Space Technologies for New Retail

RoboCV

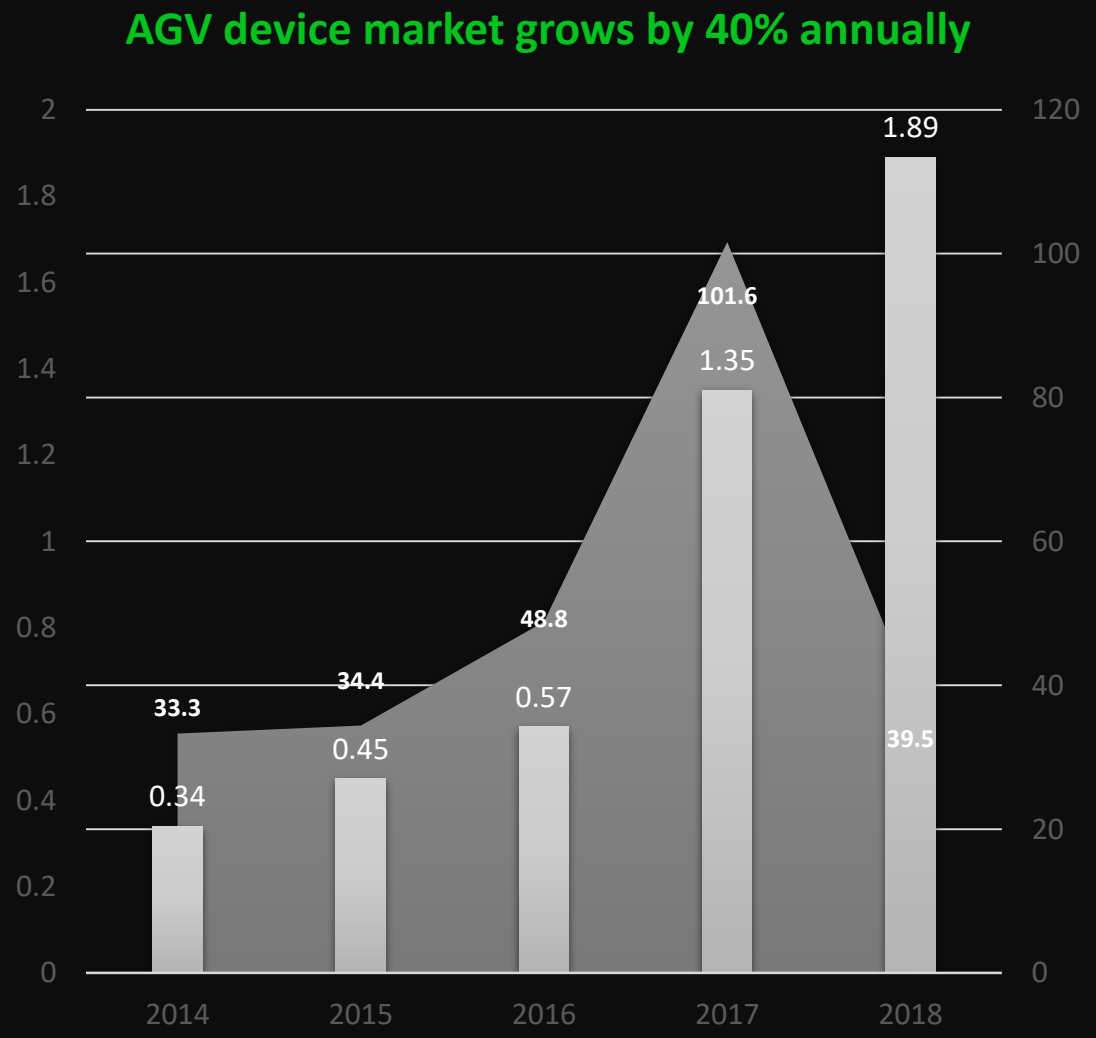
Our team started as autonomous robotics startup, aiming to win Google's Lunar X-PRIZE to transfer first commercial rover to the Moon.

Now our technologies move goods for people on Earth…

AVG Device Market

China is the world's largest eCommerce market with over 50% of global eCommerce transactions coming from China. In 2018, China's online retail transactions reached $1.33 trillion and are forecasted to reach $1.99 trillion by the end of 2019.

