Bee2Fire Detection

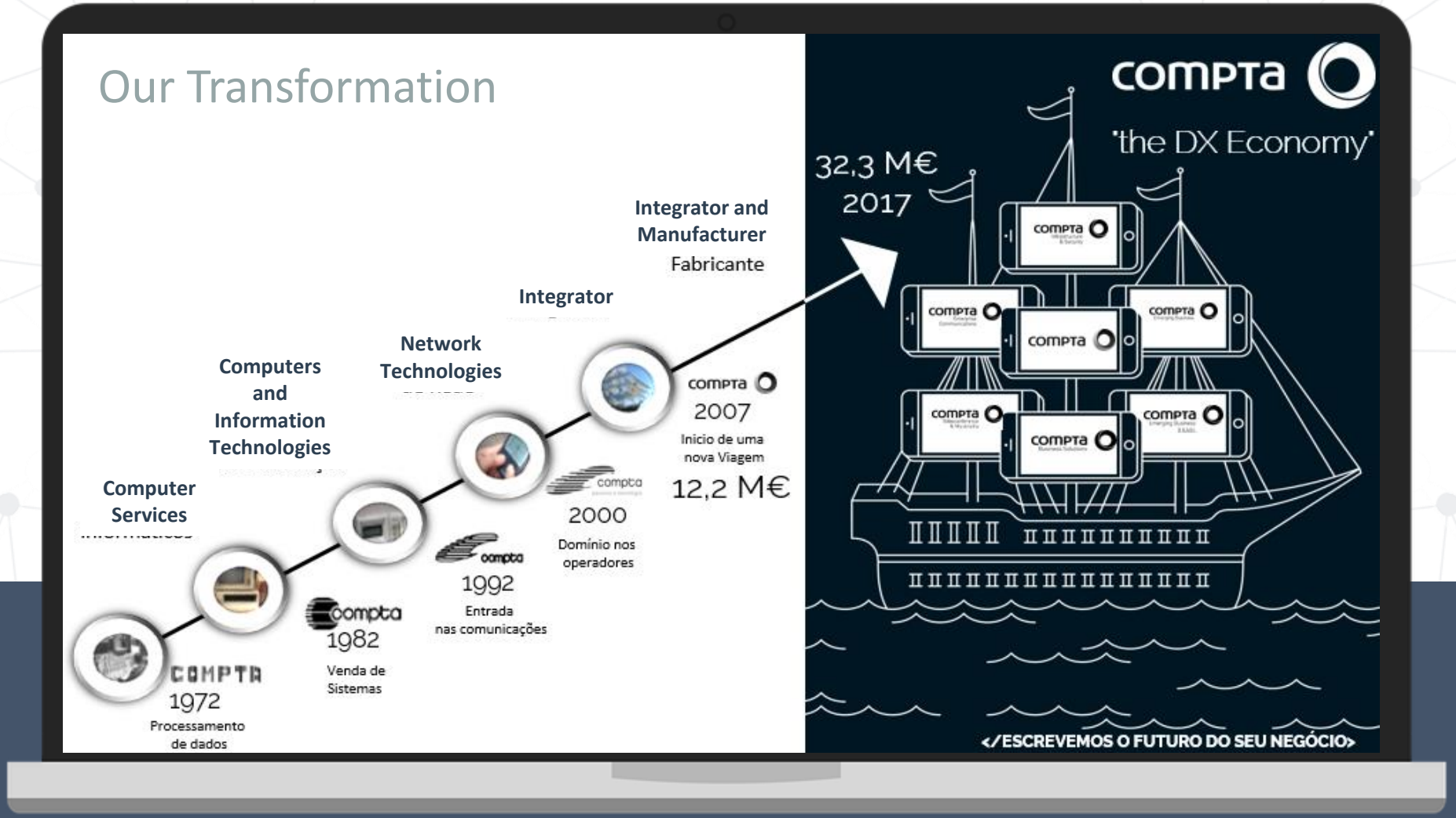
Pedro Vieira

Director at Compta - Smart Devices Division

Assistant Professor at Nova University of Lisbon

46 Years in the Market

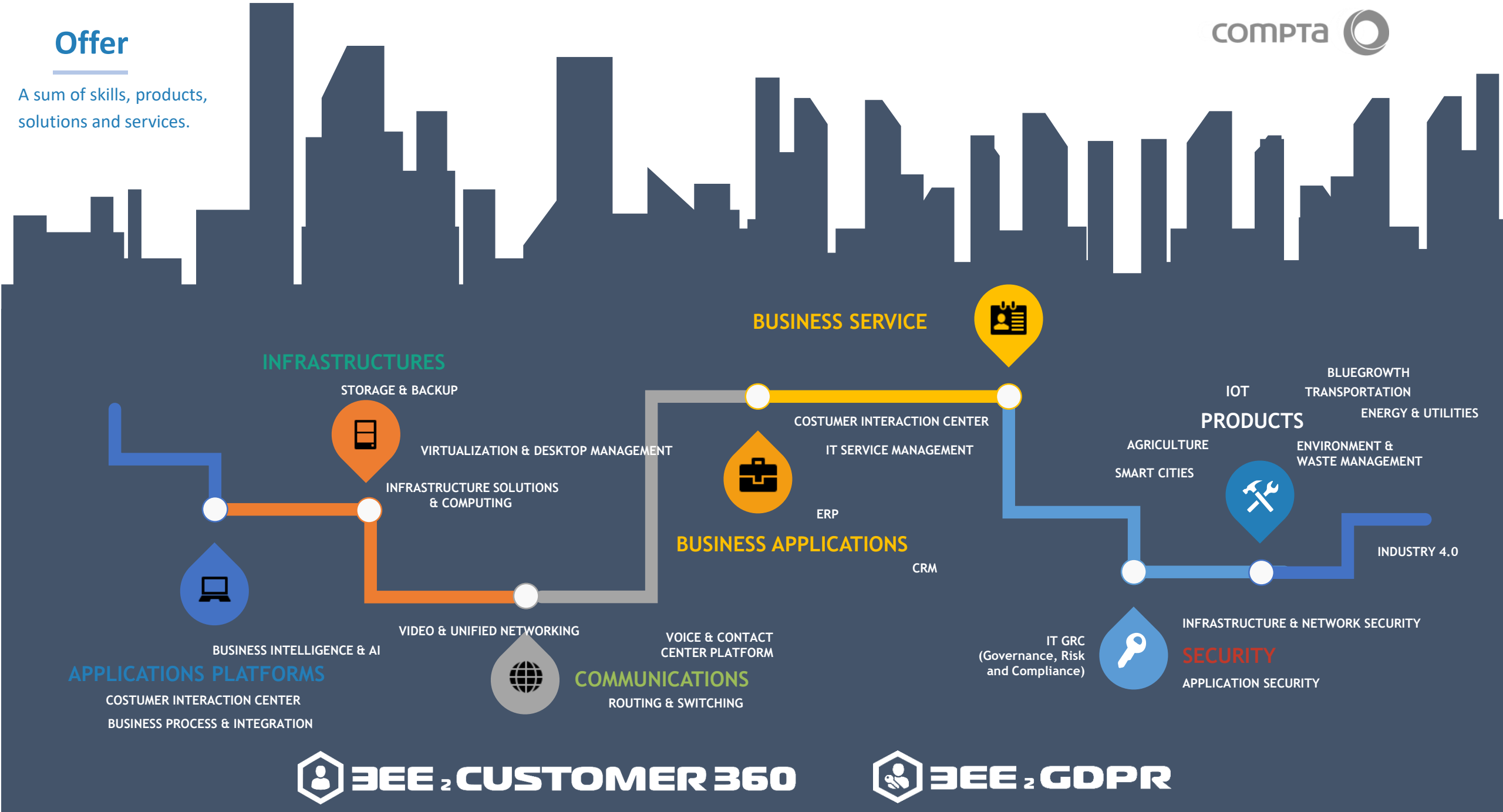
Technology is with us!



