



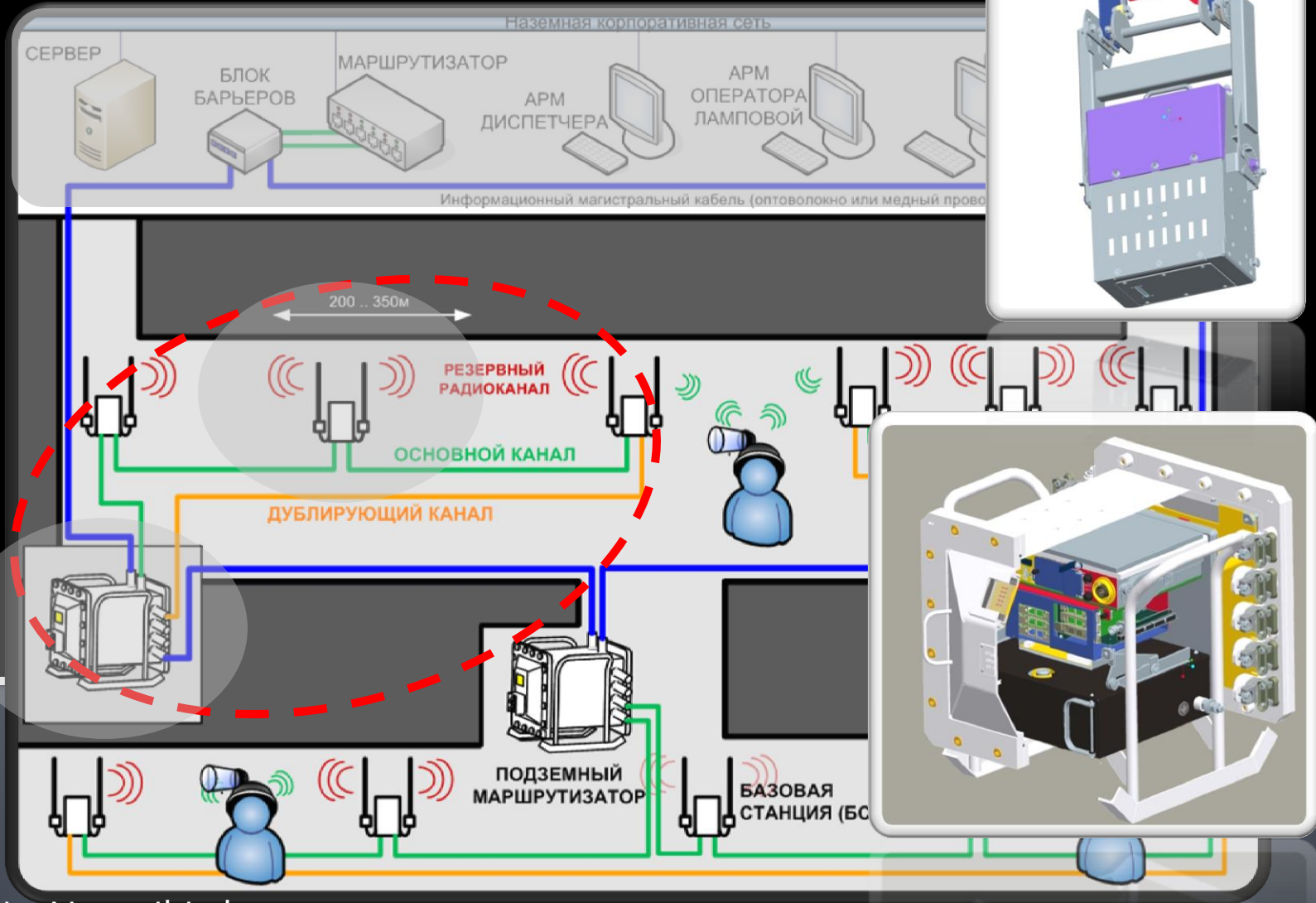
# Granch SBGPS - GORNASS

UNIFIED UNDERGROUND SAFETY AND TECHNOLOGY MANAGEMENT SYSTEM

# Components of SBGPS-GORNASS system



## Underground infrastructure



Russia, Novosibirsk

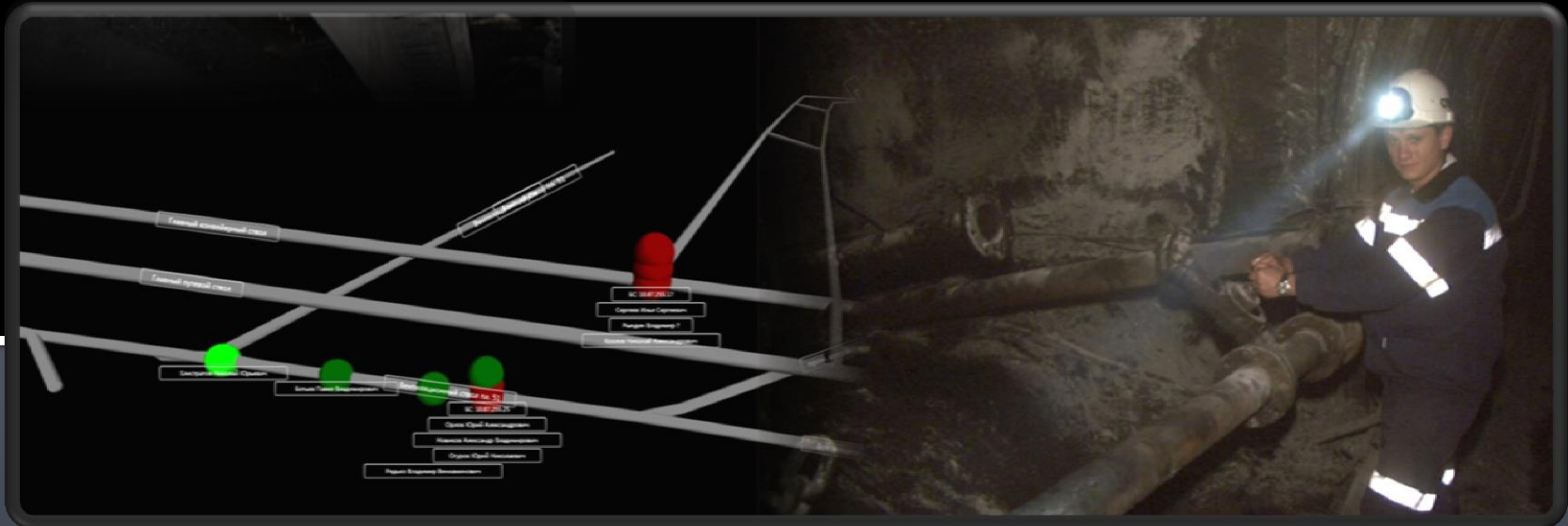
# SAFETY RULES IN COAL MINES:

“The mine should be equipped with monitoring systems...”



GORNASS is the first navigation system in the world that continuously tracks accurate coordinates of an individual, just like GLONASS overhead satellite.

