



**GEOSPATIAL  
WORLD  
FORUM** 



# **Modernization of spatial data infrastructure to reduce risks and impacts of floods**

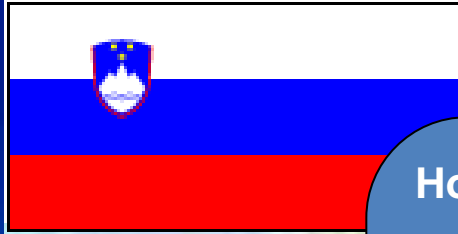
**Tomaž Petek**

**Surveying and Mapping Authority of the Republic of Slovenia**

Lisbon, May 2015

# I FEEL SLOVENIA

SLOVENIA is .....



POSODOBITEV  
PROSTORSKE  
PODATKOVNE  
INFRASTRUKTURE  
ZA ZMANJŠANJE  
TVEGANJ IN  
POSLEDIC POPLAV



Home of 2.036.541 inhabitants

Area of 20.273 km<sup>2</sup>

House numbers 527.016

Settlements 6.028

Cadastral communities 2.716

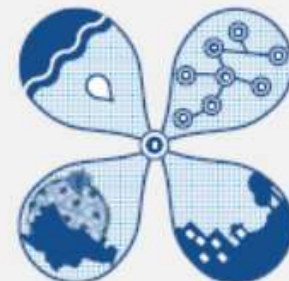
Land parcels 5.266.803

Land Owners 950 000 Buildings 1,2 mio

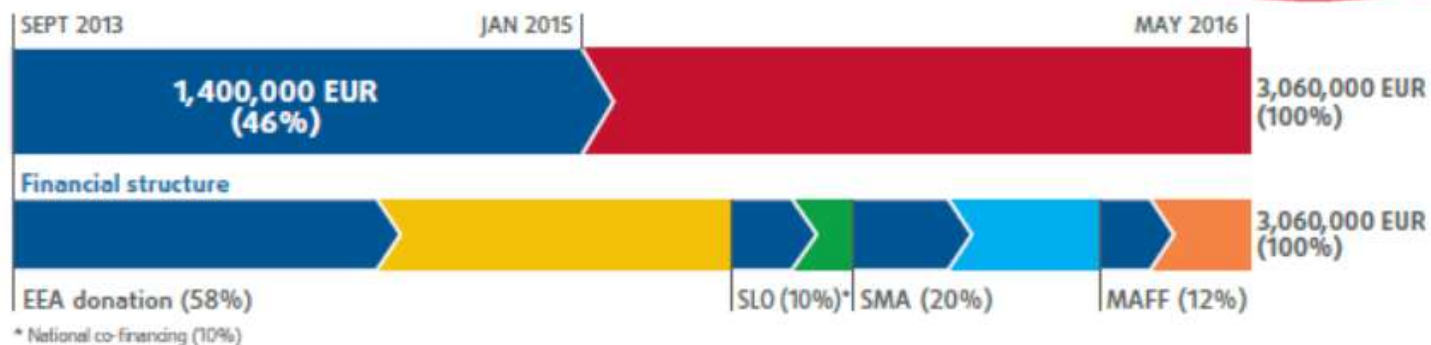


# Content of the presentation

## PROJECT DESCRIPTION MODERNIZATION OF SPATIAL DATA INFRASTRUCTURE TO REDUCE RISKS AND IMPACTS OF FLOODS



### PROJECT BUDGET



### PROJECT OBJECTIVES



# SUBPROJECT GEODETIC REFERENCE SYSTEM (GRS)

*Subproject manager: Klemen Medved*



## SUBPROJECT OBJECTIVES



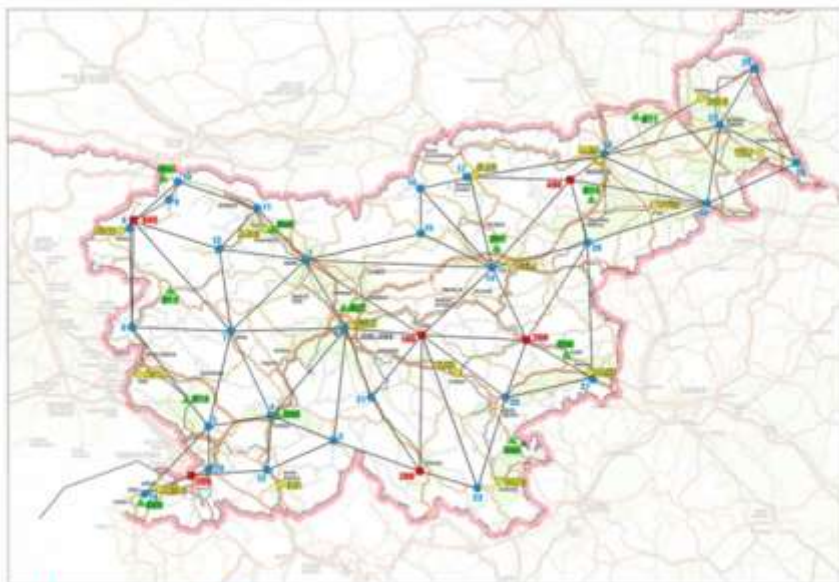
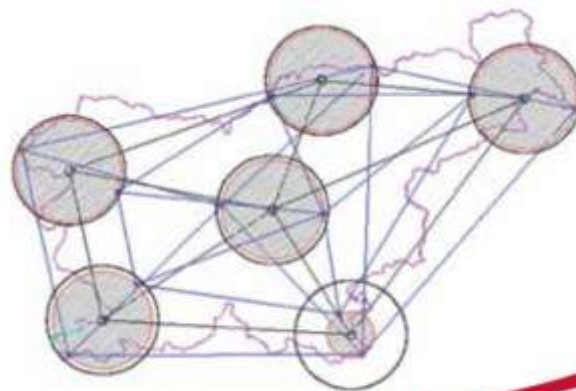
# NATIONAL COMBINED GEODETIC NETWORK



