

# V3ct3D

## Structuring project

École nationale des sciences géographiques

09 december 2016

# Brainware

## Method Scrum

- ▶ Daily sprints
- ▶ group of 14 people



FIGURE: Brainware

## Personal report

- ▶ Scrum master and part of a big team
- ▶ Tools
- ▶ 3D world
- ▶ Advanced thinking



# BD UNI & BD TOPO

## BD uni

- ▶ Is a database of vector data for the whole of France containing all the themes that constitute the commercial products of the IGN.
- ▶ Its regroup 10 domains : The road network, The building, the vegetation etc. . .
- ▶ The vector component of the RGE

## BD TOPO

- ▶ Is the topographic component of the RGE

# iTowns

- ▶ IGN technology platform : viewing and exploiting 3D geographic data
- ▶ Written in Javascript/WebGL
- ▶ Collective intelligence : Several companies are participating in the project :
  - ▶ IGN
  - ▶ Oslandia
  - ▶ AtolCD
- ▶ Github : <https://github.com/iTowns/itowns>
- ▶ Supported data types :
  - ▶ Panoramic images
  - ▶ Point Clouds
  - ▶ 3D textured models
  - ▶ WFS Vector

# Personnal report

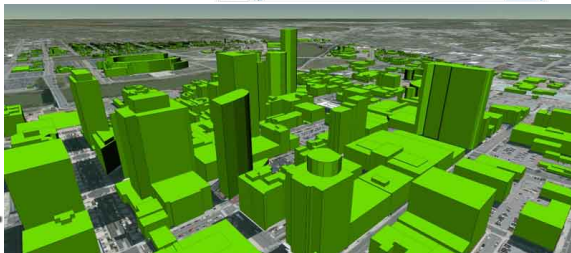
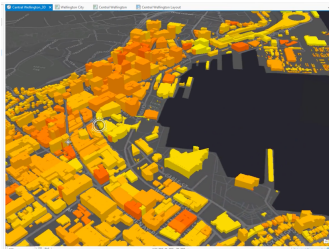
This project allowed me to :

- ▶ Discover iTowns ;
- ▶ Discover cesium ;
- ▶ And be able to write in Markdown.

