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PUBLIC RESEARCH CENTRE HENRI TUDOR

LAMILO
sustainable city logistics

Investing in Opportunities
This project has received European Regional Development Funding through INTERREG IV B.
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INTERREG IVB

iGUESS-SL – An **i**ntegrated **G**eospatial **U**rban d**E**cision **S**upport **S**ystem for **S**mart City **L**ogistics

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Background

Freight transportation targets within the EU

- Speed up deliveries across the NWE area;
- Reduced CO_2 and noise in city centres and freight hubs, and reduce the carbon footprint of logistics overall;
- Ensure more reliable deliveries;
- Provide more sustainable whole-journey choices;
- Ensure enhanced collaboration between logistics businesses;
- Engender enhanced collaboration between city centre businesses.

LaMiLo contributes to urban solutions

LaMiLo

- **aims** at reducing CO_2 & noise emissions in urban areas;
- **involves** stakeholders;
- **uses** modelling tools and best practises for sustainable freight transportation;
- **develops** innovative strategies for sustainable freight transportation and logistics planning.

LaMiLo contributes to urban solutions

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- **aims** at reducing CO_2 & noise emissions in urban areas;
- **involves** stakeholders;
- **uses** modelling tools and best practises for sustainable freight transportation;
- **develops** innovative strategies for sustainable freight transportation and logistics planning.

$\Rightarrow$ GIS can help developing sustainable solutions by integrating information across different disciplines and provide more evidence to the decision processes.

Objectives of GIS integration

Smart City Logistics – a decision support platform providing:

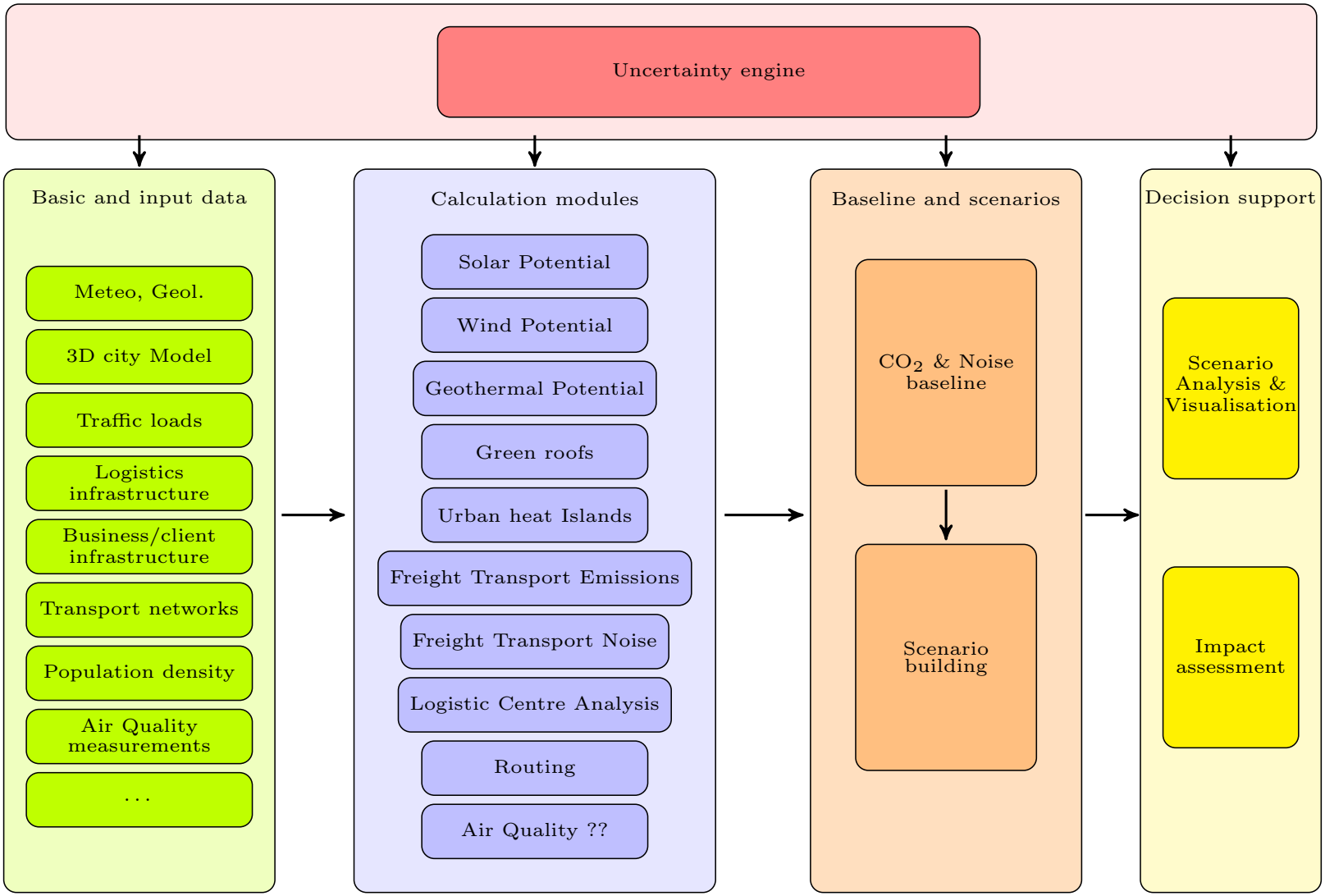
- geospatial modelling and assessment tools to determine improved last mile logistics;
- simplified access to complex spatial and temporal information for stakeholders and decision makers;
- interoperability respecting open standards to integrate distributed data sources, different modelling and analysis tools.

Specific Objectives

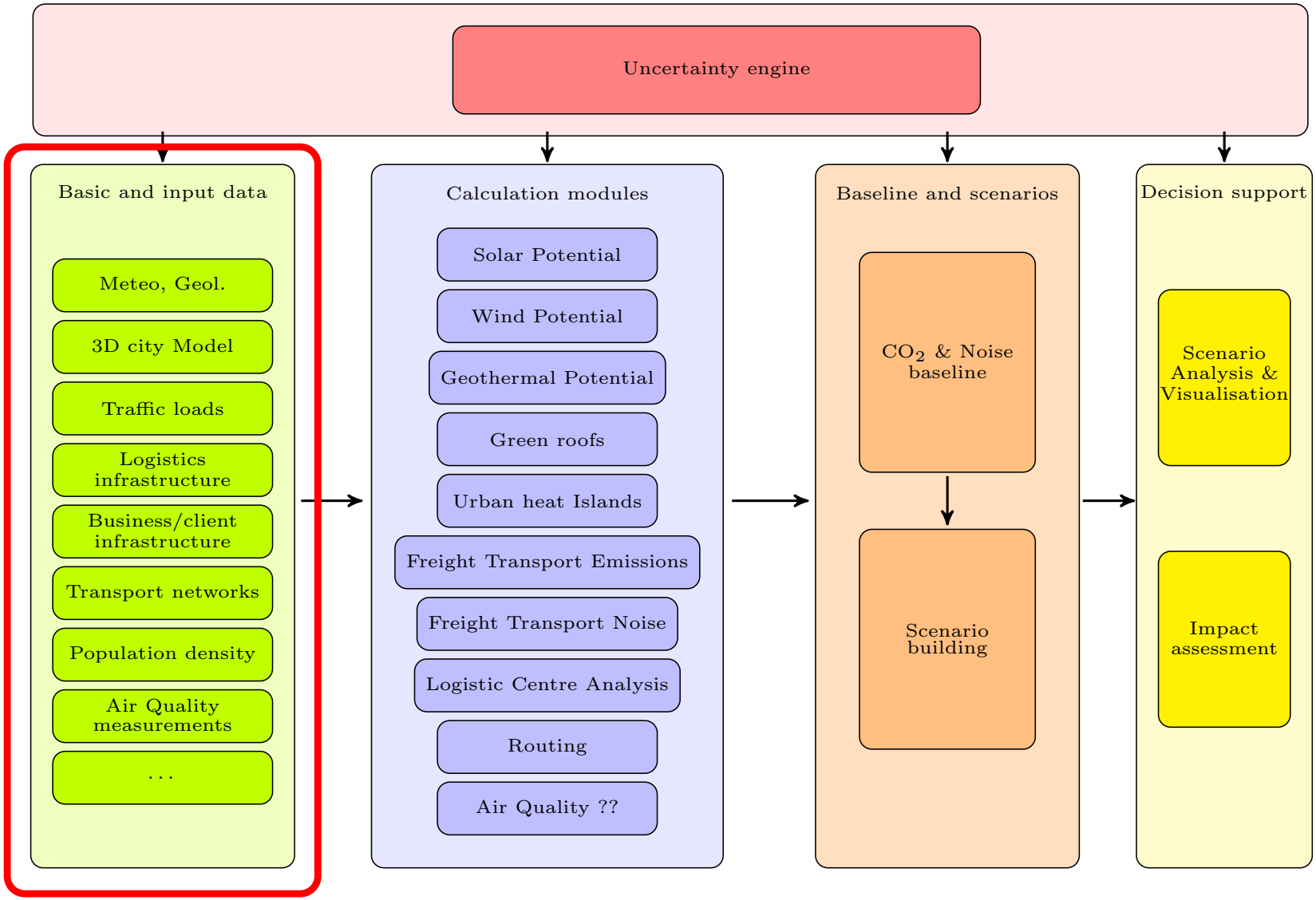
Smart City Logistics – a decision support system which provides

1. Modelling tools for:
   - emission allocation for road segments;
   - noise allocation for road segments;
   - finding routes with least/balanced costs (minimise €, emissions, noise, environmental and population impact) connecting different modes;
2. Decisions support tools for:
   - map visualisation and scenario comparison;
   - development and testing of transport mode scenarios;
   - location analysis of potential consolidation centre.
3. Framework for interoperable data and model integration for urban freight transportation.

