

“New roles for geospatial agencies”

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UN-GGIM: EUROPE

UNITED NATIONS INITIATIVE ON
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT



Change is the only constant



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So close, yet so far?



Technical challenges

- Essential standards, Cloud computing, Cloud sourcing, Web 2.0
- Cadaster 2.0, 3D, AAA...

Social challenges

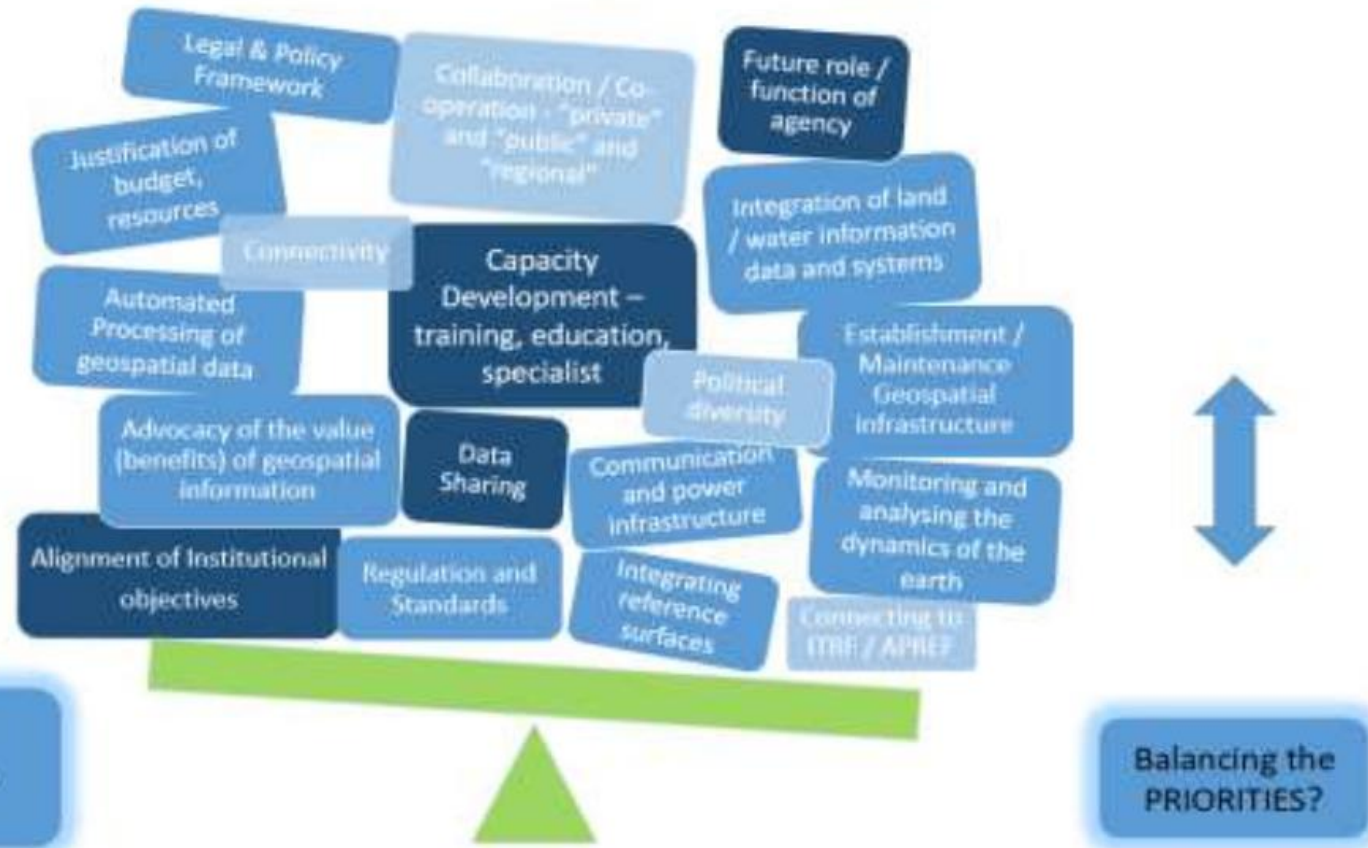
- Social networks, Capacity building, Awareness raising,

Organisational challenges

- to share or not to share,
- government or private, public participation,
- security, information propriety,



The Never Ending Challenges



UN-GGIM: Integration of needs and activities

Why a global mechanism?

