8TH INTERNATIONAL WILDLAND FIRE CONFERENCE

GOVERNANCE PRINCIPLES:

Towards an International Framework

Porto - Portugal | **May 16-19th**, 2023

FIND OUT MORE
AND REGISTER AT:
www.wildfire2023.pt

LOCAL ORGANIZER

AGIF · REPÚBLICA PORTUGUESA

INTERNATIONAL LIAISON COMMITTEE FOR THE IWFC

UNDRR · afac · Canada · WORKING ON FIRE · Korea Forest Service

Sylvestris · REPSOL Fundación · hispasat

MOTOR VERDE +FLORESTA

HIGH PRECISION IoT -*Internet Of Trees*- FOR WILDFIRE EARLY DETECTION SYSTEM

8TH INTERNATIONAL WILDLAND FIRE CONFERENCE | GOVERNANCE PRINCIPLES: Towards an International Framework

REPSOL Fundación

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MOTOR VERDE + FLORESTA

MAIN CHARACTERISTICS

- VOLUNTARY CARBON MARKET VIA AFFORESTATION, REFORESTATION AND ASSISTED NATURAL REGENERATION
- IBERIC PENINSULA AS A MAIN CARBON SINK IN EUROPE
- FAVORABLE REGULATORY CHANGES IN REGULATED CARBON MARKETS (PARIS AGREEMENT, COP26)
- MARKET UNDER FAST DEVELOPMENT: INCREASING PRESSURE ON COMPANIES TO DECARBONIZE AND SET NET ZERO GOALS
- MOTOR VERDE IS A MULTI-IMPACT PROJECT SINCE ITS INCEPTION: ECONOMIC, ENVIRONMENTAL, ECO-SOCIAL: NOT ONLY FOCUSED ON CO_2 ABSORPTION AMPLIFICATION
- INCREASING DEMAND FOR "PREMIUM" HOLISTIC PROJECTS: BIODIVERSITY, GROUND RECUPERATION, NATURAL REGENERATION, WATER RESOURCES, MIXED NATIVE FORESTS, RESILIENT FORESTS, WILDFIRE PROTECTION, FOREST MANAGEMENT, FOREST BIOECONOMY, RURAL COHESION, INCLUSIVE EMPLOYMENT
- PROVEN SUCCESS-STORY IN SPAIN WITH FINANCIAL BACKING GUARANTEED: 100 M€ ESG CARBON FUND LAUNCHED WITH *CRÉDIT AGRICOLE INDOSUEZ* AND PORTOBELLO CAPITAL FOR A FASTER SCALE-UP

MOTOR VERDE: INNOVATION AND TECHNOLOGY
5 TECHNOLOGY PROJECTS

1. EARLY STAGE GROWTH AND DEVELOPMENT

Goal: to guarantee a higher survival rate and growth

2. DIGITAL INVENTORY AND DIGITAL TWIN

Goal: to enhance the precision and efficiency of inventories as a first step towards a forest digital twin

3. MONITORING, REPORTING AND VERIFICATION (MRV)

Goal: biomass growth monitoring from satellite information as well as digital reporting and absorption verification system

4. EXANTE PREDICTION OF PRODUCTIVITY AND CLIMATE CHANGE

Goal: to obtain reliable and realistic long term growth modeling

5. ASSET PROTECTION (WILDFIRES)

Goal: early detection and prevention of wildfires

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TECHNOLOGY PRODUCT PIPELINE

PRODUCTS AT DEVELOPMENT STAGE	PRODUCTS AT PILOT/TRIAL STAGE	PRODUCTS AT COMMERCIAL STAGE
• Digital Twin	• Growth, rooting an development additives	• Satellite internet connectivity
• Holistic platform	• Exante prediction	• Perimeter surveillance
• Digital MRV	• Digital MRV (ESA and Verra pilots)	• Wildfire IoT Early Detection

