International Federation of Surveyors
Fédération Internationale des Géomètres
Internationale Vereinigung der Vermessungsingenieure

FIG COMMISSION 3

Spatial Information Management

CLUJ–NAPOCA 23/09–26/09/19

Investigating the use of 3D Modelling and Geovisualisation for social housing

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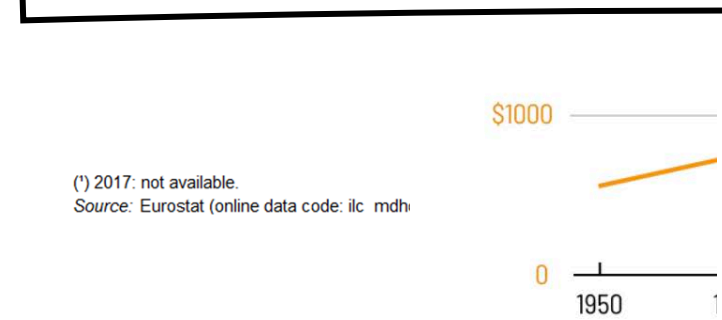
Social Housing

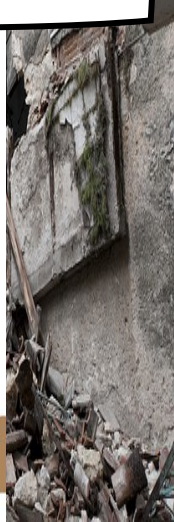
People living in an overcrowded household in the EU

2025

~1.6 billion people

will lack access to affordable, adequate and secure housing





Introduction

Management of housing stock

- Guarantee for securing credit
- Benchmark for taxes' collection
- Development of business

Pressures on

- Economic changes
- Political changes
- Social changes
- Natural disasters

Introduction

Target groups for social housing

- Migrants
- Refugees
- Low-income families
- Minorities
- Victims of natural disasters

Applications for housing exploitation

- Identify and detect available housing stock
- Economic implications
- Accommodation of urgent housing needs

WE ARE HERE TOGETHER
EUROPEAN SUPPORT FOR ROMA INCLUSION

HELLENIC REPUBLIC ASSET DEVELOPMENT FUND

Opnieuw thuis

nrosh+

land portal

Introduction

Limited rendering of the spatial characteristics of real property

No detailed description of the spatial characteristics of real property

No relation to surroundings

No association with the specific needs of vulnerable social groups

Lack of interoperable and interconnected systems

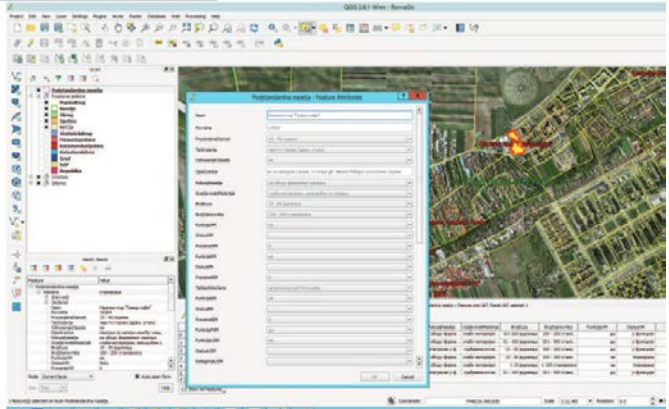
Location:	Attica Region, Athens Prefecture, Municipality of Athens
Type of asset:	Landplot with Building
Acreage:	174,06 m^2
Built surface area:	893,91 m^2
Within city plan:	Yes

Five-storey building with a façade on 88 Ippokratous Street in Athens. The building was erected in the late 1970s and is in a relatively good condition and functional.

