

Support to ELISE

European

Location

Interoperability

Solutions for

E-Government

Energy related data and buildings
Panel 1 – CitiEnGov Final Conference
Ferrara (IT), 3 April 2019

Interoperable
geospatial data at
building level to
support EU Energy
policies' lifecycle



Francesco Pignatelli
(EC - DG JRC)

Giacomo Martirano
(EC – DG JRC external consultant)

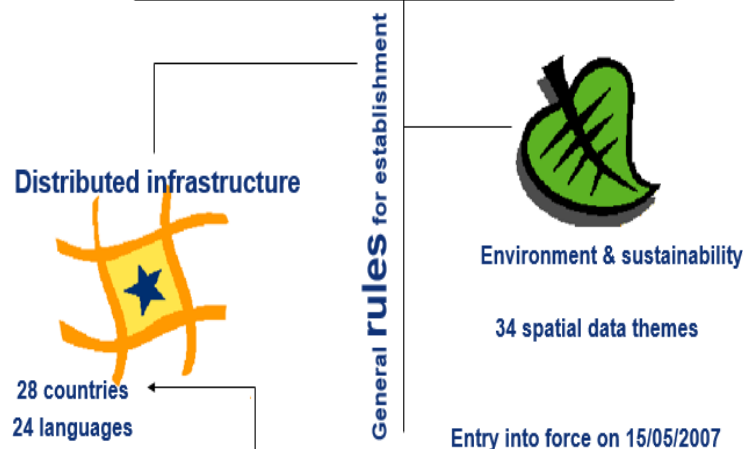
OUTLINE

- INSPIRE, Europe's "lingua franca" for anything geospatial
- ISA² Programme and ELISE Action
- The ELISE Energy Pilot and its use cases

INSPIRE, Europe's "lingua franca" for anything geospatial

Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)

Institutional framework	Technical standards
Fundamental data sets	Data Services



Set of European legal acts and their coordinated implementation

Directive 2013/37/EU of 26 June 2013 amending Directive 2003/98/EC on the re-use of **Public Sector Information (PSI)** Directive 2003/98/EC

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions: **A Digital Agenda for Europe** - COM(2010) 245 final/2

Digital Single Market strategy

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions: **the EU eGovernment Action Plan 2016 -2020** COM(2016) 179 final

The New **European Interoperability Framework** COM(2017) 134

EU implementation of the **G8 Open Data Charter**

EU Open Data Strategy

Tallinn Declaration on eGovernment

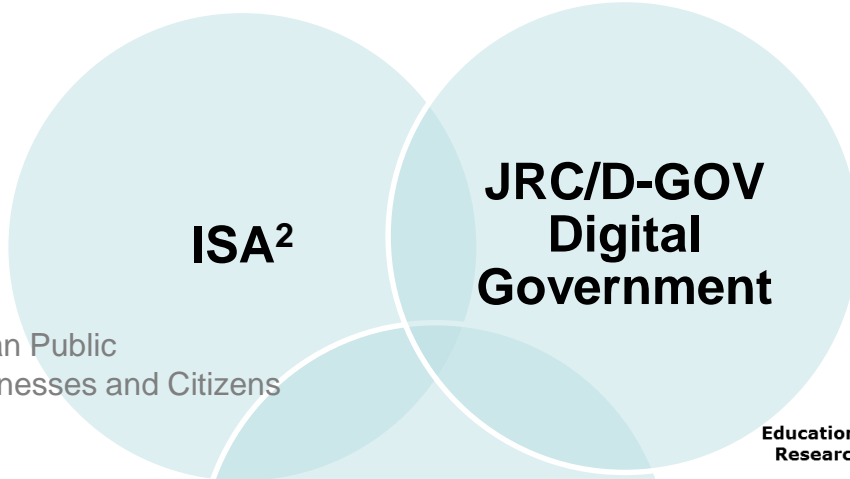


European Commission

Geospatial data beyond INSPIRE: **ELISE**



Interoperability
Solutions for European Public Administrations, Businesses and Citizens



Digital Single Market
e-Government Action Plan
Tallinn Declaration
Digital Europe Programme

