# A deep-dive into the battery-swapping drone docking station DBOX

Presented By:

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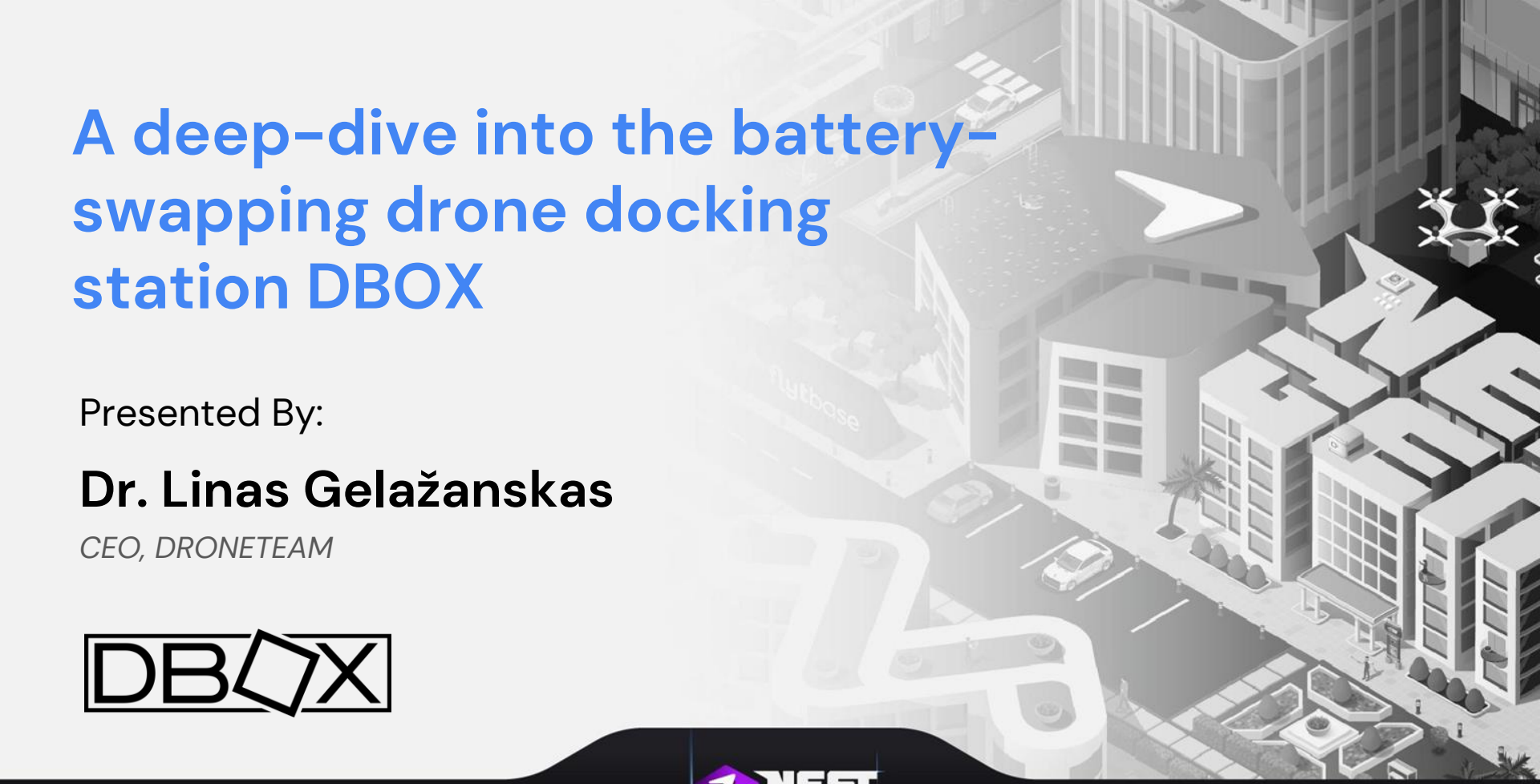
*CEO, DRONETEAM*



# Who we are?

A dedicated team of drone professionals

Experience in the field of >10 years

Main focus on 3 topics:

- Reality modelling (photogrammetry, LiDAR)
- Drone light shows (Light a Sky)
- Custom drone automation solutions (DBOX)

A team of twelve experts in the field, five of whom hold a PhD.