The Smart City Logistics Framework



The Smart City Logistics Framework



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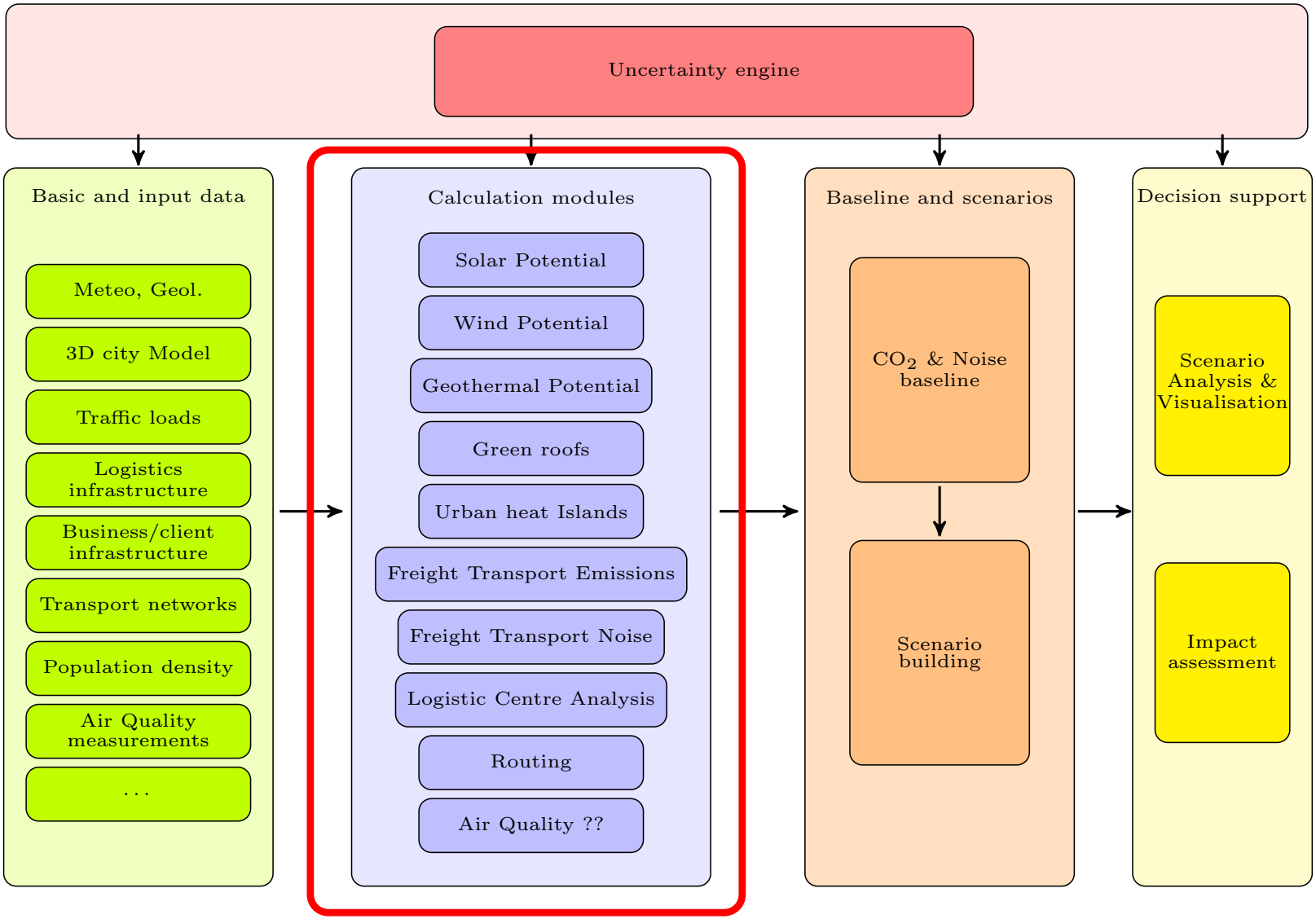
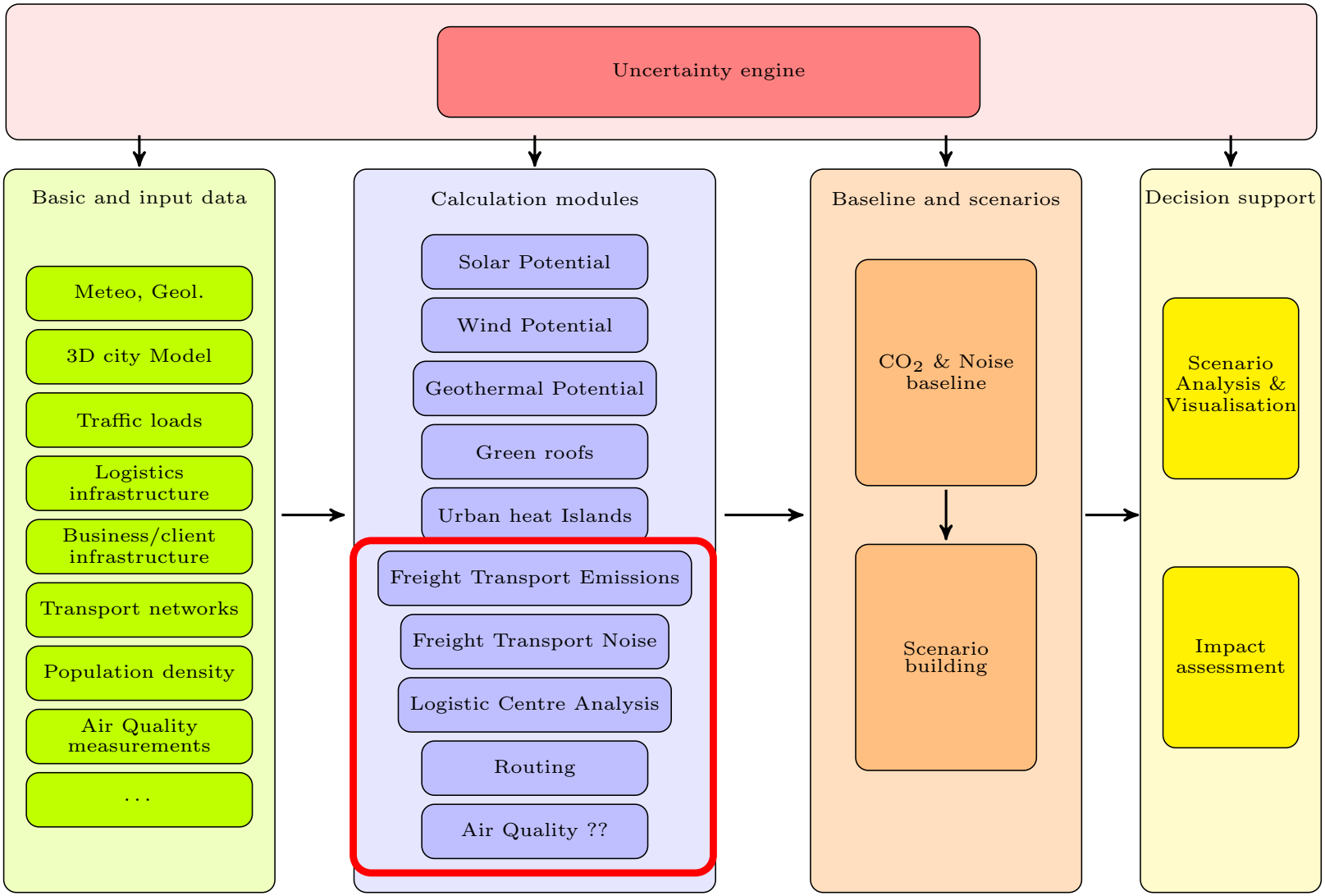


The Smart City Logistics Framework



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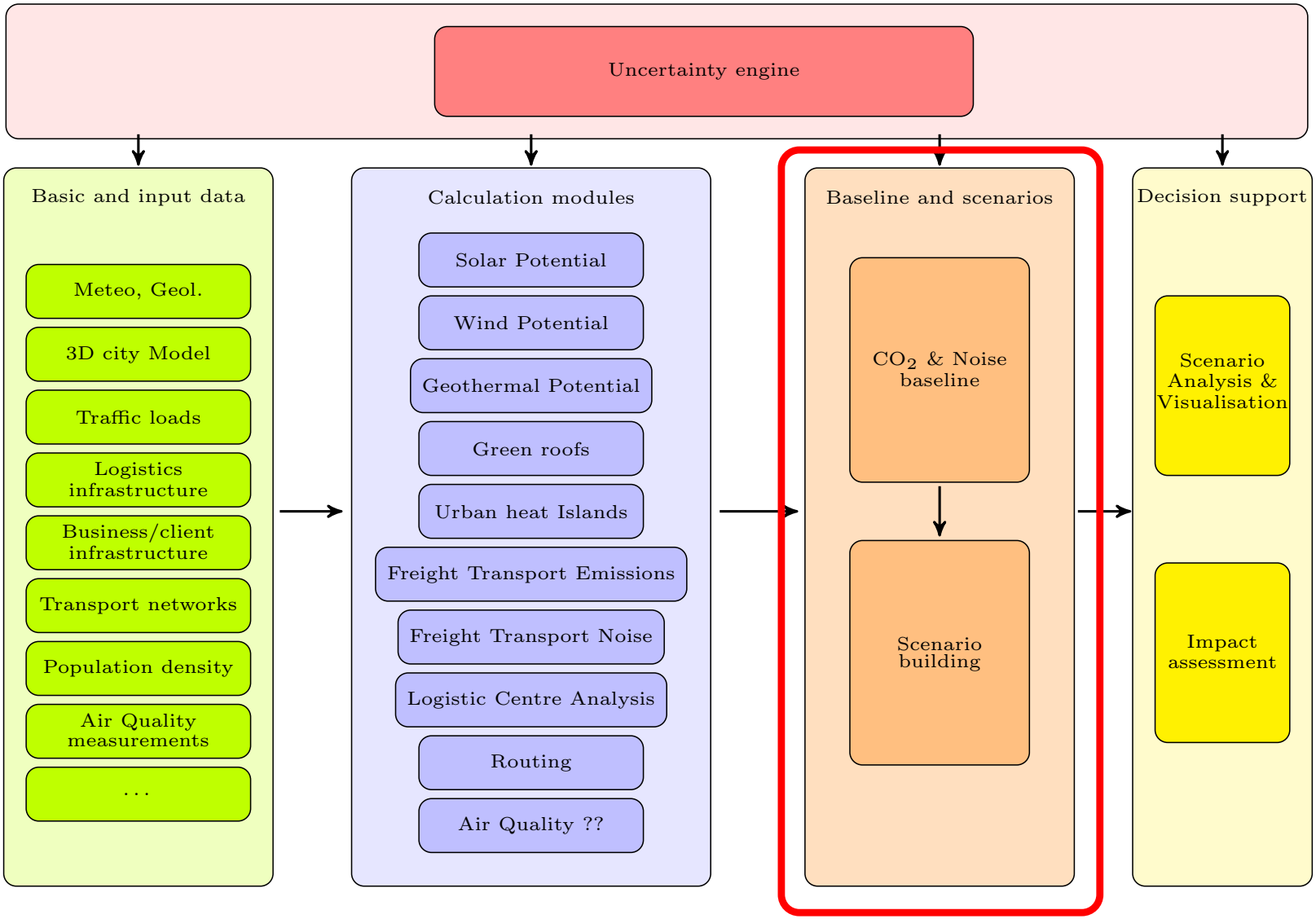

