1. Basic information
1.1 Desiree Number: PL01.04.08 Twinning number: PL/IB/2001/AG/07
1.2 Title: IACS and Animal Identification & Registration System
1.3 Sector: Agriculture
1.4. Location: Poland

2. Objectives
2.1 Wider objectives
Ensuring of proper control mechanisms of aid applications submitted within Integrated Administration of Control System (IACS) as well as functioning of Animal Identification and Registration system (I&R); Development of GIS infrastructure in Ministry of Agriculture and Rural Development (MARD) / Agency for Restructuring and Modernisation of Agriculture through building up of standard module of geographical information system identifying agricultural parcels and supporting teledetection procedures of control within IACS system on pilot basis.

2.2 Immediate objectives
1. Implementation of GPS technology to carry out supervision of area aid applications in the field (i.e. on-the-spot control);
2. Pilot implementation of teledetection methods as a support element for control of aid applications for direct payments submitted by farmers within IACS system;
3. Increasing of knowledge on EU control campaigns as well as modern methods of teledetection used in the selected EU Member States amongst people responsible for control processes;
4. Improvement of functioning of Animal Identification and Registration System by increasing the speed of data registration in the system;
5. Continuation of information campaign started within Phare 2000 amongst farmers and institutions acting in agricultural sector on functioning of IACS and I&R systems;
6. Preparation and implementation of information integration procedures on the respective levels of IACS organisational structures included in: Aid applications submitted by farmers (simulation), Maps and land registers, Aerial and satellite photographs (ortophotomaps), Complementary data bases, in order to create geographical information system identifying agricultural parcels and supporting control procedures within IACS, including generating of reports on compatibility of data from aid applications with actual status;
7. Development of information layers as well as ensuring their compatibility within geographical information system covering:
a/ cartographic space illustration including: ortophotomap obtained from new aerial photographs for two pilot areas; current ortophotomaps obtained from satellite pictures with resolution < 2.5 m (1 m pixel); images of medium and low resolution, as well as multispectral, licenced satellite imageries for crop identification; cadastral maps (vector when available from local cadastral offices or raster and vector id numbers when vector maps are not available).
b/ land parcel identification (LPIS) - EU Reg. 1593/00 amended EU Reg. 3508/92 in art. 2/b and art. 4. LPIS will be based on the existing in Poland official registers, including land and building register. Geographic Information System (GIS) will be used as an obligatory by Reg. 1593/00 and also ortophotomaps, which using as a digital cartographic documentation is sugested by the same Reg. By using LPIS we will be able to describe land parcels boundaries/areas and recognize crops with interpreting their codes and afterwards compare data with details from aid application submitted by farmer.
c/ visualisation of location of animal herds registered within IACS;
8. Elaboration of procedures and standards for agricultural parcels identification as well as teledetection procedures through the use of time series and multispectral satellite images (at the beginning, in the middle and at the end of vegetation season) in line with Common Technical Specifications taking into account local conditions typical of agricultural production space in Poland;
9. Development of existing and planned IT infrastructure of Agency for Restructuring and Modernisation of Agriculture by incorporation of GIS technologies;
10. Testing in Polish geographical conditions of teledetection control procedures through use of time serious and multispectral satellite pictures (at the beginning, in the middle and at the end of vegetation season).
2.3 Accession Partnership and NPPA priority
The priority “Preparation for implementation of CAP” or otherwise “enforcement of CAP mechanisms and its administrative structures” is stated in “Accession Partnership” as a mid-term priority. Moreover, it also has been included into NPPM (priority 3.4.1.6.) as the one requiring urgent implementation by Poland of a number of tasks, including: organisation of Integrated Administration and Control System – IACS – under responsibility of ARMA; other activities related to preparation of organisational structure to administer and control direct support measures, including CAP accompanying measures (early retirements, afforestation, agri-environmental measures) and also to assist the less favoured areas (LFA) integrated with coherent structural policy of rural areas development that is being now implemented in Poland – under responsibility of ARMA.

