



**VEHICLE**  
MANAGEMENT

# Vehicle Monitoring and Management System





# About us

AG TECH is a qualified supplier of innovative IT software and hardware, factory automation and business intelligence systems, as well as a leading supplier of radio-navigation equipment.

DMMS is a tool for operational, secure and efficient production management, as well as an effective solution for ensuring the safety of personnel and increasing the productivity of business processes in industrial enterprises.

DMMS modules allow for real-time location of facilities on an interactive map showing the operating status of equipment and key performance indicators for personnel and mobile machinery, alerting personnel in emergency situations, monitoring data for all indicators, video surveillance, automatic and continuous measurement of air conditions, analysis and monitoring of equipment status, and there is also the possibility of issuing tasks to personnel and machinery.





Vehicle Management - a DMMS module with a wide range of functionality for monitoring, controlling, and managing vehicles and mobile equipment.

# Main Functionality



Fuel Management



Positioning



Digital Work Orders



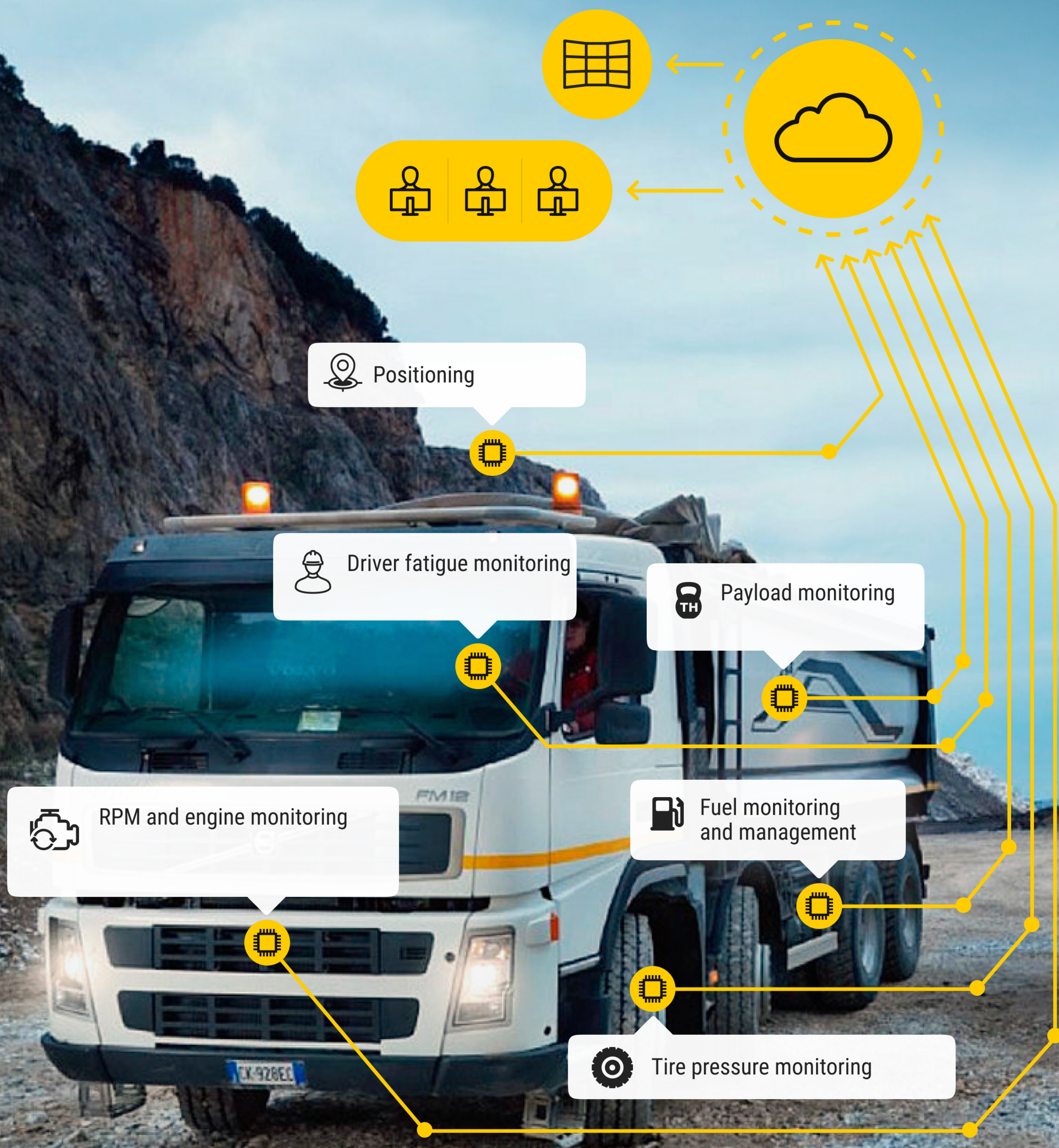
Personnel Management



Reporting, KPIs, and Analysis



# Control Sensors







## Fuel and Vehicle Management

- Collection and analysis of fuel data with exact time and location of: refueling, fuel consumption, fuel loss, potential fuel theft, idle time, etc., allowing for consumption optimization and identification/prevention of fuel loss
- Collection and analysis of positioning information, engine load, idle time, payload weight, work orders, route information, etc, allowing for optimization and increased operational efficiency of mobile equipment
- Monitoring of work in progress and KPIs for daily production/order targets
- Monitoring of the state of mobile equipment
- Reporting and analysis of work completed and vehicle route data





## Positioning

- 24/7 positioning and monitoring of all forms of vehicles and mobile equipment using IIoT
- Live map of vehicle and personnel movement
- Digital route guidance and instructions/directions
- Infographics reporting
- Archiving of all generated data, for analysis and continuous improvement





