

DALEKOVOD

T: +385 1 241 11 11
E: dalekovod@dalekovod.hr
www.dalekovod.com



CONNECTING WORLDS, BUILDING THE FUTURE

2018

CONNECTING WORLDS, BUILDING THE FUTURE

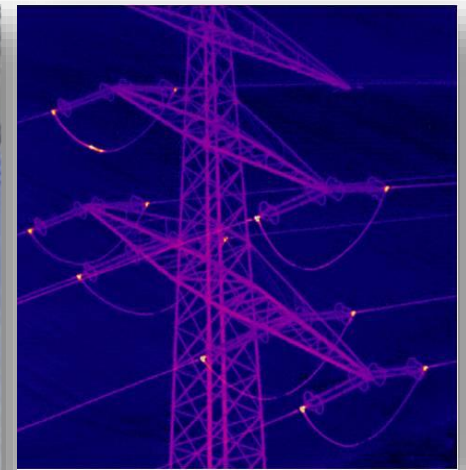
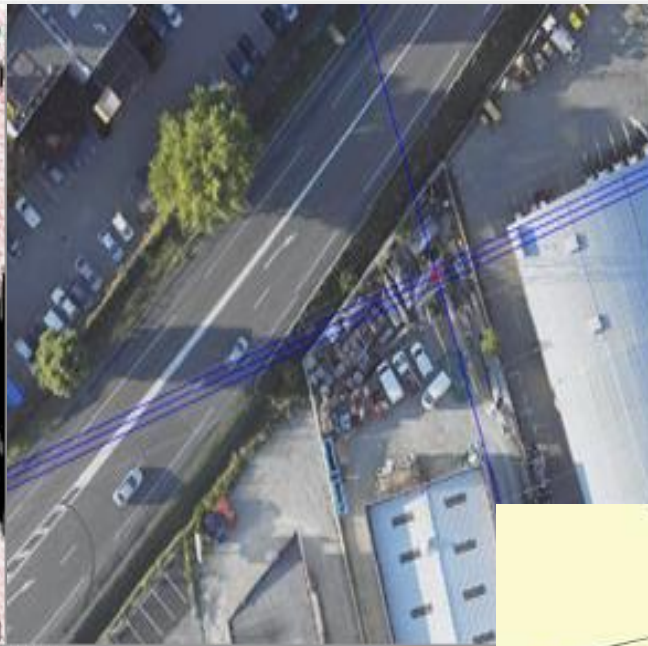
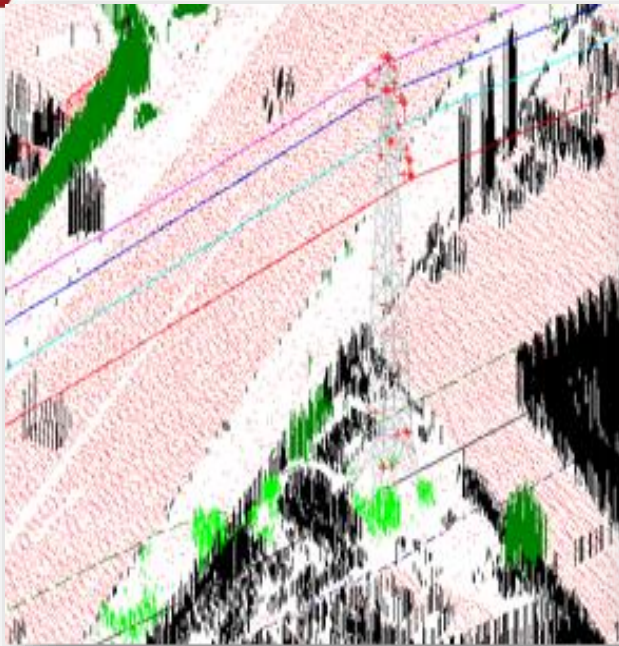


