



Inframoura

Migrating from ArcGIS to
Boundless OpenGeo Suite

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Geospatial World Forum, Lisbon

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Vilamoura, Portugal



VILAMOURA PORTUGAL



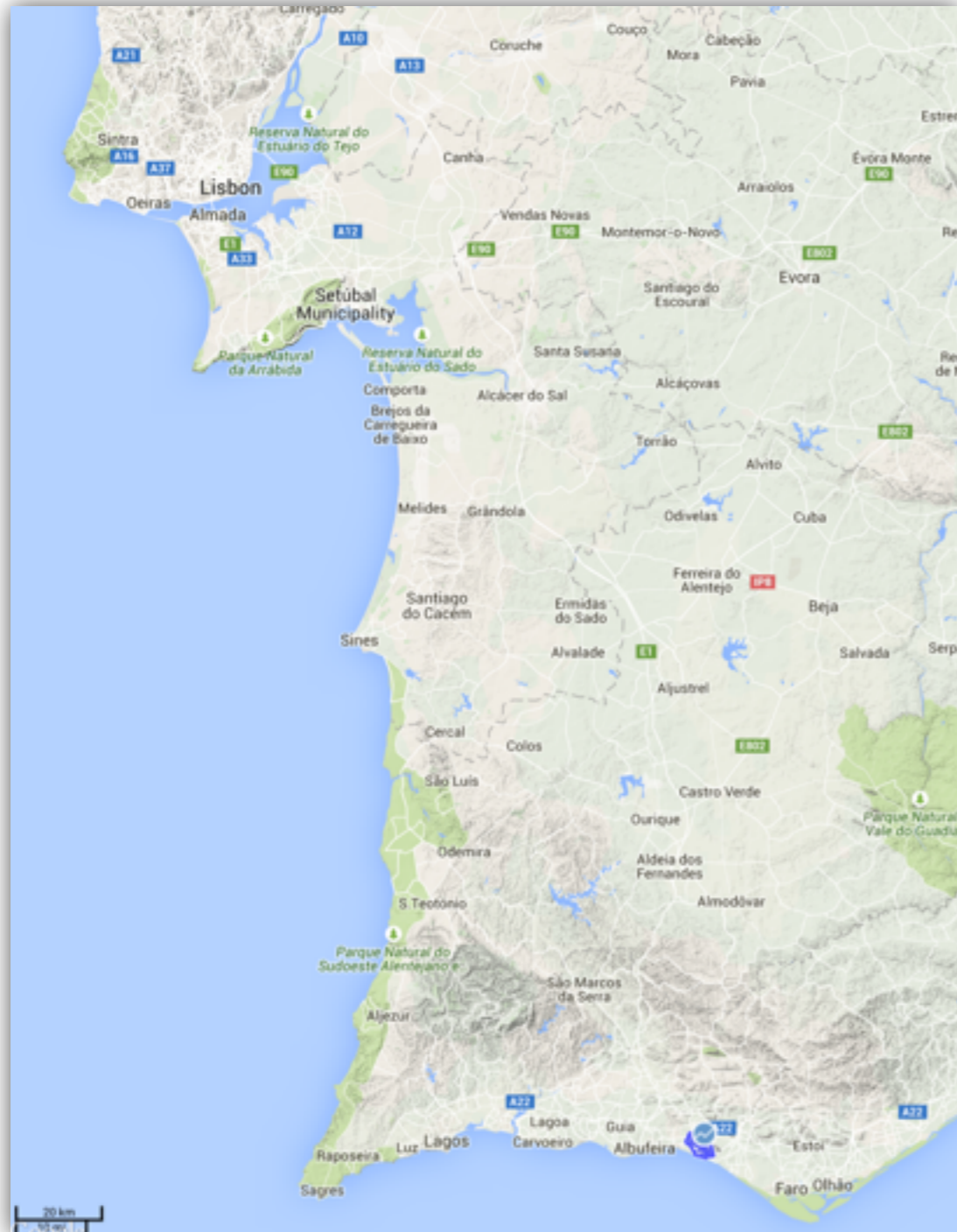
| VISITING | LIVING | MEETING | ENJOYING | PUBLIC BIKES | PLANNING |



| QUALITY OF LIFE NATIONAL RESERVE
taken care of by Vilamoura

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Inframoura – Vilamoura, Portugal