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PROJECT 1

EARLY STAGE GROWTH AND DEVELOPMENT

1.1 GROWTH
Leaf additive for improved photosynthesis activity

1.2 ROOTING

- **1.2.1 Mycorrhizae** (against competitors)
- **1.2.2 Bacteria** (nutrients availability)
- **1.2.3 Hydrogels** (humidity retention)
- **1.2.4 Bio-repellents** (against predators)

1.3 DEVELOPMENT
Recycled polimeric light-selective protector frames

PROJECT 2

DIGITAL INVENTORY AND DIGITAL TWIN

2.1 AERIAL INSPECTION: DRONES

2.1.1 Photogrametry

Assembly and ortho-correction of images and points cloud. 3D model generation. Biomass gross estimation

2.1.2 Aerial LiDAR aéreo

Over-the-tops paramatrization

2.2 TERRESTRIAL INSPECTION: LiDAR

Digital inventory generation: higher precision, time efficient and cost reduction

2.3 INTEGRATION ON A HOLISTIC PLATFORM

Integration of all the information layers on a geo-referenced digital platform

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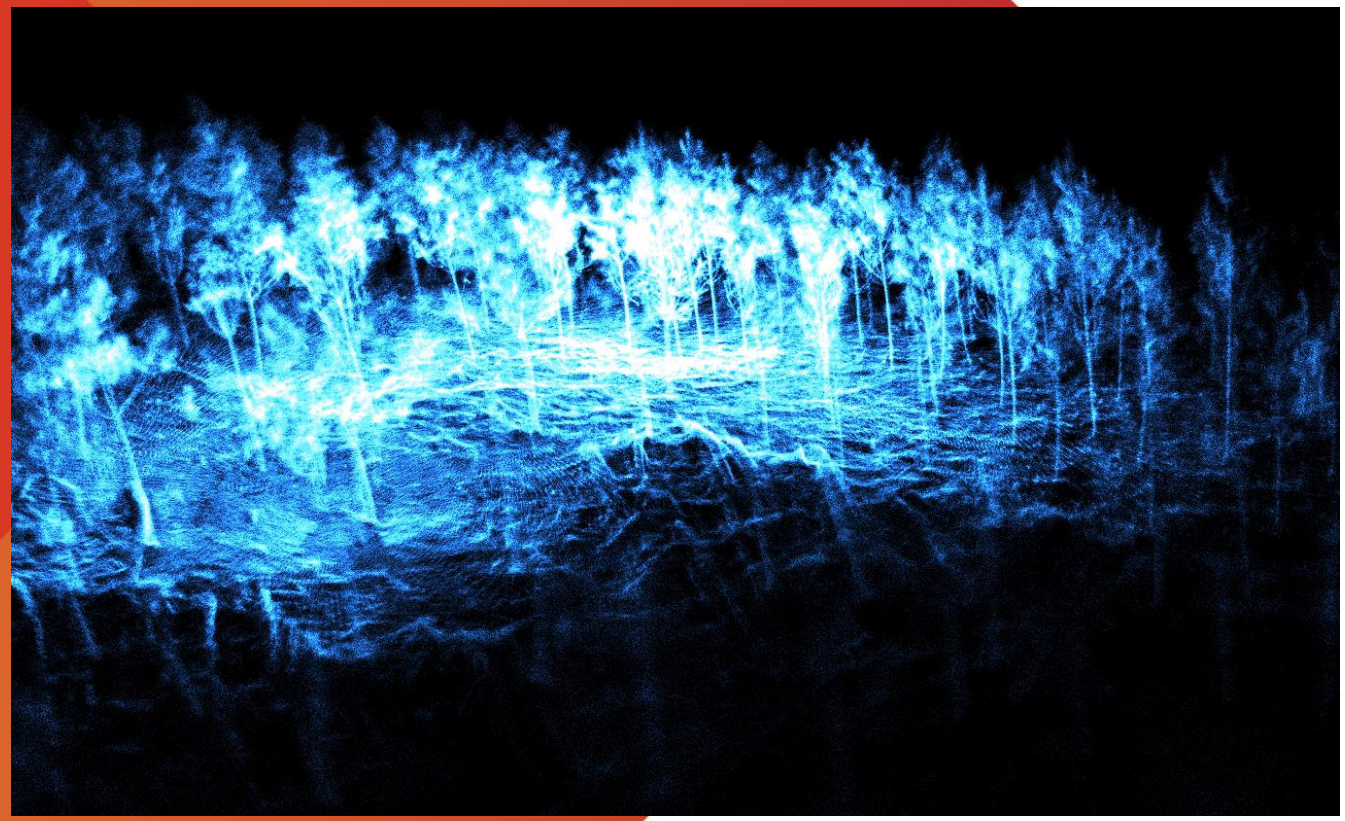