WE ARE WRITING OUR SUCCESS WITH
THE SUCCESS OF OUR COSTUMERS

Offer

A sum of skills, products, solutions and services.



BEE2CUSTOMER360

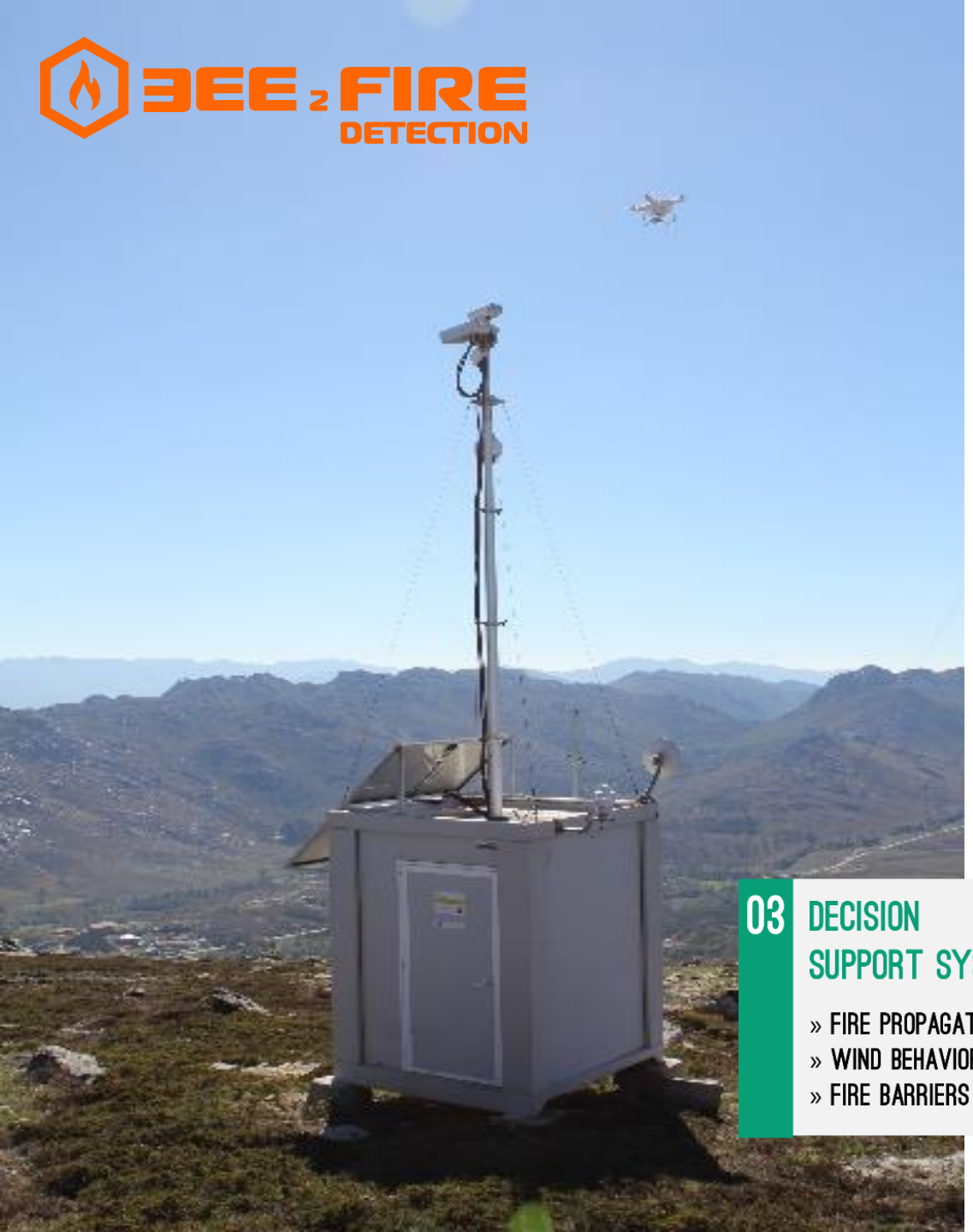
BEE2GDPR

Wildland fires – A Worldwide Problem

- Every year wildland fires are responsible for the loss of human lives, environment and economic damage
- The mitigation of this problem depends of different players, from governmental agencies, private companies and individuals.
  - Forest management
  - Risk assessment
  - Early detection
  - Decision support tools
  - Field infrastructure
  - Personal trained and equipped