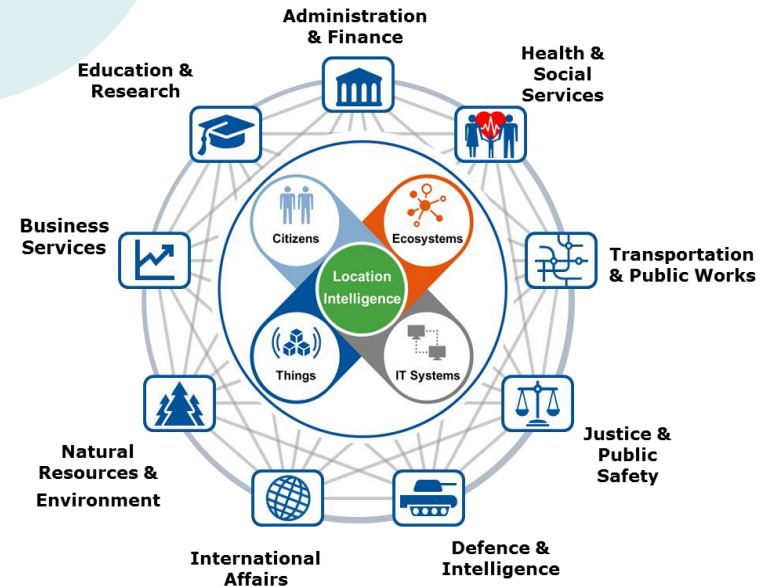
Technology-enabled
Innovation and Growth



