

LISARD - the Land Information Service for the Agriculture and Rural Development

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Abstract. The development of LISARD is a high-priority task related to the NPAA (National Programme for the Adoption of the Acquis Communautaire) of the EU integration. The system will ensure the appropriate infrastructure and capability for the Land Office Network to provide agricultural parcel based information and control service needed by the Integrated Administration and Control System according to the Common Agricultural Policy for the time of the EU accession. The system has the following features:

Establishment of the Parcel-based Information System and required IT infrastructure with full IACS functionality

- Access to the cadastre and land registration information by the IACS institutions
- Introduction of an IACS compatible farmer (land user) identification system
- Introduction of an IACS compatible parcel identification system
- Adoption of an IACS compatible registration of land use using EU nomenclature
- Service to check the contracted land use of subsidy by ad-hoc and regular satellite remote-sensing based control and monitoring
- Interoperability between systems and fully harmonised procedures of the closed-shop IACS institution framework
- Access to aerial photographs (full coverage), digital orthophotos (full coverage), scanned topographic maps and DEM as needed by IACS.

The project proposed by MARD for the Phare 2000 programme is introduced. The relations with the ongoing NPAA and Phare projects are highlighted. The major components (PARCELLA, (Parcel-based Information System), CENT (Central Land Information Service Facility) and RSCS (Remote Sensing based Control Subsystem) are presented. The institution network and planned action plan is also discussed.

Finally, the author gives an outlook on synergetic third field applications, where the technology and its value added products and service can directly increase the competitiveness and support the sustainability in agriculture, rural and regional development.

Introduction

The upgrade of the service the Land Office Network¹ (LON) as required by the implementation of the Integrated Administration and Control System (IACS) is a high priority task in the CAP institution Building supported also by the EU Phare Twinning programme.

¹ including the Institute of Geodesy, Cartography and Remote Sensing (FÖMI)

According to the proposal of the Department of Lands and Mapping, Ministry of Agriculture and Regional Development the system LISARD (Land information Service for the Agriculture and Rural Development) will ensure the appropriate infrastructure and capability for the Land Office Network to operate an agricultural parcel based information and control service for the time of the EU accession. The system has the following features:

- Establishment of the Parcel-based Information System and required IT infrastructure with full IACS functionality
- Access to the cadastre and land registration information by the IACS institutions
- Introduction of an IACS compatible farmer (land user) identification system
- Introduction of an IACS compatible parcel identification system
- Adoption of an IACS compatible registration of land use using EU nomenclature
- Service related to satellite remote-sensing based subsidy control and monitoring
- Ensuring interoperability between systems and procedures of the closed-shop IACS institution framework
- Access to aerial photographs, satellite imagery and digital orthophotos, scanned topographic maps and DEM (all with full country coverage) as needed by IACS.

LISARD has three components: a) PARCELLA (the set up a Parcel-based Information System), b) CENT (establishment of the Central Land Information Service Facility) and c) RSCS (the Remote Sensing based Control Subsystem). The implementation cost is in the range of 12 Meuro.

Prerequisites

The following tasks have to be performed previously:

- Definition and concept verification of the agricultural parcel based information system (PARCELLA /A-B, subject of the Phare Programme HU 9804-03, 1998, still waiting for launch)
- Provision of direct access to the land registration and cadastre maintained by the Land Office Network via the systems TAKAROS (Phare 1995), TAKARNET (Phare 1997) and META (Phare 1999)
- Integration of the maps completed during the land privatisation campaigns and in the National Cadastral Programme (Phare 1997 and NPAA VIII/A/3 1999)
- Aerial Survey of Hungary (NPAA VIII/A/3, 1999), production of the full orthophoto coverage in scale 1:10 000 (NPAA VIII/A/3, 2000)
- Set up and access to the land-registry conform land use information system (NPAA VIII/A/1, 1999) maintained by the Land Office Network
- Availability of the countrywide digital elevation model with appropriate functionality (NPAA VIII/A/3, 1999)
- Availability of the raster digitalised 1:10 000 topographic base maps of the agricultural areas on CD and via META/TAKARNET (NPAA VIII/A/3, 1999 and 2000)
- Production of the full orthophoto coverage in scale 1:10 000 (NPAA VIII/A/3, 1999-2000)
- Definition and concept verification of the Remote Sensing-based Control Subsystem (RSCS) used for IACS (NPAA VIII/A/4, 1999), extension of the data collection for the operational Crop Monitoring System (CROPMON) from 9 up to 19 counties (NPAA VIII/A/4 2000)
- Ensuring interoperability with the land registry and providing direct access to the Farmers' register
- Ensuring interoperability between the information systems of the Agricultural Intervention Centre as paying agency, County Agricultural Offices and the LON (NPAA VIII/A/4)
- Design and test of the capacity upgrade of the wide area networked LON TAKARNET according to the need of the IACS (NPAA VIII/A/2, 1999-2000)

Notices

1. NPAA VIII/A/x, 1999 are already approved projects, while the NPAA VIII/A/x 2000 project proposals are to be approved within the yearly updated EU harmonisation framework program financed by state budget dedicated for the implementation of the National Program for the Adoption of Acquis Communautaire.

