



# ОКО

AUTOS VIDEO RECORDING SYSTEM  
OF COMPLIANCE WITH  
CONSTRUCTION WORK  
TECHNOLOGIES

# PROBLEMS IN THE CONTROL SYSTEM AT CONSTRUCTION SITES



No automated control over construction and installation works



Control over compliance with labor protection and safety requirements is carried out manually



No possibility for centralized processing of video and photo violations



Long term response to the consequences of incidents



Loss of funds for the project

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Accurate control of work, fast transmission of information and prompt response to break of rules are the key to successful construction and the safety of workers!

## PROBLEM SOLVING - AUTONOMOUS VIDEO RECORDING SYSTEM OF COMPLIANCE WITH CONSTRUCTION INDUSTRIES OKO

AVRS "OKO" is the latest system for tracking, analyzing and adjusting the construction process. It consists of a heavy-duty, high-definition construction camera and innovative software.

The system allows you to remotely manage the construction process, and monitor compliance with safety and labor protection norms



# WAYS OF APPLICATION AVSR "OKO"



1

Short-term construction works in open sites and indoors



2

Installation and assembly works indoors



3

Inspection of facilities and equipment



4

Construction control and designer supervision

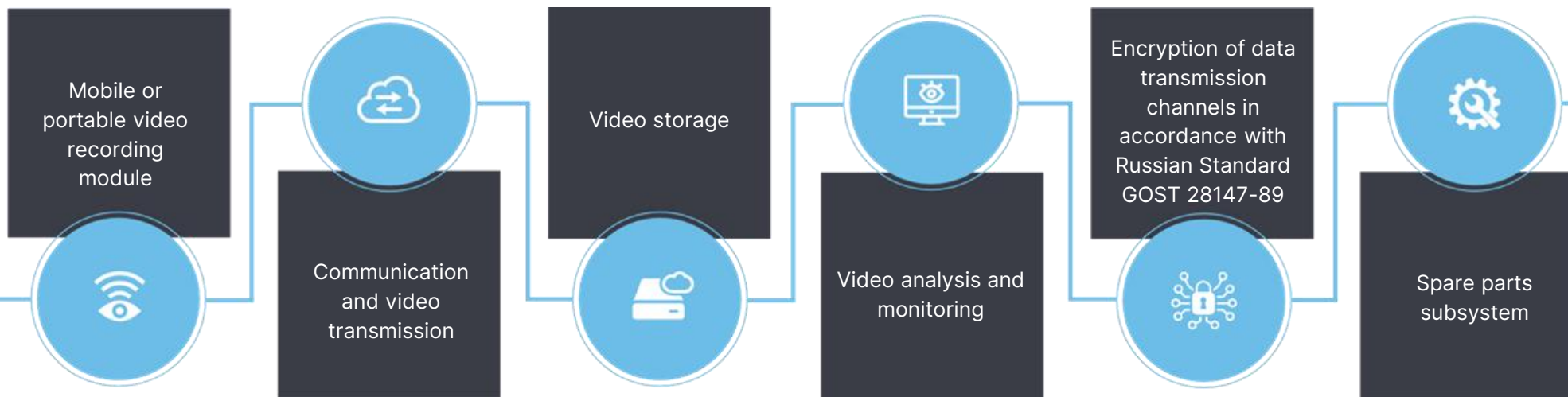


5

Monitoring compliance with labor protection and safety requirements



# AVRS "OKO"



# VIDEO RECORDING MODULES

## PORTABLE

The OKO-P module is designed for individual control of work by the performer

### OKO-P MODULE COMPOSITION



Helmet with fastening

Video camera module with flashlight and Wi-Fi transmitte

Replaceable battery unit with cable



# VIDEO RECORDING MODULES. PORTABLE

## TECHNICAL CHARACTERISTICS OF THE MODULE "OKO-P"

Dimensions:	50x50x65 mm
Body material:	Polypropylene Glass Filled (PP-GF)
Case material for extreme conditions (-50 +80)	Polyamide glass-filled (PA-GF)
Weight:	150 g
Power cable length:	1,2 m
Video transmission protocol:	webRTC (support for NAT), rtsp
Video codec:	h264
Video resolution:	1920 x 1080 pixels
Frame rate:	10 frames per second
MicroSD slot:	64 GB
Flashlight with light sensor	available
Power consumption	up to 5 W







