On-line services for surveyors in Israel

Carmela SZANCER, Yaron FELUS, Vera LAVAN, Israel

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SUMMARY

The last decade has seen a revolutionary emergence of Internet technologies. This revolution has made a great impact on surveyors and on the way by which the Survey of Israel provides data and services.
The Survey is making great efforts to convert all its information systems, activities and service to the internet. Thus during the last year the survey has launched three new systems:

1. The National Cadastral and historic maps on-line archive - The system allows searching, querying, viewing and downloading over one million scanned documents including a registration plans, surveying notes, field books, court rulings, control point descriptions, and historical maps.
2. National Geodesic Database (NGDB) - an online system that allows searching, querying, and information retrieval about control points, corner points, and Benchmarks.
3. National Spatial Geoportal, an on-line GIS system that displays more than 100 geographic layers from different governmental ministries. The system was designed for the public and allows geographic data retrieval, map production, sophisticated applications on unique public data layer and the creation of geographic layers from private data in a designated personal space.

The development of these online services presented a set of challenges to SOI. This articel will present these problems and their solutions as well as a new intergrative system that is currently under development.

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1. Introduction

The last decade has seen a revolutionary emergence of Internet technologies. This revolution has made a great impact on surveyors and on the way by which the Survey of Israel provides data and services.
The vision of the Survey of Israel is to make most of its services and datasets online. This article reviews the three systems developed to date: The National Cadastral and historic maps on-line archive, National Geodesic Database (NGD) and National Spatial Geoportal, and will describe the future system which is currently being developed to integrate spatial data with alpha-numeric data and with scanned documents.

2. The National Cadastral and Historic Maps On-line Archive

The National Cadastral and historic maps on-line archive was established to meet the needs of a modern land rights registration system. The Israeli cadastre was developed the British Mandate authorities, to manage the country's main resource - land – and it was based on the Torrens principles, required among other things, a precise definition which is based on measurements of registration units.
The precise definition of land parcels and block is documented in measurement books, documents and maps and the government is obliged by law "Save these for generations, and to make them easily available".
Thus the Survey of Israel has an archive with over a million different documents and maps relating to registration of rights and to the precise delimitation of blocks and parcels. These documents were scanned (i.e., in TIFF and JPG files) and they are managed by a computerized system.
The computerized system, which received the name "Observation – Tazpit in Hebrew" is based on IBM's platform -FilNet with Advanced Business Interface DriveU to manage an archive in a WEB environment (Figure 1).
The on-line system is characterized by the following key features:

1. Ability to synchronize data from other databases. Today is the link with the central cadastral database.
2. Hierarchical management (scalable) of documents. The data is divided into levels working environments. Meaning that all the documents with one common characteristic can be managed under one portfolio.
3. Data indexing and data validation tools are available and enable fast upload of new document into the database. These tools perform basic quality control procedures and prevent lack of uniformity in the document's properties.
4. The relational database provides linkage between different documents. This property of the system allows fast search and retrieval of documents bundled together.