13 YEARS OF NORDIC PRESENCE



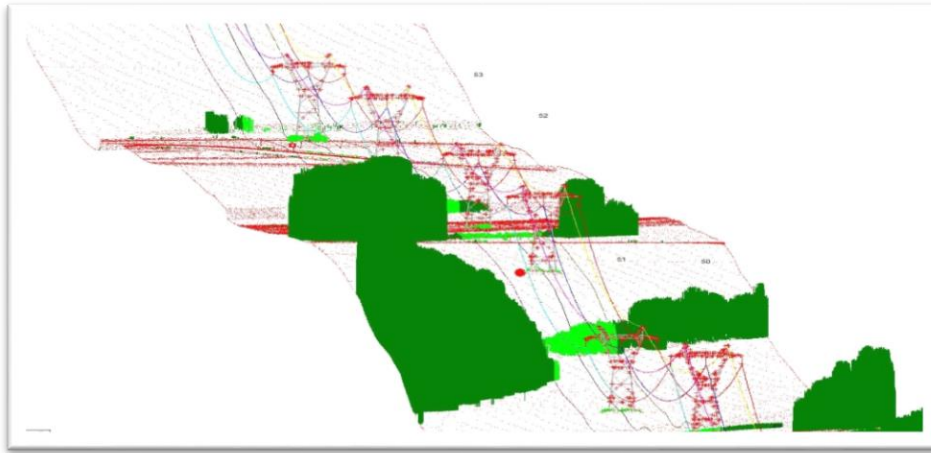
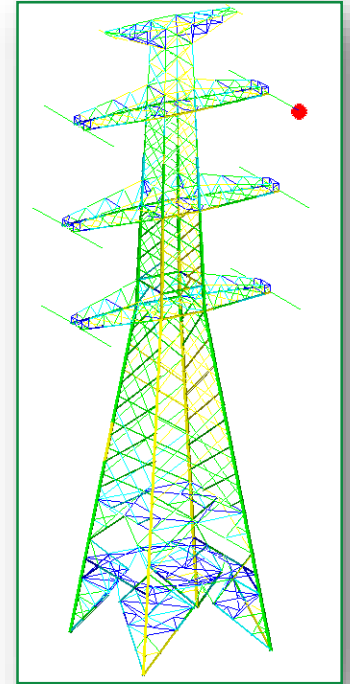
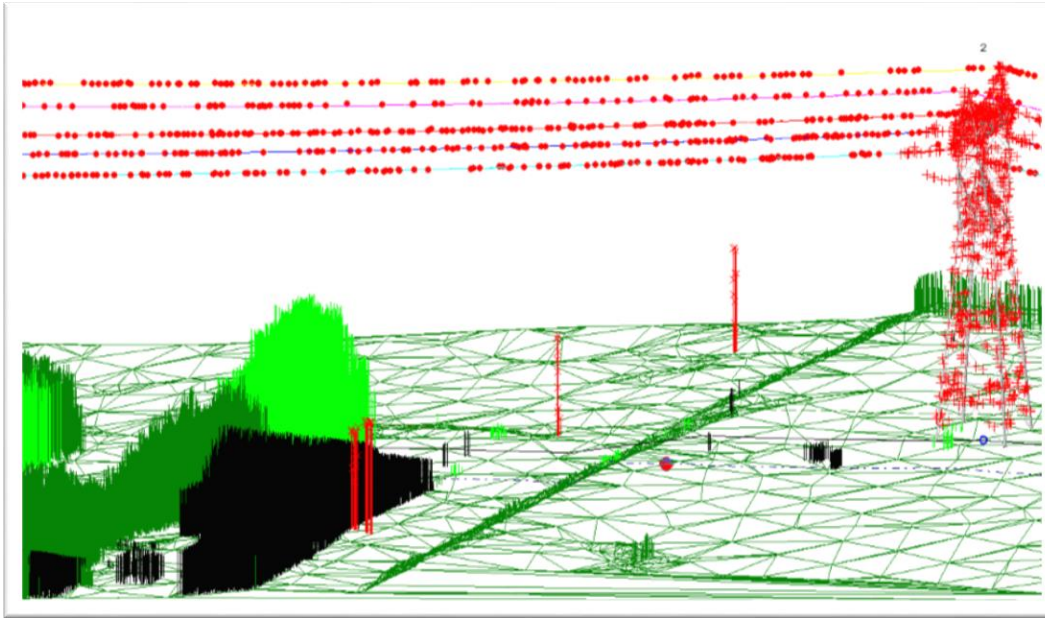
DIGITALIZING POWER LINES AND SUBSTATIONS

