VITAL

VIRTUALIZED PROGRAMMABLE INTER-FACES FOR INNOVATIVE COST-EFFECTIVE IoT DEPLOYMENTS IN SMART CITIES

EU ICT-VITAL Project

[ICT-2013.1.4] A Reliable, Smart and Secure Internet of Things for Smart Cities

Smarter Traffic Management

Esma DİLEK

Istanbul Metropolitan Municipality (IMM)

Brussels, November 30th, 2016

VITAL-IoT IMM's Goals

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Managing Traffic & Traffic Measurement Systems Smartly & Efficiently in Istanbul

Cost Effective & Quickly Identification of Traffic Events

VITAL-IoT IMM's Goals

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Develop & operate practical smart city applications for Istanbul

Integrate IMM traffic measurement data with VITAL platform & Utilize the Services provided by VITAL

Validate Smart Traffic Management Scenarios in Istanbul

Facilitate the daily tasks of Traffic Operators working on a 24/7 basis

VITAL-IoT Project Overview Year 3

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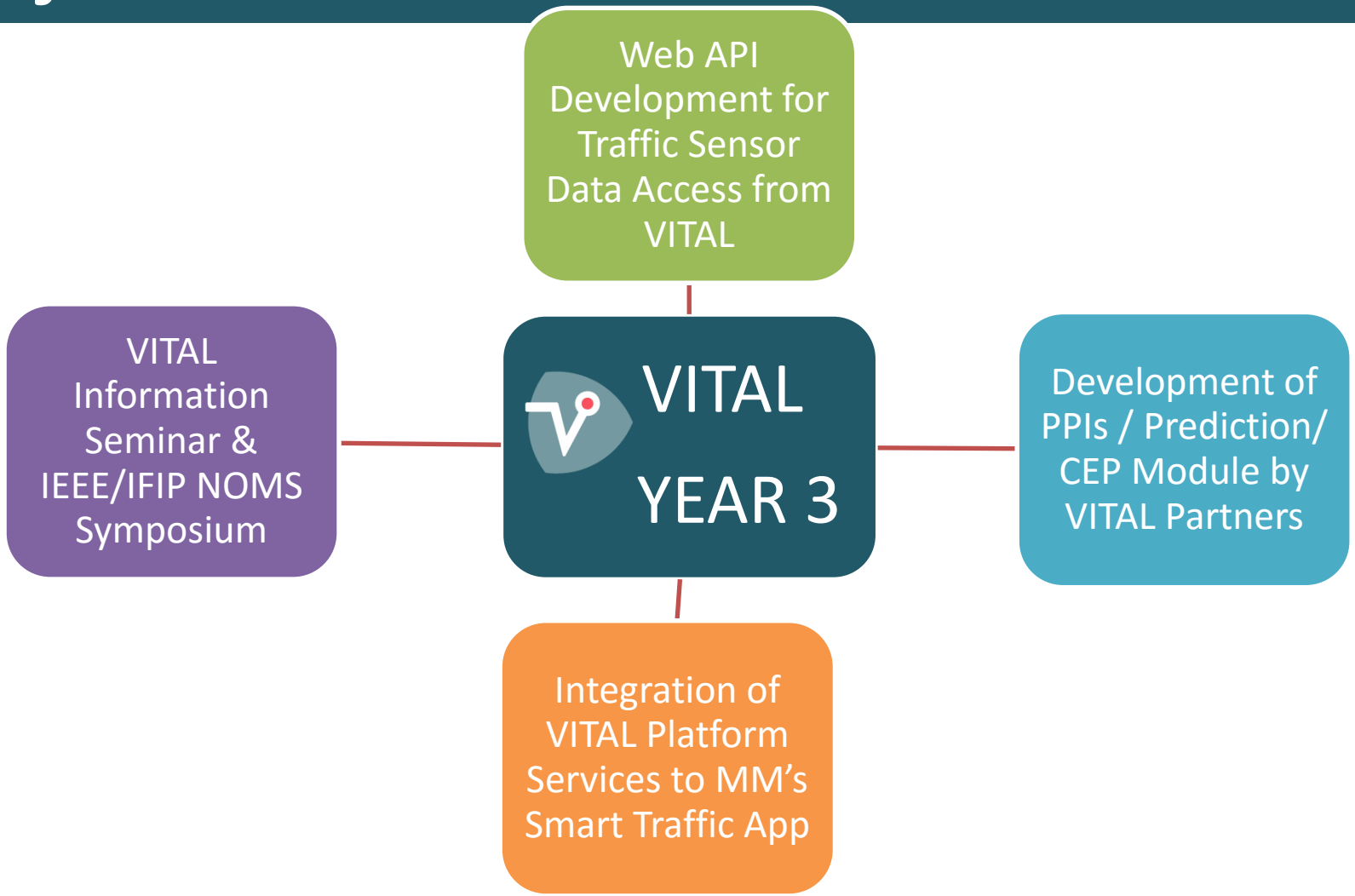

VITAL-IoT Project Overview Year 3

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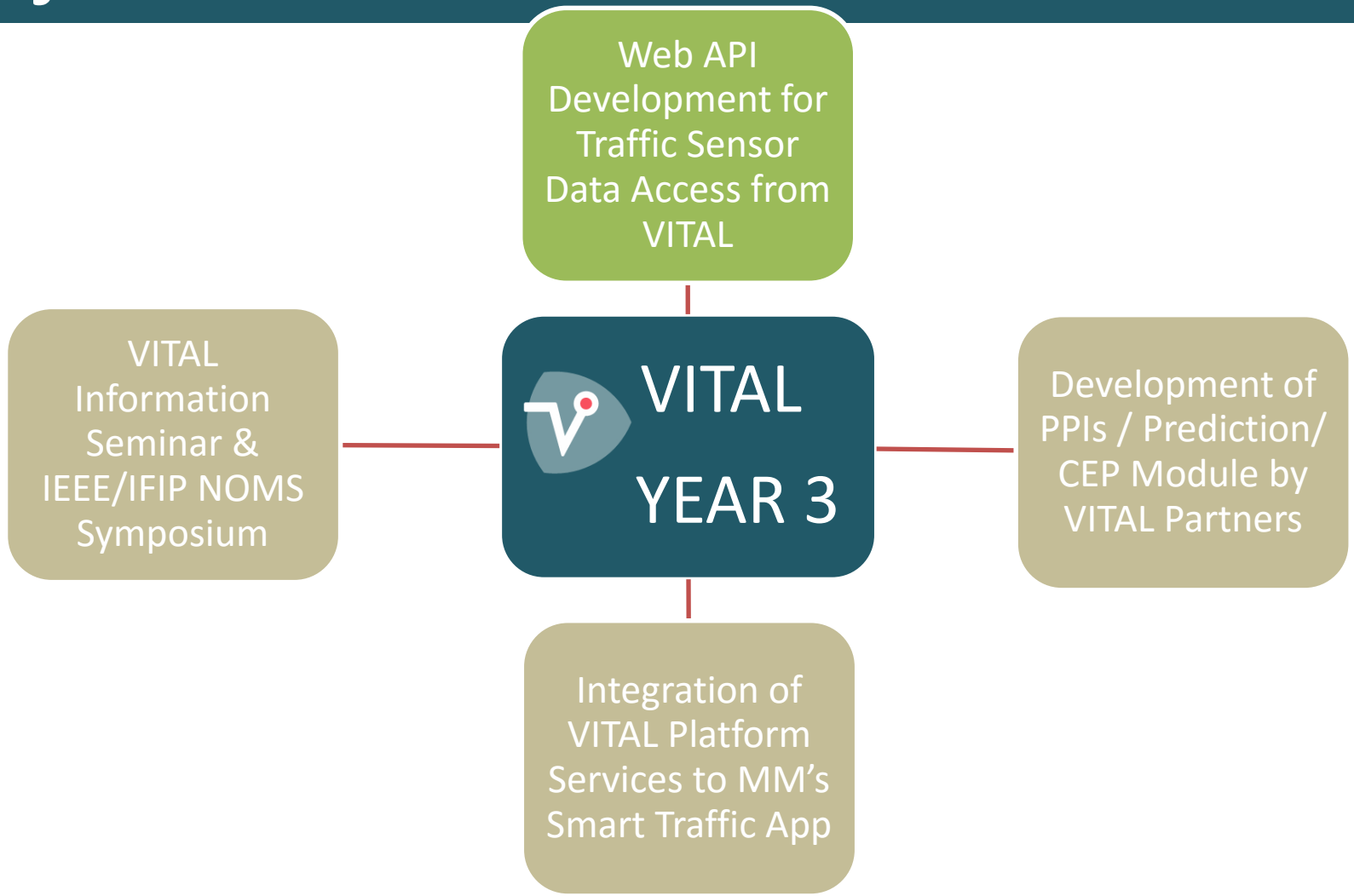

VITAL-IoT
IMM Web API

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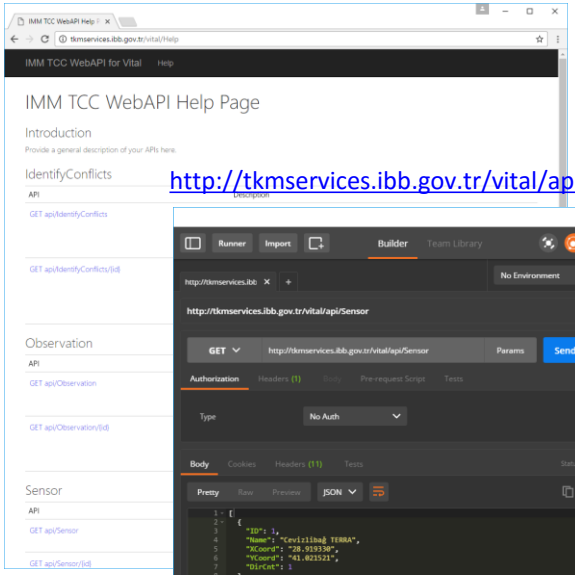
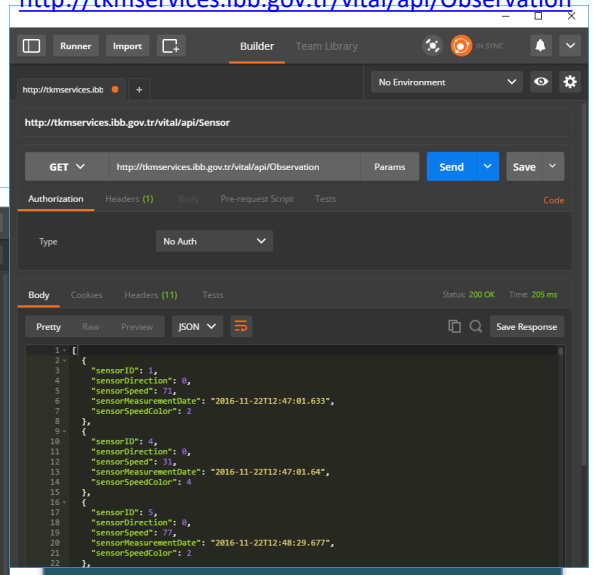
http://tkmservices.ibb.gov.tr/vital



