ITEA Smart City Day session I
Crisis management
İSTANBUL STRATEGICAL ASPECTS
COMPANY HISTORY

1986
Founded to provide maintenance and repair services for the vehicles of Istanbul Metropolitan Municipality and to carry out Traffic Signalization Services of Istanbul.

1995
First traffic signal controller and first traffic lamp both of which are national production were put into service in Istanbul.

2006
Turkey’s first mobile application in the transportation field Mobile Traffic was brought to life.

2012
First Adaptive Traffic Management System (ATAK) of Turkey was created.

2015
ISBAK founded first licensed R&D Center of Turkey in its own campus in the field of Intelligent Transportation Systems.

2018
ISBAK drafted and published the first and only Signalization Systems Handbook in Turkey.

2020
Supported the pandemic by creating spread prevention and disinfection system projects.
## ISTANBUL BY NUMBERS

How can you manage a city where 15.5 million people live, 4.4 million vehicles are constantly on the move and with constant earthquake threat?

<table>
<thead>
<tr>
<th>Acreage</th>
<th>Population</th>
<th>Average Daily Number Of Trips With Public Transport</th>
<th>Registered Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.343 km²</td>
<td>15.5 Million</td>
<td>6.4 Million</td>
<td>4.4 Million</td>
</tr>
</tbody>
</table>
Istanbul Smart City Project

IMM Strategic Plan

Intelligent Transportation Know-how

Engineering & Consultancy Experience

ISBAK Smart City Strategy

Smart City Index Software

Transportation

Energy & Environment

Disaster Management
Transportation
A management approach that collects data 24/7 and finds solutions for a city that lives 24/7.
Traffic Management Systems

Provides efficient, safe and fluent management of traffic. In case of an emergency, utmost importance is to first responders to reach scenes.

With smart traffic signal controllers, we can clear the way for priority vehicles to have a chance to prevent emergencies to become crisis.
AI Based Traffic Measurement Systems are used to collect real time traffic data like vehicle classification and counting.

With our connected information screens, in crisis we can divert drivers to alternative routes depending on the traffic density.
Best way to prevent a crisis is to be prepared beforehand. As ISBAK, with our more than 35-year experience in city planning and transportation; in a major metropolitan like Istanbul, our day-to-day life is to manage small-scale crises.
TRAFFIC ENGINEERING

Road and Intersection Analysis Studies

Alternative Projects

Simulation Studies

Highway Projects
Energy & Environment
We are working on converting the existing IETT buses into 100% electric vehicles. Also we accelerated our ongoing projects such as electric vehicle charging stations.

Fossil fuels are constant threats to environment and humanity. Aside from pollution they cause, spillage and explosion possibility pose a major danger in disasters.
Disaster Management
DISASTER COORDINATION CENTER

It was established in order to overcome all kinds of natural disasters with the least damage.

Equipped with monitoring, control and recording systems, the Disaster Management Center aims to make cities more livable for citizens while providing fast and flexible solutions to the problems of cities.
BUILDING DURABILITY MONITORING SYSTEM

Electronic system that allows us to predict how the buildings will be effected in a possible Istanbul earthquake.

We are developing it with Boğaziçi University Kandilli Earthquake Research Center.
The panic button is one of the advanced technology security systems that allows users to send an emergency signal when they encounter any situation.

Panic button is for informing the authorities to intervene where the threat is and take the problem under control in a short time.
We are still living under a global pandemic crisis.

As ISBAK, to minimise the contamination by touch; we replaced existing push buttons with non-touch sensors, pedestrians are now able to cross without a contact.
A crisis is a critical moment rather than a disastrous end point. The success of a crisis management depends on quick, effective, conscientious attitudes and actions.

The future of crisis management in cities will be defined and shaped by next generation technologies based on Ai and Big Data.
THANK YOU
Quick response actions from a City Innovation Ecosystem

ITEA3 Smart City Day - March, 16th 2021

Daniel Sarasa Funes
Zaragoza City of Knowledge Foundation
Eurocities’ Data Working Group Chair
A Smart City can also react quickly
City Innovation Toolkit

Innovation facilities
- Fablabs
- Start-up incubators
- Civic Labs

Smart Infrastructures
- Citizen Card
- Urban Data
- Apps

Funding
- Customers
- Shop owners
- Retailers’ associations
+2,000 FACIAL PROTECTION MASKS ANTI-COVID19 to re-open MUNICIPAL SERVICES
+1,500 SHOPS
+50,000 USERS
4 MEUR 2020-2021
City dashboard to monitor the pulse of retail
Main street’s Digital Twin
H2020 Project
A control tower to plan and monitor sustainable urban logistics

