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AGRICULTURAL ICT CLUSTER

The Agricultural ICT Cluster is an innovative, collaboration based environment where business, science and users – in the present case, economic actors of the agricultural sector and the alimentary industry – meet to develop and use innovative products and technologies. Competitive, new and integrated agricultural IT solutions are being developed and validated in accordance with the needs of the domestic and international economic actors of the agricultural sector and the alimentary industry, contributing to the success and profitability of the sector.

To increase their domestic and international competitiveness and to improve cooperation, the members of the Cluster strive to capitalise on synergies among them and to make better use of their resources in the fields of communication, marketing, their presence in external markets and involving additional sources of financing. A continuously expanding knowledge base is operated, helping user friendly research, development activity and innovation.

Thanks to the developments, the common projects and the agricultural specialists, the Cluster possesses immense professional experience and added value from research and development to market implementation offering real solutions to real problems worldwide.

PROFESSIONAL COMPETENCIES

The most important areas of using agricultural IT are plant breeding and animal husbandry – game keeping, food security, food processing and tracking environmental effects. Thanks to the developments of the Cluster members, we have been able to provide farmers with effective assistance, be it the assessment of game damage or controlling the ecosystems of greenhouses, tracking the usage of alimentary raw materials, pest control or the development of GPS based devices required for high precision farming.

As a result of their expertise and experience, our members have been holding leading positions in the IT development market for a good many years and they continue to offer their reliable agricultural IT services based on state of the art developments in the following fields:

- mobile and tablet applications,
- web/portal developments,
- CMS based systems,
- project management systems,
- corporate information technology,
- desktop applications,
- image recognition/imaging algorithms,
- application developments,
- introduction of corporate management systems,
- managerial information systems,
- integration of various applications,
- systems integration,
- network development and operation,
- IT security solutions,
- industrial mobile communication,
- software and hardware development and associated consultancy,
- introduction of models, testing, maintenance and related training.

WHY IS IT WORTH DEVELOPING AGRICULTURAL IT?





AGRICULTURAL CORPORATE MANAGEMENT SYSTEMS

We offer our clients a variant of corporate and task management systems specially designed for agricultural companies.

The agricultural corporate management system gathers information related to economic management in an organised manner and is linked via interfaces to professional systems such as fodder mixers, fuelling station or the milking systems, for example. It manages, in an organised structure, the title deeds of the lands used by the enterprise and the corresponding land lease contracts. The parcels set out in the lands are recorded in the parcel register where all information relevant to the parcel can be found as well as the production data of the previous years. To support animal husbandry, the module offers the flock logbook interface, recording the livestock data of various species and the changes that took place in terms of population and weight. Predefined inventory and general ledger movements may be attributed to the economic events related to the livestock; the system thereby further simplifies the administration of the economic processes. Sty, stable, or individual, ear tag number level registration are all possible and the breeding animals may also be managed separately.

Concerning the introduction and propagation of the so called **M2M (machine to machine)** solutions, our strategic objective is that the conventional corporate applications (ERP, B2B and B2C) be enabled to access data detected by devices and instruments immediately. The capability of real time dynamic data communication between physical devices and applications allows clients introduce new business models, thanks to which business processes can be managed better with the level of service, cost efficiency and payback time improved. Based on GSM/GPS know-how in industrial environments, we also offer combined positioning and health control solutions to the general public as well as consultancy regarding data mining software.

ROBOTIC SYSTEMS

Robotic systems are generally programmes running on web based interfaces, to which a mobile phone quick reporting application also belongs. They make work organisation and the compulsory registrations tied to EU and state subsidies efficient. In addition, time and fuel can be saved, requiring less personal control.

The areas covered may be monitored in a **centralised system** and these areas may also be linked into one complex system. Most controlling activities are automatically programmed and are operated either via remote access or programmable logic control. Users may control the processes through an advanced control and monitoring system. The mobile applications developed are suitable for the collection, consolidation and processing of the data collected through various analogous or digital means – such as measuring precipitation, temperature, moisture and the chemical composition of the soil. This form of data collection is cost-efficient as the program runs on smartphone and web based devices.



PROCESS MANAGEMENT SYSTEMS

Research of **process management systems** is targeted at the development of mobile robotic devices and technologies that establish the background conditions of the production of products and services.

The system stores the GPS trace for every worksheet, the time stamp and the unique identification code for the telephone of the employee. It is fully closed, safeguarding and controlling multiple times the data processed by the PC. The communication is ensured by mobile internet or Wi-Fi network via the synchronous server. For finances, the system likewise provides ready-made data sheets. The statistical information indispensable for the management of the farm are also accessible. The most important key figures may be monitored in the system quickly and in a straightforward form of presentation.

INTEGRATED SYSTEMS

Integrated systems containing **real time meteorological forecasts, geological and crop data** may be used in the fields of animal husbandry and plant breeding, for instance, in setting and controlling the greenhouse ecosystems.

The system is composed of a wireless network of mini meteorological stations and other instruments of measurement. Easy to deploy, accurate and reliable solutions to collect high resolution environmental data such as soil moisture, leaf coverage, etc., to explore irrigation, spraying and other requirements that may vary within the cultivation areas.

The management may be supplemented by a wireless crop monitoring system capable of measuring temperature and moisture content within the stored crop heap over the entire surface area of the heap.





USE OF IMAGING AND IMAGE RECOGNITION DEVICES

The **“Pest Recognition Diagnostic System”** recognises selected pests. The basis of the project is an auto-learned image recognition system. By the server side management of the input data, the system provides valuable information for the professionals and the farmers, promoting efficient and economical pest control. Besides the economic parameter the positive effect on environment protection is by no means negligible.

DRONES AND SENSORS

Drones, or **UAVs** are easy to deploy, cost efficient remote sensing solutions capable of high field resolution, to supplement or completely replace the satellite or small aircraft surveys used to date. Processing the data supplied by their onboard cameras and sensors, data regarding the flora and soil status of the area surveyed will be available and may be integrated into the decision making process. A decision supporting system may be used in the field of precision agriculture that allows farmers to use plant protection forecast services of appropriate levels and helps the assessment of game damage, tracking animals kept in outdoor-rearing or upon devising response actions to environmental effects.





RESEARCH

The Cluster, thanks to its recognised members in the world of science in Hungary as well as on an international scale, is engaged in significant research activities in agriculture, information technology and technical, economic and natural sciences.

As a result of the internationally well known professors, their experience gained in international projects and the extensive **network of corporate contacts of our university members**, several opportunities are available for researchers and students from the very start of their research activities, thanks to which they may gain experience and acquire contacts that would not only help their individual careers and research projects but may also contribute to the recognition of Hungary's international scientific role.

OUR SERVICES AND COOPERATION OPPORTUNITIES

Our objective is the development of the international relations of the Hungarian agricultural and alimentary industry sectors and the promotion of the Hungarian agricultural IT developments to external markets.

We are seeking to establish the following partnerships:

- bilateral or multilateral IT development cooperation,
- international research,
- launching sample projects,
- establishing international consortia,
- technology validation and
- market research.



AGROIT
Complex agrofood IT solutions

📍 Agricultural ICT Cluster
H-1138 Budapest, Meder u. 8.
(Prestige Towers)

🌐 www.agroit.hu