If your task involves engineering related to drones – we can do it!

DBOX

DRONE TEAM

LIGHT A SKY

# How it all started?

**Panevezys city 3D model**

City scale photogrammetry scanning:

- 15 drone pilots
- 50 sq. km
- 10 days
- 50k photos
- A lot of manual work on site

# How it all started?

**COVID-19 lockdown case**

Monitoring Lithuania capital - Vilnius

- 4 remote drone pilots
- 400 sq. km area live monitoring
- 3 months period
- 4G/LTE connectivity
- A lot of manual work for swapping batteries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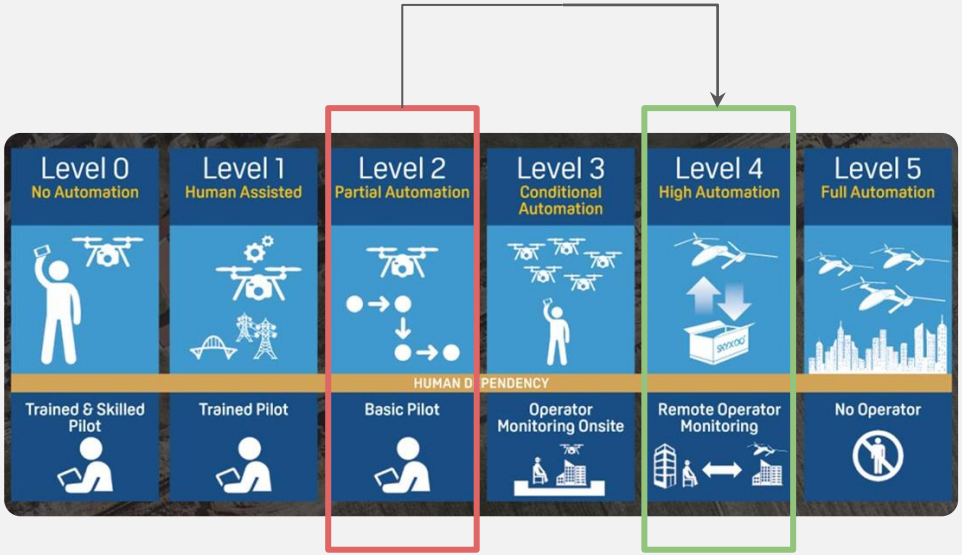
# Next level of automation

Drones as we know are in automation Level 2:

- On site operations
- Operator unpacks the drone
- Manual battery swap

DiaB brings drone automation to Level 4:

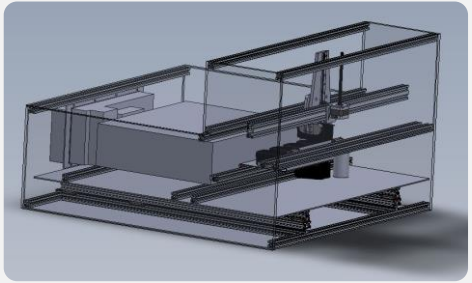
- Pilot controls the drone from a remote office
- The system provides shelter to the drone
- Automatic battery swapping