European
Location
Interoperability
Solutions for
E-Government

Studies
Frameworks and Standards
Applications and Pilots, Services

Geospatial data



Location Interoperability for Digital Government

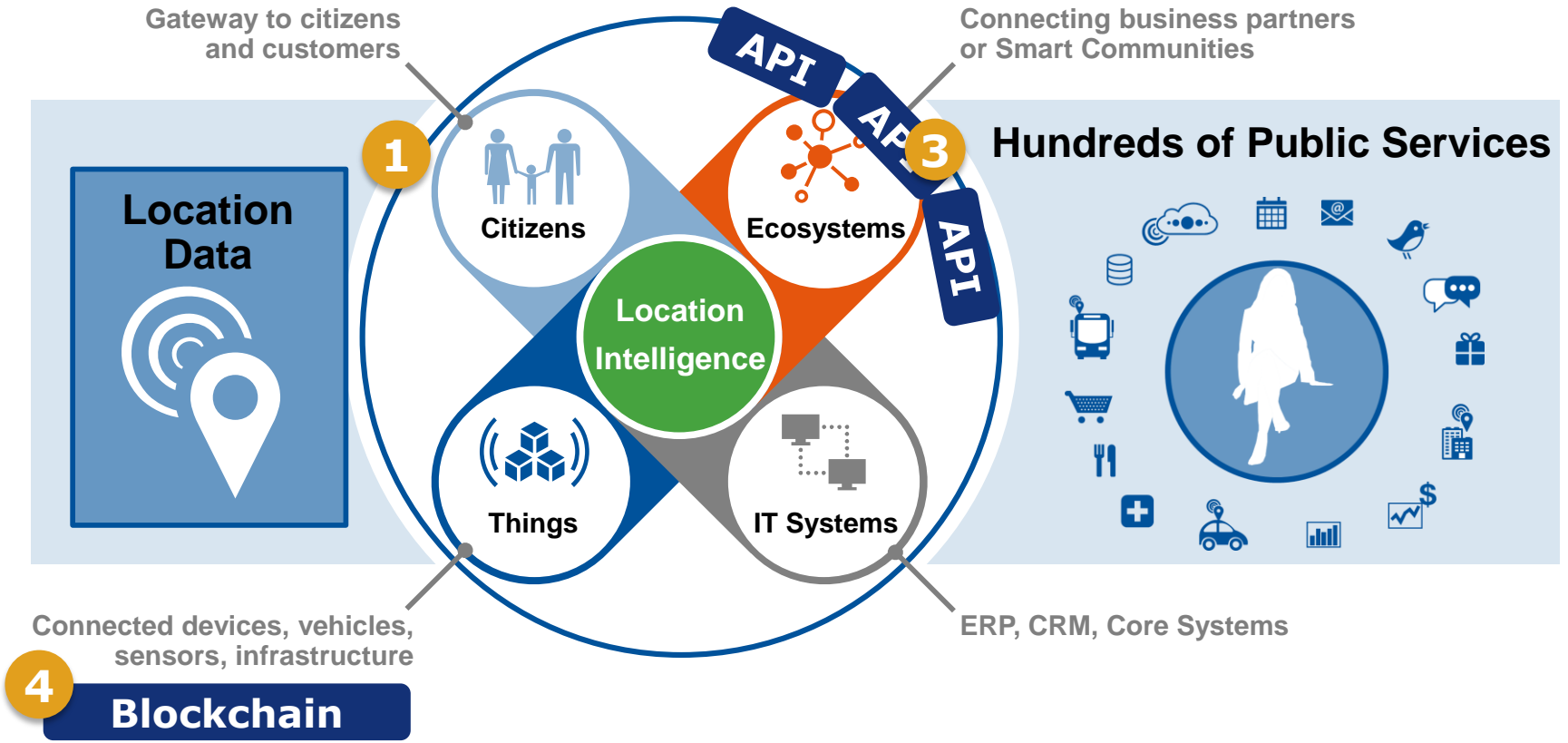
ISA²



European Commission

ELISE: role in building Digital Government

Digital Platform

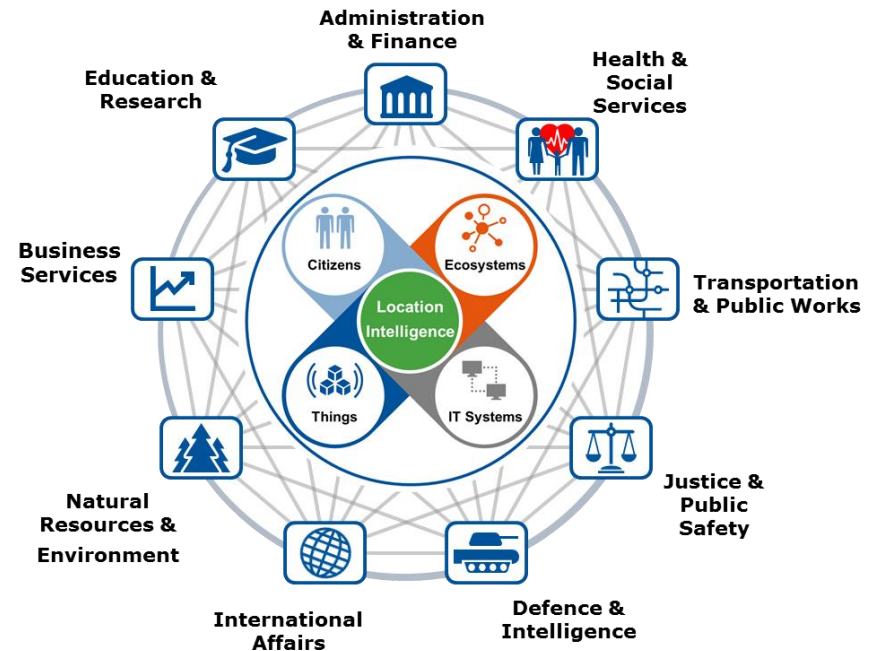


Digital Transformation of Government

2

Our experience – Interoperability solutions for public administrations (ISA/ISA²)

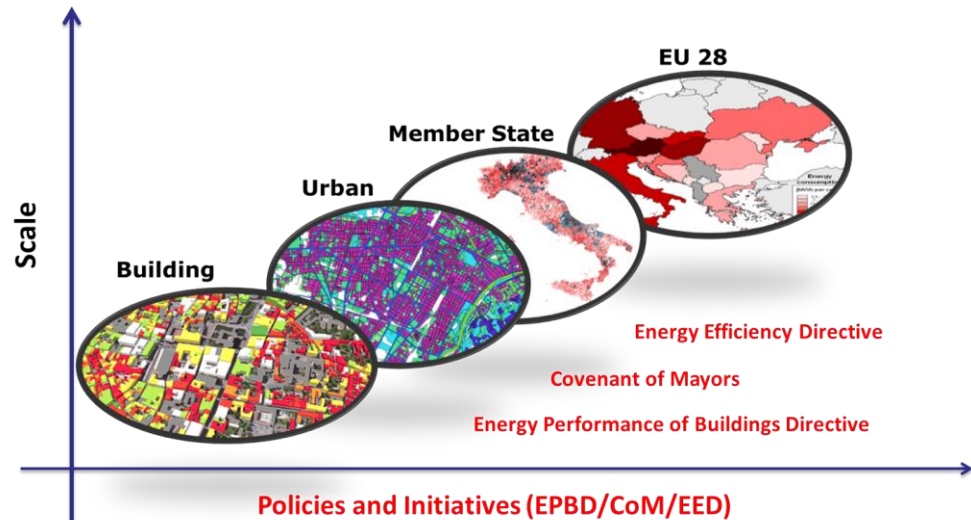
- Digital Government transformation
 - Drivers, barriers and threats of digital transformation
- APIs Landscape
 - Analysis of the status, economic activity creation
- Blockchain use in Government
 - Information exchange and registration processes, use cases for Digital Government services
- Digital Platforms
 - New way of digital government business and models
- Data Value in Geospatial domain
 - Availability, access and interoperability, for the development of geospatial data-based products or creation of new services for the public sector
- Pilot development on location interoperability (i.e. Transport, Energy)
- Input to Better Regulation tool
Assessment of ICT implications of new legislation



Overview of the ELISE Energy Pilot - aims

- Use location-based data to support stakeholders engaged in energy policies' lifecycle

