

# **Forming the spatial informatical background of agricultural statistics in the HCSO**

*Á. Podolcsák, BlomInfo - dr. L. Pintér, HCSO - dr. L. Niklasz Geometria*

## **Introduction**

The national preparation and harmonisation of the Common Agricultural Policy (CAP) and later joining the CAP and the implementation of the entire institutional system is an enhanced field of Hungary's accession to the EU. Several government programmes have been launched in connection with the CAP. Among them there are spatial informatical related projects as well, for example the nationalisation programme of MARD AICS. This lecture presents the HCSO project, entitled Plantation Statistical Spatial Informatics (PSSI), drawn up in relation with the CAP. The project is implemented with the financial support of Phare.

## **The structure of aims of the project**

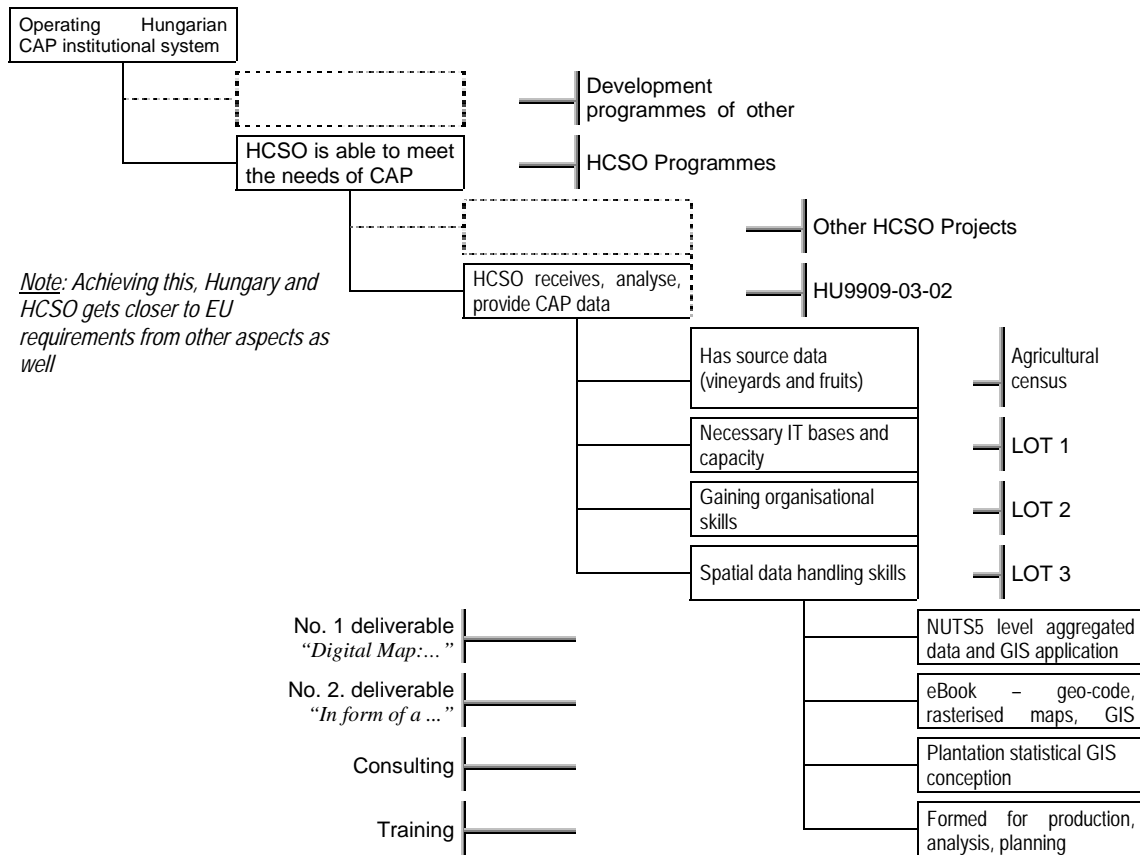
The general objective of the Phare project entitled Agricultural Statistical Development is to prepare and support the Hungarian agricultural statistical system so that the HCSO should be in the position to receive, analyse and provide EU harmonised data. The direct aim is to implement the processing of the results of the ongoing fruit and vineyard plantation cadastre through spatial informatical means.