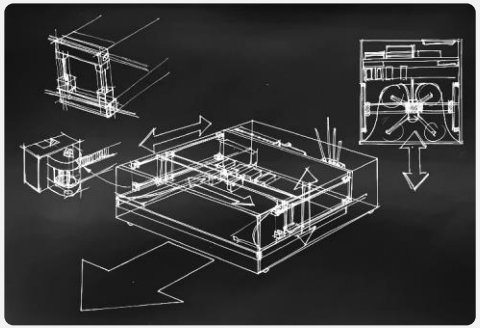


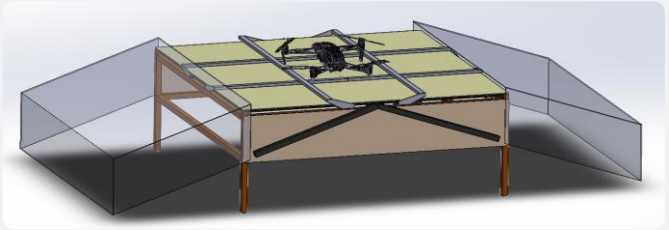
# R&D process

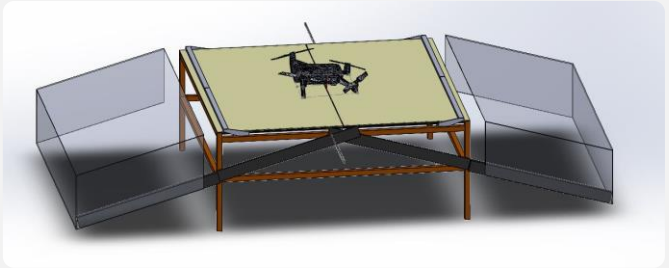
**Many design iteration**

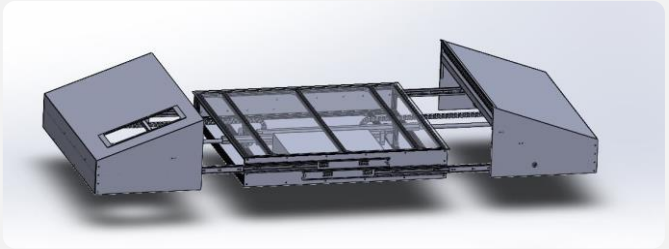
- Two door design vs drawer design
- With prop guards vs without







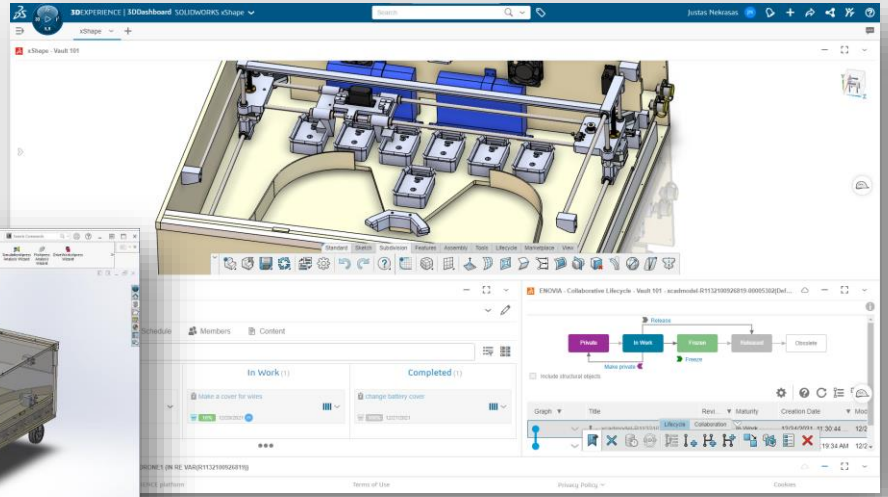




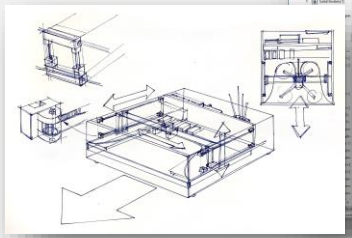
# DBOX - Autonomous Drone Charging Station with Automated Flight Operation

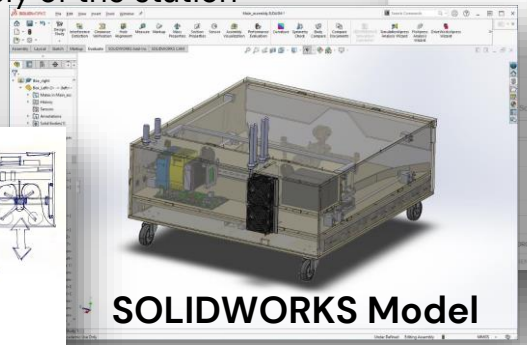
- Fully automated robotic charging station for consumer-grade drones
- Unique patent-pending technology – drone is ready for next operation in minutes, instead of hours
- Designed for maximum automation in manufacturing and assembly of the station