- Leverage location-based data at building level as enabling factor to scale-up the methodologies to assess energy consumption and performance from local to urban to district to regional to MS level as required by the European Directives in the field of energy efficiency



Overview of the ELISE Energy Pilot - specific objectives

- Show the benefits of an integrated approach for reporting, monitoring and planning, to handle multiple aspects of energy (energy performance of buildings, energy consumption at building, district and upper level, etc.) by:
 - Adopting common structured data models (extending few INSPIRE core data models) and common data access mechanisms (INSPIRE Network Services)
 - Re-using (parts of) datasets for different reporting, monitoring or planning purposes
 - Using both centralized and distributed IT infrastructures which make accessible data needed to fulfil reporting, monitoring and planning requirements

Focus on Buildings (EPBD)

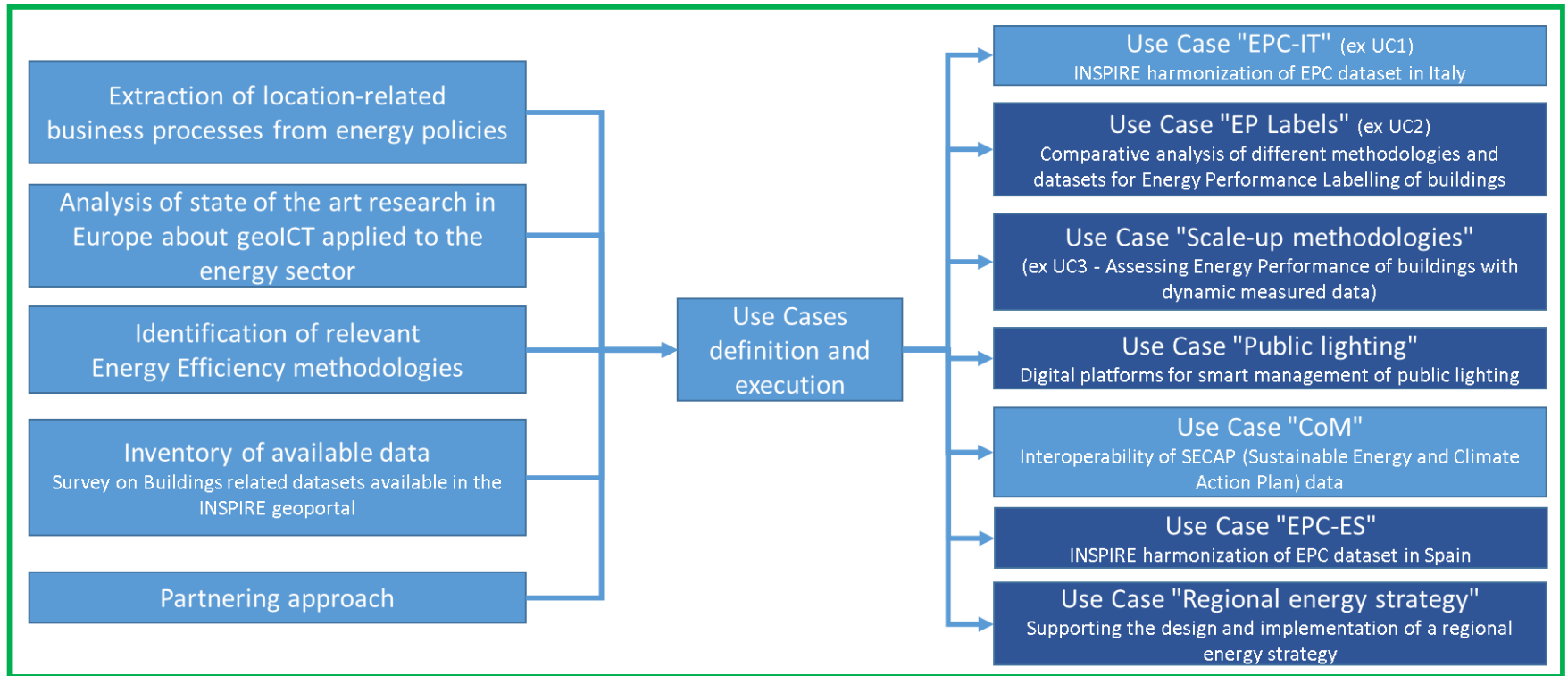
According to studies conducted by DG ENER and to data contained in the Building Stock Observatory:

- Buildings are responsible for the 40% of final energy consumption
- Over 75% of building stock is older than 25 years
- Averaged final energy consumption data: 185 kWh/m² for residential buildings and 280 kWh/m² for non-residential buildings
- Deep renovation of buildings could cut 36% of their energy consumption by 2030

Pilot will be tested by means of Use Cases with various actors: public authorities at regional and local level, businesses working in the energy sector, citizens