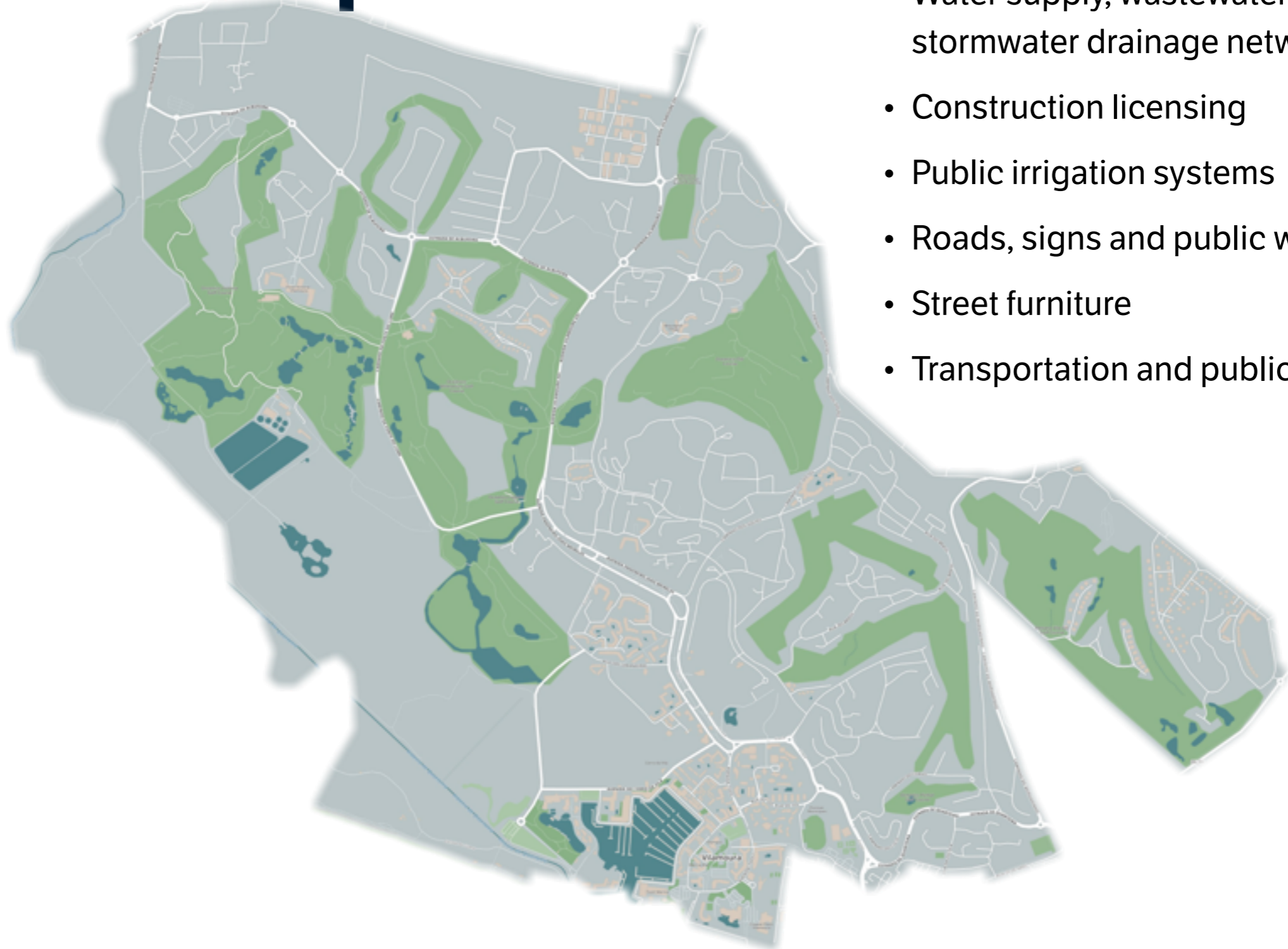
Vilamoura is one of the largest tourist resorts in Europe, developed around a recreational marina, flanked by sandy beaches.

Inframoura is Vilamoura's privately managed utility whose mission is to manage and maintain all public areas of Vilamoura, focusing on quality of life and on environmental protection and sustainability.

