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Services for the development of a system for remote monitoring of the condition of agricultural crops on the scale of an individual farm

COUNTRY OF ORIGIN	IDENTIFIER	PUBLISHED	LAST UPDATE	DEADLINE
Belarus	BO10237	2024-04-18	2024-04-18	

Linked profile in other language

Услуги по разработке системы дистанционного мониторинга состояния сельскохозяйственных культур в масштабе отдельного хозяйства

Responsible

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Summary

The United Institute for Informatics Problems offers consumers services for the development of a system for remote monitoring of the condition of agricultural crops on the scale of an individual farm under an outsourcing agreement and is looking for partners to conclude a distribution services agreement.

Description

The system for remote monitoring of the condition of agricultural crops on the scale of an agricultural enterprise (hereinafter referred to as the remote monitoring system) implements an innovative approach to increasing the profitability (reducing costs of growing products) of crop production by adapting technologies for cultivating and harvesting crops to actual conditions based on the results of operational remote monitoring.

The remote monitoring system allows you to solve the following tasks:
- assessment of damage to agricultural crops due to unfavorable factors;
- monitoring of the phytosanitary condition of agricultural crops;
- forecast of crop yields (wheat, barley and rapeseed - both winter and spring forms);
- mapping of agricultural crops.

To implement these tasks, a software and information complex, software documentation, an electronic field map, and a digital terrain model have been developed. The results obtained can be transferred both to the level of precision agriculture and to the level of district, region and country.

According to ground-based spectrometric measurements (normalized difference red edge/red index NDRERI - Normalized Difference RedEdge/Red Vegetation Index), the average accuracy of forecasting the yield of agricultural crops (wheat, barley and rapeseed - both winter and spring forms) on the site was (BBCH≥ 60) 82%.

For data from the Sentinel-2A satellite (BBCH=70 or more), the average yield forecast accuracy was (BBCH≥70) 90%. When moving from one field to multiple fields, the accuracy of yield forecast increases significantly (up to 98% or more)

The purpose of creating the system is information support for farmers when making decisions on the use of means to increase crop yields. The objects of monitoring are: the state of the area of agricultural crops, damage to them by unfavorable factors, yield forecast, etc. For the effective functioning of the remote monitoring system, data from ground sensors, unmanned aerial vehicles, and aerospace vehicles are used.

The system includes subsystems:
- assessing damage to agricultural crops due to unfavorable factors, monitoring the phytosanitary condition of agricultural crops;
- forecasting crop yields;
- mapping of agricultural crops.

Advantages and Innovations

The system allows you to speed up and facilitate the labor-intensive process of traditional information collection and increase the efficiency of assessing the condition of agricultural crops, which helps to increase the efficiency of agricultural production.

Stage of development

Already on the market

Funding source

State budged
Internal

IPR status

Secret know-how

Sector group

Agrofood
Environment
ICT Industry & Services

CLIENT INFORMATION

Type and size of client

R&D institution

Year established

1965

NACE keywords

J.62.0 - Computer programming, consultancy and related activities
J.62.01 - Computer programming activities
J.62.02 - Computer consultancy activities
M.72.19 - Other research and experimental development on natural sciences and engineering

M.74.90 - Other professional, scientific and technical activities n.e.c.

Turnover (in EUR)

10-20M

Already engaged in transnational cooperation

Yes

Additional comments

United Institute of Informatics Problems of the National Academy of Sciences of Belarus is the leading organization in the Republic of Belarus for fundamental and applied research in the field of information technologies: design automation, applied mathematics, supercomputer technologies, bioinformatics and medical informatics, geographic information systems, digital cartography, information space technologies, Grid-technologies. The Institute is a provider of the scientific and educational Internet in Belarus, participates in the development of recommendations on the use of the results of scientific research, scientific support for informatization processes in the Republic of Belarus, the development of forecasts in the relevant fields of science and technology, and the training of highly qualified personnel.

Scientific directions:
- automation of engineering systems design;
- processing and recognition of signals, images, speech;
- geoinformation systems;
- input and output of video information;
- operations research and discrete optimization;
- data protection;
- decision-making in emergency situations;
- bio- and medical informatics;
- computer networks, databases and telematic applications;
- supercomputer technologies and parallel computing, Grid technologies;
- information and reference systems.

The strategic goal of the UIIP NAS of Belarus is the creation and implementation of systems developed on the basis of modern scientific theories and methods of information technology. At the same time, the main directions are the development and creation of high-performance systems and advanced technical base of network technologies based on the principles of GRID and cloud computing. Integration of high-performance computing resources of the institute into the European and world network will create conditions for the export of services to other countries. Another important export factor should be the computing complexes and systems created in the laboratories of the institute and designed as a finished hardware and/or software product. The areas of application of these products are automation of the full life cycle of products in industry and electronics, medical informatics, space information systems, information systems in management and government, public information services, and others.