DIGITALIZING POWER LINES AND SUBSTATIONS



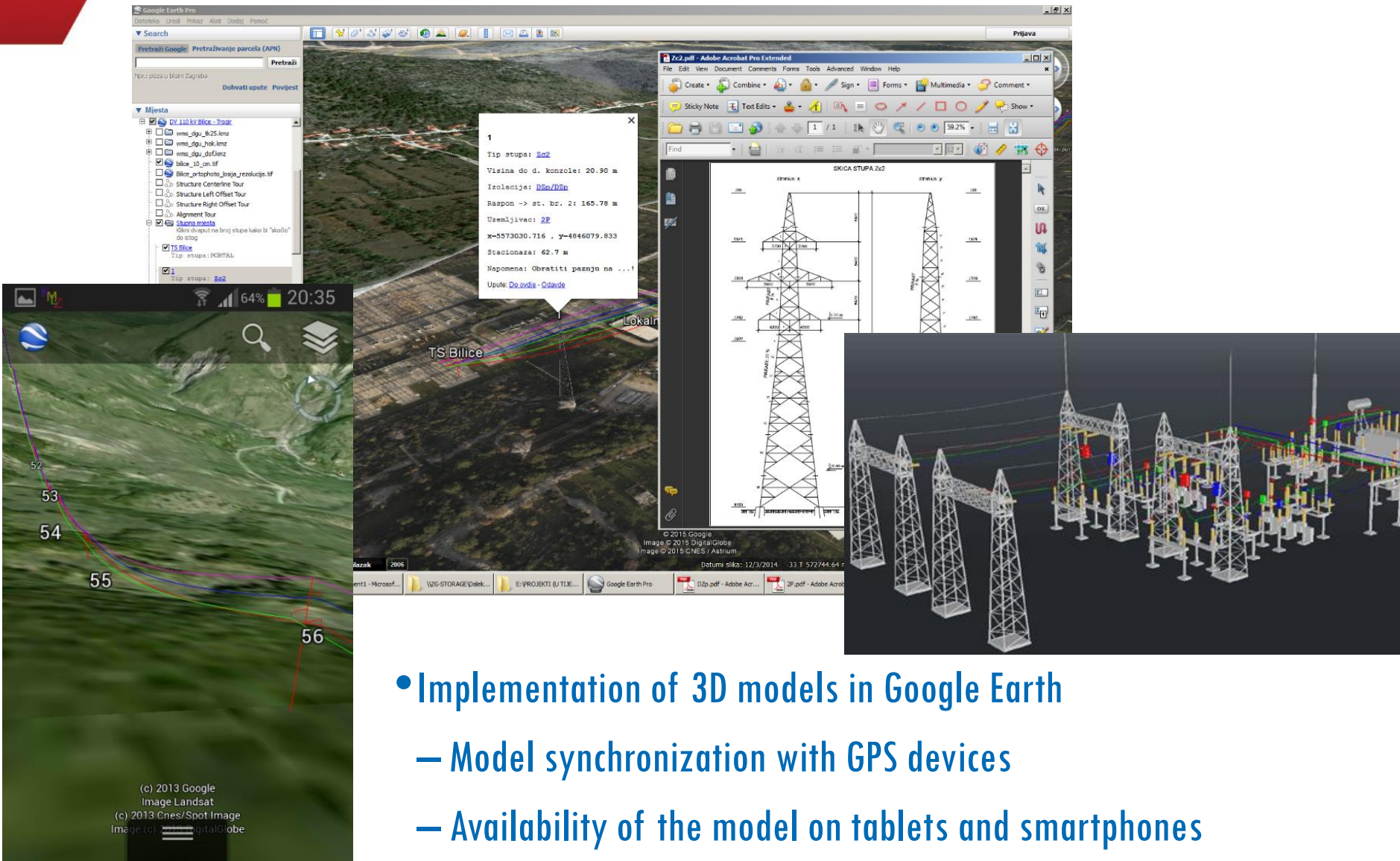
- LIDAR + orthophoto
- High resolution photo

DIGITALIZING POWER LINES AND SUBSTATIONS



- 3D model (PLS-CADD, PRIMTECH)
- Checkings:
 - Tower and equipment position and verticality
 - Conductor tension and position
 - Infrastructure vicinity
 - Clearances

DIGITALIZING POWER LINES AND SUBSTATIONS



- Implementation of 3D models in Google Earth
 - Model synchronization with GPS devices
 - Availability of the model on tablets and smartphones
 - Built-in equipment and tower data



EXTERNAL OBJECTS SUPERVISION

WHAT IS EXTERNAL OBJECTS SUPERVISION (EOS) SYSTEM ?

INTEGRATED OBJECT DIGITALIZATION SYSTEM

Multiobject and multisystem solution

EXTERNAL OBJECTS

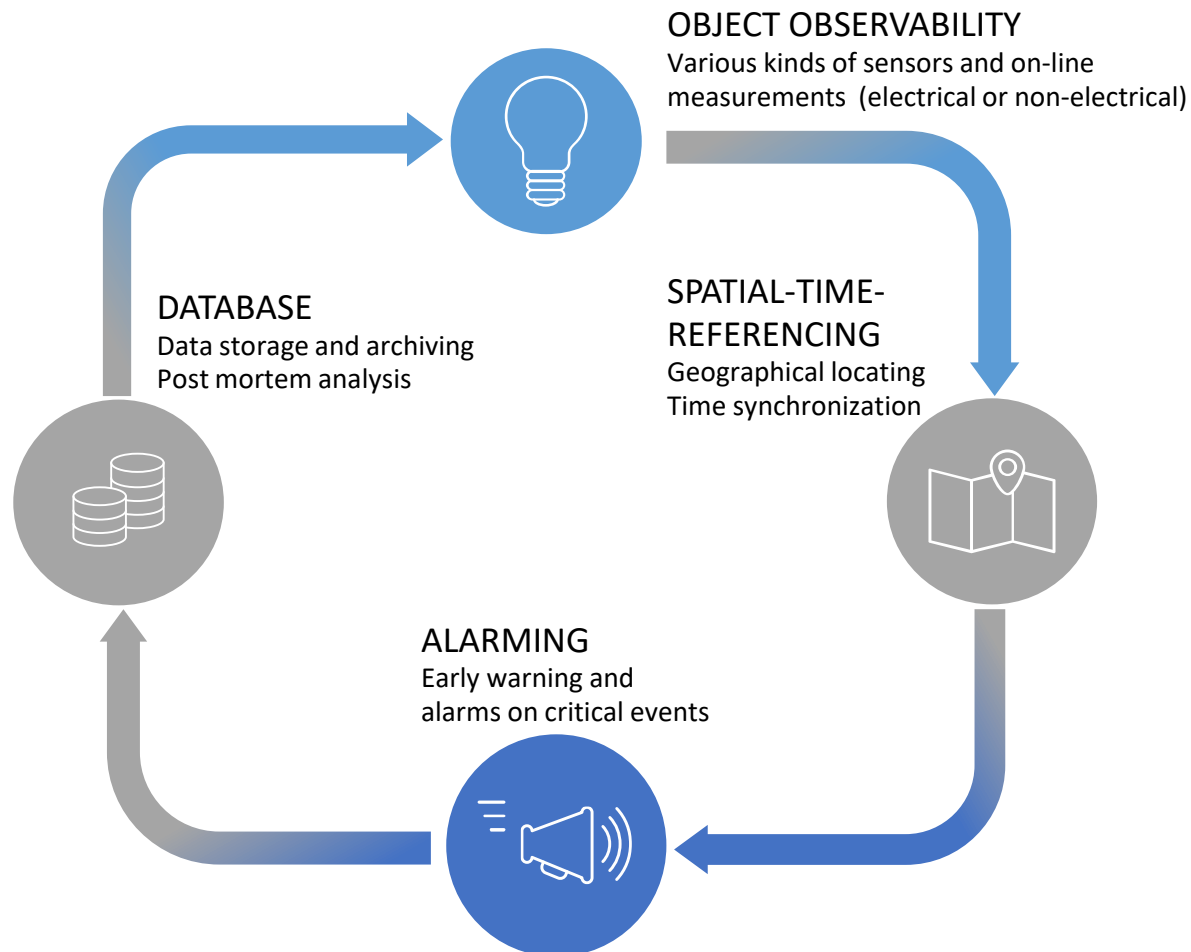
Distant objects, hard to reach and very often dispersed in locations