http://tkmservices.ibb.gov.tr/vital/api/Sensor

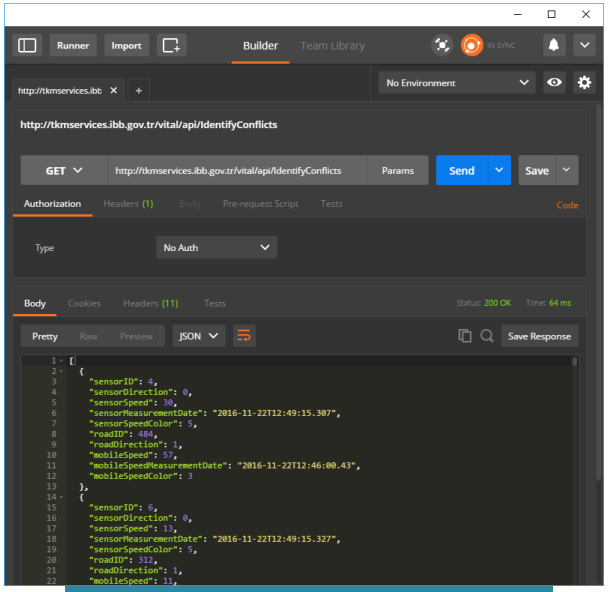
Sensor Info

http://tkmservices.ibb.gov.tr/vital/api/Observation



Sensor Observation = Sensor Speeds

http://tkmservices.ibb.gov.tr/vital/api/IdentifyConflicts



Identify Conflicts

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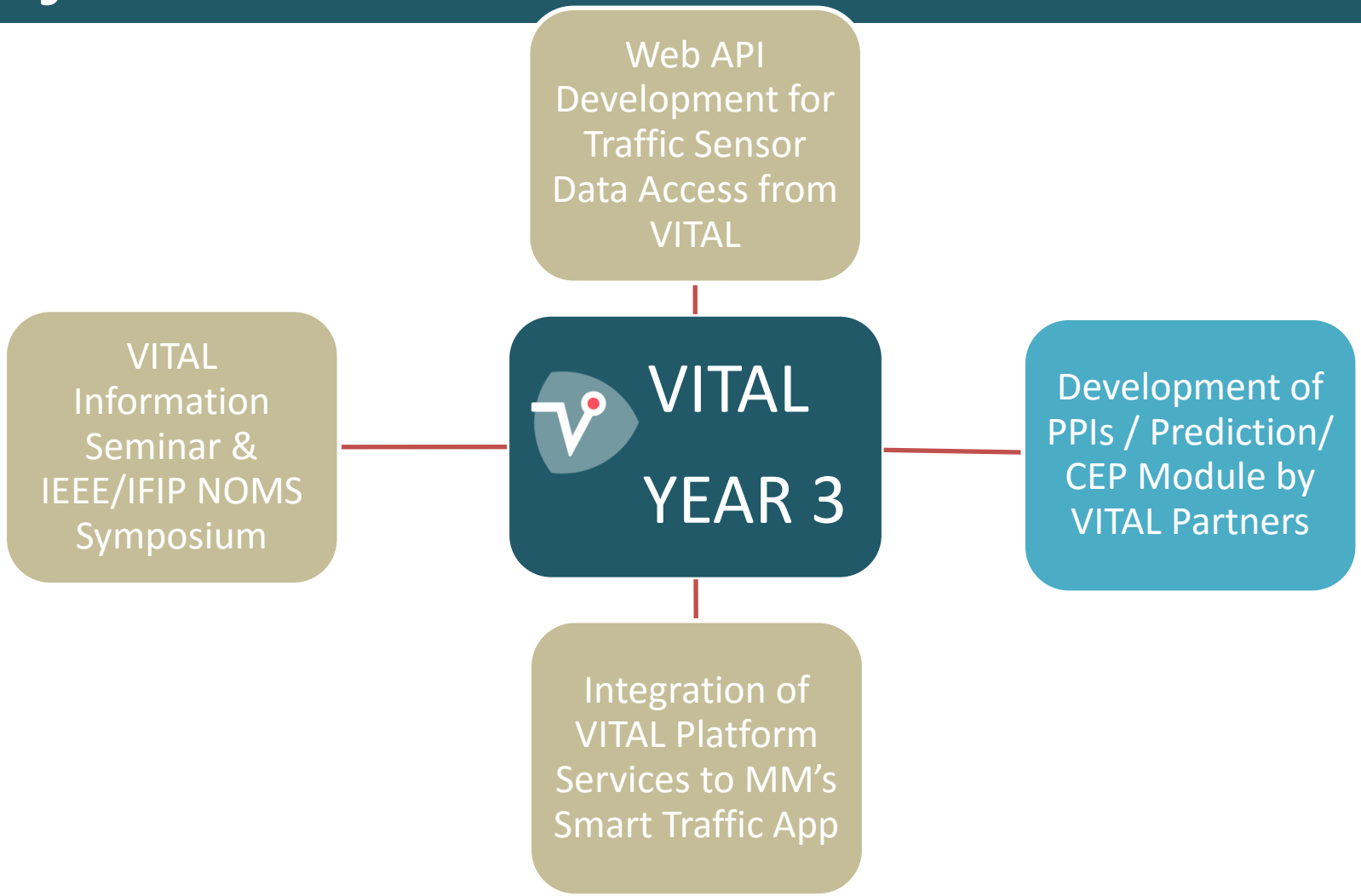

VITAL-IoT
IMM Use Case Contributors

VITAL
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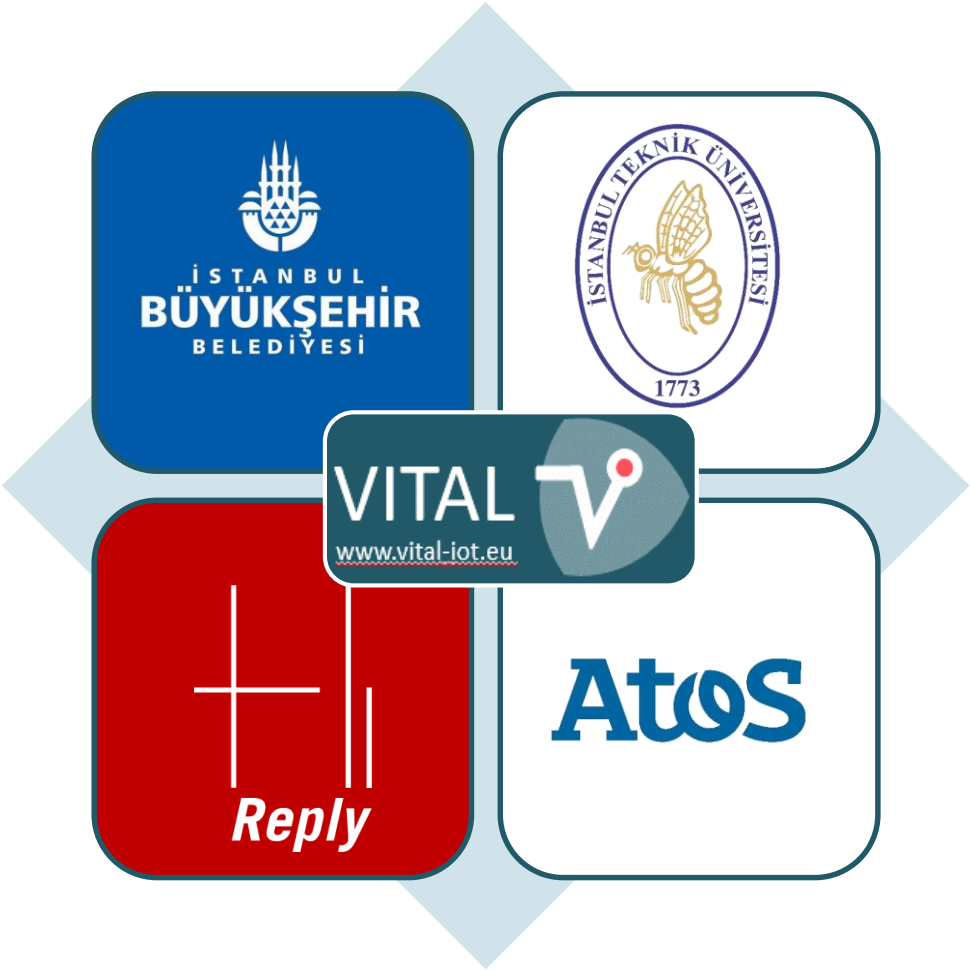
- IMM
  - IoT Data Provider
  - Development of Traffic Web API
  - Development of Smart Traffic App
- ITU
  - Traffic Prediction
- Reply
  - Development of PPIs
- ATOS
  - Development of CEPICO for
    - Incident Detection
    - Sensor Failure Detection



