

# I. Primary data capture systems

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## Land-based information collection

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**GEOMOBIL.**

Mobile Mapping is the technique of collecting cartographic information from a mobile vehicle. With the GEOMOBIL project the ICC is developing its own Mobile Mapping system.

GEOMOBIL is a system for continuously capturing images from a vehicle in movement. The system includes a direct orientation subsystem and the software necessary for the georeferencing of the images and the subsequent interpretation and

capture of information. As it is based on image capture from a vehicle in movement, capture is very fast. Moreover, it should be pointed out that the same images can be used to capture different objects according to the type of application, without having to return to the field.

In a van, the subsystems necessary for the capture of pairs of digital images are integrated together with the elements necessary for the direct orientation of the images. Direct orientation is based on observations from the GPS (Global Positioning System) and from an IMU (Inertial Measurement Unit).

The system includes the methodology necessary for calibrating the different parts of the system and also the image exploitation subsystem, which includes the functions of selection and viewing of the images captured, determination of the coordinates of the object selected, and selection and drawing of the objects identified in order to store them in a geographic information subsystem. The operation system can be personalized according to the particular type and application. The system offers precision to within less than 1 meter in the determination of coordinates, a degree of precision which is compatible with cartography at 1:5 000 scale.

The GEOMOBIL system is highly modulable and it is relatively easy to increase the number of digital cameras installed, as they would share the orientation, synchronization and power subsystems that exist at present.

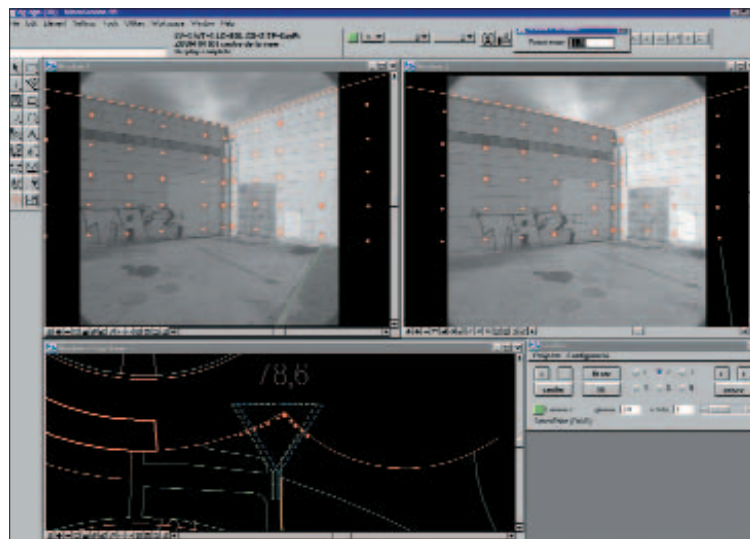
A terrestrial laser system is currently being incorporated that will support the collection of other types of information, such as road cambers.

## Applications

**Inventory of roads.** The main application of this system is the creation of a precise inventory of the physical and geometric characteristics of the road network (horizontal and vertical signals, road marking, road safety, center lines of roads, cambers).

**Database of georeferenced images.** The generation of a database with pairs of georeferenced digital images with a predetermined equidistance between them. From the applications developed, access can be obtained to any pair to measure the different elements that appear in the photographs, without the need to return to the field to take new data.

**Terrestrial laser.** The GEOMOBIL system will include a terrestrial laser system which makes it possible to measure and georeference points on the façades of buildings, and it will also facilitate the calculation of volumes in mining zones or landfill sites.



Software for determination of the coordinates of elements that appear in the photographs so that these may be subsequently stored in a structured manner.



Inventory of objects.