

LASERPAS
REMOVELY PILOTED AIRBORNE SYSTEMS

THE JUNGLE OF INFRASTRUCTURE

AERIAL INFRASTRUCTURE
INSPECTION AND ANALYSIS



LASERPAS – another drone company?

DO YOU KNOW THE JUNGLE?

LASERPAS
REMOTELY PILOTED AIRBORNE SYSTEMS

PAPER WORLD

vs.

REALITY

Most railroad operators apply time-based approach – assets are checked, renewed and reconstructed on a time-based schedule

However, there are multiple environmental factors influencing the health of the railway line and surrounding assets that cannot be estimated on paper



ABOUT LASERPAS

LASERPAS
REMOPLY PILOTED AIRBORNE SYSTEMS

- ▶ **FIRST INFRASTRUCTURE-FOCUSED UAV OPERATOR IN CENTRAL AND EASTERN EUROPE**
- ▶ **UNIQUE INFRASTRUCTURE SURVEILLANCE SERVICES, DEMANDED BY UTILITIES**
- ▶ **CONCLUDED SALES TO ČEZ, EVN AND OTHER INDUSTRY GIANTS**
- ▶ **NAMED THE 2ND BEST SMART ENERGY START-UP AT ASIAN UTILITY WEEK**
- ▶ **BEYOND VISUAL LINE OF SIGHT (BVLOS) PERMITS IN 5 COUNTRIES**
- ▶ **FIRST UAV FLIGHT SCHOOL IN LITHUANIA**



STATE-OF-THE-ART TECHNOLOGY

LASERPAS
REMOETLY PILOTED AIRBORNE SYSTEMS

ULTRA-LONG ENDURANCE UAV FLEET



COVERAGE

UP TO 400 KM



SPEED

0 - 100 KM/H



OPERATION

UP TO 5 HOURS



**FUEL
CONSUMPTION**

1,2 L/H*



*** ELECTRIC VERSION
IS ALSO USED
IN SEMI-URBAN
ENVIRONMENTS**

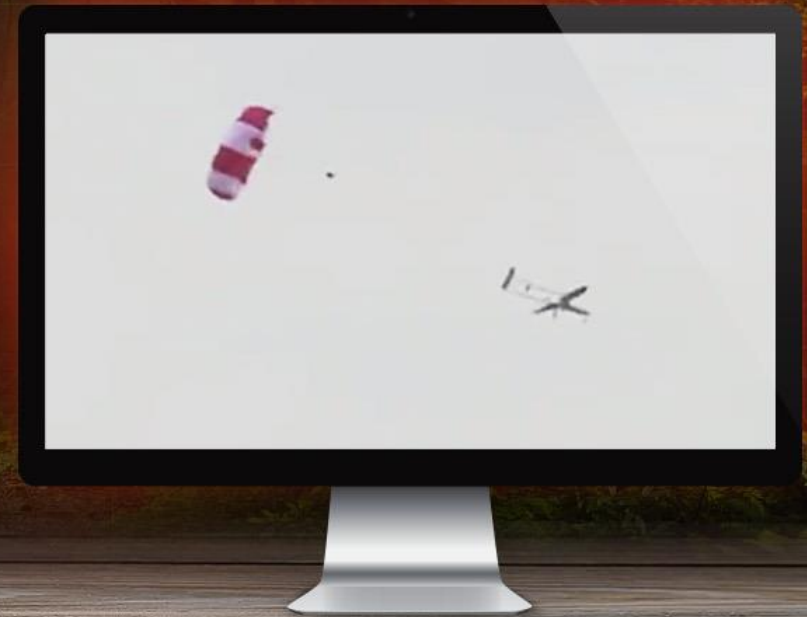
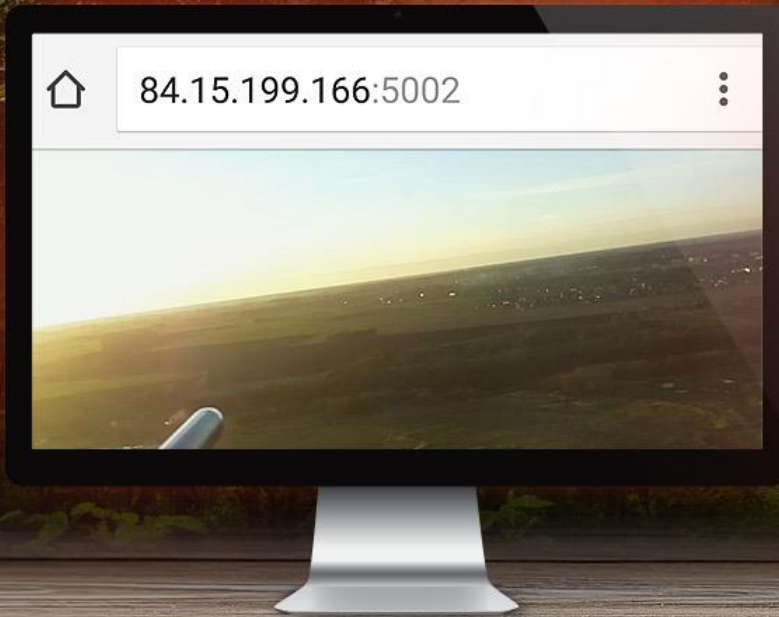


