	IST-2002-507427 SAFIR	WP10.2 - Deliverable D10.2.3 <i>6 Monthly Report</i>	Organization : NBT	
	Ref: WP10_D10.2.3.1_v01.00_Final_6_Monthly_Pilot Field Update of the Vratsa Map_Activity_Report	Version: 00.01 Date : 28/02/2006	Status : Draft/Provisional/ FINAL	Page 1 of 10




IST-2002-507427

SAFIR

Work Package 10.2

DELIVERABLE 10.2.3.1

**6 Monthly Pilot “Field update of the Vratsa map”
Activity Report**

	IST-2002-507427 SAFIR	WP10.2 - Deliverable D10.2.3 <i>6 Monthly Report</i>	Organization : NBT	
	Ref: WP10_D10.2.3.1_v01.00_Final_6_Monthly_Pilot Field Update of the Vratsa Map_Activity_Report	Version: 00.01 Date : 28/02/2006	Status : Draft/Provisional/ FINAL	Page 2 of 10

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Deliverable10.2.3.1

6 monthly pilot "Field update of the Vratsa region" activity report

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	IST-2002-507427 SAFIR	WP10.2 - Deliverable D10.2.3 <i>6 Monthly Report</i>	Organization : NBT	
	Ref: WP10_D10.2.3.1_v01.00__Final_ 6_Monthly_Pilot Field Update of the Vratsa Map_Activity_Report	Version: 00.01 Date : 28/02/2006	Status : Draft/Provisional/ FINAL	Page 3 of 10

Abstract:

This document includes description of the pilot development and execution activities of the pilot "Filed update of the Vratsa region". It covers the work during the period M19-M24 of the SAFIR project.

	IST-2002-507427 SAFIR	WP10.2 - Deliverable D10.2.3 <i>6 Monthly Report</i>	Organization : NBT	
	Ref: WP10_D10.2.3.1_v01.00_Final_6_Monthly_Pilot Field Update of the Vratsa Map_Activity_Report	Version: 00.01 Date : 28/02/2006	Status : Draft/Provisional/ FINAL	Page 4 of 10

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	IST-2002-507427 SAFIR	WP10.2 - Deliverable D10.2.3 <i>6 Monthly Report</i>	Organization : NBT	
	Ref: WP10_D10.2.3.1_v01.00_Final_6_Monthly_Pilot Field Update of the Vratsa Map_Acitivity_Report	Version: 00.01 Date : 28/02/2006	Status : Draft/Provisional/ FINAL	Page 5 of 10

Table of Content

DOCUMENT SUMMARY	2
DOCUMENT HISTORY	4
TABLE OF CONTENT	5
1 EXECUTIVE SUMMARY	6
1.1 Purpose and scope of the document	6
1.2 Results and conclusions	6
1.3 Recommendations.....	6
2 OVERVIEW OF PILOT	7
2.1 Activities.....	7
3 SIGNIFICANT ACCOMPLISHMENT	9
3.1 Achievements	9
3.2 Main events	9
3.3 Publications/Documentation/Demonstration result up to date (if there is any).....	9
4 STATUS OF PILOT ACCORDING TO GANTT	9
5 OPEN ISSUES AND STRATEGY TO RESOLVE THE OPEN ISSUES	9
6 NEXT STEPS	11
7 CONCLUSION	11

	IST-2002-507427 SAFIR	WP10.2 - Deliverable D10.2.3 <i>6 Monthly Report</i>	Organization : NBT	
	Ref: WP10_D10.2.3.1_v01.00_Final_6_Monthly_Pilot Field Update of the Vratsa Map_Activity_Report	Version: 00.01 Date : 28/02/2006	Status : Draft/Provisional/ FINAL	Page 6 of 10

1 Executive summary

1.1 Purpose and scope of the document

The purpose of this deliverable is to present the activities and achievements on the "Field Pilot - Vratsa region" during the period M19-M24 of the project.