Wildland fires – A Worldwide Problem

- Every year wildland fires are responsible for the loss of human lives, environment and economic damage
- The mitigation of this problem depends of different players, from governmental agencies, private companies and individuals.
  - Forest management
  - **Risk assessment**
  - **Early detection**
  - **Decision support tools**
  - Field infrastructure
  - Personal trained and equipped



3EE2FIRE DETECTION

compta Emerging Business

01 FIRE DETECTION

» AUTOMATIC
» 365X24
» LOW RATE OF FALSE ALARMS

3EE2FIRE DETECTION 360

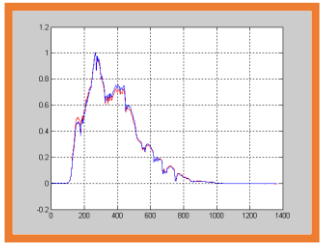
02 SURVEILLANCE

» INSPECTION
» 360ª
» OPTICAL

03 DECISION SUPPORT SYSTEM

» FIRE PROPAGATION
» WIND BEHAVIOR
» FIRE BARRIERS

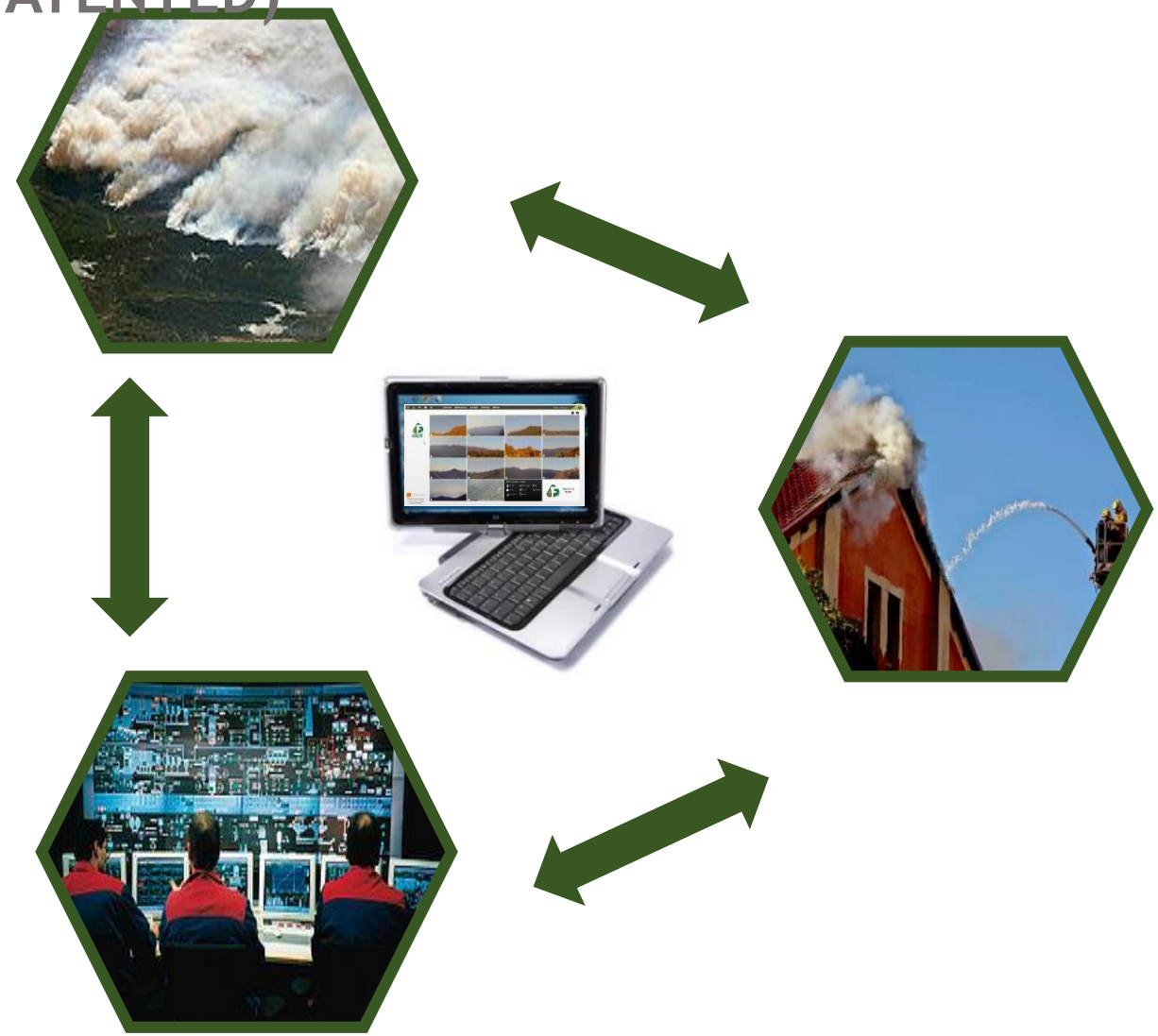
THREE DETECTION TECHNOLOGIES (PATENTED)



- Optical Spectrometry: detects smoke from fires up to 15km away through comparative analysis of sunlight spectra

- Thermal: detects fires up to 2km away through space-time temperature analysis

- Image: detects fire, up to 15 km, through visual recognition algorithms.



Always Looking for New Solutions

- Through
  - Inhouse research & development
  - Through partnerships with significant players

- IBM Watson contest
  - IBM Weather company for a better risk and fire behaviour assessment
  - IBM Watson Visual Recognition as a tool to integrate deep learning in the wildland fires early detection

Global Champion of IBM Watson Build 2018

3EE 2 FIRE
DETECTION
powered by Watson AI
FIRE DETECTION AND PREDICTION POWERED BY ARTIFICIAL INTELLIGENCE
the ultimate tool for automatic early detection of forest fires
act before it's too LATE
compta
Emerging Business

First 20 minutes are crucial!!!