**DEEP UNDERGROUND**



Positioning accuracy up to 20m

Russia, Novosibirsk



# Underground mobile image transfer system Granch Mine look



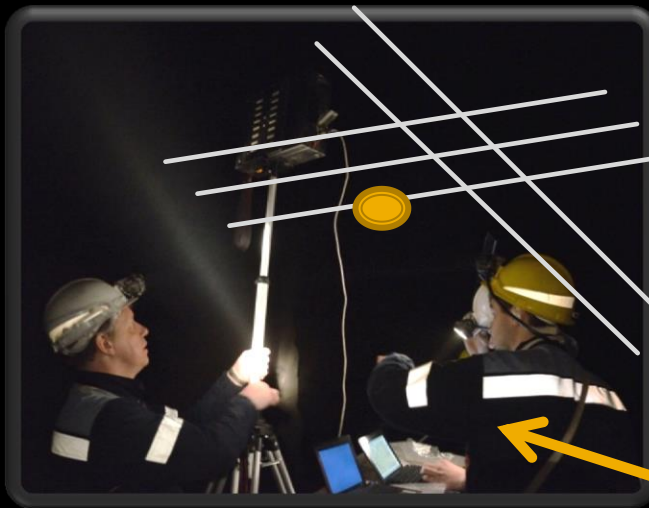
Underground mobile image transfer system is a part of Smart Mine – GORNASS.

It operates wherever GORNASS infrastructure is deployed.

A camera built-in into a personal lamp transmits images to the surface.