Significant gap among countries

Lack of global decision-making

Mandate of Governments

High level coordination

National and global policy frameworks

Geospatial capacity building

Address global issues as a community



Global agenda



Global geodetic reference frame



Global fundamental geospatial data themes



Institutional arrangements, legal and policy frameworks



Standards and technical specifications



Integration of geospatial and statistical information



Land administration and management



Sustainable development and disaster risk reduction



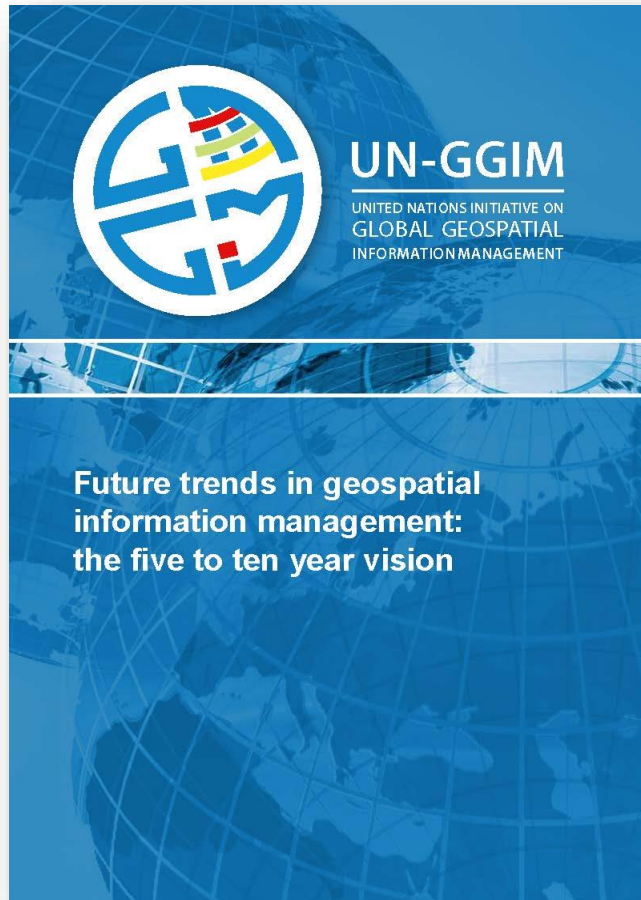
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Future trends in geospatial information management: the 5–10 year vision



Five broad themes identified

- trends in technology and the future direction of data creation, maintenance and management;
- legal and policy developments;
- skills requirements and training mechanisms;
- the role of the private sector and non-governmental sectors; and
- the future role of governments in data provision and management.



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Geospatial Drivers and Trends

Trends

- Relevance of **data integration and interoperability** increase
- Products and solutions produced from **multiple data sources** becoming the norm
- **New opportunities for data gathering**, i.e. autonomous vehicles
- **Crowdsourcing and VGI** become established ways of data collection
- **High-resolution high-revisit Earth Observation** data become valid alternative to aerial imagery
- **Big Data processing** has become a normal path of geospatial data processing
- Integration of multiple data sources requires **licensing harmonisation**
- **Digital platforms** provide access to data at scale
- **Linked Data** enables knowledge-on-demand

Rise of new data sources & analytical methods

- **Ubiquitous connectivity** enables deployment of new tech
- **Digital infrastructure** through sensors and the Internet of Things
- Interconnecting modes of transport through **intelligent mobility**
- **Digital Twins** for modelling, simulation and prediction
- Wide uptake of **edge computing** to enable intelligent mobility, the Internet of Things, and smart cities
- Visualisations and **immersive technology** widely used to enhance customer experience and decision making
- **Machine learning, deep learning, and AI** disrupt geospatial production
- **Quantum computing** enables intensive processing