Inframoura – Vilamoura, Portugal

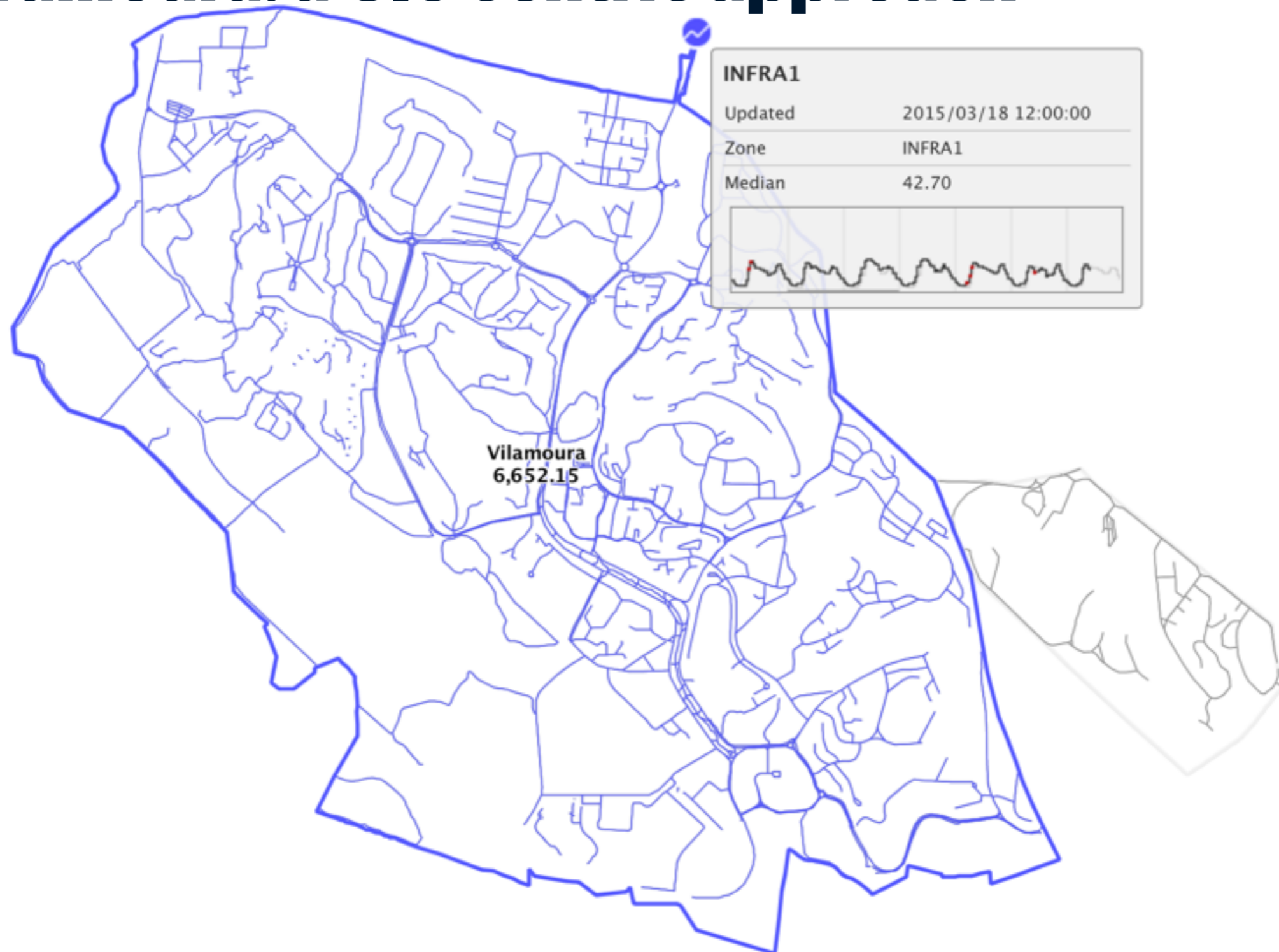


Inframoura: operation



- Water supply, wastewater and stormwater drainage networks
- Construction licensing
- Public irrigation systems
- Roads, signs and public works
- Street furniture
- Transportation and public bikes

Inframoura: a GIS centric approach



Starting point – software

ESRI™ ArcGIS 9, licensed to **a single user**, all GIS access and operation depends on one person.

Microsoft™ SQLServer Express Database, limited to **4GB**, exhausted.

Flash based web maps, limited mobile access.

