Spatial information – trends and challenges

Darko Šiško
City office of strategic planning and development
Zagreb

Overview

Data collecting and processing - LIDAR, UAV/UAS, Crowdsourcing, Big Data, Open software, Cloud computing …

Spatial data infrastructure – standardization, data sharing, services …

Spatial information for city planning – information, analysis …

Smart City concept – IT, citizens, energy, traffic, environment …

Background documents

Future trends in geospatial information management (UN-GGIM 2012)

Spatially enabled society (FIG 2012)

Rapid Urbanization and Mega Cities: The Need for Spatial Information Management (FIG 2010)

Smart Cities Stakeholder Platform - 10 Year Rolling Agenda (EC 2013)

LIDAR

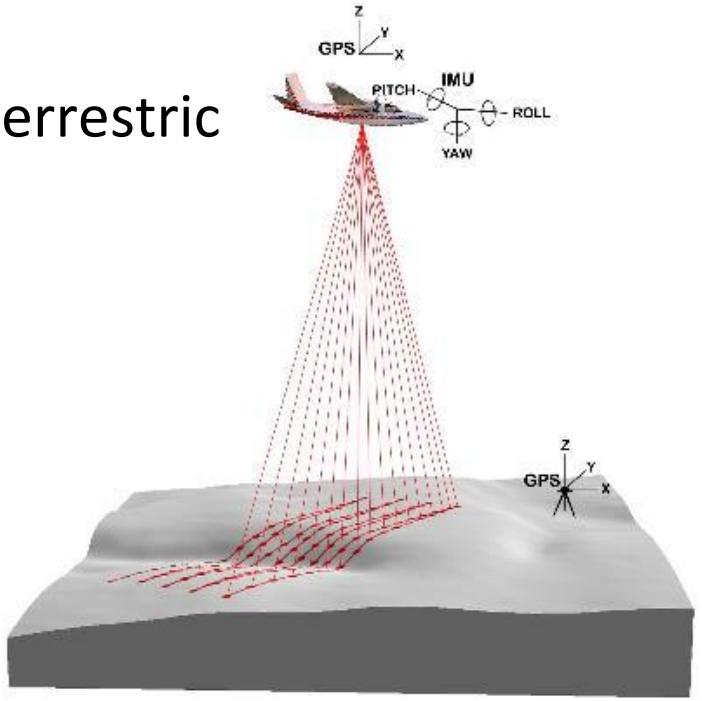
LIght Detection And Ranging

Laser scanning technique – aerial and terrestric

Point cloud – millions of points

Used for terrain and surface modelling

3D city models

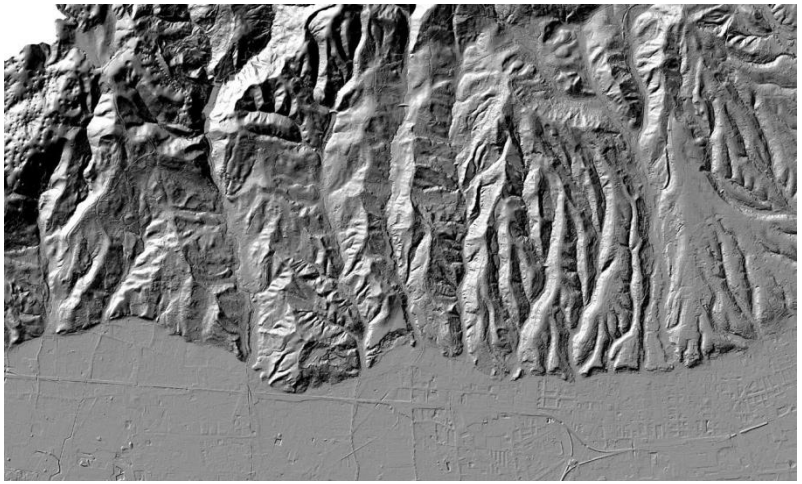


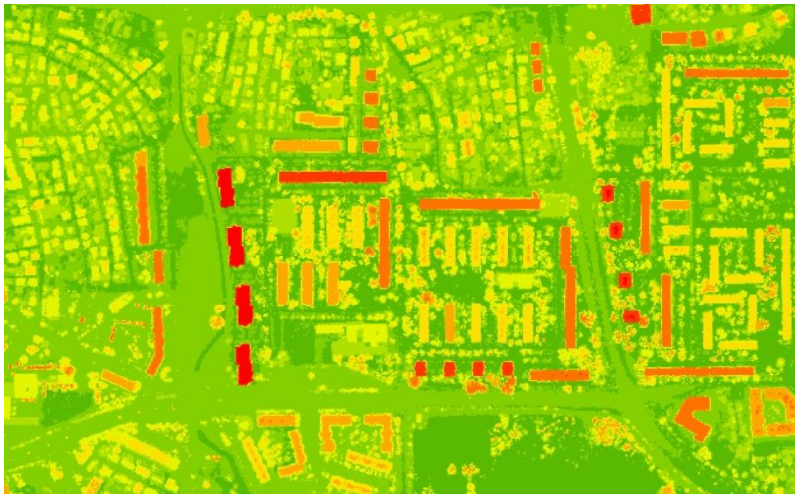
LIDAR & City of Zagreb

Laser scanning in 2012

1 point per m2

Result – DTM, DSM





UAV/UAS

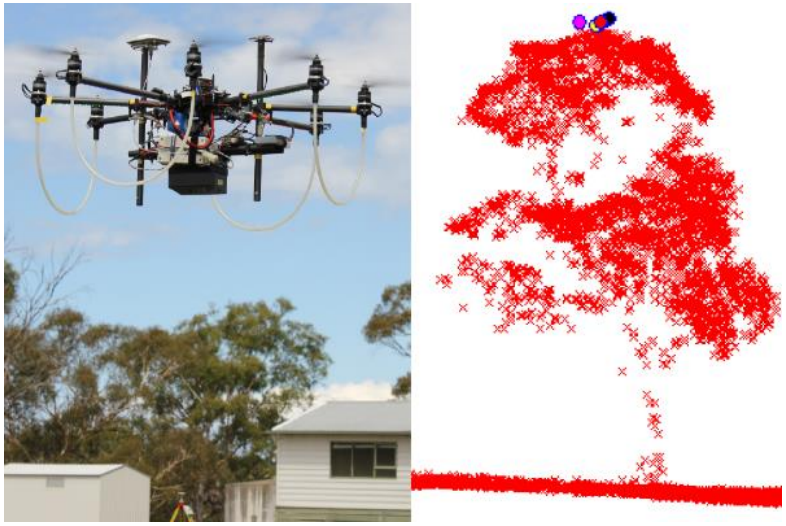
Unmanned aerial vehicles/sensors

Collecting data for specific purposes and smaller areas

Cheap comparing to planes

High resolution of data

Research on University of Zagreb



Crowdsourcing

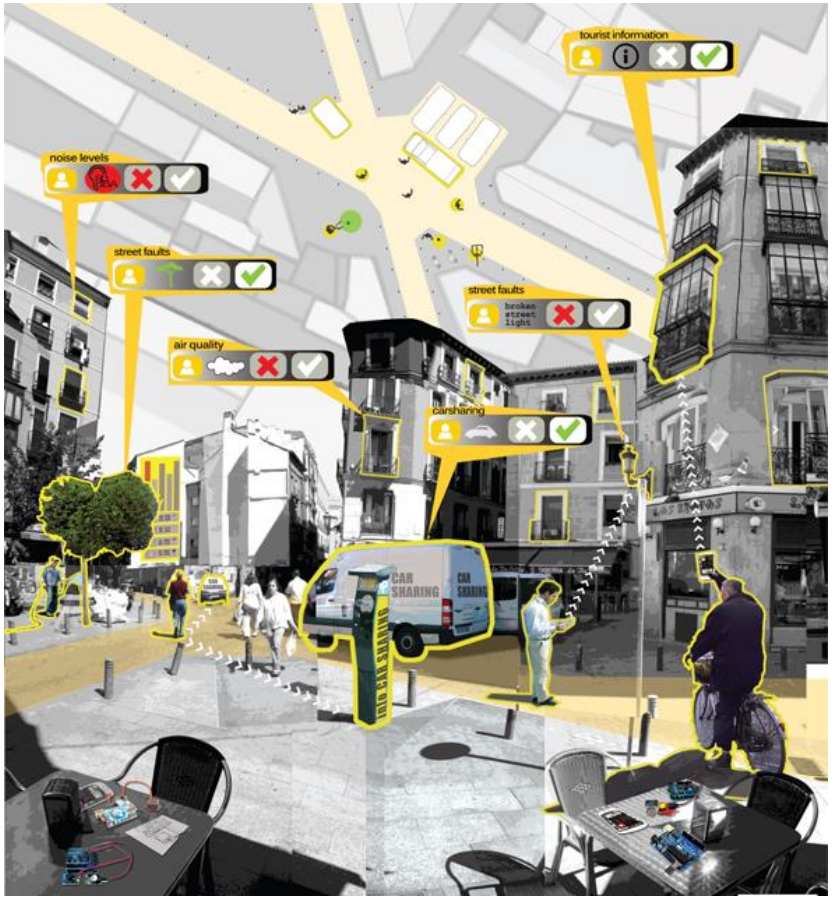
Citizen as a sensor

Smartphones

Feedback of citizens needs