VITAL-IoT
PPI & Prediction & CEP

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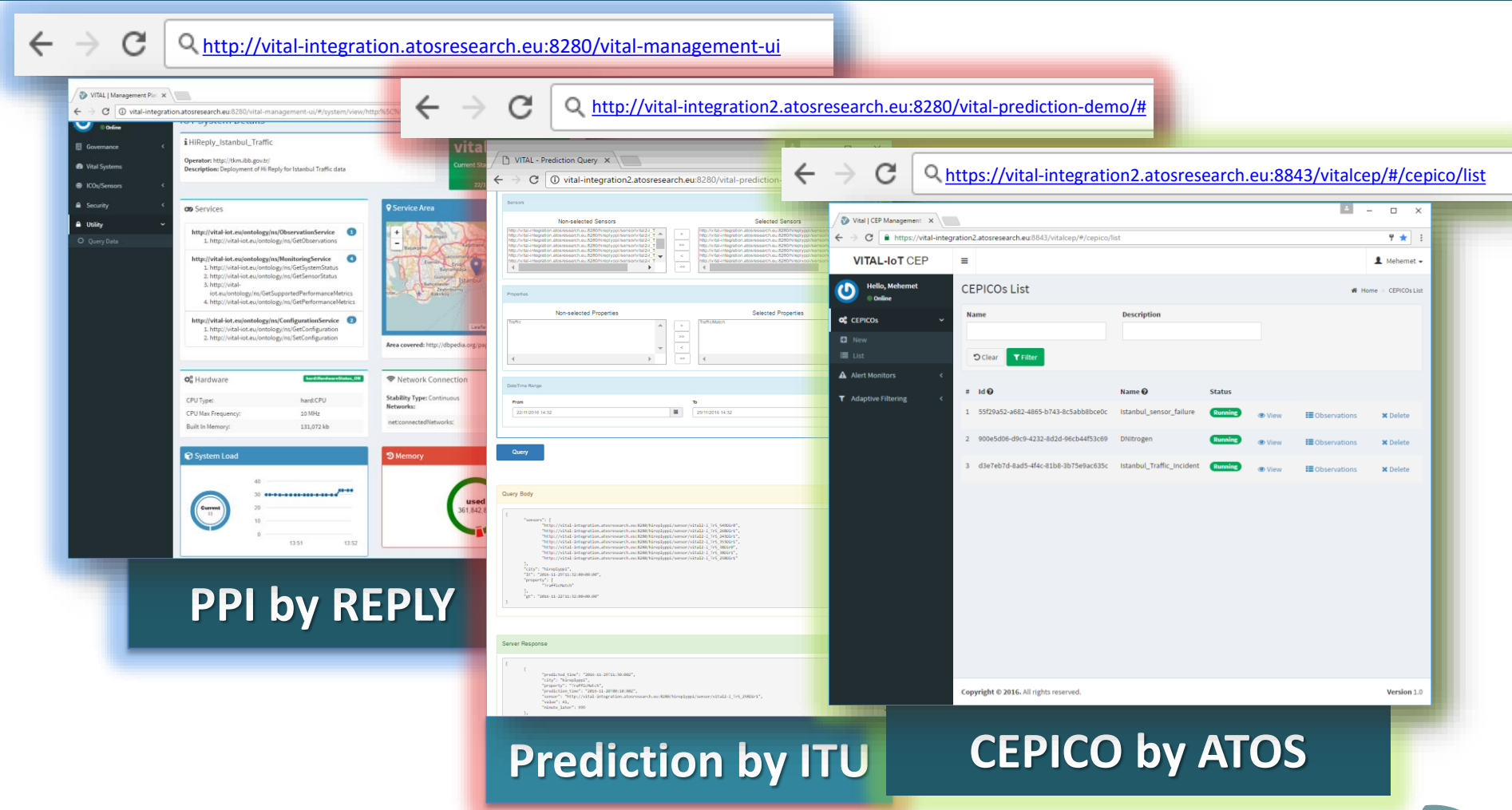
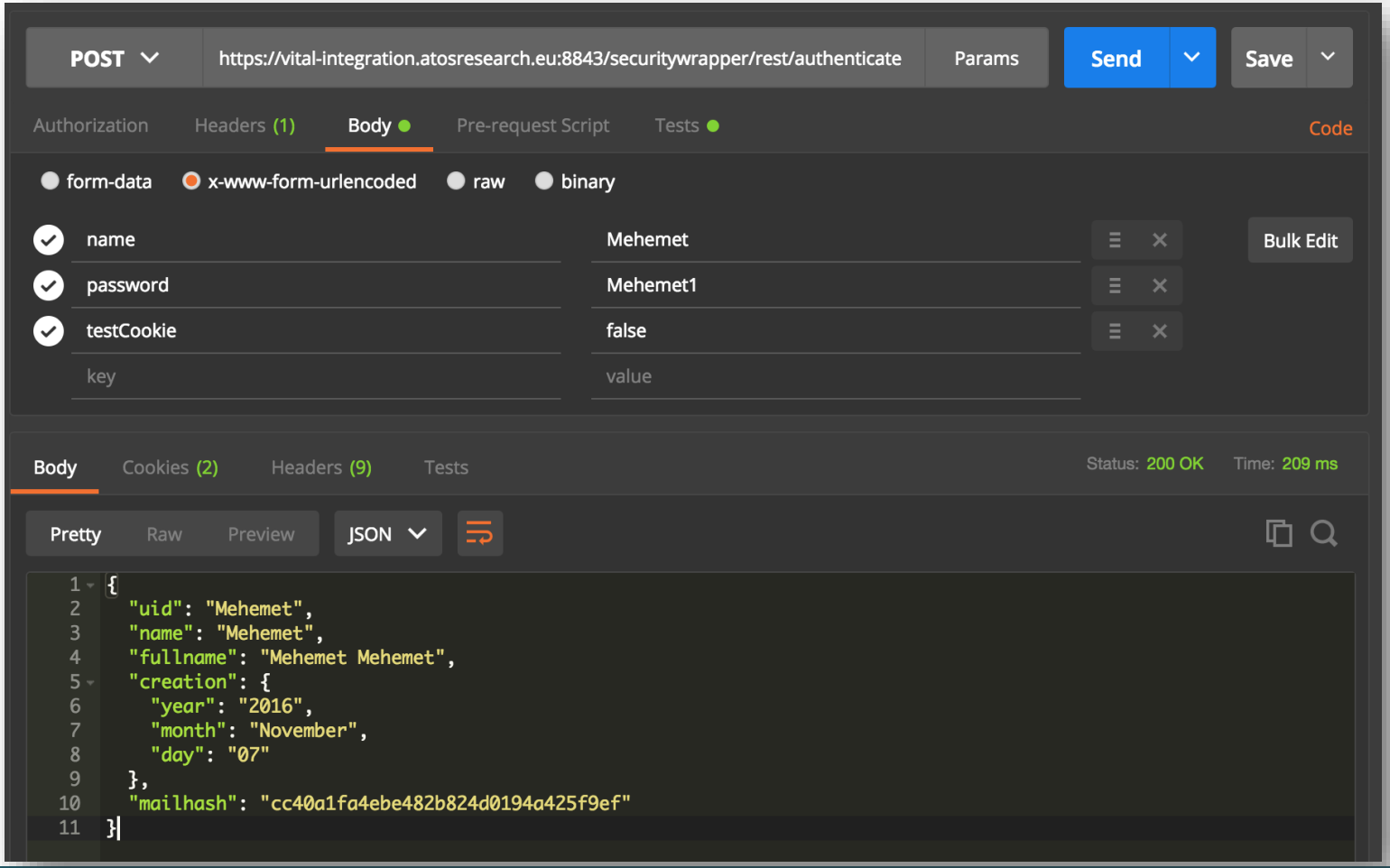


VITAL-IoT Authentication

VITAL
www.vital-iot.eu

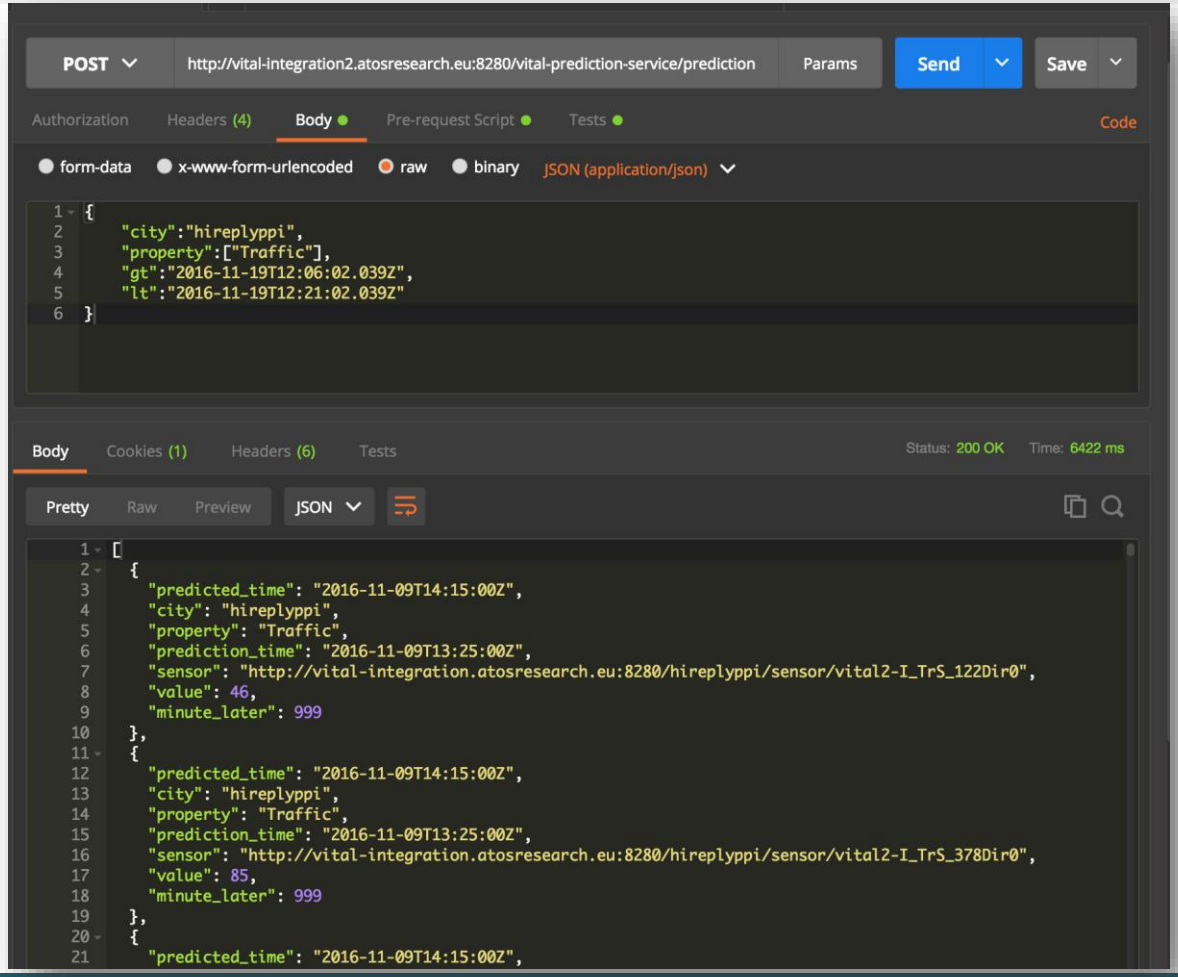
https://vital-integration.atosresearch.eu:8843/securitywrapper/rest/authenticate



VITAL-IoT Traffic Prediction

VITAL
www.vital-iot.eu

http://vital-integration2.atosresearch.eu:8280/vital-prediction-service/prediction



Incident Detection Use Case

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The DOLCE rule that triggers a Traffic Incident compares the "**colour**" property of the last three observations (colors assigned to sensor speeds) of every sensor to match the cases

The "**colour**" property represents the degree of traffic congestion with values from 1 to 5

5 => High Congestion

1 => No Congestion

Incident Detection Use Case

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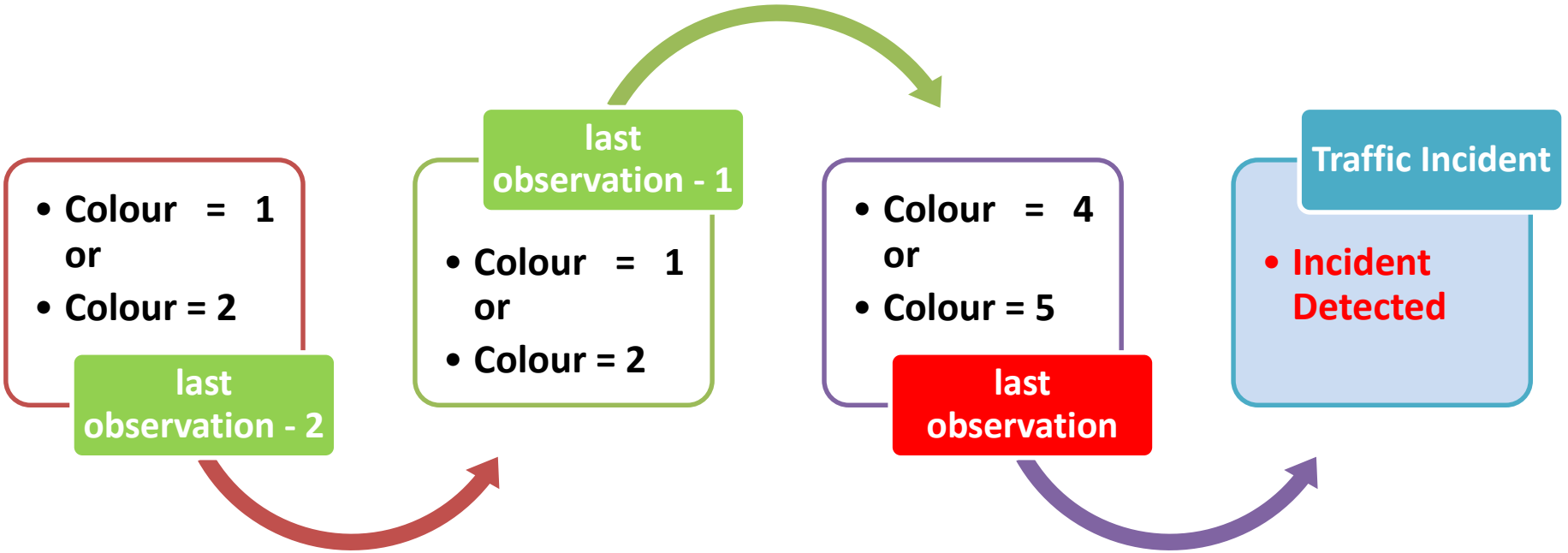

The output observations of the CEPICO are provided through the VITALCEP PPI that provides the "**ObservationService**" & "**getObservation**" operation & requested by the Smart Traffic Management App