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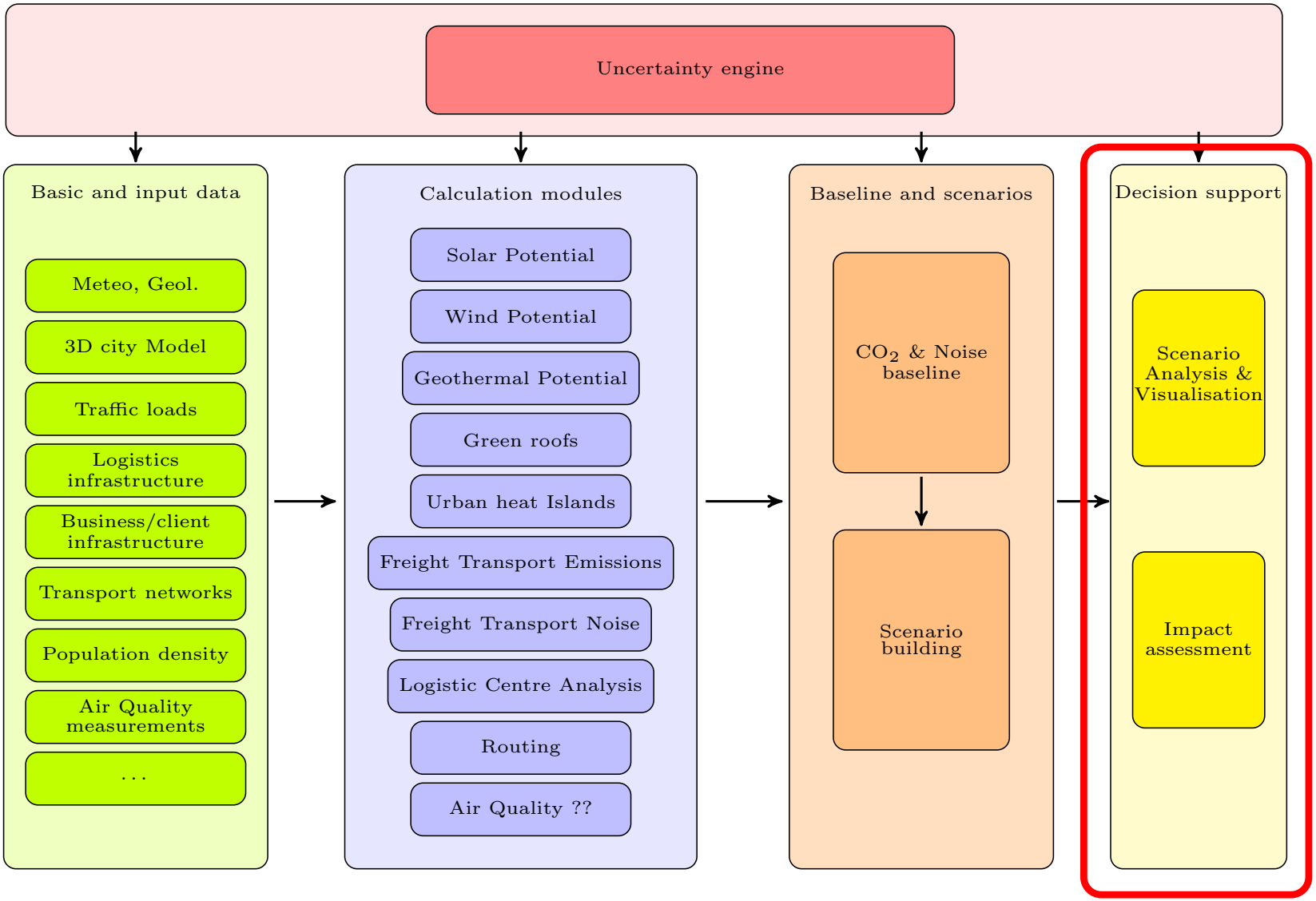
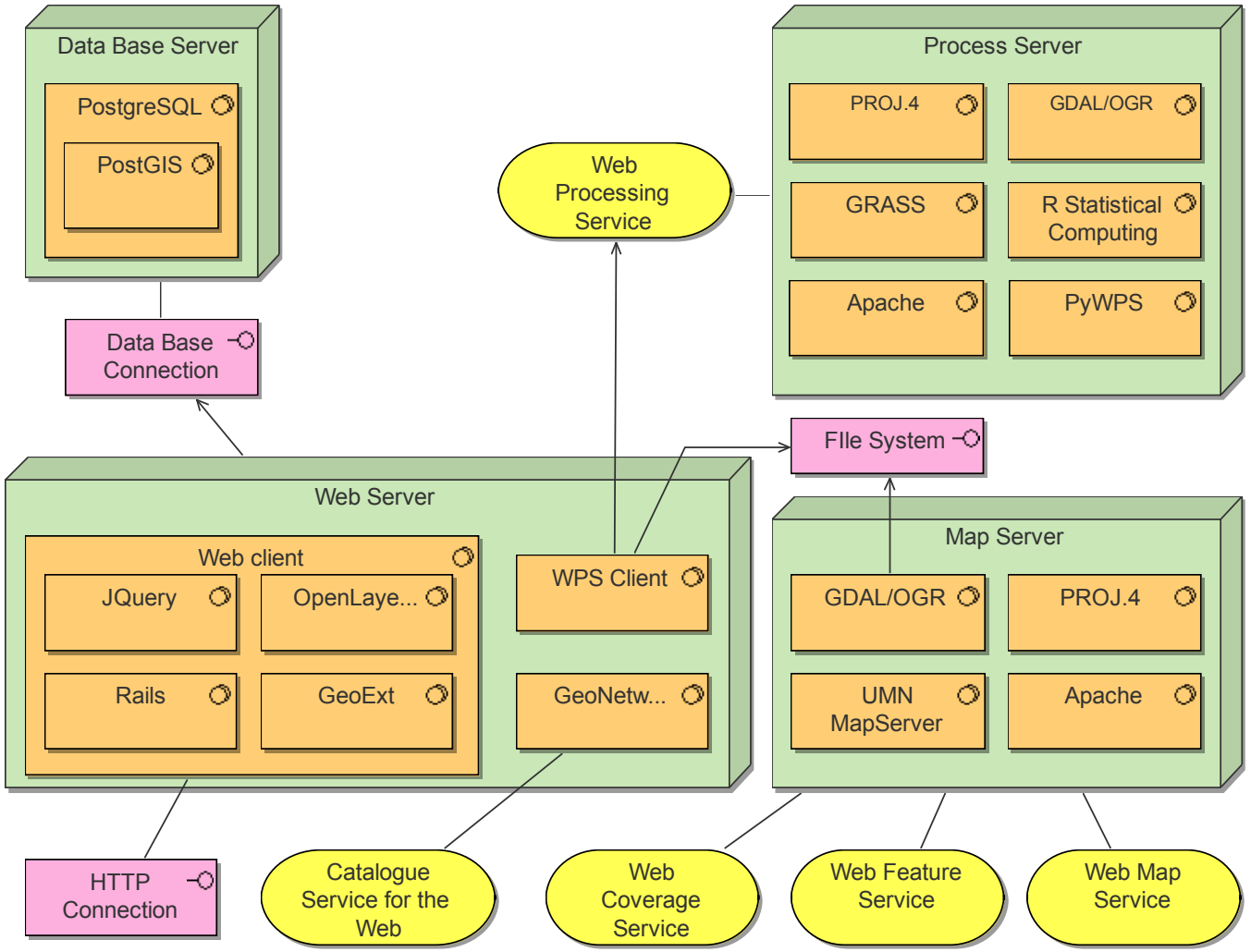


The iGUESS Technological Architecture



LaMiLo outputs

The major LaMiLo outputs originating from the Smart City Logistics approach are tools to:

- visualise data and modelling results,
- compute CO_2 (and NOx) emissions originating from freight traffic,
- model noise propagation from freight transport across 2D (3D) space and time,
- compute spatial costs associated to freight transportation,
- find optimal routes and transportation modes in inner cities,
- enable scenario development and testing,
- provide improved support to decision making by integrating information,
- provide a basis for the development of monitoring indicators.