9 <https://ec.europa.eu/energy/en/data-analysis/building-stock-observatory>



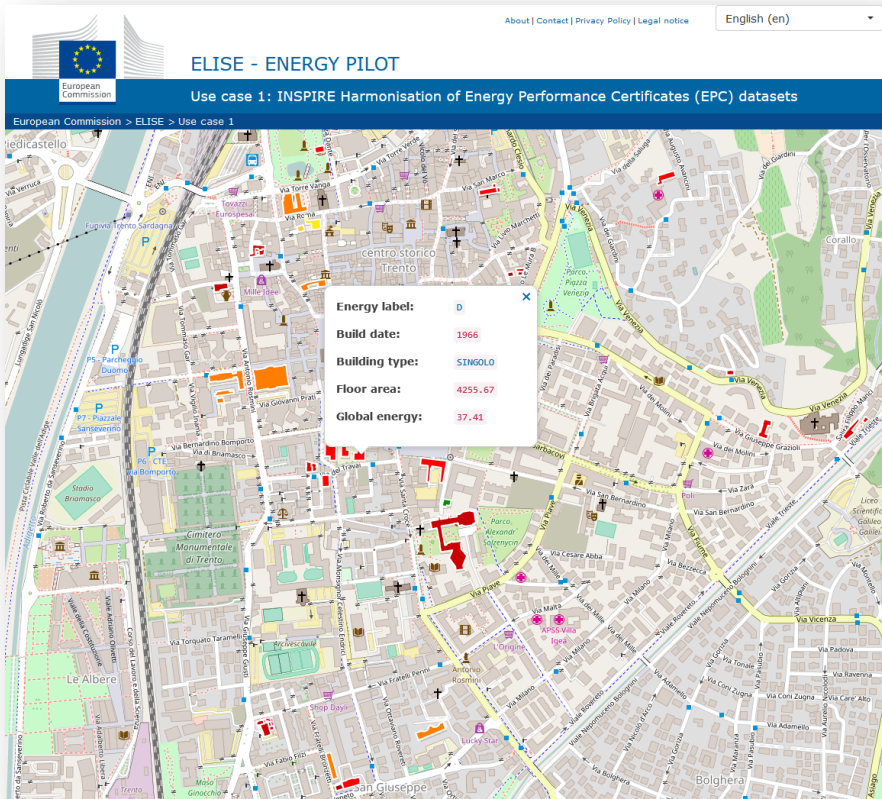


Dissemination, Exploitation, Communication, Training

- Workshop 1
Nov 2015
- Workshop 2
Sep 2016
- Parallel session "INSPIREd energy" at INSPIRE Conference 2016
- Workshop "INSPIREd energy" at INSPIRE Conference 2017
- Seminar "Possible synergies between energy smart meters, SensorThings API and INSPIRE"
- Thematic session "Energy & Location" at INSPIRE Conference 2018
- Creation of ELISE Energy Pilot section in IKB
- Creation of ELISE Energy Pilot Collection in Join-Up

Use case 1: INSPIRE Web App prototype and Re³gistry implementation

<http://europa.eu/!xM86nX>



European Commission | About | Contact | Privacy Policy | Legal notice | English (en)

ELISE - ENERGY PILOT

Use case 1: INSPIRE Harmonisation of Energy Performance Certificates (EPC) datasets

European Commission > ELISE > Use case 1

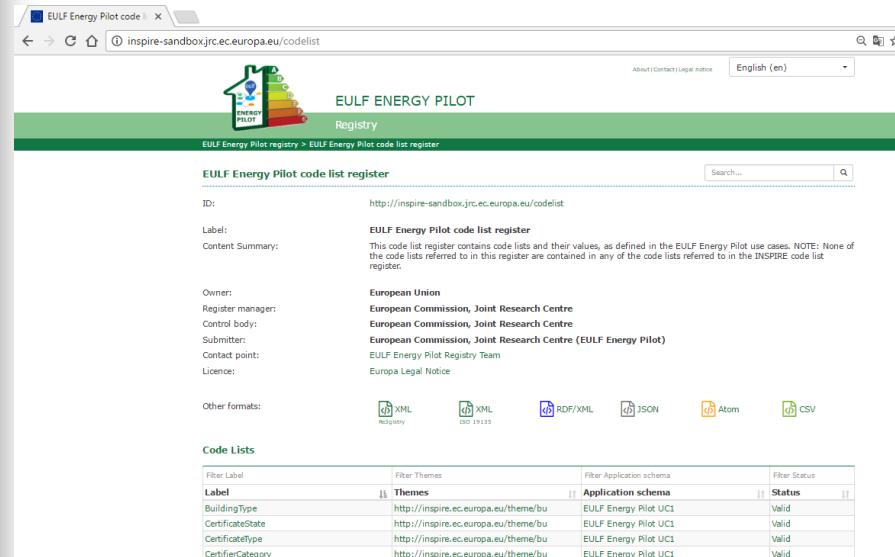
Energy label: **D**

Build date: **1966**

Building type: **STINGOLO**

Floor area: **4255.67**

Global energy: **37.41**



EULF Energy Pilot code list register

inspire-sandbox.jrc.ec.europa.eu/codelist

European Union

Register manager: European Commission, Joint Research Centre

Control body: European Commission, Joint Research Centre

Submitter: European Commission, Joint Research Centre (EULF Energy Pilot)