The project plans have identified three target areas of the development:

1. **Informatical:** Upgrading the existing IT system and basic databases of the HCSO to provide the exchange of statistical data on agriculture between the competent EU and Hungarian authorities.
2. **Institutional:** Strengthening the institutional capacity and the understanding of EU integration requirements of Hungarian institutions involved in agricultural statistics.
3. **Functional:** The HCSO must be enabled to support EU harmonised sector policy planning with analytical, planning and data providing services.

The planned informatical, institutional and functional changes are by no means independent of each other. There is no strict line between them and result achieved in certain fields have strong effect on one another, therefore, during the planning of the Phare project the three Lots were drawn up within the framework of one single project. The focus is on the basic IT services of the HCSO for Lot 1, the institutional development for Lot 2, and the agricultural statistics related spatial informatical functions for Lot 3.

The following results are expected from Lot 3. The first one is a GIS application only referred to as Digital Map (DM) at present, that handles descriptive data aggregated on NUTS5 (settlement) level based on the FÖMI boundary data base and OTAB (1:100 000 scale topographic digital map) on country, region, county, small region, settlement (NUTS 1-5) levels. The second result to be achieved is a geo-coded basic data base on plantation level called eBook (an electronic book of maps), completed with the rasterised image of 1: 10 000 scale index map of surveying base maps transformed into EOVI. The third one is the leading GIS conception of HCSO's Agricultural Department, laying down the basis for future GIS developments. The fourth element is the training of information system administrators and assistants. Figure 1 presents the structure of aims.



**Figure 1**  
**The Agricultural Statistical Digital Map Project - Structure of Aims**

## Contracting

The contractor was chosen in line with Phare regulations. The tender was won by the consortium formed by the Danish BlomInfo A/S and DANAGRO A/S. The international experts of the consortium have considerable experience in agricultural related digital map developing. This includes the spatial informatical system integration, the examination of digital maps with agricultural aims, analysis of spatial informatical systems, development

of spatial informatical user interface, building of relational databases, software development, digital cadastre mapping and institutional development in Central and Eastern European countries. There are two Hungarian subcontractors, the Geometria System House Ltd. and Mapscan Ltd. Geometria has considerable experience in the development of spatial informatical systems, while Mapscan is experienced first of all in large scale mapping and map scanning.

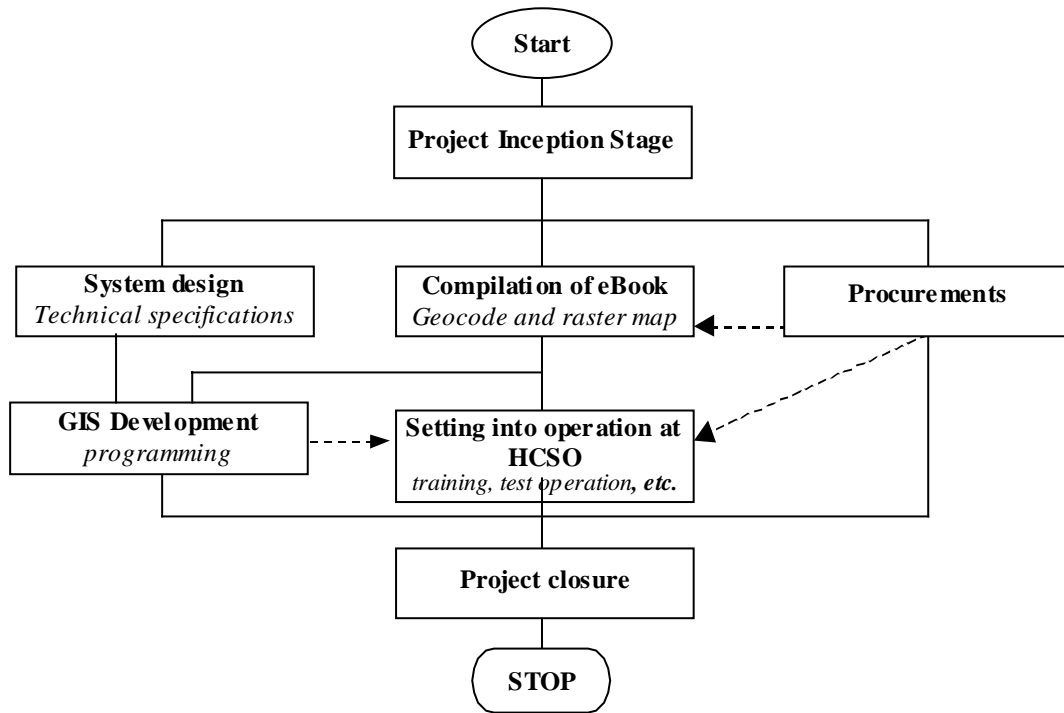
### **The process of development and its present stage**