The Smart City Logistics Web Interface

The Smart City Logistics Start Page

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Smart City Logistics
powered by iGUESS

Home | Maps | Modules | About

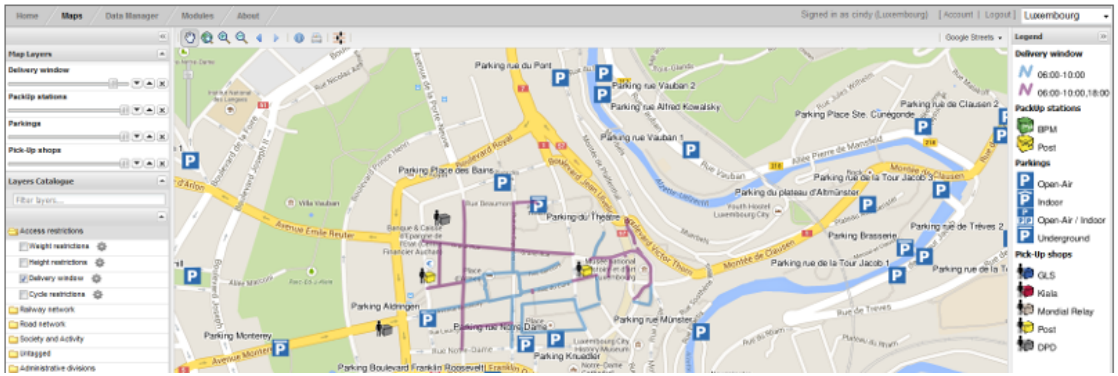
[New User | Login]

understand your options...

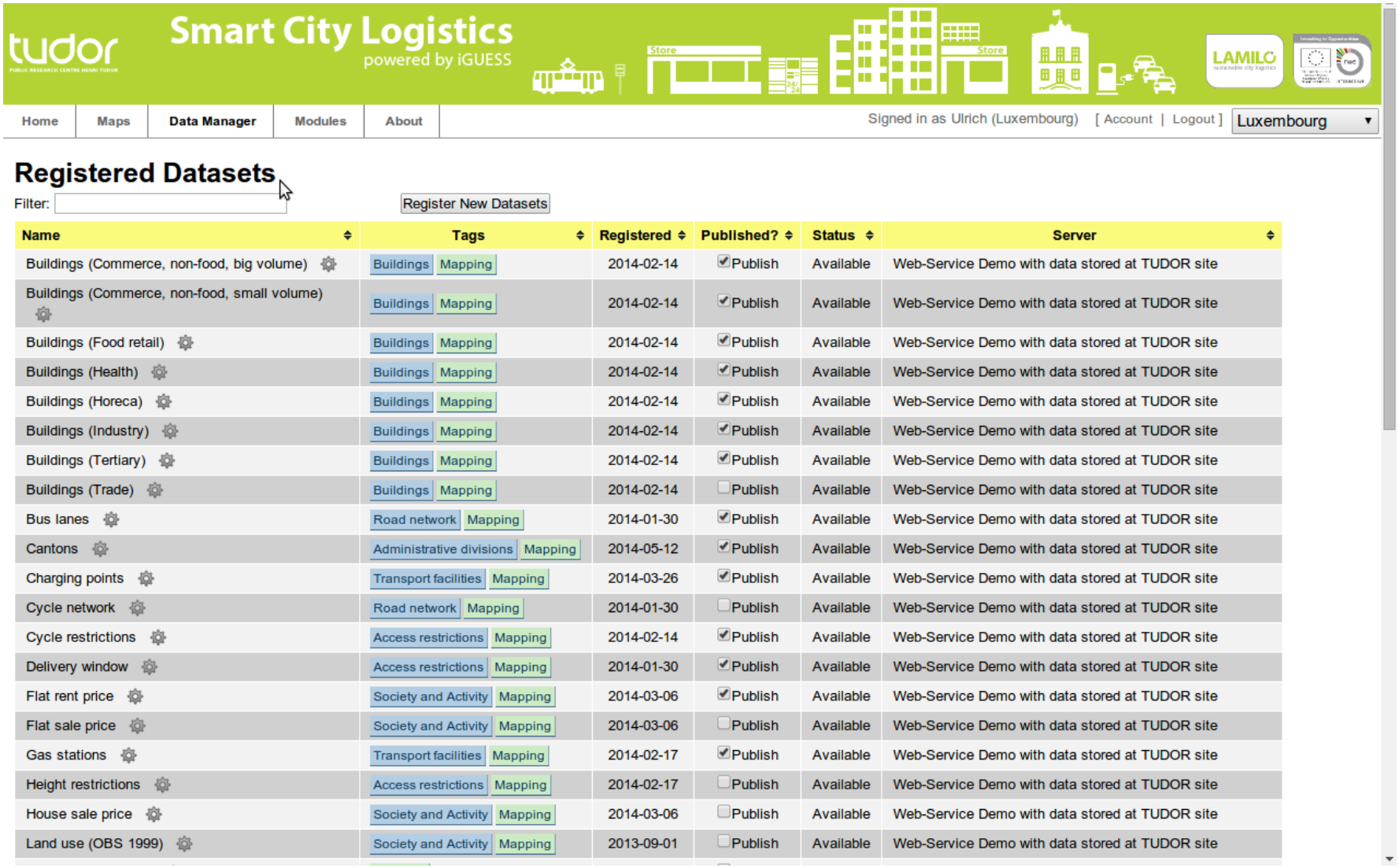
plan your future.

Smart City Logistics is a decision support platform for urban logistics for European cities. Smart City Logistics provides decision makers with a wide range of easy to understand information to support the development of urban freight transportation plans. Addressing urban logistics requires an integrated understanding of transport, environmental and socio-economic aspects to arrive at sustainable solutions. The Smart City Logistics platform maps information on transportation networks, access restrictions, traffic measures, delivery and transport facilities, administrative units, population, land use and emission situations. Smart City Logistics allows to assess trends and relationships from different perspectives and identify innovative and strong sustainable solutions.