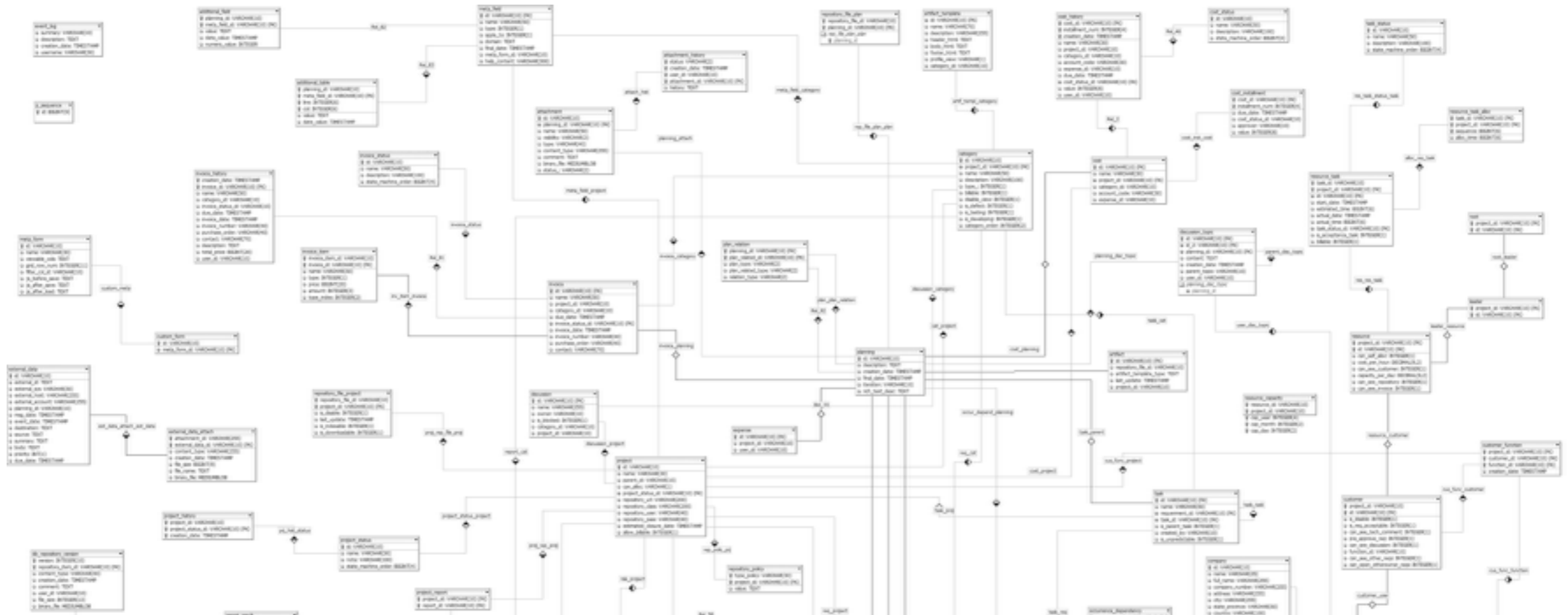


Starting point – data

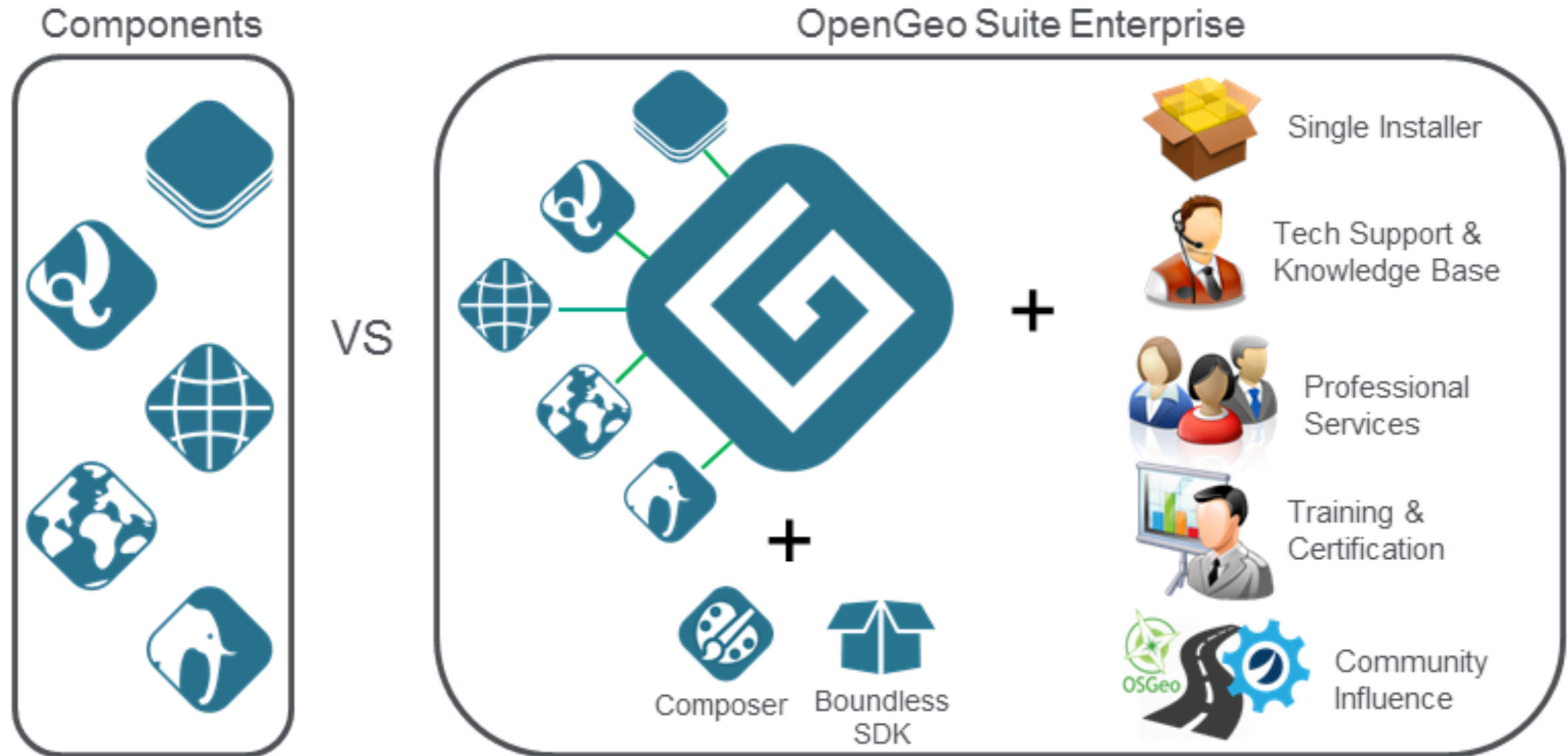
150 independent data layers, over 110.000 geometries/entities.

200 domain tables connected to over 1.500 layer attributes.

Complex, disjointed data model, excessive use of ‘domain tables’ to replace data relations.