Seven implementation stages were formed for project management related considerations. The inception and closing stages deal primarily with project management. Emphasised spatial informatical professional activities are carried out during the compilation of eBook, the GIS development and installation stages. The procurement stage ensures the base data following the strict procurement procedures of Phare. Table 1 and Figure 2 gives an overview of the project stages.

The project has successfully completed the inception stage and started the system design and procurements. The interviews are completed, the overall GIS development conception is being shaped, the first version of the system requirements will also be ready soon. In consideration of the lengthy procurement procedures, the specification of the base data to be procured has already been drawn up, the procurements will soon begin. Suppliers interested in the production of scanned maps and geo-coded data products will soon meet the relevant suppliers' call for proposal on the homepage of the CFCU (<http://www.cfcu.hu>).

<b>Main activity</b>	<b>Summary of activity</b>	<b>Practical result</b>
Project Inception	The official implementation of the project starts: Short overview of the present state and further development of the project plan.	Detailed project plan.
System design	System design: recording business needs, preparing software plans.	GIS conception and plans meeting business needs.
Compilation of eBook	Set of electronic maps is compiled: eBook: compilation of electronic book of maps.	eBook: index map sketches of plantations in electronic form and their geo-codes.
GIS development	The software: Preparation of the application and data integration.	The GIS software is ready for accepting test .
Setting into operation	Setting into operation of the DM (go live) at HCSO: training, installation.	The system operates at HCSO.
Project Closure	Finishing the official implementation.	Final Report.
Procurements	Procurements: Land Offices, national open tender for scanning and geo-coding.	Base data: index map, scanned map and geo-codes are available.

**Table 1**  
**Overview of project stages**



**Figure 2**  
**Flowchart of project stages**

## Concrete results

The plantation statistical spatial informatics (PSSI) will be embodied in two closely related software products that can be used separately as well. These are recorded by the administrative project documentation together with the name referring to the type of the product, that is why these names are a little bit unimaginative: Digital Map and eBook.

The first Digital Map is the extension of the present GIS system of the HCSO. The Digital Map will help in the analysis, representation of the agricultural statistical data and their publication with an informatory purpose. Furthermore, it will support the regional level examination of the results of agricultural censuses providing geographical information, aiming at the registry of vineyards and fruit plantations.