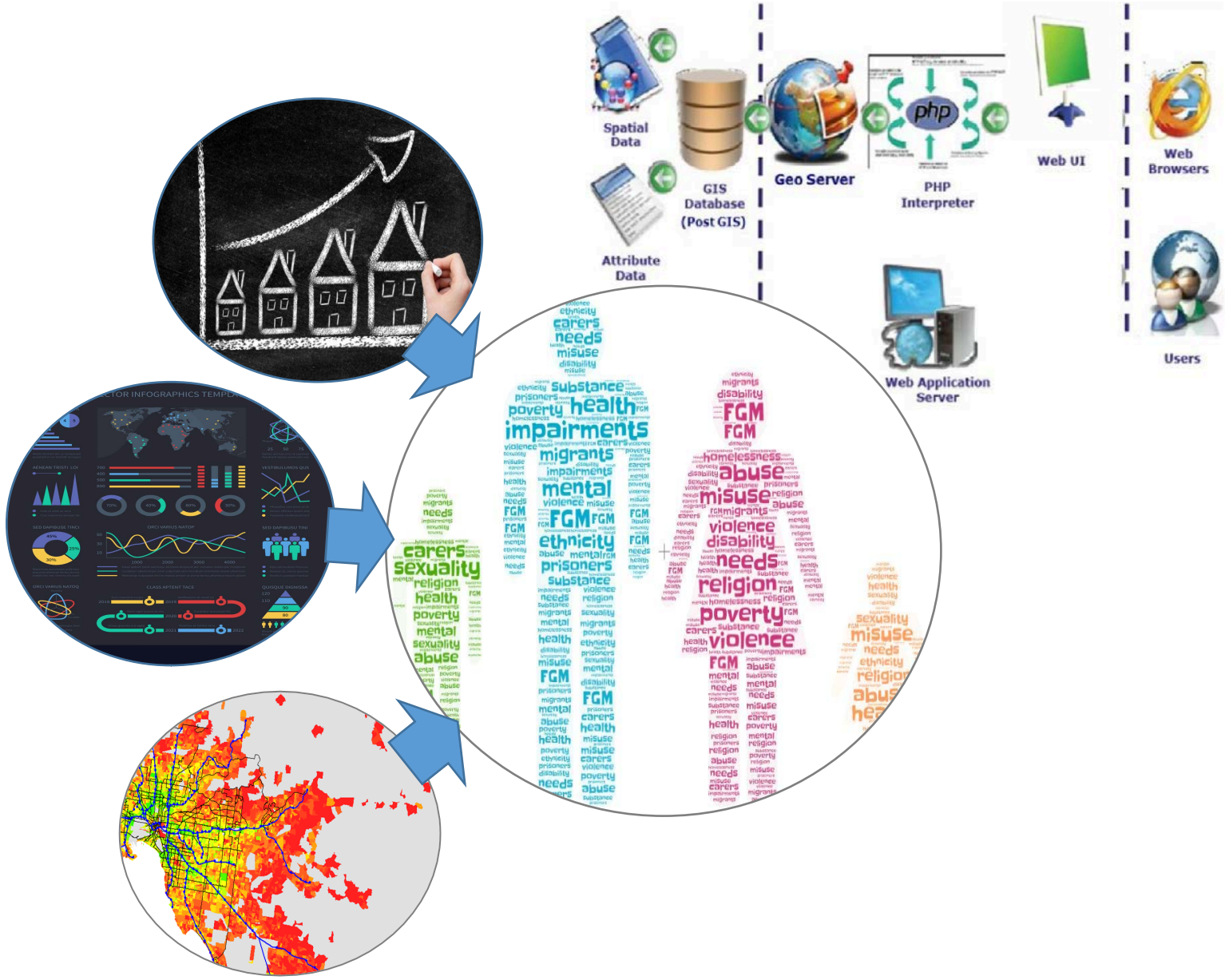
Location

The property has very good connection and accessibility both by road and by public transportation. The property is accessed by road by Ippokratous street. The closest public transportation station is the "Panepistimio" metro station, which is only 800 m from the property, whereas relatively close, at a distance of 1400 m, is the "Omonoia" Station which connects to 2 rail public transportation means (ISAP & Metro). From Akadimias and Panepistimiou streets there are a number of bus routes of the Athens