Boundless OpenGeo Suite Enterprise



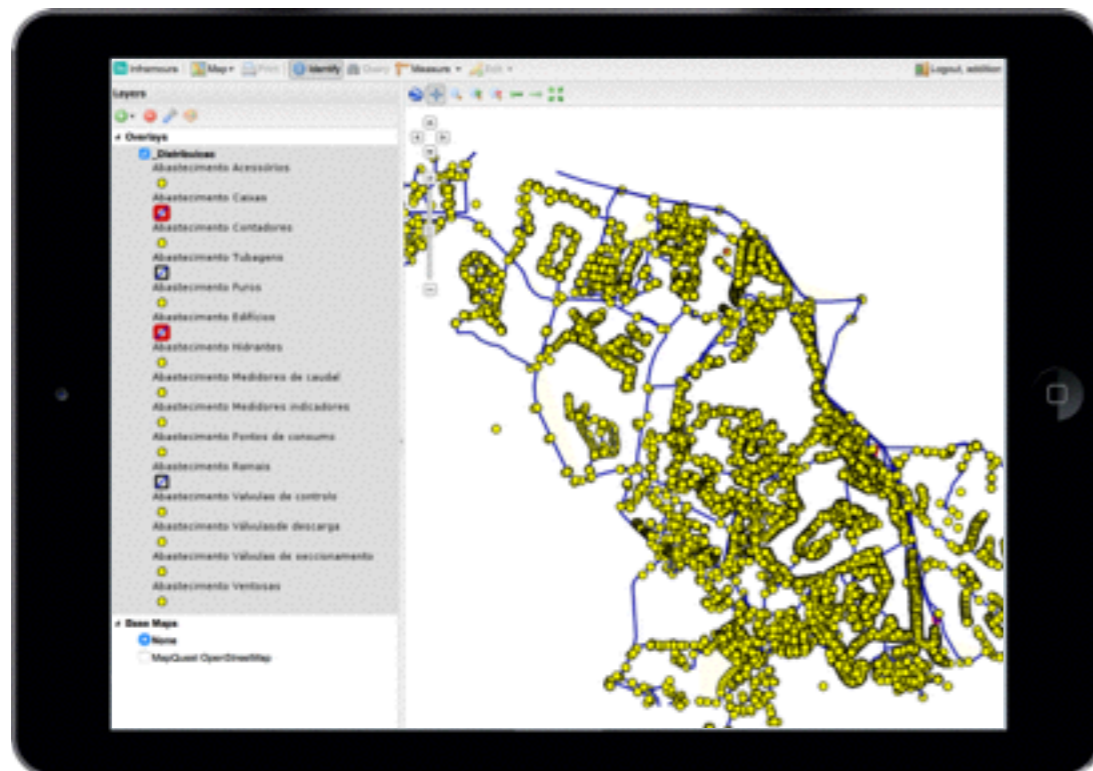
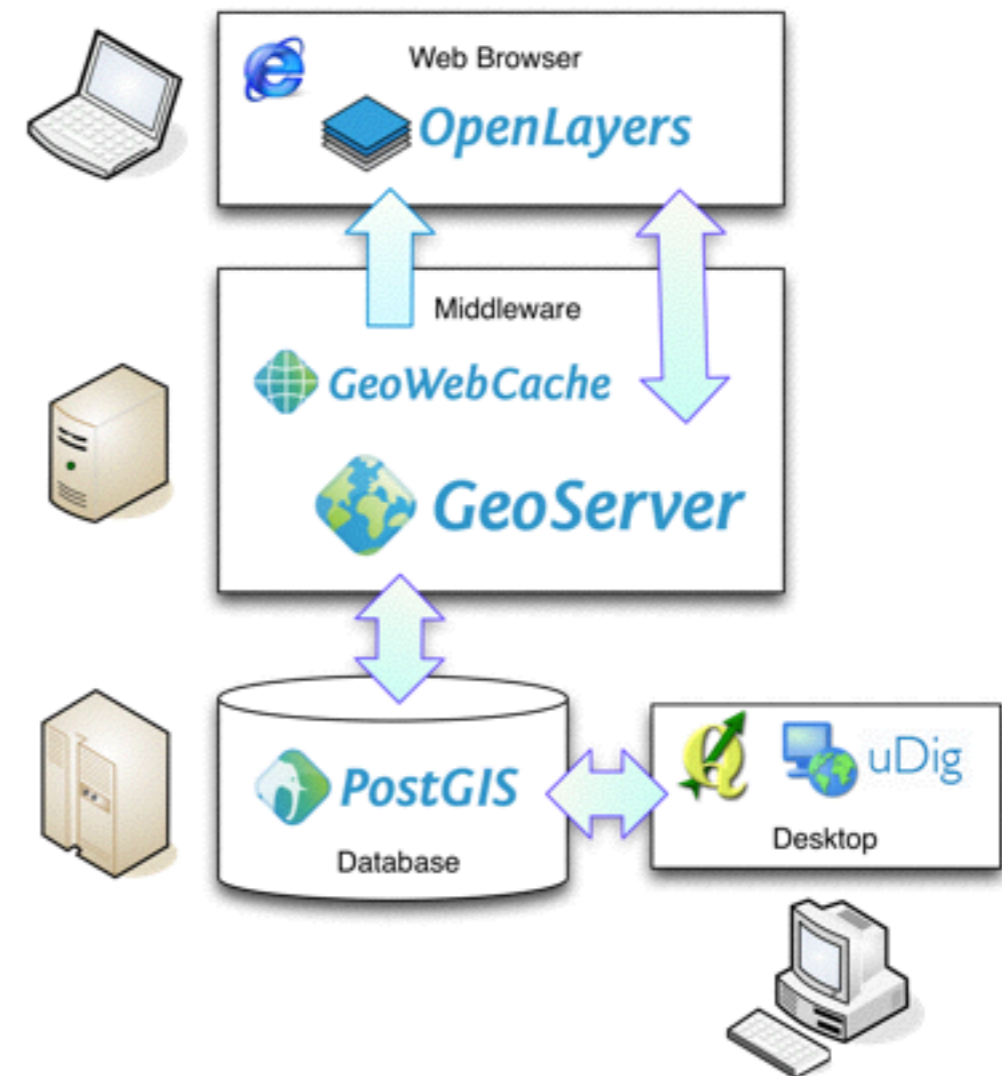
Boundless OpenGeo Suite Enterprise

Made for the web, with advanced desktop usage.

Formal, scalable database and data models.

Open, secure, standards compliant.

Multi-platform, multi-user.



Migration 1/3

Data model

Python scripts were used to harness and iterate through information on existing data.