The Solution

3EE2FIRE DETECTION
powered by Watson AI

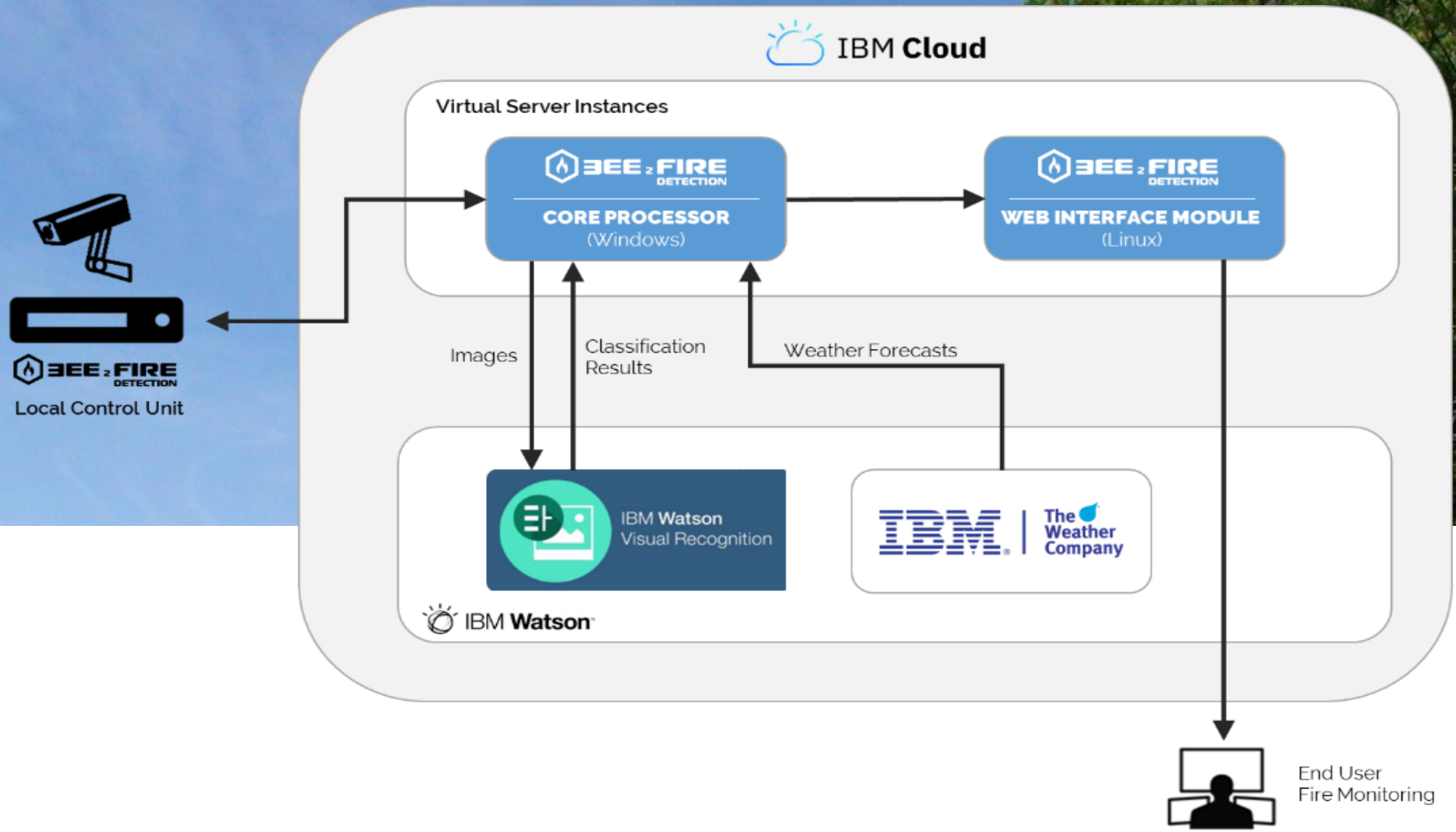
1) Predicts: constantly measures the "Fire Danger Level Forecast", powered by IBM Weather Company

2) Detects: early Fire Detection powered by IBM Watson AI Visual Recognition.

3) Recommends: estimates the fire propagation over the terrain and suggests where and how to act first.