1.2 Results and conclusions

The pilot application was completely developed in English. The definition of the data model was according to the latest decisions of the Bulgarian administration, related to LPIS/IACS and the new updates of the Common agriculture policy of EU. All three field tests showed excellent results and lead to the important conclusion that such mobile voice-activated application could be an effective complementary technology for the fast validation of the land parcels, derived from the appropriate cartographic material (orthophotos, digital cadastre) and for optimization of the field check on the claimed farmer parcels. The application developed can be used in all aspects of the fieldwork, related to agriculture – on the spot control, data collection, but also for the validation/creation of the LPIS' geographical database, based on satellite data, aerial photos, digital cadastre, etc. The impact of the mobile voice activated technology seems to be even higher, provided that the new changes of recent status of the CAP reform, focusing on the so-called "Second Pillar", presumes more measures to be applied by the Member States in order to ensure the agri-environmental balance of the landscape. This will lead to more features to control. All these will trigger higher volume of fieldwork (on-the-spot checks), combined with remote sensing for the different measures (especially GAEC). The high number of farmers in Bulgaria and the land fragmentation foresees higher rate of on-the-spot check for the country as a new member state.

The application was mounted on the appropriate hardware, chosen after trying of 4 sets of equipment during the three field tests.

Two iterations were performed for improvement of the application's prototype functionality as well as improvement of the dialogue scenarios and actualization of the database content.

The results from the final field validation showed that the design of the prototype is appropriate and the performance is acceptable in terms of efficiency and reliability.


The major constraints found were related to the hardware set (portable PC and peripherals), which has to be further optimized, according to the specific condition of the outer environment.

1.3 Recommendations

All partners agreed that in order to ensure the financing of the Bulgaria ASR and the successful dissemination of the voice application for agriculture in Bulgaria, as part SAFIR technology, the prototype developed in English should prove in appropriate manner its potential and effectiveness in optimizing the work/business processes of the Bulgarian administration. Conferences/workshops, combined with real-time demonstration should be organized in order to increase the interest of the decision makers in the Bulgarian government.

Bulgarian language is still the most important issue for the pilot and solving it will be a huge step to successful dissemination.

A Bluetooth headset would be very useful for the field workers. It is recommended in the next period this part of the equipment to be used.

	IST-2002-507427 SAFIR	WP10.2 - Deliverable D10.2.3 <i>6 Monthly Report</i>	Organization : NBT	
	Ref: WP10_D10.2.3.1_v01.00_Final_6_Monthly_Pilot Field Update of the Vratsa Map_Activity_Report	Version: 00.01 Date : 28/02/2006	Status : Draft/Provisional/ FINAL	Page 7 of 10

2 Overview of pilot

2.1 Activities

A kick-off meeting with the participation VI and Bulgarian partners was organized on 20-21.09.2005 in Sofia in order to prepare and plan the activities related to the execution of the pilot. The GANT chart for the implementation schedule and actions, which was prepared in advance by NBT, was discussed and adjusted. Draft schedule of the Bulgarian ASR development in terms of work, preliminary actions and financing was also included. Another important point was the GIS platform, which was decided to be ESRI for the following reasons:

- The existing Agriculture Land Information System, available in the Ministry of Agriculture is based on ESRI ArcGIS
- We have a strong ESRI partner in the SAFIR consortium – MDS.
- ERSI product was quite popular and extensively used in Bulgaria, especially in the sectors of Agriculture and Environment
- There is a strong local partner who could provide the necessary training, support and maintenance
- Starting on ESRI platform will enable the staff to develop the application in short terms

It was decided that during the first mission of the VI expert planned for the beginning of November, training on VQL would be organized for the local partners.

During the kick-off meeting partners also prepared a list of possible risks and constraints, which might lead to delay or put some limits on the effective preparation and dissemination of the software application. The important role of ASDE/ReSAC as associated body to the Bulgarian project team was discussed and its tasks/roles in the implementation of the pilot were properly defined.

Additional presentation of SAFIR and a short demonstration of the existing applications were organized by ASDE/ReSAC in the Ministry of Agriculture. The meeting was hosted by the Deputy Minister of Agriculture, Mr. Biurhan Abazov and included from the side of the Ministry, directors of the main departments and the technical experts, responsible for the preparation of the LPIS specification and regulations. The target of this presentation was:


- To introduce the audience with the goals of SAFIR and the capabilities of the technology
- To stress on the potential for Bulgarian agriculture
- To stress the support of EC IT Directorate and the importance of this pilot
- To encourage decision makers for Bulgarian ASR financing

During the later discussion, the scope and purpose of the agriculture pilot, as well as the role of the ministry and its regional offices, were discussed.

The audience was very excited and interested in the SAFIR technology. The deputy minister personally addressed the project representatives, mentioning the importance of agriculture pilot in the frame of the LPIS/IACS implementation in Bulgaria. Additional presentation, once the application would be ready, was planned as soon as possible.

