SERVING GEOSPATIAL SOCIETY THROUGH ESTABLISHMENT OF THE INSPIRE FRAMEWORK; MODULES ON CLOUD AND REGULARIZATIONS.

Süleyman S. Birhan, Onur Lenk, Yıldırım Bayar, Mahir Güney, Erkan Tın, Ali Toksoy, Arif Aydınoğlu
Outline

- Rationale and Context
- Components of Geospatial Framework
- Achievements
Challenges for Local Administrations

- Each municipality must make its own IT investment (i.e. servers, software packages, database etc.), and
- Train its own staff
- Provide ‘standard spatial data’ through ‘standardized services’ for other stakeholders

✓ ...feasibility and cost-benefit considerations shall be taken into account in the development of the implementing rules (INSPIRE D. Article 7 (1))
✓ ...public authorities are given the technical possibility to link their spatial data sets and services to the network ...where spatial datasets and services comply with implementing rules with regard, in particular, to metadata, network services and interoperability (INSPIRE D. Article 7,11(1),12..)
Small and medium scaled municipalities are main resources of spatial data in INSPIRE context.

They have deficiency in financial and human resources which causes delays for establishing appropriate geospatial infrastructure.
Turkey

Total 1365 Municipalities

Metropolitan Municipality 30
District Municipality 782
Provincial Municipality 51
Provincial Special Administration 51
Town Municipality 451
Ministry of Environment and Urbanization (MoEU) requires a standardized input and approach from the local governments that covers spatial data users, data producers, financial resources and policies in order to better use of resources of spatial data management and services.
Rationale and Context

Solution

- It was aimed to provide appropriate infrastructure to develop and maintain geospatial software modules through cloud system.

- On-demand self service,
- Broad network access,
- Resource pooling,
- Rapid elasticity,
- Measured service.

Data Security
System Security
Interoperability
Cost Saving
Standard Data
High Performance
Extendable System
Effective Human Resource
Rationale and Context

Aim

- Facilitating the INSPIRE’s principles for interoperability and data sharing among interrelated institutions to achieve National Environmental Legislation in line with EU Environmental Directives
This project is co-financed by the European Union and the Republic of Turkey.

So, to make it INSPIRE driven; And in order to make environmentally sustainable future for society.

Rationale and Context

Overall objective

- To enhance the protection of environment by preventing or remedying environmental damage and by fostering exchange of spatial information between institutions.

Purpose

- To strengthen the institutional, technical and legislative framework for effective implementation of the EU INSPIRE directive and establishment of strong administrative and technical capacity at all levels
Consortium Structure
(Implementing Body)

- BPR CONSULTING - BPR Elektronik Bigi Sistemleri Plan ve Reorg. Dan. Hiz. Ltd. Sti (BPR) - (TR);
- Sarga - Sociedad Aragonesa de Gestión Agroambiental (ES)
- Evoluxer S.L. (ES)
- GEOGRAMA S.L. (ES)
- IDIEIKON (Investigación y Desarrollo Informático EIKON, S.L) (ES)
- EKİNOKS Yazılım, Donanım, Danışmanlık, Elektronik, inşaat, Harita ve Mühendislik Hizmetleri San. Tie. Ltd. Şti (TR)

Stakeholders

- 10 Ministries
- Provincial Directorates of MoEU
- Local Administrations
- Public Institutions/Organizations

MoEU P.Crd.Team

- Süleyman Salih BİRHAN
- D.Yıldırım BAYAR
- Yasemin KOÇ
- Aslı Ölmez
- Gülseren Baysal
- Hakan Güven
- Eda Soylu Sengör
- Harun Badem
- Pınar Yılmaz
Components and Expected Results

Training and Awareness raising

Spatial Data Inventory

Cloud-based Geospatial Modules

Process Modelling Management for data sharing

Legislations

Results to be Achieved

1. MoEU has increased its own and other relevant institutions’ capacity for future implementation of the INSPIRE Directive.

2. Raised awareness for related stakeholders and decision makers.

3. More environmentally friendly land planning has developed in line with the EU spatial planning approach.
### Training and Awareness raising

**Activity-1** Know-how and experience for administrative and technical staff increased

- Development of a Detailed Work Program and Revision of Project Time Schedule
- Conducting TNA and Development of TNA Report
- Development of Training Program and Training Materials
- Organization and Delivery of Trainings, Workshops, Seminars and INSPIRE Conference Attendances

**Activity-2** Awareness for related major groups and decision makers raised

- Organization of Seminars for Wider Audience
- Organization of Study Visits
- System Analysis and Design of the Training Portal
- Implementation of the Training Portal
- Development of an Internet Website for the Project
Training and Awareness raising

- Training Need Analysis Report Prepared where a web-based ‘Survey’ is carried out.
- 1890 participants including 651 from Local Administrations.
- INSPIRE Training Programs (13 Groups) designed for different profile levels of participants according to the survey outputs.
## Training and Awareness raising

### INSPIRE BASIC: LOCAL GOVERNMENTS

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<thead>
<tr>
<th>Geographic Information Systems (GIS)</th>
<th>Geographical Data Infrastructure (GDI)</th>
<th>INSPIRE Implementing Rules</th>
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### Basics of GIS and Geographical Data Models
- INSPIRE Directive and Relevant EU Policies
- Contents of INSPIRE/UIS Data Themes and Rules of Description

### Data Production Techniques and Map Projections
- INSPIRE/TNGIS Policies, Principles and Components
- Interoperability of INSPIRE/TNGIS Conceptual Data Models Components

### Geographical Database Design and Management
- INSPIRE/TNGIS Policies, Principles and Components
- INSPIRE in practice

### Tasks of Public Institutions and GIS Implementations
- Geographical Data Standards, with examples ISO 191XX and OGC Standards