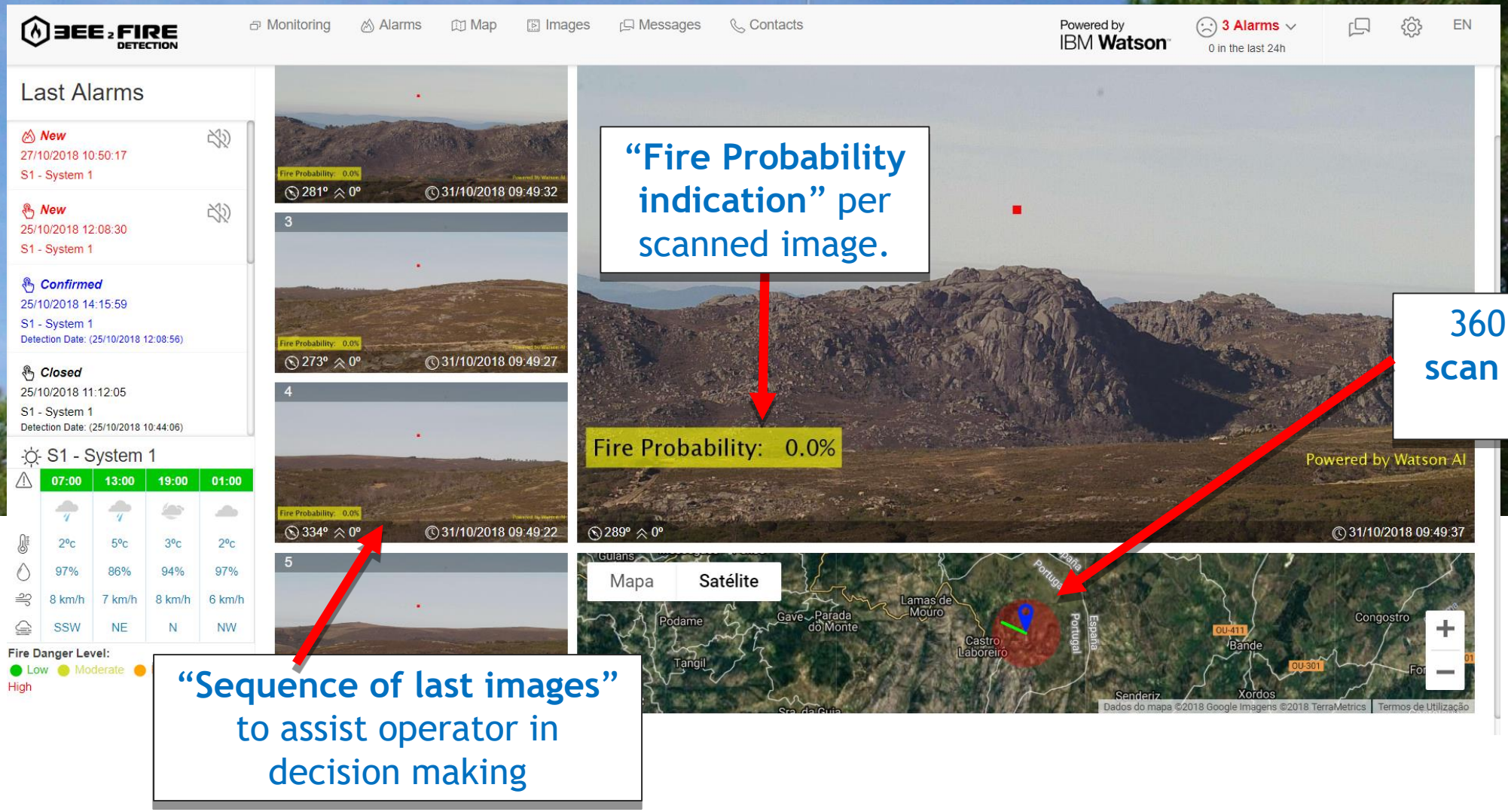
COMPTA
Emerging Business

Architecture



System Access

Operator Screen

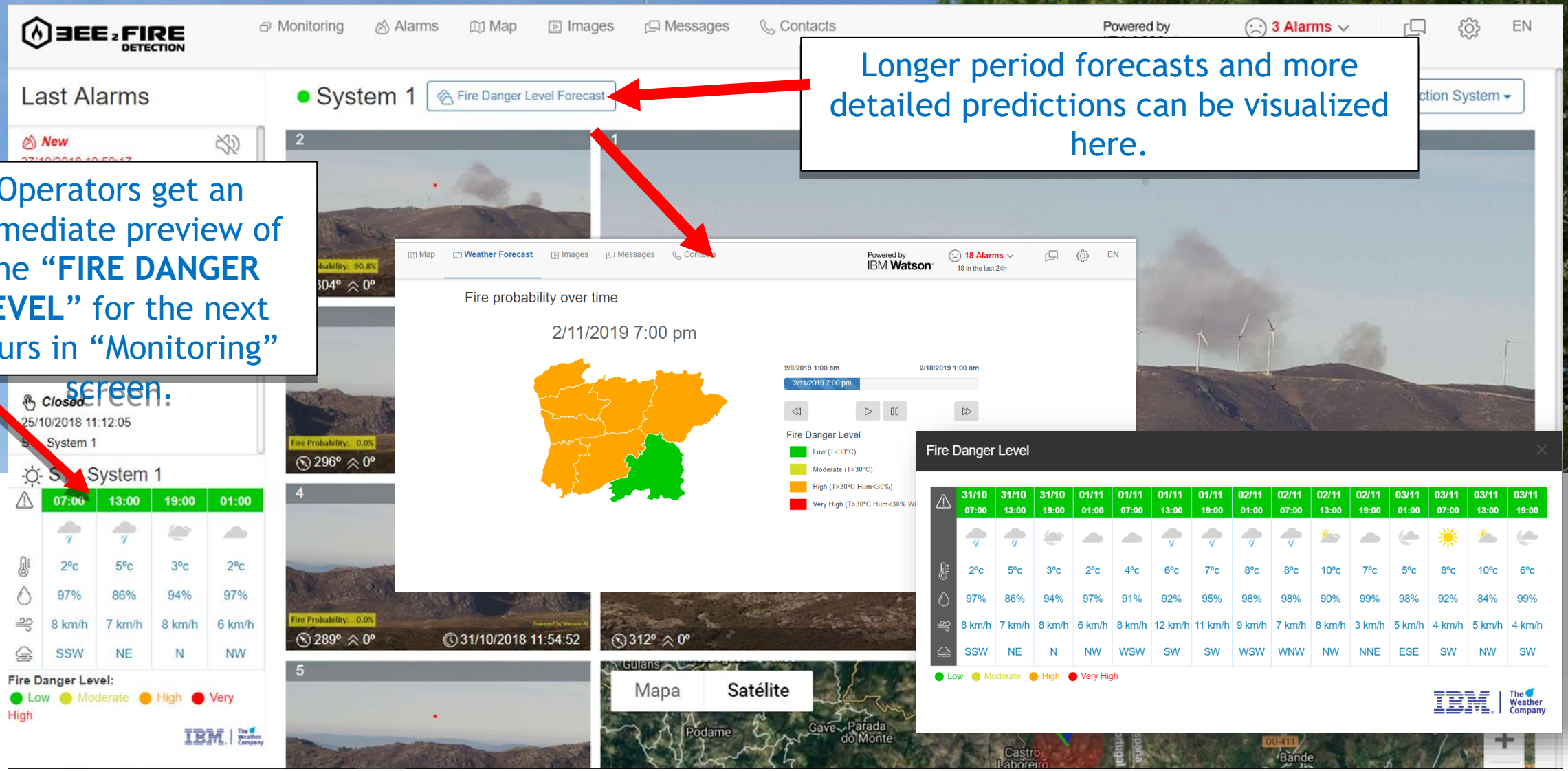


"Fire Probability indication" per scanned image.

360 degree **circular scan** performed by the camera.