Feature Classes and Feature Datasets

Exported using python to shape file format; datasets converted to database schema; massive conversion with normalized projections and 2D geometries.

Data tables

PostgreSQL database “mounted” on ArcCatalog; python scripts to export from ArcGIS to PostgreSQL.

Relationship classes

Again, used python to export model information; this information is used on another python script to recreate relationships on qGIS.

Workspace Data Domains

There is no direct match to this entity on OpenGeo; domains were exported using python, recreated as regular tables on PostgreSQL and mapped on qGIS via automated qGIS python script.

Migration 2/3

Feature Field / Domain relationship

Workspace domains are referenced by over 1500 individual attributes; qGIS script has been used to map these relationships. Data model revision, in progress, will

Feature Class and Feature Field

Aliases

Layers and layer attributes include “friendly names” on ArcGIS; this information has been exported from ArcGIS and imported to qGIS; solution for web maps is being explored, namely for individual attributes.

Layer Styles

The migration project is an opportunity to formalize styling; specific styles, for example street signs, were exported to SLD and imported in GeoServer.

Attachments

Were massively used to store photos and videos from public works and infrastructures. These were exported to a server filesystem and linked to qGIS using “actions” which are constructed using python.

Migration 3/3

Aerial/raster images

Filesystem based rasters were easily transferred to GeoServer and feed GeoExplorer web maps as well as qGIS usage.

History/versioning

ArcGIS includes a versioning feature allowing for exploring database previous states. Historical data was migrated using python and database trigger driven history tables were created in PostgreSQL.

Take aways

Python scripting, both on ArcGIS and on qGIS, has proven to be a great tool to automate large data migration.

Inframoura's use of many specialized ArcGIS features, such as versioning or domain relationships found suitable parallels on OpenGeo Suite.

Overall migration process took **two months**, including the development and fine-tuning of scripts, data validation and PostgreSQL/PostGIS, GeoServer and qGIS configuration as well as training.

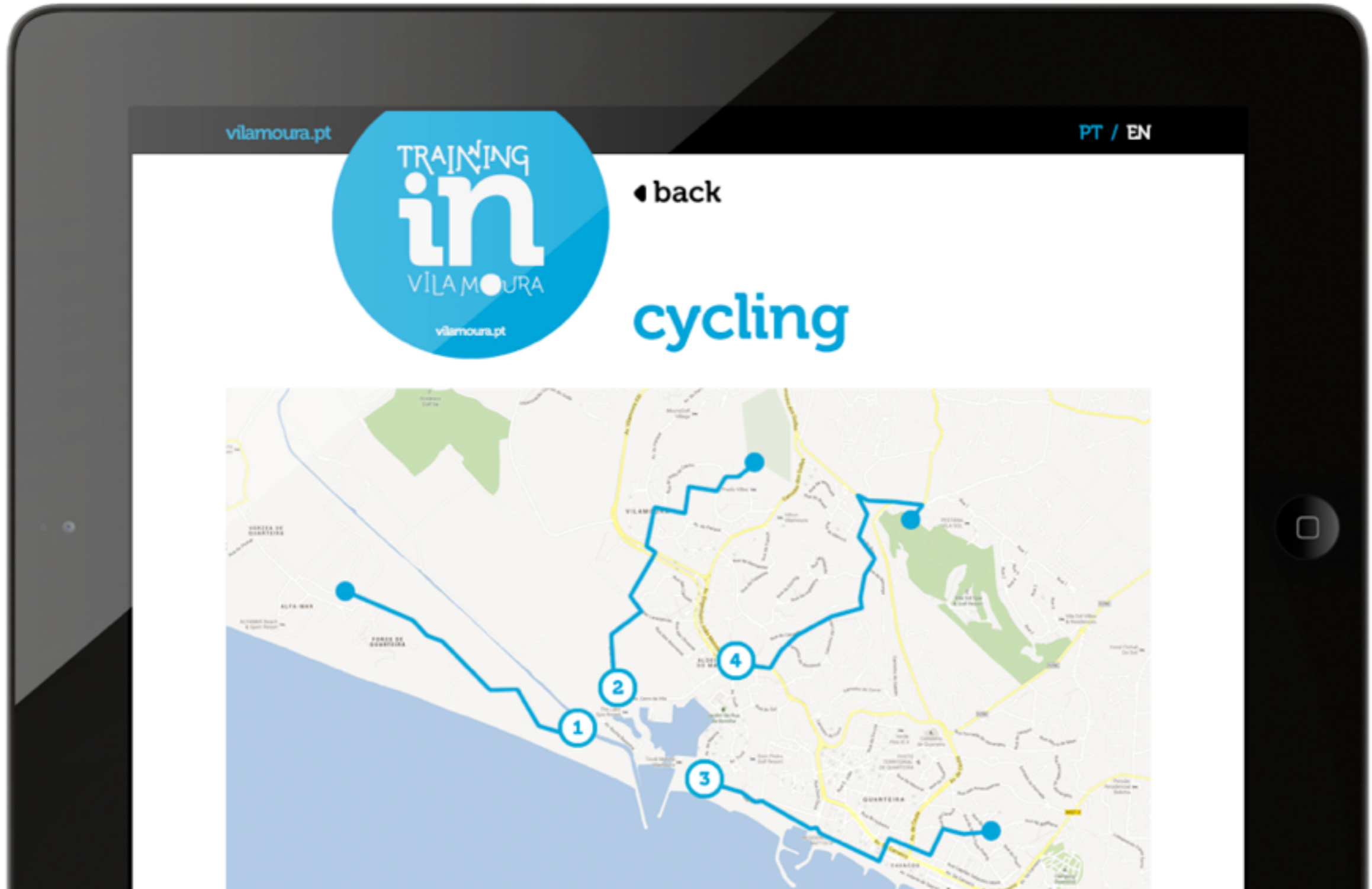
Migration can be scary but it is also a very good opportunity to redefine and optimize data models, workflow and procedures.