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fundamental national geodetic infrastructure for continuous monitoring of geodynamic processes in the country



M = 1 : 750 000

# THE VERTICAL COMPONENT OF THE GEODETIC REFERENCE SYSTEM



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absolute gravimetric measurements were carried out on all of the six existing absolute gravimetric points in Slovenia.

•AGT 400 Areh

AGT100 Bogenšperk

AGT200 Gotenica



•AGT 600 Kluže

AGT300 Sevnica

AGT500 Socerb

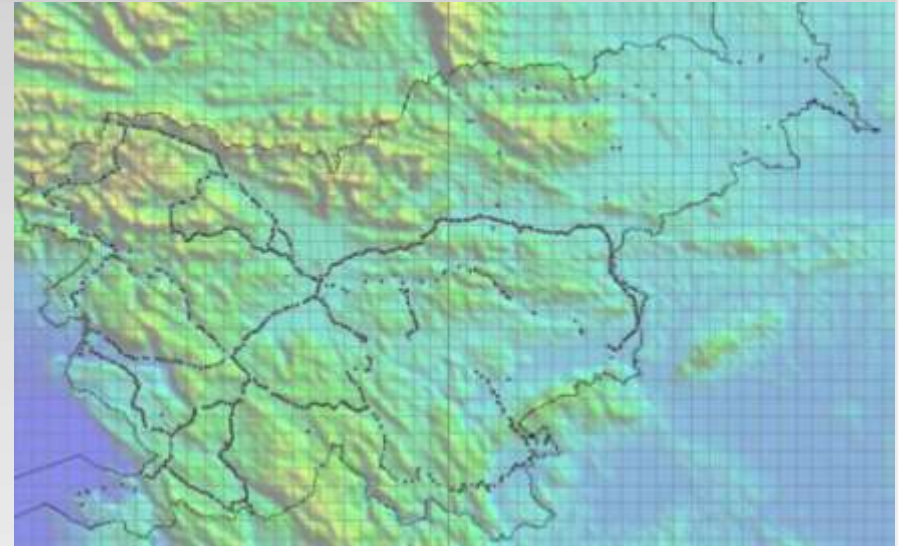
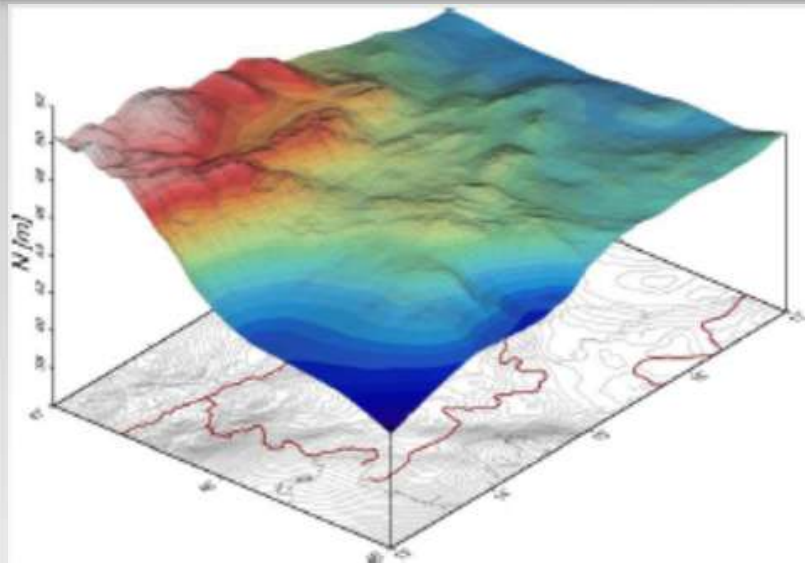
over 300 km of leveling lines were measured in 2014