# VIDEO RECORDING MODULES. PORTABLE



- Body material:  
**Polypropylene Glass Filled (PP-GF).**  
Case material for extreme conditions (-50 +80). Polyamide glass-filled (PA-GF)
- Flashlight
- Camera  
Video resolution: **1920x1080 px**  
Frame rate: **25 frames per second**
- Microphone
- Memory card slot
- Weight: **150 g**  
Power consumption: **up to 5 W**



50x50x65 mm

# VIDEO RECORDING MODULES.

## PORTABLE

### SPECIFICATIONS FOR BATTERY ON THE BELT

Dimensions: 110x120x35 mm

Body material: polypropylene glass-filled (PP-GF)

Weight: 120 g

Dust / moisture protective connector for connecting a video recorder: available

Sound indication of disconnection and battery discharge: available

Operating time of the video recorder of battery changing/disconnecting: at least 1 minute

### TECHNICAL CHARACTERISTICS OF BATTERY

Dimensions: 73x81x30 mm

Body Material: Acrylonitrile Butadiene Styrene + Polycarbonate (ABS-PC)

Weight: 150 g

Capacity: 5200 mAh

Indication of the current charge level, charging process: available

Time of uninterrupted operation of the video recorder: not less than 12 hours





# VIDEO RECORDING MODULES. PORTABLE

Display activation button

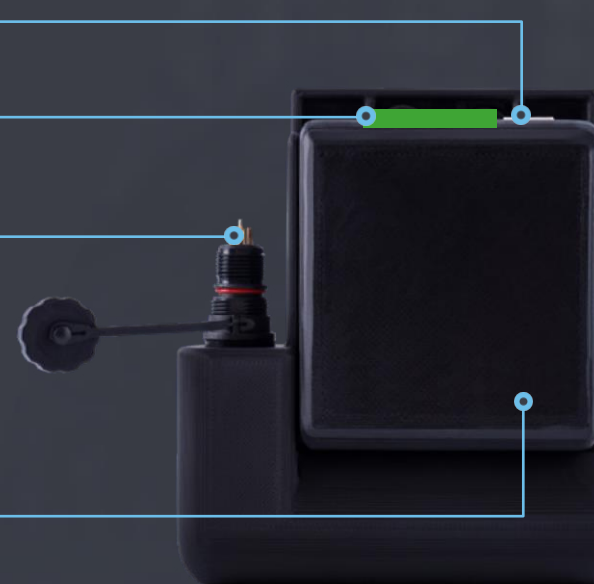
Status indication

Connector

Body material  
**Polypropylene glass-filled (PP-GF)**

Battery slot weight for belt: **150 g**  
Weight: **120 g**

Capacity: **5200mAh**  
Operating time of the video recorder when changing /  
disconnecting the battery is **at least 1 minute**  
Time of uninterrupted operation of the video recorder:  
**not less than 12 hours**



**110x120x35 mm (battery slot for belt)**  
**73x81x30 mm (battery)**



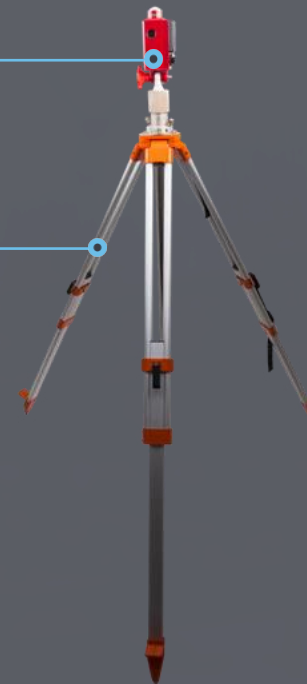
## VIDEO RECORDING MODULES. MOBILE

The "OKO-M" module is designed to control the work of construction equipment (cranes, excavators) at temporary sites.  
Can be used as an access point for OKO-P

### MODULE "OKO-M" COMPOSITION

Camcorder module with microphone  
and Wi-Fi transmitter

Tripod



# VIDEO RECORDING MODULES. MOBILE

## TECHNICAL CHARACTERISTICS OF THE MODULE "OKO-M"

Dimensions:	80x170x70 mm
Body material:	glass filled acrylonitrile butadiene styrene (ABS-GF30)
Body material for extreme conditions (-50 + 80):	Polyamide glass-filled (PA-GF)
Weight:	600 g
Power cable length:	2m
MicroSD slot:	64 GB
Video transmission protocol:	webRTC(поддержка работы за NAT), rtsp
Video transmission protocol:	H264
Video resolution:	1920x1080 px
Frame rate:	16 frame/sec
Power consumption	up to 8 W