"Sequence of last images" to assist operator in decision making

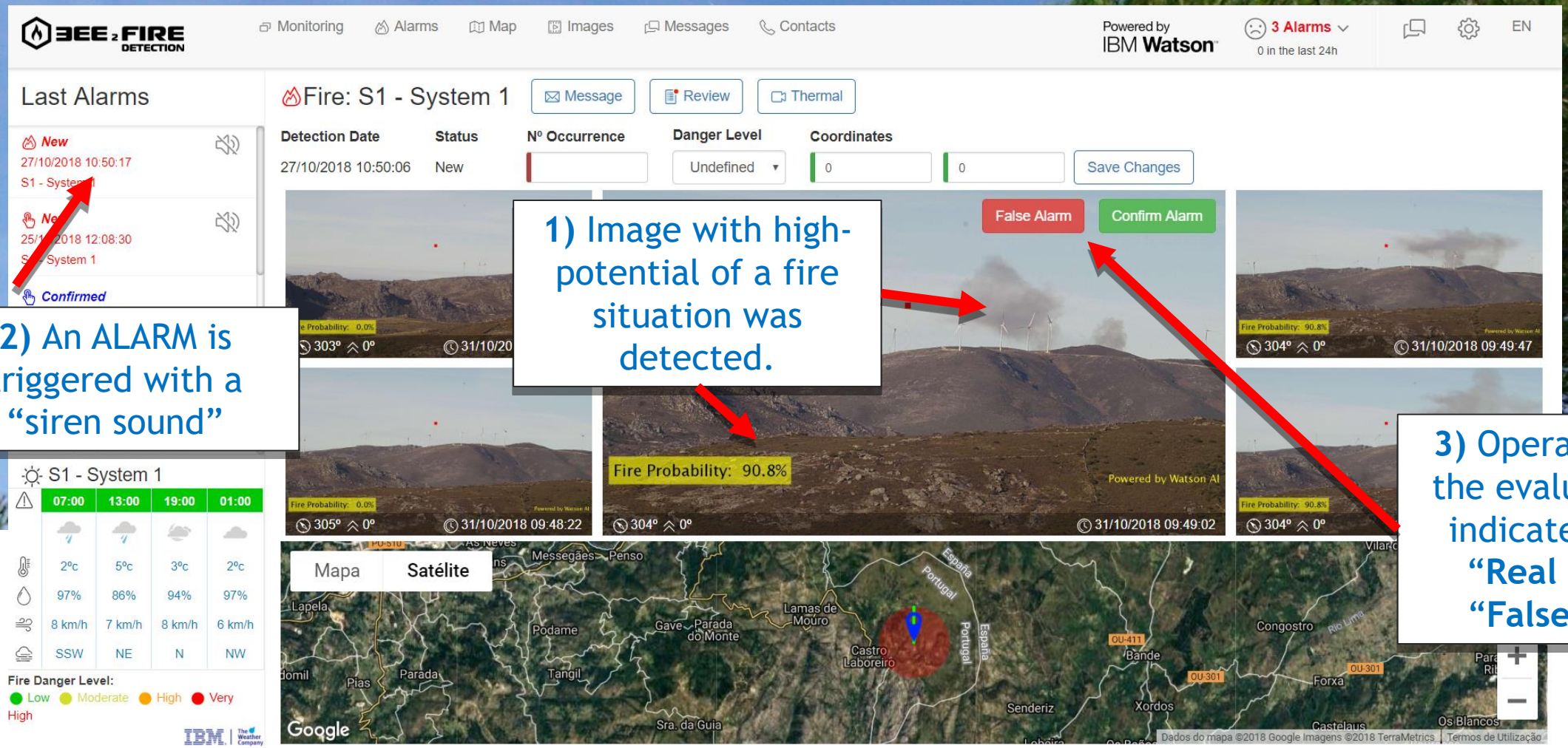
Prediction



Longer period forecasts and more detailed predictions can be visualized here.

Operators get an immediate preview of the **“FIRE DANGER LEVEL”** for the next hours in “Monitoring” screen.

Detection

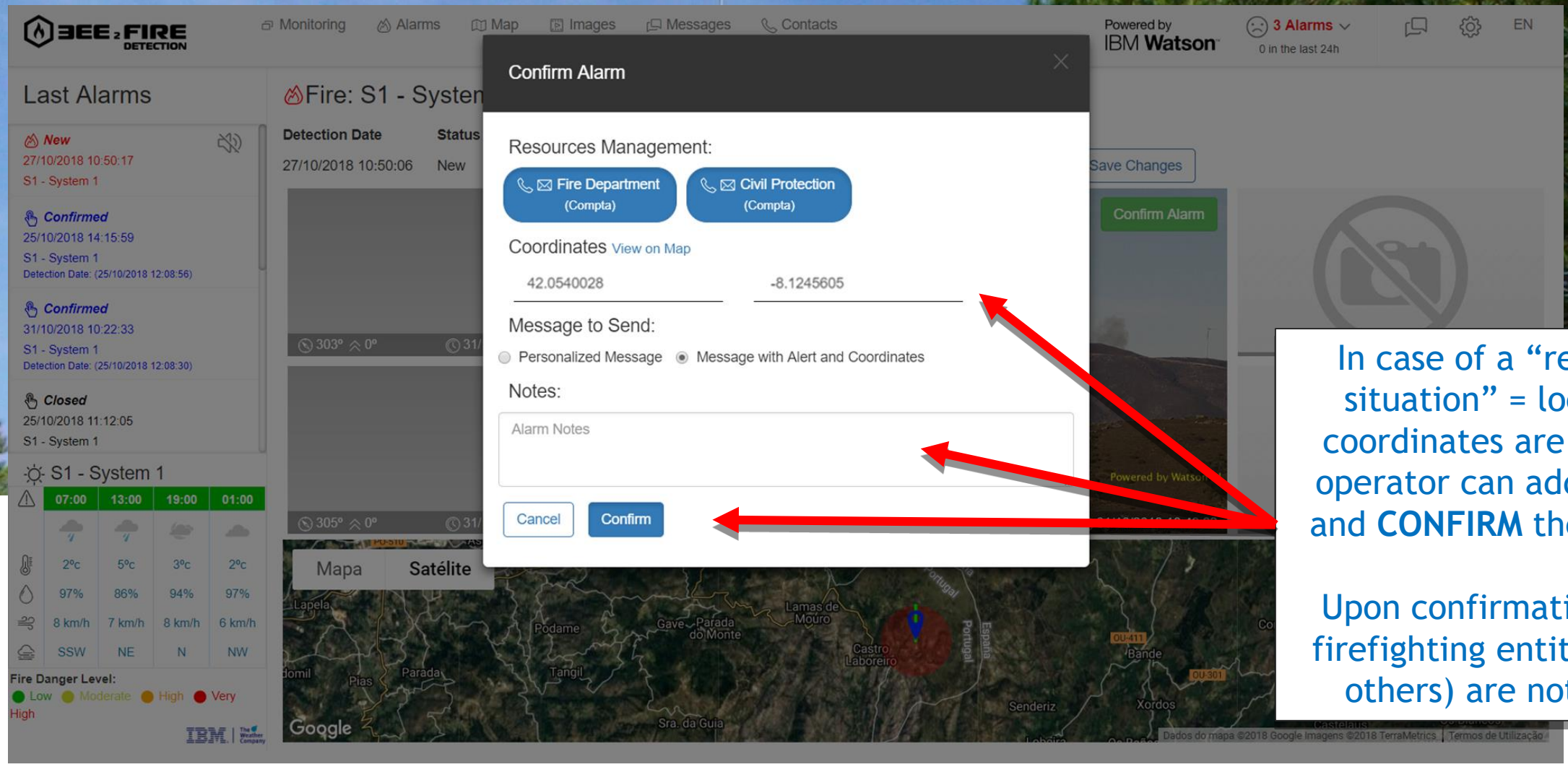


1) Image with high-potential of a fire situation was detected.