Further eCommerce and Retail industries development, growth are impossible without new approaches, full robotic automation and semi-automation solutions



Warehouses Growth in China

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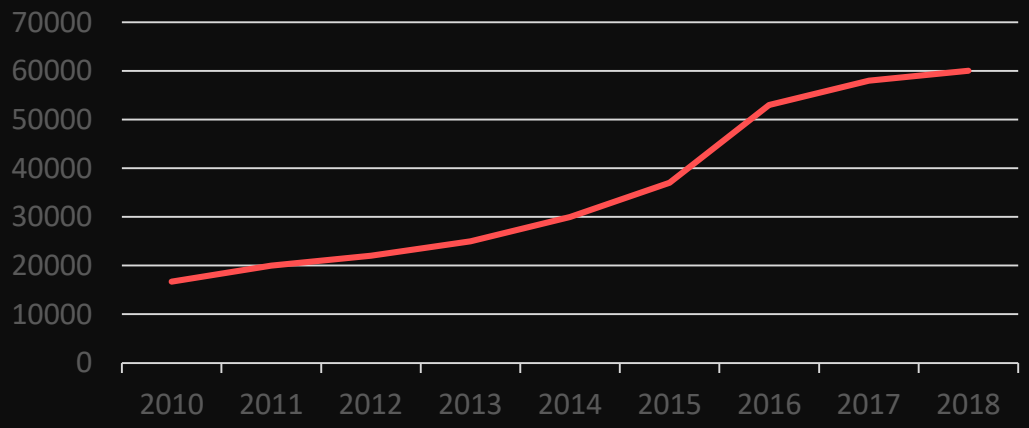
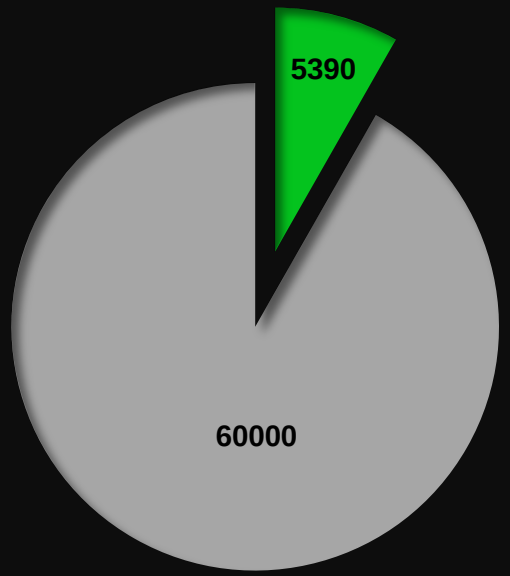
GGII data shows that in 2018, the number of warehousing enterprises in China was 60,000, which increased from 16,700 in 2010 to 60,000 in 2018

↑360% **growth of number of warehouses in China**



Out of 60,000 warehouses there were only 5,390 fully automated warehouses (New Retail)

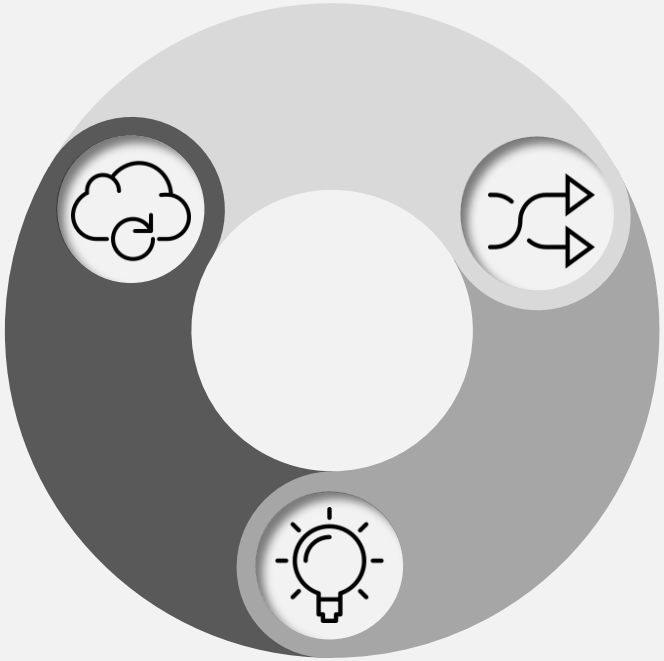


By 2023, the size of the automated warehouse market reaches 197.5B RMB, demand for warehouse robotic solutions will keep growing with development of New Retail & Ecom sectors

RoboCV – A Complex Solution for New Retail

RoboCV automates intralogistics operations, integrates automated and human-driven operations and provides transparency of all processes within warehouse.