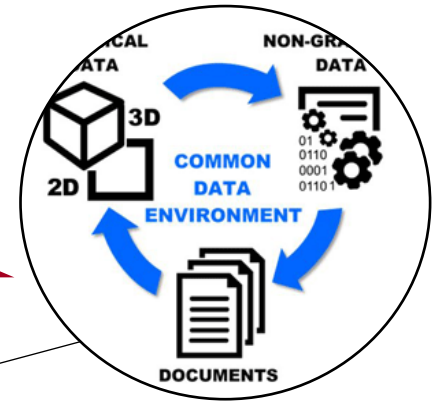
Data Extract File	Field name	NROSH Field No	Latest Data Standard (2006) Ref.	Data Standards Field Name	Description
1	Addr1	3	1	(Address)	Address
1	Addr2	4	1	(Address)	Address
1	Addr3	5	1	(Address)	Address
1	Addr4	6	1	(Address)	Address
1	Addr5	7	1	(Address)	Address
1	Addr6	8	1	(Address)	Address
1	Addr7	9	1	(Address)	Address
3	BedroomCount	16	44	(BedroomCount)	Number of Bedrooms
3	BedSpaceCount	17	45	(BedSpaceCount)	Number of Bed Spaces
2	bS7666AdministrativeArea	26	1	(Address)	Address
2	bS7666Locality	27	1	(Address)	Address
2	bS7666PAON	28	1	(Address)	Address
2	bS7666PAONDescription	29	1	(Address)	Address
2	bS7666PAONStartRangeNumber	32	1	(Address)	Address
2	bS7666PostCode	34	1	(Address)	Address
2	bS7666SAON	36	1	(Address)	Address
2	bS7666SAONDescription	37	1	(Address)	Address
2	bS7666StreetDescription	42	1	(Address)	Address
2	bS7666Town	43	1	(Address)	Address
3	ChoiceBasedLettings	56	94	(ChoiceBasedLettings)	Choice Based Lettings
3	DateCreated	N/A	14	(ReportDetails/Created)	Report Date
3	DateRated	64	55	(SAP/DateRated)	Date of SAP Rating
3	DateValued	69	30	(Valuation/DateValued)	Date of Valuation
3	Derivation	70	39	(Derivation)	Purpose Built or Converted
3	DHS_QDPMStandardMet	90	61	(DHS/QDPMGuidelinesMet/	Decent homes standard
3	DPPropertyRef	94	3	(DPPropertyRef)	Data Provider's Property Reference Number
4	EstateName	100	9	(EstateName)	Data Provider's Estate Name



This paper aims to explore the available **technological tools** and **techniques** that may be used to support the **spatial analysis** and **visualisation** of accessible housing data, within the concept of developing a **webGIS platform** dedicated to managing housing stock for **social housing** purposes.