VITAL-IoT Create CEPICO for Incident Detection

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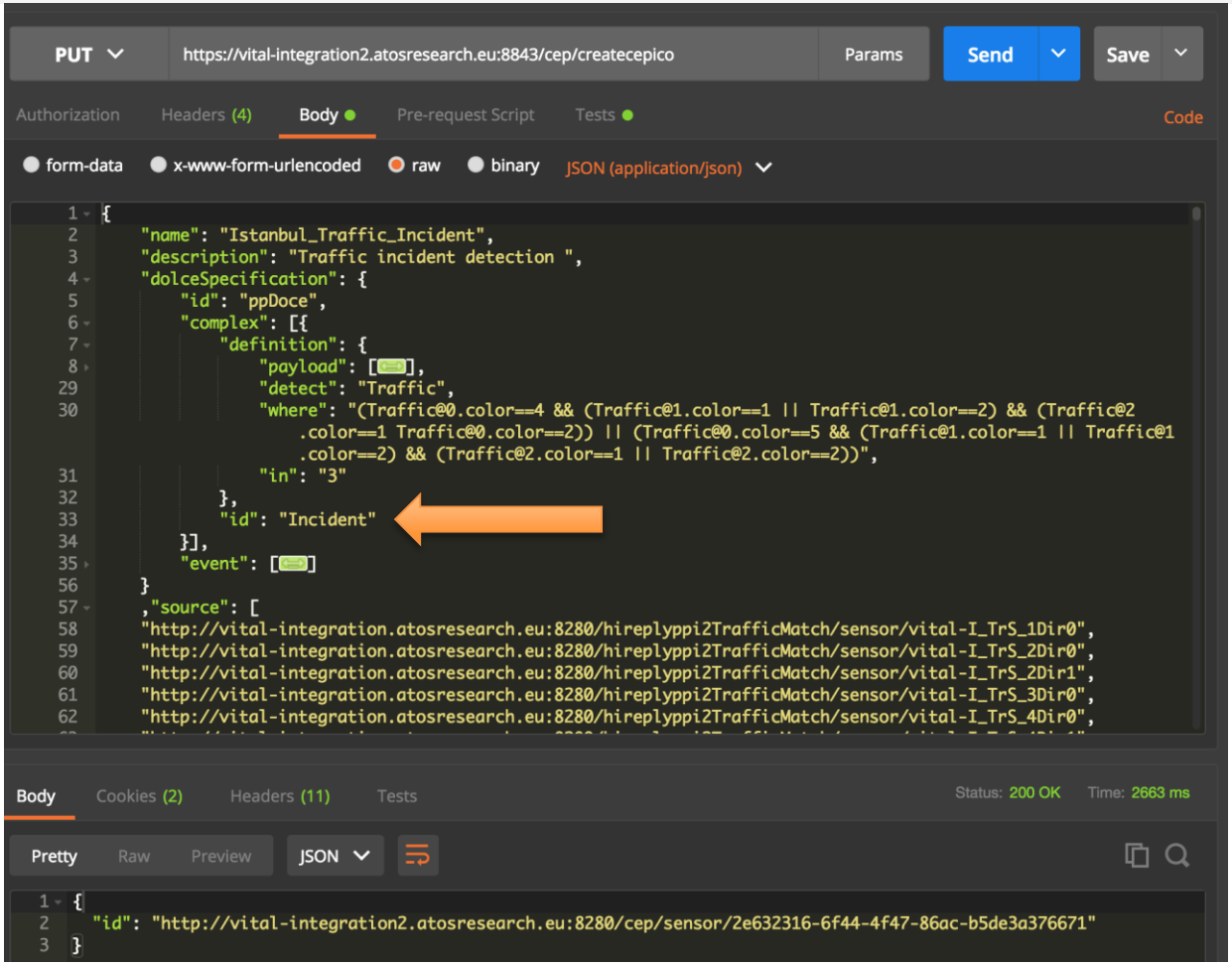
https://vital-integration2.atosresearch.eu:8843/cep/createcepico



VITAL-IoT
Get Detected Incidents' List

VITAL
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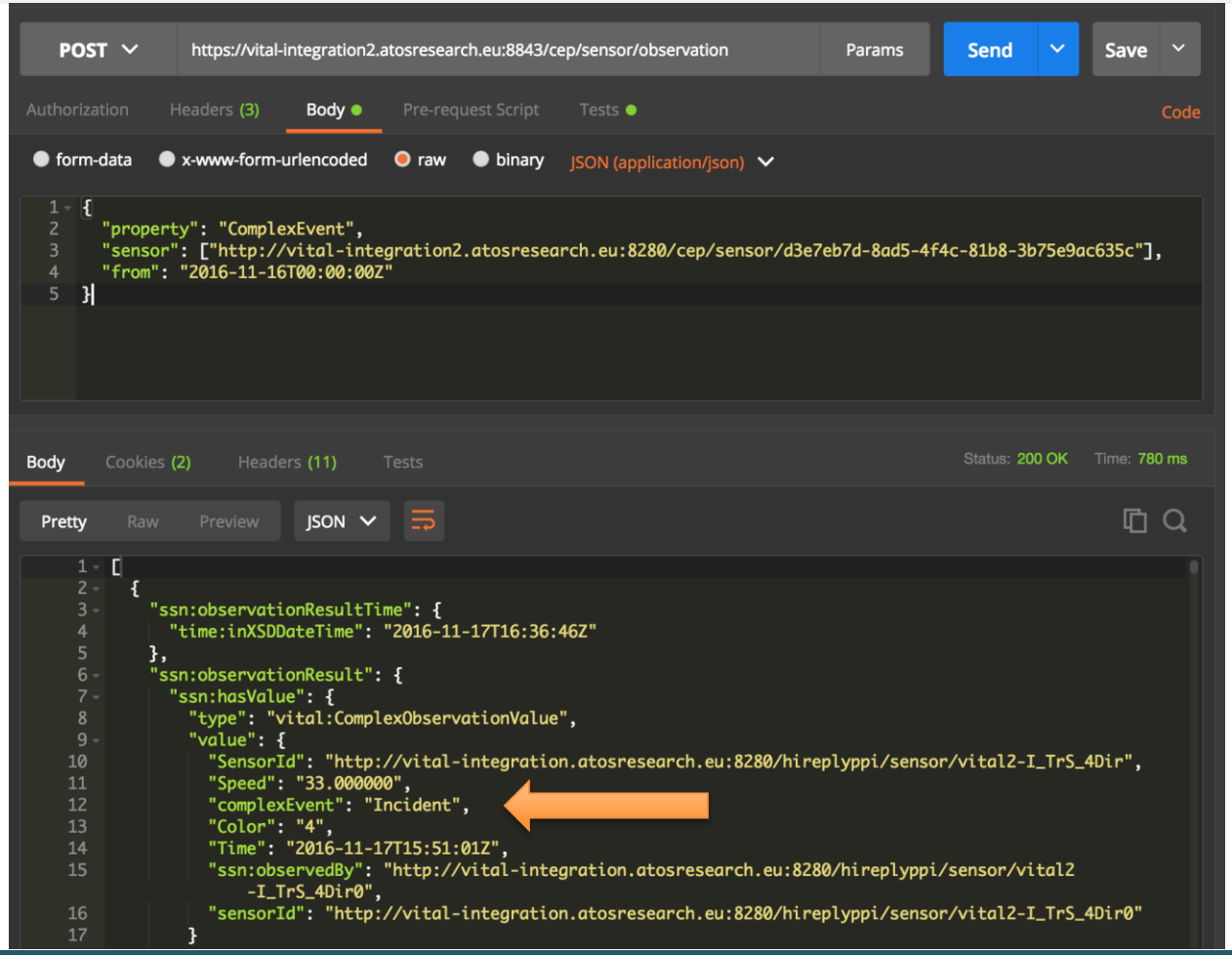
https://vital-integration2.atosresearch.eu:8843/cep/sensor/observation



Sensor Failure Detection Use Case

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The DOLCE rule that triggers a Sensor Failure Detection compares the "**colour**" property with the "**mobileColour**" property of the last observation of every sensor to match the condition that there is a contradiction in the observation.

The "**colour**" property represents the degree of traffic congestion with values from 1 to 5

5 => High Congestion

1 => No Congestion

Sensor Failure Detection Use Case

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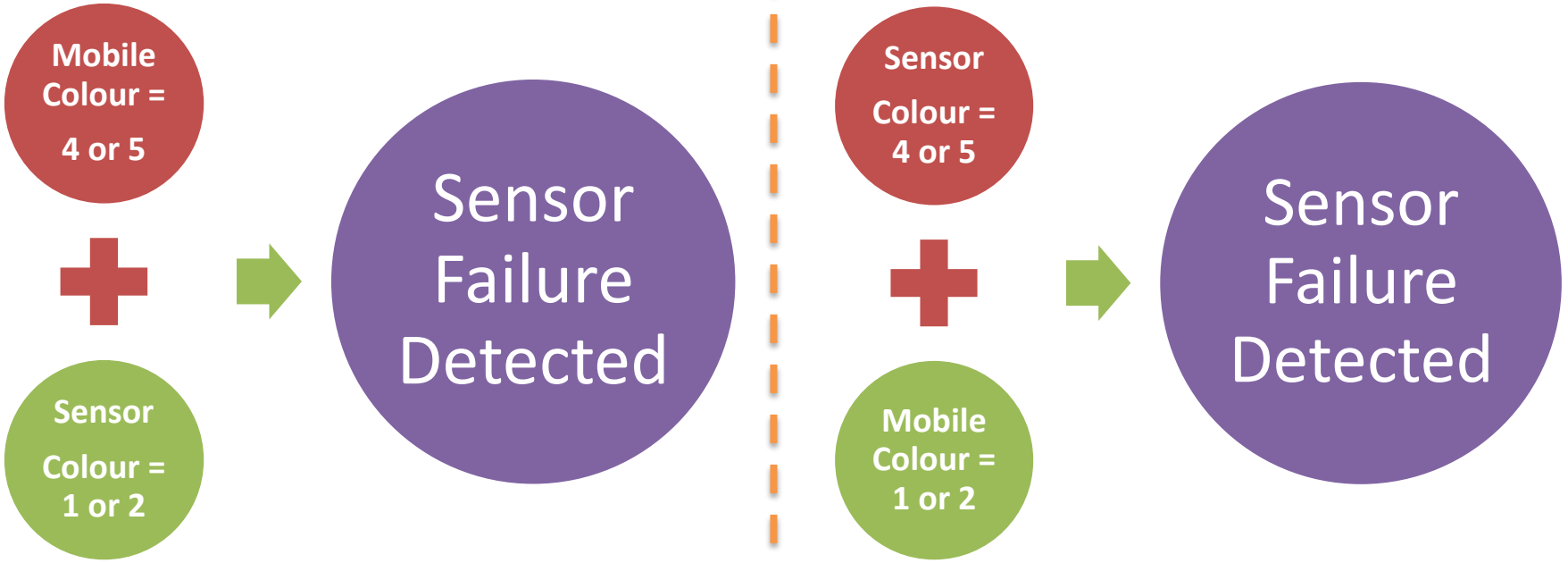

The output observations of the CEPICO are provided through the VITALCEP PPI & requested by the Smart Traffic Management App