# VIDEO RECORDING MODULES. MOBILE



Flashing beacon

Flashlight

Camera

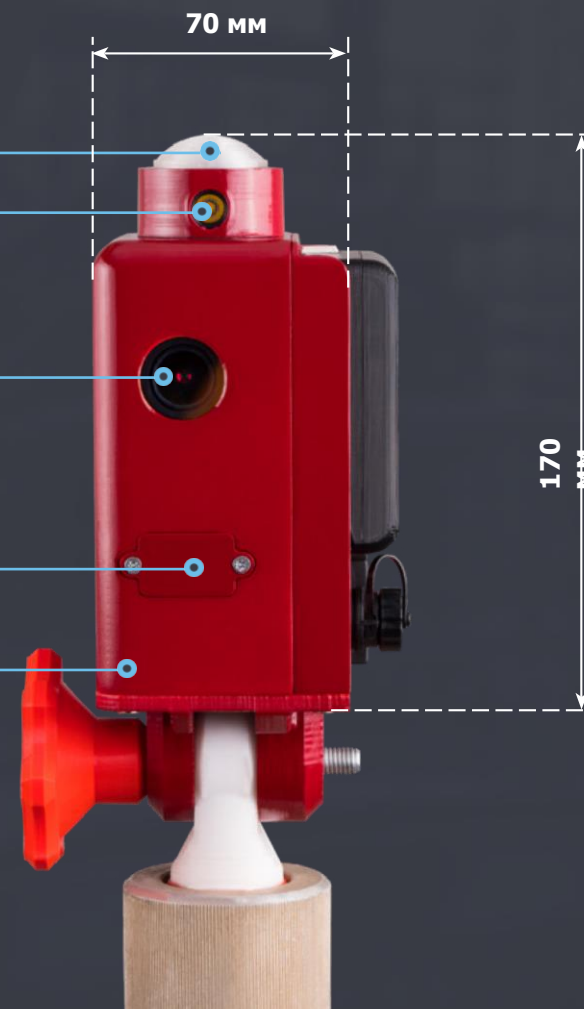
Video resolution: **1920x1080 px**  
Frame rate: **16 frame/sec**