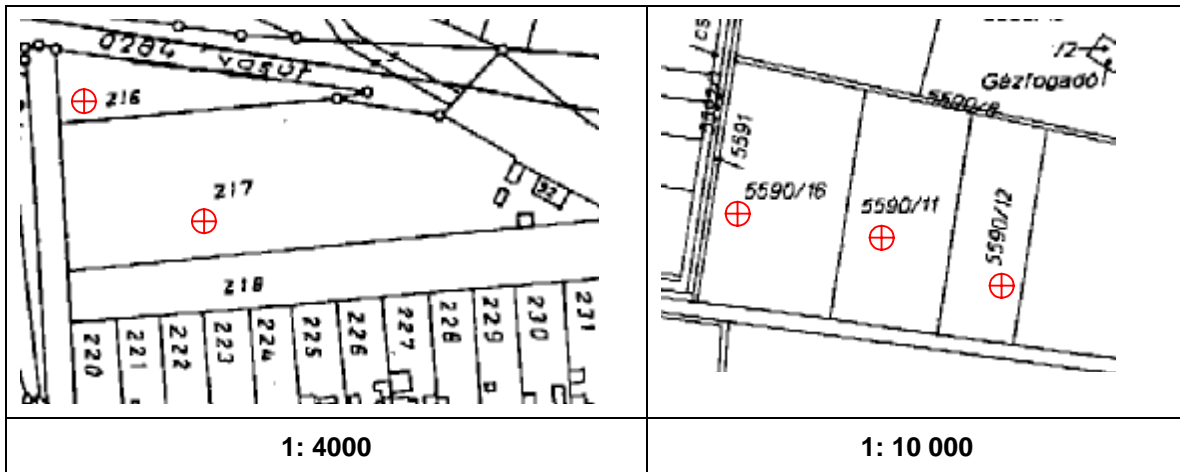
The geographical database of the Digital Map will be based upon the database of Hungary's administrative boundaries (MKH-10), which is a structured settlement level digital data base and it is the product of FŐMI. The Digital Map will provide statistical information grouped on the basis of standard administrative units (settlement, county, statistical region, country) or of units created by the user (small region, wine-districts, etc.).

The Digital Map will connect to the existing IT system of the HCSO, so that the data originating from the survey of 2001, processed by the IT system, grouped geographically can be represented on maps. The user interface of the Digital Map will be drawn up in Hungarian language. The thematic map output (background information, legend, etc.) of the Digital Map will be available both in Hungarian and English, with a possibility to switch from one language to the other.

The Digital Map ensures the thematic map functions of the standard GIS. The Digital Map will be installed at five workstations of the HCSO.

The second is the eBook, that is the electronic book of maps, the collection of plantation level electronic maps. The electronic maps are produced through the scanning of index maps of surveying base maps, in 1:10 000 scale in case of agricultural areas and in 1:4000 scale in case of closed gardens and urban area. Every settlement involved in the survey of vineyards and fruit plantations of 2001 will have an own electronic map, which means some 5000 raster maps. According to the relevant Act, all vineyards, the size of which reaches or exceeds 500 square meters, all fruit plantations planted with trees, the size of which reaches or exceeds 1500 or planted with fruit bush, the size of which reaches or exceeds 500 square meters, a statistical census must be made of. Altogether the registry of some 500 000 plantations is expectable.

The eBooks, organised by counties plus Budapest build up 20 eBooks. Each electronic map includes geo-codes of survey sites. The survey sites are managed by land use (vineyard, fruit tree and berry plantation). Data of the land user and attribute data of used parcels registered during the 2001 survey are linked by geo-codes to the geographical location (one or more agricultural parcels) of used land. It will ensure the access to the data of the geographic location of the 2001 survey by positioning the geo-code on screen or by typing the unique identifier of the survey site, the plantation. The users of HCSO can also access eBook data through the Digital Map. The eBooks will be prepared in Hungarian language and installed at 5 workstations of the HCSO.



**Figure 3**  
**Index maps indicating geo-codes**

### **Finally about the success of the project**

The version of the Digital Map under completion, supporting agricultural statistics concentrates on vineyard and fruit plantation cadastre and the most important basic functions but it does not neglect further needs either. The final version of the Digital Map will be formed as a result of further, successive projects. The present project is the first step that determines the success of later phases to a great extent. The most important bridge-heads must be taken to ensure later success. These are as follows:

- An electronic publication should be available by the name Agricultural Statistical Digital Map that contains the geo-coded census data, the data base of administrative boundaries and the raster index map.
- A user interface should be prepared that enable the execution of the most important spatial informatical functions on the Agricultural Digital Map, the maintenance of data files and their extension with new records.
- Connecting the Digital Map system to the databases of the HCSO relating to the data of the vineyard and fruit cadastre, so as to ensure the operative use of the Digital Map's services through the user interface by the Agricultural Department of HCSO.
- The HCSO staff involved in agricultural statistics should acquire the knowledge of operating the system, they should realise the inherent possibilities of the system and they should be encouraged to participate in the exploitation of these possibilities.

- Foundational written works should be available, on the basis of which the line management of the HCSO can regulate the operation of the system and plan later developments.