3. Description
3.1 Background and justification
According to the Article 2 of the Council Regulation (EEC) No 3508/92 the Integrated Administration and Control System shall comprise of the following elements:
1. A computerised data base: an identification system for agricultural parcels; a system for the identification and registration of animals; aid applications.
2. An integrated control system. Activities that have been undertaken, are being or will be implemented within Phare programmes ’98, ’99 and Phare 2000 concentrate mainly on the Integrated DataBase. On the contrary, this project has mainly for objective to implement, on the pilot basis, the modern methods of control as the necessary pre-requisite ensuring the proper financing from the European budget. Construction of the Integrated Administration and Control System started in Poland in 1999 through the implementation of two pilot projects financed out of Phare ’98. The objective of the above projects was to elaborate a concept of the multi-functional farm register as well as animal identification and registration system (I&R) on the territory of two pilot regions: warminsko-mazurskie and podkarpackie.
So far the Agency have implemented the following activities: final version of IACS and I&R functioning models in Poland have been prepared (they will be based on three levels: Powiat, Voivodship and ARMA Headquarters); indispensable legal amendments enabling the creation of the above three-layer structure of IACS have been proposed (amendments to the Act on creation of ARMA as well as to the Act – Land Surveying and Cartography Law); activities related to creation of Act on IACS have commenced; detailed schedule for implementation of activities related to the system of direct payments in Poland has been prepared. This document under the name of “Brief scheme implementation schedule for the use of direct payments in Poland till 2003” was adopted by the Committee for European Integration on 28 February 2000; within ARMA structure a group of specialists representing different Ministries and other institutions interested in the construction of IACS and I&R systems has been set up that is to observe the implementation of respective stages of the above schedule and to present its comments; an estimate cost of implementation of IACS and I&R systems in Poland in the pre-accession period has been prepared. This estimate amounting to app. 90 million Euro was accepted by the Committee for European Integration on 3 July 2000; a number of study tours to Germany, Austria and Denmark has been organised during which the ARMA staff were familiarised with running of similar Integrated systems on the territory of the above countries; tendering process for the selection of suppliers of both equipment and services that are to be purchased in the above two pilot programmes has started (i.e. computer equipment with related software, animal ear-tags, tagging equipment, passports for animals, tagging services, etc.); tendering procedure for the selection of external software companies is to be completed very soon. Its task will be to prepare a technical project for IACS and I&R systems which will in turn enable to build proper software, create its prototype and finally to implement the systems. Before the signature of the contract the winning company is expected to present detailed diagram showing interrelation between different elements of IACS.
The above activities are implemented according to the schedule, which will enable to introduce multifunctional farm register and to build IACS system on the territory of pilot regions. Since September 1st 2000 the programme Phare ’99 “Preparation for implementation of CAP – phase I” started, the aim of which is to further develop the Central Paying Agency and its regional branches for implementation of IACS system. Moreover, Phare ’99 will aim at assessment of achievements of Phare ’98 as well as verification of initial assumptions of Integrated systems on the pilot regions before their implementation on the territory of the whole country. Phare ’99 programme will be succeeded by Phare 2000 that mainly concentrates on completion of IACS information system on the territory of the whole country as well as on a wide information and training campaign amongst farmers with regard to direct payments and the correct way of filling in the aid applications. In the project fiche for Phare 2000 the necessity for
modernisation of traditional method of on-the-spot control was also mentioned through the purchase of 64 GPS. The continuation of investment efforts related to Integrated control system will be realised within this project.

Article 7 of Council Regulation (EEC) No 3805/92 stipulates that: “The integrated control system shall cover all aid applications submitted, in particular as regards administrative checks, on-the-spot checks and, if appropriate, verification by aerial or satellite remote sensing”. At the same time, Article 6 of Commission Regulation (EEC) No 3887/92 defines the above checks. According to this Article:

- **administrative checks** shall include, in particular, cross checks on declared parcels and animals in order to ensure that the same aid is not granted more than once in respect of the same calendar / marketing year;
- **on-the-spot control** shall cover at least 10% of ‘livestock’ aid applications; and 5% of ‘area’ aid applications.