Maps Preview



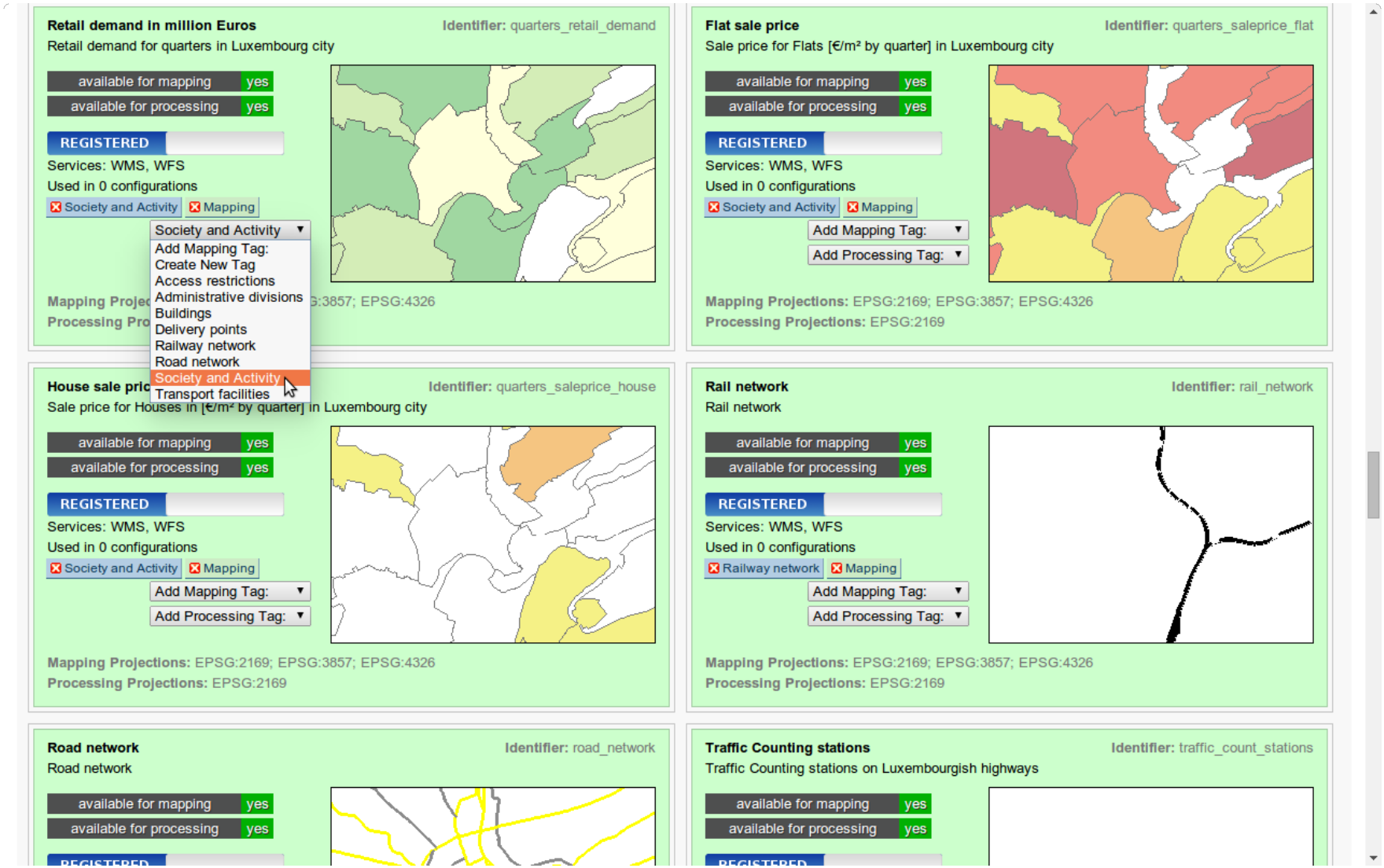
The Smart City Logistics Data manager



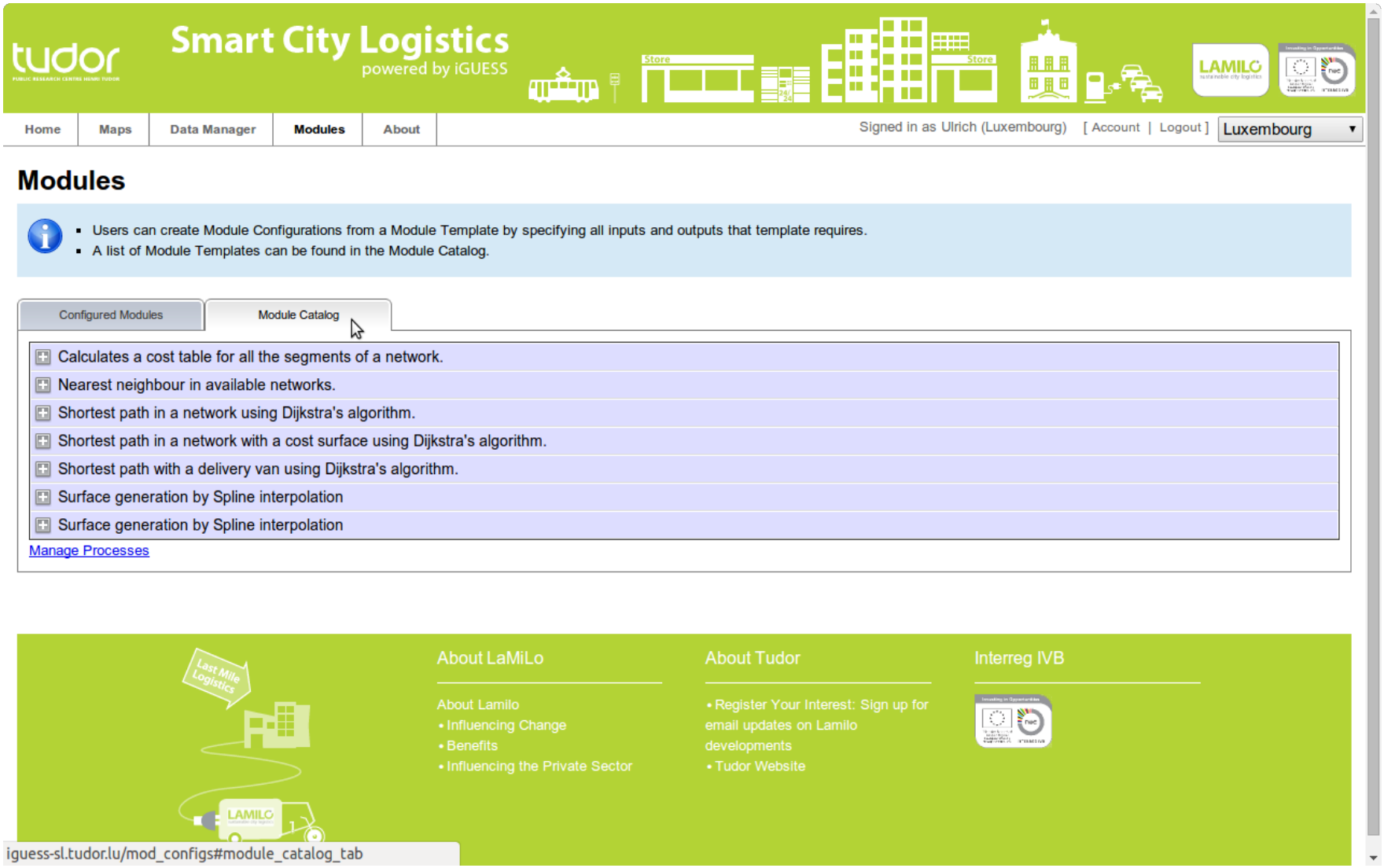
Name	Tags	Registered	Published?	Status	Server
Buildings (Commerce, non-food, big volume)	Buildings Mapping	2014-02-14	Publish	Available	Web-Service Demo with data stored at TUDOR site
Buildings (Commerce, non-food, small volume)	Buildings Mapping	2014-02-14	Publish	Available	Web-Service Demo with data stored at TUDOR site
Buildings (Food retail)	Buildings Mapping	2014-02-14	Publish	Available	Web-Service Demo with data stored at TUDOR site
Buildings (Health)	Buildings Mapping	2014-02-14	Publish	Available	Web-Service Demo with data stored at TUDOR site
Buildings (Horeca)	Buildings Mapping	2014-02-14	Publish	Available	Web-Service Demo with data stored at TUDOR site
Buildings (Industry)	Buildings Mapping	2014-02-14	Publish	Available	Web-Service Demo with data stored at TUDOR site
Buildings (Tertiary)	Buildings Mapping	2014-02-14	Publish	Available	Web-Service Demo with data stored at TUDOR site
Buildings (Trade)	Buildings Mapping	2014-02-14	Publish	Available	Web-Service Demo with data stored at TUDOR site
Bus lanes	Road network Mapping	2014-01-30	Publish	Available	Web-Service Demo with data stored at TUDOR site
Cantons	Administrative divisions Mapping	2014-05-12	Publish	Available	Web-Service Demo with data stored at TUDOR site
Charging points	Transport facilities Mapping	2014-03-26	Publish	Available	Web-Service Demo with data stored at TUDOR site
Cycle network	Road network Mapping	2014-01-30	Publish	Available	Web-Service Demo with data stored at TUDOR site
Cycle restrictions	Access restrictions Mapping	2014-02-14	Publish	Available	Web-Service Demo with data stored at TUDOR site
Delivery window	Access restrictions Mapping	2014-01-30	Publish	Available	Web-Service Demo with data stored at TUDOR site
Flat rent price	Society and Activity Mapping	2014-03-06	Publish	Available	Web-Service Demo with data stored at TUDOR site
Flat sale price	Society and Activity Mapping	2014-03-06	Publish	Available	Web-Service Demo with data stored at TUDOR site
Gas stations	Transport facilities Mapping	2014-02-17	Publish	Available	Web-Service Demo with data stored at TUDOR site
Height restrictions	Access restrictions Mapping	2014-02-17	Publish	Available	Web-Service Demo with data stored at TUDOR site
House sale price	Society and Activity Mapping	2014-03-06	Publish	Available	Web-Service Demo with data stored at TUDOR site
Land use (OBS 1999)	Society and Activity Mapping	2013-09-01	Publish	Available	Web-Service Demo with data stored at TUDOR site

Register new Data Sets in Smart City Logistics

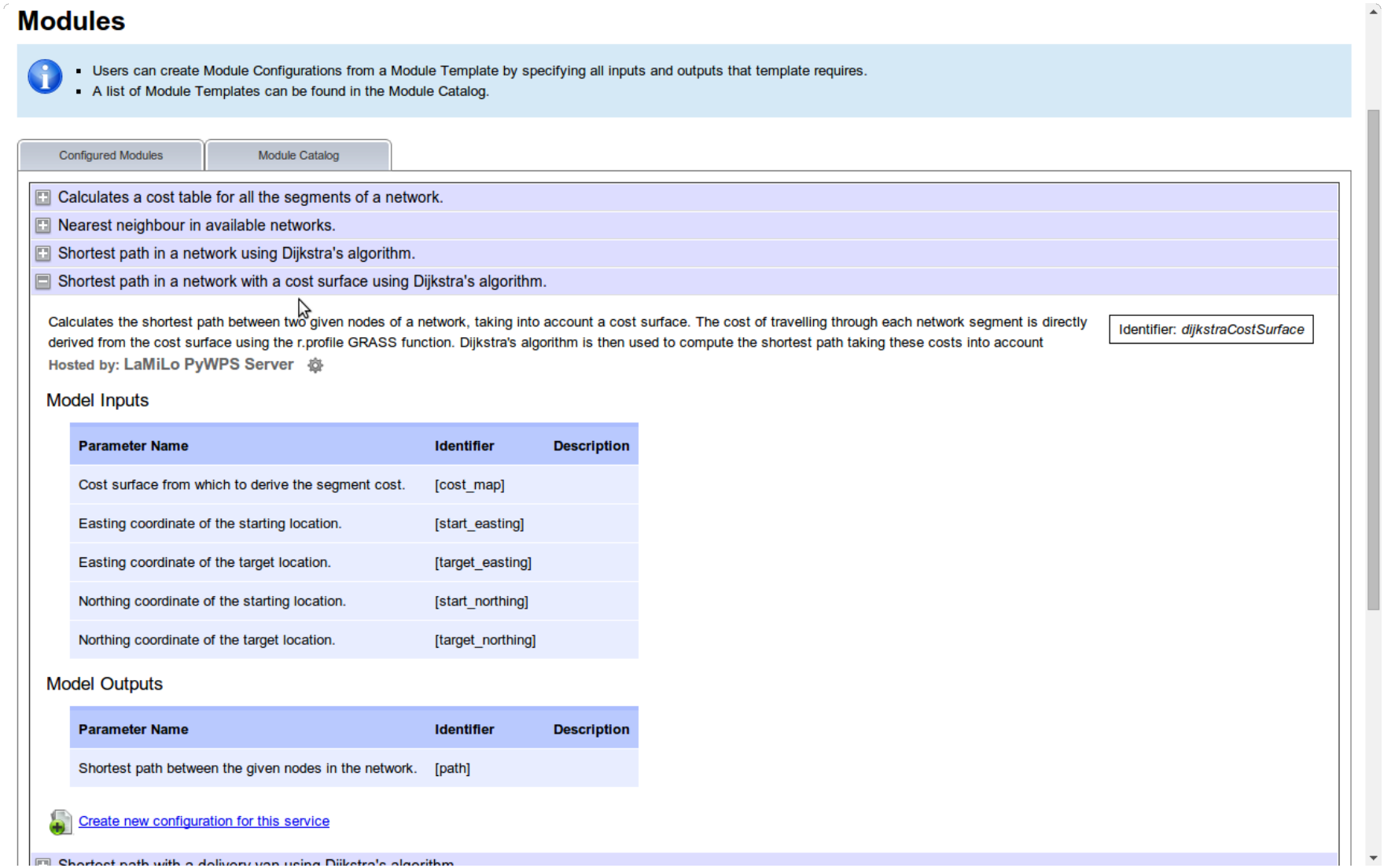
Tagging registered data sets



The Module Catalogue



Choosing a Routing tool



Modules

- Users can create Module Configurations from a Module Template by specifying all inputs and outputs that template requires.
- A list of Module Templates can be found in the Module Catalog.