**Collaboration Model in 3DEXPERIENCE Platform**



**Hand Sketch**





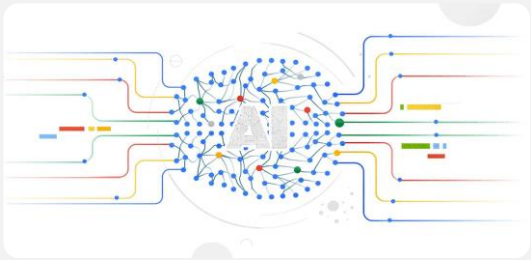
**SOLIDWORKS Model**

# 3 important pieces of the puzzle

DBOX docking station; automatic battery-swapping


Remote ground control software - Flytnow


AI pipelines for data processing




flytnow
FLY
MISSION
LOGS
GEOFENCE
88 %
160 ms
ALTITUDE
50.20 m
DIST. FROM HOME
236.01 m
VERTICAL SPEED
0.00 m/s
HORIZONTAL SPEED
5.00 m/s
TIME ELAPSED
02 mins
TIME REMAINING
N/A
LATITUDE
54.7047972
LONGITUDE
25.2670668
Launch to location
Missions
MTAAS Lazdynai
Mission Unavailable
10
WAYPOINTS
RTDS
FINISH ACTION
08:03
ETA
3866.33 m
DISTANCE
Feedback
Help
Search by Name, Coordin
LinasGelazanskas
FPS: 28
Res.: 720p
Optimization: Default
Min
Max
Wide
Zoom
Thermal
Feed 1
Droneteam-Box-2
M2EA #2
Domino's Pizza
UAB Ladis
Car dealer
Mangų Mangas
Antano Gustaičio Aviacijos Institutas
Statybos produkcijos sertifikavimo centras
ČIOP ČIOP Event Studio
Beriva auto
Tire shop
UAB Autokora
Tokvila
Vilda
Geležinio Vilko g.
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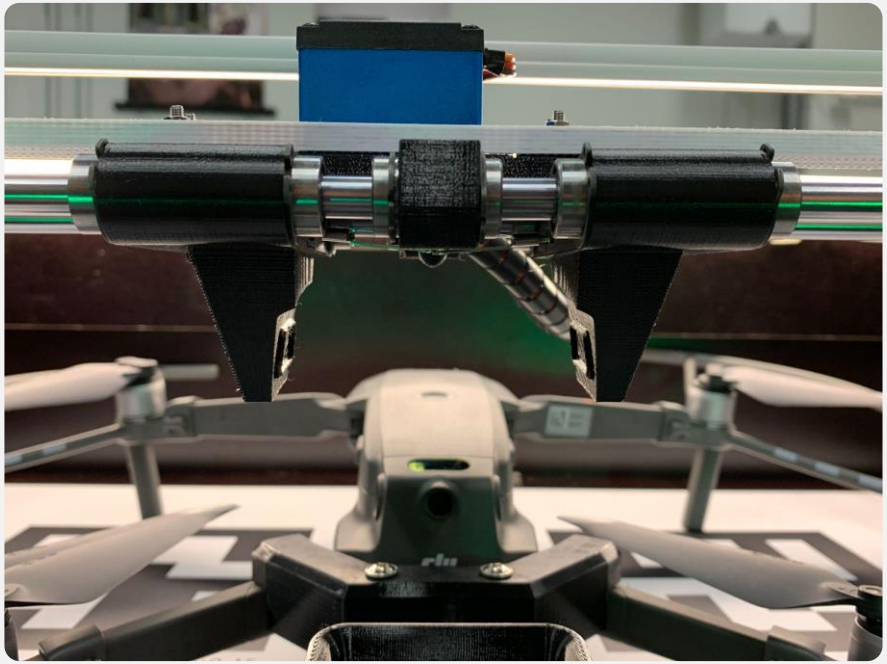
# Technical specifications: battery swapping

**Battery swapping**

Swap the battery in less than 60 seconds



# Technical specifications: parallel charging

DBOX can charge 6 batteries in parallel - you never run out of power

# Technical specifications: compatible drones

Currently we support DJI Mavic 2 series drones:

- DJI Mavic 2 Pro
- DJI Mavic 2 Zoom
- DJI Mavic 2 Enterprice Zoom
- DJI Mavic 2 Enterprice Dual
- DJI Mavic 2 Enterprice Advanced **– best choice!**



# Technical specifications: DJI Mavic 2

We all know how good DJI Mavic 2 is:

- 31 minute flight time
- Unbelievable transmission range
- RTK positioning
- 48MP resolution - great for Photogrammetry
- 640x512 thermal (!)