Cloud/Server management
Transparent monitoring and control of all pallets within their full cycle in the warehouse in real time

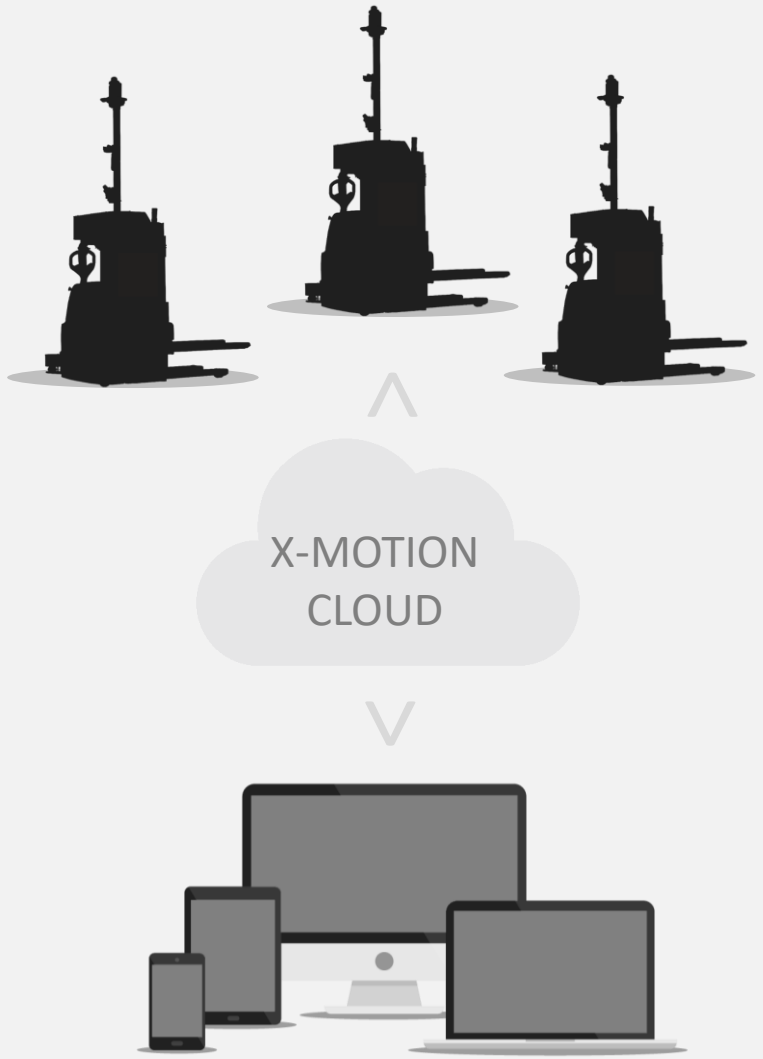


Autonomous forklift robots
Operations in high traffic
Obstacles avoidance
Pallet position detection
Ordinary roads operation
Interaction with Human employees

Intellectual equipment IOT
Telematics, sensors and devices
for navigation, vehicle & warehouse data

RoboCV X-MOTION Cloud / Server Management

- Optimal assignment of tasks among robots
- Monitoring of processes and robots in real time
- Integration with WMS/ERP (SAP, Exceed, +others)
- Collection data for business analysis
- Emergency stop for all robots



RoboCV – autonomous forklift working with human employees

Robotic Tow Tractor

Stand-alone robotic tow tractor for repetitive material movements automation.
Usually used at manufacturing floor.

Robotic Pallet Truck

Driverless forklift with adaptive behavior technologies for use at warehouses with intense traffic of people and vehicles, high presence of obstacles.