2. All these activities and the coordination at MARD level will be supported by the French-Germany CAP Twinning expertise and by the IACS-tailored Long term Technical Assistance project of the Phare 1998.

Main tasks to be performed in the Phare 2000 program

Implementation of the agricultural parcel based information system (phases PARCELLA /C-F) as needed by the Integrated Administration and Control System

Components, phases and features are as follow:

PARCELLA /C

Software customisation, which can provide the appropriate new LON services for supporting IACS. Developing a Land Information System on the META* platform, which will register, manage and query the following objects:

- Farmers who uses the land during a certain season
- Agriculture parcels, which are subjects of the subsidy
- Plots coded by the OECD/EUROSTAT nomenclature
- registration of land use
- reporting about land use
- checking the contracted land use of subsidy

PARCELLA /D

Compilation of an integrated data set from different sources. The data-set will be managed at County Land Offices by an IT system resulted from PARCELLA/C. Matching to the requirements the following information is needed:

- Legal titles from the Land Registration
- Land use and user information from the Land Registration
- Cadastral maps in digital form
- Scanned data from existing topographic maps
- 1:10 000 scale digital orthophoto and digital terrain model database with IACS-related functionality
- Digital thematic information provided by the remote sensing based control subsystem

PARCELLA /E

Upgrading of TAKARNET* and ensure full TAKAROS/META/PARCELLA interoperability as required by the operational mode of IACS. The technological chain of the remote sensing based control and have to be set up ready for operation.

PARCELLA /F

Improving the quality of the project. Evaluating the achievements by independent experts and getting recommendations.

N.B. In view of the expected size and importance of the tender, it is absolute necessary to involve independent international expert who will review the specifications and finalise the tender dossiers. Quality assurance and verifications have great importance in case of PARCELLA as pillar of the IACS. Involvement of staff members of authentic European Institutions (DG VI, JRC SAI and EUROSTAT) for consultancy will be also required. CAP Twinning support is also anticipated.

Set up of the CENT (establishment of the CENTRAL Land Information Service Facility)

This centrally located infrastructure is the platform running the PARCELLA. Within the LON, it will receive, handle, archive, compile, visualisate and submit information and provide service as required by the IACS operation within the IACS institutional framework. Fully controlled interoperability will be ensured with META via the TAKAROS intranet and FOMI Remote Sensing Center's CROPMON computer cluster via high speed cable. For data transmission within the IACS institutional framework (including AIC, County Agricultural Offices, MARD) the enhanced TAKAROS will be used. (Dedicated links e.g. with Territorial Information System (TeIR) of MARD's Regional Development branch and the Central Statistical Office with emphasis on the 2000 Agricultural Census data are also foreseen). Major Components: CENT (central hw/sw infrastructure), DITAB (establishment of the change management of the digitised topographic sheets in 1:10 000 (2001), PILOT (test of the change management in semi-operational environment) TRAIN (multilevel vocational training of the LON staff), LTTA (dedicated long term technical assistance will provide additional expertise, know-how, mobility and technology transfer). The RSCS is highlighted in separately.

* META – IT configuration of County Land Offices. META is an object oriented & data model independent GIS system, which is planned to manage a wide-range of geographic data.

* TAKARNET – Wide Area Network for the Land Office Network. Recently, it supports the internal communication and manages electronic information-flow between the offices. Supported by security and accounting systems, external users can also have a limited access to the LON databases via TAKARNET.

RSCS (establishment of the Remote Sensing based Control Subsystem)

The remote sensing segment of the parcel based information system is a dedicated, fully protected subsystem to be developed according to the IACS requirements. High resolution satellite data will be used as a basic tool for the subsidy control on croplands (as cost effective spin-off effect, providing capabilities for multipurpose application in other NPAA related tasks as monitoring of land use with emphasis on the historical wine growing areas, as well as imagery basis and/or value added products for land evaluation and land consolidation improving the sustainability of the agricultural development in the integrated rural development framework). RSCS provided data, products and information will be handled as classified as required by the PARCELLA operating in the CENT environment.

RSCS will be performed by FÖMI Remote Sensing Centre where the necessary processing infrastructure, expertise and know-how are available from the crop monitoring project (CROPMON), working operational since 1997.

Notice: The remote sensing based control part of the IACS needs the involvement of independent expert as staff members of authentic European Institutions (DG VI, JRC SAI) for review, consultancy and verification. CAP Twinning support is also anticipated.

Outlook

There are a series of synergetic third field applications, where the technology and its value added products and service can directly increase the competitiveness and support the sustainability in agriculture, forestry, integrated rural development (incl. land consolidation, landscape planning, village renewal), regional development, agro-environment, as well as plant and animal health protection, renewable natural resource management, land tenure policy as well as agricultural economics/statistics etc.

Figure 1 The Lands and Mapping chapter of the National Programme on the Adoption of the Acquis Communautaire
 (as of 07/10/1999)
 (Source: G.Remetey-Fülöpp- L.Niklasz: EU harmonisation tasks of the Lands and Mapping Department, MARD
 Presented paper, Agroinformatics'99, Debrecen, 26th August 1999)