ТЕКУЩЕЕ НАРЯД-ЗАДАНИЕ №10816										Исполнение наряда		75%	Эфф-сть планирования		96%	Всё месторождение		1.10.2020	31.10.2020	...	↗
Рабочее место		РМ опасно	Марш- рут	ВИД РАБОТ		Операции		ОБЪЕМ РАБОТ факт/план/исп./отклон.		Ед. изм.	ПРОГРЕСС факт/план/Δ реглам.		Статус								
1	Промежуточный склад НП	Нет		Заправка буровой установки caterpillar 440b №108		16 / 16		200 200		100% 0Δ	т		100 / 100% Δ +36 мин								
2	Сектор 18, участок сепарации	Нет		Заправка дизельного электрогенератора Hitachi 1200w №19		3 / 4		66,4 150		87% 9,7Δ	т		43 / 40% Δ -13 мин								
3	Производственная площадка №3	Да		Заправка автосамосвала CAT AD741 №2		0 / 8		0 100		0% 100Δ	т		0 / 0% Δ 0 мин								



## Digital Work Orders

- > Planning, distributing and controlling daily work orders for all operations, shifts, and departments
- > Digital and print forms for work orders
- > Assigning vehicles to specific work orders and tasks
- > Permissioning for work orders
- > Analysis and reporting for completed and in process work orders, both short and long term
- > Detailed, worker and department specific reporting



Konstantinopolsky F.I.

ShutleBus №108

Bus Driver

Production Line №3

Madhupatov I.N.

Kamaz Fuel Truck , №108

Fuel Truck Driver

Route Warehouse НП

Zhaksybekov A.M.

Niva 4x4, №16

Assistant Master Technician

Sector 18, Separation Zone

Dovganev F.A.

ShutleBus №108

Bus Driver

Production Zone №3

Muhamedov A.K.

Toyota Hilux №108

Driver

Electric Substation №9

KARIMSAKOV Nurlan Serikovich

Kamaz 110, Trailor

Technician

Sector 18, Separation Zone

MADHUPATOV Ivan Dobryneevich

AUTOMATION DEPARTMENT

Fuel Truck Operator

SHIFT 1 (21:00 - 7:00)

ON SITE

0,93  
+0,1Δ  
SAFETY

1,00  
+0,1Δ  
HEALTH

98,7  
+0,1Δ  
KPI

Orders

3/7 75%

97%  
+3%

SAFETY VIOLATIONS

1.10.2020  
31.10.2020

PAYDABEKOV Rinat Kibraevich

SHIFT -

SICK

0,93  
+0,1Δ  
SAFETY

0,81  
+0,1Δ  
HEALTH

98,7  
+0,1Δ  
KPI

VALIKHANOV Askar Velorienovich

SHIFT -

OFF

0,73  
+0,1Δ  
SAFETY

1,00  
+0,1Δ  
HEALTH

98,7  
+0,1Δ  
KPI

UDACHIN Fedor Afonasyevich

0,93  
+0,1Δ  
SAFETY

1,00  
+0,1Δ  
HEALTH

52,7  
+0,1Δ  
KPI

# Personnel Monitoring

- > Health monitoring of personnel - heart rate, fall detection, etc.
- > Clearance authorization
- > Personnel KPIs
- > Individualized personnel mapping
- > Reporting on health of personnel