NON-OBSERVABLE

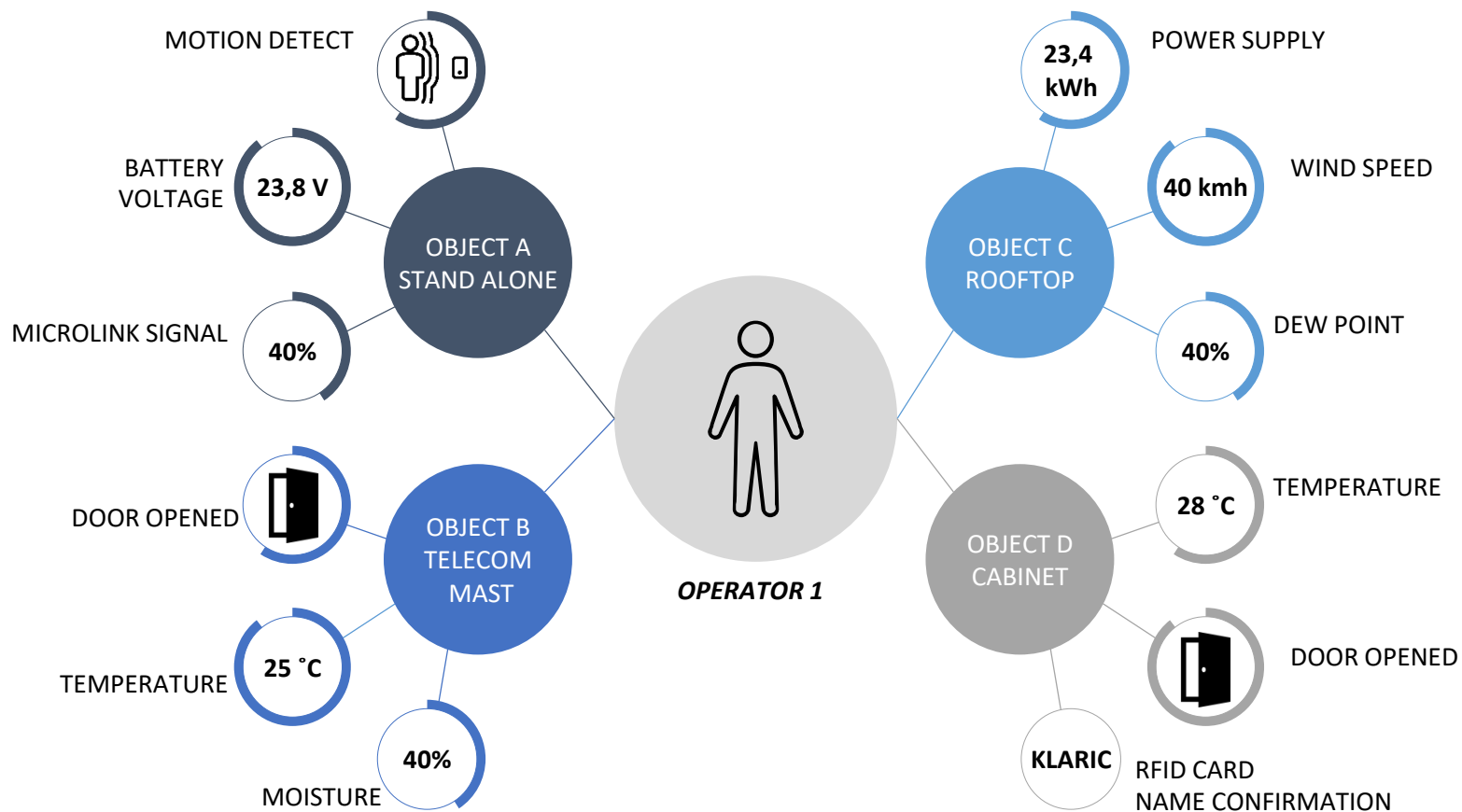
Objects without any signal or with only few non integrated signals

NO CRITICAL EVENT ALARM

External objects very often belong to key infrastructure that needs to be alarmed on critical event



WHY EOS SYSTEM ?