Two pilots
Zaragoza and Dublin

Goals
Revitalize public markets, social eco-delivery, creation of a local market-place
Funding mechanisms

Direct Funding

- Promotion, street actions (markets and zones)
- Digitization (markets and shops)
- Innovation (commercial shops + technology companies): AR, Smart Lockers,

Indirect funding

- Digitization (Chamber of Commerce)
- Shopping (citizens, “groupon”)
- Last mile eco-social delivery (Disabled People Associations)
Thank you

More info:

etopia.es
volveremos.app
openurbanlab.es
PS-CRIMSON
Public Safety & Crisis Management Service Orchestration

Project Webpage
https://itea3.org/project/ps-crimson.html
www.ps-crimson.com

Sep 2016 – Mar 2020
The Partners - Canada & Netherlands

3D & Smart City Platform

- esri Canada
- AtoS
- cyclomedia
- TU/e
- Sorama
- ViNotion

Smart City Platform

3D Data & Imagery

Data Analytics

Technology Integration

IoT Sensor (Voice)

IoT Sensor (Camera)
Key Challenges for Municipalities

- Quality, effectiveness and efficiency of municipal services and decision making
- Fragmentation of information
- Silo-oriented closed systems and organizations
- Information/data collection, sharing, management, analysis and dissemination
Smart City Platform

VISION

A City Model created from Authoritative Sources

- A trusted 4D Model to the unit level
- Cloud Access to the City Model
- Update through captured transactions
- Feedback mechanism
- Metadata on sources, updates
- Unit valuation
- Real estate analysis
- Demand modelling

Trusted Aggregator of Content and Models
3D Smart Model Creation

- Center piece of city model
- Require higher level of detail and granularity
3D Smart Model Creation

Station and Transportation Line

- Paper Plan
- Digital Feature
- 3D Textured Model
- Data sharing

3D Scene Layer (Hosted)
System Architecture (ATOS MyCity/Fiware)
Field Lab 1: City of Eindhoven, Netherlands
Field Lab 2: City of Vancouver, Canada

Pre and Post Disaster Assessment – City Level

- Flooding and Earthquake

<table>
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<th>Phase</th>
<th>Time/Area</th>
<th>No. of Strata</th>
<th>No. of Unit</th>
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<td>2013</td>
<td>336</td>
<td>37,447</td>
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<td>2</td>
<td>2018</td>
<td>1,075</td>
<td>33,783</td>
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<tr>
<td>3</td>
<td>2019</td>
<td>1,026</td>
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<tr>
<td>Total</td>
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<td>109,995</td>
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PS-CRIMSON - Conclusions

- A Smart City Platform
  - From a community to a large city scale and beyond
  - Static data of infrastructure: 3D digital twin or Smart Model
  - Value added with dynamic GIS-based sensor/IoT data from partners and end users
  - Advanced AI-based sensing for high semantic information
- Enabling many applications for different stakeholders
- Scalable through partners with existing market access
- Result in many Smart City commercial projects
  - Maui HI; Pinellas; Palm Beach; Hillsborough Counties, FL - USA
PS-CRIMSON - Thank You!

ITEA Award of Excellence 2020

For Exploitation and Unique Business Partnerships


For More Information & Inquiry

Project Webpage

https://itea3.org/project/ps-crimson...
ITEA3 16026 BIMy – BIM in the City

ITEA Smart City Day 2021 – Crisis Management
Osman Kumaş
Overview of the Project

Key Figures

- Aproplan
- Assar
- BBRI
- Geo-IT
- GIM
- Sirris
- Willemen

City: CIRB – Brussels

- Erarge
- Netaş

City: Pendik

Duration: 36 M (3 Y)
Start: April 2018
End: March 2021

2 countries
7 companies
2 research institutes
2 cities

Total Effort: 562 PM (±47 PY)
Total Costs: 4.1 M€
Targeted Results

- **Open collaborative platform** for
  - **Sharing, storing and filtering** BIM among different BIM owners / users
  - **And integrating and visualizing** them in their built and natural environment

- **Digital marketplace** for sharing BIM models / data

- **Secure collaborative working environment**

- **Open and generic intermediary** that enables interactions between existing and new applications (point solutions)
Research & Innovations