Configured Modules | Module Catalog

- Calculates a cost table for all the segments of a network.
- Nearest neighbour in available networks.
- Shortest path in a network using Dijkstra's algorithm.
- Shortest path in a network with a cost surface using Dijkstra's algorithm.

Calculates the shortest path between two given nodes of a network, taking into account a cost surface. The cost of travelling through each network segment is directly derived from the cost surface using the r.profile GRASS function. Dijkstra's algorithm is then used to compute the shortest path taking these costs into account

Identifier: *dijkstraCostSurface*

Hosted by: LaMiLo PyWPS Server

Model Inputs

Parameter Name	Identifier	Description
Cost surface from which to derive the segment cost.	[cost_map]	
Easting coordinate of the starting location.	[start_easting]	
Easting coordinate of the target location.	[target_easting]	
Northing coordinate of the starting location.	[start_northing]	
Northing coordinate of the target location.	[target_northing]	

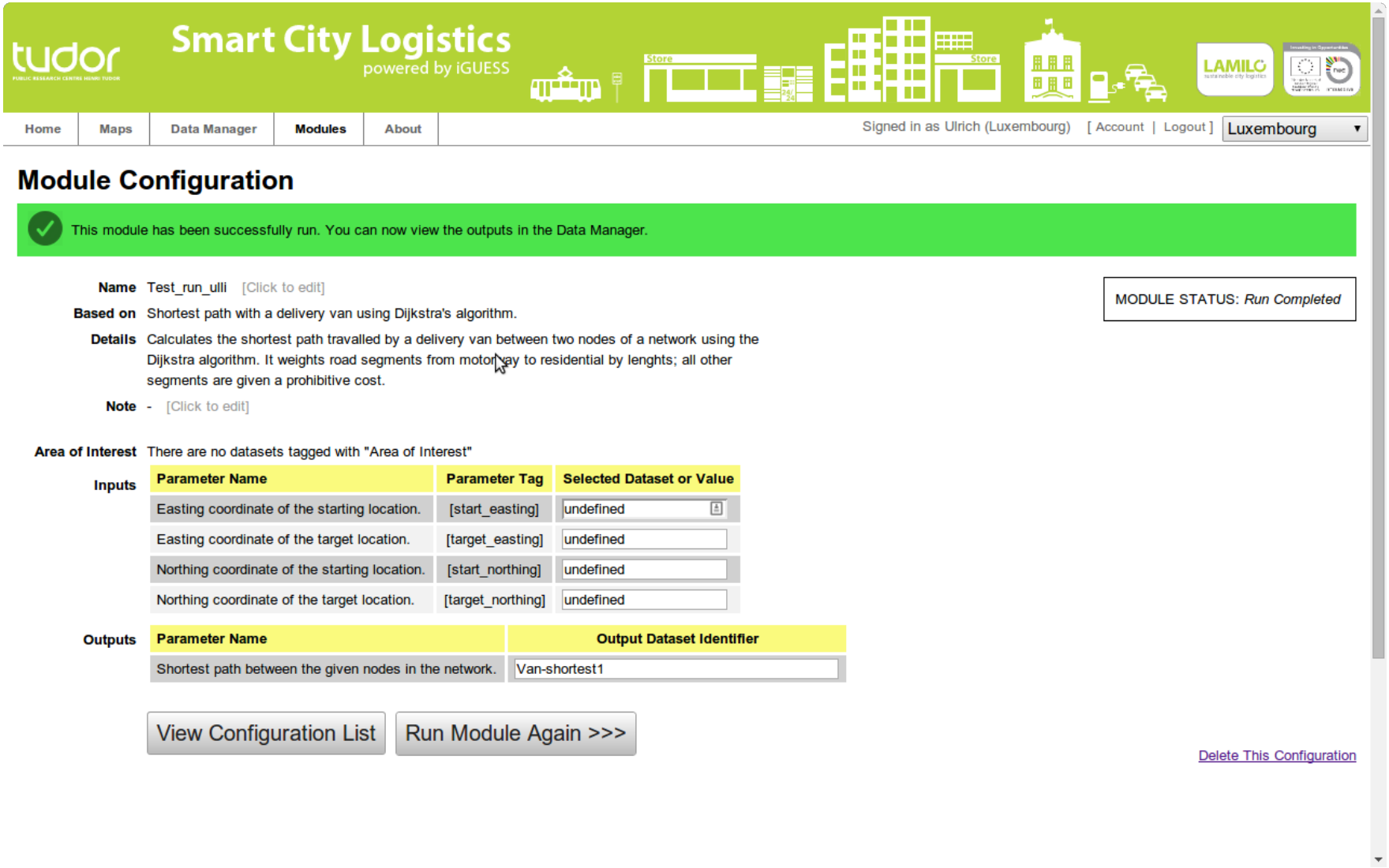
Model Outputs

Parameter Name	Identifier	Description
Shortest path between the given nodes in the network.	[path]	

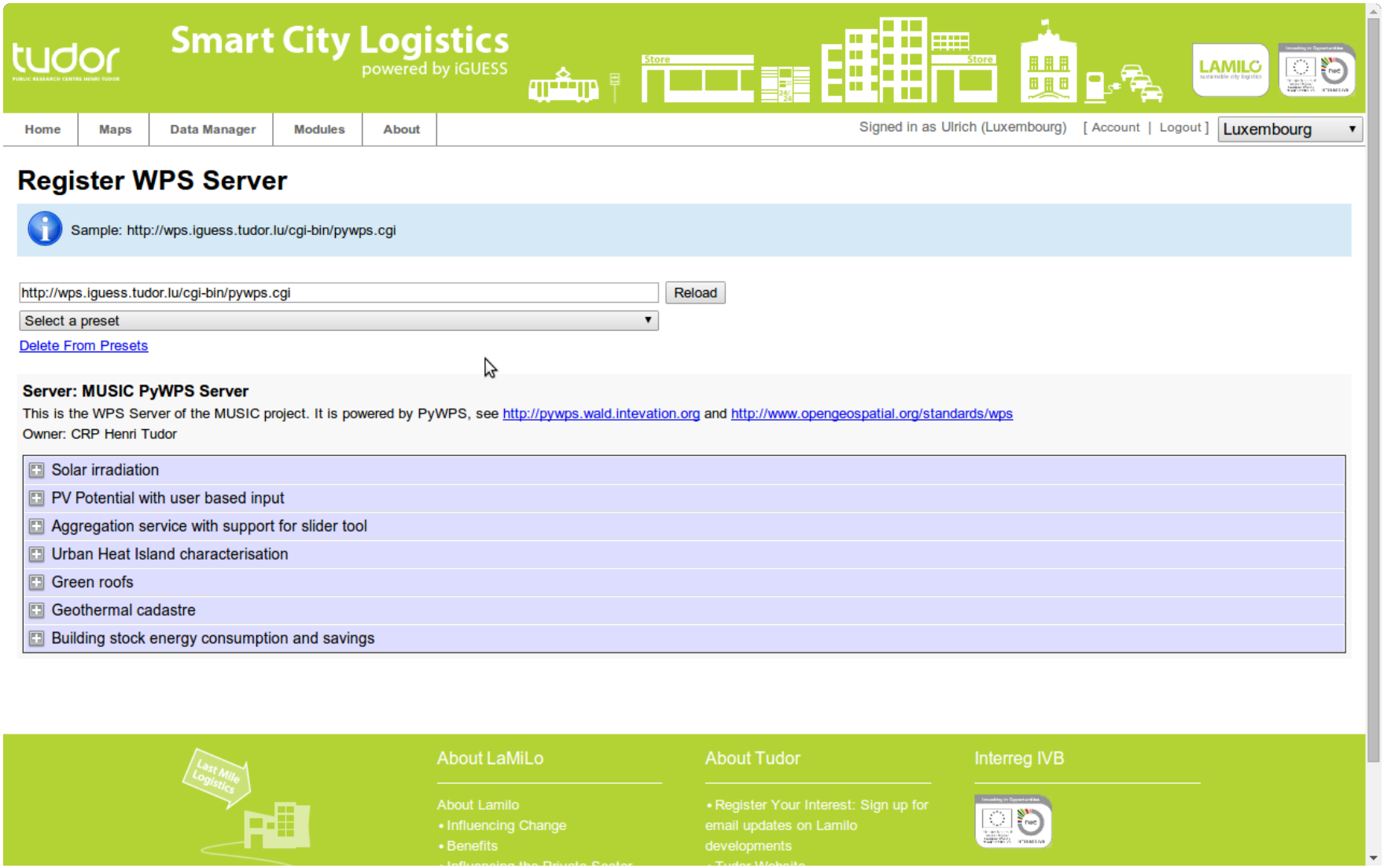
Create new configuration for this service

- Shortest path with a delivery van using Dijkstra's algorithm.