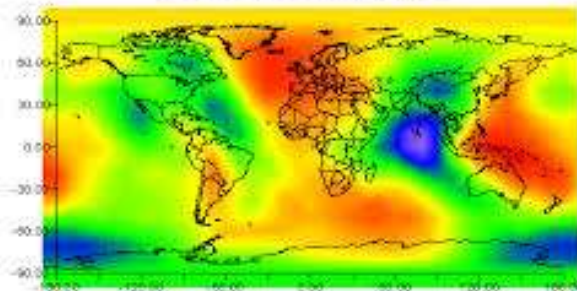
# GEOID MODEL



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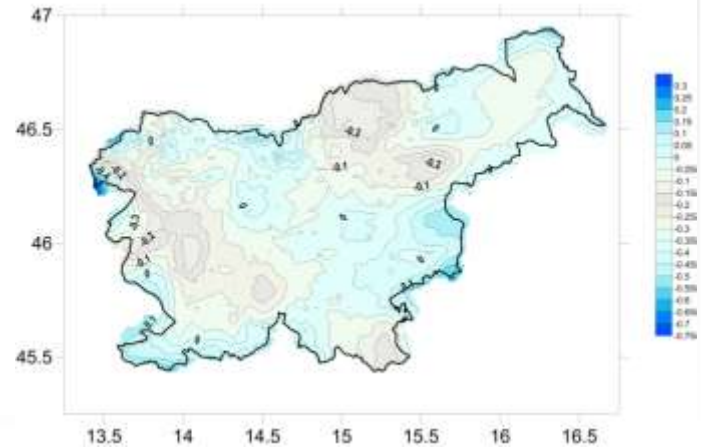
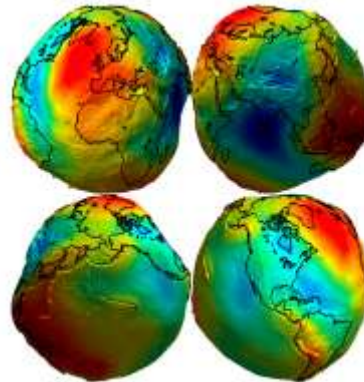


WGS-84 Geoid Height



From DMA 10 by 10 Degree Geoid Height Grid

File: B. Daa 11/05/05



# SUBPROJECT TOPOGRAPHIC DATABASE (TOPO)

*Subproject manager: Marjana Duhovnik*



## SUBPROJECT OBJECTIVES

CHANGE OF THE EXISTING TOPOGRAPHIC DATA MODEL WITH REGARD TO INSPIRE DATA SPECIFICATIONS	100%
ESTABLISHMENT OF A PHYSICAL TOPOGRAPHIC DATABASE MODEL AND DEVELOPMENT OF APPLICATION FOR MANAGING DATA IN ACCORDANCE WITH THE NEW TOPOGRAPHIC DATABASE MODEL	100%
TRANSFORMATION OF EXISTING TOPOGRAPHIC DATA INTO THE NEW DATA MODEL	10%
TOPOGRAPHIC DATA ACQUISITION IN ACCORDANCE WITH NEW INSTRUCTIONS	0%
DEVELOPMENT OF NEW METHODS AND PROCESSES FOR THE MAINTENANCE OF TOPOGRAPHIC DATA	0%
CREATION OF A NETWORK SERVICE FOR VIEWING TOPOGRAPHIC DATA	0%



# TOPO

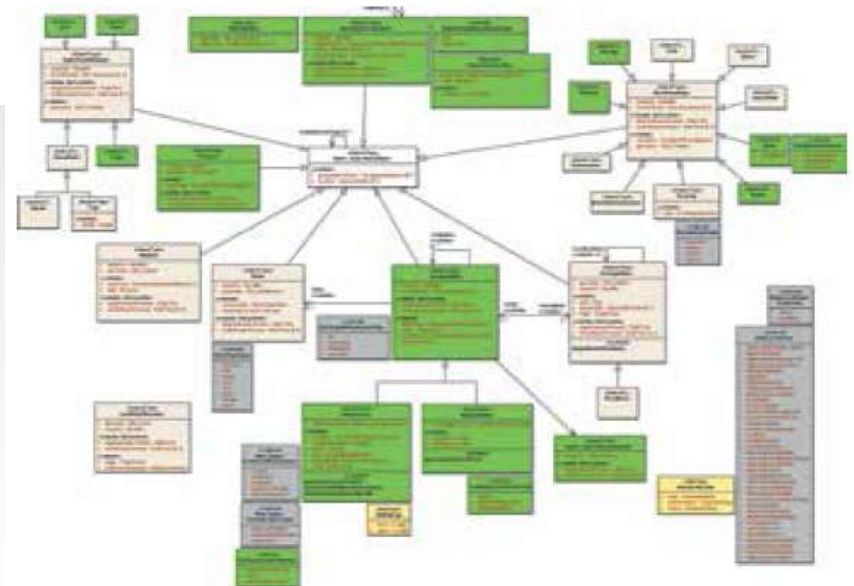


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With the new data model a UML diagram was also presented.