Contact point: EULF Energy Pilot Registry Team

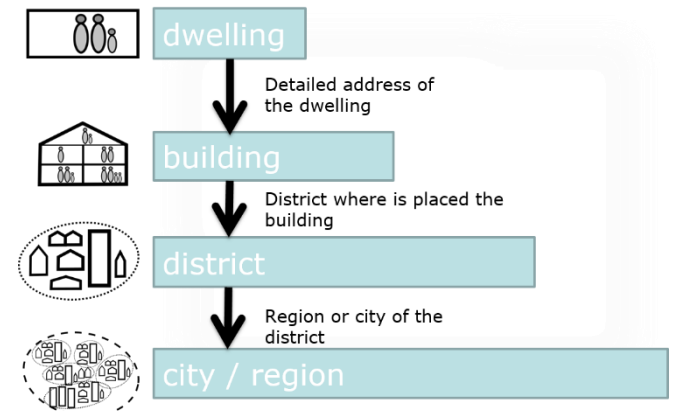
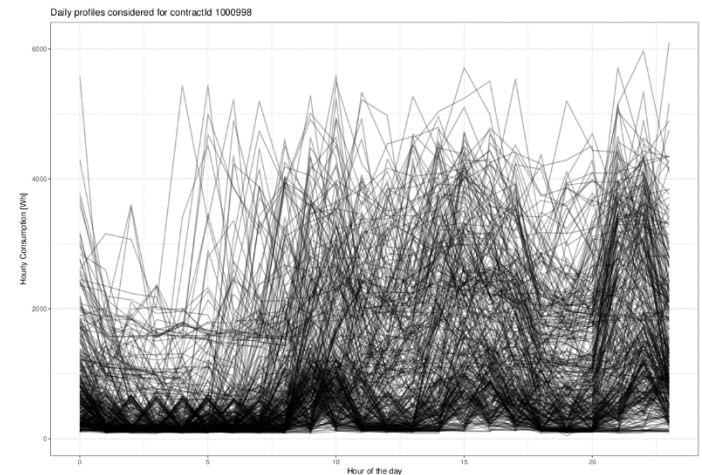
Licence: Europa Legal Notice

Other formats: XML Registry, XML ISO 15925, RDF/XML, JSON, Atom, CSV

Filter Label	Filter Themes	Filter Application schema	Filter Status
Label	Themes	Application schema	Status
BuildingType	http://inspire.ec.europa.eu/theme/bu	EULF Energy Pilot_UC1	Valid
CertificateState	http://inspire.ec.europa.eu/theme/bu	EULF Energy Pilot_UC1	Valid
CertificateType	http://inspire.ec.europa.eu/theme/bu	EULF Energy Pilot_UC1	Valid
CertificateCategory	http://inspire.ec.europa.eu/theme/bu	EULF Energy Pilot_UC1	Valid

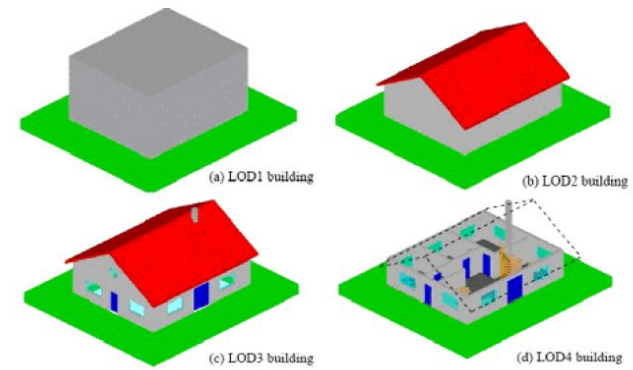
Use case 3 - Assessing Energy Performance of Buildings with dynamic measured data

- To analyse existing methodologies to assess the energy performance of buildings with dynamic measured data from metering or in-situ measurements.
- To define requirements for input data, including interval of observations.
- To validate the methodologies with measured data from field experimental work or from metering readings (e.g. electricity, heat, gas and water) and link the different data sources to an uncertainty assessment.
- To scale-up the methodologies to district levels and beyond.