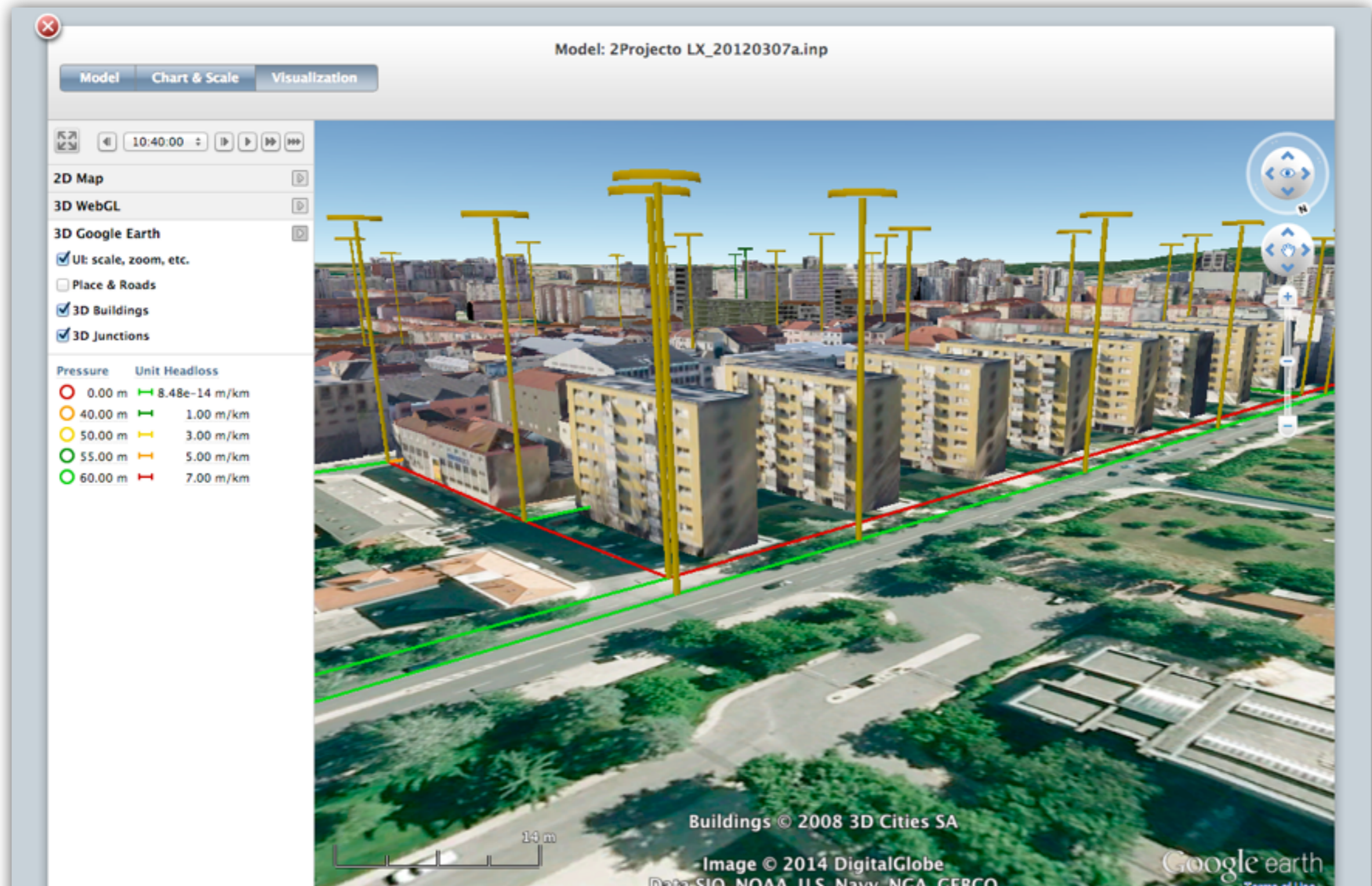
Integration: billing / CRM



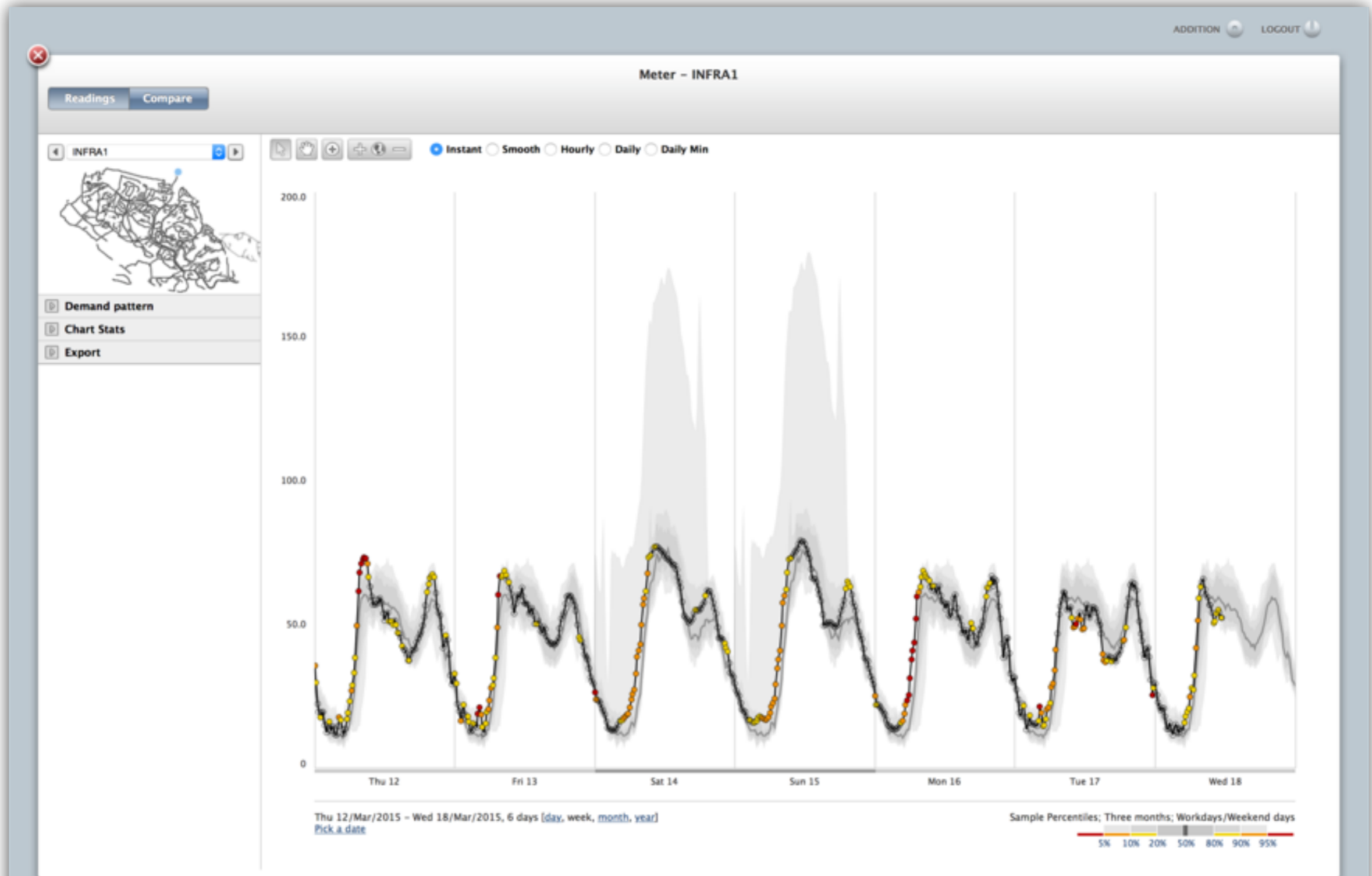
Integration: public bike rentals



Integration: water network modeling



Integration: water supply monitoring



Baseform software portfolio

Monitor: real-time operational efficiency



Events

Detects deviations to normal network behavior that may translate leaks, pipe breaks, unusual demand or a variety of network issues.



Meters

Sensor-based monitoring drives system usage analytics, learning and predicting demand patterns & trends, and consumer behavior.



Zones

Interactive map-based environment to precisely calculate zone totals and statistics, as well as a range of key NRW and efficiency indicators.



Water balance & energy balance

IWA-compliant water audit & energy balance framework for rigorous, automated diagnosis, NRW reduction and asset management.

Diagnose: spatial and system behavior analytics



Network modeling

Efficient, Java Epanet engine for full-range hydraulic and water quality simulation, with 3D visualization and Google Earth integration.



Technical performance

Simulation-based, technical performance assessment of system capacity, water quality, energy use and any other system behavior.



Energy analysis

Automatically calculates the energy needed to supply distributed demand in a water network using web-available detail geodata.



Baseform GIS

Adds geo-referenced data (e.g., demographics, buildings, zoning, utility shapefiles) & geo-analysis capabilities to the specialty modules.

Predict: system & asset analytics



Failure analysis

Using system component failure records, such as work orders, predicts present and future probability of failure of pipes or sewers.



Inspection analysis

Using pipeline/sewer inspection and condition assessment records, predicts future condition, residual life, and guide the inspection effort.



Component importance

Simulates the failure of each individual pipe in a water supply network to measure its hydraulic impact on nodal demand.



Unmet demand

Quantifies supply service interruption risk through expected reduced service, based on failure probabilities and consequences.

Plan: time and space prioritization



Compare & prioritize

AWARE-P framework where competing projects/alternatives are measured up and prioritized through objectives-guided metrics.



Performance indicators

A tool for selection and calculation of kPI based on organized libraries, including industry standards (IWA) and user-developed libraries.



Financial project

Assesses net present value (NPV) and the investment return rate (IRR) of any financial project from a long-term perspective.



Infrastructure Value Index

Analyses the ageing degree of an infrastructure comprised of any no. of assets, and forecast short/long-term investment and rehab needs.

baseform



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