Technological advancements

- Rise of products and services specifically designed for the **urban environment**
- Demand for **real-time information** provision
- **Digital divide and exclusion** continue to hold back universal digital transformation
- Seamless experience between **outdoor and indoor mapping** becomes an expectation
- Viable integrated **Smart City** solutions becoming wide spread

Evolution of user requirements

- Increased **diversity at work** in technology, science, and innovation
- **Talent and consumer shift** - changing values and attitudes
- **Incubator spaces** enable innovation to enter markets swiftly
- **Regeneration of business ecosystem** through the rise of non-geospatial start-ups
- **New collaboration agreements** with industries outside of geospatial emerge

Industry structural shift

- **Digital ethics and privacy** addressed by national and international initiatives
- **Cybersecurity** conversations increase in tandem with increase in digital devices
- **Pace of digital and tech change** puts pressure on national institutions to address policy and legislative shortcomings
- **Pressure on government institutions** to be more tech and digital savvy

Legislative environment

Drivers



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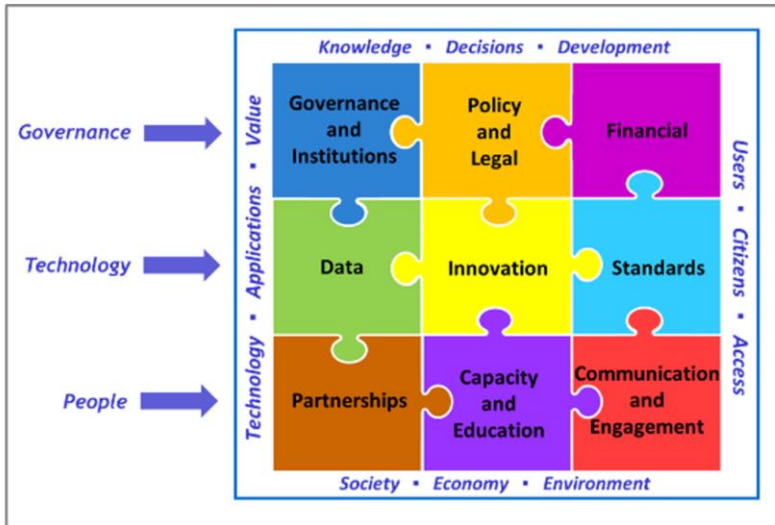
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INTEGRATED-GEOSPATIAL- INFORMATION-FRAMEWORK

A STRATEGIC GUIDE TO DEVELOP AND STRENGTHEN
NATIONAL GEOSPATIAL INFORMATION MANAGEMENT



Key Trends

Technological advancements

Ubiquitous connectivity enables deployment of new tech
Digital infrastructure through sensors and the IoT
Interconnecting transport through **intelligent mobility**
Digital Twins for modelling, simulation and prediction
Edge computing for intelligent mobility, IoT, smart cities
Immersive technology to enhance CX and decision making
Machine & deep learning, AI disrupt geospatial production
Quantum computing enables intensive processing
Rise of new data sources & analytical methods

Relevance of **data integration and interoperability** increase
Products/solutions from **multiple data sources** the norm
New opportunities for data gathering; autonomous vehicles
Crowdsourcing and VGI become ways of data collection
High-res-revisit Earth Obs data valid alt to aerial imagery
Big Data processing normal for geospatial data processing
Integration multi data sources needs **licensing harmonisation**
Digital platforms provide access to data at scale
Linked Data enables knowledge-on-demand
Industry structural shift

Increased **diversity at work** in STEM
Talent and consumer shift - changing values and attitudes
Incubator spaces enable innovation to enter markets swiftly
Regen of business ecosystem; rise non-geospatial start-ups
New collab agreements industries non-geospatial emerge
Evolution of user requirements

Rise of products/services designed for **urban environment**
Demand for **real-time information** provision
Digital divide/exclusion slows universal digital transformation
Seamless experience between **out/indoor mapping** expected
Viable integrated **Smart City** solutions become widely spread
Legislative environment