Use case 2 - Comparing different methodologies and datasets for Energy Performance Labelling of buildings

- To make a comparative analysis of different methodologies for Energy Performance Labelling of buildings, applied to sample datasets of buildings in test areas of DE and NL
- To support the assessment of the energy performance of the building stock in other geographical areas (by other Member States), comparing costs & benefits of applying the same (or similar) methodologies based on the availability of similar datasets, with respect to those used in the comparative analysis

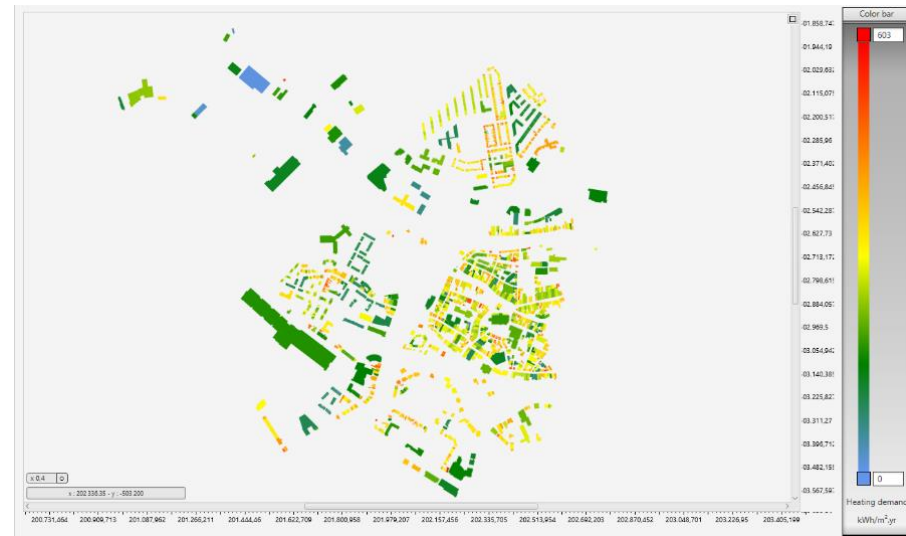


Use case 2 - Comparing different methodologies and datasets for Energy Performance Labelling of buildings

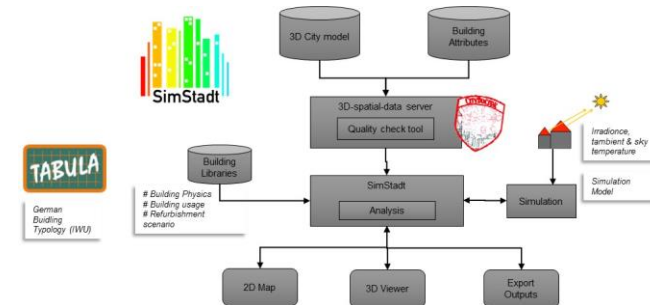
Labels Zwolle issued by RVO



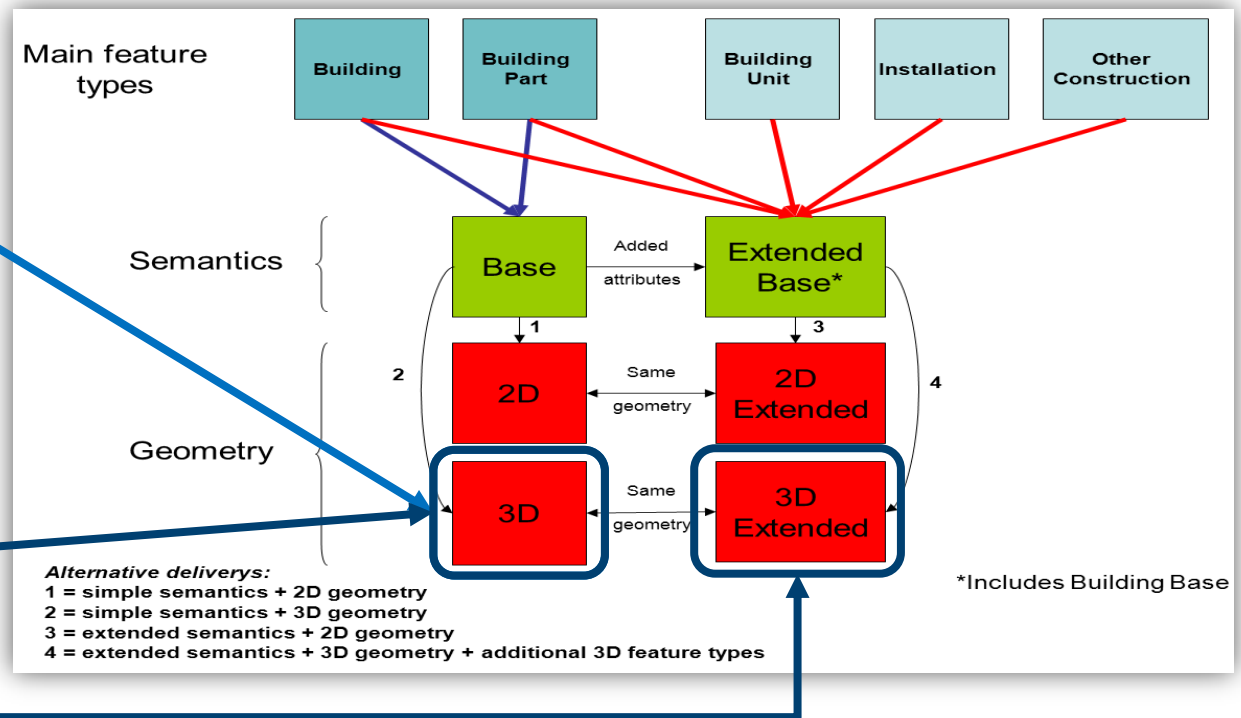
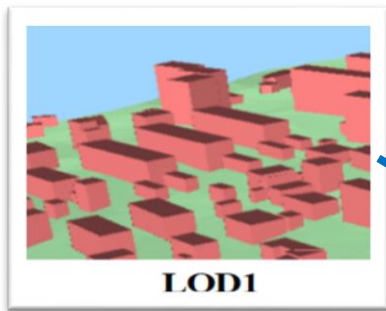
Simstadt Simulation results