PROJECT 3

MONITORING, REPORTING AND VERIFICATION

An approach from Satellite sensors

3.1 ESA EUROPEAN SPACE AGENCY
(COPERNICUS constellation)
Pioneering project on Satellite MRV led by ESA and VTT-Finland. Harmonized Satellite Plataform in pre-production phase as an interface with developers and promoters of carbon sinks.

3.2 'MOTOR VERDE' HIGH RESOLUTION MODEL
Biomass estimation + AI modeling

3.3 VERRA
Pilot Project running to establish methodology and thresholds

PROJECT 4

EXANTE PREDICTION

4.1 ARTIFICIAL INTELLIGENCE FOR EXANTE PREDICTION
Pilot Project with Sngular and Universidad de Valladolid to predict growth in 30 land plots

4.2 CLIMATE CHANGE FUTURE EFFECTS
Future effects of climate change will be incorporated for species selection and specific treatments. Reference Project EU-Trees4F by *Joint Research Center*

4.3 WILDFIRE PREVENTION AND REVERSALS
AI solution to predict the ocurrence of wildfires based on historians and future weather conditions (Reference: Quiron Digital)

PROJECT 5

PROTECTION AGAINST WILDFIRES

ASSET PROTECTION: WILDFIRES

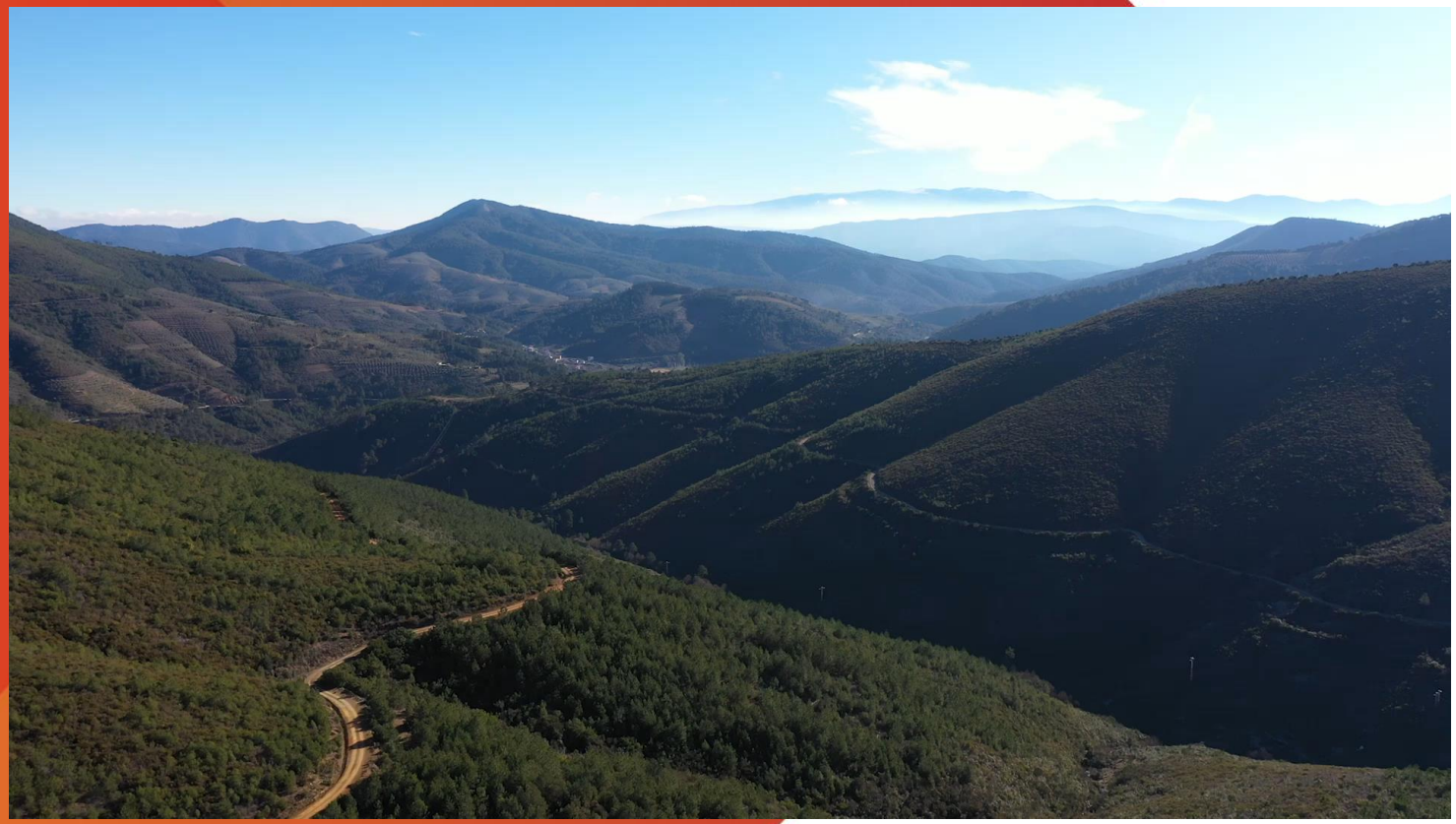
Early detection and prevention of wildfires