While considering the usefulness of teledetection methods for the control reasons an important issue that should be taken into account are the control costs. Those methods are becoming widely used in the EU Member States because of their constantly decreasing costs vis-à-vis the traditional methods of on-the-spot control. Moreover, latest UE legislation stresses the importance of wider use of teledetection methods for both identification and control of agricultural parcels. Council Regulation (EC) No 1593 of 23 July 2000 stipulates that “in view of the difficulties encountered when carrying out administrative checks on areas declared, and in particular the costs and time involved in clearing up anomalies in declarations, experience in a number of Member States which have created a special parcel identification system and progress in digital orthophotogrametry and geographical information systems, the introduction of computerised geographical information systems and techniques for the identification of agricultural parcels should be foreseen”. Therefore, in order to ensure efficiency in functioning of IACS system in Poland it is indispensable to test modern tools of teledetection control and GIS technologies. It should be stressed that different countries use more accurate scales depending upon the scale of local cartographic materials. Therefore, on the majority of Polish territory the above scale should be at 1:5000 due to existing register of parcels and buildings. However, in some cases of particularly scattered structure of local agricultural farms maps with more accurate scales can be used. That scale will be used in two pilot powiats to see what is the best for Polish system. Teledetection methods and the procedures for their application for the purpose of area payments control have been defined by DG JRC as Common Technical Specifications. Their importance has been underlined by EC as for their high efficiency, reliability and relatively low cost. Those methods are more and more widely used by EU Member States. This fact is reflected in annual conferences organised by JRC within MARS programme (Monitoring Agriculture with Remote Sensing) the aim of which is to present results of control campaigns made in different EU Member States. Poland has already certain experience in use of teledetection methods due to creation of information layers to be applied within IACS system and crops identification. Those experiences result from participation in MERA/MARS programme implemented in the years 1994-1996 as well as from implementation of the project „Integrated Information System of Agricultural Production Space”. The latest project has been implemented in the years 1999/2000 by a consortium of public and private companies at the request of MARD. The implementing team created application software using data formats for vector and raster preferred by DG Joint Research Centre as well as data bases assuming its application at the powiat, regional and central levels. However, use of GIS technologies and teledetection methods as suggested by the EU requires the elaboration of repeatable system unit (to be repeated in each powiat) and its testing at the level of basic organisational level of IACS system. As the IACS implementation timetable shows by March 2001 the implementation of IACS prototype, including I&R subsystem, will be initiated. It is therefore necessary to integrate GIS functionality into IACS architecture and use the same technologies, standard and formats. Project assumes that the above activities will be implemented on the territory of a powiat representative of Polish conditions that is located in the regions (voivodships) covered by pilot Phare ’98 project, i.e. warminsko-mazurskie or podkarpackie. The final selection of powiat will be made on the basis of statistical comparisons including data on average number of farms per powiat, average farm size, average number of parcels, average number of crop size in farm, etc.

At the moment ARMA is in the final stage of selection of a software company that will be responsible for building up of software for the whole IACS system. The tender organised according to Polish procedures (Act on Public Procurement) is due to be completed in March 2001. Once the winning tenderer has been selected and its concept with regard to software implementation precisely known, Agency will be in position to present detailed diagrams presenting all interrelations between the respective IACS elements.
3.2 Linked activities

Phare '93: “Implementation of analytical phase and preparation of information system for ARMA" Phare '98: project PL98/IB/AG/01, Reinforcement of MAFE for Integrated Administration and Control System (IACS) has for objective to elaborate a concept of the multi-functional farm register in Poland and its implementation in two pilot regions (Warminsko-Mazurskie and Podkarpackie Voivodships), and project PL98/IB/AG/03 Implementation of Animal Registration and Identification System (I&R) has for objective to create a concept and subsequently implement an animal identification and registration system in the same two pilot regions. Results gathered during the implementation of those two pilot projects, after necessary modifications aimed at the improvement and testing of the system, will be gradually transferred to other regions of the country. The data bases of agricultural parcels and animals will be developed by adding subsequent regions (14 remaining Voivodships) to the existing system. Obviously, before it takes place necessary adjustments will be proposed by the IT experts from Phare '99 as one of its objectives it to present comments to the software prepared under Phare '98. One of the priorities of Polish authorities is to cover with IACS system the territory of the whole country in relatively short period of time as only with this assumption can the entire system function properly. Building the IACS system over longer period of time will cause considerable increase of its costs and the necessity of its upkeep will be not yet fully operational. Within this project several activities are well advanced such as identification and registration of cattle and registration of farms on which those animals are kept. At the moment a temporary data base is being created in order to register cattle located on the territory of 2 pilot regions together with numbers of farms.

Phare '98 (SPP – activity 2.5): Adjustment of ARMA to the role of Paying Agency for SAPARD programme. Creation of administrative and legal capacities for implementation of SAPARD programme as well as FEOGA Structural Funds.

Phare '99: building of Central Paying Agency and its regional branches for implementation of direct payments; final elaboration of the concept of IACS system (proposed for 2 pilot Voivodships within Phare '98) so as it will be appropriate for implementation on the territory of the whole country (all 16 Voivodships); selection of proper organisational structure for ARMA and its implementation (after its approval by the Polish government); completion of ARMA Internal Audit structure that was created by the Agency itself using the Polish budgetary funds (setting up of proper audit teams, elaboration of audit plans and procedures, etc.).