2) An ALARM is triggered with a "siren sound"

3) Operator makes the evaluation and indicates if it's a **"Real Fire"** or **"False Alarm"**

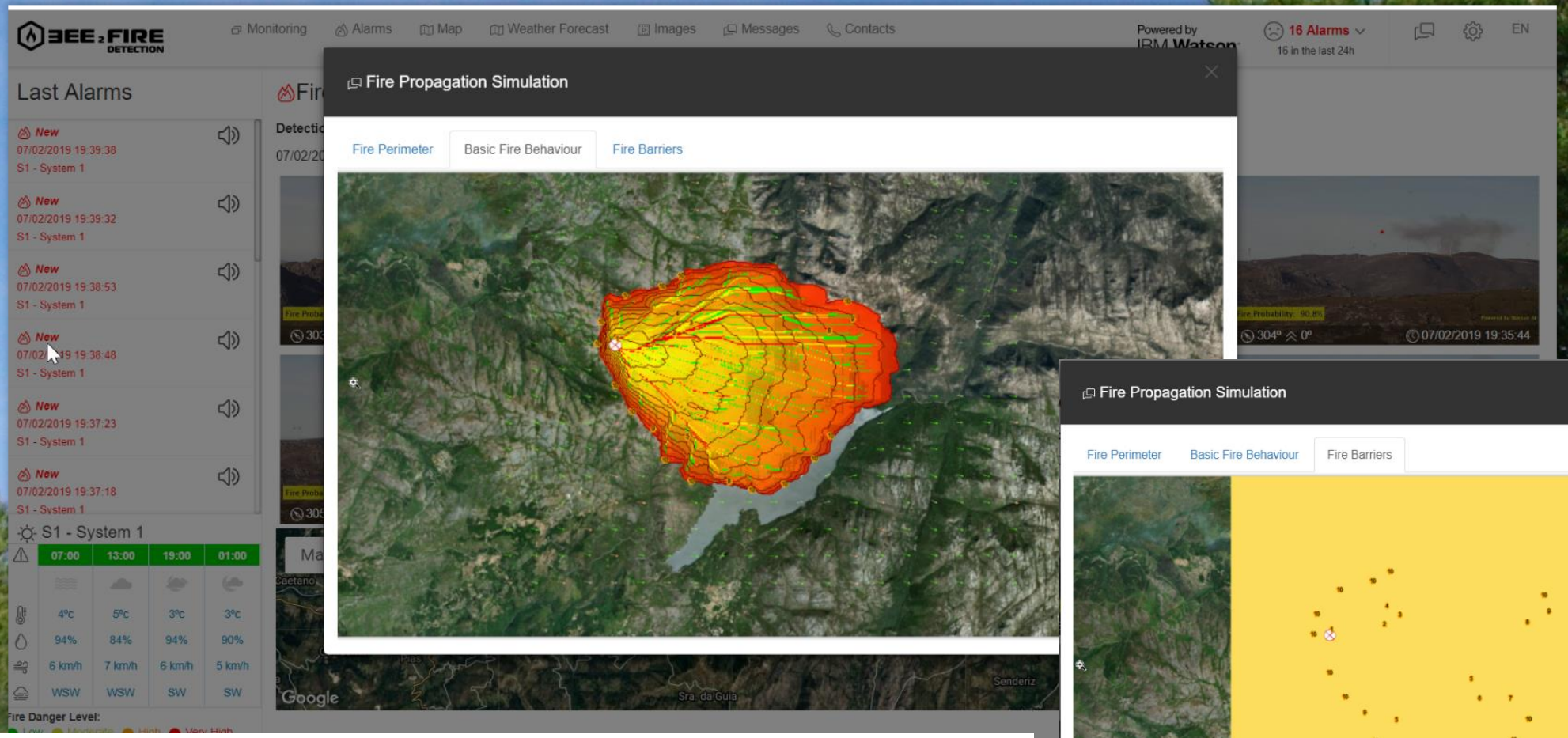
Detection – Fire Confirmation

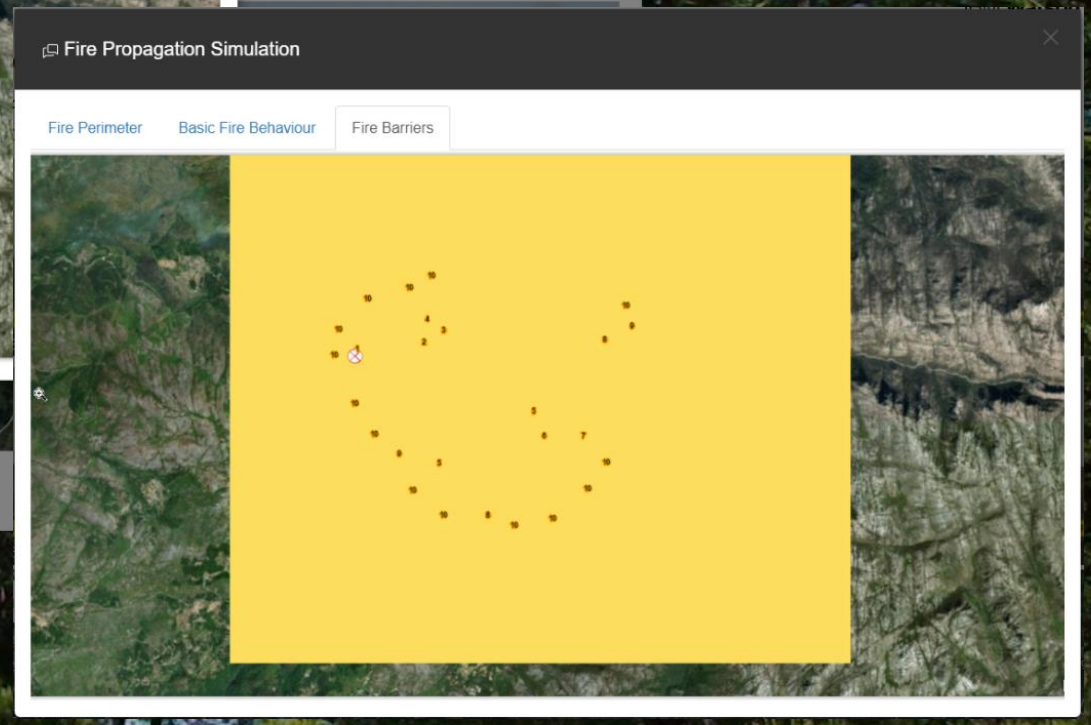


In case of a “real fire situation” = location coordinates are added, operator can add a note and **CONFIRM** the alarm.

Upon confirmation, the firefighting entities (and others) are notified.

Firefighting Assistance (add-on module)

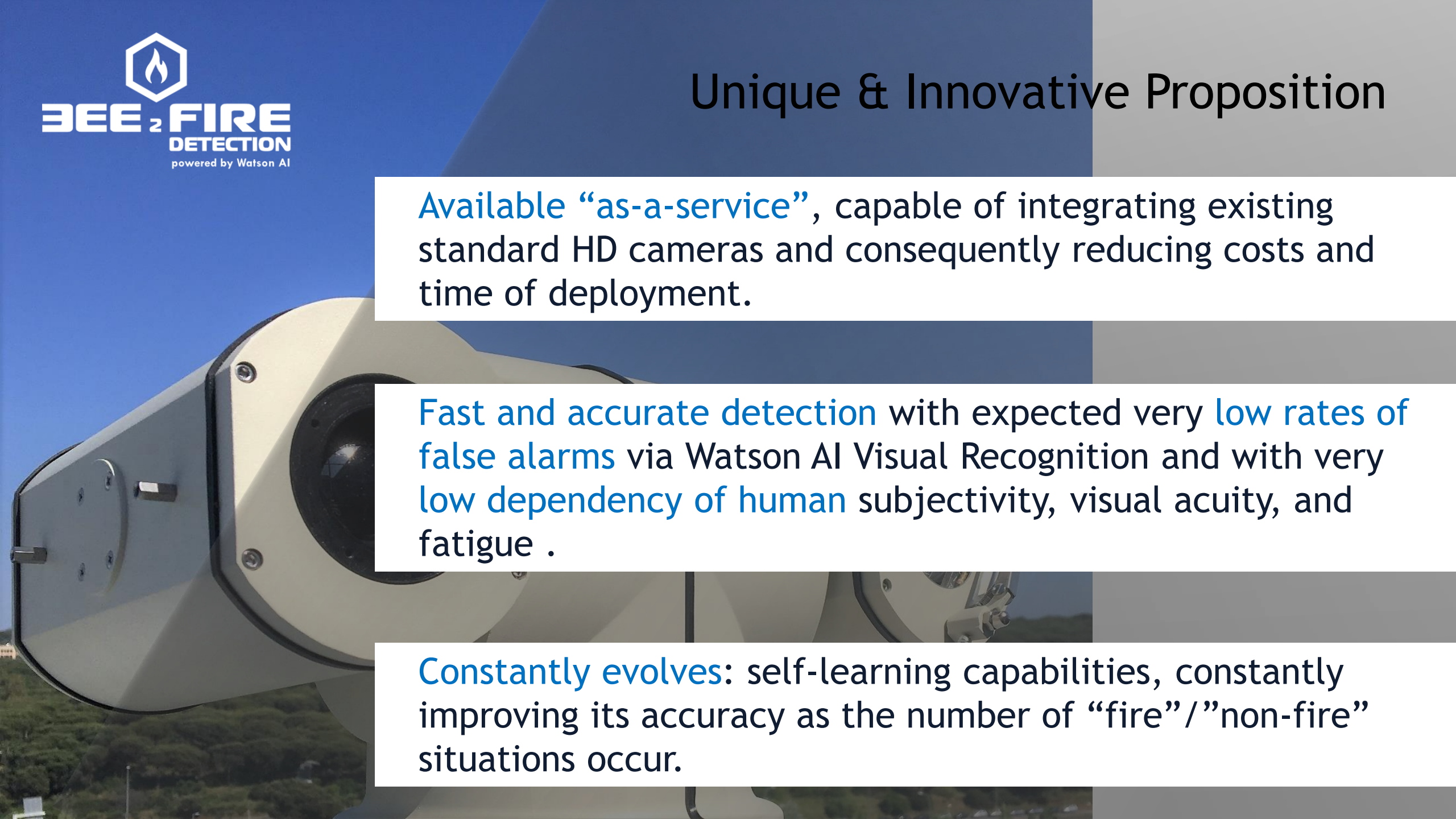




"Fire Evolution Module" to assist in Firefighting measures and action plan.

Roadmap (v2.0 additional modules)

"Drone Assistant Module" to provide additional data for "decision-making" support



Unique & Innovative Proposition

Available “as-a-service”, capable of integrating existing standard HD cameras and consequently reducing costs and time of deployment.

Fast and accurate detection with expected very low rates of false alarms via Watson AI Visual Recognition and with very low dependency of human subjectivity, visual acuity, and fatigue .

Constantly evolves: self-learning capabilities, constantly improving its accuracy as the number of “fire”/”non-fire” situations occur.

Go-to-Market

Target Customers:

1) Municipalities, Counties, Local Government
- Forest Protection, Civil Protection
- Natural Parks Protection
- Wildlife and Ecosystem protection entities

2) Forest Related Industries:
- Celluloses, Pulp and Paper industry
- Rubber, Cork, Wood Producers
- Large Agricultural Plantations
- Mining Industry

3) Industrial yards with highly inflammable materials:
- Lumber yards
- Tyre yards
- Waste treatment yards and landfills
- Chemical plants

Thank you

Pedro Vieira – pedro.vieira@compta.pt