Digital ethics/privacy fixed by nat/international initiatives
Cybersecurity/digital devices conversations increase in tandem
Digital/tech change; address policy/legislative shortcomings
Government institutions to be more tech/digital savvy

IGIF Pathways

	Governance & Institutions	Policy & Legal	Financial	Data	Innovation	Standards	Partnerships	Capacity & Education	Communication & Engagement
Technological advancements									
Ubiquitous connectivity enables deployment of new tech				●	●				
Digital infrastructure through sensors and the IoT	○			●	●	●			
Interconnecting transport through intelligent mobility				●	●	●			
Digital Twins for modelling, simulation and prediction				●	●	●			
Edge computing for intelligent mobility, IoT, smart cities		●		●	●	●			
Immersive technology to enhance CX and decision making				●	●				
Machine & deep learning, AI disrupt geospatial production				●	●	●		○	
Quantum computing enables intensive processing				●	●	●		○	
Rise of new data sources & analytical methods									
Relevance of data integration and interoperability increase	○			●		●			●
Products/solutions from multiple data sources the norm		○		●		●			
New opportunities for data gathering ; autonomous vehicles				●	●	●	●		
Crowdsourcing and VGI become ways of data collection	○			●	●	●		●	
High-res-revisit Earth Obs data valid alt to aerial imagery				●	●	●			
Big Data processing normal for geospatial data processing				●	●	○			
Integration multi data sources needs licensing harmonisation		●		●	●	○			
Digital platforms provide access to data at scale		●		●	●		●		
Linked Data enables knowledge-on-demand	●	●		●	●	●			
Industry structural shift									
Increased diversity at work in STEM								○	●
Talent and consumer shift - changing values and attitudes					○			●	○
Incubator spaces enable innovation to enter markets swiftly			○	○	○		●		
Regen of business ecosystem ; rise non-geospatial start-ups					●		●		
New collab agreements industries non-geospatial emerge							●		○
Evolution of user requirements									
Rise of products/services designed for urban environment			○	○	○				
Demand for real-time information provision		○		●	●	●	○		
Digital divide/exclusion slows universal digital transformation	○				○				
Seamless experience between out/indoor mapping expected				●	●	●			
Viable integrated Smart City solutions become widely spread			○		●		○		
Legislative environment									
Digital ethics/privacy fixed by nat/international initiatives	○	●		○	○		○	○	○
Cybersecurity /digital devices conversations increase in tandem		●							
Digital/tech change ; address policy/legislative shortcomings		●			●				
Government institutions to be more tech/digital savvy	●	●	○		●			○	○

● Major level of impact ○ Minor level of impact



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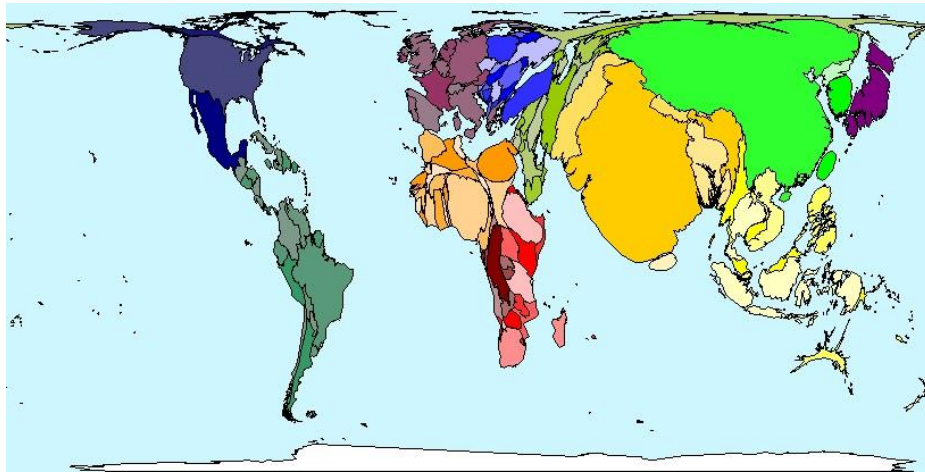
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Challenges for UN-GGIM: Europe:

Achieve true cooperation between NMCAs and NSIs

Statistical and geospatial information providers are a powerful couple, joint geospatial-statistical information systems are needed to inform evidence-based decision making:

- Globally - *for example the achievement of the Post-2015 targets*
- Regionally - *for example implementation of the Europe 2020 strategy*



The size of each territory shows the relative proportion of the world's population living there



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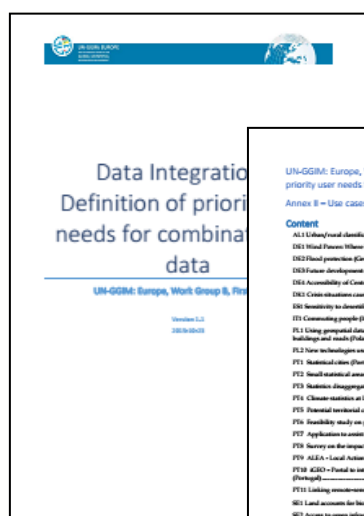
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Work Group B, Data Integration: *Enabling integration of core geospatial data with other data in order to foster further usage*

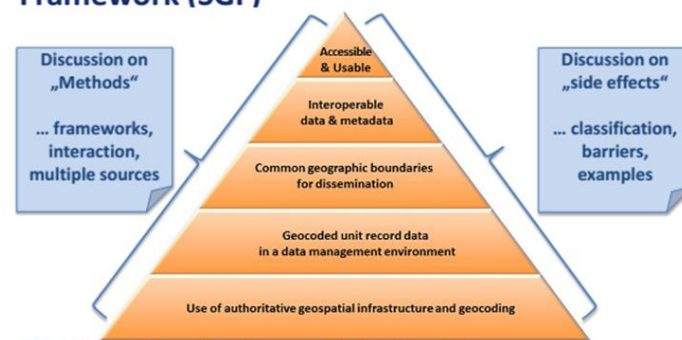
- Supply three deliverables:
 4. Definition of the priority user needs for combinations of data (*Mid-2015*).
 5. Recommendation for methods implementing the prioritised combinations of data (*Mid-2016*)
 6. Recommendation about how to manage side-effects induced by data combinations (*Mid-2016*)



2015-10-03		Version 1.1	
UN-GGIM: Europe, Work Group B "Data Integration – Definition of priority user needs for combinations of data"			
Annex B – Use cases			
Content			
01 Urban Form Classification (Finland)	3		
02 Flood protection (Germany)	4		
03 Future development of the urban population (Germany)	4		
04 Accessibility of Central Locations (Germany)	7		
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14 Essential territorial coverage of household internet access (Portugal)	17		
15 Feasibility study on potential accessibility indicators to schools (Portugal)	18		
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17 Survey on the impact of the internet that occurred the summer of 2013 (Portugal)	20		
18 ALEA – Local Action of Applied Statistics (Portugal)	21		
19 eGIS – Portal to integrate Public Administration open data and open source code applications (Portugal)	22		
20 Linking semi-structured and unstructured data to produce Land Cover estimates (Portugal)	23		
21 Land accounts for biodiversity (Finland)	24		
22 Access to open infrastructure (Finland)	25		
23 Experiences distributed on paths (Finland)	26		
24 Flooding as a consequence of data failure (Finland)	27		
25 Establishment of Population Density Grid for a New Urbanhood Classification	28		
26 Making complex statistical information accessible and easy to understand (EU)	29		
27 Supporting the new economic growth using digital data from Urban Survey (EU)	30		
28 Access to public transport in urban areas (European Commission – DG Regional and Urban Policy)	31		
29 Fighting international organized crime (cross border example, the Netherlands)	32		



5 principles of the Statistical Geospatial Framework (SGF)