Organising 3D information for buildings and infrastructures



WebGIS platform for social housing needs

Different data sources and formats

Integration of different types of information

Contribution by VGI data

Streamline processing and integration capabilities

Registration, management, visualisation and decision making tools

Organising 3D information for buildings and infrastructures

3D standards regarding building models

Storage

Building model

Modelling

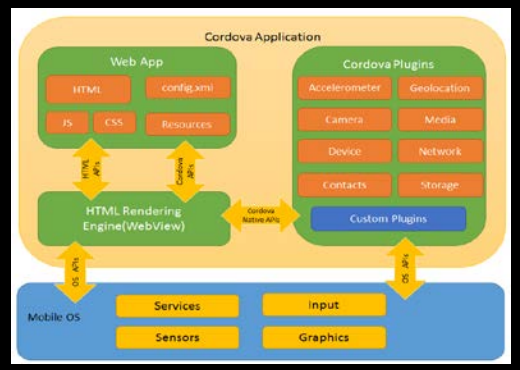
DB

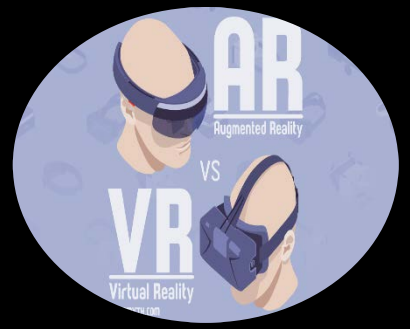
Web Services

Data from distributed sources

Web Services

Client

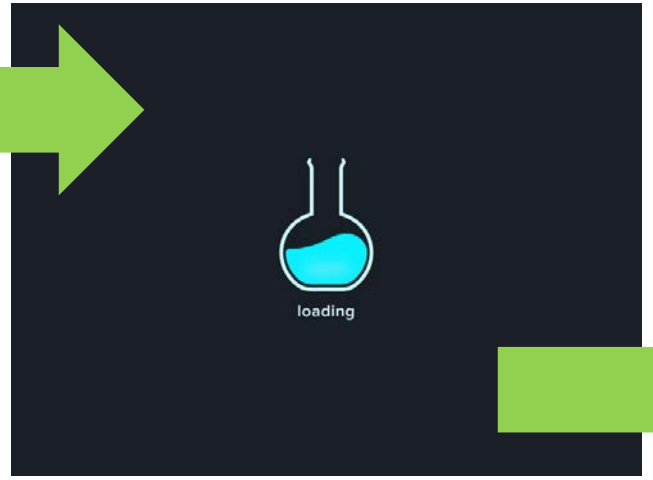


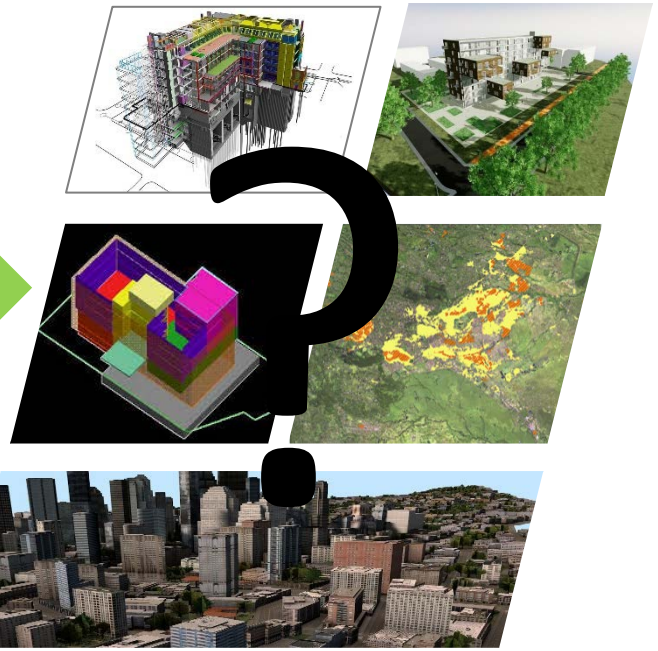


Building modelling

- Land registries
- Databases
- Digital documents
- Point clouds
- Scanned documents
- Sketches
- Verbal descriptions

CAD
Procedural modelling
…





(3D) Building models

3D Modelling, Standards and Cadastre

Interoperability

IFC

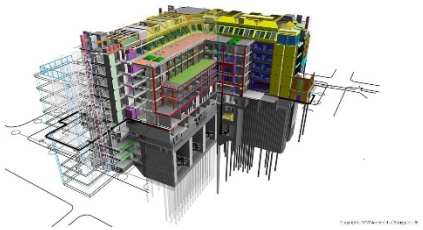
LANDXML.org

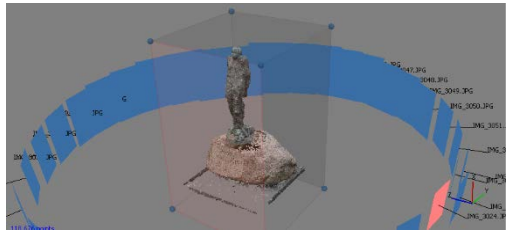
InfraGML

OGC Making location count.