# Technical specifications: other compatible drones coming soon!

In 2022 we will launch DBOX versions with these drones:

- Parrot Anafi AI
- DJI Mavic 3 (subject to SDK release)

Main advantage - 4G/LTE connectivity straight from the drone!


# Technical specifications: dual SIM 4G/LTE reliable connection

We have partnered with world known telecom equipment manufacturer to ensure reliable 4G/LTE communication.
Dual SIM, bonded connection.

# Technical specifications: HVAC

Peltier unit provides temperature control inside the box. Also, additional heater.

Temperature regulation: +5°C - +25°C

Operating temperature: -30°C - +50°C

# Technical specifications: UPS

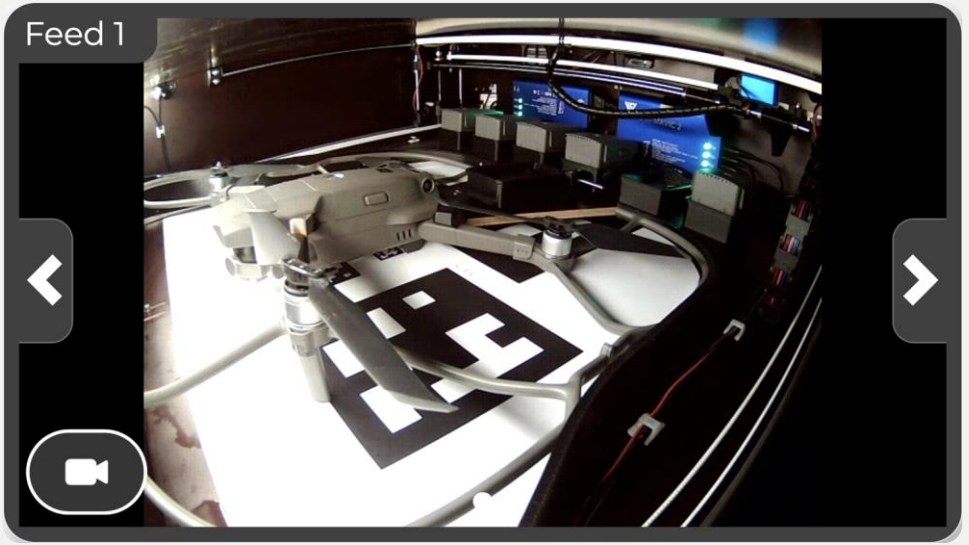
Uninterruptible power supply provides power in case of mains power loss.

Operations for up to 2 hours are safe after power loss.

# Technical specifications: 5 internal cameras

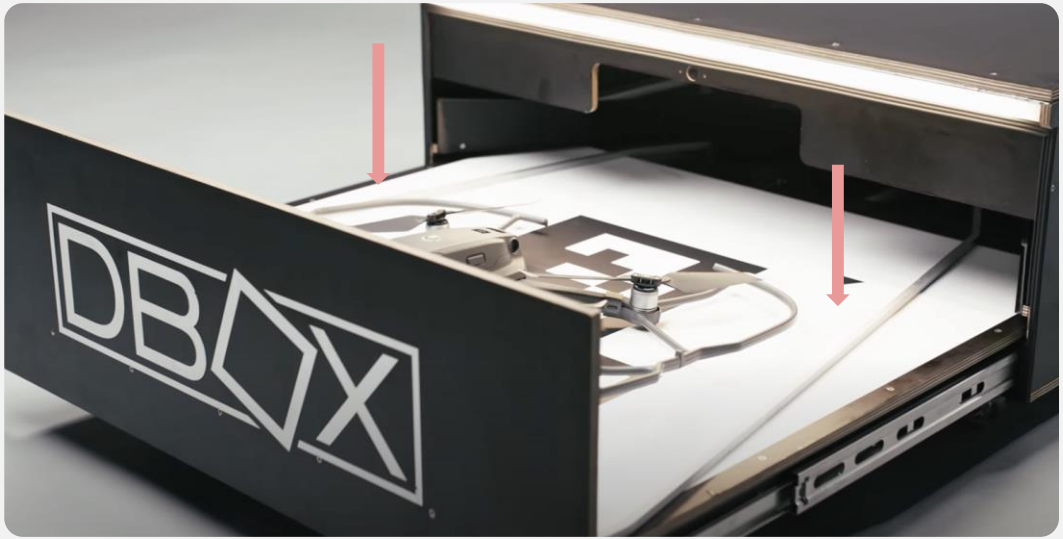
In total there are 5 internal cameras to monitor the state of the drone.
Visual inspection before take-off.