DO YOU KNOW THE JUNGLE?

LASERPAS
REMOTELY PILOTED AIRBORNE SYSTEMS

IT CAN BE EASIER

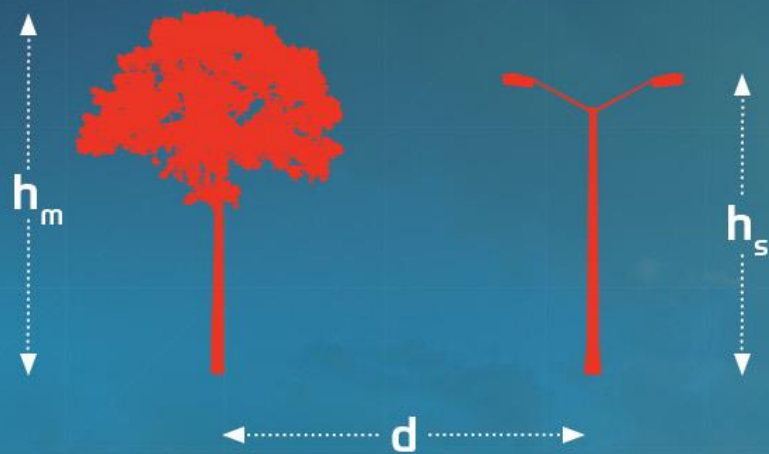
- ▶ All UAV systems are constantly monitored
- ▶ Pilot has a view to the front and full telemetry
- ▶ All flights operated by dual pilots
- ▶ Planes are equipped with emergency parachutes
- ▶ Liability against 3rd party is insured to €10 million



UNIQUE VEGETATION MONITORING

LASERPAS
REMOOTELY PILOTED AIRBORNE SYSTEMS

LASERPAS TECHNOLOGY ALLOWS SIMULATING FALLING TREES & DETECTING DANGEROUS AREAS



SUSPICIOUS

$$\sqrt{d^2 + (h_s - 0,05 \cdot h_s + f)^2} > h_m \geq \sqrt{d^2 + (h_s - 0,05 \cdot h_s + f)^2} - s$$