IoT -Internet of Trees- solution with high precision distributed sensors and satellite communication with real time information for extinction resources.

Risk assessment (Fire Weather Index –FWI- and severity potential) according to weather conditions and historians.

Use case: Caminomorisco

- 1.357 ha
- Bseed WATCH® sensors
- Strategic connectivity sites (satellite)
- 360º video-camera
- Satellite EO sources (hotspots)



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Internet of Trees IoT

High Precision Early Detection System

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A Redeia company

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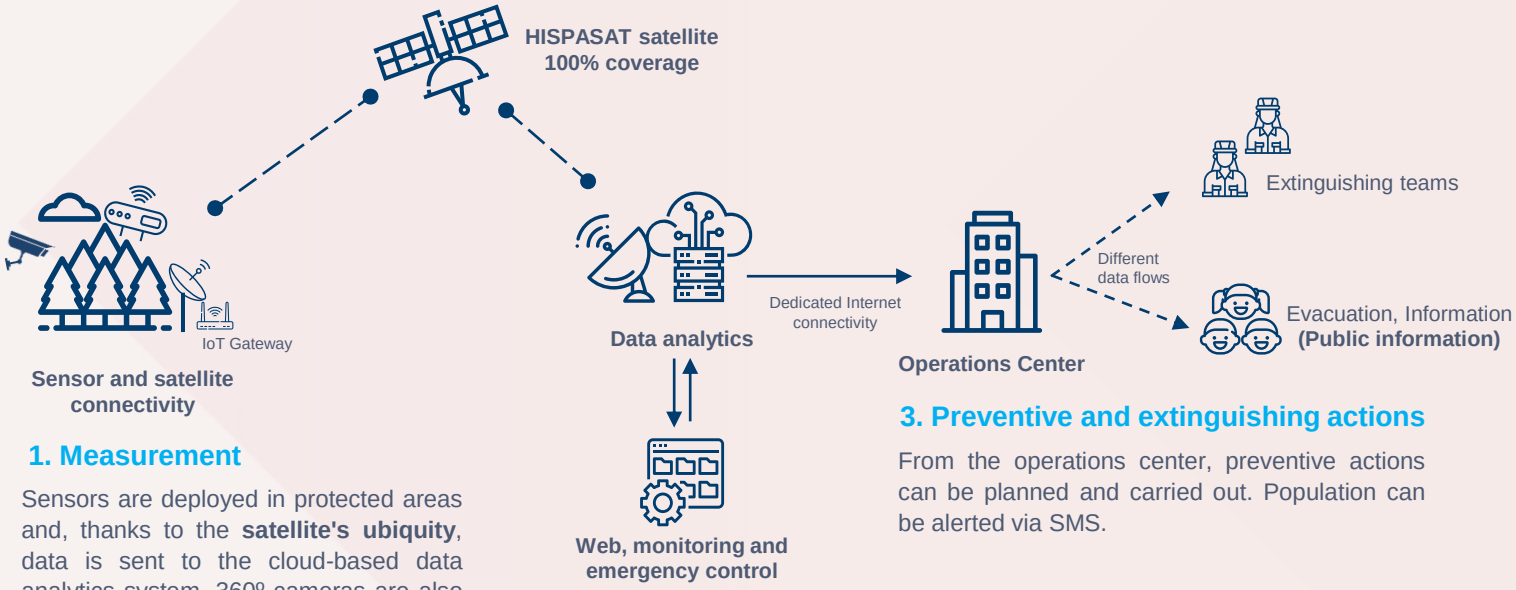

