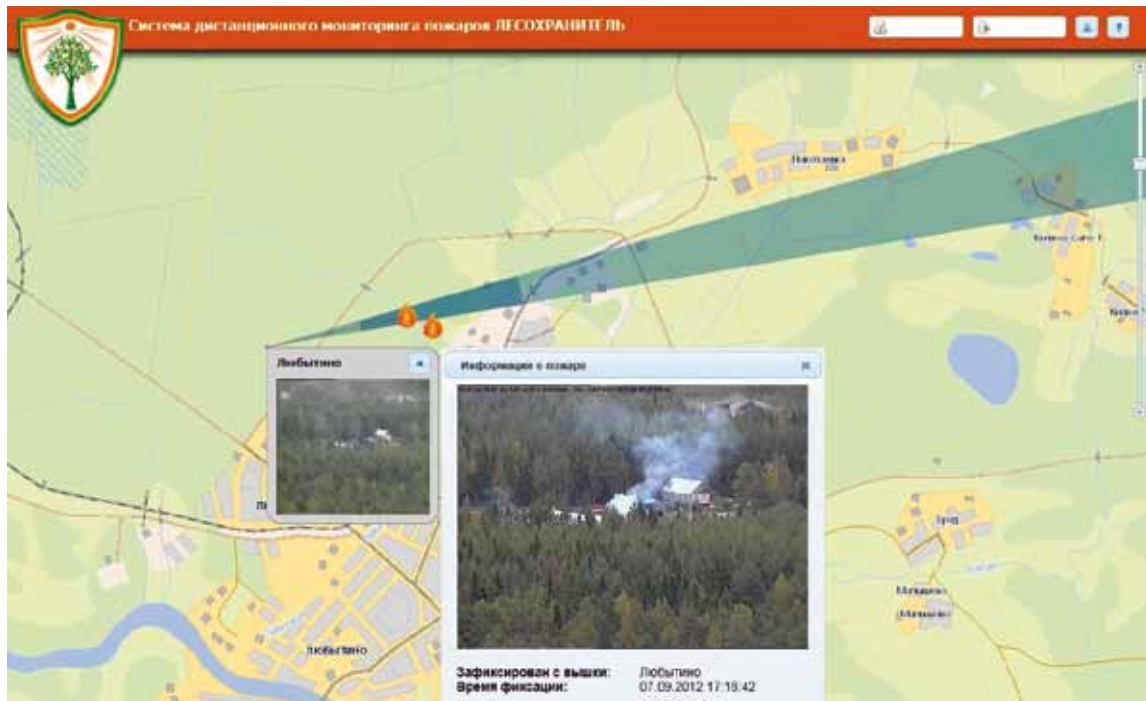


## Axis network cameras for remote forest fire monitoring. Formoza uses Axis cameras installed on cell phone towers in Lesohranitel Project.



Organization:  
Committee on Forest  
Management and Forest  
Industry of the  
Novgorod Region

Location:  
Pskov, Russia

Industry segment:  
Government

Application:  
Fire detection/prevention

Axis partner:  
Formoza

### Mission

Remote monitoring system Lesohranitel is intended for detection of forest fires at early stages. The main functions of the systems are visual fire detection and automatic fire alarm, determination of location, area, nearest fire fighting forces and means, secure access to the system from any location in the world and from any device without installation of special software.

### Solution

High-quality AXIS Q6032-E Network Cameras were chosen for implementation of this project. These cameras have unique technical features: all-round view, 35x optical zoom and 12x digital zoom, wide range of operating temperatures (from -40°); tilt of up to 20° above horizon for a total tilt range of 220° enabling better views over uneven terrain. AXIS Q6032-E supports auto-tracking which allows moving object detection and tracking. Excellent image quality is provided by day/night functionality, progressive scan, 128x extra-wide dynamic range and D1 resolution. H.264 compression format allows optimum bandwidth and storage use without compromising image quality.

### Result

8 Axis network cameras have been installed on antenna towers in the south-eastern part of the Novgorod Region for forest monitoring purposes. All the cameras are connected to an integrated monitoring system Lesohranitel. Control over this system is maintained in the center of the round-the-clock monitoring service of the Committee on Forest Management and Forest Industry of the Novgorod Region. This system allows real-time monitoring of the situation in the forest complex and immediate deployment of technical and human resources in case of fire. Results of an analysis of the information obtained from the camera are used for determination of the fire location; exact coordinates and area are plotted on the map of the Novgorod Region and appropriate services are immediately informed for prompt fire suppression.

"The forest fire monitoring system has met all our expectations. We plan to cover all the territory of the Novgorod Region in the future. At present the system covers only 15% of the forestry. Appropriate provisions have already been made in the budget for the following year."

Oleg Anatolyevich Verenikin, the Chairman of the Committee on Forest Management and Forest Industry of the Novgorod Region.

### Real-time camera control

Camera locations have been chosen with the help of geo-location technologies. According to the results of a fire hazard analysis of forest areas, seven MegaFon towers and a grid of forest compartments with specification of their fire hazard classes have been plotted on the map of Novgorod Oblast. Buffer zones of camera view areas (approximately 15 km) have been provided around these towers and their optimum locations have been chosen.

MegaFon Company provides secure data transmission channels between the cameras and the data processing server. Data from the server to the Committee is transmitted via a dedicated channel at the rate of 50 Mbps and this allows real-time control over the cameras.

"The operator of the Lesohranitel system, owing to excellent image quality and geo-information system, can easily detect the fire area and send its coordinates to the services responsible for extinguishment of forest fires. Axis network cameras used in the project excellently meet this challenge due to their outstanding performance. Moreover, these cameras work well in our other large projects," said Dmitry Anatolyevich Goryachenkov, Services Director of Formoza.

### Minimum resources – maximum efficiency

Only one operator is required for overview of the entire system. Owing to use of modern applications, the operator can monitor the forestry with the use of a PC or tablet device via the Internet without installation of special software on the workstation. Access to real-time as well as historic data is possible.

"The technology used in the Novgorod Region is unique for Russia and was improved on account of experience from the Pskov region, where 53 Axis network cameras are already installed. Experience from the Pskov region shows that economic efficiency of such a forest monitoring system is very high – it pays out in the course of one season," said Dmitry Anatolyevich, Services Director of Formoza.

It is planned that the system of remote monitoring of forests will cover all the territory of Novgorod Oblast (at present, only 15% of forestry is covered).

### Automatic fire area location system

A computer vision system for automatic fire area location has been set up on the basis of the Lesohranitel Project. This system processes video streams obtained from cameras on a real-time basis, detects suspicious objects, marks them with a red square, sends a message to the operator and registers the event in the event log. This computer vision system has been set up on the basis of RAPP libraries and the basic software will be installed on the camera itself using AXIS Camera Application Platform, a unique platform developed by Axis which allows installation of a portion of software on the camera itself and thus provides faster analysis with maximum image quality.

