

# INSPIRATION RESULTS AND BENEFITS ALBANIA



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Paper prepared for  
**E&I Workshop: Support to INSPIRE Implementation in  
enlargement and EWP Countries**  
**JRC ISPRA**

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# PREPARATION OF LEGAL BASIS FOR THE INSPIRE DIRECTIVE



- 2 National Workshop
- Regional Conference “Capacity building and Education”  
Durrës
- A video film about NSDI/INSPIRE
- INSPIRE day Albania
- Law No.72/2012 “Organization and operation of NSDI in  
Albania
- Law No.33/2012 “For Immovable Property Registration”  
(Cadastral Map)
- DCM “Creation and Implementation of Albanian Reference  
Geodetic Framework”
- DCM “Approval of Common Geodetic and GIS Standards”

# New Coordinative Reference Frame KRGJSH

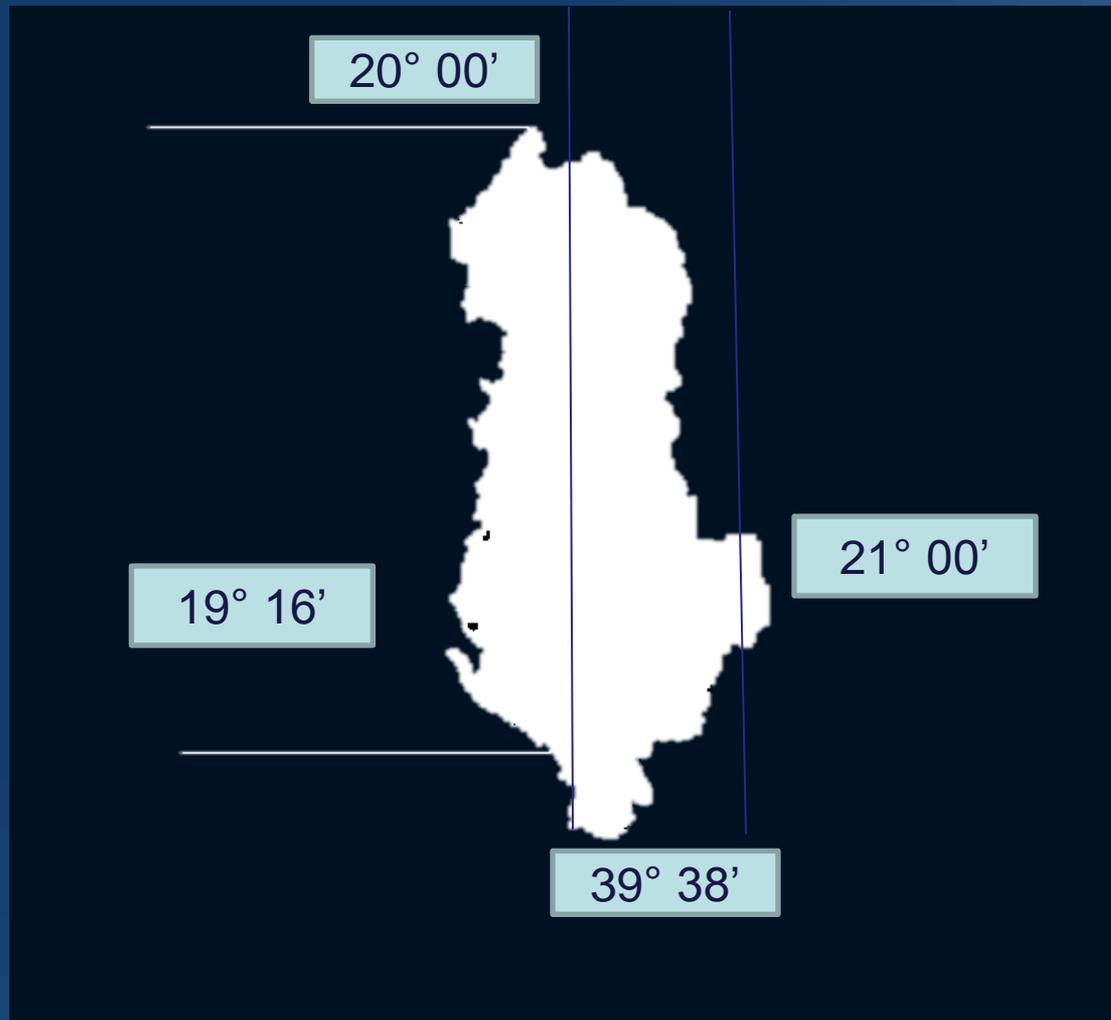
(in accordance with INSPIRE)