- 4 cameras facing inside of the box.
- 1 camera facing the landing pad.



# Technical specifications: drone alignment

Special alignment rods designed to ensure 100% drone positioning reliability.



# Real world applications

# First responders

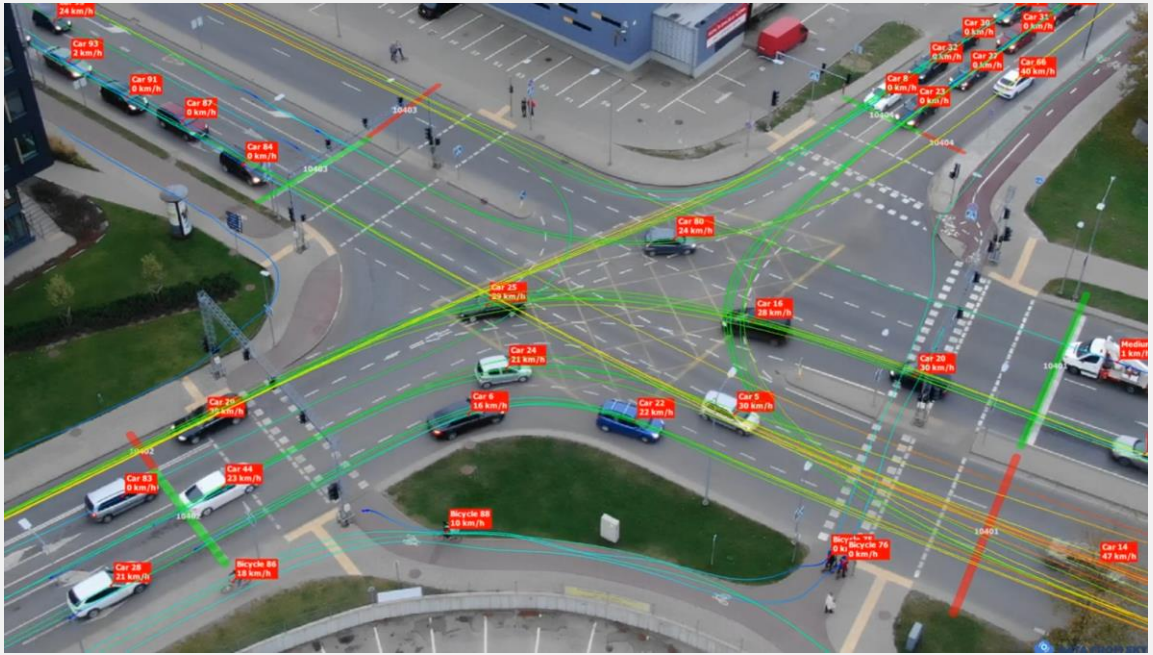
DBOX network deployed in the city provides clear view to first responders:

- Firefighters clearly see heat spots.
- Police trace suspects - eye in the sky.
- Car accident 3D model without police arrival.


# Traffic monitoring

Traffic utility companies periodically monitor junctions:

- Count traffic flow
- Distinguish vehicle type
- Measure speed, acceleration, etc.



# Volumetric measurements

- Stockpile measurements up to 1% volumetric accuracy.
- Nida national park monitoring and preservation - monitor movement of dunes and prevent wildfires.

# Endless possibilities!

Only your fantasy is the limit!

There are applications for DBOX in many many areas

# Contact Us

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