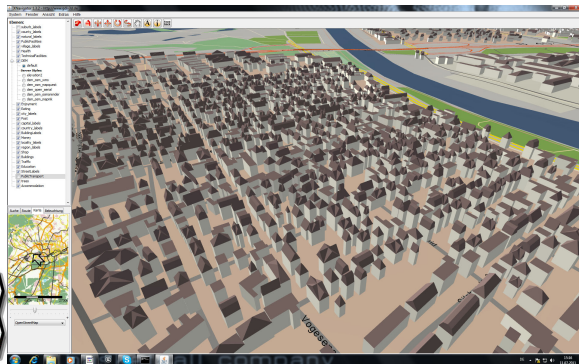
# Different kind of data to do 3D



# ArcGIS®



## Different kind of data to do 3D (2)





# Personal report - Victor BRINON

## Computer skills

- ▶ Markdown
- ▶ Github
- ▶ Taiga
- ▶ Slack

## Social skills

- ▶ Work in a big group
- ▶ Communication
- ▶ Relationships
- ▶ Daily meeting

## Processing chain md => pdf

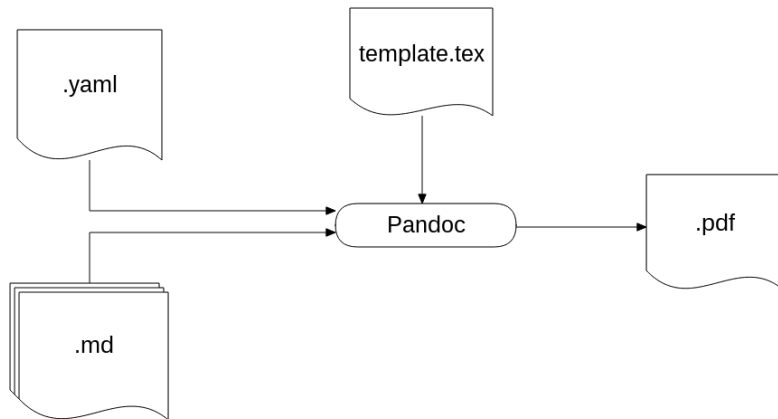


FIGURE: Processing chain

# Use case diagramm

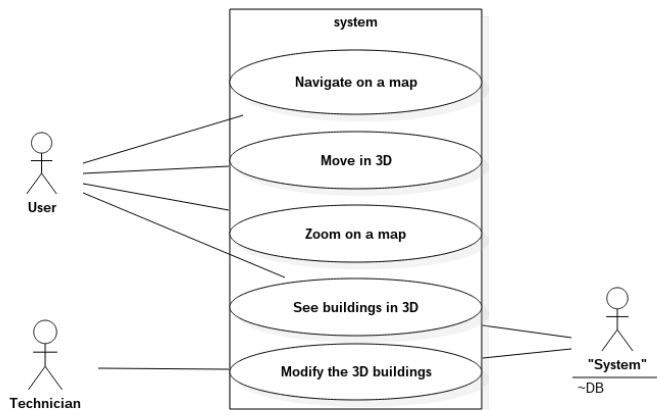


FIGURE: Use case diagram

# Personal report - Hugo BALTZ

## Computer skills

- ▶ Pandoc
- ▶ Markdown
- ▶ UML diagrams
- ▶ 3D-Viewer

## Social skills

- ▶ Organization
- ▶ Relationships
- ▶ Communication
- ▶ Efficiency

# Production chain : global

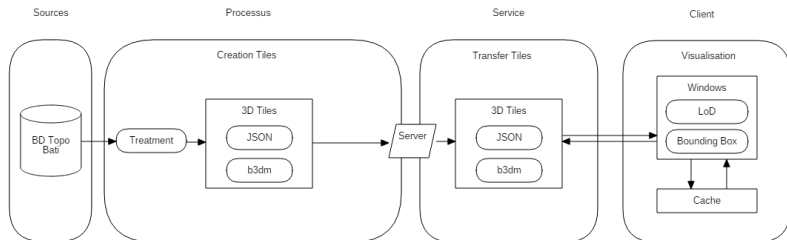


FIGURE: Production chain

# Personal report - Julie MARCUZZI

- ▶ Learn Markdown methods
- ▶ UML diagrams
- ▶ Communication
- ▶ Discover Cesium, file format & library

## BD TOPO (BATI)



Interpret

- (+) basic geometric features
- (+) geolocation
- (+) type
- (-) no relationship
- (-) no hierarchy



Create

Transform

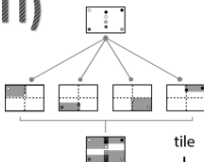
## 3D Tile server



- (+) bounding box
- (+) geolocation
- (+) volume
- (+) metadata

FIGURE: 3DTileGen

# BD TOPO (BATI)



# 3D Tile server



tile

boundingVolume



geometricError

refine

content

– boundingVolume (box, region, or sphere)



– url → Separate file with tile contents, streamed on demand

children[]

FIGURE: 3DTileGen



# Personal report

## Improved knowledge in Geomatic

- ▶ Vocabulary, geolocation, data representation

## Discovery of current standards and libraries

- ▶ Cesium, 3D Tiles, webGL, postGres, ...

## Team work

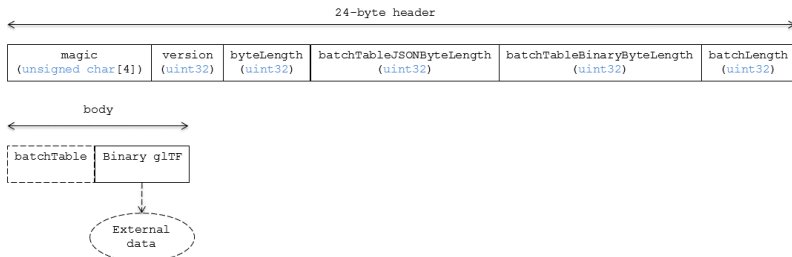
- ▶ Large team, tiny sprints = hard work

## b3dm *Batched 3D Model*

OGC is considering a proposed work item for 3D Tiles as a Community

The Batched 3D Models is an initial tile format proposed by **Open Geospatial Consortium (OGC®)** for **buildings**, terrain, massive models, etc. and the transfer of **3DTiles**.

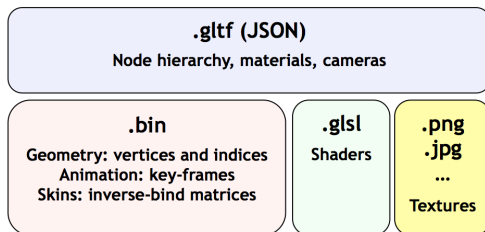
A tile is composed of two sections : a **header** immediately followed by a **body**, i.e. Binary glTF.



# glTF *GL Transmission Format*

## Used by 3DTiles

- ▶ Efficient, extensible, interoperable format (3D transmission and loading)
- ▶ Preserve full hierarchical scenes
- ▶ Making no assumptions about the target application or 3D engine.

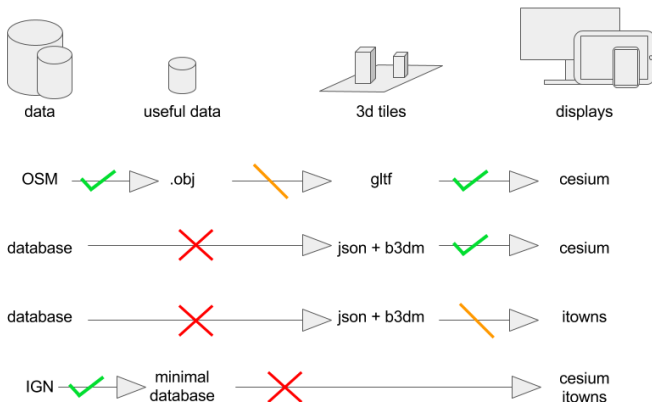


# Personal report

- ▶ Rediscovery of **Cesium** & Node js
- ▶ Discovery of streams (WMTS) and **file transfers** (gltf, b3dm ... ) + library js like OpenLayers
- ▶ Knowledge about **Markdown**
- ▶ Curious and Analytical mind

# Demonstrator

## Explanations



# Demonstrator

Movie time

# Personal report

- ▶ Relationship :
  - ▶ Oslandia team
  - ▶ IGN team
- ▶ Technical skills :
  - ▶ 3d data mechanisms
    - ▶ cesium exploration
    - ▶ iTowns exploration
- ▶ Team skills :
  - ▶ team splitting
  - ▶ feedbacks

# Conclusion

- ▶ Suggestion of a chain of production
- ▶ Creation of an interest