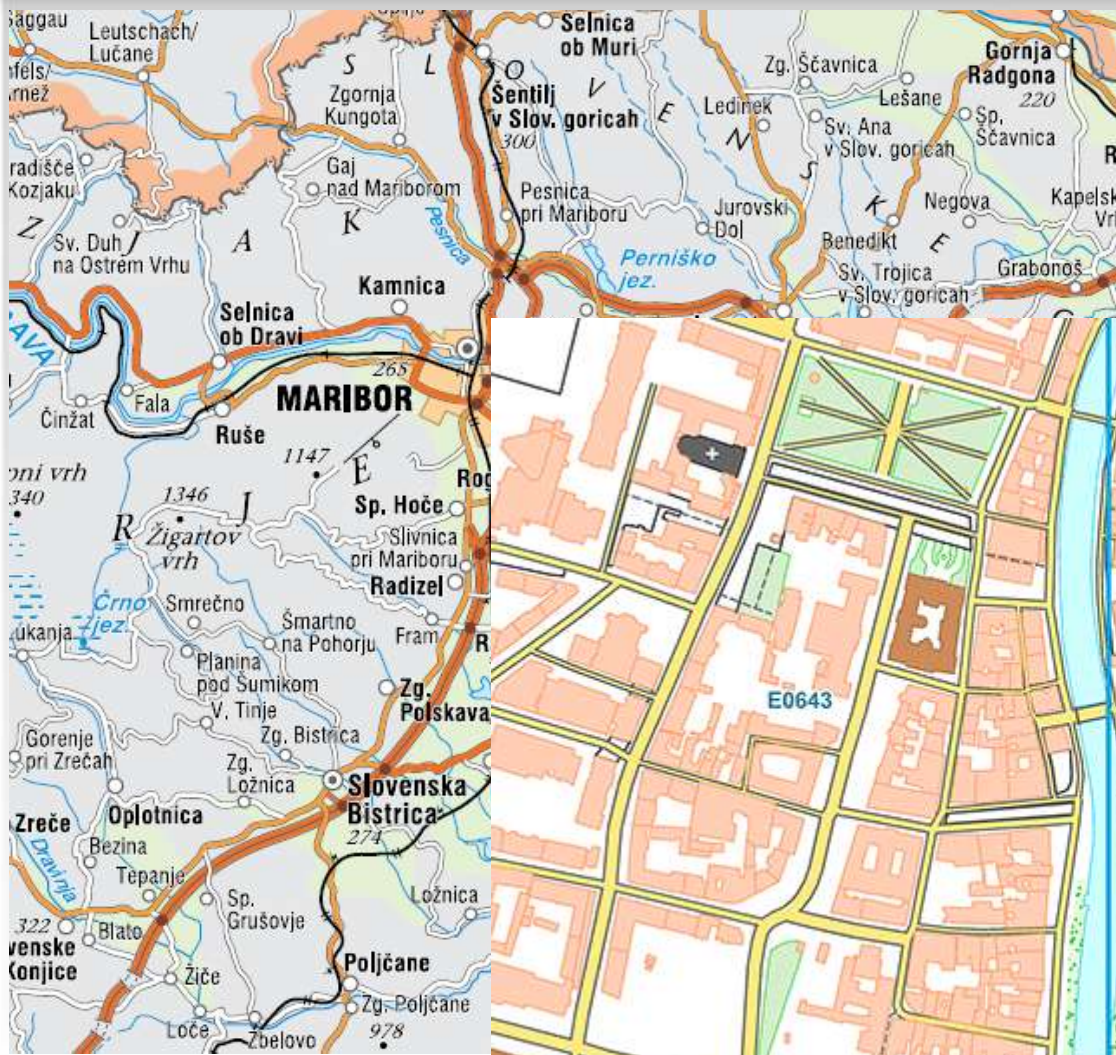
modified existing topographic  
data model with respect to the  
INSPIRE data specifications



# TOPO



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established  
topographic  
database



# SUBPROJECT HYDROGRAPHY (HIDRO)

*Subproject manager: Boštjan Savšek*



## SUBPROJECT OBJECTIVES

THE MIGRATION OF HYDROGRAPHIC DATA CAPTURED WITH A TEST ACQUISITION (320 SHEETS) INTO THE TOPOGRAPHIC DATABASE OF THE SURVEYING AND MAPPING AUTHORITY OF RS (SMA)

0%

UPDATE OF THE SPATIAL DATA INFRASTRUCTURE TO IMPROVE OPERATIONAL HYDROLOGICAL SYSTEMS

40%

UPDATE OF THE WATER INFRASTRUCTURE DATABASE TO IMPROVE THE PROCESS OF WATER MANAGEMENT AND MAINTENANCE

40%

# HIDRO



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UPDATE OF THE SPATIAL DATA  
INFRASTRUCTURE TO IMPROVE  
OPERATIONAL HYDROLOGICAL  
SYSTEMS