Phare 2000: is a continuation of the previous projects financed from the European budget. Phare 2000 will concentrate on the completion of information systems (hardware, software) as well as nation-wide information campaign amongst farmers related to CAP, functioning of EU system for direct payments, training sessions on the correct way to fill in application forms for both “area” and “livestock” payments.

General Agricultural Census planned for 2002: Draft legislation on general agricultural census together with the related executive acts with regard to General Agricultural Census in 2002 has been prepared by the Main Statistical Office. During the general agricultural census, basic data on the farms users, land use, surface of the respective crops, animal stock and many other will be gathered. Census is one of the necessary pre-conditions for Polish entry into EU CAP. Detailed results obtained during the census will provide IACS system with needed data being simultaneously a viable source of information, comparison and control.

3.3 Results

Technical preparation of staff responsible for on-the-spot control in use of modern equipment (GPS, telemeters, pocket PC’s); Setting up of a system of loading data on e.g. birth, death, slaughter of animals in order to speed up their transfer to the animal central data base; Increase of knowledge within staff of ARMA and other institutions involved in control processes on CAP, functioning of IACS and animal I&R systems, GIS environment as well as control processes (teledetection, GIS); Creation of repeatable operationally tested GIS module for agriculture parcel identification for supporting the control processes. The GIS module will be fully integrated with proposed IACS architecture and technologies, currently under implementation, and will include: (a) Land Parcel Identification System with use of regularly updated ortophotomaps at a scale of 1: 10 000 or even more accurate in case of areas of scattered ownership structure of agricultural farms together with: identification of crops on the basis of periodic satellite pictures and their photointerpretation; elaboration of appropriate interpretation codes for different crops; defining of land parcels surfaces. (Updating of ortophotomaps will take place according to actual needs. It should be stressed that in all EU Member States using ortophotomaps annual updating has different territorial scope varying from 1/5 to 1/3 of territory, (e.g. in Italy being at the level of 1/3, i.e. 34 provinces out of 103). This results from Commission recommendation to use ortho-imagery not older that 3-5 years); and (b) system of on-the-spot control with teledetection methods.
through comparison of data included in aid applications with results of photointerpretation, in line with EU requirements (Common Technical Specifications DG JRC and DG Agri); Preparation of Report from control campaign for DG JRC, DG Agri and ARMA / MARD compatible with EU requirements made in the pre-accession period in conditions the most similar to the real ones; Equipping the ARMA organisation units (one unit per region plus ARMA Headquarter and the Ministry of Agriculture) responsible for identification of agricultural parcels and control campaigns with equipment (hardware and software) needed for the use of GIS data, aerial photographs and satellite images as well as other spatial information.

3.4 Inputs

Provision of equipment for conventional control methods of aid applications (48 GPS, 16 telemeters, 128 pocket PC’s with related software); Purchase of orthophotomaps obtained from current aerial photographs in a scale of 1:10 000 or more if necessary for LPIS purposes; Purchase of satellite images (high, medium and low resolution, as well as multispectral) for crop identification; Purchase of graphical stations with GIS software for all ARMA regional branches and Ministry of Agriculture. GIS software should be integrated with IACS architecture, technologies and formats; Organisation of training sessions in GIS technologies and teledetection methods for specialists from ARMA and other institutions from agricultural milieu (both in Poland and EU Member States); Purchase of scanners for faster loading of data (e.g. data on birth, death, slaughter, etc.) to the animal registration and identification (I&R) system in order to limit the number of committed errors. It is foreseen to purchase 308 scanners one for each I&R powiat office. Unit price of a single scanner amounts to app. 4,500 Euro. As the aid applications will be submitted in large quantities at the specific dates during the year, it is important to ensure their fast registration with minimum number of errors. Any delays can seriously affect the transfer of data to the central data base and as a result the issue of passports and other documentation for animals; Organisation of series of training sessions for representatives of institutions acting in agricultural milieu on, inter alia, the CAP, functioning of IACS and I&R systems. The above training sessions will be based on information brochures prepared under Phare 2000 - organised as part of the twinning. The purchases listed above together with the equipment bought under the previous Phare programmes will support the building of accurate and complete data bases that are easy to update regularly. The architecture of the data bases will ensure the security of the stored information, flexibility to meet the needs of various users taking into account the reporting process that IACS system will have to ensure (reports for both internal institutions such as e.g. MARD, Main Statistical Office and the external ones such as e.g. the EU Commission).