VITAL-IoT Create CEPICO for Sensor Failure Detection

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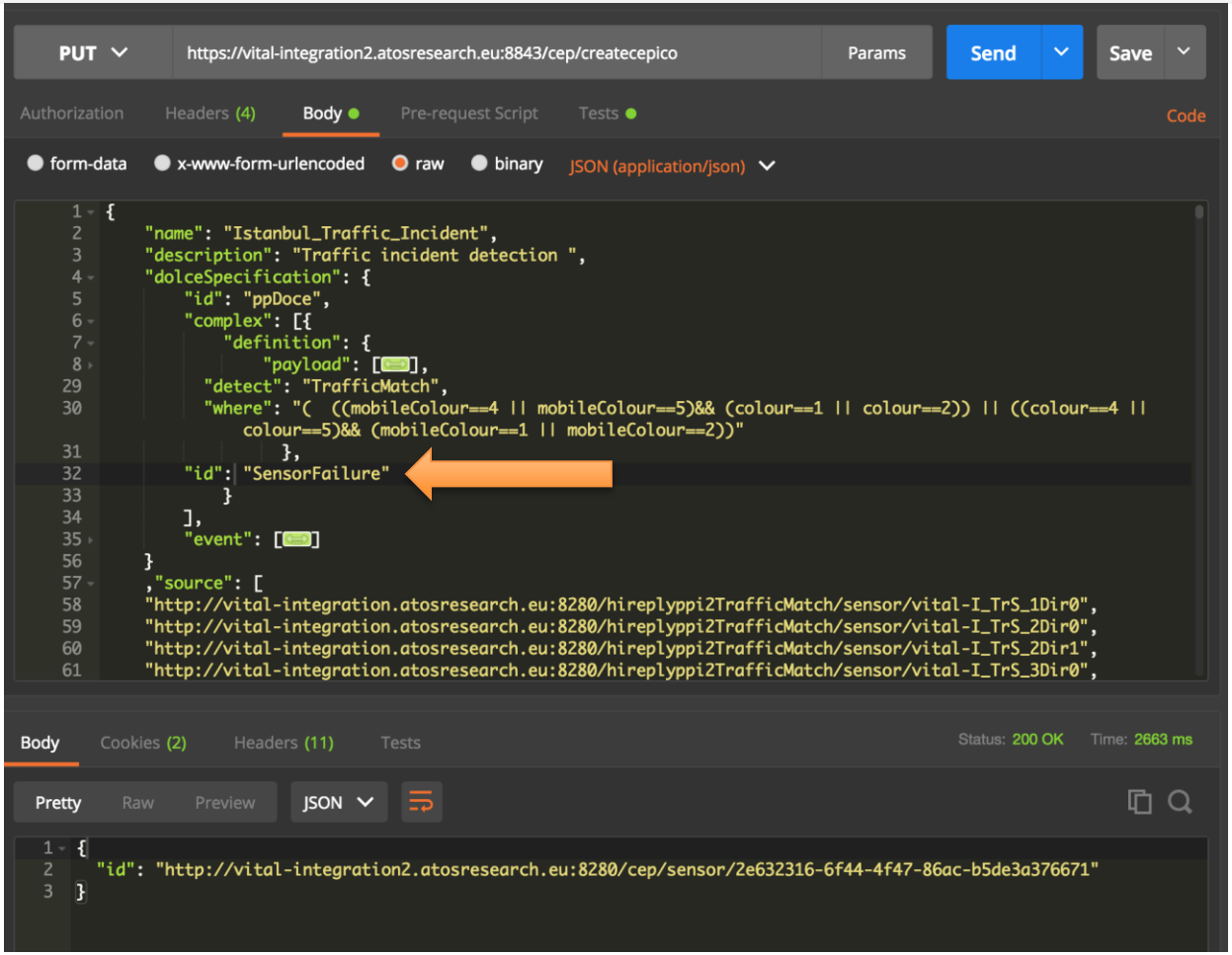
https://vital-integration2.atosresearch.eu:8843/cep/createcepico



VITAL-IoT Get Detected Sensor Failures' List

VITAL
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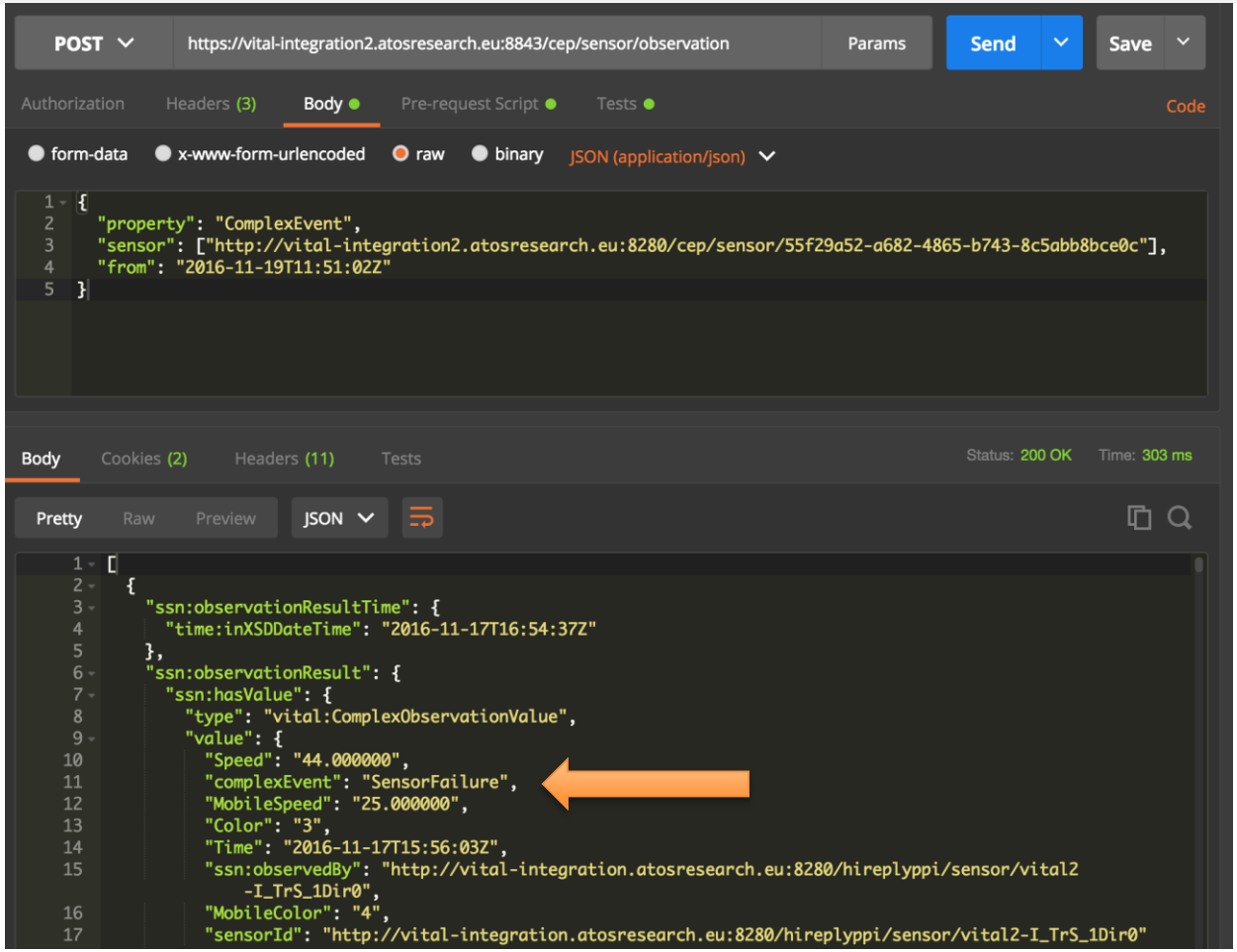
https://vital-integration2.atosresearch.eu:8843/cep/sensor/observation



VITAL-IoT Create CEPICO for Sensor Failure Detection

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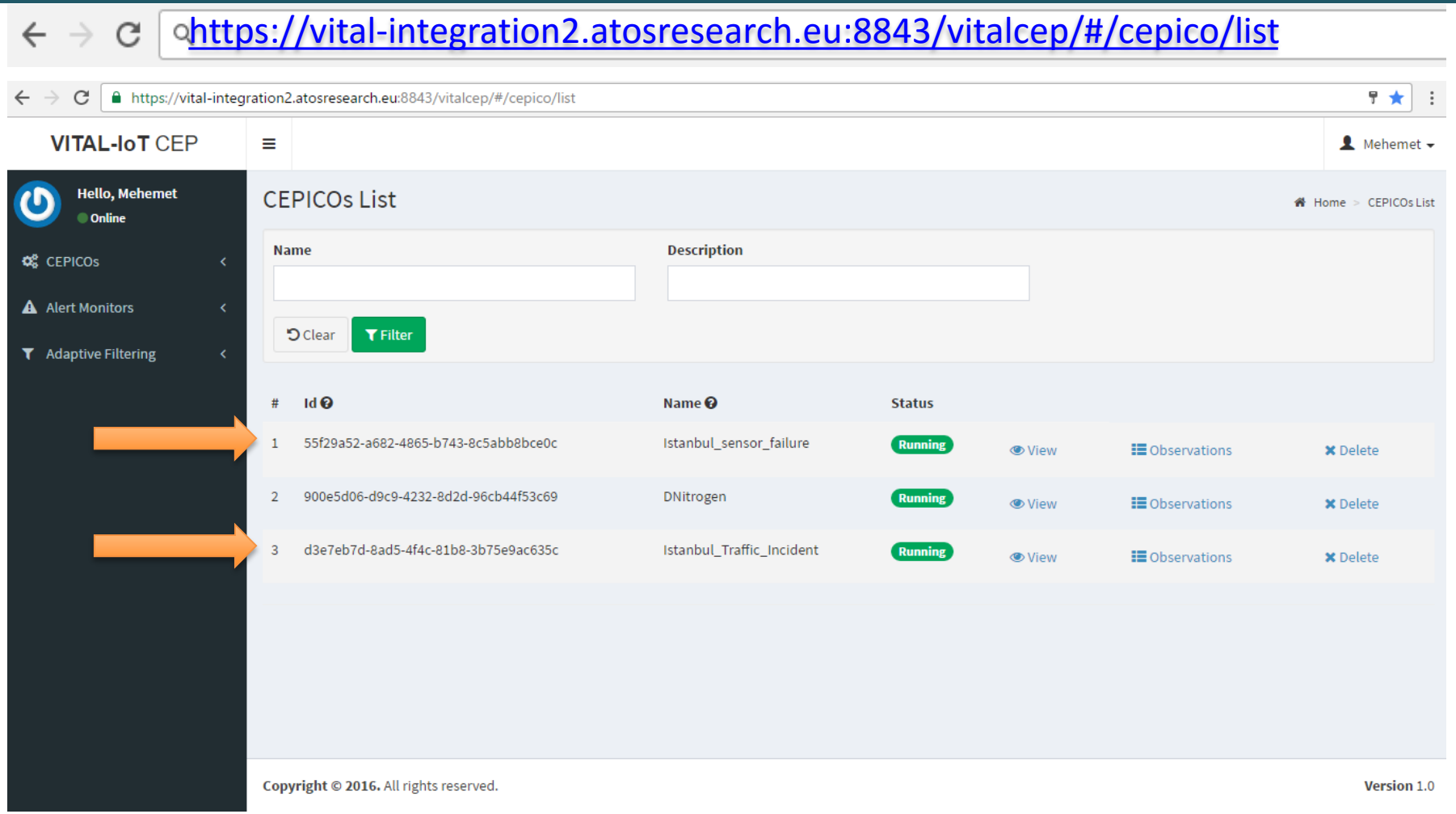