Decision of Council of Ministers Nr.669, 7 July 2013



- Referența : Satelit Network (GNSS) and European referența (ETRF89)
- Elipsoidi: WGS84 (with geometric and gravitational parameter)
- Projección : TMZn (Transversal Mercator, zone)
- Coordinativ zone: 6<sup>o</sup> number 34, East
- Origin of Elipsoidic Coordinat:
  - Ecuator of earth elipsoid (elipsoid latitude)  $\varphi = 0^0$
  - Mean Meridian of elipsoid (elipsoid longitude  $\lambda = 20^0$  (East))
- Origin of rectangular coordinates (x, y or North, East) :
- Display of Ecuator Projection 'False North' FN = 0.000 m.
- 'False East' to keep values always positive FE = 500 000 m.
- Scale of distortion (20<sup>o</sup> East )  $k_0 = 1$ , maximum distortion 0.5%

# Map of Albania Scale 1:1.000.000



# Handling Major Data Sets



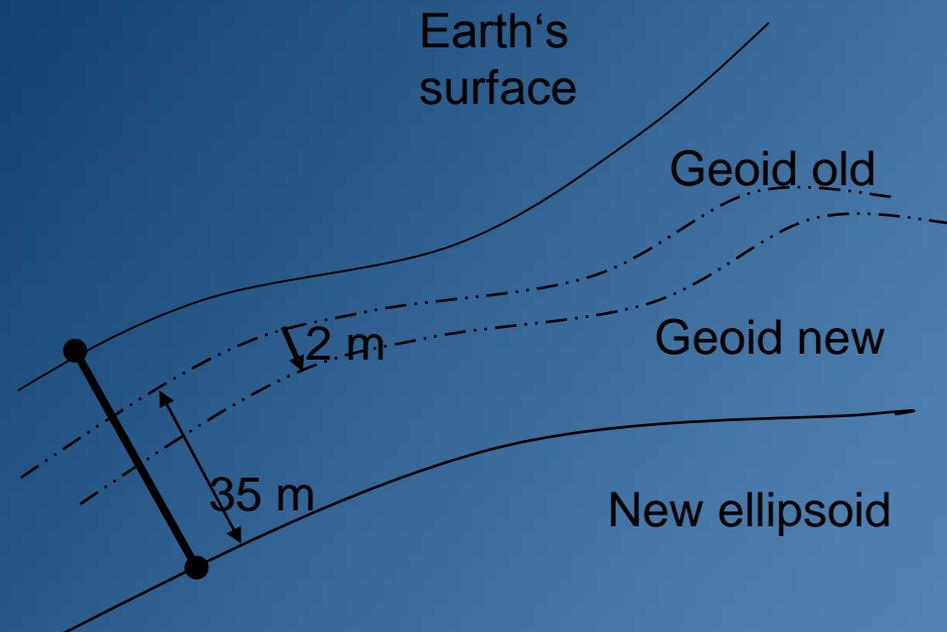
- **Orthophotos:** From UTM (WGS84) to TM20 (ETRF89):  
All orthophotos have to be cut into the new grid system, both topographic and cadastral maps, all boundary grid lines have to be renumbered
- **IGJUSH triangulation points:** Transformation to ETRS89 and plane coordinates by software ALBACO
- **Cadastral maps:**  
First step cut to chosen grid boundaries  
Second step digitize and transform to new coordinates  
Third step plot new maps  
(Fourth step recomputed all areas, if wanted)  
Step 1 and 2 may be exchanged
- **Levelling points:** Check GPS levelling by conventional levelling

# Examples of Changes (1)



- All maps affected (1:50 000 to 1:500), changing the ellipsoidal reference by 100-200 m, all contour lines by 1-2 m