Large potential in city management

Metodological and legal challenges

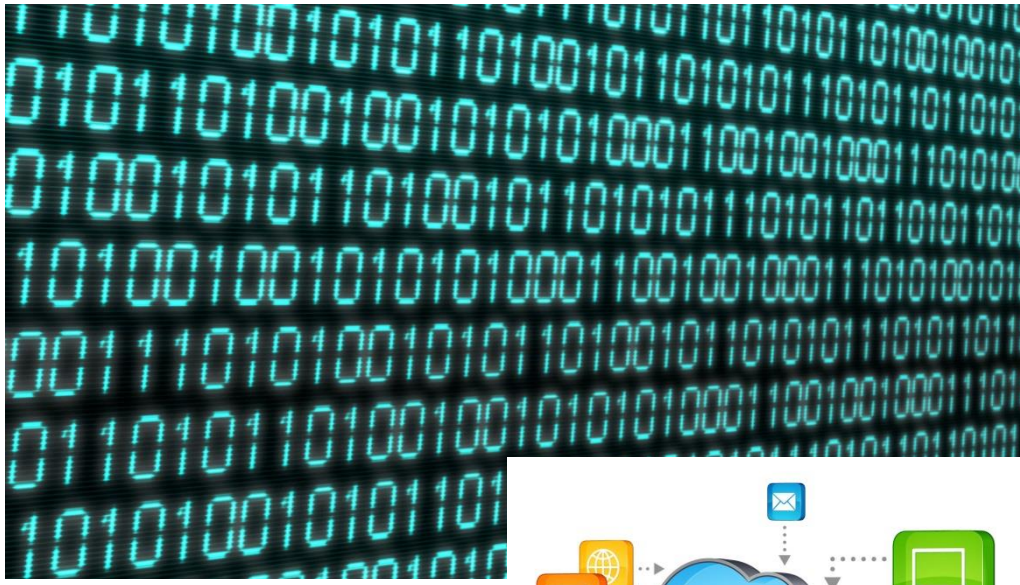


Data processing

„Big data”

Cloud computing

Open source software



GeoServer

Leaflet

Powered by MapServer

apache Flex

PostGIS
Spatial PostgreSQL

OpenLayers

Spatial data infrastructure

Framework of data, users and tools

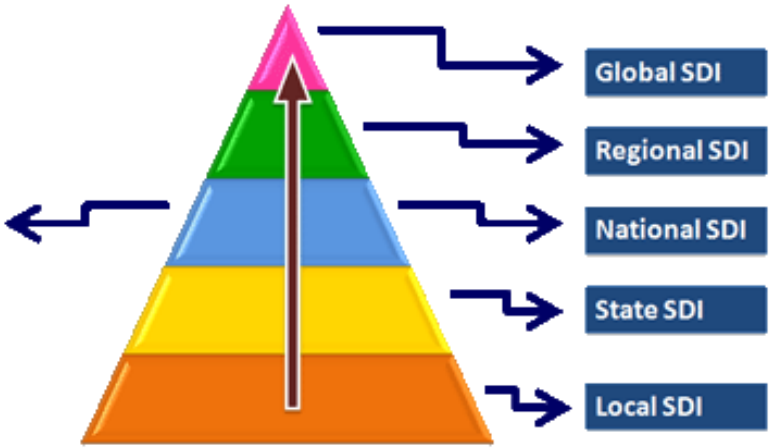
Goal is to use spatial data in most efficient and flexible way

INSPIRE Directive (EC 2007)

Data interoperability, metadata, network services, data sharing, coordination

Levels of SDI – european, national, local

INSPIRE/NIPP/ZIPP



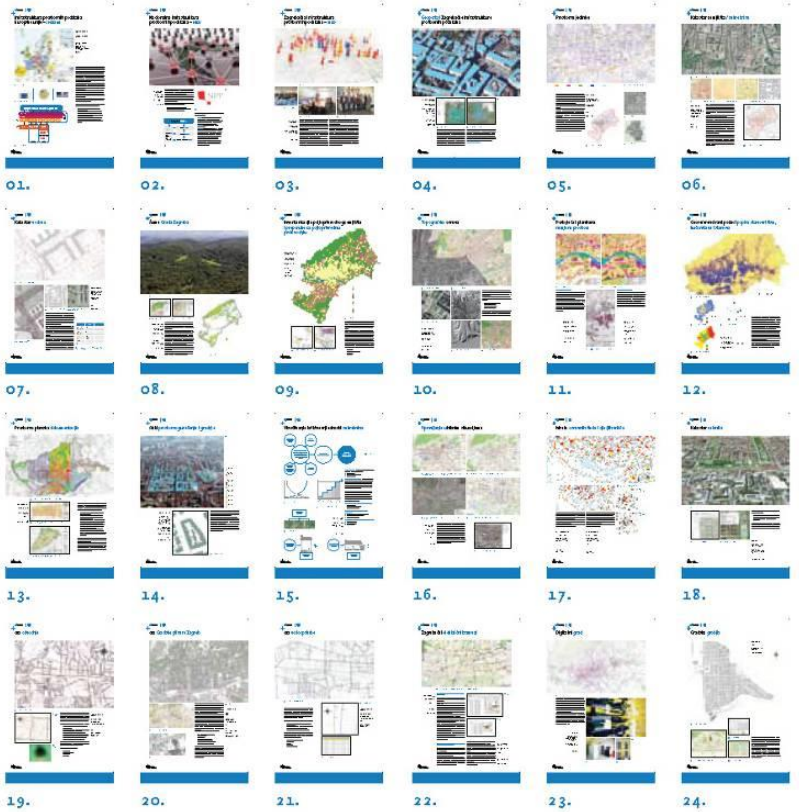
Local level of SDI –
most detail and most expensive data