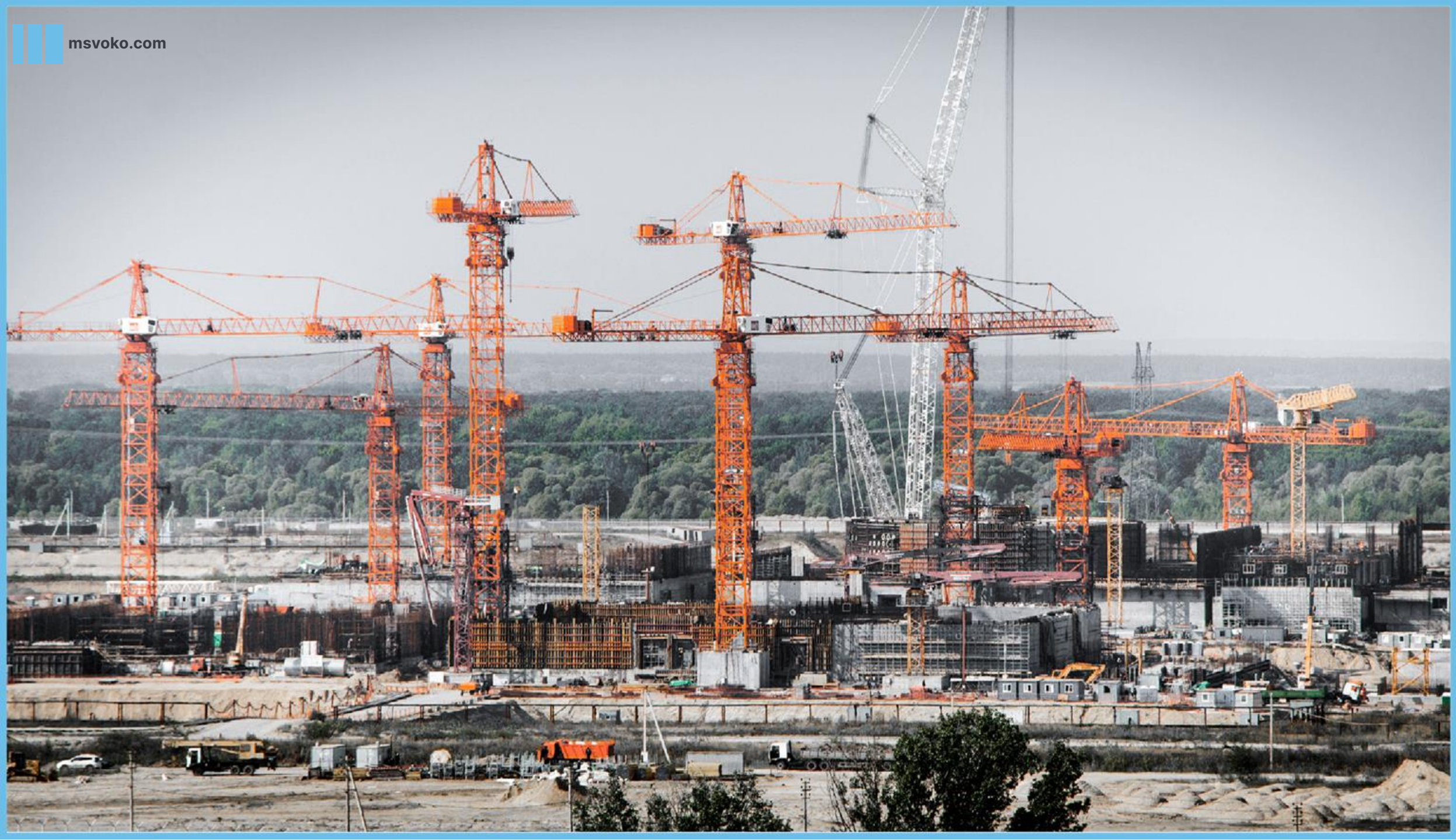
MicroSD slot


Body material

**Acrylonitrile Butadiene Styrene (ABS)**  
reinforced with **30% glass fiber**. Body  
material for extreme conditions (-50 + 80):  
**polyamide glass fiber (PA-GF)**

Weight with power cable: **600 g**  
Power consumption: **up to 8 W**







# SOFTWARE FOR MONITORING AND WORK WITH VIDEO STREAM AND RECORDINGS

## AI-powered video analytics

Automatic violation detection  
Instant access to the image and archive of any of the cameras  
Violation reports

## ARTIFICIAL INTELLIGENCE REPLACES MANUAL CONTROL

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### ADVANTAGES OF THE SOFTWARE OF AVRS "OKO"



User-friendly  
interface



Ability to customize the  
operator's workplace



Access from  
anywhere in the  
world



Ability to protect  
communication channels



# SOFTWARE CAPABILITIES OF AVRS "OKO"

The software of AVRS "OKO" opens new opportunities for users in quality control and labor safety at construction sites, fast transfer, protection and reliable storage of data