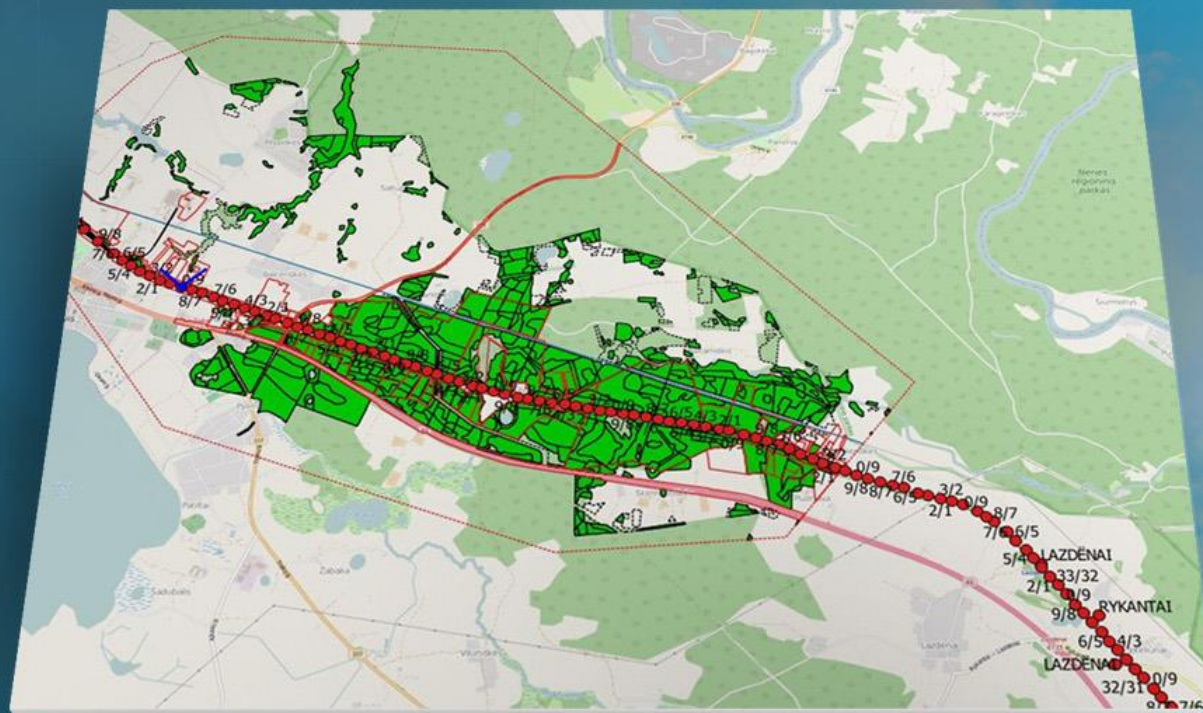


LASERPAS SOLUTIONS ALLOW
REDUCING VEGETATION TRIMMING COSTS
UP TO 40%

SEE FOR YOURSELF

EYE-OPENING LOOK INTO YOUR INFRASTRUCTURE

- pk Balcieriškės
- pk Vievis
- railways
- holdings
- range
- electricity
- plots
- plots of forest land



3D PRECISION RISK ANALYTICS

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REMOTELY PILOTED AIRBORNE SYSTEMS

PRECISE 3D MODELS ARE GENERATED FOR DETAILED RISK ANALYSIS

▶ **FLIGHT TRAJECTORY ANALYSIS**

▶ **SELECTION OF THE SENSORS**

▶ **FLIGHT PLANNING**

▶ **DATA COLLECTION**

▶ **DATA PROCESSING**

▶ **DATA ANALYSIS**

▶ **EXPERT EVALUATION**



ALL RISK FACTORS, SUCH AS TREES, BUILDINGS AND EROSION ARE MATCHED AGAINST INFRASTRUCTURE WHILE DANGEROUS AREAS ARE MARKED

**What does this mean to my
infrastructure?**

There is a switch

The screenshot displays the 'Yard Office' software interface. The main window is titled 'Inventory' and shows a 'Scan Inventory' window. The interface is divided into several sections:

