Deployment of Cloud Urban Information System in Turkey

Süleyman Salih BİRHAN, Head of Department
Dursun Yıldırım BAYAR, Urban Planner
At the end of 2014, Republic of Turkey Ministry of Environment and Urbanisation - General Directorate of Geographical Information Systems started the Cloud Urban Information System Project in order to develop a cloud based urban information system.
Cloud Urban Information System

e-Plan Automation System

Geological Etude Information System

Earthquake Risk Rapid Mapping System
Before starting, we had to understand...

Every local government use spatial data for urban management activities and the awareness has increased related to benefits of spatial data usage.

This awareness also raises the necessity of investment in geospatial technologies, necessity of standardization and establishment of an efficient spatial data infrastructure.
Many local government get into problems related to:

**Budget**

**Financial resources**

**Human resources**

**Technical Assistance**

And phone calls from many local governments;

“Who will fill the survey? We do not have GIS experts...”
In order to provide a feeding for spatial data infrastructure (SDI), establishing compatibility with INSPIRE through SDI and establishing an interconnection with environment through SDI;

**A comprehensive management of spatial data at all levels is one of the most important issues.**

Urban management activities involve the use of spatial data, which mainly focus on “urban data” however necessity of interconnection between “urban data” and environmental data exists as an important task.
Urban Information System

Urban Information System manages and integrates the spatial data in scale of base map level, spatial data that is used for urban management and sharing of spatial data.
In Turkey there are:
• 30 Metropolitan Municipalities,
• 1365 Municipalities

as well as,
• 51 Provincial Special Administration as local governmental units.
Cloud Urban Information System manages and integrates the spatial data in scale of base map level, spatial data that is used for urban management and sharing of spatial data at national level.
Solution

Thus, an infrastructure which is capable of hosting applications for the local government units would provide efficiency in cost and all operations in order to accomplish electronic services for urban management.
Today the idea to use of cloud computing has spread to all world which provides an efficient way to disseminate urban information systems as software as a service (SaaS).
Related to Urban Information Systems, General Directorate of Geographical Information Systems conducted:

• Determination of Urban Information Systems Standards Project (2012)
• Determination of Route Map for Disseminating Urban Information Systems Project (2013)
• Cloud Urban Information System Project (2014-2016)
Flashback to Project; Project Methodology

Project components included data collection, data preparation and software development activities.

Three municipalities and a province in Turkey were selected as pilot municipalities which are Elazığ, Ardahan, Talas Municipalities and Kırşehir Province.
Project Overview

On site building data collection, digitizing of building licenses, digitizing of spatial plans and standardization and infrastructure data collection activities were held within the Project.
Besides;
- Software Development Kit,
- Cloud Server Software
- GIS Server Software
- Web Application Software
- Desktop Application Software

Have been developed with the Project.
A data model has been formed which is called KBS-GML and collected data were made compatible with the defined data model.

Data model is developed in compliance with the data themes which were studied in Urban Information System Standards Project, in 2012.
Cloud Server Software

Management of
• Nodes,
• Roles,
• Users
• User Groups
• Workspaces
GIS Server Software

Management of:
• Users
• Services
• Data Sources
• Layers
• Styles
• Restrictions
Cloud Urban Information System currently consists of four modules which are:

- Infrastructure Module,
- Address Assessment Module,
- Spatial Development Module
- Building License Module.
Web Application Software

Management Page

Main Page

Access to Modules
Web Application Software
Drawing & Editing Functions
Web Application Software

Address Assessment Module

Address Editing Functions
Web Application Software

Query Functions
Web Application Software

Infrastructure Module
Web Application Software

Spatial Plan Status Module

Parcel Query

License Module
Desktop Application Software

Desktop GIS functions
Connection to web application
Challenges:

- Obtaining necessary services from 3rd party institutions
- Necessity of regulatory studies
- Scheduling hardware investments
- Defining complex work flows and job processes
- Tight Project Schedule
Deploying cloud;
“it needs team work...”

Control Board
Süleyman Birhan
Yasemin Tabar
Eda Soylu Sengör
Hakan Güven
Salih Evren Acar
Harun Badem
Pınar Yılmaz
Ayhan Kavşut
D.Yıldırım Bayar

“For minimum turbulence...”
Currently the system is deployed in pilot municipalities and new modules will be developed in;

"Technical Assistance for Capacity Building in Horizontal Sector for the Implementation of INSPIRE Directive Project".
To make it INSPIRE driven...

"Technical Assistance for Capacity Building in Horizontal Sector for the Implementation of INSPIRE Directive Project"
"Technical Assistance for Capacity Building in Horizontal Sector for the Implementation of INSPIRE Directive Project"

Project started on March 1st, 2016 and will end in February, 2018.

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

**Project 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.
"Technical Assistance for Capacity Building in Horizontal Sector for the Implementation of INSPIRE Directive Project"

Results to be achieved

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

Result 2: Raised awareness for related stakeholders and decision makers.

Result 3: More environmentally friendly land planning has developed in line with the EU spatial planning approach.
Activity Sets of the Project include,
• Training, seminars, workshops and awareness raising activities
• Software development activities and prototype implementation
• Performing INSPIRE impact analyses and related legislations, plans, reports.
"Technical Assistance for Capacity Building in Horizontal Sector for the Implementation of INSPIRE Directive Project"

The capacity building referred in the Project purpose is to be achieved by the development of INSPIRE driven cloud-based geospatial software modules development. These are specifically designed to overcome the problems faced by the local governments, in a complementary act with Cloud Urban Information System Project by using the same software development kit.
Conclusion

• Deployment of Cloud Urban Information System gained experience in both technical and organisational directions., as well as the Project deliverables.

• Cloud Urban Information System in Turkey is intended to be disseminated and preparation has been started for involving other municipalities to this system.

• INSPIRE driven cloud-based geospatial software modules will provide more functionality and providing a maximum level of abilities of an urban information system.
Thank you...

Süleyman Salih BİRHAN, Head of Department  
suleyman.birhan@csb.gov.tr

Dursun Yıldırım BAYAR, Urban Planner  
yildirim.bayar@csb.gov.tr