VITAL-IoT Get Detected Sensor Failures' List

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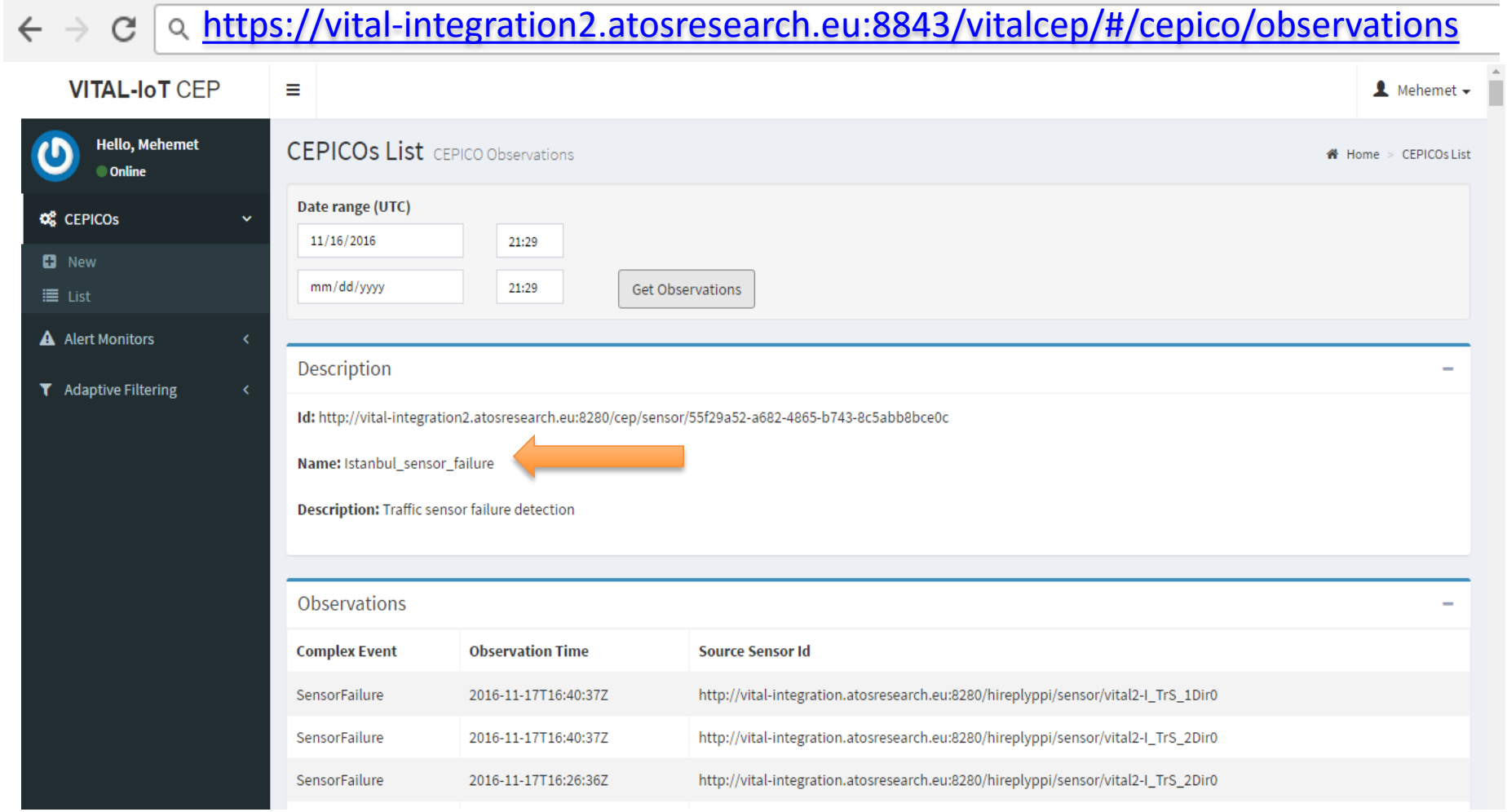

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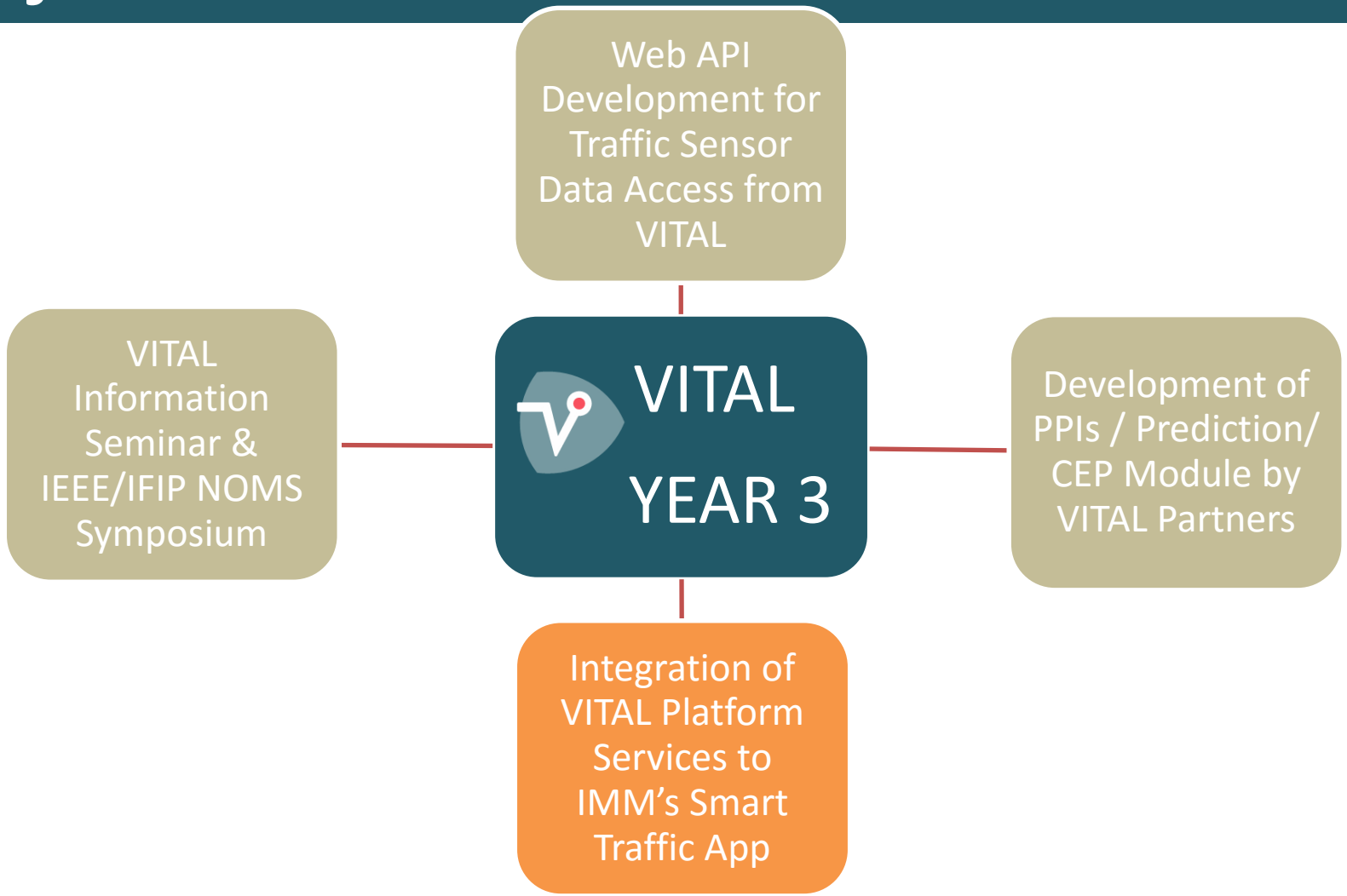

VITAL-IoT Smart City Traffic Management

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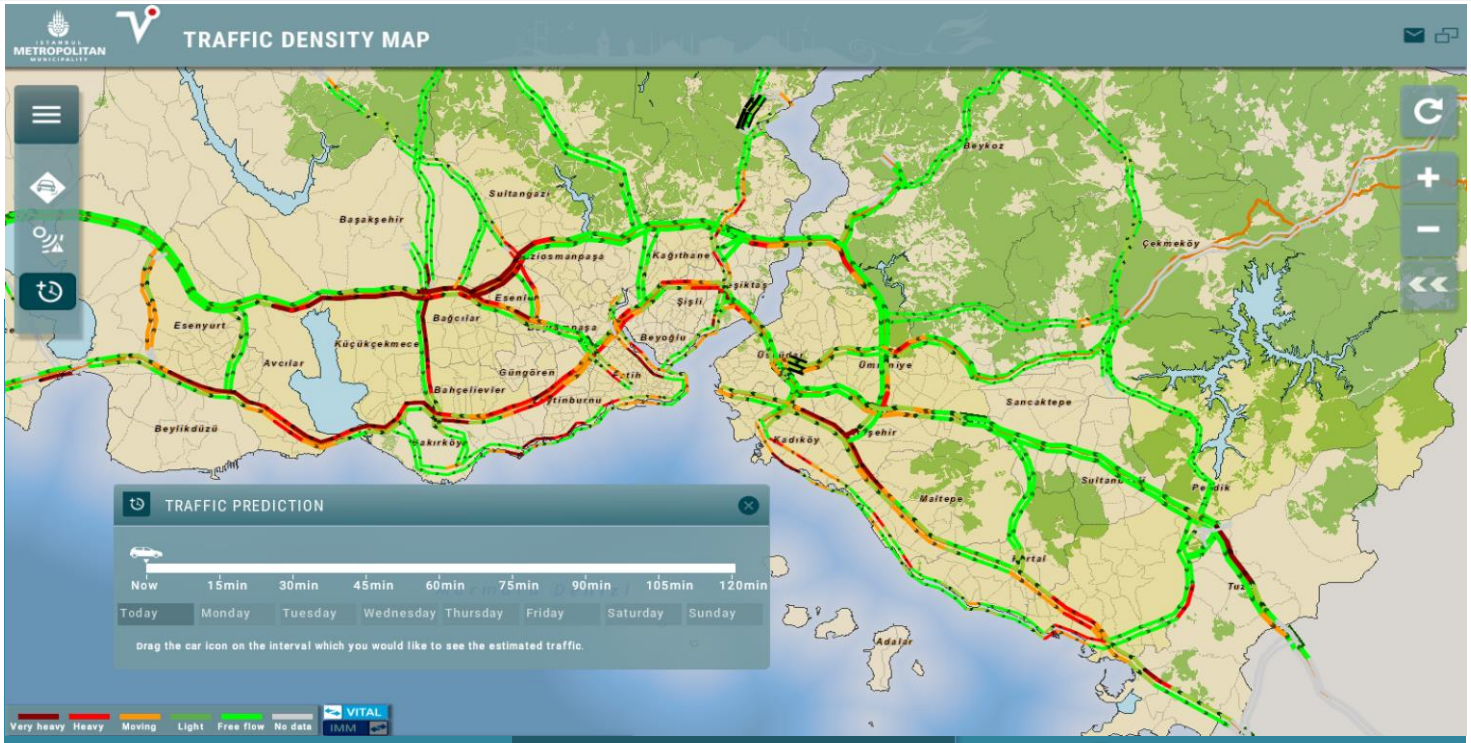
IMM developed a web-based **Smart Traffic Management App** accessible at