SENSORSTAGE SOFTWARE — FUNCTIONALITY AND MOBILITY

01



ON LINE SYSTEM MONITORING

Digitalization of existing objects

02



MEASUREMENTS AND SENSING

Better observability and visibility of existing objects

03



ALARMING AND WARNING

Early warning values and signals

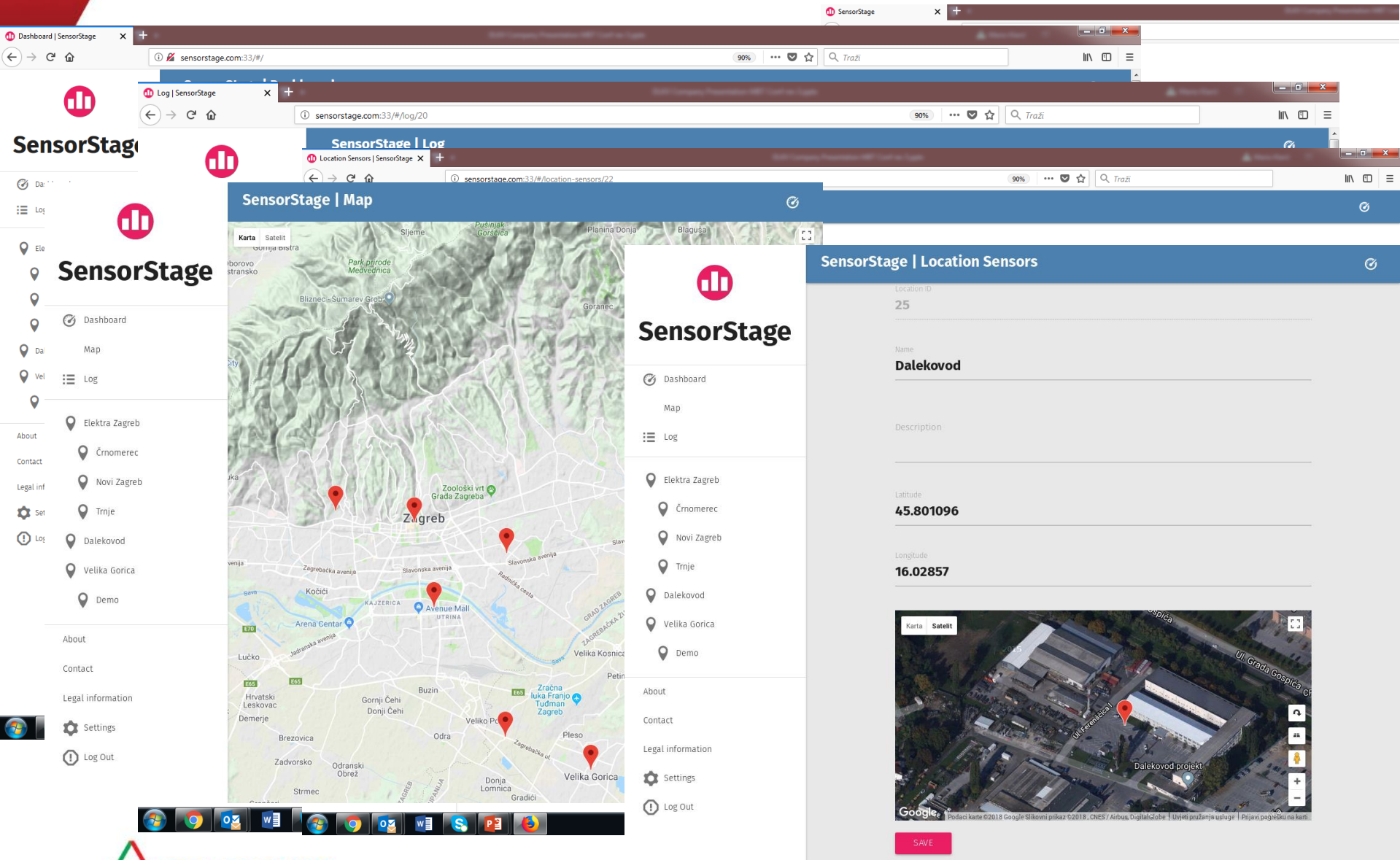
04



DATABASE

Analyzing critical events, post-mortem diagnostics

SENSORSTAGE — EXAMPLE



The screenshot displays the SensorStage web application interface across multiple browser windows and a desktop taskbar. The main window shows the 'SensorStage | Map' view, featuring a map of Zagreb with several red location pins. The left sidebar contains a navigation menu with options: Dashboard, Map, Log, Elektra Zagreb, Črnomerec, Novi Zagreb, Trnje, Dalekovod, Velika Gorica, and Demo. The bottom of the screen shows a Windows taskbar with various application icons.