The pilot implementation and validation was conducted according to the preliminary schedule. Taking into account the significance of the project results for the implementation and the Land Parcel Identification system and the setting-up of the Integrated Administrative Control System, some activities were speeded up and more resources have been allocated for their accomplishment in the shorter time.

The architecture of the prototype and the content of the database were clearly and comprehensively defined already in the previous stage (D.6.2.1 from WP6.2). However some modifications were made during the design of the database and the development of the user interface, taking into account the latest decisions of the Bulgarian Administration, related to IACS/LPIS, as well as the update of the common technical specifications of JRC/Agrifish related to the Control with remote sensing and the newest inputs of DG Agri to the CAP reform. The functional requirements were also slightly tailored and updated.

	IST-2002-507427 SAFIR	WP10.2 - Deliverable D10.2.3 <i>6 Monthly Report</i>	Organization : NBT	
	Ref: WP10_D10.2.3.1_v01.00_Final_6_Monthly_Pilot Field Update of the Vratsa Map_Acitivity_Report	Version: 00.01 Date : 28/02/2006	Status : Draft/Provisional/ FINAL	Page 8 of 10

In October the database of the application was designed and coordinated with VI, the software functionality and basic dialogues were specified and the application development started. Out of the project scope a GIS training was conducted with the technology-engaged Bulgarian partners in ESRI Bulgaria.


In November the first prototype of the application was developed and voice activation was in progress. Experts of VI were allocated in Bulgaria for the voice activation and preliminary field tests. The first results of the prototype, tested on the previously selected pilot areas were presented during the poster session on the 11 CwRS conference, organized by JRC/Agrifish, held in the end of November 2005 in Krakow. More than 200 people attended this important event, including representatives of the Member States Paying Agencies and DG Agri.

The first field tests in Sofia showed the stable behavior of the application including the vocal interface. The hardware devices however did not performed satisfactorily in terms of battery life, screen quality, weight, etc. There was also potential for improvement of the application's functionality, because of the huge variety of scenarios related to the creation/editing of graphical objects.

During December 2005 and January 2006 the necessary improvements of the database and functionality were made and the application was tested in the field with two different sets of hardware at the Vratsa village of Kostelevo, together with officials of Vratsa region, experts from VI and all Bulgarian partners.

The final validation test of the English version of the software application and the appropriate hardware was done in the end of February 2006 with a short demonstration to the officials of Vratsa Regional Administration and the Regional Department of the Ministry of Agriculture.

The project team had also the opportunity to test the prototype on real working environment, by giving support to the Pilot Project for Preparation of LPIS in Bulgaria, financed by the Ministry of Agriculture and Forestry and implemented by ASDE/ReSAC. Physical block validation and ground truth collection was performed in the pilot areas of Assenovgrad. The results of this project were incorporated in the technical specifications for the LPIS implementation prepared by the Ministry of Agriculture. Analysis and statistics from this key field test will be presented later in this document.

	IST-2002-507427 SAFIR	WP10.2 - Deliverable D10.2.3 <i>6 Monthly Report</i>	Organization : NBT	
	Ref: WP10_D10.2.3.1_v01.00_Final_6_Monthly_Pilot Field Update of the Vratsa Map_Activity_Report	Version: 00.01 Date : 28/02/2006	Status : Draft/Provisional/ FINAL	Page 9 of 10


3 Significant accomplishment

3.1 Achievements

Description	Details
Functional and architectural specification of the pilot	Some modifications were made during the design of the database and the development of the user interface, taking into account the latest decisions of the Bulgarian Administration, related to IACS/LPIS, as well as the update of the common technical specifications of JRC/Agrifich related to the Control with remote sensing and the newest inputs of DG Agri to the CAP reform. The functional requirements were also slightly tailored and updated.
Mobile application developed	The Agri-mobile application was developed by the end of December, taking into account all business use cases, like: LPIS creation and maintenance, on the spot checks, field validation of declarations and ortho-photos
Hardware selection for the pilot	The appropriate hardware set was selected after testing devices from different suppliers, including all necessary peripherals (headset, GPS, bluetooth)
Test the prototype on real working environment	Three tests were performed in the field: Sofia, Kostelevo (Vratsa region) and Assenovgrad (Plovdiv Region). The later two successful tests, proved the increased efficiency of the field inspectors equipped with mobile voice technology The project team had the opportunity to test the prototype on real working environment, by giving support to the Pilot Project for Preparation of LPIS in Bulgaria, financed by the Ministry of Agriculture and Forestry and implemented by ASDE/ReSAC. Physical block validation and ground truth collection was performed in the test area of Assenovgrad.
Final validation test (English)	The final validation test of the English version of the software application and the appropriate hardware was done in the end of February 2006 with a short demonstration to the officials of Vraca Regional Administration and the Regional Department of the Ministry of Agriculture.