- Left Panel:** A table with columns 'Type' and 'Rpt. Mark'. The selected row is 'HTCX'. Below this is a 'Sort Order' section with radio buttons for 'Rpt. Mark', 'Category', 'Type', 'Mfg.', 'Dealer', 'Status', and 'Config'. At the bottom of this panel are buttons for 'New', 'Delete', 'Find', 'Browse', 'Image', 'Reports', and 'Filter'.
- Main Content Area:** Divided into tabs: 'Main', 'Values', 'Details', 'Everything', 'Notes', and 'Log'. The 'Main' tab is active, showing:
 - Reporting Marks:** HTCX, Road No. 407, Transportation Corp. of America/General Electric Rail Services
 - Category:** FB, Type: BXAD, ALL DOOR BOX CAR
 - Description:** ALL DOOR BOX CAR - IDAHO FOREST INDUSTRIE
 - Manufacturer:** WAL, Mfg. No. [blank]
 - Purchased From:** AA HOBBIES, Date Acquired: 04/13/1996, Scale: HO
 - Status:** LAYOUT, Purchase Config. [blank]
 - Purchase Price Table:**

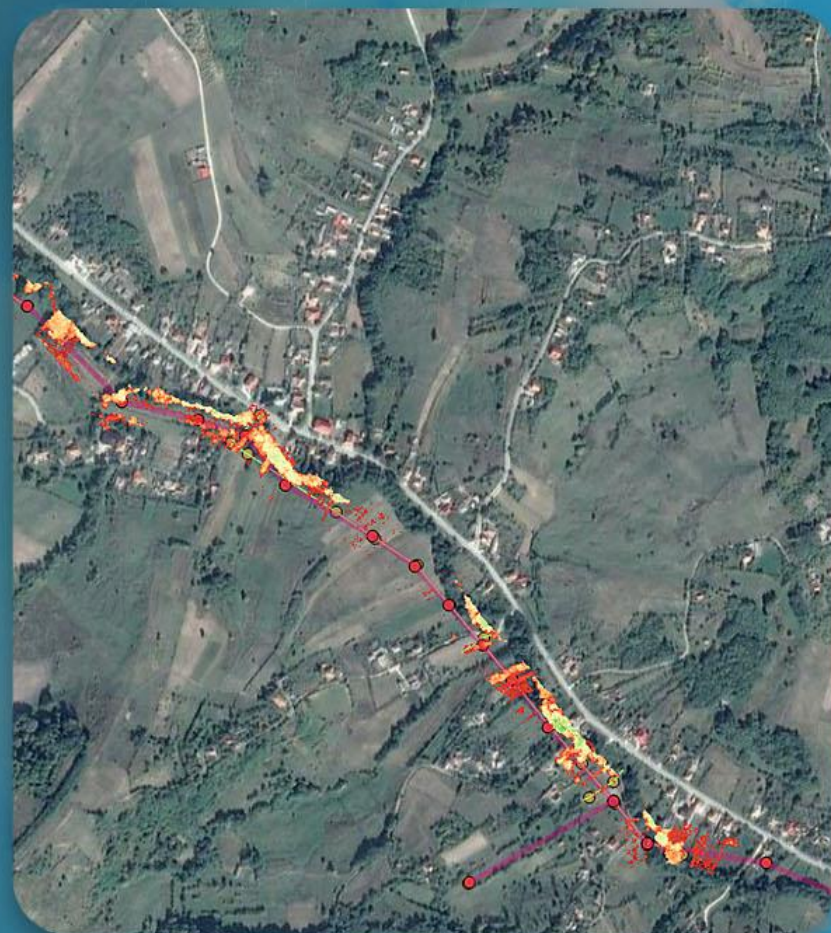
	Retail Price	Paid Price	%
	\$12.00	\$10.00	83.33 %
Additional Costs:		KADEES \$2.00	
		METAL WHEELS \$3.00	
Total Cost		\$15.00	125.0 %
 - Date Valued:** 04/13/1996
 - Current Value:** [blank]
 - Date Sold:** / /
 - Price Sold:** [blank]
 - DCC Decoder Section:** Decoder [blank], Sound [blank], Decoder Type [blank], Address 0
 - Model Notes:** [blank]
 - Other Fields:** Couplers: KADEE 5, Trucks: RB, Color: WHITE, Built: THRALL, Height: 55', Length: [blank], Weight: [blank], Condition: E, Owner: RPH, Set: [blank], Quantity: 1
- Right Panel:** 'Look Up Reporting Marks' table:

ID	Description
HSLU	Haulage Services Ltd.
HSRR	Hardin Southern Railroad Inc.
HSRZ	H & S Railroad Co. Inc.
HTCX	Transportation Corp. of America/General Electric
HTMU	Hansen & Tidemann Inc.
HTSU	High Tech Transport Ltd.
HTTX	Trailer Train Co / TTX Co.
- Bottom Section:** A photograph of the 'HTCX ALL DOOR BOX CAR' with the text 'HTCX ALL DOOR BOX CAR' below it. At the bottom right, there are icons for 'Print Page', 'Help', 'Page', 'Table', 'Print', and 'EXIT', along with the text 'Version 2.11c (Shareware)' and a 'CAPS' button.

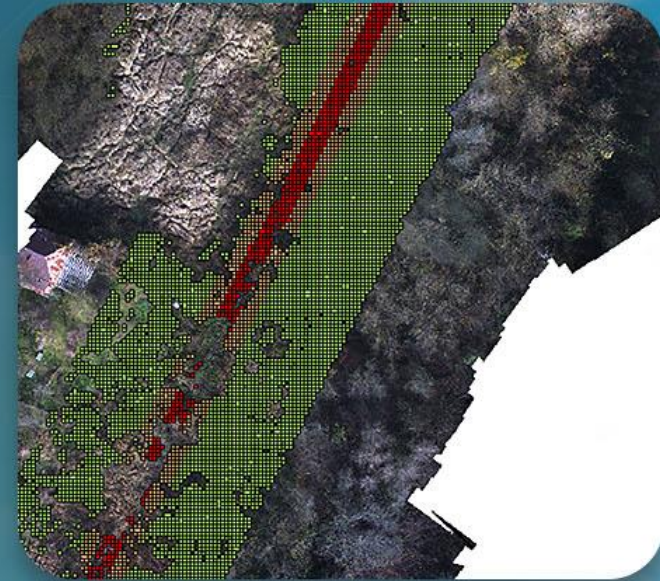
...to this...

ROMANIAN GRID: VEGETATION INSPECTION

- ▶ **6.3% OF TOTAL GROUND AREA IN THE ROW IS SEVERELY AFFECTED BY VEGETATION**
- ▶ **OUR EXPERIENCE SHOWS THAT PRECISE VEGETATION DATA ALLOWS UP TO 60% REDUCTION IN NETWORK**



ROMANIAN GRID: VEGETATION INSPECTION



- ▶ **ALL VEGETATION DATA WAS VECTORIZED AND GIS REFERENCED, ALLOWING THE CUSTOMER TO MAKE DIRECT WORK ORDERS FROM GIS OR .XML TABLES**

SERVICE LEVEL OFFERINGS AND BUSINESS CASE

Optical + Lidar + component inspection

WHAT YOU GET

- ▶ Dangerous tree and dangerous building location
- ▶ Asset location
- ▶ Tower geometry and line health analysis
- ▶ Line sag and clearance analysis + simulations

COST

- ▶ 50 – 70 €/km

BENEFITS

- SAIFI reduction of 0.45-0.75, SAIDI reduction of 70-190min (incl. Force majeure) – line touching is detected as well
- €40 per km saving by reducing need for physical, instrumental and thermal inspection
- €70 per km saving for reduction of precise asset location cost
- Reliable data for vegetation and corridor inspection
- Reliable data for tower and tower component health, incl. Isolators, geometry and more

IS IT WORTH IT?

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▶ **PRECISE
ASSET LOCATION**

▶ **IN-DEPTH DATA
ON EXISTING AND
POTENTIAL THREATS**

▶ **DECREASED
HR COSTS**

▶ **1% RECLAIMED
REVENUE FROM THEFTS**

YOU DECIDE

▶ **TIMELY
PREVENTIVE ACTIONS**

▶ **40% DECREASE IN
ASSET LOCATION COSTS**

▶ **20% DECREASE
IN MAINTENANCE COSTS**

▶ **25% DECREASE
IN SAIDI/SAIFI**



YOUR DEDICATED PROVIDER OF UAV INSPECTION AND MONITORING

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