http://tkm.ibb.gov.tr/vital

Smart Traffic Management in İstanbul by the Help of VITAL Platform

http://tkm.ibb.gov.tr/vital



Traffic Prediction | **Incident Detection** | **Sensor Failure**

Smart Traffic Management Web App - Traffic Prediction

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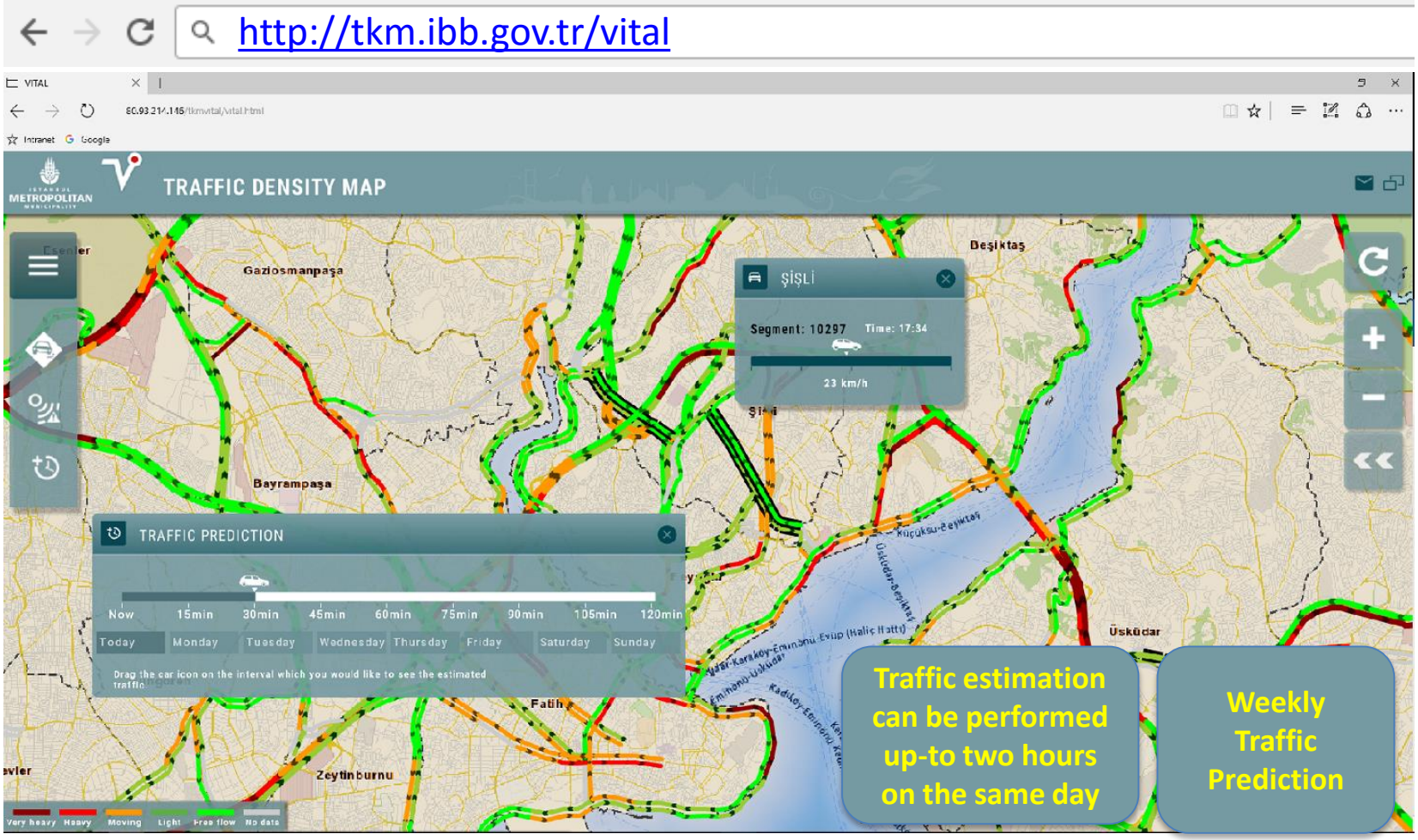
Smart Traffic Management in İstanbul by the Help of VITAL Platform



Smart Traffic Management Web App - Incident Detection

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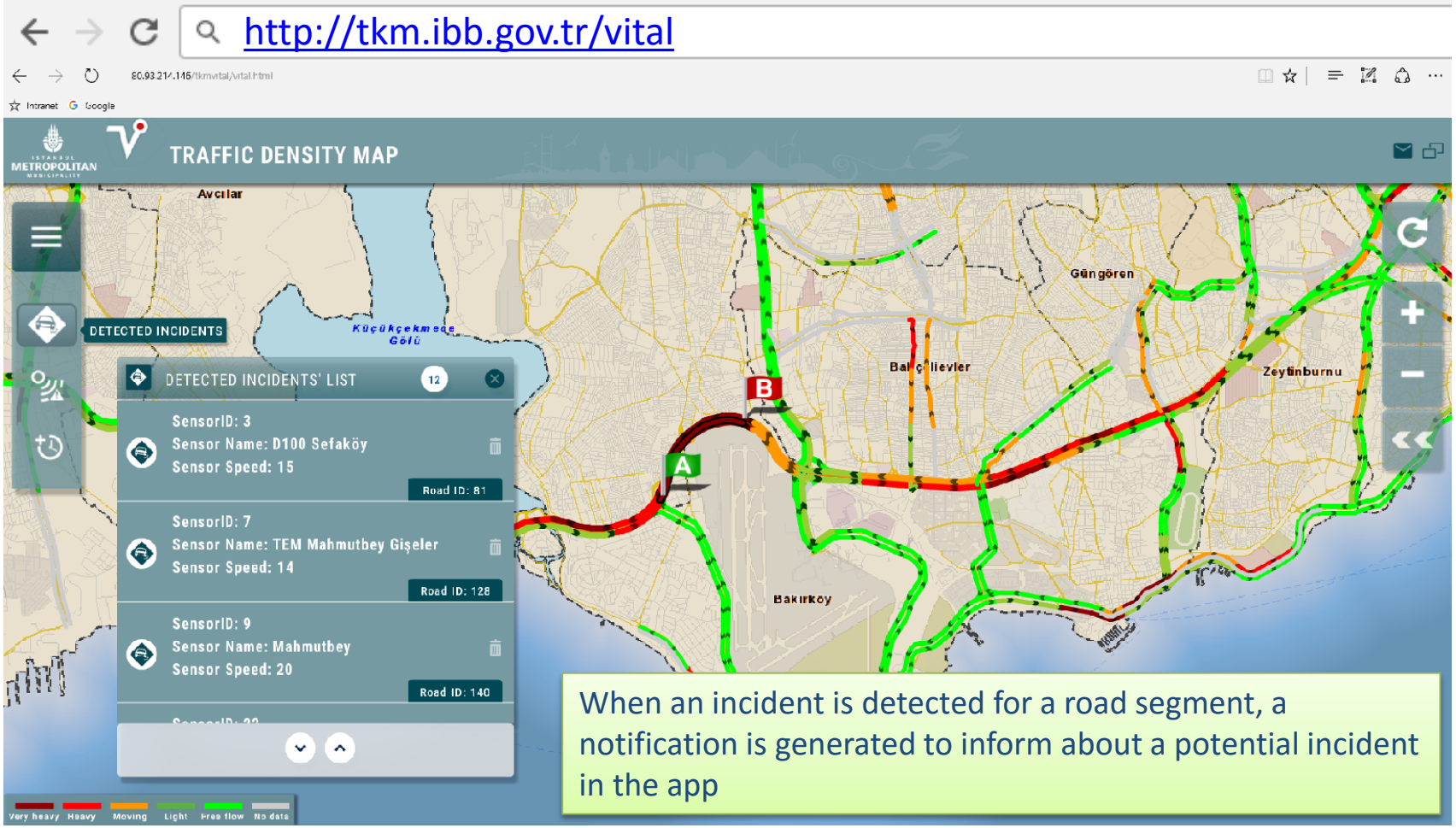
Smart Traffic Management in İstanbul by the Help of VITAL Platform



Smart Traffic Management App
Sensor Failure Detection

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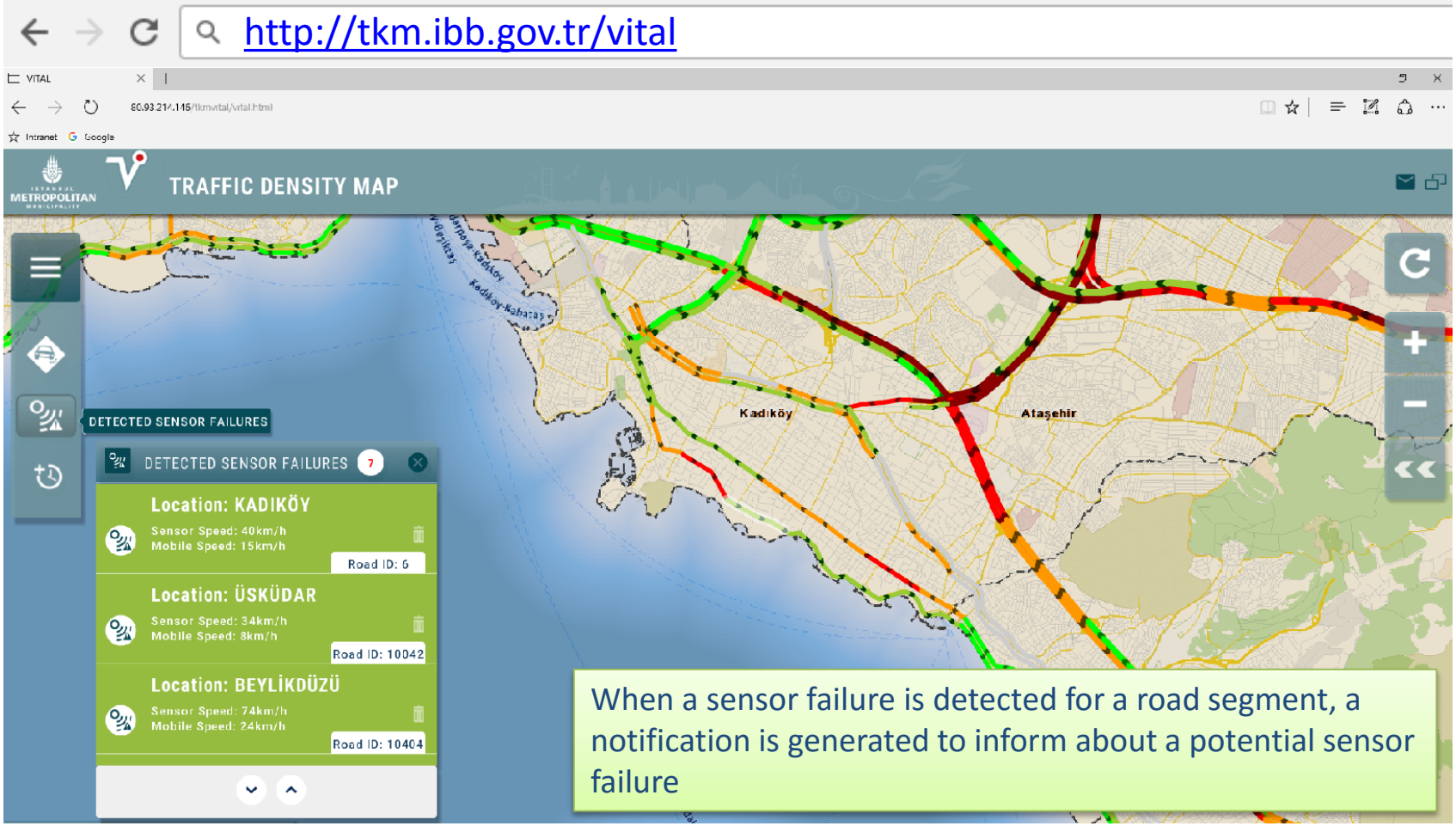

When a sensor failure is detected for a road segment, a notification is generated to inform about a potential sensor failure

VITAL-IoT
IMM Use Cases Summary

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Scenario	Scope	City
Smart Traffic Management	Manage Traffic & Traffic Measurement Systems Smartly & Efficiently in Istanbul	