1. Measurement

Sensors are deployed in protected areas and, thanks to the **satellite's ubiquity**, data is sent to the cloud-based data analytics system. 360º cameras are also considered and strategic points.

2. Risk analysis

Data are analysed and **risk assessment** is performed. In the event of a **fire alert**, the notice is sent in real-time to the operations center.

3. Preventive and extinguishing actions

From the operations center, preventive actions can be planned and carried out. Population can be alerted via SMS.

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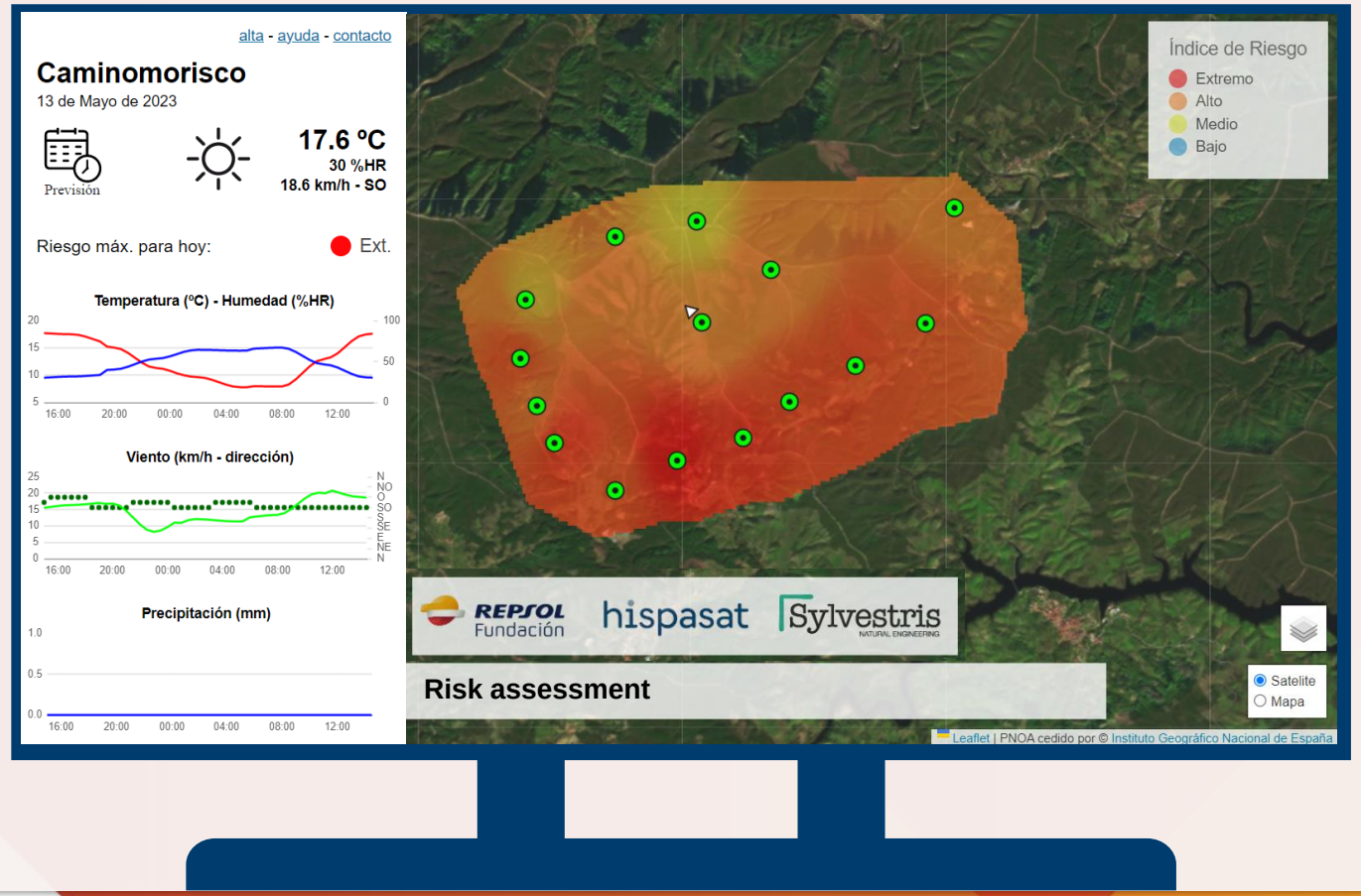
Internet of Trees IoT
High Precision Early Detection System