8



## PERSONNEL MONITORING

# Social Distancing Control



## TECH CHARACTERISTICS OF PERSONNEL BRACELET

**Li-ion battery:**  
300 mA\*h-24 hour charge

Accelerometer (fall and movement detection)

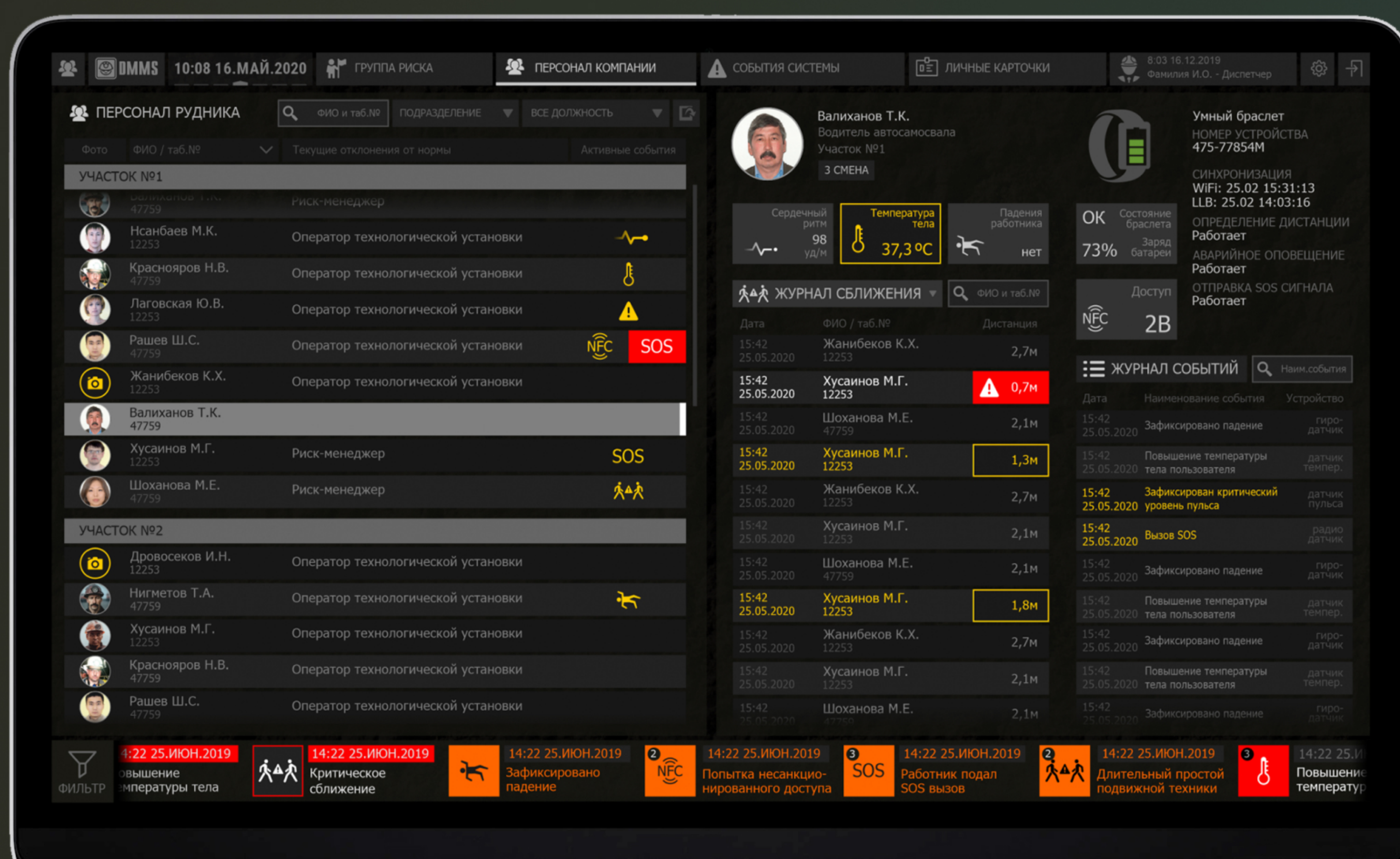
Body temperature monitor

Pulseometer

NFC for controlling access

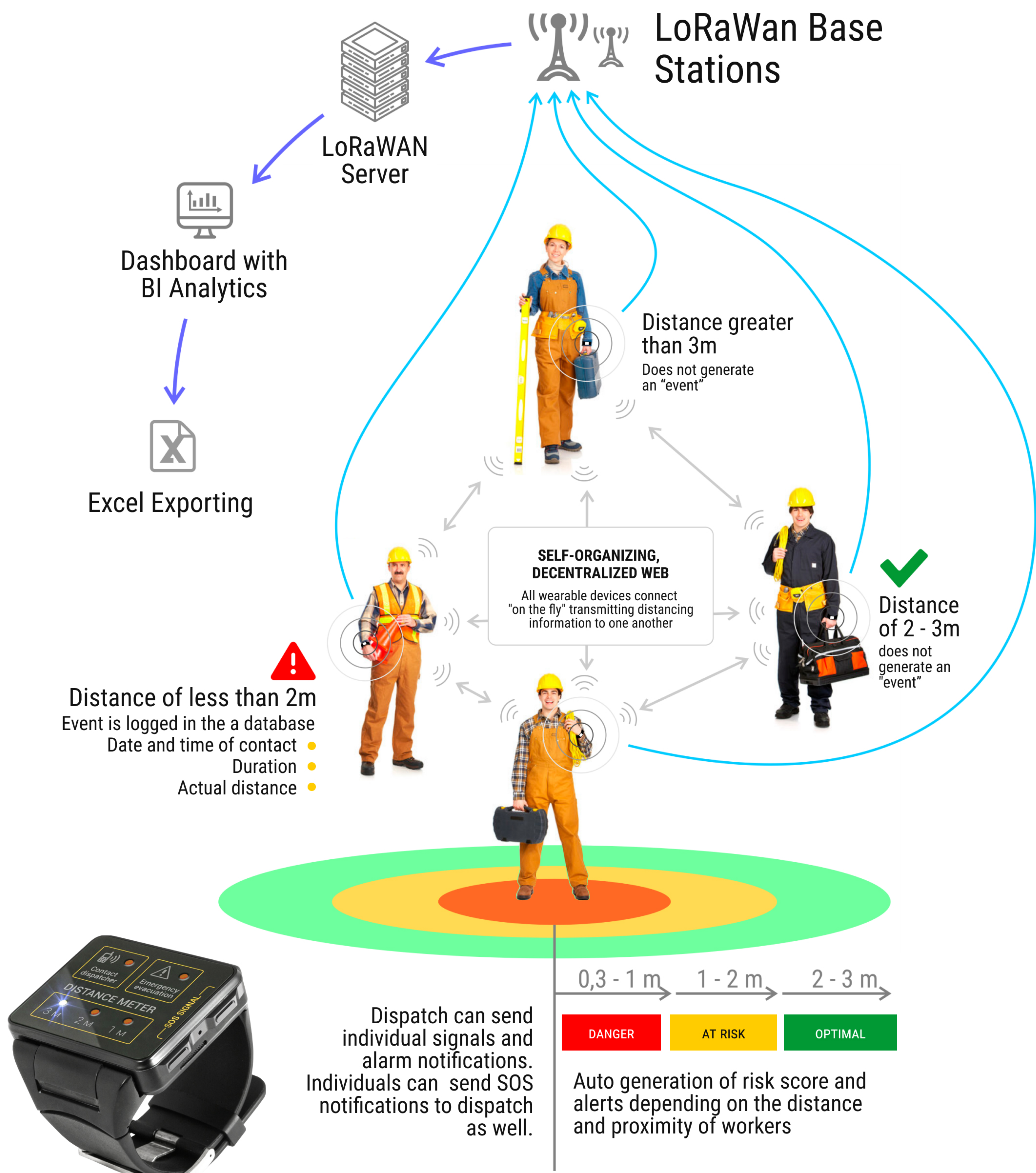
## System functionality:

- On-line monitoring of proximity of personnel, indicating risk zones, distances, and contact durations, without the need for specific coordinates of individuals
- Capable of integrating with enterprise systems/software (i.e. ERP, IC, BI, etc.)
- Two-way line of communication allows dispatch, and automated systems to send signals including warning vibrations, sounds and light indicators