Secure
Efficient
Flexible

Operations in high traffic

Obstacles avoidance

Pallet position detection

Ordinary roads operation

Business Model

We are experts in converting any modern electrical forklift from top-5 manufacturers into a driverless one.

Step 1
Robot manufacturing

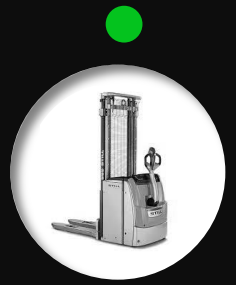
Top-5 forklift manufactures:

TOYOTA INDUSTRIAL EQUIPMENT · BT · JUNGHEINRICH · HYSTER-YALE · NOBLELIFT · xilin

+

Autopilot HW-components:

- on-the-shelf parts
- parts produced according the RoboCV's specification



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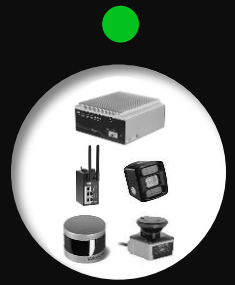

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Step 2
Sales & Implementation

- direct corporate sales of robots
- integration and implementation of software

Step 3
Service & Maintenance

- solution-level maintenance by RoboCV team
- forklift-level maintenance

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Clients: Multinationals as Clients

Leading 3PL-providers

itella

DHL

FM LOGISTIC

Automobile & Device Multinationals

SAMSUNG

Biggest Retailers in Europe

X5 RETAIL GROUP

MARS incorporated

RoboCV

Team

Our team is 15+ experts (incl. 2 PhDs) in the field of object detection & classification, real-time path planning and robot behavior control.

Aziz Beytullaev
Role: CEO
Experience: Business Development and International Corporate Sales
Education: SEU (MBA in Economics)

Artem Shklovez Phd in Technical Sciences
Role: Head of Science
Experience: Chief Science Officer at *Selenokhod LLC*, Engineer at *Space Research Institute of RAS (IKI RAN)*
Education: KNUR (Radio technology)

Ruslan Arabgadzhiev
Ph.D. in Mathematical Modeling
Role: Head of Software Development
Experience: Senior software engineer VNIINS
Education: National Research Nuclear University MEPhI

15+ people

2 PhDs

Adviser

CEO of the largest Russian 3PL provider (branch of international 3PL company)

Investors

AlmazCapital 2BF LETA CAPITAL ColumbusNova Technology Partners

Our core – autopilot technologies

RBCV vBus
Infrastructure-level software environment.

1

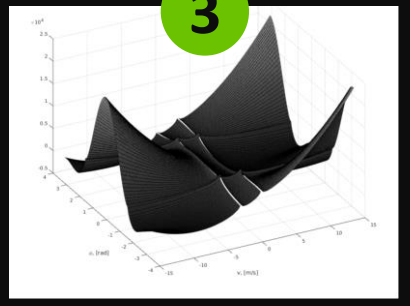
The software enables real time communication between different software modules. It uses approaches that are similar to ROS (Robotics Operation System), but it is fully developed by RoboCV and ensures an industrial level reliability approved by real robots implementations.

Real-time path planning on the road map

2

NMPC-based vehicle motion control approach

3

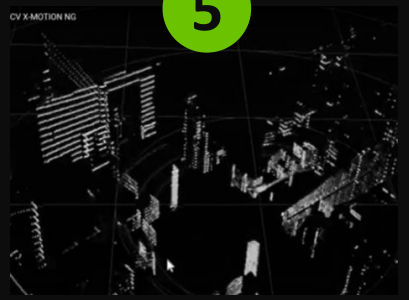


Collision forecast and its avoidance

4

Visual feature detection, mapping and navigation

5

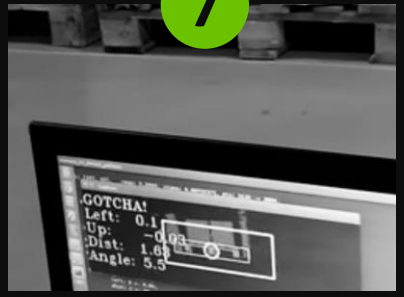


3D-safety: low object detection

6

High precise object position localization

7



Online service utilities

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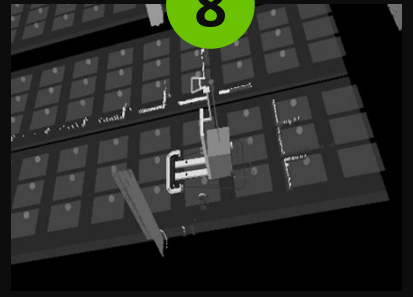