Targeted to both citizens and disaster management agencies

- Real-time information
- End user front end
- Detailed back end for management
- Alarms can be configured

Customizable platform

- Adapted to every type of organism
- Integrable with any external platform



More info:
https://bseed.eu/caminomorisco/

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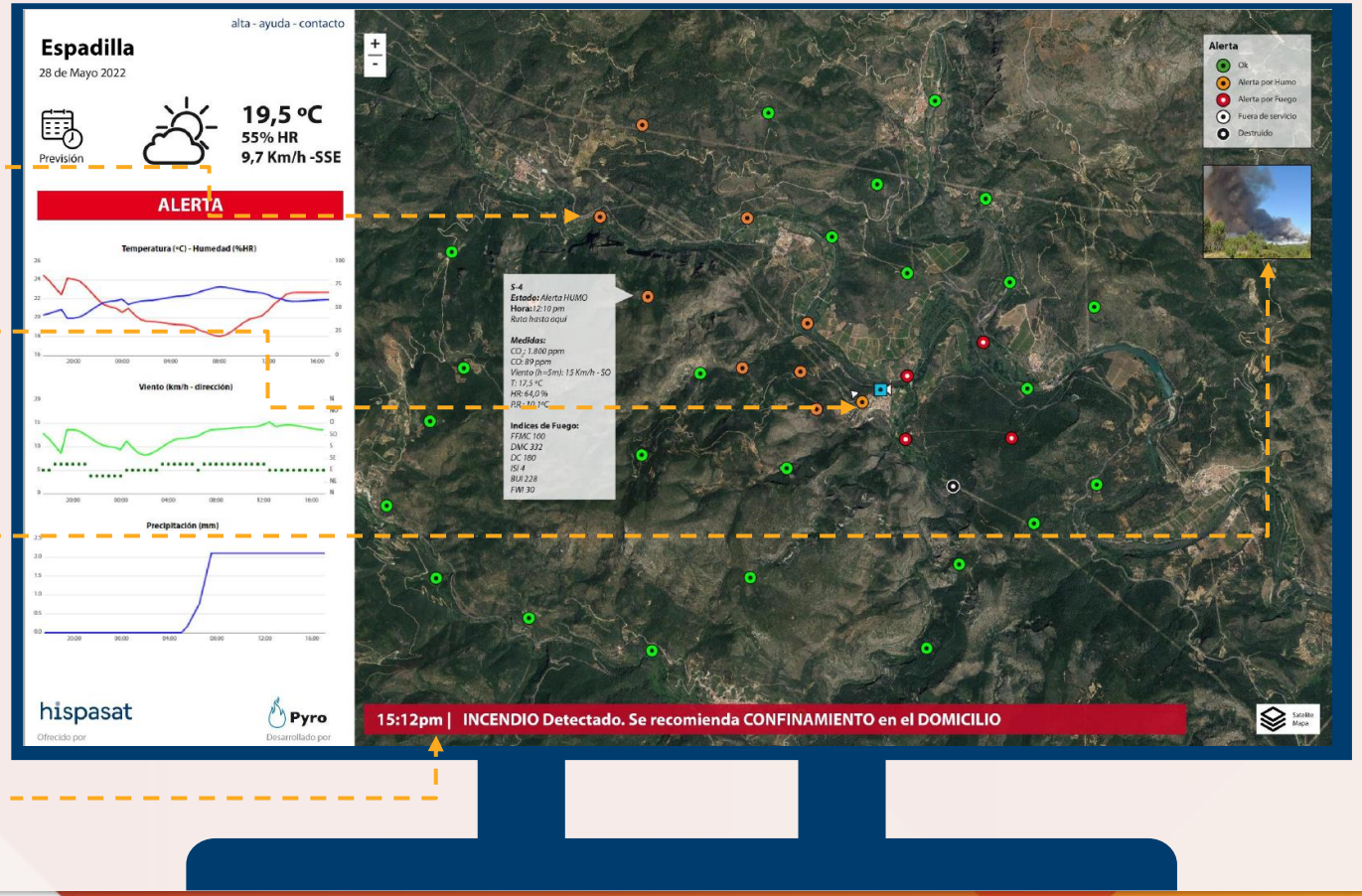
Internet of Trees IoT
High Precision Early Detection System