3.2 Main events

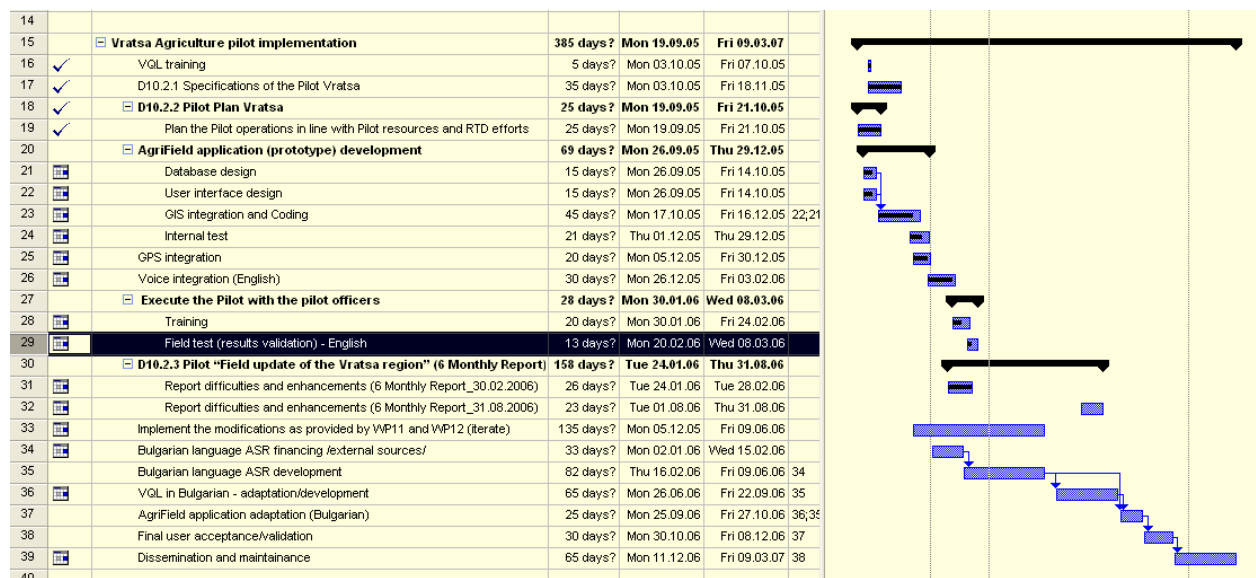
Date	Title	Participants
20.09.2005	Presentation to the new regional governor of Vratsa, Mr. Antonio Georgiev	Project partners and the new regional governor of Vratsa, Mr. Antonio Georgiev
October. 2005	Presentation of SAFIR and a short demonstration of the existing applications was organized by ASDE/ReSAC in the Ministry of Agriculture	The meeting was hosted by the Deputy Minister of Agriculture, Mr. Biurhan Abazov and included from the side of the Ministry, all directors of departments and the technical experts, responsible for the preparation of the LPIS specification and regulations
November 2005	Presentation of the first results of the prototype in Krakow	The first results of the prototype, tested on the previously selected pilot areas were presented during the poster session on the 11 CwRS conference, organized by JRC/Agrifish, held in the end of November 2005 in Krakow.
February 2005	Presentation of the prototype functionality (screen recording movies) at JRC, Italy	The basic use cases and the specific functionality developed in the prototype were presented in Agrifish Unit, JRC

	IST-2002-507427	WP10.2 - Deliverable D10.2.3	Organization : NBT	
	SAFIR	6 Monthly Report		
	Ref: WP10_D10.2.3.1_v01.00_Final_6_Monthly_Pilot Field Update of the Vratsa Map_Activity_Report	Version: 00.01 Date : 28/02/2006	Status : Draft/Provisional/ FINAL	Page 10 of 10

3.3 Publications/Documentation/Demonstration result up to date

Deliverable Code & Name	Planned delivery date	Actual delivery date	Comments
D10.2.1 Specifications of the Pilot Vratsa	20/01/06	14/04/06	
D10.2.2 Pilot Plan Vratsa	14/03/06	28/03/06	
D10.2.3 Pilot "Field update of the Vratsa region" (6 Monthly Report)	28/02/06	28/03/06	Current document

4 Status of pilot according to Gantt



Taking into account the significance of the project results for the implementation and the Land Parcel Identification system and the setting-up of the Integrated Administrative Control System, some activities were speeded up and more resources have been allocated for their accomplishment in the shorter time.