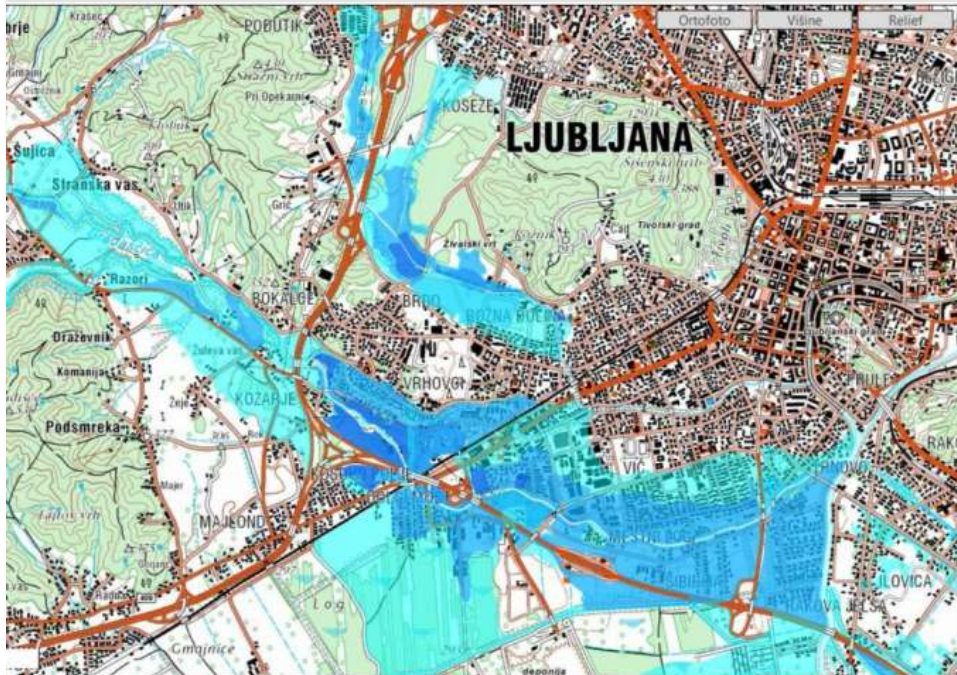
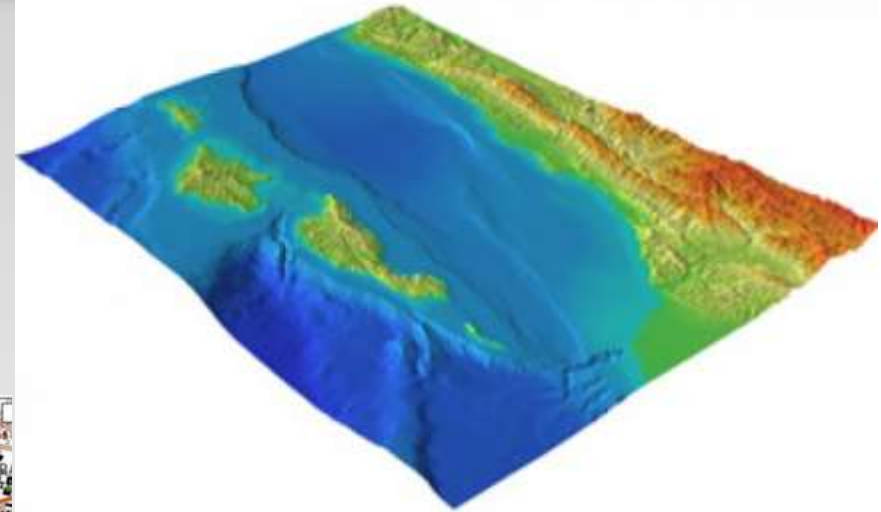
# HIDRO



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UPDATE OF THE WATER  
INFRASTRUCTURE DATABASE TO  
IMPROVE THE PROCESS OF WATER  
MANAGEMENT AND  
MAINTENANCE



# SUBPROJECT INFRASTRUCTURE FOR SPATIAL INFORMATION (INSPIRE)

*Subproject manager: Tomaž Petek*



## SUBPROJECT OBJECTIVES



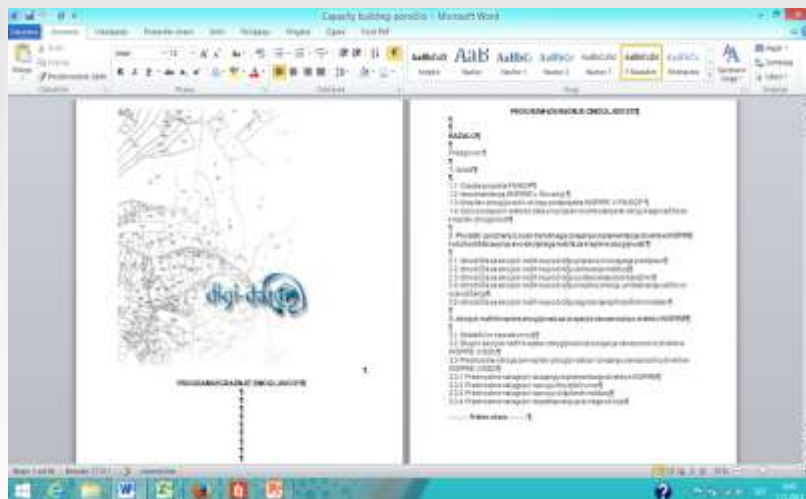
# Capacity building and awareness raising



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- Capacity building program
- Information and promotion of INSPIRE sub project
- Meetings and workshops
- Guidelines for creating data policies for data access and services to the Community



# WORKSHOOPS



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# GUIDELINES



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Guidelines for  
creating data  
policies for data  
access and services  
to the Community