1

Viewing the archive without restrictions on its depth

2

Access control, user management

3

TLS encryption of video streams

4

Automated video analytics

5

Push notification of events

6

Live video viewing, list management



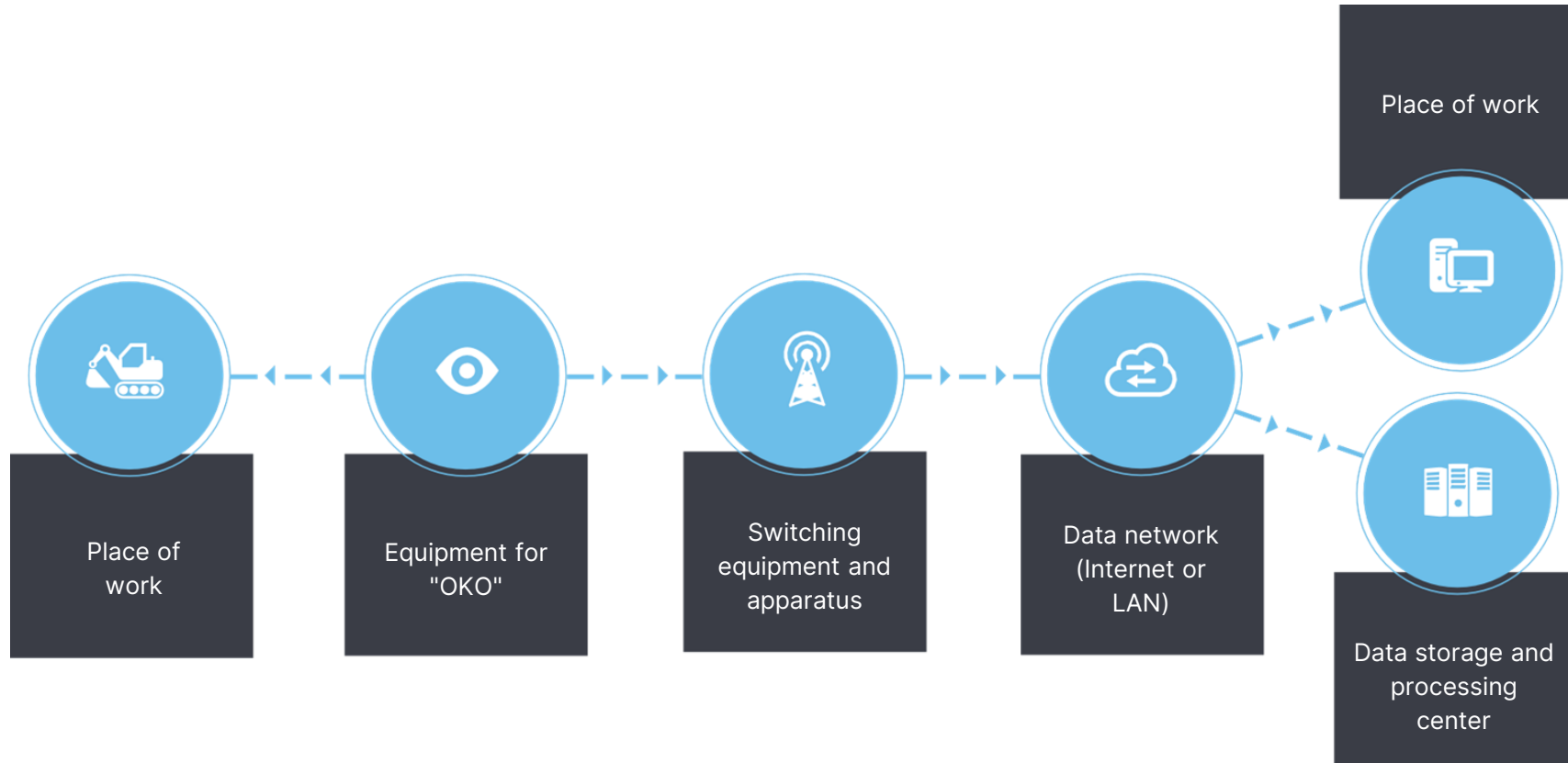
# SYSTEM REQUIREMENTS FOR INSTALLING THE SOFTWARE AVRS “OKO”

- Ability to work in cluster mode (Cluster) or on a single server (Single)
- WEB access
- Mobile application is available
- Operating system Ubuntu 14.04 or higher  
Debian 7 and higher
- Processor not lower than CPU Xeon E-3 1230v5 3.4 GHz
- RAM 32 Gb
- PostgreSQL 9.6 or newer database