ZIPP initiative – development of SDI for the City of Zagreb

ZIPP – Zagreb SDI

City of Zagreb data sets:

- Cadastre
- City planning
- Realestate management
- Environment protection
- Agriculture and forestry
- Protected areas and buildings
- Utility lines and objects
- Building permits
- Emergency management …



zipp
Zagrebačka infrastruktura prostornih podataka

Coordinating body

Information, education, awareness

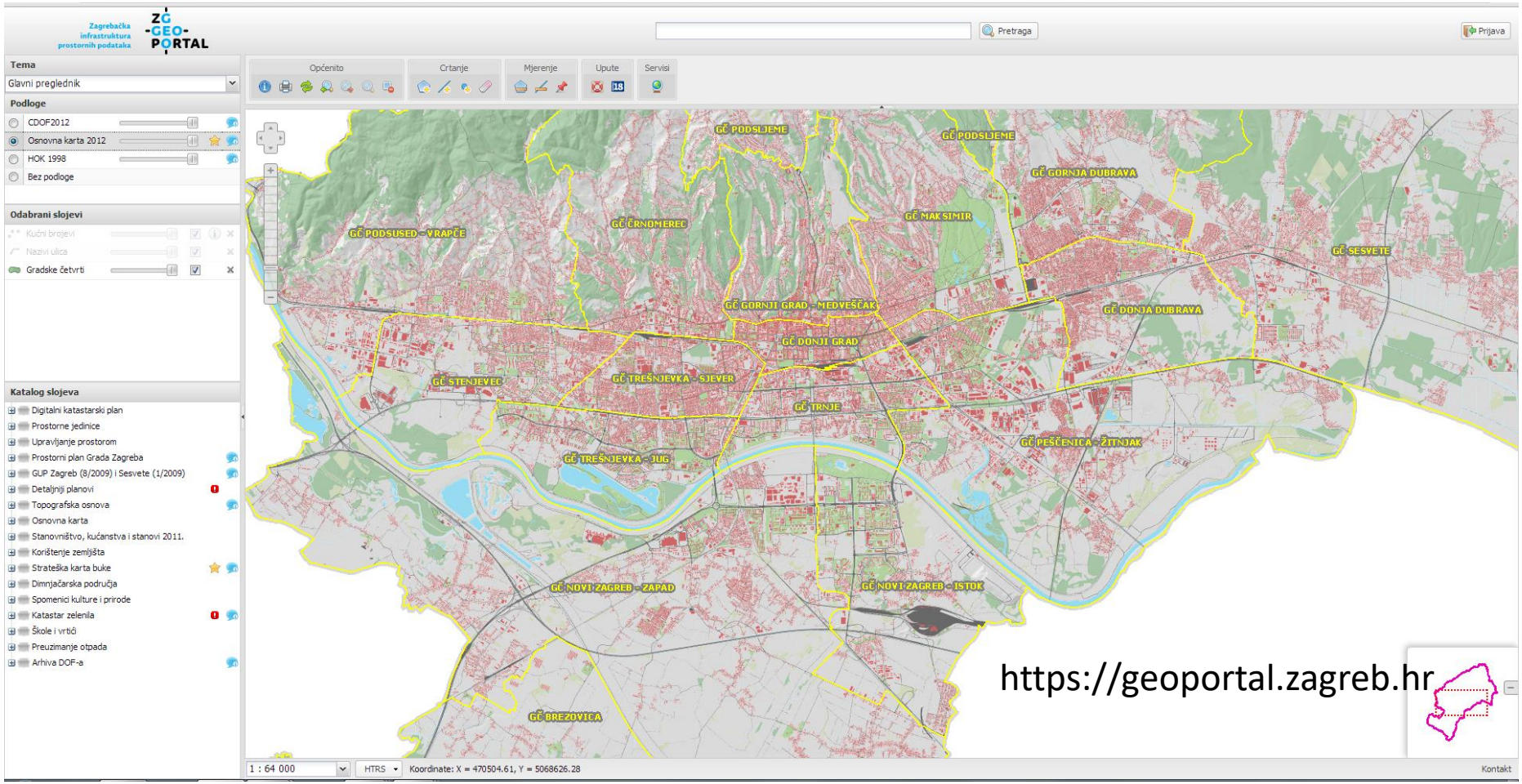
Data sharing and standardization, Open data

ZG Geoportal and network services

City SDI Strategy

SINERGI
SOCIAL INTEGRATION THROUGH URBAN GROWTH STRATEGIES

FIRST THEMATIC SEMINAR ZAGREB, CROATIA, JULY 2014.