**Twinning:** 1 long-term EU expert specialising in teledetection methods. Moreover, 1 mid-term expert on GIS techniques and 1 mid-term expert on animal I&R system will be needed as well as short-term experts responsible for approval / verification of technical specification of equipment and software, overall surveillance on training process for ARMA staff (teledetection, GIS), participation in organisation and conducting of training sessions and placements for farmers and other institutions from agricultural sector (CAP mechanisms, functioning of IACS and I&R systems, etc.);

**Training programme (as part of the twinning):** development of human resources of ARMA and other institutions involved in controlling process under IACS, through organisation of training sessions in Poland (to be covered by Polish budget). Polish part will cover costs of training of employees from regional offices as well as managers of powiat level (720 persons+310 persons). Training sessions will be carried out by trainers (appr. 120 persons), who will be prepared for leading by twinning partners. The rest of ARMA staff will be trained based on other projects. According to ARMA estimates the final number of IACS personnel will vary from 2,500 to 5,000 depending on adopted strategy regarding especially the process of on-the-spot control. Therefore, extensive training process for trainers and institutions acting in agricultural sector will be much needed at the time of implementation of this project. Workshops in Poland for app. 100 persons that will concentrate on building of Land Parcel Identification System from central, regional as well as powiat administration from pilot regions; participation in international conferences; conducting of training sessions for trainers and institutions acting in agricultural sector on functioning of IACS system. Training process will take place under close supervision of PAA. Study visits may be part of the twinning.

**Local experts:** (to be covered by Polish budget) participation in activities implemented by EU long- mid- and short-term experts (including the training sessions) dissemination activities including preparation of publications, brochures and other materials for farmers, interested institutions and economic operators; Implementation of information campaign for farmers – project final beneficiaries (knowledge on the CAP, functioning of IACS and I&R systems, etc.).
Computer equipment and software: Purchase of 48 GPS (three per each regional office of ARMA), 16 telemeters (one per each regional office of ARMA) and 128 pocket PC’s (eight per each regional office of ARMA as an equipment for control teams) needed for professional conducting of on-the-spot control of aid applications submitted by farmers (the number of 128 pocket PC’s has been obtained as follows: 64 GPS purchased under Phare 2000 + 48 GPS and 16 telemeters under this project. Therefore 128 pocket PC’s will be delivered to the control units using the above equipment); Purchase and installation of 18 computer units together with GIS software compliant with IACS architecture – to use for managing spatial raster and vector layers, aerial photographs and satellite images being part of the GIS database for IACS purposes; Purchase of 308 units composed of scanner, computer and OCR software (1 for each powiat) for the registration of different events in I&R system (animal birth, death, slaughter, etc.). Technical specification of scanners: format A4; optical resolution 1200 dpi; automatic form feeder; interface SCSI and USB; drivers for Windows 98 and NT; software including OCR 0 Optical Character Recognition in Polish language version; scanning speed min. 20 pages / min; scanner specialising in scanning forms. Preparation of technical specification of equipment to be purchased will take place under overall supervision of PAA and with assistance of EU short-term experts. All purchases both from Phare and Polish budget will be made using tender procedures thus ensuring the procurements at economically most advantageous price.

Software data bases that are now being drafted must have the possibilities (according to the new Council Regulation 1593/2000) to be developed with GIS elements in a form of numeric land registries as well as orthophotomaps (the above requirement shall be fulfilled by all EU Member State as from 1.01.2005). Therefore, already at this stage must Agency ensure full integration of currently built IACS system with GIS with regard to system architecture, used technologies and procedures. The equipment that is to be purchased under this project is not planned for GIS built for the IACS system all over the country. It will simply give the Agency the possibility to have access to other GIS bases that are administrated by other organs of public administration.

4. Institutional framework

Overall supervision of the project will be ensured by MARD. The Agency for Restructuring and Modernisation of Agriculture (ARMA) is a leading institution in Poland with regard to implementation of structural transformation programmes in agriculture and rural areas. Those programmes support: investments in agriculture, agri-food processing and agricultural services; projects aiming at creation of new work places amongst rural population; development of production and technical infrastructure in rural areas; building of market infrastructure; education in the field of increase and change of professional qualification of rural population. It should be stressed that ARMA is playing the role of both implementing and paying institution. The role of implementing agency covers direct or indirect (with assistance of other technical and financial operators such as banks, Extension Services, etc.) activities such as elaboration of principles and procedures of granting assistance, monitoring and control. Acting as implementation and paying agency of direct payments and accompanying measures necessitates considerable organisational development of the Agency. In January 2000 a Division for Integrated Administration and Control System was created that is composed of three sections: Section of area payments, Section of livestock payments and Organisational and Information Section.

