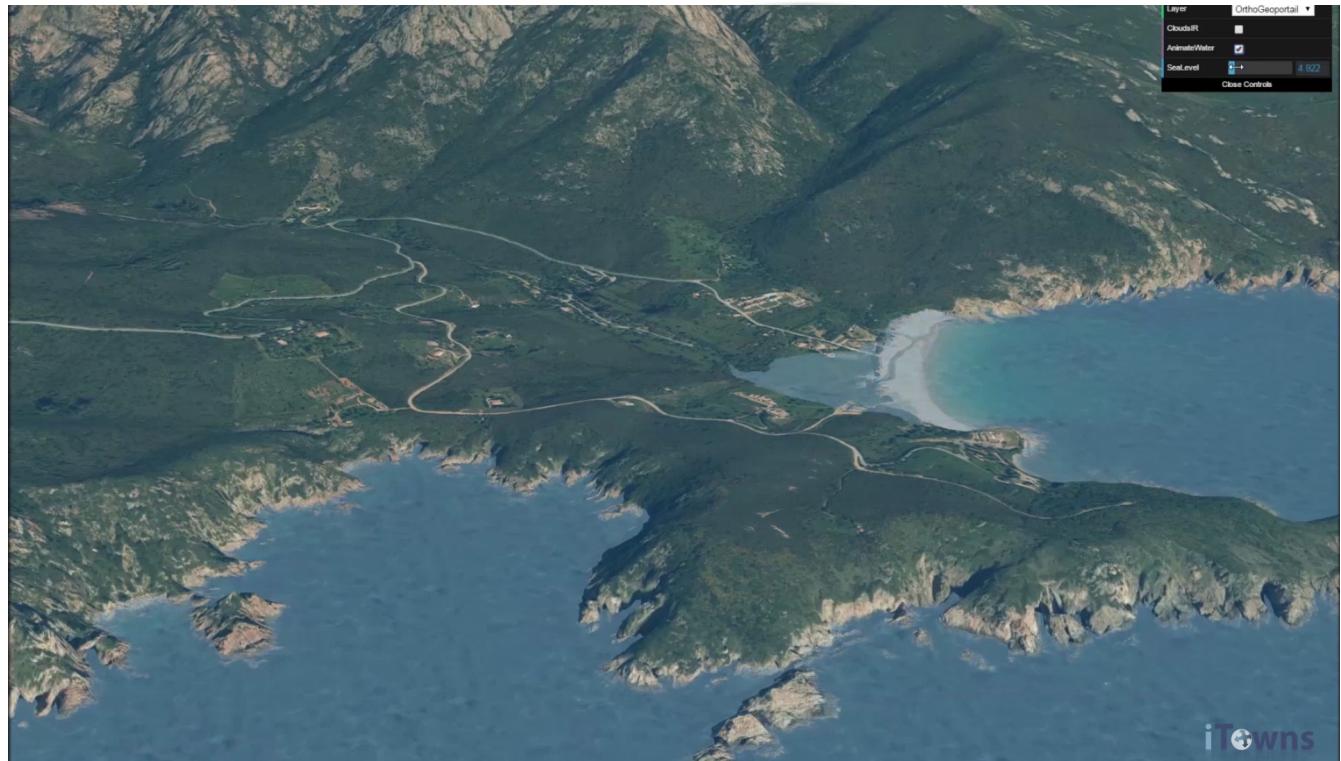
3D web services

- 3D objects (buildings...)
- Mesh (& quantized mesh)
- PointClouds
 - Greyhound / Entwine
 - LOPoCS (<https://github.com/LI3DS/lopoocs>)
- Oriented images → Server-side API coming
- 360° images
- 3D Tiles support



Future - project

Version 2.0
Code quality
More contributors
Better collaboration
First industrial projects
Funding
Communication



**Thanks,
Merci,
Any question ?**

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<http://github.com/iTowns/itowns2>

<http://www.itowns-project.org>

<http://www.oslandia.com>

iTowns vs Cesium ?

- Space to street / street to space
- Maturity level
- Immersive visualization in iTowns
- Pure WebGL / THREE.JS



Requêtes

- Tuile A niv + 1
- Tuile B niv + 1