- either at the command of a dispatcher
- or at the miner's command

Quickly transmits the image





## Пример сенсорной сети - система SBGPS, установленная на шахтах СУЭК и СДС

**THE WORLD'S FIRST ALARM SYSTEM.**

While other systems just produce the signal,  
**This system, that INFORMS.**

GORNASS receives a confirmation  
quaranteeing that:

- the signal has been delivered;
- the miner is not just warned – the miner comprehends the signal;

GORNASS tracks the response to the signal



Signals are transmitted by voice phrases

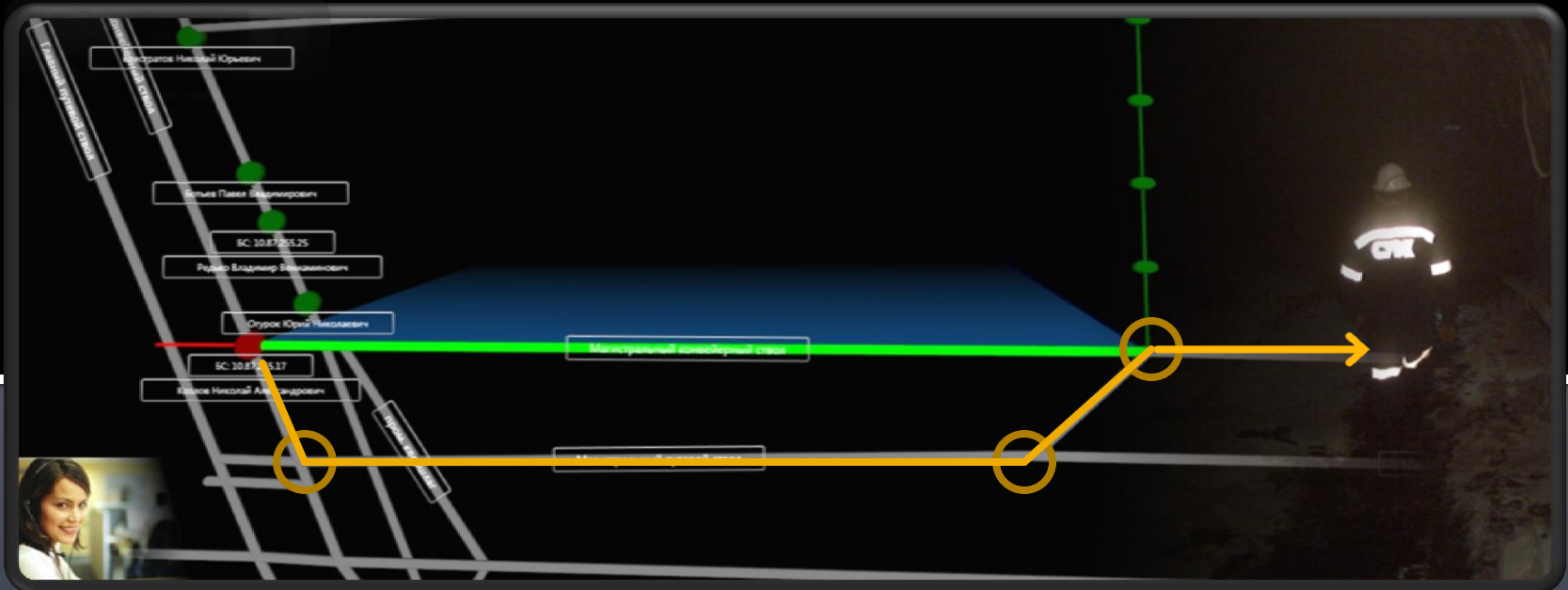
## System that Saves

Conventional systems do not know:

- what happened to a person

GARNASS is the first underground system which:

- informs about the miner's condition,
- guides the rescuers to the injured person and safely guides the miner outside in case of emergency





## SAVERS

Conventional systems do not know:

- what happened to a person,
- condition of the person,
- how to approach the person,
- how the person can get outside.

GORNASS is the first underground system which:

- informs about the miner's condition,
- safely guides the miner outside,
- guides the rescuers to the injured person.



## Other SYSTEM APPLIANCE



Portable system can be broke out near any dangerous object for a few minutes. For example, it can control fireman inside fire building.

