From CAD to GIS

Where are we?

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FOSS4G
Firenze, Italia
August 24, 2022

Self-Introduction - Oslandia

GIS architecture

Open Source software

GIS-oriented algorithms

OSLANDIA

Jacky Volpes

- GIS Engineer
- Former industrial data processing engineer

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Loïc Bartoletti

- Former urban planner
- CAD - GIS Engineer
- QGIS core commiter
- PostGIS (SFCGAL), GRASS contributor
- FreeBSD ports commiter

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CAD = Drawing GIS = Drawing ***augmented***

In most usecase we see, CAD is only drawing

- Data quality at a specified scale
- No need to respect topology
- No need to structure (all geometries mixed in one layer)

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- Layers are restrained to one geometry type
- Each geometry has associated data
- The geometry is a representation of the data
- Tools can easily verify topology, geometries, etc.

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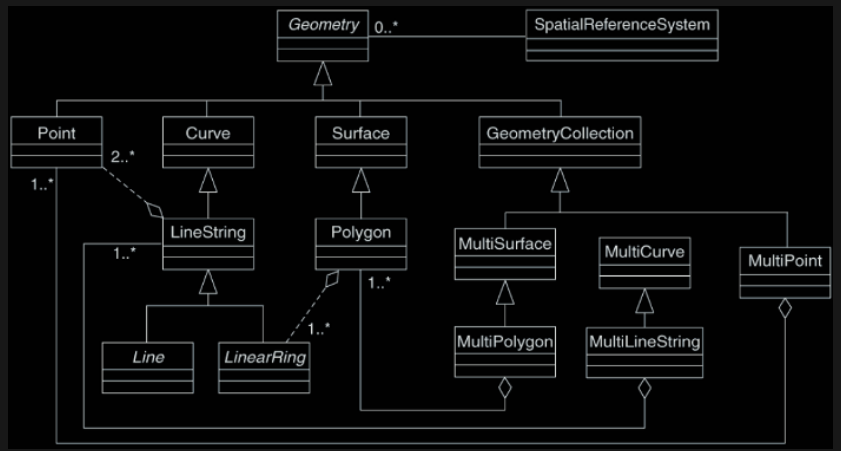

The file formats problem

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GIS common formats

- PostGIS

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But, it's OK!

The file formats problem

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Please, contribute!

From CAD to GIS: which tools are converted to OSGeo?

Objective: migrate geographic data from CAD to GIS and migrate **verification and integration toolboxes** from proprietary softwares to FOSS4G tools.

- Microstation
- AutoCAD
- TopStation
- FME
- QGIS
- QGIS processings
- PyQGIS scripts
- GRASS

In most cases, we are able to use FOSS4G tools only.
The **workload** varies with the **CAD drawings quality**.
The CAD drivers are very important to keep the best consistency during the migration.

Everything I do, I do it

with FOSS tools

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Everything I do, I do it with GRASS

The venerable OpenSource GIS

- Topology! (v.clean)
- The only one with a civil plugin (v.civil)
- And so more...

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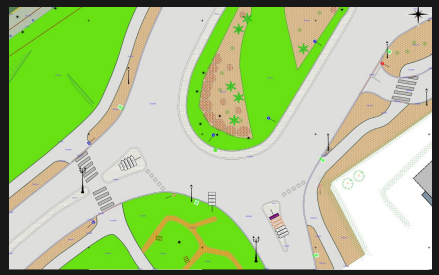
Everything I do, I do it with QGIS

QGIS Rocks!

- Powerful drawing tools!
- Ease to use
- Processing is a nice ETL
- Advanced symbology



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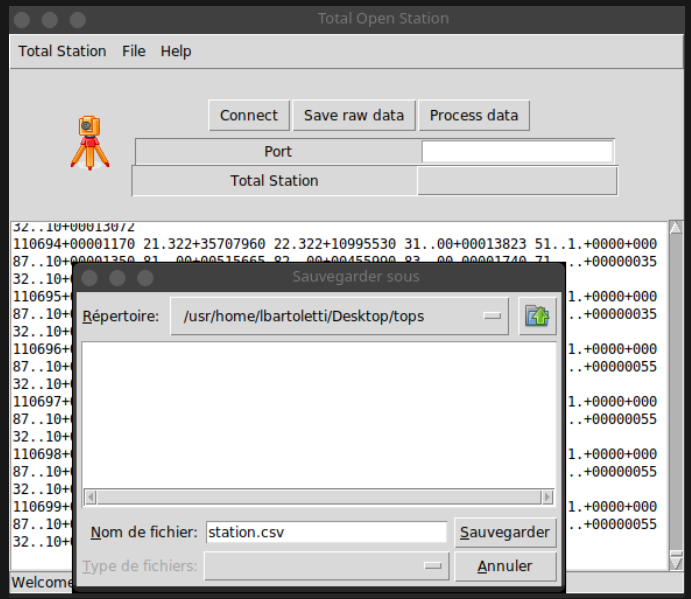
Everything I do, I do it with Total Open Station

