STRATEGY OF THE DEVELOPMENT OF THE EXACT HUSBANDRY AND STOCK-BREEDING ON BASE CONVERGENCE OVERLAND AND SATELLITE FACILITIES OF THE REMOTE OBSERVATION, NAVIGATIONS AND MANAGEMENT

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In agriculture, the use of communication systems and technology is particularly effective in the large self-sufficient agricultural organizations in solving optimization problems multifactorial management of the economy and business. To realize these objectives requires an information system operational management, organizational and economic basis which must be unified automated information-technological complex based on the convergence of terrestrial and satellite remote sensing, navigation, guidance and control stationary-Narnia and mobile objects, robotic assemblies, production lines and mechatronic devices.

The main components of the expected economic benefits from the out-of-Drenia information and communications systems, robotic precision farming and animal husbandry: the national-economic - to provide opportunities for growth of agricultural production at the expense of modernization of material-technical base, improve productivity, the application of modern technologies; Social - giving farmers a wide range of services to the information communication and automation to help improve efficiency in the marketing of products, the choice of technologies for the production of agricultural products, as well as socially important services; Corporate - increase in business activity and the agricultural population by combining forces with other companies and organizations interested in increasing the volume of agricultural production, and included in a single information space of agricultural regions; political and administrative - improving the efficiency of agricultural production due to the transition to innovative technologies with comprehensive mechanization, automation and informatization of all manufacturing operations and manufacturing pro-cesses that enables the achievement of high levels of consumption and blow-food-security.

The purpose of research - used in agriculture unified automated control centers, robotic facilities, mobile units and unmanned aerial vehicles on the basis of sur-

veillance, local positioning and satellite navigation to ensure efficiency and quality of the implementation of agro-technology processes.

Materials and methods of research. The main objectives of an innovative project:

- Creation of conditions for the expansion of provided information and communication services using the results of space activities, experiences and best practices in agricultural industrial development of agricultural regions;

- Mastering technology accurate production with the use of satellite communications, digital signal processing devices and information, microelectromechanical systems and robotics, new intelligent encoder systems, vehicles and mobile units;

- Making available to the end users of space activities in the field of remote sensing, satellite communications, use of navigation technologies, unmanned aerial vehicles, computer vision systems;

- Development of new competitive agricultural industrial technologies based on satellite communications, remote sensing, navigation support, tracking and monitoring of mobile objects with the use of ground space and ground positioning system identification;

- Solution of problems of cartography, environmental control, inventory of natural resources, ensure sustainable agricultural practices;

- Achievement of international cooperation in the field of information and communication space, development of human resources of agriculture.

To implement the project in question requires significant resources and time.

The system of measures for implementation of the project

Activities for research and development work - the creation and equipment of specialized engineering offices and research laboratories on the basis of agricultural universities.

Construction and equipping of regional dispatch information and communication centers and an extensive network of farm management.

Stages of development

First step: Formation of the priorities of in-formatting and automation in high-technology. Formation of the market of information services, automated jobs and

technologies. Improving the structure, function and the role of information and dispatch management in the implementation of work plans, organizational and technical assistance to the operating divisions and tractor units, as well as the introduction of computer applications in plant and animal breeding. Improving information security technologies implemented to help improve productivity and reduce time-consuming. Ordering of priorities and functions automated information system operationalment councils.

Second stage: Designing information and communication ASIC-order space-based and ground-based remote monitoring and management of st. Creating databases and knowledge bases, including expert systems, achievements and inventions of scientists, experience of leading agricultural enterprises in production and processing.

The third stage: Ensuring the implementation of high-performance technology in agricultural management decisions. Implementation encyvariables means and methods of automated industrial process control using cognitive. Robotics agrotechnological processes. Formation of the organizational and financial modernization program branches of agricultural production.

The results of research. Sharing systems glopoint navigation, local positioning and intelligent video surveillance

Sharing global navigation systems GLO-NASS / GPS, RTLS local positioning and intelligent video surveillance ITV can provide new synergies and opportunities of solving agrotechnological improve the accuracy of robotic processes and accompanying this trend of economic profits increments.

Sharing RTLS and GLONASS / GPS allows propagation-country control of movement of vehicles and agricultural machines on areas where there is no direct visibility of satellites - covered courtyards, buildings. This gives rise to additional opportunities to control the movement of animals and local staff in production and Non-manufacturing areas closed and open.

Sharing RTLS and intelligent video surveillance ITV allows you to combine the possibility of identifying and positioning an object on the label, with its visual observation. For example, if the camera motion sensor detects motion of the object, and a

signal of radiolabel into camera field of view while offline, it may mean the motion of foreign (not interested) object. You can simultaneously display the operator to analyze the video object in front of a video camera, and to identify it by the signal label. This approach creates a unique opportunity for automatic object identification for automated surveillance of animal behavior that can significantly reduce the burden on staff, reduce the likelihood of errors or false alarms when the agrotechnological operations. Moreover, when integrating the RTLS data and video will identify instances of motion of the object using a mark that maliciously or negligently readdressed to another entity.