<http://un-ggim-europe.org/content/wg-b-data-integration>



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NMCA play a key-role in implementing INSPIRE

- INSPIRE conformant datasets and network services
- metadata for data and services
- Providing the good example:
- be the first and provide reference implementations
- resolving the cross-border challenge
- expertise in high quality portrayal for WMS/WMTS

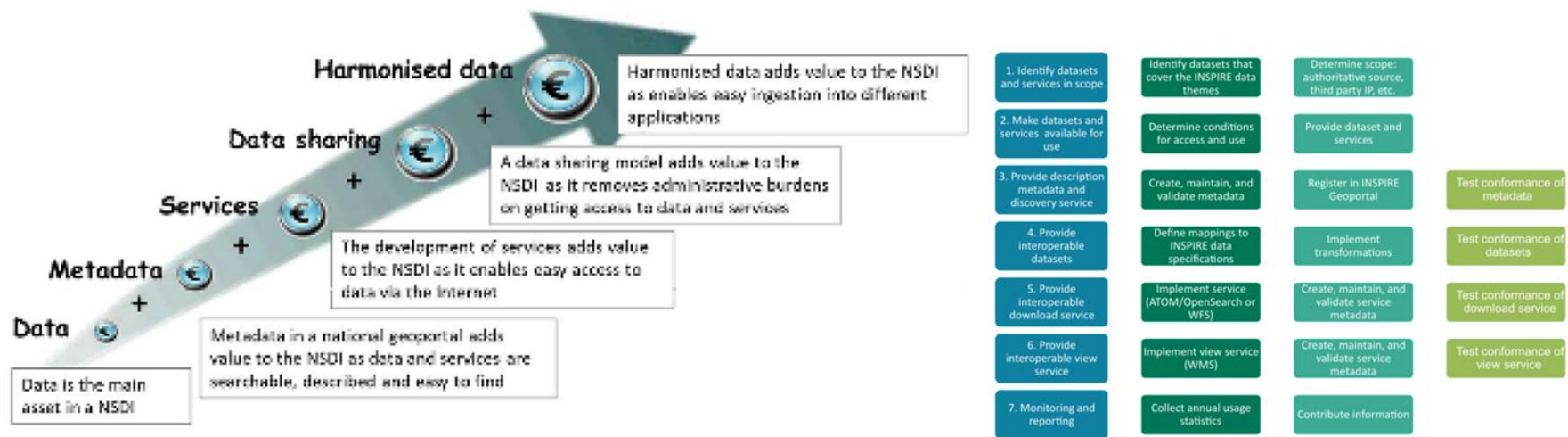


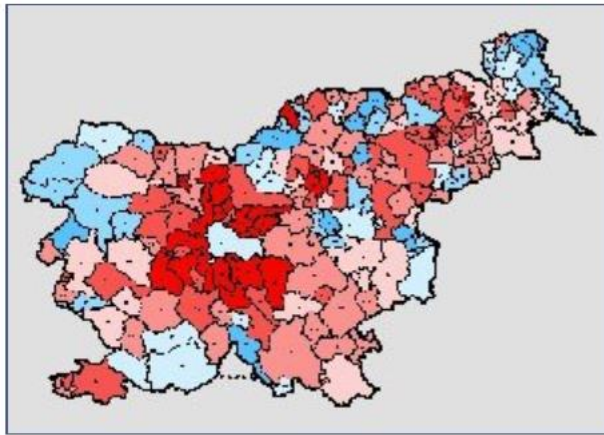
Figure 42. The NSDI value chain.