Topographic map: Grid point changes 2-3 mm



Sea level heights: changes of 1-2 m because of refined Geoid

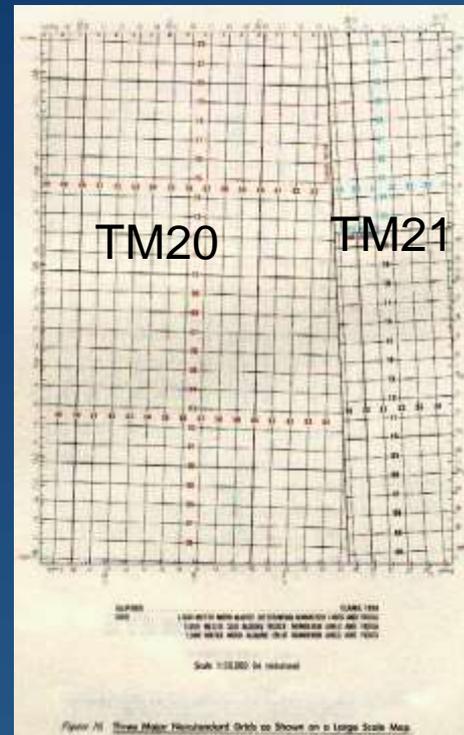
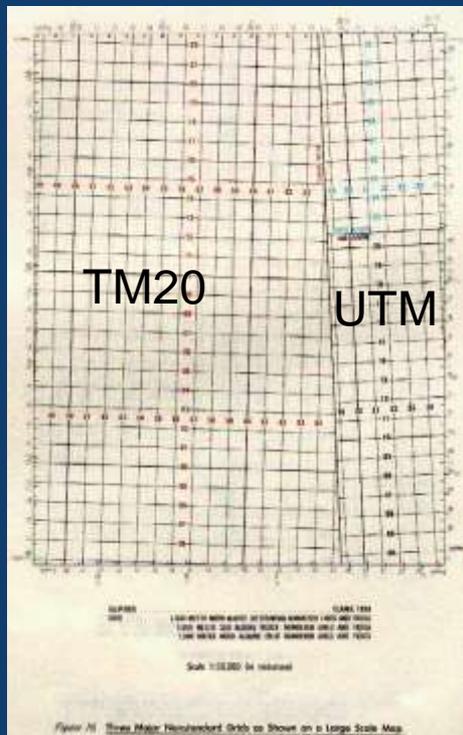
# Example of changes (2)



- Transformation of orthophotos and cadastral maps best done by grid points
- Plane transformation parameters 2 shifts, 1 rotation, 1 scale

Orthophotos

Cadastral maps



General shift in Easting by 84 km (Central Meridian)

To discern between old and new a different false Easting (e.g. 500 000 instead of 4 500 000) is recommended

# Example of Change in Distance and Area



- Generally distances and areas in maps differ from surface surveys
- Differences are dependent on ellipsoidal height, choice of ellipsoid and choice of map projection
- Major bias occurs due to map projection
- Conformal map projections (UTM, TM) cannot preserve distances and areas



# ALBSReP implementation

Albanian System of Electronic Registration of Properties



- Product from one of LAMP components
- Currently most of functionalities are implemented and in production
- Developed “In-House” by IPRO IT team with support from World Bank and Lantmäteriet consultants
- Task Force from Council of Ministers

# Architecture - Strategic Possibilities & Constraints



- Fully Centralized System
- Combination of Desktop and Web Based Solutions
- Microsoft Partnership
- NAIS Data Centres