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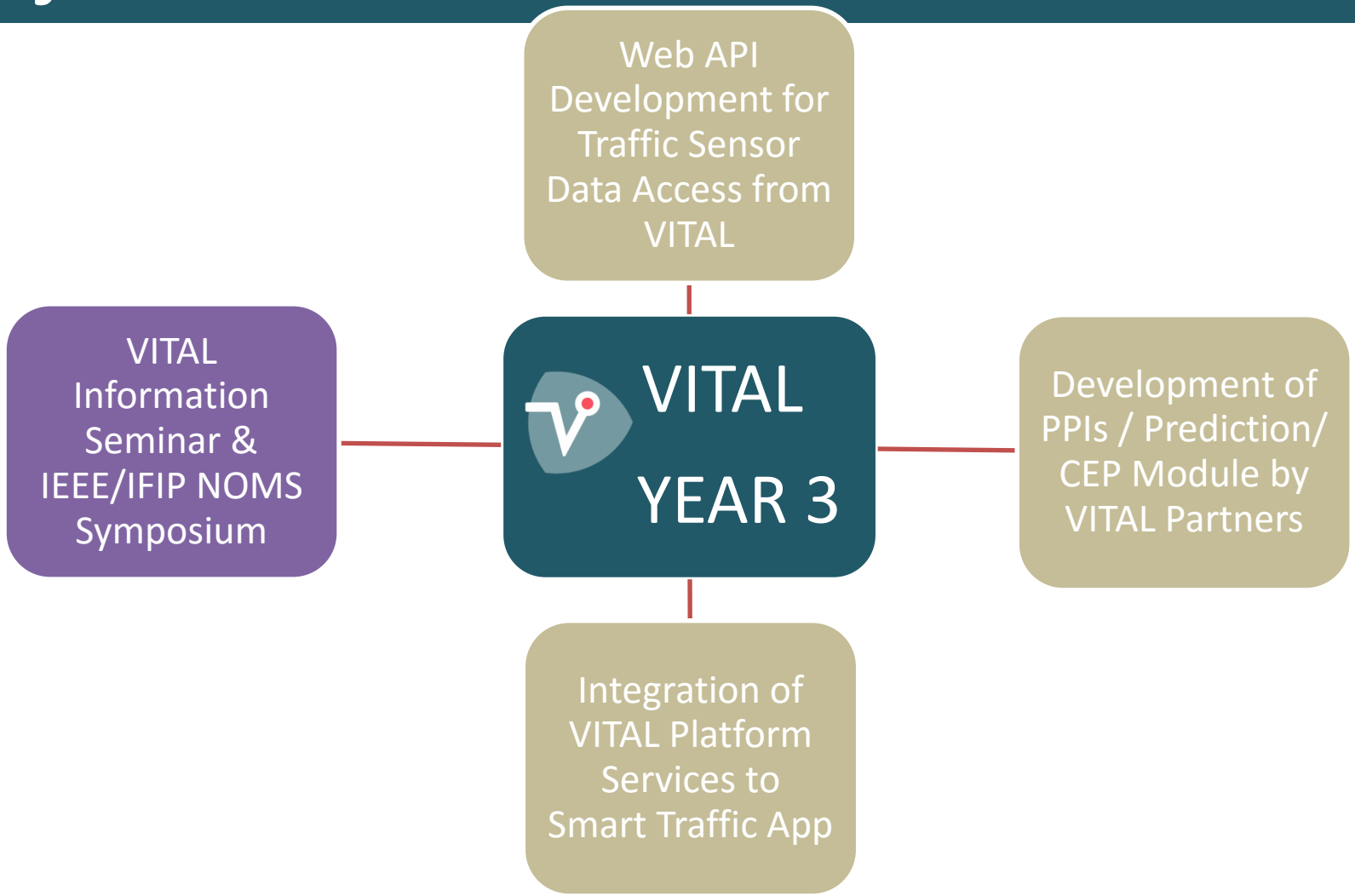

Smart Traffic Management & VITAL Information Seminar

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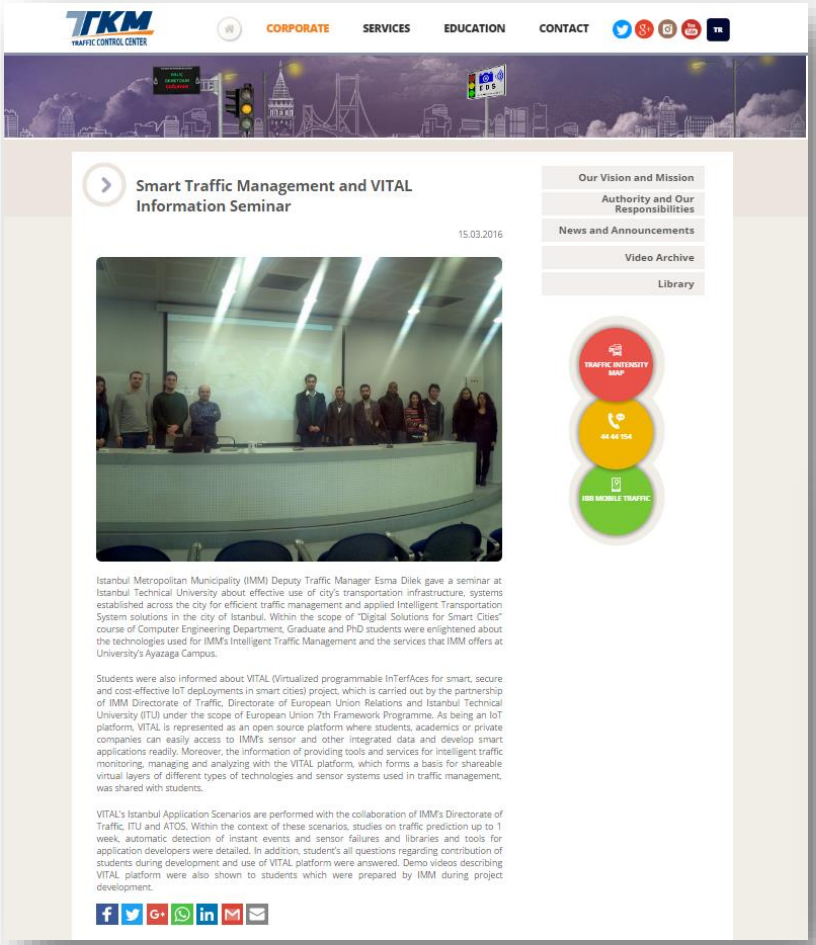
http://tkm.ibb.gov.tr/corporate/news-and-announcements/smart-traffic-management-and-vital-information-seminar



IEEE/IFIP NOMS Symposium

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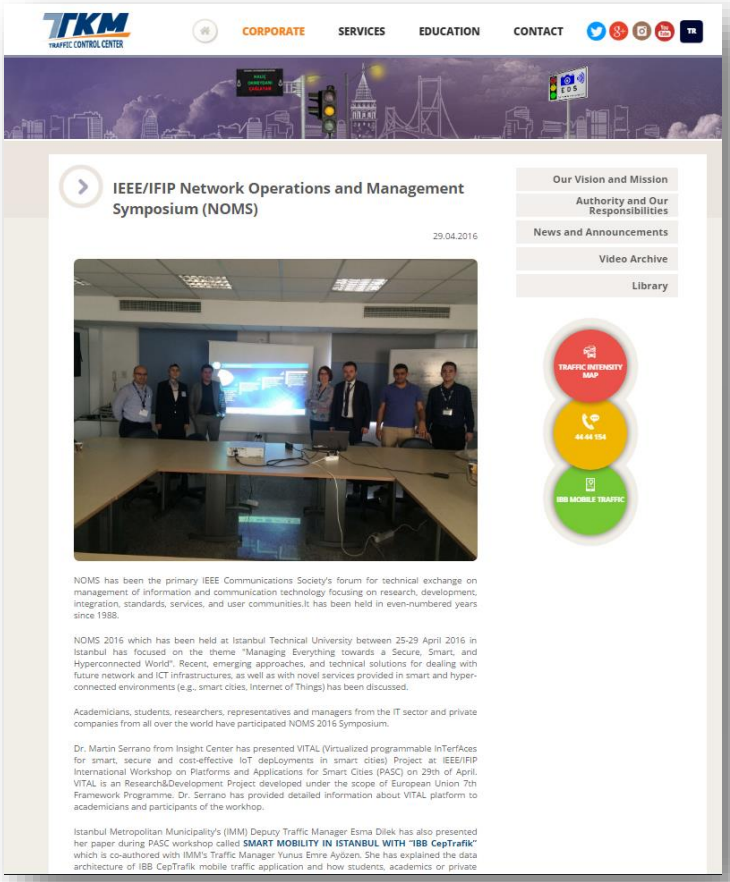
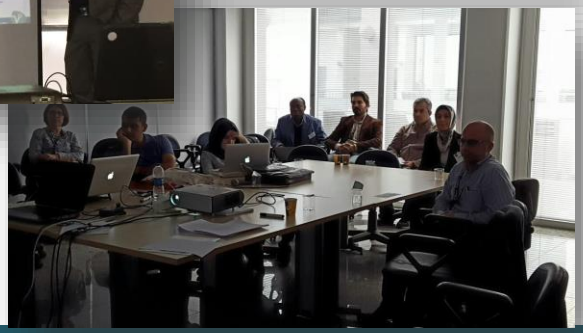
http://tkm.ibb.gov.tr/corporate/news-and-announcements/ieeeifip-network-operations-and-management-symposium-noms





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Singular Logic
Atos
Athens Information Technology
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CAMDEN TOWN UNLIMITED
Reply
santer
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More Information

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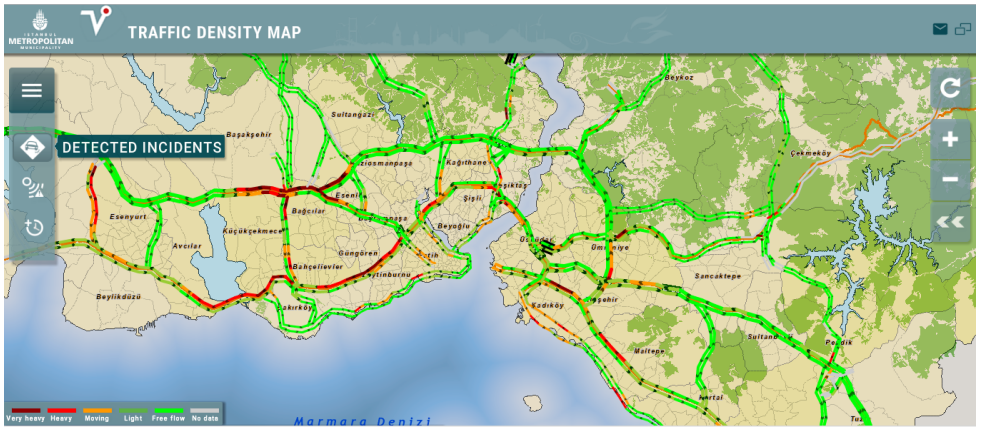
VITAL Smart Traffic Management Web Site:
http://tkm.ibb.gov.tr/vital



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VIRTUALIZED PROGRAMMABLE INTER-FACES FOR INNOVATIVE COST-EFFECTIVE IOT DEPLOYMENTS IN SMART CITIES

Thank You!

"Virtualized Programmable Interfaces for innovative cost-effective IoT deployments in Smart Cities"

A novel Approach for Integrating Application silos in Modern Smart Cities

Esma DİLEK

Istanbul Metropolitan Municipality – Directorate of Traffic

Brussels, November 30th, 2016