



ROBOTICS

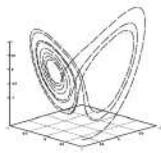
WAREHOUSE DRONES:
real-time inventory taking



ABOUT US



UVL Robotics - high-tech company that pioneers the Russian market in developing solutions for the logistics industry based on unmanned aerial vehicles (UAV).



Национальная
технологическая инициатива
Пространство возможного



2017: year of founding

2017: first version of an areal robot

2018: resident status of “Skolovo” foundation

...

2018-19: 40 successful inventory taking cases

PROBLEM



Traditional methods of inventory counts have some limitations and risks:



They take a long time that causes: **> 3 days**

- ✓ Excess costs for man-hours and rental of lifting equipment
- ✓ «Frozen» cash in stocks **> \$1 mln**
- ✓ Opportunity losses related to stoppage in warehouse operations



Current regulation prohibits working at high altitude without using a special equipment **NO ALTERNATIVES**

* Based on market research amount 50 large companies

SOLUTION

Autonomous unmanned aerial vehicles (UAVs) for inventory counts improvement



FAST

inventory taking for 1 hour
(10 000 pallets)



FLEXIBLE

free movement and work
at any height



EFFICIENT

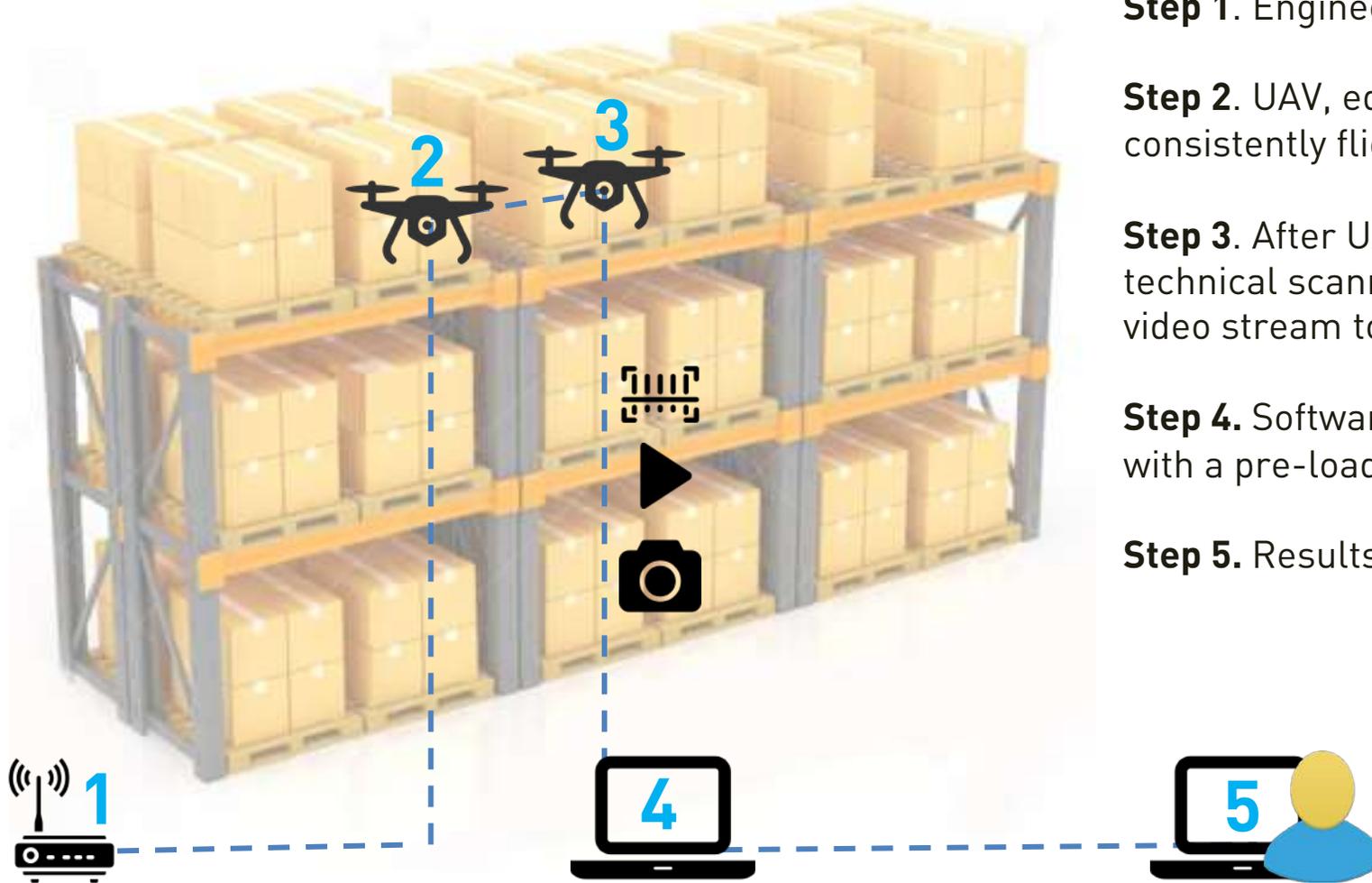
real-time integration with
WMS



SAFE

no human factor or
work at high altitude

WORKING CYCLE



Step 1. Engineer set up the network and launches UAV

Step 2. UAV, equipped with the system of technical vision consistently flies along the racks