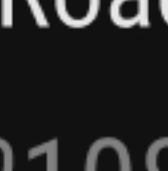


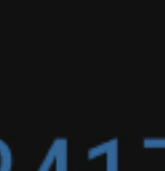




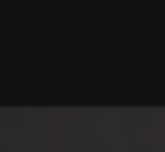


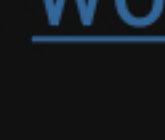



















# Implementation of Social Distancing



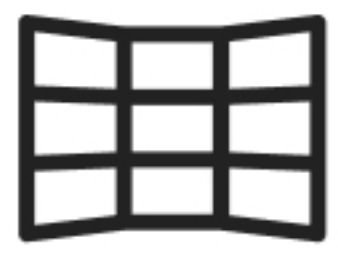




- |  <b>TODAY'S INCIDENTS</b> |   |    <div> 1.10.2020<br/>31.10.2020 </div>    |
|--|---|---|
|                           | <b>10:08 7.OCT.2020</b>  <b>Road H-14, 8 km</b>                                      |    |
|  | Accident Toyota Hilux №108, №16, driver <a href="#">Dogonyaev F.A. 34177 WO 0774D</a>   |   |
|                           | <b>10:06 7.OCT.2020</b>  <b>Route Warehouse OP</b>                                   |    |
|  | Potential fuel syphon <a href="#">worker CAT-16H №108 Nifedov N.P. № 34177.</a>   |   |
|                           | <b>10:03 7.OCT.2020</b>  <b>Production Field №3</b>                                  |    |
|  | Delayed trips of <a href="#">equipment</a> , <a href="#">ID CAT - 1024H №16</a> <a href="#">ID CAT - 2048H №108</a>   |   |
|                           | <b>9:58 7.OCT.2020</b>  <b>Sector18, Sorting Location</b>                            |    |
|  | Equipment fall identified <a href="#">Smart phone</a> of <a href="#">Konstantinopolsky ID 34177 WO 0774D</a>  |   |
|                           | <b>9:38 7.OCT.2020</b>  <b>Sector18, Sorting Location</b>                            |    |
|  | Deviation from route, 1) <a href="#">Service TOnP, Sector 7</a> ; 2) <a href="#">Production Optimization Sector 6</a>   |   |
|                           | <b>9:32 7.OCT.2020</b>  <b>Route Warehouse OP</b>                                    |    |
|  | Prolonged Idle of Equipment (Idle) <a href="#">Loader CAT-16H №108</a> , <a href="#">Loader CAT - 1024H №16</a> , <a href="#">Loader CAT - 2048H №108</a>               |   |
|                           | <b>9:24 7.OCT.2020</b>  <b>Sector 18, Sorting Facility</b>                           |   |
|  | No connection with Loader <a href="#">CAT-16H №108</a> , Operator <a href="#">Dogonyaev F.A. ID34177, WO 0774D</a>  |   |
|                           | <b>8:01 7.OCT.2020</b>  <b>Route H-14, 8 km</b>                                      |   |
|  | Prolonged Idle of Equipment, <a href="#">Loader CAT-16H №108</a> , <a href="#">Loader CAT - 1024H №16</a> , <a href="#">Loader CAT - 2048H №108</a>                     |   |



# User Interfaces



Format for Dispatch and Control Centers



Format for Desktops and PCs



Format for Mobile Tablets



USER INTERFACE

# Dispatch and Control Centers



Астана Москва





# Personal Computer and Desktops





# DMMS Capabilities

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## Category 1 Modules

- |                                  |                                      |
|----------------------------------|--------------------------------------|
| ● Interactive map                | ● Air quality monitoring             |
| ● Positioning                    | ● Emergency notifications and        |
| ● Monitoring of equipment status | ● communication                      |
| ● Digital work orders            | ● Video Surveillance                 |
| ● Event log                      | ● KPIs of equipment and<br>personnel |
- 

Scheduled Maintenance

## Category 2 Modules

- |  |                               |
|--|-------------------------------|
| ● Personal interface/dashboard<br>(Director, Shift Lead, Engineer, etc.) | ● Commercial indicators       |
| ● Stockpile and raw material   | ● Marketing                   |
| ● management   | ● Project calculator          |
| ● Production process management  | ● Budget                      |
| ● Human capital management   | ● Finacial reporting/treasury |
| ● Energy resource management   | ● department                  |
| ● Transportation and Logistics   | ● Procurement                 |
| ● managment  | ● Tax reporting               |
| Warehouse and finished goods<br>management                               | Perimeter security            |





**DMMS**



**AG TECH**  
TECHNICAL SOLUTIONS



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