Sharing RTLS, GLONASS / GPS and ITV observation gives even more options for synergies: in evaluating the individual condition of the animal (identification and location of the animal in a herd, individual control and accounting of the animal data, calendaring and history of the animal), during milking (control of the operator and the behavior of the animal), while feeding (time of eating, chewing food, weight gain), in the process of insemination (identification of sexual hunting, observation of calving animal), in the assessment of the mobility of the animal (control of physical exercise, physical activity animal behavior signs), during the veterinary measures (Valuation of identification of diseases, the formation of the calendar of veterinary measures).

Sharing global navigation systems GLO-NASS / GPS, RTLS local positioning and intelligent video surveillance ITV due to a variety of moving objects (animals, people, and the mobile conveyor technology), distributed them in space (within the same farm, a farm, region, ob- field), the scale of operational processes (number of animals, pieces of equipment, staff). Accordingly, their priority will change, but highly informative, visibility, efficiency, versatility and flexibility with an increasing component of the video analytics function day and night, long, more focused, intelligent observing the behavior of animals and the agricultural industrial infrastructure in the long term will be of central importance.

Additional information and analytical capabilities of the application of intelligent video surveillance in livestock:

• Conduct surveillance of numerous and varied objects indoors, on the produc-

tion process lines, with the protection of perimeter and territory of agricultural enterprises or farm animal.

• Identify the general condition of the herd animals (number of animals, overcrowding and isolation of animal activity and concern animal struggle for leadership).

• Inspection of the herd during the grazing, milking, feeding, watering and rest (identification of weak and strong animals healthy and sick).

• Inspection of the herd in the stall or group content (definedtion the general condition of the animals in groups).

• Observation of animal welfare and of technological equipment.

• Determine the total of the animal (the position of the body in space, solid, body, condition of coat and skin, the presence or absence of secretions from the nose, eyes, vagina).

• Monitoring accented animal behavior and determination of the structure (the duration of lying, standing, feeding, watering, movement in the stall, movement in the pasture).

• Detection of an infected animal through a selective examination and observation of behavioral responses.

• Detection of detailed evidence of the passage of estrus and insemination of animals.

• Observation of signs of prenatal and childbirth animal spe-cial premises.

• Establish the nature of the disease by a thorough examination of parts of the animal (in moderate light, in the established order: head, neck, chest, stomach, udder, uterus, pelvis, extremities).

• Thermometric observation.

• Acoustic monitoring by listening

Intelligent video motion detection and behavior of animals and mobile-vehicles

Intelligent video surveillance is based on the integration of three components: the video subsystem, subsystem LOCATION-determination and of the global navigation satellite system. Intelligent video surveillance based on radar data from the subsystem performs automatic determination of the active camera (in sight which is the object), and selects a route recording. Video subsystem receives a video stream from

the active camera and transmits the selected route in the video archive or send the operator. When used in the PTZ camera video support is carried out continuous monitoring object over the area of its movement. Using data from the positioning system and video analysis, intelligent video surveillance system provides tracking of a particular object without involving the operator. This system can be used, such as cattle farms.

On the cattle farm where the system is deployed, the base stations are located and determine the location of the camera. An object (animal, human, mobile unit, a vehicle) for which surveillance is carried out, is mounted mobile device - tag (label). The base stations measure the distance to the tag and transmit the received data to the server sub-system, which translates them into position. Then, these coordinates are fed to the video subsystem server, which in turn produces from the respective video capture cameras and performs further processing.

Using the proposed system will allow:

• automatically switch video from multiple cameras, based on an analysis of the observed object coordinates;

• to record video when motion interested object before the camera;

• receive quality video;

• interested to see the object from different angles corresponding to the main areas of agro-technology processes;

• CCTV for producing each animal automatically, without operator;

• Create an archive of video data on the behavior of each interested object

• further clarification of behavioral and diagnostic interested object carried out by analyzing the image on the server of the video subsystem.

Conclusions

1. Recent advances in science and technology create the fundamental prerequisites for further development and improvement of agricultural production robot in the direction of increasing the accuracy of the implementation of agro-technology processes.

2. Video surveillance of the most promising method of recording the structural and morphological, dynamic and behavioral characteristics of moving objects agri-

cultural production in their global-local navigation, precise positioning and remote control.

3. Sharing the global guidance, local Positioning and intelligent video surveillance in agricultural production will significantly expand the information and control functions agrotechnological automated processes.

3. The system of video surveillance and positioning of animal behavior and mobile-vehicle enhances the effect of the presence of experts in the areas of production, provide more attention to the state of the object interested and allows constant monitoring of their behavior, and thus exercise more effectiveness-governance.