

# **GeoSit : cutting edge technology for the professional technician for optimizing management of the territory.**

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**Key words:** Geoportali\_Sit, Geoweb,

## **SUMMARY**

Management of the territory implies as a principal element every activity aimed at the complete knowledge of the territory, particularly if acting concomitantly and in harmony with the principles of compatible development and environmental respect.

An essential condition is the perfect knowledge of the territory and more specifically and in detail, of its particular aspects of vocation and criticality.

The methodology and technologic tools available to the professional, who has the honor of such management, allows together with the GEOPORTALI-Sit and with the various reference cartography to possess a countless quantity of data and of information that are necessary and useful for proper and fast management.

With regard to what more directly concerns the activities carried out by Surveyors and technicians in general, that is largely formed by topographical surveys and subsequent planning of works and projects to be implemented in the territory, the leading Italian organization (CNG and Geometri Laureati) together with GEOWEB has created a service aimed at overlapping land registry maps to orthophotos (GEOSIT) with elements of quality precision and accuracy that are highly appreciable.

More in detail, the primary applications of this study, research and application methods are concentrated in the following three fundamental points:

- 1) General support to the professional Surveyor for additional further technical tasks (such as for example, determining points for dividing land registry units, map types, borders between land registry units, etc.);
- 2) Identifying and determining homes on the territory known as “ghost homes” (unauthorized buildings that were never registered);
- 3) Consequent fight against tax evasion at both central and peripheral levels.

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1/5

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The principal element of Land management in general, involves all activities which provide complete knowledge of the territory, particularly if acting in harmony with compatible development and environmental principles.

An essential condition is having exact knowledge of the territory, specifically how it is used.

The methodology and technological tools available to the professional, who is responsible for land management, allows, in conjunction with the GEOPORTALI-SIT and with the various reference cartography, to possess a countless quantity of data and information that is necessary and useful for proper and fast management.

What directly concerns the activities carried out by Surveyors and technicians in general, is largely formed by topographical surveys and subsequent planning of work and projects to be implemented in the territory. The leading Italian organization (CNG and Geometri Laureati) together with GEOWEB has created a service called GEOSIT which provides land registered maps of superimposed orthophotos with elements of quality precision and accuracy that are highly appreciable.

In more detail the process of drafting and processing of geographical data is exposed below.

- 1) It is necessary to point out that cadastral maps are provided by the Land Registry in PDF format (Portable Document Format) in geometric images that are not immediately overlapping to the corresponding images obtained with the method aerial-photogrammetry;
- 2) The PDF file is then uploaded to the GEOSIT server that points out the coordinates indicated in the cadastral map (Cassini Soldner - Gauss Boaga) and through a special software called OCR (optical character recognition) transforms the data collected in the PDF image into letters and numbers that can be managed through other applications (Word, etc.).
- 3) By then using a special algorithm, these coordinates are then transformed to the WGS84 system (World Geodetic System 84); this constitutes an ellipsoidal model of the planet from a

geometric and geodetic and gravitational point of view built on the bases of the measurements and scientific and technological knowledge available as of 1984;

4) The system that provides the orthophotos (BLOMURBEX\*) receives the converted coordinates, transforms them further, and so uniquely identifies the area corresponding to the orthophoto base;

*\*BlomURBEX™ is an online geographic information server (geoserver) which has been developed by Blom to allow on-line access to all of our archive products. This server is a revolutionary collection of geographical datasets including high resolution aerial imagery, LiDAR and raster data. Functionality within BlomURBEX allows the user to navigate, measure, export and search.*

*The BlomURBEX™ server has been specially designed to provide fast access to tiled georeferenced data models. The data and functionality can be accessed through a variety of technologies and applications. Blom has a collection of standard API's / SDK's which allow users to create their own integrations with intranet solutions or web mapping products. Alternatively users can access BlomURBEX™ through pre-developed GIS plug-ins or via Blom's new viewing application BlomWEB™. The many different methods of accessing BlomURBEX™ emphasises the flexibility of the service and how this geoserver can meet all customer requirements, however varied they may be.*

*Currently there are over a thousand urban areas represented by aerial imagery and hundreds of 3D models. BlomURBEX™ is designed to serve all products and services provided by Blom, but data belonging to the client can also be tiled and uploaded to the server to be used by the client alongside the Blom data.*

***BlomURBEX Data Models: BlomORTHO™, BlomOBLIQUE™, Blom3D™, BlomHISTORICAL™***

***BlomURBEX Viewers: BlomWEB Viewer™***

*The technology behind BlomURBEX™ ensures speed and flexibility with data layers that are extremely fast to load whilst still being robust and stable to meet the demands of any ambitious enterprise.*

5) At this point, the overlapping of the two images is allowed and can thus detect various inconsistencies between the two representations (eg, ghost houses, unauthorized construction, differences in height, illegal subdivisions, and boundaries, etc..).

More in detail, the primary applications of this study, research and application methods are concentrated in the following three fundamental points:

- 1) Identifying and determining homes on the territory known as “ghost homes” (legal and illegal buildings that were never registered);
- 2) Consequent countering tax evasion both centrally and peripherally;
- 3) General support to the professional Surveyor for additional further technical tasks (for example, determining points for dividing land registry units, map types, boundaries between land registry units, etc.);

It is evident that the above-mentioned GEOSIT system can be seen as a further means of knowledge of the area by the Surveyor who in this ways acquires deeper knowledge of the territory.

This system is indeed of great help to the town and country planning with the ultimate aim of promoting the most appropriate urban, industrial, and agricultural choices. It is also useful to intervene properly in the field of environmental engineering and geological risks, and last but not least can be used successfully to combat pollution caused by particularly wild and unlawful urbanization.

The fundamental purpose of the A.G.I.C.A.T. (Associazione Geometri Consulenti per l' Ambiente ed il Territorio) is cultural and environmental and it was recently formed under the auspices of the National Council for Surveyors and Graduate Surveyors. Geosit, can then be

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4/5

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understood, finally, as a modern tool that simplifies the complexity of the territory while also being of great help to the professional technician for the study and preservation of the territory and the environment.

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