# High Level Domain Model



## External Systems

Address Register

Business Register

Citizen Register

## Database Entities

Parties

Legal Entities

Rights

Application Requests

Application

Workflow

Basic Administrative Units

Documents

Spatial Units

Design based on INSPIRE  
ISO19152 annex G for LADM

## Other Data Repositories

Mail

Files

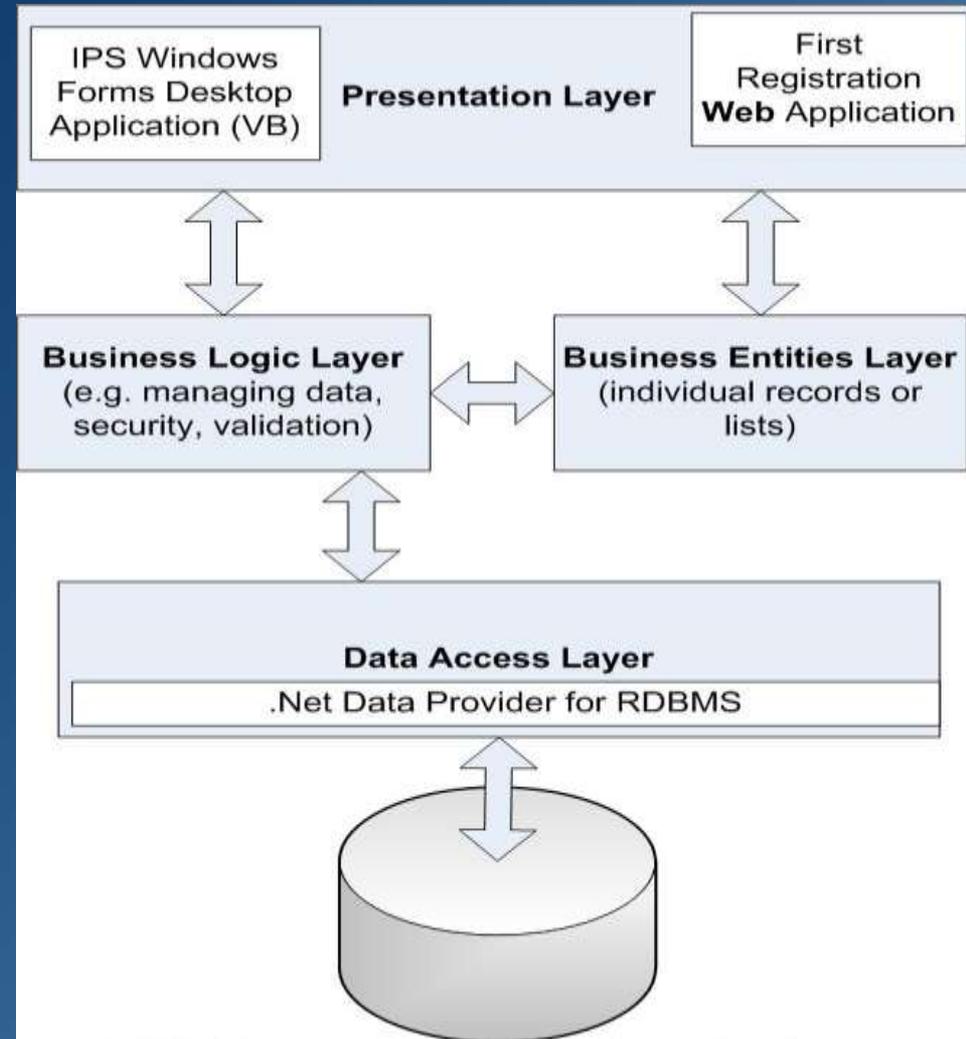
Base Maps

Employees &  
Security

# Software Architecture – Layers



- Data Access Layer
  - Business Logic Layer
  - Business Entities Layer
  - Web Service Layer
- 
- 100% of BE, DAL, BLL automatically generated





# Enhancement of business processes by ALBSReP



- Main achievement – FR data maintenance
- Different old applications are replaced with only one integrated solution
- Centralized solution means real time analysis and reporting capabilities
- Flexibility to interact with other external systems
- Use of LADM ISO standards for data modeling

# First Registration Data



Package of digital products that first registration provides contains:

1. Vectorial map of the cadastral zone (dxf or dwg format)
2. Database file that contains cartel data (mdb file)
3. Orthophoto
4. Digital Archive

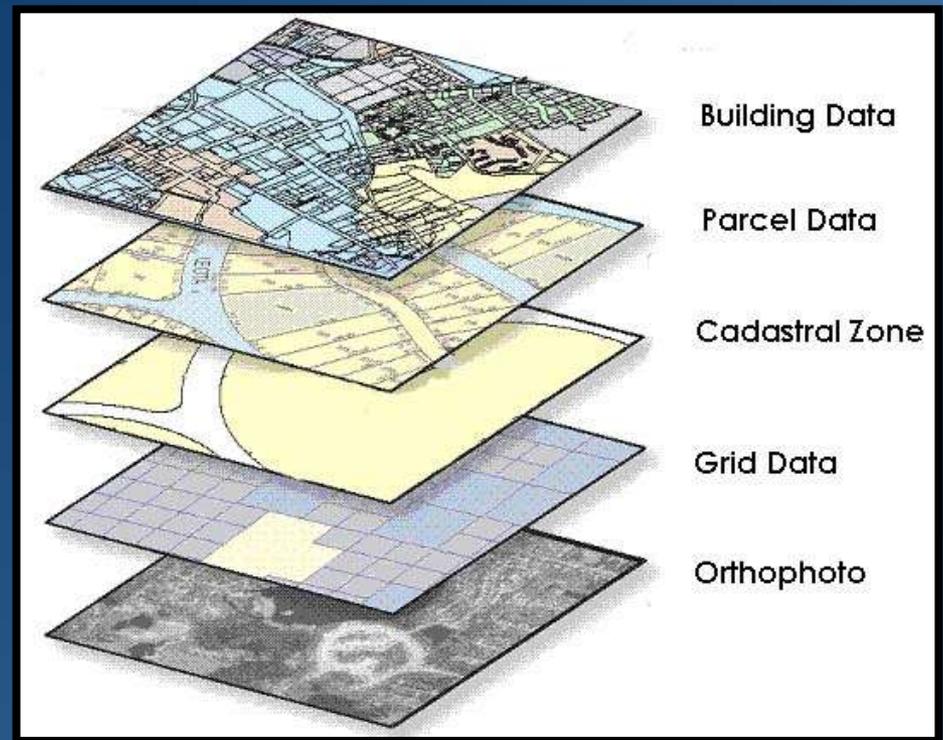
These data are received and imported in our system database.