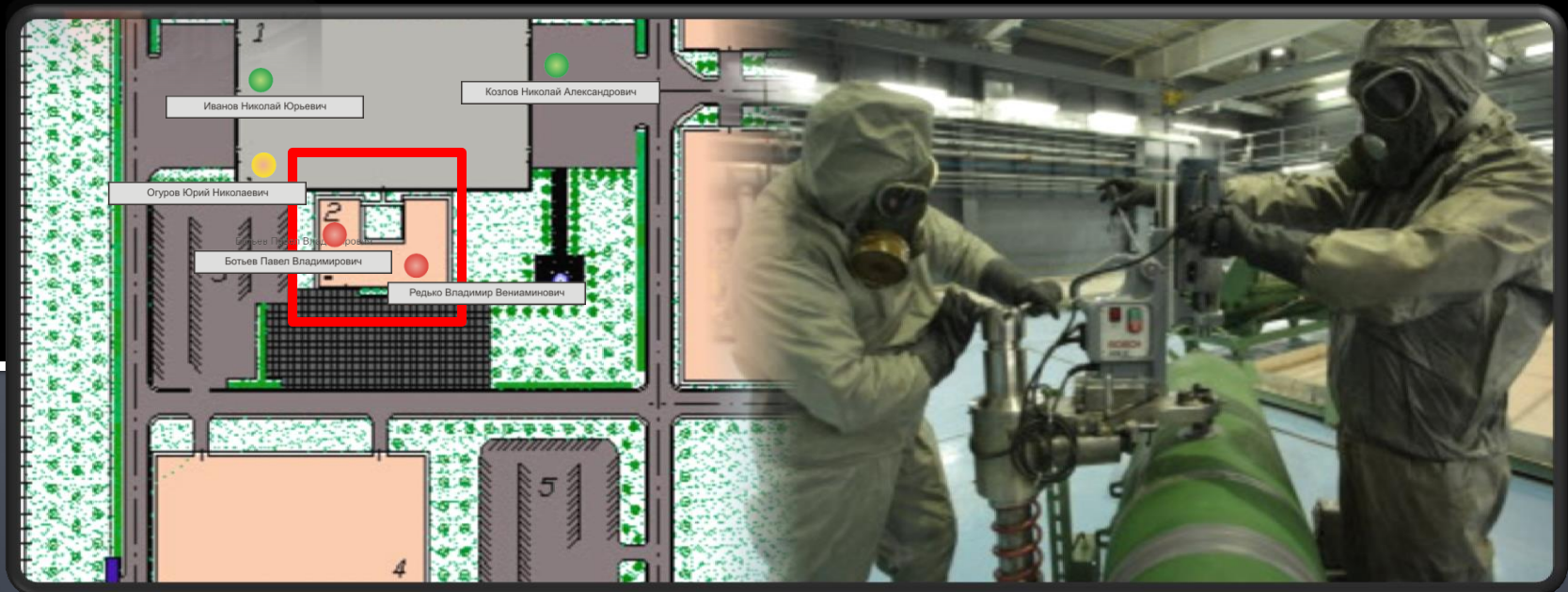
positional accuracy 2m.



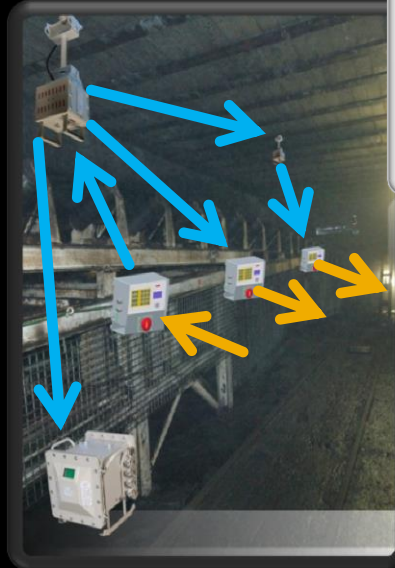




Solved a problem of person movement on the territory of dangerous production.  
When we know person location, we can alert them from coming to dangerous zone, while they are in the certain area.



# Smart Mine - GORNASS® - GRANCH SBGPS Feature Highlights



**Biometry**

**Loudspeaker communication**

**Start confirmation**

**Mobile communication**

**Video information**

**Data transmission from mobile equipment**