5. Detailed budget (in EUR)

<table>
<thead>
<tr>
<th>Description</th>
<th>Investments PHARE</th>
<th>Institution co-financing</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twinning ARMA – IACS + I&amp;R (twinning includes short- mid- and long-term experts, training sessions, seminars, workshops, conferences, etc.)</td>
<td>-</td>
<td>2,000,000</td>
<td>2,000,000</td>
</tr>
<tr>
<td>Purchase of 48 GPS, 16 telemeters and 128 pocket PC’s.</td>
<td>1,650,000</td>
<td>-</td>
<td>1,650,000</td>
</tr>
<tr>
<td>Purchase of hardware and GIS software for ARMA branches and Ministry of Agriculture. GIS software will be integrated with IACS architecture and technologies (18 sets).</td>
<td>300,000</td>
<td>-</td>
<td>300,000</td>
</tr>
<tr>
<td>Purchase of 308 units (scanners, computer and OCR software) for I&amp;R system</td>
<td>700,000</td>
<td>-</td>
<td>700,000</td>
</tr>
</tbody>
</table>
Building GIS application fully integrated with IACS (architecture, technologies and standards)

| Acquisition of aerial orthophotomaps, satellite orthophotomaps, multispectral images and any other satellite, as well as cadastral data needed for LPIS and crop interpretation procedures and teledetection control method. | 350,000 | 350,000 | 500,000 | 850,000 |
| Visualisation of animal herd location registered in IACS within GIS together with related applications. | 150,000 | 150,000 |
| Preparation of LPIS together with making interpretation tests for crops covered with direct payments. | 700,000 | 700,000 |
| TOTAL: | 3,000,000 | 2,000,000 | 5,000,000 | 4,200,000 |

1. cost of one equipped GPS is 40,000€, one equipped telemeter is 15,000€, one pocket PC is 5,000€.
2. cost of one workstation with two monitors is 9,000€; the rest of the cost covers GIS software, plotters, printers and scanners.
3. developing of system application using purchased hardware and software tools.
4. financing of pictures is not included in discussed project according to information delivered by JRC Ispra; however Agency can use their experts and send employees for training and internships.
5. estimate costs of satellite photographs was made using the following assumptions: Estimate cost of satellite pictures meeting accuracy requirements for LPIS system together with their orthorectification (as required by EU) is as follows: average surface of 1 powiat: 1000 km², cost of processed satellite data: app. 150€/1 km², two powiats will be covered (app. 2000 sq. km): app. 0.3M€ + costs of automation of changes, registration = 350 000 Euro. In EU 15 the average cost per typical control site amounts to app. 100 000 Euro. This is, however, the cost for controls using aerial pictures at pixel 10*10 , whereas in this project it is foreseen to use pictures 1*1m pixel. (see also 3.4/2).
6. The co-financing funds for the project implementation will be available.

6. Implementation arrangements

6.1 Implementing Agency
Project Authorising Officer (PAO): Pawel Samecki, Under-secretary of State, Aleje Ujazdowskie 9, 00-918 Warszawa, tel: +48224555241.
Central Financing and Contracting Unit (CFCU), Wojciech Paciorkiewicz, Director, Ul. Nowy Swiat 6/12,00-400 Warszawa, + 48 22 661 76 33.
CFCU will be responsible for tendering, contracting and payments in the name of Agency for Restructuring and Modernisation.

6.2 Twinning
It is foreseen to sign one twinning covenant comprising of long-term EU expert (PAA) on teledetection methods (for the whole period of project running). PAA profile: professional background: land surveyor specialising in teledetection; experience in co-operation with Join Research Centre Ispra; previous professional performance in the countries of similar climatic conditions; professional experience min. 5 years; fluent in English; experience in the Eastern European countries will be an advantage. Additionally, one mid-term expert in GIS technologies and one mid-term expert in the field of I&R system will be needed as well as several EU short-term experts in the specific fields of expertise related to the implementation of IACS and animal I&R systems in Poland. During their entire stay in Poland PAA and mid-term experts will be located in the premises of the ARMA Headquarters. ARMA will be responsible for preparation, management and implementation of the project.
Contact persons: Jerzy Mikulski, Zbigniew Fafara, IACS Division, Agency for Restructuring and Modernisation of Agriculture, Al. Jana Pawla II 70, 01-175 Warszawa, tel: +48(22)8602874, 8602826.