https://geoportal.zagreb.hr

Europe for Citizens

City of Zagreb
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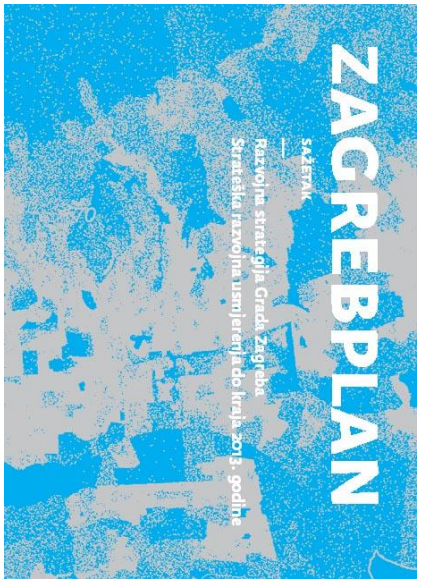
Strategic city planning



Dinamic discipline of the city administration

Results with city development strategies

Usually beyond normative physical planning, but with much spatial elements

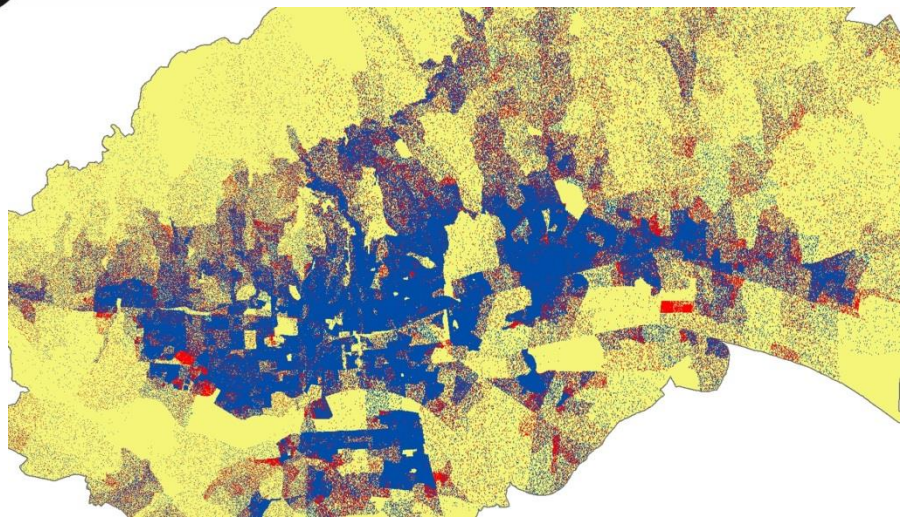
Methodology includes basic analysis, SWAT, defining of vision, goals, priorities and measures, financial framework, implementation plan and communication strategy

Spatial data are crucial for strategic city planning – most activities and features are spatially defined

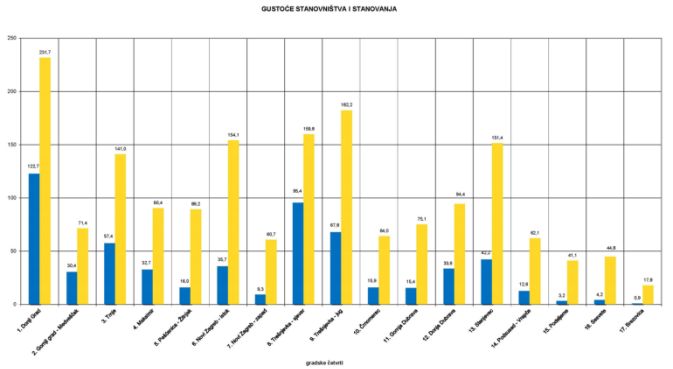
Spatial data are used in analysis, planning and implementation monitoring – decision support tool

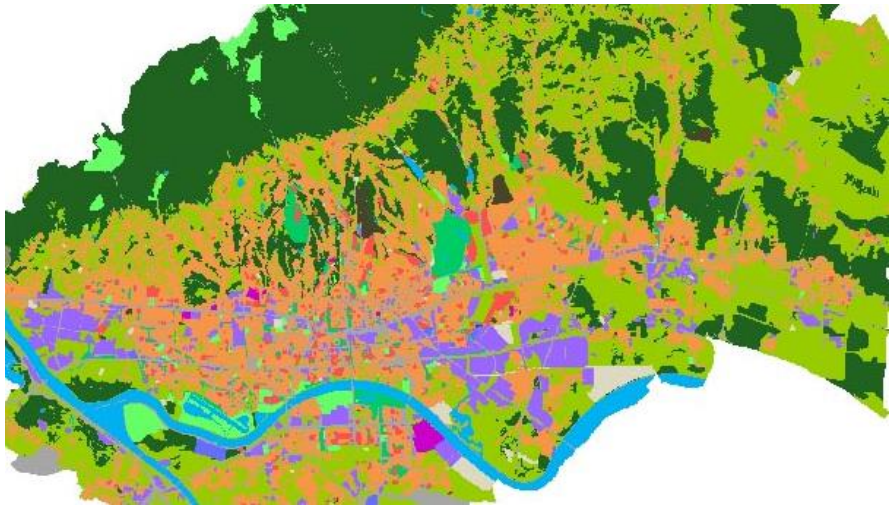
Most important spatial data sets – Population distribution (with other georeferenced statistics) and Land use