# Spatial Data Organization

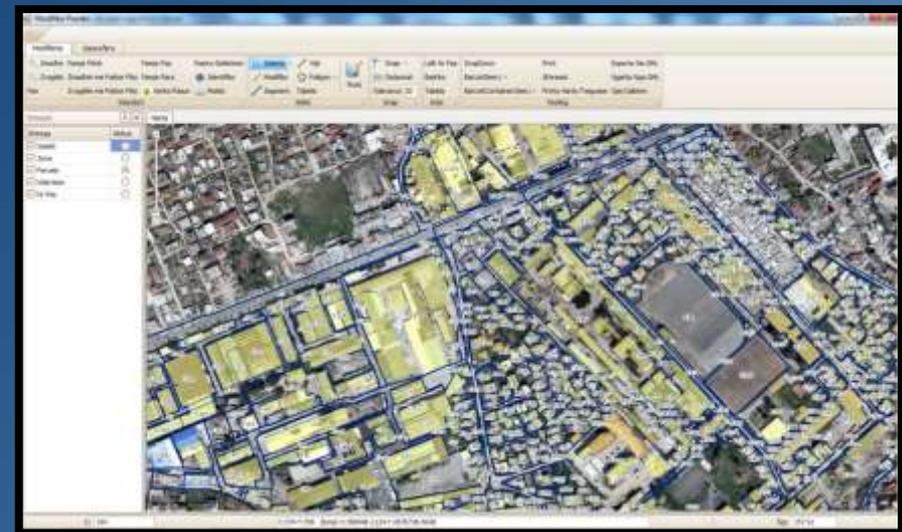
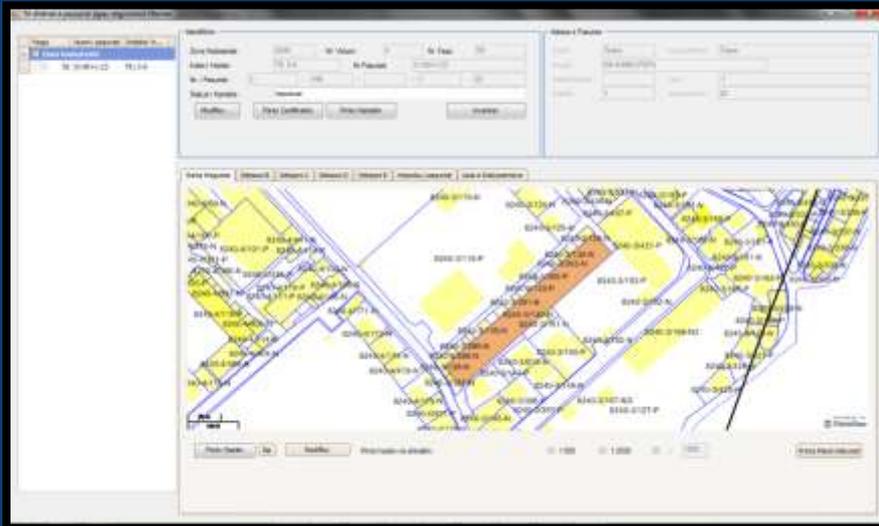


In IPS like in most GIS software data is organized in themes as data layers.

This approach allows data to be input as separate themes so the user can edit the attributes of different data layers.



# Spatial Data Framework



The first slide presents the surveyor user interface.

In the second one there are all the map editing tools that our system provides.

# Stage of INSPIRE and NSDI implementation in Albania



## Our System provides possibilities:

### Data Resources for Inspire:

- Spatial Data
- Ownership Attributes Data

### Technologies of Geographic Information

- Possibilities for building Web-Services according to INSPIRE Directives
- Geoportal for presenting our Spatial and Attribute Data

# CLOSURE



- 1. There is a legal package (Law 72/2012 & DCM), which are the product of adoption and transition phase of the EC INSPIRE Directive in Albania .
- 2. Law 72/2012 of Albanian Parliament , constitutes a sound basis for institutional development and technical implementation of SDI. The articles of this Law are to develop aspects such as portals, metadata, network services, interoperability, coordination and organization.
- 3. Legislative package supported by two other documents such as: Policies for NSDI and Action Plan (Strategy) for implementation of the NSDI are evaluated in conformity with the INSPIRE Directive and can serve as Road Map for further activities in the context of Albania SDI implementation.
- 4. Considering decisions, regulations and analysis by EC after 2007 will bring improvement to the existing package for **INSPIRE** and NSDI in **Albania** .



THANK YOU