Total Open Station downloads and exports survey data from your total station

- Import data from total station
- Export to common format
- With a QGIS plugin



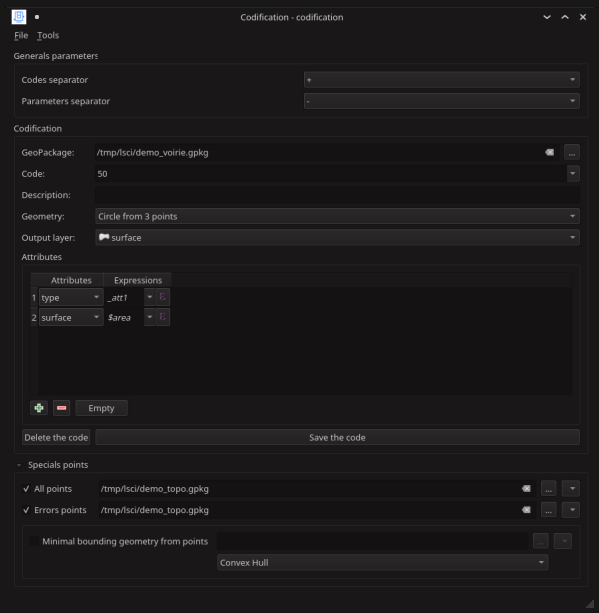
Links:

- https://tops.iosa.it/
- https://github.com/enzococca/totalopenstationToQgis

Everything I do, I do it with LandSurveyCodesImport

Import data from a land survey (GPS or total station) to draw automatically in a database using a codification (aka Field Codes).

- Import codified data (from a CSV)
- Export to (single or multiple) GeoPackage
- Easily integrated into a processing workflow



Links:

- https://www.oslandia.com/
- https://oslandia.gitlab.io/qgis/landsurveycodesimport/en/index.html

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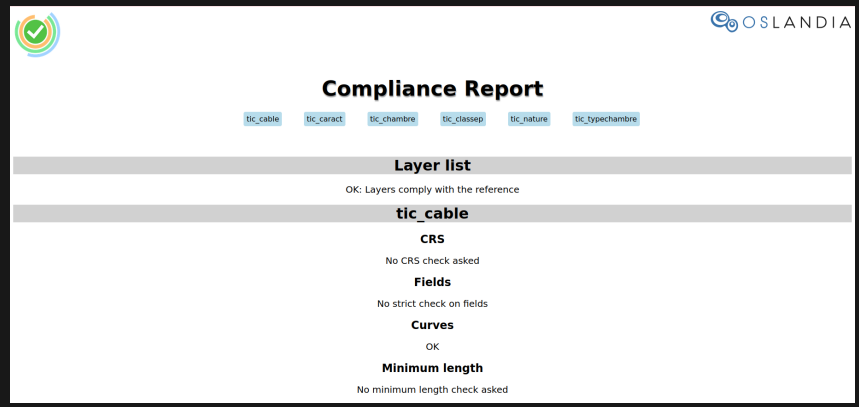
Everything I do, I do it with QompliGIS

This plugin aims to provide a simple way to verify if the structure of a dataset complies with the structure of a reference dataset.

- Ease to configure and use
- Easily transferable compliance rules
- Well integrated with QGIS
- Easily integrated into a processing workflow



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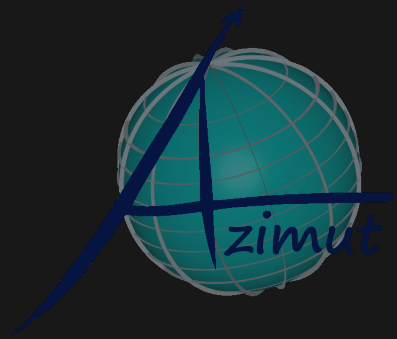
Everything I do, I do it with QTopometry

Work In Progress!