Emerging usage of 3D city models

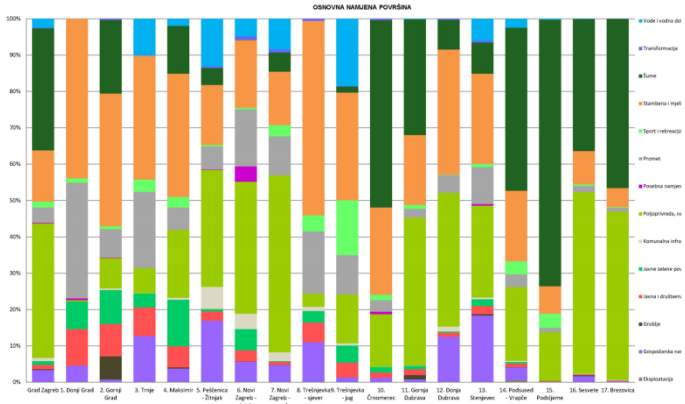


Population distribution, urban densities





Land use distribution



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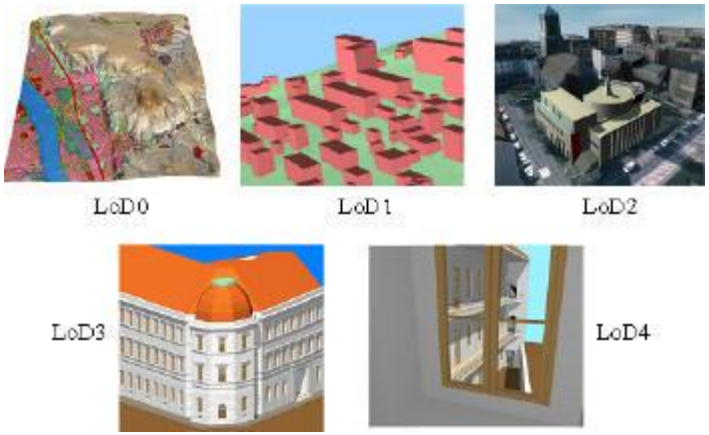
3D city models