Dwelling type	Year of construction (period)									
	until 1945	1946-1964	1965-1974	1975-1982	1983-1987	1988-1991	1992-1999	2000-2005	2006-2013	2014 and later
Seperate	G	F	D	C	C	B	B	B	A	A
Semi-detached	G	F	D	C	C	C	B	B	A	A
Detached corner	G	F	D	C	C	C	B	B	A	A
Detached	F	E	C	C	C	C	B	A	A	A
Flat / apartment	G	E	E	B	C	C	C	B	A	A



Mapping CityGML to INSPIRE BU 3D



Conclusions

- Mapping CityGML LOD2 datasets to INSPIRE BU 3D Core or Extended depends on the use case.
- Reverse mapping from INSPIRE BU 3D to CityGML (easily doable) can improve interoperability of energy simulation software using CityGML input data.
- Harmonization of energy simulation output (easily doable by means of a further extension of INSPIRE BU Extended Base) can improve interoperability of energy performance of buildings data.

Additional on-going activities

- Re-use of use case 1 results (harmonisation of EPC datasets) in the Castilla y Leon region of Spain
- Harmonisation of data contained in the Sustainable Energy Action Plans of the Covenant of Mayors signatories
- Collaboration with AgID/ENEA in the frame of the PELL (Public Energy Living Lab) and DILight (Digital Italian Light) projects/initiatives
 - A short survey to discover similar best practices (within the context of digital platforms for public lighting management) in other Member States has been launched
 - The support asked to and obtained by the members of the ISA² WG GS was great!
 - The results are under analysis and they will be published soon

Partnership approach and status

- Collaboration between 2 JRC Units (B.6 - Digital Economy and C.2 - Energy Efficiency & Renewables)
- Non-monetary bi- or multi-lateral Collaboration Agreements between JRC and 6 partners from 4 Member States with a 2-year duration (NL, DE, ES, IT) under finalisation
- Small contracts with external experts
- Hosting of Visiting Scientists under finalisation

The final goal is to demonstrate the expected benefits of the various use cases and promote their reuse in other MS



Francesco.Pignatelli@ec.europa.eu
Giacomo.Martirano@ext.ec.europa.eu

The ELISE Energy Pilot in the INSPIRE Knowledge Base:
<https://inspire.ec.europa.eu/pilot-projects/inspire-energy-pilot/440>

Want to know more?

ELISE

European Location
Interoperability Solutions
for e-Government

Get started: [ELISE Action page](#)

Join and collaborate: [ELISE Community](#)

Stay tuned:  [@EULocation](#)



<http://inspire.ec.europa.eu/>



The ELISE action is undertaken with the support of [ISA²](#).

ISA² is a EUR 131 million programme of the European Commission which develops digital solutions that enable interoperable cross-border and cross-sector public services for the benefit of public administrations, businesses and citizens across the EU.

ISA² supports a large range of [actions](#) and [solutions](#). The ISA² solutions can be used free of charge and are open source when related to IT.

[ISA²](#) - IT solutions for less bureaucracy You click, we link. Follow us on [twitter](#).

<http://ec.europa.eu/isa>, ISA@ec.europa.eu