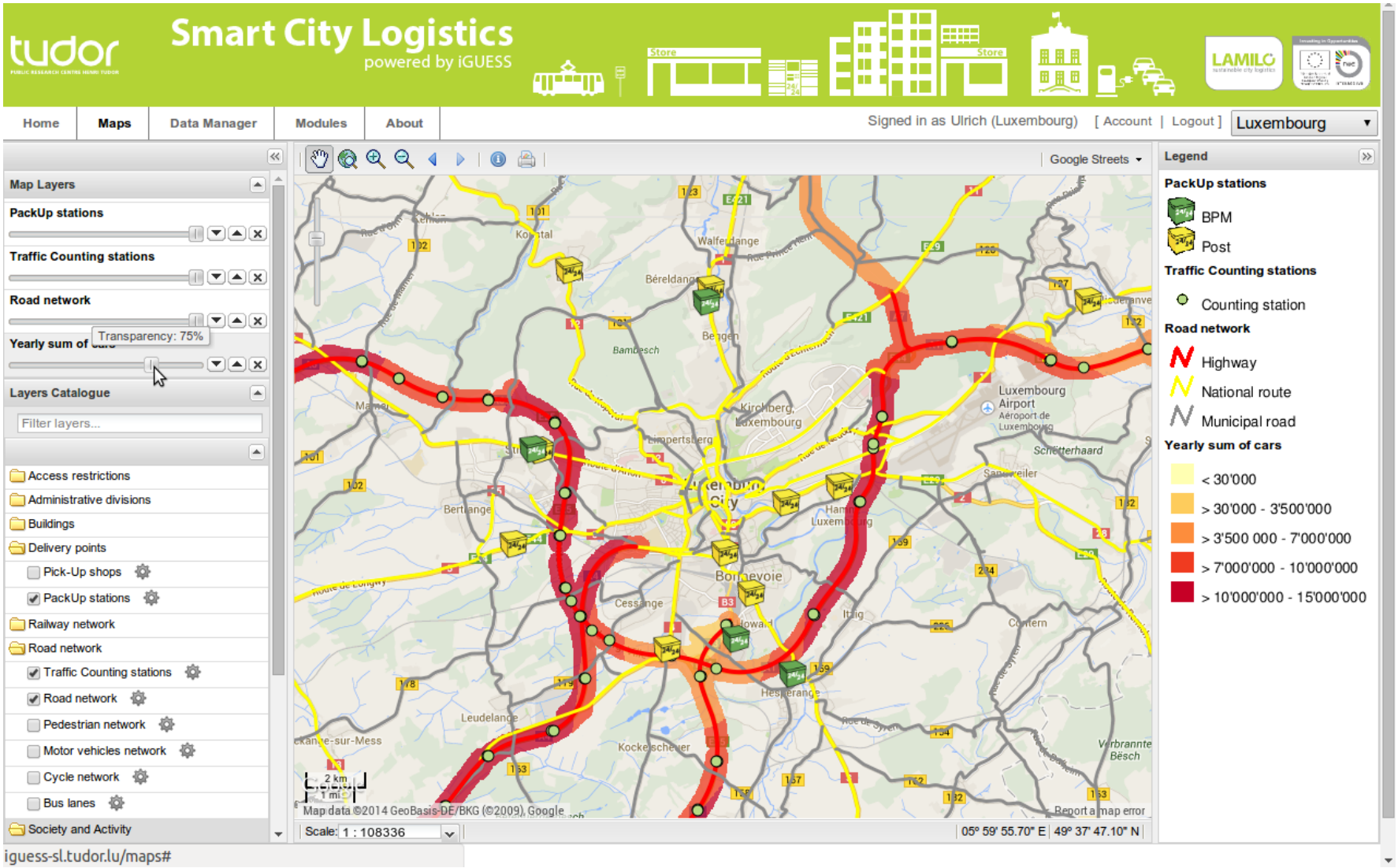
Configuring a Module



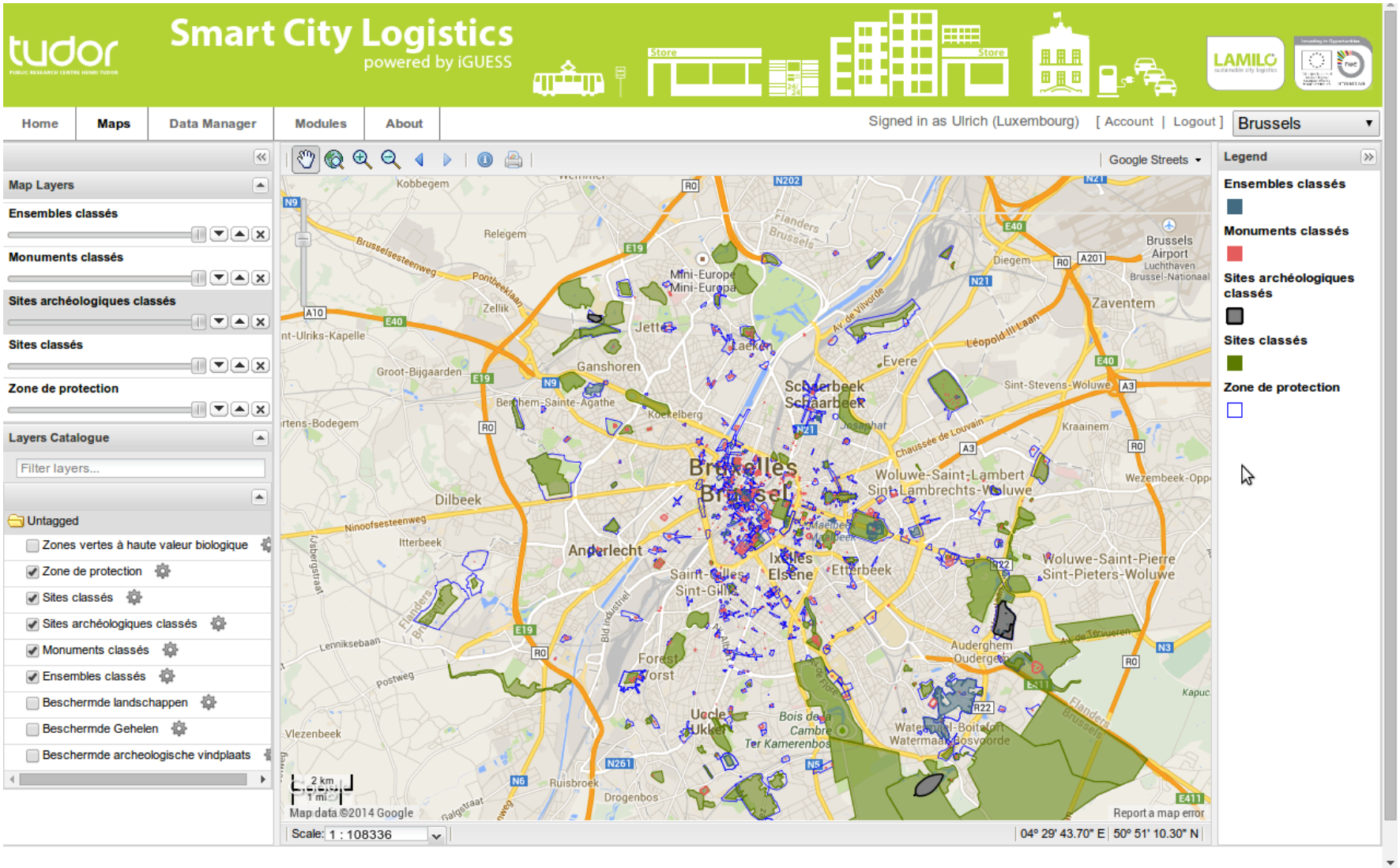
Register New Modules



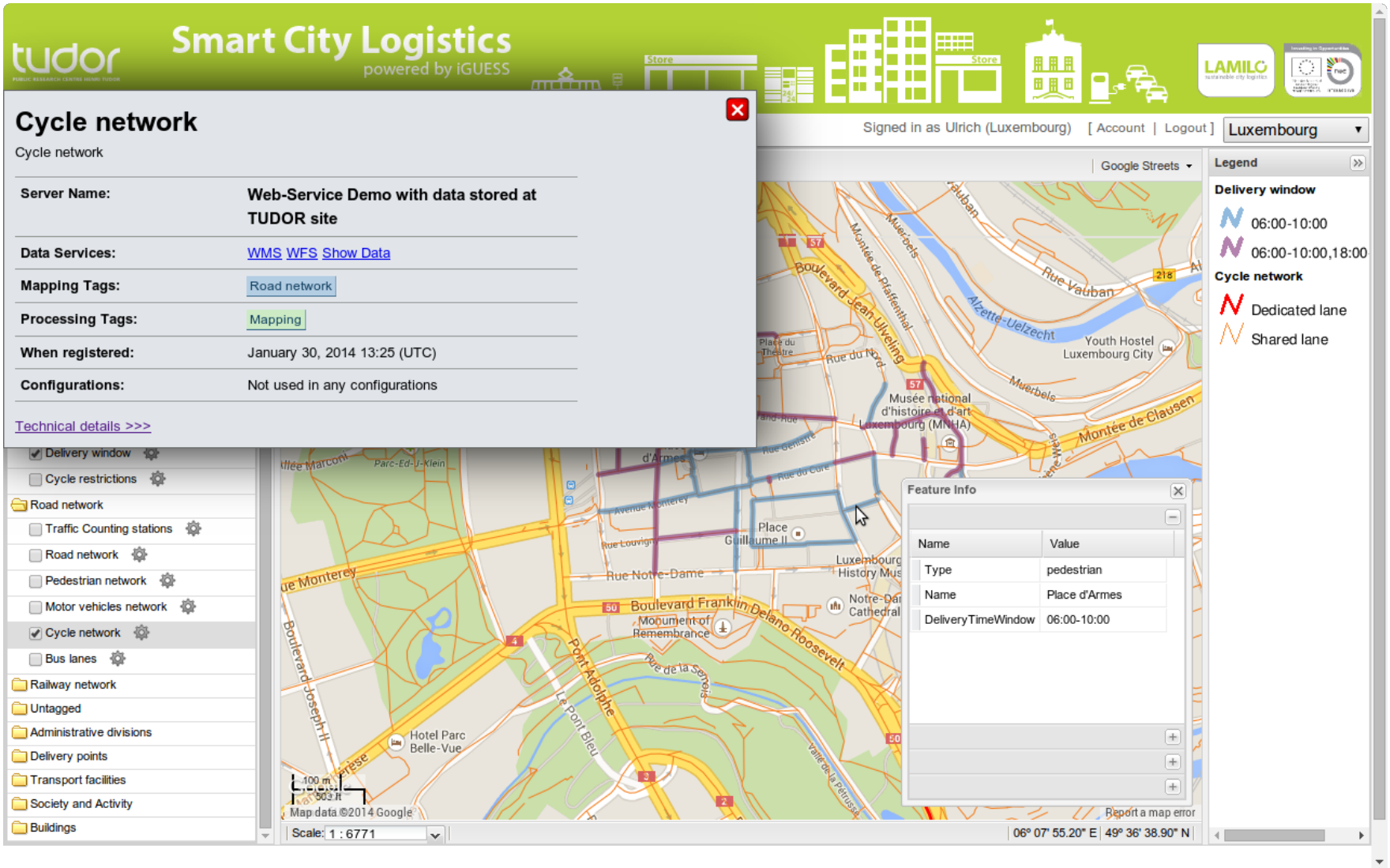
Visualising information on Traffic



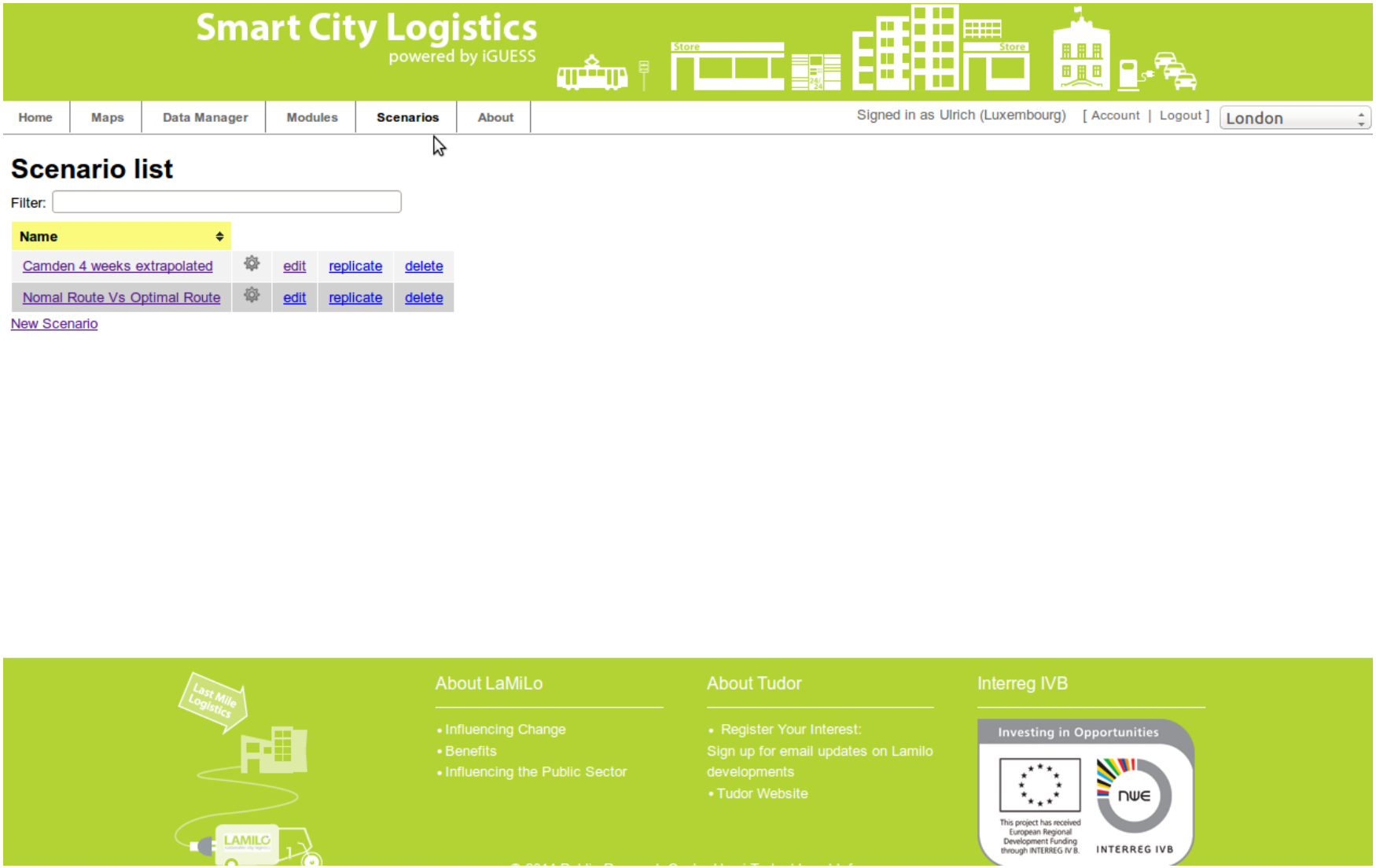
Combining Information of different web services



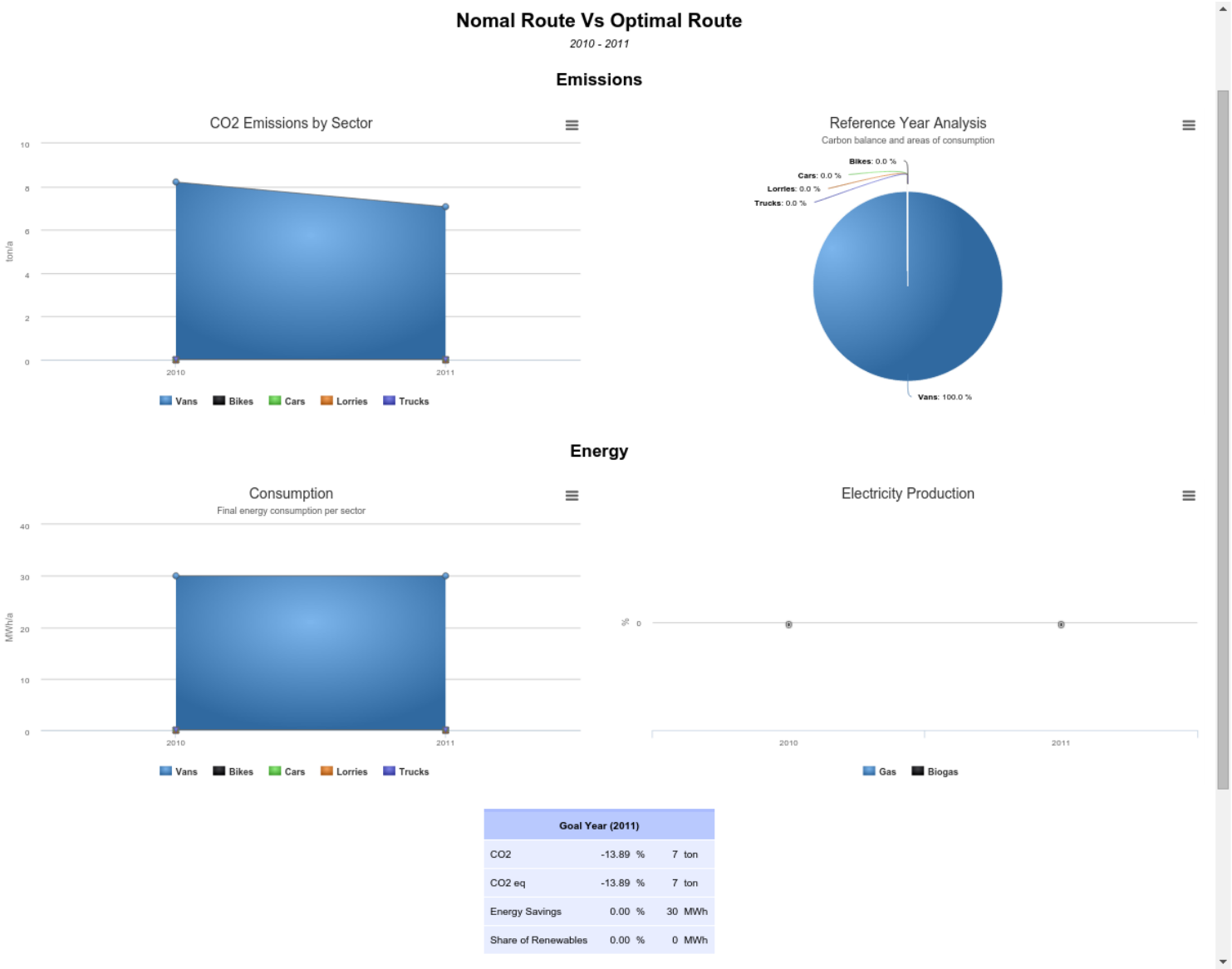
Accessing Information through the web



Emission Scenario Modelling



Emission Scenario Modelling



Goal Year (2011)			
CO2	-13.89 %	7	ton
CO2 eq	-13.89 %	7	ton
Energy Savings	0.00 %	30	MWh
Share of Renewables	0.00 %	0	MWh

Smart City Logistics impacts

- Smart City Logistics can help finding answers to complex questions;
- Smart City Logistics will support cities to develop innovative strategies, e.g. open data access, mobile app developments, optimal location finding of urban consolidation centres, strategic CO_2 emission reduction scenarios, link to renewables and energy savings potentials;
- it provides a flexible framework to integrate other topics, e.g. energy, air quality, etc.;
- New cities show interest for new opportunities.

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For further information, please contact:

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