Combination of terrain model and buildings

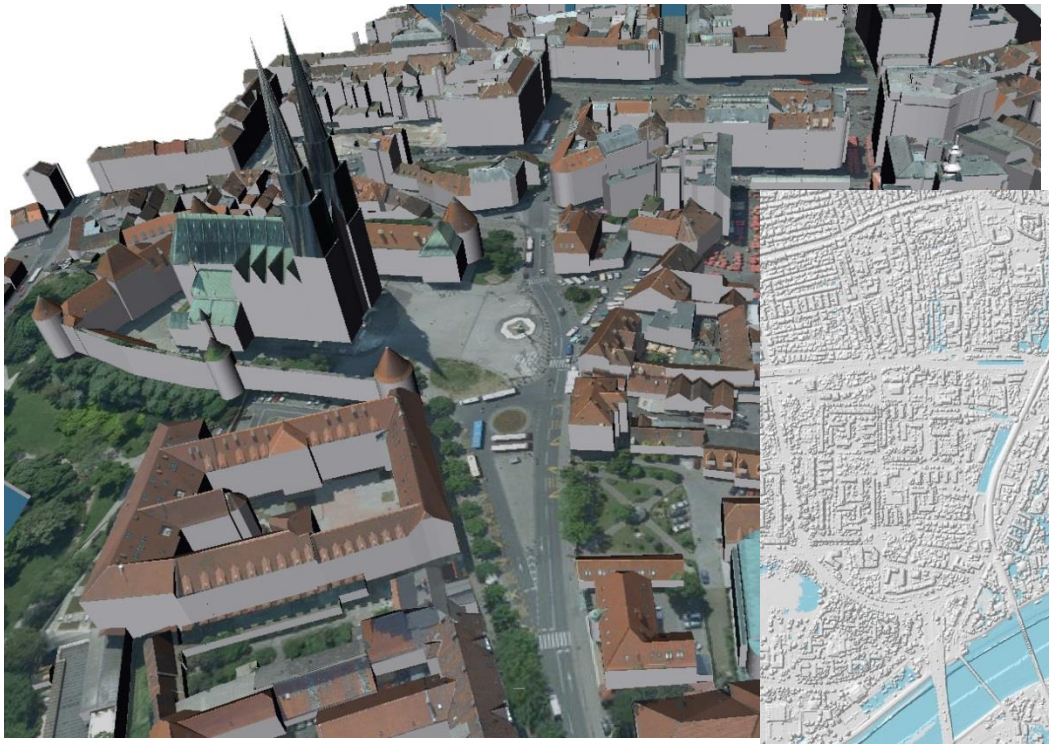
Level of detail (LoD) 0-4

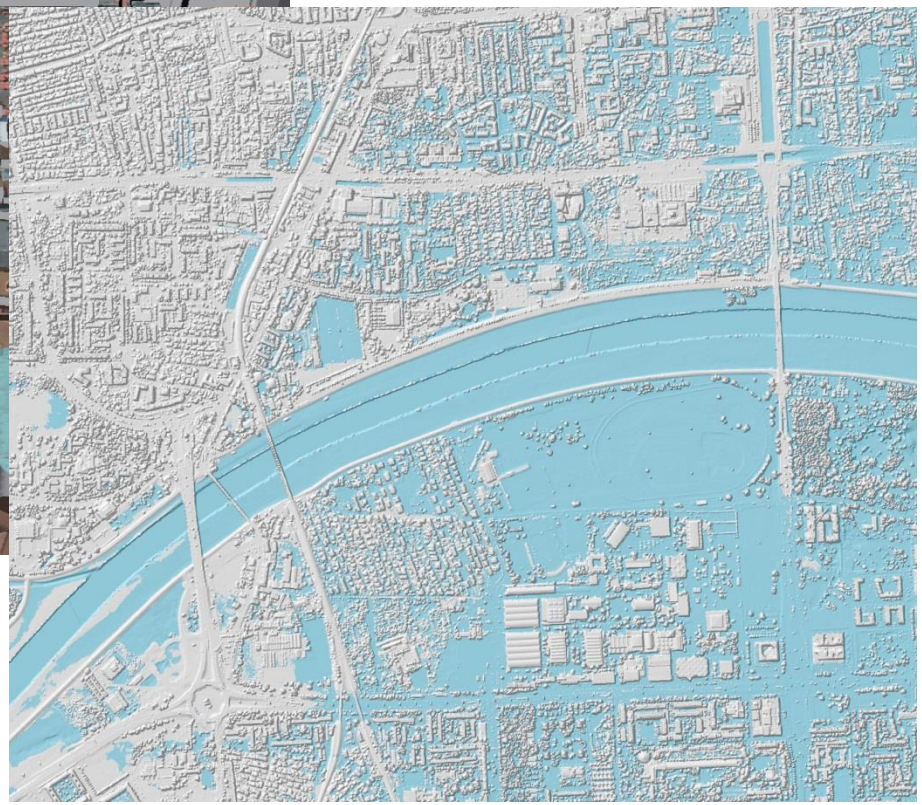
CityGML

Multipurpose spatial database for planning and management



3D model of the City of Zagreb





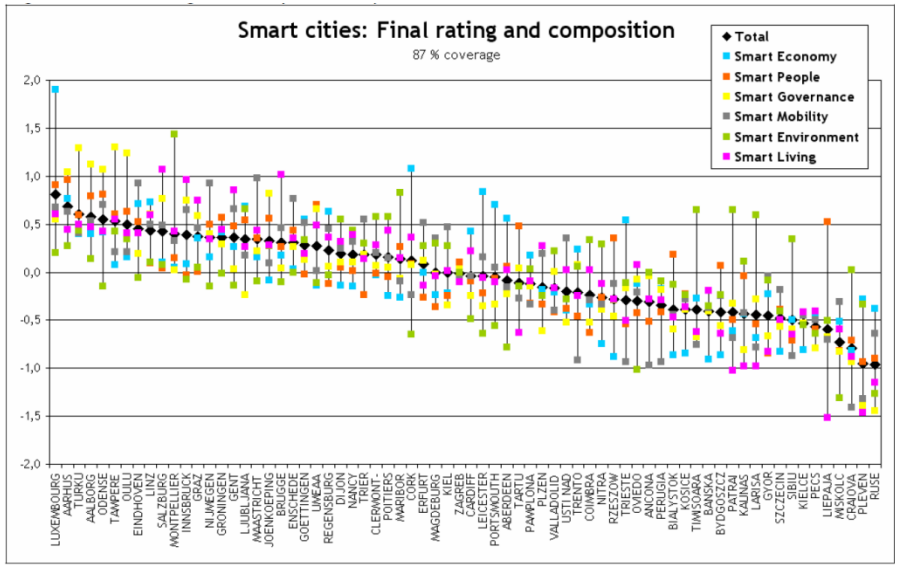
Smart City concept

Interdisciplinary concept for the integration of new and smarter technologies for example in energy, buildings, transport and ICT.

Smart economy, mobility, environment, people, living and governance.