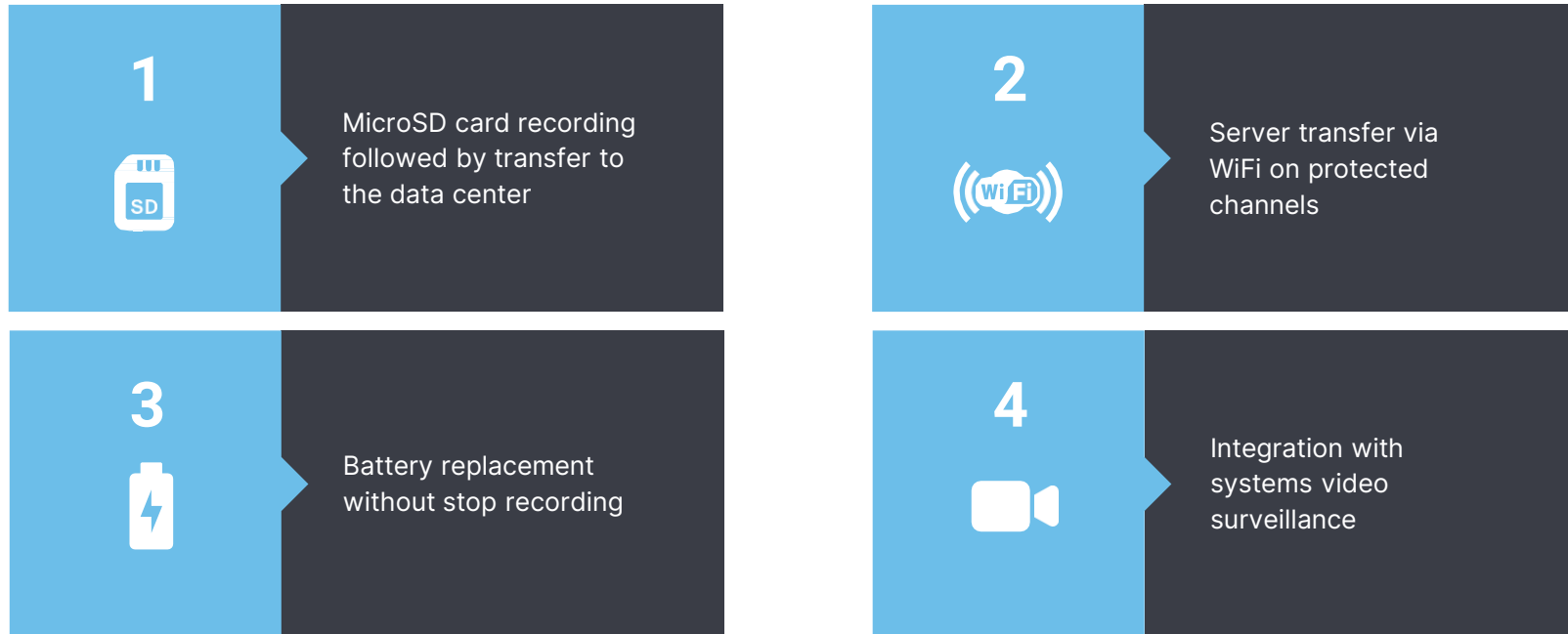


# HOW AVRS "OKO" WORKS



# TRANSFER AND STORAGE OF DATA

AVRS "OKO" allows you to transfer the video stream from cameras to the data processing center quickly, creating the ability to identify violations and respond to them in real time.



Audio and video from cameras mounted on helmets or tripods through a commutational equipment and the Internet is broadcasted to the data storage and processing center.

# WHOM THE AUTONOMOUS VIDEO FIXING SYSTEM "OKO" IS CREATED FOR

AVRS "OKO" is engineered for monitoring, prompt detection of violations and control of safety measures at the construction site



## THE SYSTEM WILL HELP OPTIMIZE THE WORK OF SPECIALISTS:



- foremen;
- brigadiers;
- masters;
- safety engineers.

## THE MOST IMPORTANT FUNCTIONS OF AVRS "OKO":



- quality control and work safety;
- fast response to crisis situations;
- unmistakable determination of those responsible for the accidents of the violation;
- control of compliance with the schedule of work by the contractor

## ADVANTAGES OF THE AUTONOMOUS VIDEO RECORDING SYSTEM "OKO"



No additional costs

Video equipment easily attaches to already available objects: helmets, tripods, walls



Reliable

Simple technology provides durable exploitation equipment breakdowns and malfunctions.



Multipurpose

The system allows for a wide range of users: from individuals and small building companies to large state corporations



Approved

Technology received an approval and high rates from Ministries of construction of the Russian Federation.



Safely

Data transmission channels are securely protected by encryption, which provides no risk of information leaks



Promptness

Autonomous videorecording system "OKO" allows solving any problems in real times

## PROJECT PARTNERS



Novaprint

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Novaprint - composite polymers for printing / casting, have improved impact resistance, tensile strength.



OpenIPC

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OpenIPC - An open source operating system project for embedded systems. We using it as the core software in our camera modules.



Flussonic

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Flussonic - Centralized set of software tools for working with various systems for receiving / transmitting and processing videodata.



Vizorlabs

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Vizorlabs - video analytics, training and training of neural networks for the analysis of events recorded by video filming.



# AVRS “OKO”

EFFICIENCY AND SAFETY BUILDING  
WORKS



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