5 Open Issues and strategy to resolve the open issues

In order to implement and disseminate an effective mobile solution in agriculture in Bulgaria, the Bulgarian language has to be developed for voice recognition (Bulgarian ASR).

The strategy to resolve this issue is based on the assumptions that if the technology proves its efficiency in the field and the decision makers in Bulgaria are aware of its benefits, a political and financial support will be achieved and a source of financing will be found to develop the Bulgarian ASR/TTS.

The legal framework of the implementation of the Common Agriculture Policy in Bulgaria as Member State of the European Union is still not complete. Many regulatory documents and technical decision are to be taken. This situation stipulates that there might be some changes in the organization of the processes in the Administration, related to the IACS/LPIS and the management of farmer subsidies.

Another constraint is the delay of the orthophoto production, which is ready only for 4 000 sq. km. of the country. The Bulgarian government is trying to compensate this delay, launching a production of the orthoimages, based on archive satellite data.

	IST-2002-507427 SAFIR	WP10.2 - Deliverable D10.2.3 <i>6 Monthly Report</i>	Organization : NBT	
	Ref: WP10_D10.2.3.1_v01.00_Final_6_Monthly_Pilot Field Update of the Vratsa Map_Activity_Report	Version: 00.01 Date : 28/02/2006	Status : Draft/Provisional/ FINAL	Page 11 of 10

In any case, the latest discussions with the Agrifish unit of JRC, put the focus on preparing a strategy for management of farmer declarations, during the first year of SAPS, based mainly on the digital cadastre, as reference system (first version of the LPIS).

6 Next Steps

- Perform tests on the field in iterative manner and give feedback.
- Organize conference/press conference to increase the awareness of the SAFIR technology among the Bulgarian decision makers.
- Training of the field users.
- Finding of investment for Bulgarian language ASR.
- Integration of Bulgarian ASR/TTS

7 Conclusion

The analyses of the performed tests of the voice-enabled application and the outcomes of the discussions with the administration could be summarized as follows:

1. Through voice commands on his daily language, the field inspector could improve the performance of his workflow. In other words, he could control faster and more.
2. By designing the interface to communicate via voice, some operations could be defined in more efficient manner, which was not possible before. For example, one of the innovations of the prototype is the field measurement of the area, which collects GPS data in both static and kinematical (real-time tracking) mode. This approach could be successfully implemented, only using voice commands, as the measurement should be carried out at certain speed (2 to 7 km/h, depending to the size of the parcel).
3. The usage of voice-activated mobile application doesn't require comprehensive training in remote sensing and GIS, as most of the complex GIS functions and operations are "hidden" behind simple verbal expressions. This is very important point, taking into account the huge number of staff, which will be allocated to perform the control (approx. 1000 people).
4. Field operators will be very interested in using modern and highly efficient technological solution, in order to be compatible with the expectation of the farmers, as beneficiaries of the subsidies. There are many cases, when the farmer posses more advance techniques for measurement of their own parcels for declaration, than the staff of the administration. The respective administrative body should overcome this challenge; otherwise it will be not in a position to justify the control performed.
5. Further adjustment of the hardware set must be done in order to make it more convenient for the field inspector. This requires lighter portable PC with powerful battery for at least 6 hours, bluetooth headset, belt, etc.
6. The efficiency of the voice-enabled application is highly dependent on the accuracy of the GPS device. A close cooperation with JRC (Agrifish Unit) is recommended and especially the team responsible for the testing of GPS devices from various vendors for the parcel measurement. The European initiatives of EGNOS and future GALILEO should be taken into account.
7. The development of the application was done on top of the ArcGIS platform of ESRI. However most of the functions incorporated in the prototype are not ArcGIS dependent. In addition it was considered that there are lots of menus and functions that are not relevant to the mobile application, but decreased the performance of the system, because they need lot of system resources. An application built on top only of the standard ESRI libraries (ArcObjects), using ArcEngine will be more flexible and usable. This will make it simpler and easier to handle, as well as will decrease the final price of the whole product.