PRIROČNIK ZA OBLIKOVANJE  
PODATKOVNE POLITIKE ZA DOSTOP  
DO PODATKOV IN STORITEV ZA  
ORGANE SKUPNOSTI

BOLJŠE  
MOŽNOSTI  
ZA VSE  
/ INSPIRE



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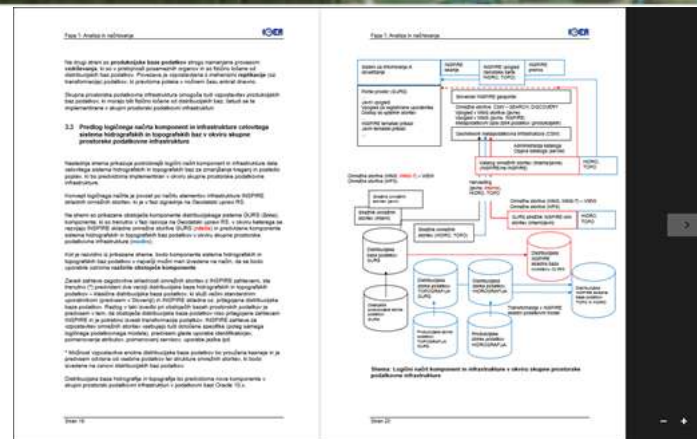
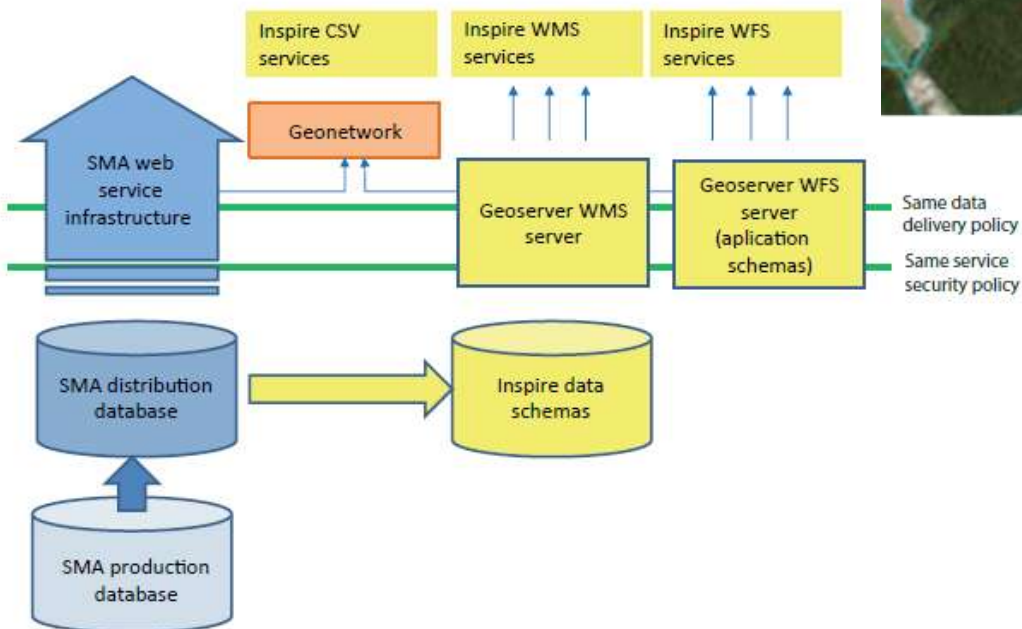
# INSPIRE



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## COMMON INFRASTRUCTURE - ANALYSIS AND PLANNING IN THE SUBPROJECT INSPIRE



# Analysis and Planning



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Tema	Prostorski objekt	Izvorna zbirka podatkov	Namespace localID	WMS	WFS
Aneks I 3. zemljepisna imena GN Geographical Names	KRAJ Z IMENOM NamedPlace	REZI	SI.GURS.REZI.NP EN_MID	GN.GeographicalNames	inspire_gn:NamedPlace
Aneks I 4. Prostorske enote AU AdministrativeUnits	ADMINISTRATIVN A ENOTA  AdministrativeUn it	RPE	SI.GURS.RPE.DR DR_ID SI.GURS.RPE.D44 D44_ID SI.GURS.RPE.UE UE_ID SI.GURS.RPE.OB OB_ID	AU.AdministrativeUnit	inspire_au:AdministrativeUnit
Aneks I 5. Naslovi AD Address	NASLOV  Address	RPE	SI.GURS.RPE HS_MID	AD.Address	inspire_addr:Address inspire_addr:AddressArea Name inspire_addr:Thoroughfare Name
Aneks I 6. Katastrske parcele CP CadastralParcel	KATATRSKA PARCELA  CadastralParcel	ZK	SI.GURS.ZK SIFKO_PARCELA	CP.CadastralParcel	inspire_cp:CadastralParcel
Aneks I 7. Prometno omrežje TN TransportNetworks	CESTNI ODSEK  RoadLink	ZKGJI	SI.GURS.GJI ID	TN.RoadTransportNetwork.RoadLink	inspire_rtn:RoadLink inspire_rtn:FormOfWay
Aneks III Stavbe BU Building	STAVBA  Building	KS	SI.GURS.KS SID	BU.Building	inspire_bu-core2d:Building

# GN.GeographicalNames

NamedPlace

- FeatureCollection
- NamedPlace
- BEUNLIFESPANVERSION ▶ 1000-04-24T10:01:37Z
- geometry
- LineString
- POI LIST ▶ 40284.794 100421.0 400120.094 178421.000
- Isolated
- Identifier
- LOCALID ▶ 21020K
- NAMESPACE ▶ SI-GURS-REG-IMP
- localType
- name
- GeographicalName
- LANGUAGE ▶ sl
- reference
- nameStatus
- sourceOfName
- processStatus
- spelling
- SpellingOfName
- TEXT ▶ SIVE
- SCRIPT ▶ Latn
- TYPE ▶ posodobit/loc