Importance of participatory action and engagement of the citizens

Smart cities - Ranking of European medium sized cities (2007) – TU Wien, Uni Lj, UT Delft



SMART ECONOMY (Competitiveness)	SMART PEOPLE (Social and Human Capital)
▪ Innovative spirit ▪ Entrepreneurship ▪ Economic image & trademarks ▪ Productivity ▪ Flexibility of labour market ▪ International embeddedness ▪ *Ability to transform*	▪ Level of qualification ▪ Affinity to life long learning ▪ Social and ethnic plurality ▪ Flexibility ▪ Creativity ▪ Cosmopolitanism/Open-mindedness ▪ Participation in public life
SMART GOVERNANCE (Participation)	**SMART MOBILITY (Transport and ICT)**
▪ Participation in decision-making ▪ Public and social services ▪ Transparent governance ▪ *Political strategies & perspectives*	▪ Local accessibility ▪ (Inter-)national accessibility ▪ Availability of ICT-infrastructure ▪ Sustainable, innovative and safe transport systems
SMART ENVIRONMENT (Natural resources)	**SMART LIVING (Quality of life)**
▪ Attractivity of natural conditions ▪ Pollution ▪ Environmental protection ▪ Sustainable resource management	▪ Cultural facilities ▪ Health conditions ▪ Individual safety ▪ Housing quality ▪ Education facilities ▪ Touristic attractivity ▪ Social cohesion

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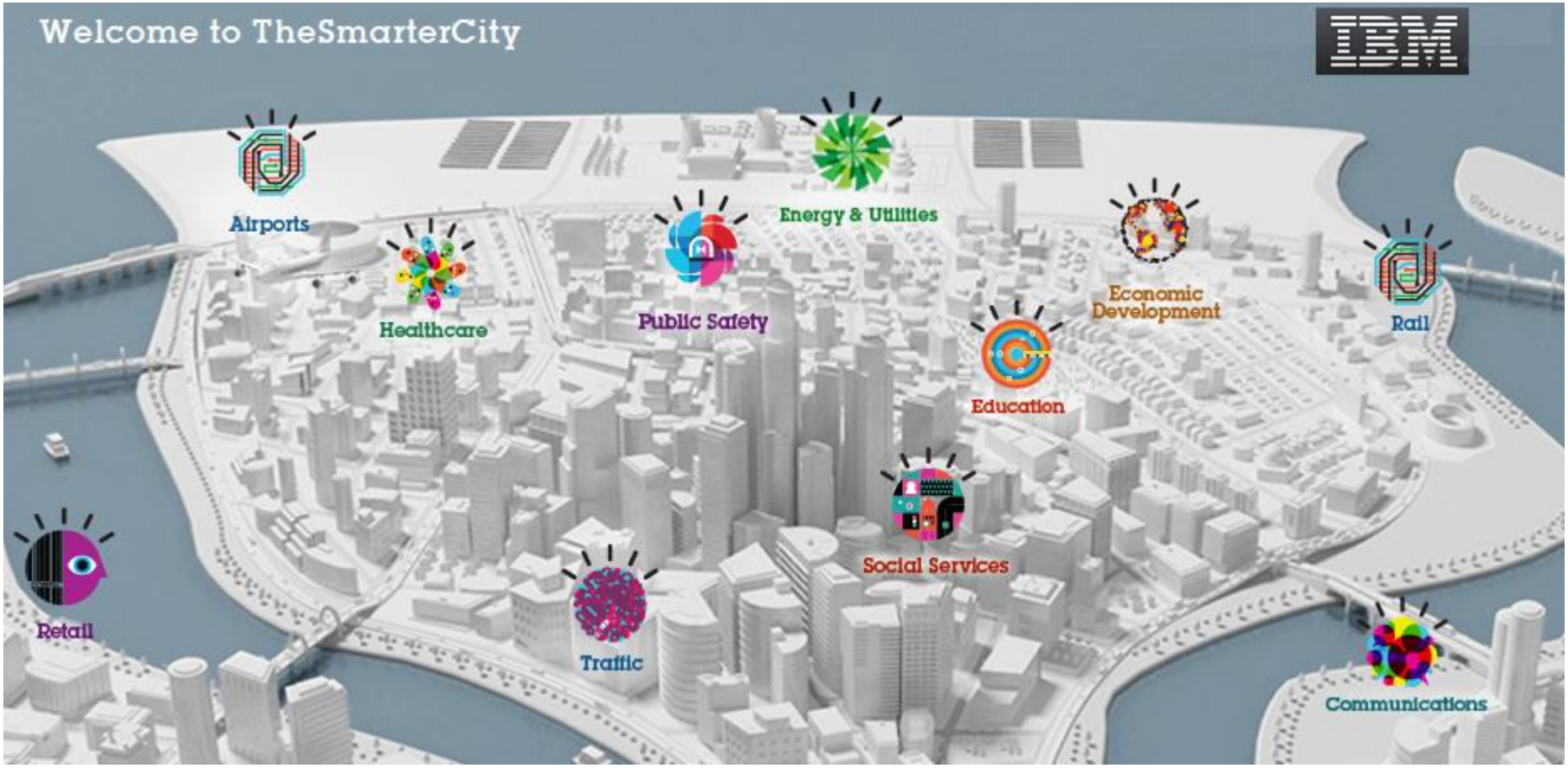

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Conclusions

New solutions and concepts in data collecting and processing

Spatial data infrastructure provide good framework for data management for the administration, citizens and bussiness

Importance of advanced spatial analysis in city planning

Smart city concept connects these fields with the needs of the citizens and society

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Thank You!!

darko.sisko@zagreb.hr