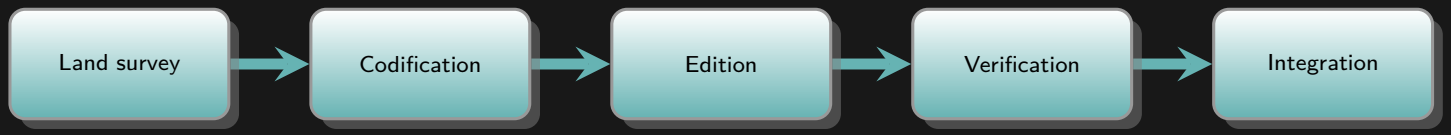


What about FreeCAD, LibreCAD or Blender?

The CAD to GIS workflow

How can you limit the use of proprietary software?

The usual workflow from land survey to integration is



Every step can have its specific tool (depending on habits, historical reasons, etc.).

We want to be able to **do every step with QGIS** so migrating to FOSS4G tools is not bridled.

QompliGIS for compliance check

Simple - Intuitive

Answers to: is my dataset ready to be integrated in my GIS?

- Compliant with **geometrical** and **topological** restrictions
- Compliant with **expected fields** and **layers**
- Compliant with **expected values** (available soon)

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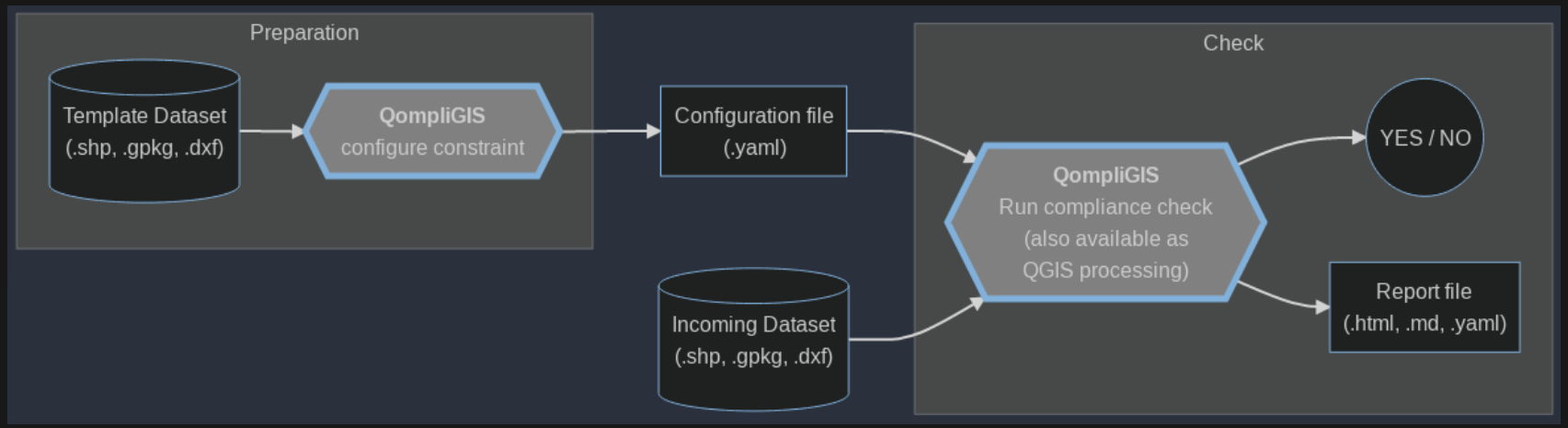
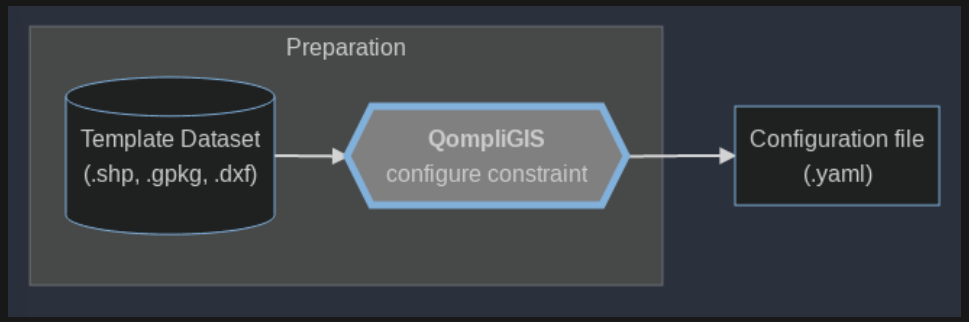
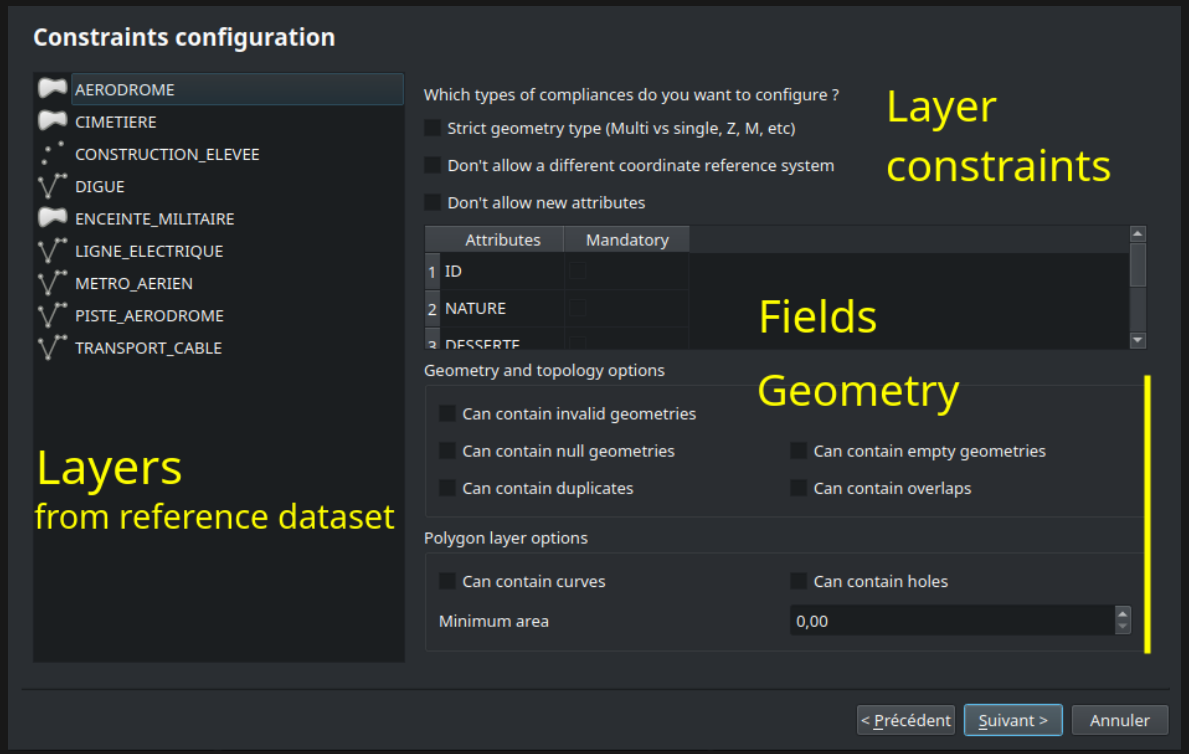