Fire monitoring solution:

- Real-time fire monitoring
- Weather data (high precision)
- 360º video-camera monitoring
- Alarms system for both citizens and agencies



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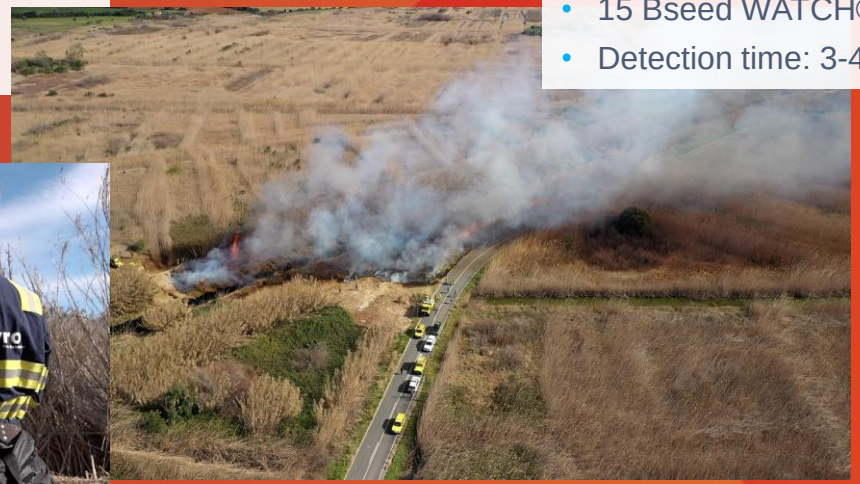
Internet of Trees IoT
High Precision Early Detection System

Performances in prescribed Fire

Mallorca, Feb, 16th 2022

- Albufera Natural Park
- 2 Bseed WATCH® sensors
- Detection time: 1 min at 400m distance



Performances in prescribed Fire

Cáceres, May, 10th 2023

- Caminomorisco (Las Hurdes Natural Park)
- 15 Bseed WATCH® sensors
- Detection time: 3-4 min at 553m distance

Solution already deployed in more than 10.000 ha in Spain

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FINAL REMARKS

Q&A

THANK YOU
MUITO OBRIGADO
MUCHAS GRACIAS

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