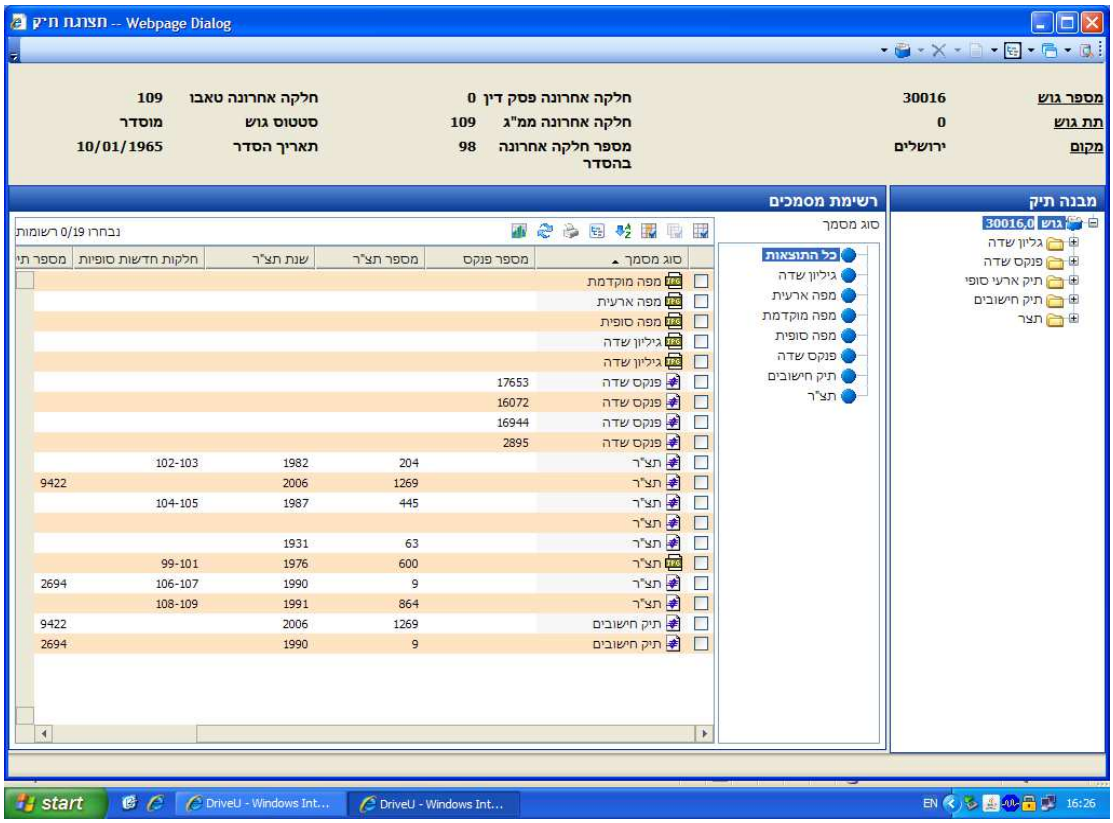

Figure 1: Screenshot of the main document retrieval page

3. The National Geodesic Database (NGDB)

The National Geodetic Database provides quick and easy access to the Survey of Israel geodetic data. These data include coordinates of control points as well as many other attributes of these points. The system serves only registered users and provides two methods to search for specific data (see Figure 2):

1. By attribute data such as number and letter point, network type and serial number
2. By defining an area and requesting all the points contained within it. Area boundaries can be set in one of two ways: Using the coordinates of a center point and radius of a search circle, Definition of a rectangle by the coordinates of two points: bottom-left and top-right

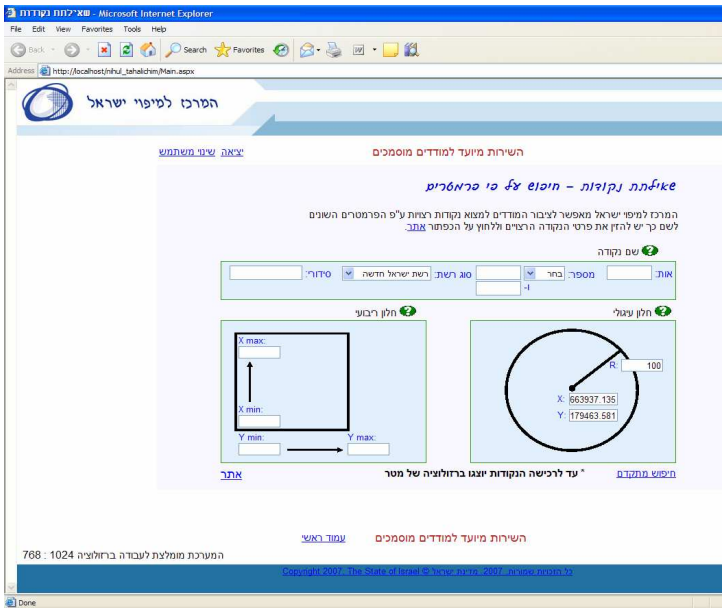

Figure 2: data search page of the on-line geodetic system

4. The National Geospatial Portal and the TopoCad system

The geospatial portal is a free site which was designed for a wide range of users: the general public and professional agencies, municipalities and government agencies.
Unlike the previous systems, this site is dynamic and provides a list of 14 network services - Web Service – which allows users to use it in different applications.
The geospatial portal employs natural language search engine which is very flexible, and does not require cumbersome typing of many data fields. The site presents more then 130 layers of geographic information from different governmental agencies. Some of these layers are being updated by the agencies themselves on a daily basis.
One of the innovations of the geospatial portal is a "personal zone" component that allows users to add layers of data and build their own environment.
The Geospatial portal includes seven specific applications developed specifically on the demand of the governmental ministry, for example an application of the Israel Lands Administration that display all the city master plans, an application of the Israeli Central Bureau of Statistics to display demographic data, application with the Ministry of Transport to display bus lines and bus schedule, and many more.