QompliGIS for compliance check

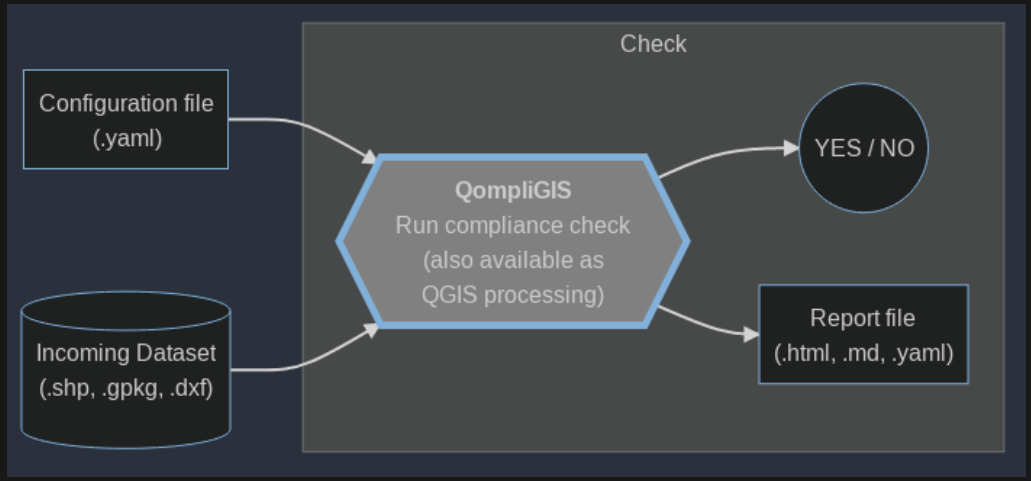
Preparation





QompliGIS for compliance check

Check



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Compliance Report

tic_cable tic_caract tic_chambre tic_classep tic_nature tic_typechambre

Layer list

OK: Layers comply with the reference

tic_cable

CRS

No CRS check asked

Fields

No strict check on fields

Curves

OK

Minimum length

No minimum length check asked

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Conclusion

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Questions?

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