# AD.Address

Address

- FeatureCollection
- Address
- Identifier
- LOCALID ▶ 120400
- NAMESPACE ▶ SI-GURS-IMP-AD
- ALTERATIONCENTRE ▶ 120400
- geometry
- GeometryPrecision
- geometry2D
- Line
- YOR ▶ 40210.0 10041.0
- SPECIFICATION ▶ Building
- METHOD ▶ byAddressName
- SEARCHIT ▶ Yes
- Location
- AddressLocation
- Identifier
- LocalDesignator
- CORRELATOR ▶ 11
- TYPE ▶ administrativeCenter
- LEVEL ▶ Address
- subFeature
- subFeature
- EnglishAddressName
- languageCode
- languageCode

# CP.CadastralParcel

CadastralParcel

- FeatureCollection
- CadastralParcel
- AREAVALUE ▶ 0.0
- BEUNLIFESPANVERSION ▶ 2013-06-07T08:31:02Z
- geometry
- Polygon
- Identifier
- LineString
- POI LIST ▶ 40077.2 100274.24 40028.45 10026.19 40011.80 10028.45 40012.07 10029.1 40012.0 10030.2 40011.75 10040.07 40013.3 100275.22
- Isolated
- Identifier
- LOCALID ▶ 0751-2023
- NAMESPACE ▶ SI-GURS-CK-CP
- LABEL ▶ 2023
- NATIONALCADASTRALREFERENCE ▶ 0751-2023

# BU.Building

Building

- FeatureCollection
- Building
- EnglishAddressName
- visualizedConstruction
- geometry
- Polygon
- Isolated
- Identifier
- LOCALID ▶ 21020K
- NAMESPACE ▶ SI-GURS-IMP-AD
- NUMBEROFBUILDINGS ▶ 1
- NUMBEROFBUILDINGUNIT ▶ 1
- NUMBEROFCOORINATEVECTORS ▶ 1
- geometry2D
- geometry
- Polygon
- Identifier
- LineString
- POI LIST ▶ 40210.0 10041.0 40028.45 10026.19 40011.80 10028.45 40012.07 10029.1 40012.0 10030.2 40011.75 10040.07 40013.3 100275.22
- REFERENCEGEOMETRY ▶ Yes
- NationalGeometryReference
- NationalGeometryReferenceAccuracy

# TN.RoadTransportNetwork.RoadLink

RoadLink

- FeatureCollection
- RoadLink
- BEUNLIFESPANVERSION ▶ 2007-10-08T10:51:02Z
- geometry
- LineString
- Identifier
- LOCALID ▶ 70002P
- NAMESPACE ▶ SI-GURS-NA-RL
- isNetwork
- referenceGeometry
- LineString
- FEATURES ▶ Yes
- geographicalName
- GeographicalName
- LANGUAGE ▶ sl
- reference
- nameStatus
- sourceOfName
- processStatus
- spelling
- SpellingOfName
- TEXT ▶ Kaptolova cesta
- SCRIPT ▶ Latn
- VALUE NUM ▶ 2007-10-08T10:51:02Z

# AU.AdministrativeUnit

AdministrativeUnit\_01

- FeatureCollection
- AdministrativeUnit
- AdministrativeUnit
- geometry
- Boundary
- NATIONALCODE ▶ 01
- geometry
- Identifier
- LOCALID ▶ 11010P
- NAMESPACE ▶ SI-GURS-IMP-AD
- NATIONALLEVEL ▶ 010000
- isNationalLevelName
- LOCALIZEDCHARACTERFORM ▶ 010000
- name
- COUNTRY ▶ SI
- geometryOfName
- LANGUAGE ▶ sl
- reference
- nameStatus
- sourceOfName
- processStatus
- spelling
- SpellingOfName
- TEXT ▶ Ljubljana
- SCRIPT ▶ Latn
- referenceOfName
- BEUNLIFESPANVERSION ▶ 1991-12-31T23:00:00Z
- SUTS
- geometry

# Test application: „Inspire Service Viewer“



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The screenshot displays the Inspire Service Viewer application interface. At the top, the search bar contains the address "Zemljomerska ulica 12, 1000 Ljubljana, Ljubljana". The map shows a residential area with buildings and green spaces, overlaid with green lines representing flood risk boundaries. A red pin is placed on a building. On the right side, there is a "Base layers" panel with "DOF5" selected, and an "Overlays" panel with "Address" and "CadastralParcel" checked. Below the map, a "Metadata" panel is open, showing details for a "Building" feature, including its location, elevation, and geometry.