CityGML

IndoorGML





Data integration

"Cross-platform" applications

HTML

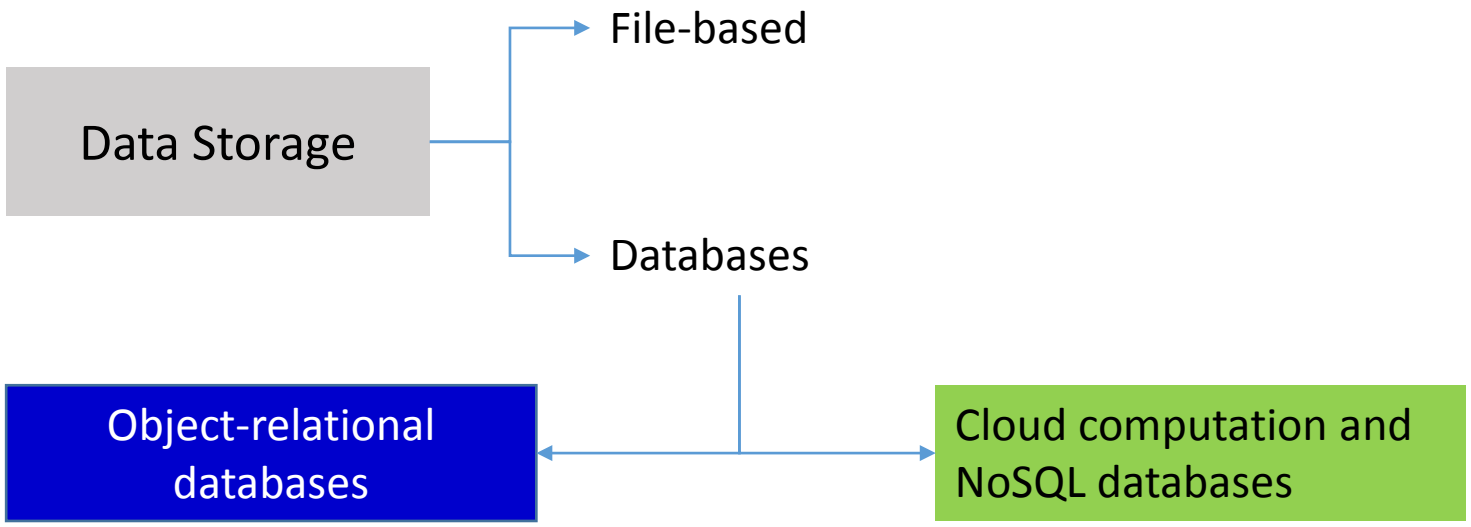
WebGL™

JS

CSS

APACHE CORDOVA™

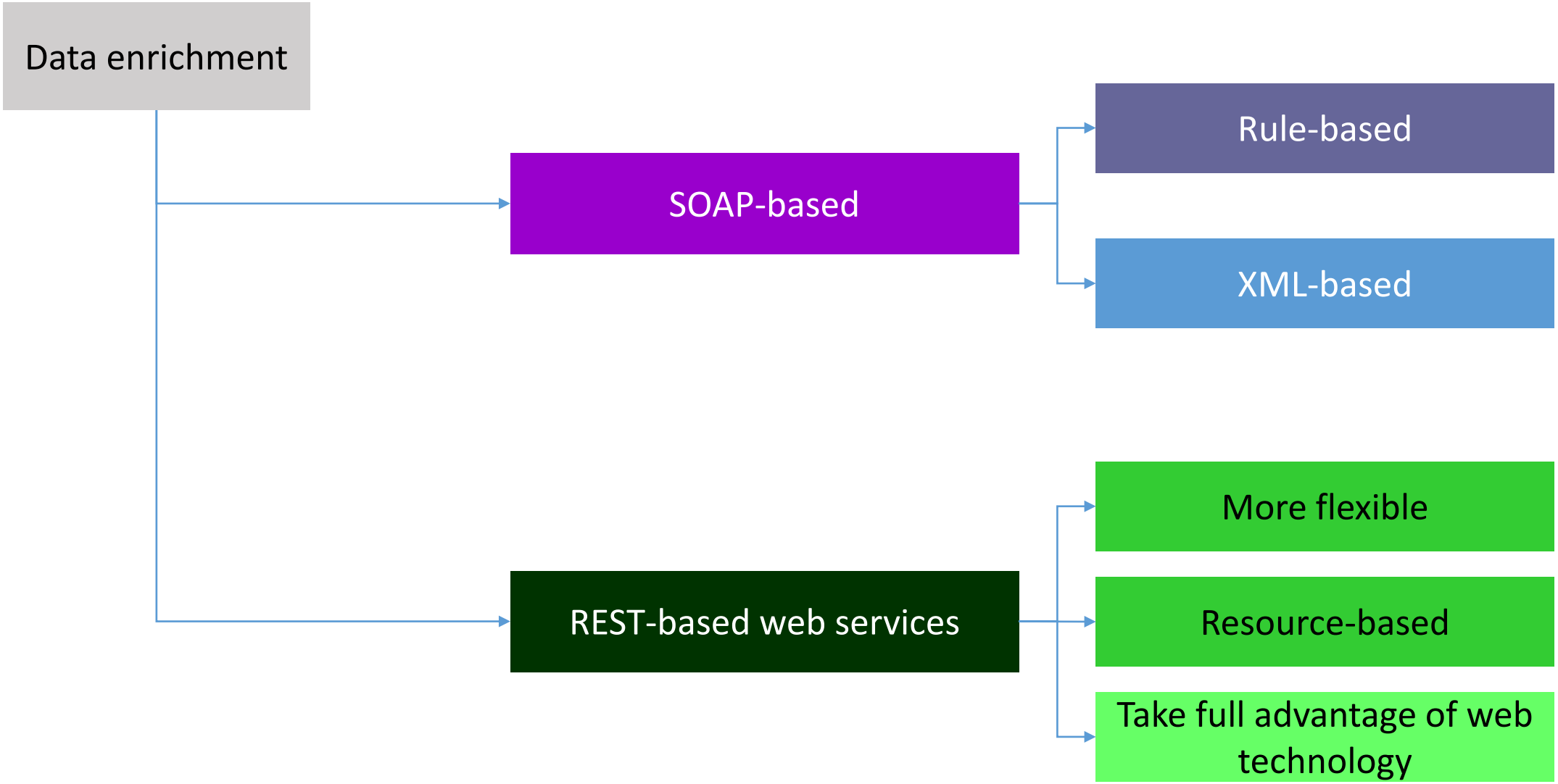
Data enrichment and dissemination via web services



