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# GINA (Geographical Information Assistant) Fresh Wind in Environmental Mapping

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**Abstract.** GINA is a comprehensive software system for field workers allowing effective mapping of environment and situation. The GINA makes easier by its design the mapping works in the terrain and protects the collected data. It runs on hardware of Motorola Company which has sturdy design for work in the field and is perfectly adjusted to needs of field workers. By means of GINA System can be realized mapping projects in extraviilans that wouldn't be even possible to do by traditional methods.

**Keywords:** GINA System, environmental mapping, online mapping, crowdsourcing

## 1 Introduction

The aim of this document is introduction of innovative mobile system offering new methods for effective environmental mapping. The system is called GINA and it is a main product of GINA Software Company.



**Fig. 1.** GINA logo

### 1.1 GINA System

The core of the system is software for mobile equipment. It serves for collecting of geographical information and allows their exchange in real-time. Thanks to this the system is aimed not only for passive mapping but also allows remote management of people working in the field.

The mobile client offers a possibility to display and record huge amount of different information in the map. The user is not limit in any way and can have all the

need information with him in the field. The GINA System offers many types of maps which are available directly in the field so the users can choose the most suitable maps to fulfill current tasks. These maps are downloaded from the Internet so the users are not limited by the memory of the device and can use the whole map portfolio. Currently GINA System offers broadly available Internet maps such as OpenStreetMap and Bing Maps and also specialized types of map layers such as cadastral maps. The advantage of the system is its extensibility. The map portfolio can be very briskly extended of almost any digital map data according to customers' needs. For work in the low areas with low Internet Connectivity can be the maps also pre-cached in the device.

The system aims to increasing the productivity of field workers. It provides very comfortable user interface which is customizable according to customers' needs. The access to main functions for collecting of geographical information is very intuitive and makes the work with the software as simple as is man works with the paper map. The user can draw by curves and polygons by pen, can add pictograms into the map and to all the recorded information he can add an attachment which can be pictures taken by built-in camera, drawings, textual documents or other files. This way can be all the recorded information well documented. [1]

## **2 Usage Scenarios**

Besides environmental mapping the GINA System is in use also by crisis management or corporate government. Thanks to its unique feature of real-time geographical information exchange it is a power tool for search & rescue missions and security operations. In such scenarios is very important for people in the field to have always the up-to-date information because it can mean the difference between life and death. The system allows interconnection of big number of field workers end even their groups. Besides the exchange of information by means of the map they can also use the benefits of integrated instant messaging and conference calls. This way makes GINA the crises management more effective and lowers the costs of it.

GINA System already approved to be a powerful tool for crises management in several scenarios. The system is in use in Haiti since April 2010 where it helps by several rescue and security missions. It is involved in the rescue mission of Hand for Help organization where it helps by coordination of rescuers and served for finding the most suitable location for the hospital. Since January 2011 it is in use also by mission Water for Haiti organized by Praga Haiti organization. The goal of the mission is sinking of tents of new wells in the area as there is a lack of drinking water. The current progress of the mission is available to public on website [www.haitiwells.com](http://www.haitiwells.com) [2]. Most widely is GINA in use by project ECHO Haiti which is a project of European Union. GINA helps by monitoring of political situation and cholera spreading. The up-to-date information is available on the website [www.cholerahaiti.com](http://www.cholerahaiti.com) [3]. Besides Haiti has been GINA system deployed also to Brazil when it helps by renovation of devastated areas after flood and also to Japan only few days after the earthquake in March 2011. In Japan was GINA used as a

documentation tool for rescuers and the results are again available online on [www.japansituation.com](http://www.japansituation.com) [4].



**Fig. 2.** Usage of GINA in Haiti by Hand for Help organization

### **3 Integration Possibilities**

GINA System is very open platform to integration with other systems. Currently it is possible thanks to cooperation with National Instruments Company to integrate autonomous sensors into the system. Thanks to this can be the important values automatically measured and results are available to people in the field in real-time. This data are stored with chronological context for allowing the display of trends of measured values. Besides the measuring and tracking hardware GINA allows also integration with software systems such as ERP or CRMs.

### **4 Hardware Equipment**

The GINA System contains of mobile client and PC Software. The software for the PC can run on almost any computer with Microsoft Windows installed. The mobile client requires Windows Mobile device and it is strongly recommended to use

Motorola devices for which is the system aimed. Those devices are sturdy and are designed for work in the field. They have a big well readable screen; the battery can last up to 8 hours and all the data are preserved in persistent memory protects data in case of damage of the device. There are also available sturdy tablets supported by GINA System offering even bigger displays for comfortable work.



**Fig. 3.** Sturdy Motorola device

For recording of geographical point is used built-in GPS sensor. In Motorola devices are integrated the highest class GPS sensors. Despite the fact they don't support the RTK correction data is possible to reach a precision around 1 meter in open space which is sufficient for environmental mapping.

## **5 Services for Customers**

GINA Software offers the following services in context of environmental mapping. It provides licenses of GINA System for the end-users and offers also assisted mapping services when the mapping in the field is done by dedicated workers of GINA Software Company. There is also available a simplified mobile client supporting almost every commonly available smartphone allowing to involve crowd in the mapping. This way can be very effectively mapped very large areas.

## **6 References of Usage**

GINA System is used with high advantage in two main areas. The first one is surveys in extravilans (outside the city), where the rapid access to cadastral and satellite maps together with its precise location is desirable during the whole day. The system was, for example, used to localize very large fence (about 10 Kilometers) around habitat corridor whereas the whole localization was done during 1 day. The second area is environmental mapping of large areas and places. As the system is designed to input of single information (object in the country) very easily, it was able to map more than 13 hectares of areas counting more than 2000 different trees and 200 surfaces of bushes in 4 days. The next day has been generated the documentation according to submitter needs. Mapping large area was never so easy before.

## **7 Company Profile**

GINA Software is a company established at the end of the year 2010 in the Czech Republic. The main product is GINA System which allows an effective management of field workers. The company also aims to ensuring the security of people by tracking of movement. GINA Software is Motorola ISV Partner and Microsoft Partner. [5]

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