Other visible windows include:

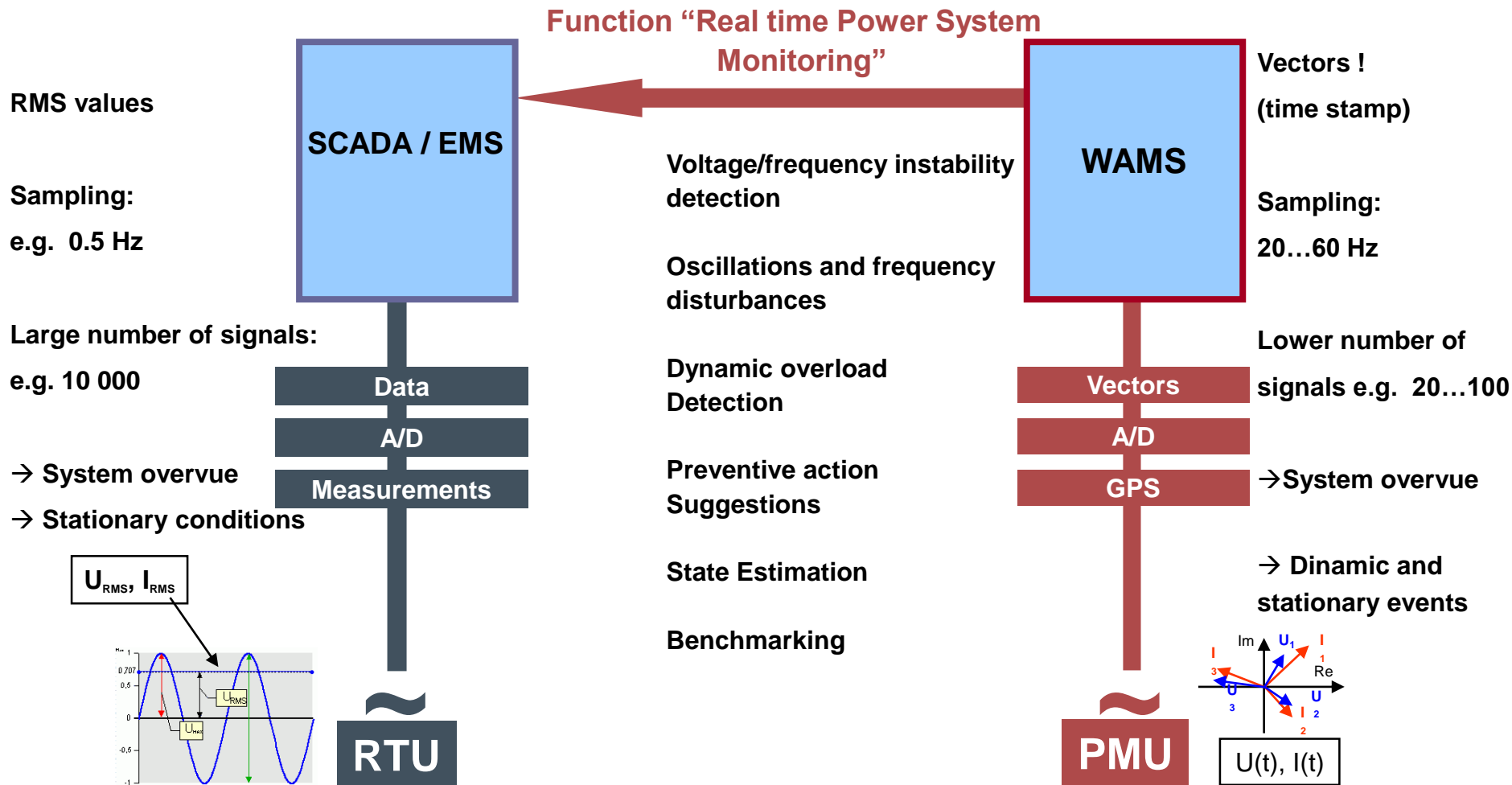
- SensorStage | Log**: Shows the 'Location Sensors | SensorStage' view.
- SensorStage | Location Sensors**: Displays details for a specific location sensor with the following information:
 - Location ID: 25
 - Name: Dalekovod
 - Description:
 - Latitude: 45.801096
 - Longitude: 16.02857

The desktop taskbar at the bottom includes icons for Windows, Google Chrome, Microsoft Office (Word, Excel, PowerPoint), and other applications.