Along with the expansion of scientific and technical cooperation with partners from the CIS countries, Western and Eastern Europe, much attention was paid to expanding the geography of scientific and technical cooperation and entering new markets for scientific and technical products (China, the countries of the Persian Gulf and a number of other countries).

The strategic goal of the implementation of international projects is to increase the competitiveness of domestic scientific and technical products, their promotion to the world market, the maximum attraction of foreign investment in the research sector of the Republic of Belarus.

Languages spoken
Russian

INFORMATION ABOUT PARTNERSHIP

Type of partnership considered
Distribution services agreement
Outsourcing agreement

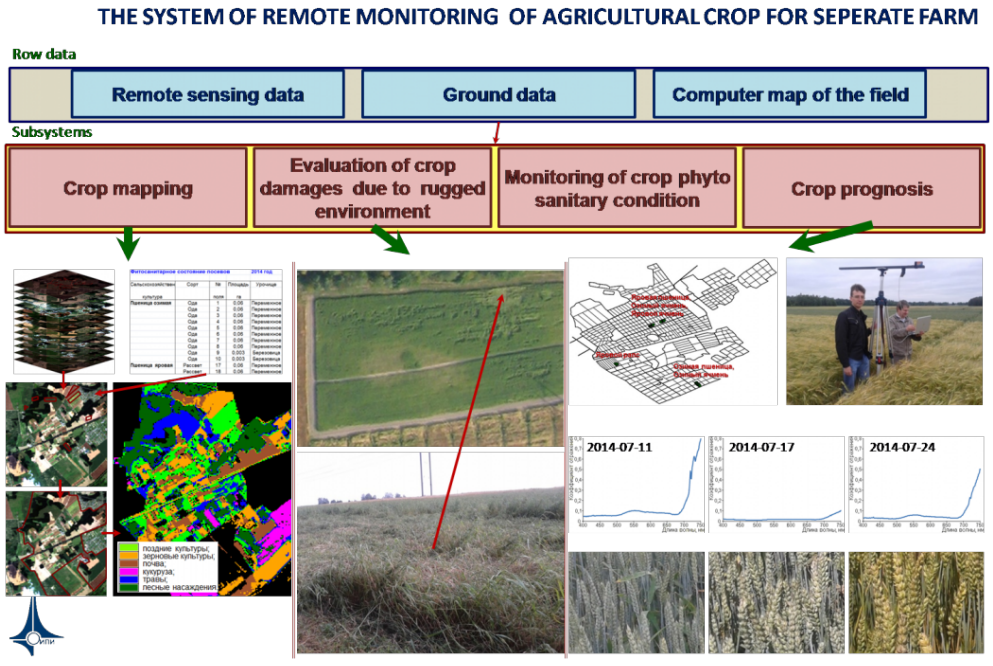
Type and role of partner sought
Consumers interested in purchasing services for the development of a system for remote monitoring of the condition of agricultural crops on the scale of an individual farm under an outsourcing agreement.

Partners interested in purchasing services for the development of a system for remote monitoring of the condition of agricultural crops on the scale of an individual farm under a distribution services agreement.

Type and size of partner sought
Sole proprietor

ATTACHMENTS

Agricultural crop monitoring-1.jpg



Agricultural crop monitoring-2.jpg


СИСТЕМА ДИСТАНЦИОННОГО МОНИТОРИНГА СОСТОЯНИЯ СЕЛЬСКОХОЗЯЙСТВЕННЫХ КУЛЬТУР В МАСШТАБЕ СЕЛЬСКОХОЗЯЙСТВЕННОГО ПРЕДПРИЯТИЯ
Исходные данные
Оценка повреждения неблагоприятными факторами
Мониторинг фитосанитарного состояния
Прогноз урожайности
Картографирование сельскохозяйственных культур
Разновременные данные ДЗЗ (спутниковые, с БПЛА)
Непосредственное обследование полей
Электронная картосхема полей
Цифровая модель рельефа
24.06.2016
11.07.2016
30.06.2016
19.07.2016
26.07.2016
02.07.2016
04.06.2015
21.07.2015
Спектрометрические измерения
BBCH=50
BBCH=90
Уравнения прогноза урожайности
Черный колос (пшеница)
лес;
люпин;
яровой ячмень;
озимая пшеница;
яровая пшеница;
озимый рапс;
яровой рапс
трава;
овес;
гречка;
горох;
кукуруза;
пар.