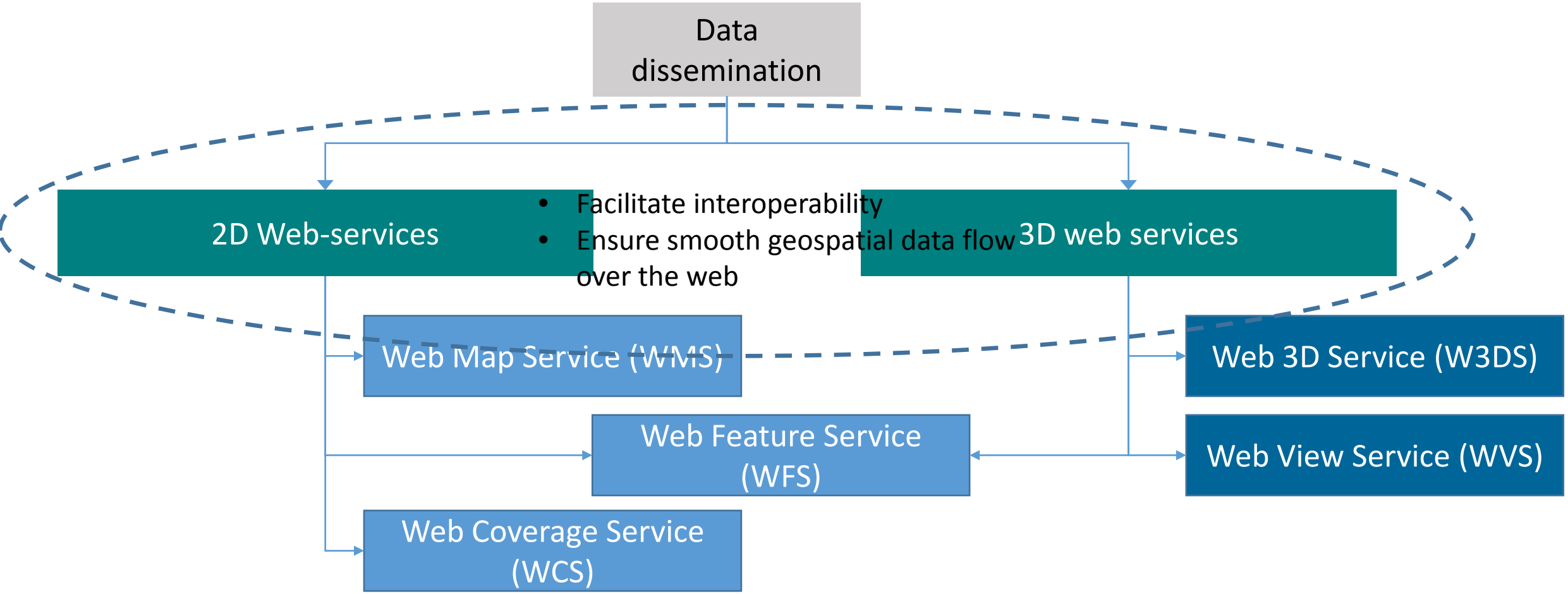
- Decomposition to parts and subparts
- Different LoDs
- Predefined semantic attributes
- Large data volume

- Cost effective
- Performance
- Time

Data enrichment and dissemination via web services



Data enrichment and dissemination via web services



Client

WebGIS clients

+

APACHE CORDOVA™

GPS

+

AUGMENTED REALITY

virtual reality

Conclusions

Development of webGIS platform for social housing purposes

- Parametrisation and visualisation of housing stock characteristics
- Thematic, multi-layered modelling of available housing stock

Requirements of conceptual prototype

- Data storage and dissemination
  - Client/server workload distribution
  - Exploitation of web services and mashup technology
  - Exploitation of different platforms' functionalities
- Spatial database schema
  - Controlled access
  - Support 2D/3D models and functionalities
  - Distinguish between different user types
  - Support complex geometrical, topological, schematic model structures
  - User-friendly and easy to update

Thank you !