WIDE AREA MONITORING SYSTEM

WAMS – SYSTEM FOR FUTURE GRIDS



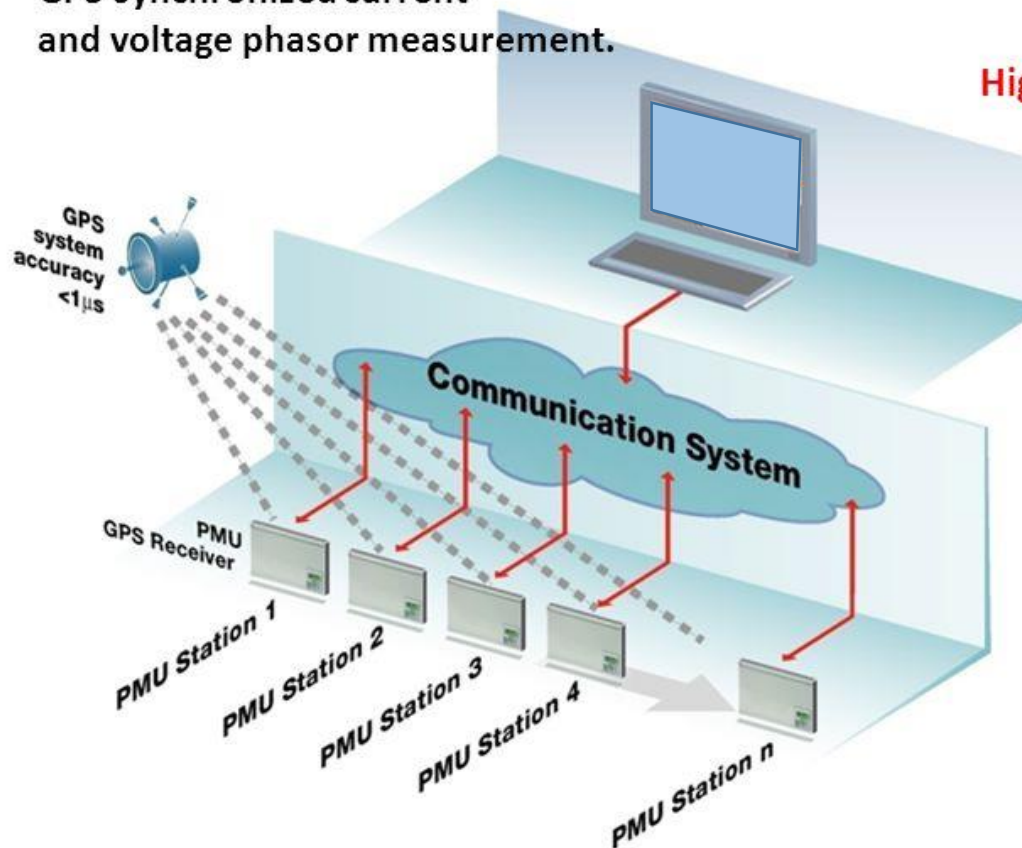
WAMS – POWER SYSTEM ON-LINE MONITORING

Wide Area Monitoring (WAMS) : System Configuration

GPS synchronized current and voltage phasor measurement.

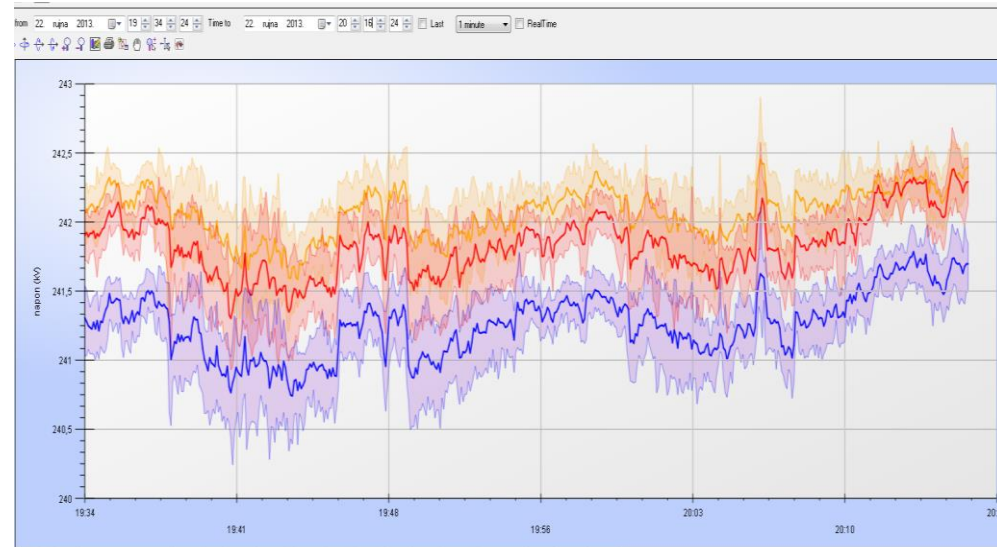
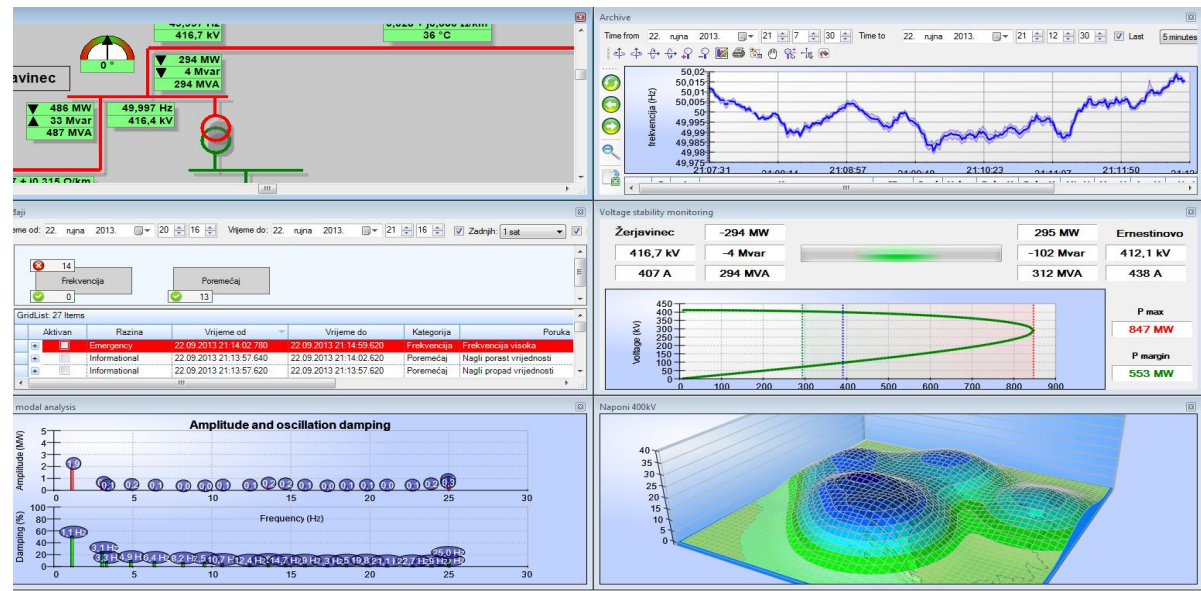
High precision data acquisition

