Application of GIS in agriculture
OBJECTIVES OF THE MANUFACTURER

- Increase of fertility;
- Reduction of soil degradation;
- Increase of productivity and quality;
- Reducing costs and risks;
- Increase of optimization and automation of production.
PREPARATION OF INITIAL DATA

- measurement of boundaries of farmland contours;
- agrophysical and agrochemical analysis;
- agroaudit;
- optimization of the structure of arable land and crop rotation;
- compilation of digital field map;
- information database of soil fertility
- agro-technological planning;
- optimization of machine-tractor park;
Software “Panorama AGRO”

The basic tool for creating an agricultural GIS.

Provides:

- farm accounting;
- conducting of the soil fertility base;
- agro-technological planning;
- monitoring of the condition of fields and crops;
- conducting a database of equipment;
- remote monitoring of equipment;
- information interaction with 1C.
Agricultural technologies management

- maintenance of field passports
- processing of measurement results
- planning and accounting

Monitoring of mobile technical facilities

- control of the state of equipment
- collection of navigational data
- visualization in real time

Farmland monitoring
Soil fertility
Agromanagement
Land bank
Control of agricultural equipment

GIS Panorama AGRO
Main functions of the program
• agrochemical composition of soils

• phytosanitary condition of crops

• crop rotation
Refinement of the electronic map by different sources:

- Satellite and geodetic devices
- Open sources: Google, Yandex, Bing and other;
- Files from autopilots;
- Tracks of monitoring objects.
Types of crop rotation

Description of the composition of crops

Field selection - arable land

Appointment to the field of crop rotation

Change of year of harvest

Automatic change of cultures
Principle of the system operation:

- acquisition of GNSS signal;
- sensor status request;
- sending measurements to the server;
- visualizing the moving;
- display of speed, course and sensor readings;
- calculation of fuel consumption, mileage and treated area;
- event recording.
Customizing legend of monitoring's object

Forming the list of monitoring objects

Selecting the monitoring mode: “real time” or “history”

Automatic updating the map of movements

Displaying Monitoring Indicators

On-screen navigation: “object” in the list – “object” on the map
Software package
“GIS Panorama FARMING”

Extended automated agronomist workstation
 SOFTWARE
 GIS Panorama FARMING

• creating and editing of maps
• conducting digital corded book
• processing data from other GIS

• automatic creation of objects
• road graph
• conducting of a digital classifier
• transformation of projections
• raster transformation
Integrates the software tools of data processing, providing the implementation of a number of technologies:

- creation of large-scale maps and plans;
- processing of engineering survey materials and land management;
- creation of topographic maps and plans based on data UAV on the base PHOTOMOD or PhotoScan;
- import of spatial data from OpenStreetMap;
- monitoring data processing;
- maintenance of field passports;
- maintenance of cadastral database of the property;
- thematic mapping.
The program is designed for monitoring mobile objects on the basis of GNSS.

Provides:

- data reception from on-board equipment;
- processing of information from sensors of the system;
- displaying the location of monitoring objects and their characteristics on the map’s background;
- preparation of tasks for drivers;
- calculation of actual performed work;
- information exchange with 1C.
Main functions of the program:

- maintaining the hierarchical structure of company data;
- basic cartographic capabilities;
- monitoring of equipment: history and real time;
- calculating Events;
- road graph;
- planning and accounting of work;
- formation reports and graphs;
- data exchange with 1C.
A set of programs “Agronomist Workstation”

Basic automated workplace of an agronomist.

Includes:

- minimally necessary set of tools for creating and editing digital maps;
- tools of maintaining an electronic cord book of the economy.

Allows:

- process field monitoring data;
- connect external data sources from the Internet;
- form thematic field cartograms and reporting documents.
Complex of agronomic tasks

- the extension module for universal GIS
- creation and editing of maps of agricultural lands
- processing of materials of agrochemical analysis
Generated maps:

- forms and elements of relief;
- hills distribution along slopes;
- hills distribution by shapes;
- hills distribution by expositions;
- development of relief microforms;
- soil cover structure;
- semihydromorphic and hydromorphic soils;
- eroded soils;
- agrophysical land types;
- and others
Generated maps:

- nutrient content;
- humus content;
- content of microelements;
- agro-environmental lands;
- cultivation.

- map of wheat cultivation;
- map of sunflower growing;
- and others.
The re-planning of the boundaries of cropland has been carried out taking into account all agrophysical, agrochemical and agroecological conditions.
GIS WebServerAGRO

- web access to the agricultural enterprise management system
- publication in Internet/Intranet data of agricultural holding
• work on standard protocols OGC: WM(T)S, WCS, WFS
• web interface
• moving and zooming of the map
• control of the composition of the layers
• display of data about spatial objects

• calculation of length, area and perimeter of objects
• measurement of distances on the map
• reception of cadastral information
• editing of agricultural land contours
• monitoring of motor transport and agricultural machinery
• maintenance of data of land plots.
Panorama AGRO Service

Relaying data from telematic platforms in the database of agricultural GIS

- AutoGRAPH
- UNDS
- Stabliner
- GLOSAV
- Wialon
- Gelix
- EGTS
Closed joint-stock company Konstructorskoe bureau “Panorama” is formed in 2001 by association of the existing enterprises and divisions with the group of software developers “Panorama” known since 1991.

The main activity of Joint-Stock Company Konstructorskoe bureau “Panorama” is the development of geoinformation systems and technologies that are used by federal agencies, municipal services, agencies working with the land and real estate, road organizations, committees on architecture and construction, etc.

Result of long-term activity of our company – more than 18 thousand users across Russia and abroad.
Thank you for attention!