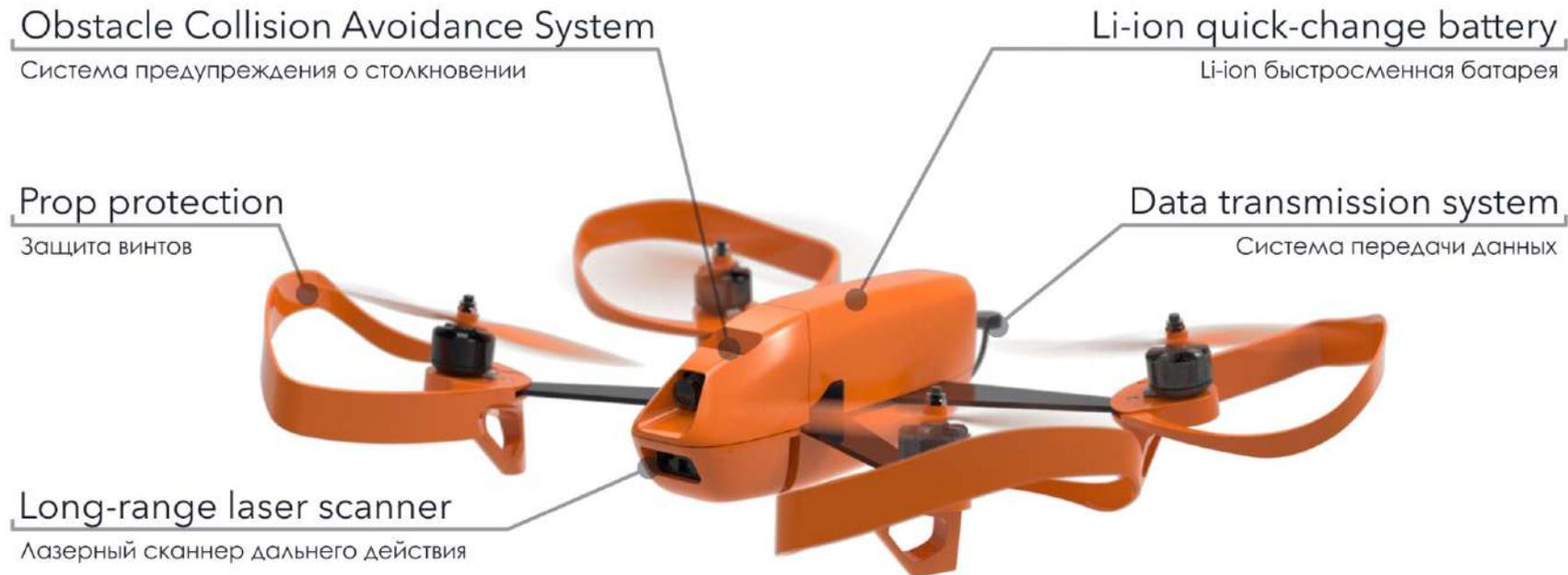
Step 3. After UAV detects the barcode and scans it using technical scanner it transmits data together with photo and video stream to ground station

Step 4. Software processes the collected data by matching it with a pre-loaded storage address scheme

Step 5. Results are transmitted to client's WMS/ERP

УСТРОЙСТВО ДРОНА

Multi-rotor vertical take-off UAVs adapted for indoor warehouse narrow areas (up to 1,3 m)



- ✓ Autopilot that ensures reliable navigation in indoor areas
- ✓ Obstacle detection and collision avoidance (LiDAR sensors)

- ✓ Advanced positioning system
- ✓ Wireless communication + video transmitter
- ✓ Group control station

SAFETY COMPLIANCE

Our company makes a special **focus on the safety of warehouse operations** performed at the Customer's production facilities using the UVL Robotics' unmanned aerial vehicle

- ✓ Depth-camera for safe autonomous navigation in a warehouse
- ✓ Special screw protection from damage of packs and shelving beams
- ✓ LiDAR sensors which allow to keep optimal height
- ✓ Soft landing system in case of low battery or other anomaly



VALUE PROPOSITION

Comparison with traditional methods of inventory taking

Параметр	 UVL Robotics	 Staff + reach trucks
 Speed (per pallet)	5 sec	250 sec
 Costs (per pallet)	from \$0.5 ... \$2	from \$1
 Lost profit + frozen assets	-	from \$1 mln
 Accuracy	100%	95%
 Risks of a «human factor»	NO	YES

DAAS («drone as a service») – outsourcing of inventory taking

Services:

- Inventory service, including system integration and setup
- Monthly fee for a set of inventories during the calendar year
- Additional services for photographing and HD video in real time

Payment model:

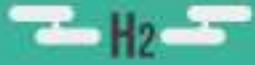
Flexible rate affected by the speed, number of drones simultaneously used and additional services involved

OUR PARTNERS



DELIVERY DRONES

hydrogen fuel



Transportation companies are looking for opportunities to replace expensive helicopters on UVL drone for spare part and laboratory oil samples delivery to O&G terminals. The necessity for using UAV is caused by hours of equipment downtime than means million dollars losses.

Also UVL drones allow to make deliveries much faster than ground vehicles in terms of small deliveries to hard-to-reach zones and urgent need for a customer to receive an order.



Fully autonomous



180 min
150 km



Up to 5 kg



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