6.3 Non-Standard aspects: DIS manual will be followed.

6.4 Contracts
1. purchase of 48 GPS, 16 telemeters as well as equipment and 18 sets with GIS software;
2. purchase of 308 units for I&R system and 128 pocket PC’s;
3. acquisition of aerial orthophotomaps, satellite orthophotomaps, multispectral images and any other satellite, as well as cadastral data needed for LPIS and crop interpretation procedures and teledetection control method;
4. Preparation of LPIS together with making interpretation tests for crops covered with direct payments.
5. Twinning covenant 2.2M€
The remaining contracts will be financed in total out of Polish budget.

7. Implementation schedule:
TOR preparation: 06.2001;
Commencement of project activities
   Twinning: 10.2001;
   Investment: 01.2002;

8. Equal opportunities
Women participation results from employment structure of the Agency, where women constitute approximately 50 % of staff. Participation of women in the project will be measured by percentage ratio of women participating in the training programmes and seminars.

9. Environment
Not relevant.

10. Rates of return
Not relevant.

11. Investment criteria
The equipment purchases are going to be based on the technical specification valid at the time of making purchases. As technical progress in the field of modern equipment is particularly fast it is inappropriate to define detailed technical specification of the equipment at this moment.

12. Conditionality and sequencing
1. Completion of tendering process for purchase of satellite pictures and GIS related equipment before the end of I quarter 2002;
2. Taking satellite pictures and implementation of control activities in the field during the vegetation season, i.e. in II quarter and at the beginning of III quarter of 2002.
3. Decrease in procurement costs of satellite photographs to the level affordable for beneficiaries;
4. Purchase of scanners for registration of events within Animal Identification and Registration System making the registration process more effective by lowering the number of committed errors;
5. Adequate preparation of training materials prepared within Phare 2000 resulting in proper level of training sessions under this project. Training sessions for farmers and representatives of agricultural institutions within this project constitute the continuation of trainings to be delivered under Phare 2000 under which the majority of training materials, information brochures as well as aid applications samples will be printed.

Main activities of the project:
1. Arrival of long-term expert (PAA) to the Agency – IV quarter 2001;
2. Selection of 2 pilot powiats – IV quarter of 2001;
3. Organisation of all tenders related to supply of hardware, GIS technologies and GIS applications IV quarter 2001 – I quarter 2002;
4. Acquisition of aerial ortophotomaps, high resolution satellite ortophotomaps, multi series sessions and multi spectral images and cadastral information – according to EU requirements stared in Common Technical Specification - I quarter 2002;
5. Purchase of hardware and GIS software equipment for ARMA and MARD – as a result of tender procedure – I quarter 2002;
6. Building of repeatable GIS module which will be used with LPIS and will support control procedures and will accept aerial photographs and satellite images as information layers – as a result of a tender procedure – I quarter 2002;
7. Purchase of equipment for traditional methods of control – I quarter 2002;
8. Consultation on organisation of control campaign in JRC – I quarter 2002;
10. Generating of transitional and final reports from control campaigns in line with DG JRC requirements – during the duration of the project;
11. Purchase of scanners for registration of events within I&R animal system – II quarter of 2002;
12. Organisation of training sessions for trainers III and VI quarter of 2002;
13. Organisation of training session for ARMA staff in GIS technologies and applications, teledetection control process. Training sessions will be organised in the 3rd and 4th quarters of 2002, after the delivery of appropriate equipment to the ARMA regional branches;