Simulation SW for use-cases fine tuning

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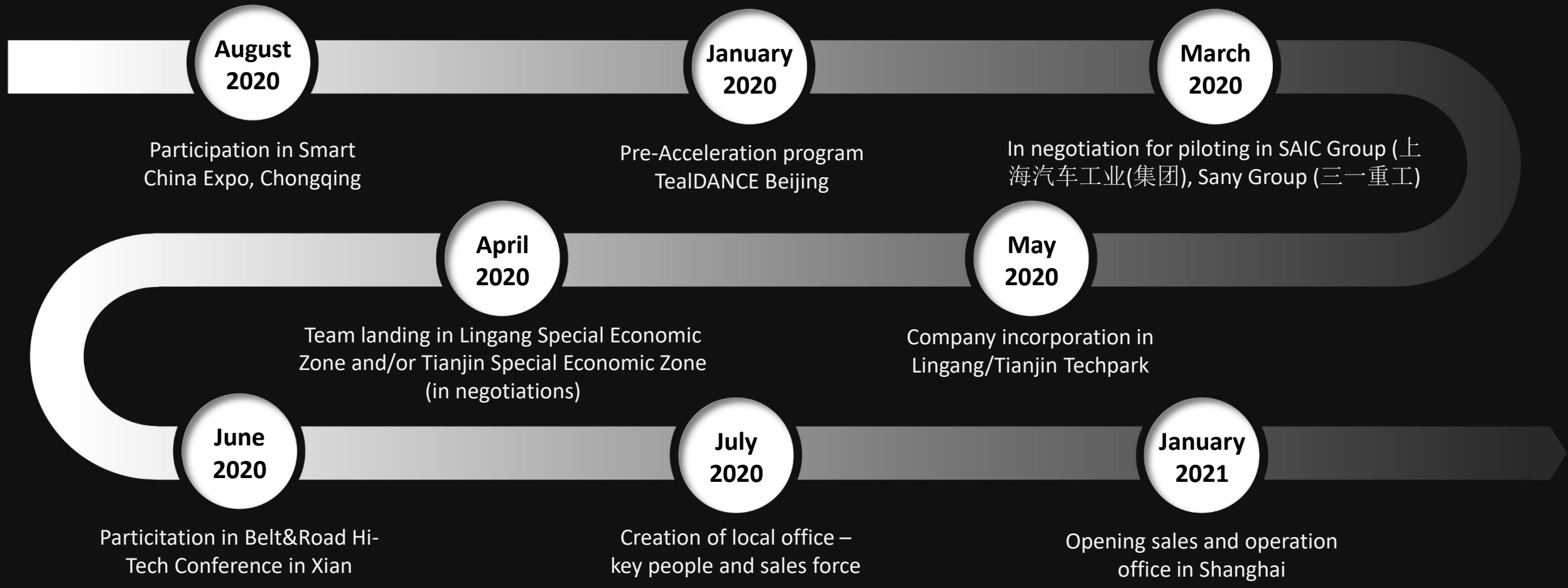
China Expansion Plan



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Patents

Method for segmenting laser scannes and system For its implementation	RF: No. 2015127651, Patent for invention No. 2606370, Validity of patent: 12/03/2035
Method and system for reducing the risk of hazards for human situations by visualizing labels for hazardous zones	PCT, (patent): RF: No. 2016145673
Method and system of navigation of a mobile object using three-dimensional sensors	PCT, (patent): RF: No. 2016140359, Patent for invention No. 260,58082
Method and system for detecting and maintenance of moving objects based on three-dimensional sensor data	PCT, (patent): PCT: International Application Number: PCT / RU2016 / 000800 (W1S-1611470), RF: No. 2016145126, Patent for invention No. 2656711
Method and system for determining the location of folding pallets based on the images of three-dimensional sensors	PCT: International Application Number: PCT / RU2016 / 000865 (W1S-1612514), RF: No. 2016148478, Patent for the invention No. 2659867

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