INSPIRE

Zemljomerska ulica 12, 1000 Ljubljana, Ljubljana

Base layers

- DOF5

Overlays

- NamedPlace
- Address
- CadastralParcel
- AdministrativeUnit - 1st
- AdministrativeUnit - 2nd
- AdministrativeUnit - 3rd
- AdministrativeUnit - 4th

Metadata result: True

Address | CadastralParcel | Building | RoadNet

FeatureCollection

- Building
  - legalNameVersion
  - streetViewInstruction
  - elevation
    - elevationReference: ELEVATIONVALUE > 200
  - localed
    - LOCATED > 2142007
    - NAME SPACE > 2142007
    - NUMBEROFDWELLINGS > 1
    - NUMBEROFFLOOR/UNIT > 1
    - NUMBEROFFLOORABOVEGROUND > 11
  - geometry2D
    - BuildingGeometry2D
      - geometry
        - Polygon
          - exterior
            - LineString
              - POINTLIST > 462005.83 100000.26 462005.44 100047.1 462007.19 100034.1 462009.49 100067.43 462014.3 100048.86 462019.11 462020.71 462021.76 1000147.9 462027.23 1000167.11 462000.81 1000111.26 462014.46 462009.83 1000100.32 462014.28 1000199.52 462014.24 1000200.88 462009.45 1000161.26 462021.88 100021.76 462005.8 100014.46 462005.88 100011.26
      - REFERENCE GEOMETRY > true
      - horizontalGeometryReference
      - horizontalGeometryReferenceAccuracy

Application optimized for: Firefox 20+, Chrome 30+ and IE 9+

Sign out

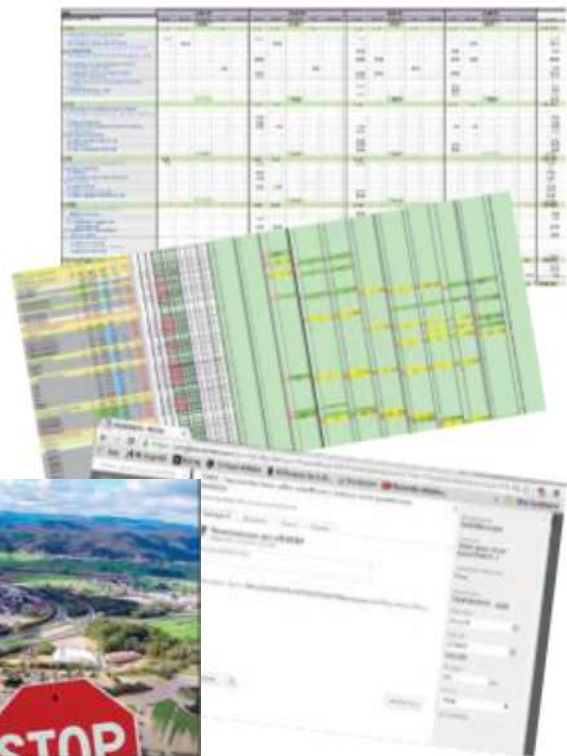
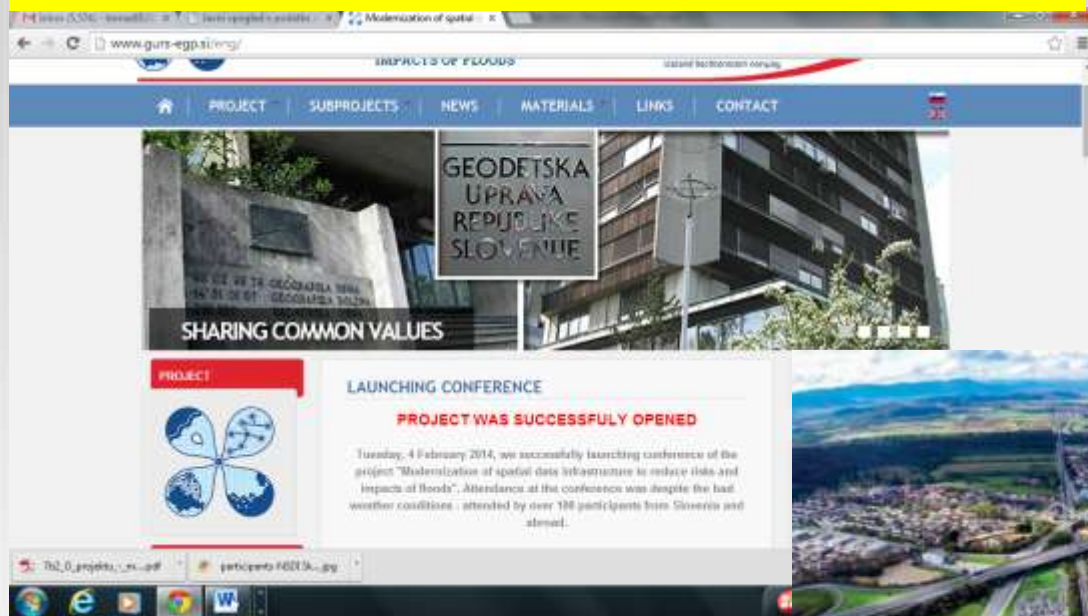
# Information and promotion of project



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<http://www.gurs-egp.si/eng>



MODERNIZATION  
OF SPATIAL DATA  
INFRASTRUCTURE  
TO REDUCE RISKS  
AND IMPACTS  
OF FLOODS



# QUESTIONS



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*THANK YOU !  
HVALA !*



E-mail: [tomaz.petek@gov.si](mailto:tomaz.petek@gov.si),  
Web: [www.geoportal.gov.si](http://www.geoportal.gov.si)



**SLOVENIAN  
SPATIAL DATA  
INFRASTRUCTURE**