Time resolution: $< 10^{-6}$ s
Measurement quality: 0.1% of U and I
and Angle accuracy of $< \pm 0.05\%$



Installation of PMUs at critical nodes in Power Systems.

- Better system monitoring :
 - optimising investments
 - systems on the edge
- Larger share of renewables (wind)
 - system control with constant increase of renewable energy
- Needs:
 - flexible power system control applications
 - integration to existing infrastructure
 - PMUs, communications
 - Smart Grid Backbone



SMART *city*



**DALEKOVOD OMOGUĆAVA
IZGRADNJU INFRASTRUKTURE
PAMETNOG GRADA.
U SVOM DJELOVANJU
NASLANJAMO SE NA
DUGOGODIŠNJE ISKUSTVO
U PROJEKTIRANJU,
PROIZVODNJI I IZGRADNJI
ELEKTROENERGETSKE,
TELEKOMUNIKACIJSKE,
CESTOVNE, ŽELJEZNIČKE
I OSTALE KLJUČNE
INFRASTRUKTURE U
VLASNIŠTVU JAVNIH I
PRIVATNIH INVESTITORA.**

Urbanizacija čovjekove okoline uvjetuje brzi razvoj u području municipalne infrastrukture pri čemu suvremene prometnice, sportski objekti, industrijska postrojenja, stambene i turističke građevine iznova zahtijevaju nova rješenja i prilagodbe koje moraju odgovarati tehničkim i ekonomskim zahtjevima, ali i zadovoljiti estetske kriterije. Dalekovod omogućava projekte energetske učinkovitosti, energetskih usluga i izgradnje informacijske i komunikacijske (ICT) infrastrukture u okviru smart city platforme.

SMART *city*

DIGITAL URBAN INFRASTRUCTURE



DIGITAL URBAN INFRASTRUCTURE



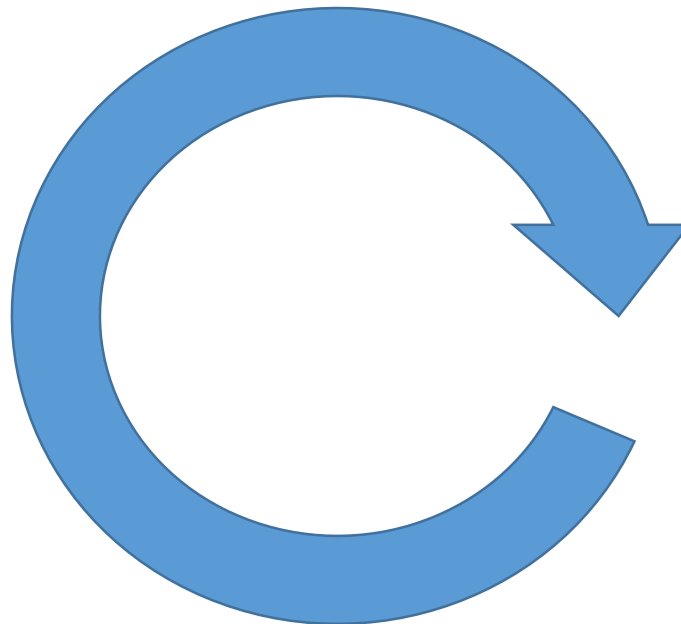
DIGITAL URBAN INFRASTRUCTURE



Hewlett Packard
Enterprise

aruba

a Hewlett Packard
Enterprise company



DALEKOVOD

SMART CITY SOLUTIONS

Schneider
Electric





T: +385 1 241 11 11
E: dalekovod@dalekovod.hr
www.dalekovod.com



CONNECTING WORLDS, BUILDING THE FUTURE