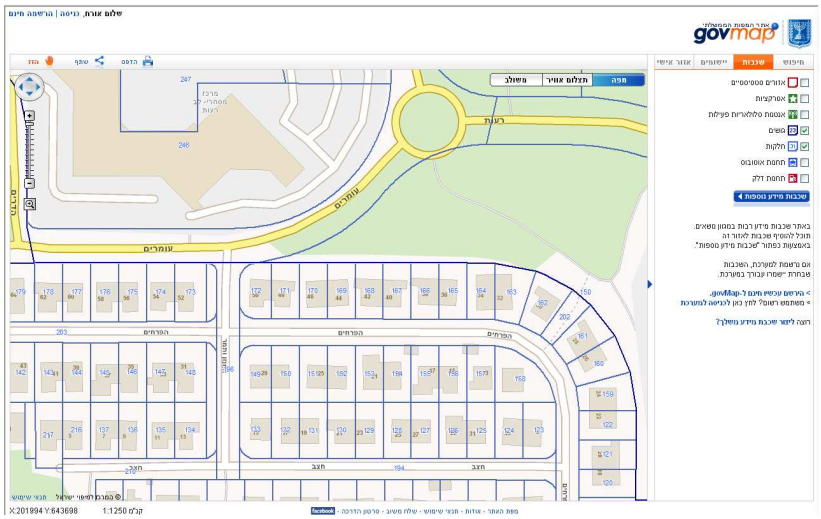

Figure 3: The geospatial portal

The TopoCad system is next generation system which is currently being developed. The system integrates several systems (Figure 4) and provides a cohesive environment for geospatial data analysis, sharing and presentation capabilities. The system will provide the best support for the activities of professionals, civilians, and government offices working in surveying, cadastre and mapping in Israel.

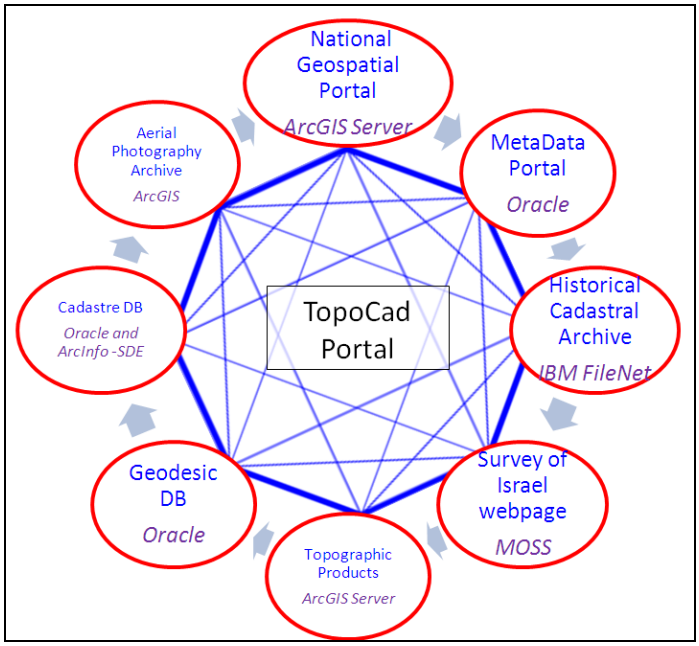

Figure 4: Systems integrated in the TopoCAD portal

Topocad will have some key features such as Single-Sign-on, advanced data delivery technology for large files (Download manger), advanced search and retrieval capabilities, integrative geographical and natural language tools, simple user interface and much more.

5. Final remarks

We have presented some of the newly developed on-line systems in the Survey of Israel.

The development of these online services presented a set of challenges to SOI including:

- Technological challenges of transfer of large volumes of data through limited communication bandwidth, computer security issues requiring sophisticated penetration examination, development of simple user interface that meets the needs of the surveying community, and the necessity to deal with a software environment that constantly changes.
- Management challenges including organizational changes and modification of the main activities of the employees
- Legal challenges include writing the terms of use, and an examination of liability issue that may arise through the use of the data.

The Survey of Israel is developing the TopoCad system that expands the range of online services and add a new on-line databases including viewer for cadastral information, an on-line archive for aerial photographs, and an on-line system to sell vector (digital topographic data) and raster(orthophoto) products. These systems will be combined together under a unified user interface and a single sign-on system.

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CONTACTS

Carmela Szancer, Yaron Felus, Vera Lavan
Survey of Israel,
Lincoln 1, Tel-Aviv
Israel, 61141
Tel 03-6231950
Fax: 03-5610866
carmela@mapi.gov.il , felus@mapi.gov.il, lavan@mapi.gov.il
Web site: http://www.mapi.gov.il/SurveyOfIsrael/Pages/default.aspx