Examples from Slovenia

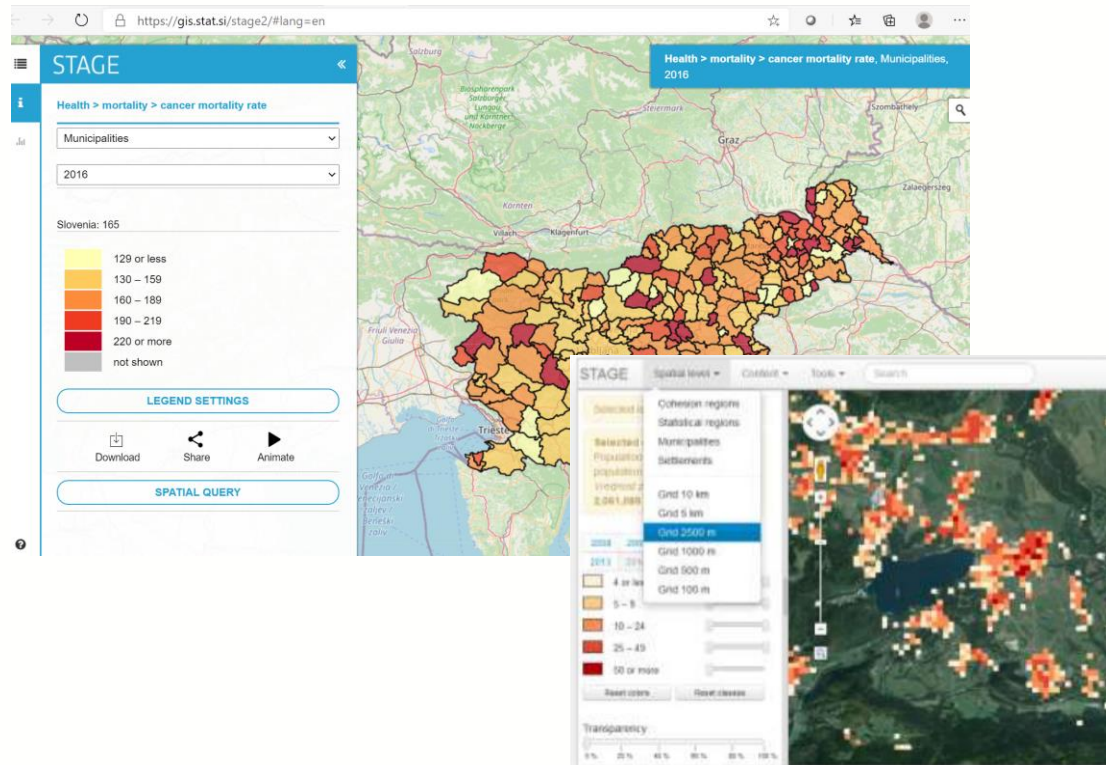
- POPULATION CENSUS

Picture: Changes in the number of inhabitants between the 1991 and 2002 censuses, municipalities, Slovenia



combined data from various administrative and statistical sources that were used in the process of data collection and processing

- STAGE (<https://gis.stat.si/>)

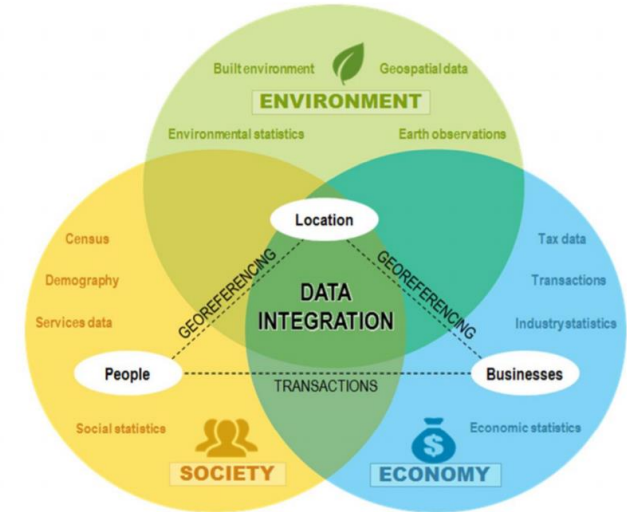


an interactive cartographic application for displaying statistical data about Slovenia



The role of the Surveying, Mapping and Cadastral Authority is gradually changing

- from map factory to SDI co-Ordinator
- from data collector to data integrator
- from information approach to a model approach
- from product oriented to user needs orientation
- from data set to network services
- from large number of staff to fewer staff in flexible structure



Thank you



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