### INSPIRE ADVANCED: DATA SPECIALIST

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### GIS and Data Models
- INSPIRE Rules of Data Description
- INSPIRE Advanced Network Services

### Geographical Database Design and Management
- Interoperability of INSPIRE Conceptual Data Models Components

### Geographical Data Standards Sensor Web
- Advanced INSPIRE

### INSPIRE BASIC: PUBLIC INSTITUTIONS - CENTRAL

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### Tasks of Public Institutions and GIS Implementations
- Geographical Data Standards, with examples ISO 191XX and OGC Standards
Training and Awareness raising

- 4 Seminars (Professionals and Stakeholders);
  - OGC Overview, OGC Standards
  - INSPIRE Overview, OGC Standards
  - Best NSDI-Focused Practices and INSPIRE Relations
  - Developing 3D City Models with CityGML
  - Use of INSPIRE Implementation Schemas for Data Harmonization
  - Best Practices for INSPIRE Data Harmonization
  - National Spatial Data Infrastructure (‘SDI’) Implementations in Turkey
  - Capacity Building for Spatial Data Infrastructure

- 2 Technical Study Visits
  - Spain and Italy

- 2 Workshops

- 2 INSPIRE Conference Participation
Training and Awareness raising

SEMINAR SESSIONS WERE RELEVANT TO NEEDS

- Not at all: 31%
- Well: 68%
- Very well: 1%

SEMINAR ENHANCED MY AWARENESS in OGC, INSPIRE and SDI ACTIVITIES.

- Not at all: 64%
- Well: 35%
- Very well: 1%
Pilot Areas for Spatial Data Inventory

- Pendik Muncp.
- Kayseri Met. Muncp.
- Muğla Met. Muncp.
- Elazığ Muncp.
Almost each municipality has data sets that correspond to data themes such as administrative unit, address, cadaster parcel, transportation, topography, reference systems, protected sites, transportation networks, buildings and land use as internal parts of their local GIS/UIS projects.

In this context, it is possible to produce and transform the data sets to INSPIRE standard at levels to fulfill basic and compulsory types of details and attributes.

<table>
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<tr>
<th>Local Government</th>
<th>Data Availability</th>
<th>INSPIRE</th>
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<tbody>
<tr>
<td>Digital/Analog</td>
<td>Compatible Data</td>
<td>Transformable Data</td>
</tr>
<tr>
<td>Kayseri Metropolitan Municipality and Talas Sub-Provincial Municipality</td>
<td>55 %</td>
<td>7 %</td>
</tr>
<tr>
<td>İstanbul- Pendik Sub-Provincial Municipality</td>
<td>59 %</td>
<td>9 %</td>
</tr>
<tr>
<td>Elazığ Municipality</td>
<td>45 %</td>
<td>4%</td>
</tr>
<tr>
<td>Muğla Metropolitan Municipality</td>
<td>49 %</td>
<td>5%</td>
</tr>
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Compatibility of data sets, both on analog or digital media, held by each pilot local government with INSPIRE data themes and their percentage of availability are defined and graphically demonstrated as per the following criteria:

- INSPIRE-compatible
- Available/ INSPIRE transformable
- Available at other institutions/INSPIRE transformable
- Need to be produced
Cloud-based Geospatial Modules

- Cloud Storage
- Cemetery Module
- Topographic Map
- Expropriation
- Infrastructure
- Building Information Management
- Building Inventory Module
- Address Assessment
- Urban Information Module
- Application of Article-18
- Process Management
- INSPIRE Data Management Module
- Cloud Infrastructure
- Training Portal

PROGRESS ACHIEVED (As of 28 Aug, 2017)

Realized

<table>
<thead>
<tr>
<th>Date</th>
<th>实现 (%)</th>
</tr>
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<tr>
<td>17 Feb</td>
<td>11%</td>
</tr>
<tr>
<td>30 March</td>
<td>28%</td>
</tr>
<tr>
<td>25 May</td>
<td>42%</td>
</tr>
<tr>
<td>06 June</td>
<td>44%</td>
</tr>
<tr>
<td>26 July</td>
<td>47%</td>
</tr>
<tr>
<td>28 Aug</td>
<td>52%</td>
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Cloud-based Geospatial Modules

- Building Information Management
- 3D Topographic Map
Cloud-based Geospatial Modules

- **Application of Article-18**
- **Address Assessment**
Cloud-based Geospatial Modules

- Cemetery Module
- Address Assessment
Cloud-based Geospatial Modules

**Infrastructure**

**Cloud Storage**
Objective:
- Provide a common process management environment by constructing “To-Be” process models for Local Governments and putting these models into service via Process Modelling and Management Software running on cloud platform in order to standardize process flows of institutions, enable scalability and process optimization.

Target Stakeholders:
- Local Governments
- Provincial Directorates of MoEU
- 12 Government Institutions

Stages of Implementation:
- “As-Is” and “GAP” Analysis – At 4 Pilot Local Governments
- Business Areas – 6 Major Business Areas Covered
- “To-Be” Process Modelling – Optimized and Refined Process Flows
- Cloud-Based Process Modelling and Management Software
- Synchronization – Between Process Modelling and Management Software & Business Application Software Systems
- Deployment – Putting Process Models into Service
- Scale – Measure Performance and Improve Models

Target Outcomes:
- Upskill institutions in process improvement
- Provide a common ground for producing standard geographical and administrative data
- Enable institutions to design and execute their own process models.
Process Modelling & Management

- BPM Notation
- Staff Task Assignment
- Execution of Processes
- Model Pools
- Integration with Application Software Modules
Project website (www.inspire.gov.tr)
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Onur Lenk (honest2404@gmail.com) Team Leader (On behalf of Consortium)