Teledetection methods and the procedures of their application for the purpose of area payments control have been defined by DG JRC as Common Technical Specifications. Their importance has been underlined by European Commission as for their high efficiency, reliability and relatively low cost. Nowadays, those methods are more and more widely used by EU Member States. This fact is reflected in annual conferences organised by JRC within MARS programme (Monitoring Agriculture with Remote Sensing), the aim of which is to present results of control campaigns made in different EU Member States. Therefore, it is planned to consult the project activities related to modern teledetection techniques with JRC Ispra.
<table>
<thead>
<tr>
<th>Immediate Objectives</th>
<th>Indicators of Achievement</th>
<th>Sources of Information</th>
<th>Assumptions and Risks</th>
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<tr>
<td>Implementation of GIS technology to carry out supervision of area aid applications in the field (i.e. on-the-spot control); Pilot implementation of teledetection methods as a support element for control of aid applications for direct payments submitted by farmers within IACS system; Increasing of knowledge on EU control campaigns as well as modern methods of teledetection used in the selected EU Member States amongst people responsible for control processes; Improvement of functioning of Animal Identification and Registration System by increasing the speed of data registration in the system; Continuation of information campaign started within Phare 2000 amongst farmers and institutions acting in agricultural sector on functioning of IACS and I&amp;R systems; Preparation and implementation of information integration procedures on the respective levels of IACS organisational structures; Development of information layers as well as ensuring their compatibility within geographical information system covering cartographic space illustration; land parcel identification (LPIS) based on land and building register and ortophotomap; visualisation of location of animal herds registered within IACS; Elaboration of procedures and standards for agricultural parcels identification as well as teledetection procedures through the use of time series and multispectral satellite images (at the beginning, in the middle and at the end of vegetation season) in line with Common Technical Specifications taking into account local conditions typical of agricultural production space in Poland; Development of existing and planned IT infrastructure of Agency for Restructuring and Modernisation of Agriculture by incorporation of GIS technologies; Testing in Polish geographical conditions of teledetection control procedures through use of time serious and multispectral satellite pictures (at the beginning, in the middle and at the end of vegetation season).</td>
<td>IACS system ready for control of UE payments and in line with EU standards after accreditation (Reg. 3508/92 and 3887/92); ARMA staff familiar with teledetection methods used in UE Member States; the knowledge checked by exam; Teledetection methods of control implemented in the pilot regions – audit I&amp;R system timely updated with complete and accurate information – 5% controlled on-the-spot</td>
<td>Documentation of Polish government; MARD and ARMA documentation Documents and reports of European Commission and other EU institutions.</td>
<td>A: Correct selection of UE twining partners Adjustment of Community teledetection and GIS patterns to Polish conditions Good co-operation with JRC Ispra Employment by ARMA of staff with adequate knowledge on teledetection R: Lack of sufficient funds both national and European for the complete implementation of IACS; Delays in implementation of pilot projects '98, '99 and Phare 2000,</td>
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### Outputs of Project

- Technical preparation of staff responsible for on-the-spot control in use of modern equipment (telemeters, pocket PC’s);
- Setting up of a system of loading data on e.g. birth, death, slaughter of animals in order to speed up their transfer to the animal central data base;
- Increase of knowledge within staff of ARMA and other institutions involved in control processes on CAP, functioning of IACS and animal I&R systems, GIS environment as well as control processes (teledetection, GIS);
- Creation of repeatable operationally tested GIS module for agriculture parcel identification for supporting the control processes.

The GIS module will be fully integrated with proposed IACS architecture and technologies, currently under implementation, and will include: Land Parcel Identification System with use of annually updated ortophotomaps at a scale of 1:10 000 or even more accurate in case of areas of scattered ownership structure of agricultural farms; system of on-the-spot control with teledetection methods through comparison of data included in aid applications with results of photointerpretation, in line with EU requirements (Common Technical Specifications DG JRC and DG Agri).

Preparation of Report from control campaign for DG JRC, DG Agri and ARMA / MARD compatible with EU requirements made in the pre-accession period in conditions the most similar to the real ones. Equipping the ARMA organisation units (one unit per region plus ARMA Headquarter and the Ministry of Agriculture) responsible for identification of agricultural parcels and control campaigns with equipment (hardware and software) needed for the use of GIS data, aerial photographs and satellite images as well as other spatial information.

### Indicators of Achievement

- Downtime level not higher than specified by manufacturer;
- Control units within ARMA set up: Percentage of scanned applications; Appropriate knowledge of staff of ARMA and other institution on EU matters.

### Sources of Information

- Documentation of Polish government;
- Reports from project implementation;
- Appraisal of training programmes;
- Information materials of MARD, ARMA

### Assumptions and Risks

- A: Tendering procedures implemented in time; Sufficient number of trainers able to deliver training sessions for farmers;
- Good co-operation with JRC Ispra; Employment by ARMA of staff with adequate knowledge on teledetection
- R: Tenders to be organised are unsuccessful;

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### Annex 2: Cumulative implementation, contracting and disbursement schedule

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<th>Date of Drafting</th>
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