- Technology
  - BIM/GIS integration and storage (semantic integration at different scales and times)
  - BIM with time and scale (modelling research: BIM extension)
  - BIM filtering (delivering authorized and relevant information to BIM users)

- Usage
  - By enabling their integration in their environment at a larger scale including not only buildings but also the surrounding assets

- Business model
  - BIMy will provide an infrastructure that facilitates new interactions and transactions between different stakeholders
Demo 1: Earthquake Simulation

Duration: 02:33

SMARTCITY
EXPO WORLD CONGRESS
Demo2: Digital building permit – Fire Intervention

Duration 01:34
Smart City 3D Simulation and Monitoring Platform

George Suciu Jr
CitiSim is an International R&D Project with the ITEA3 seal, involving industrial Partners and Universities from several European consortia in the business of Smart Cities. As a result, it provides a Smart Services Platform that offers valuable information on multiple urban dimensions, and whose knowledge impacts directly on a large spectrum of users with different interests.

CitiSim Platform integrates sensors and other data sources for continuously monitoring multiple variables of the city in a single platform. In the same way, it develops value-added services with great potential of reusability for citizens, companies and city councils, and it also develops technical solutions for 2D/3D data visualization, simulation and interaction useful for different stakeholders.

Start date: December 2016  
End date: December 2019
## Citisim core architecture: SOTA

<table>
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<tr>
<th></th>
<th>Smart City specific</th>
<th>Device integration</th>
<th>Common vocabulary</th>
<th>Simulation</th>
<th>Smart City Services</th>
<th>3D Monitoring</th>
<th>2D Monitoring</th>
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</table>

1. [sofia2.org](http://sofia2.org)
4. [www.sooul.com](http://www.sooul.com)
6. [cityprotocol.org](http://cityprotocol.org)

⚠️ Only visualization, no control
Citisim Core Architecture
Results

- Data distribution and persistence
- Monitoring Dashboard
- IoT event distribution
- Urban Model as a Service
- Service discovery
- Libcitisim
- Adapters
  - MQTT, Kafka
- Processed 100 Million of events in the developing phase
- Validated with all partners and services
- Developer manual
- Easy setup
Smart Platform Alliance – Why?

• Why do we propose this platform?
• ITEA supports us to create a community to disseminate the results.
• Instead of doing “our own community” with few impact we thought that it was better to create a global community and have a higher impact.

• [http://smartplatformalliance.agile.ro/](http://smartplatformalliance.agile.ro/)
BEIA CONSULT INTERNATIONAL

- **BEIA** is an innovative R&D performing SME, is a key supplier for ICT solutions/services in Romania, with an experience since 1991 in more than 900 commercial projects.

- **Products and services:** contact / call center equipment and services, telemetry systems, data networks, advanced communication projects.

- **Main markets:** telecommunication, Smart City, Smart Energy, Environment Monitoring.

- **Customers:** Vaillant, Hidroelectrica, Franke, Taxi Meridian, Romanian Waters, ENEL.
CitiSim – Crisis management services

1. Indoor / outdoor air quality monitoring – environmental motion assistant (E.M.A.)
2. Citizen Incident Reporting
3. Critical infrastructures – energy management

Presentation to municipalities:
- Rivas Vaciamadrid
- Aldea del Rey
- Bistritsa
- Pitesti
- Camas
- Fieni
- Lugoj
- Buzau (Under implementation)
1. Environmental Motion Assistant overview

The Environmental Motion Assistant (E.M.A.) was developed as a service that should help any potential user to have a clear understanding of the surrounding environment – the interior of a vehicle or the public space within the city.

The service and its associated device are not limited to interior conditions, the user having the possibility to use it outdoors, in various situations such as when riding a bike or taking a walk. By using E.M.A., as a Smart Mobility Service, environmental and motion parameters are continuously measured and stored for any user context, insightful visualizations being provided through a mobile and a web application.
1. Environmental Motion Assistant functionalities

**React Web Application**
- Developed for public and private sector, offering:
  1. Almost real-time insights on the motion and environmental context,
  2. Historical insights,
  3. Analytics details on every parameter,
  4. Easy integration with public or corporate vehicles,
  5. Visuals with integrated external sensors,
  6. Context sharing

**Android Application**
- Developed for public and private sector offering:
  1. Almost real-time insights on the motion and environmental context,
  2. Historical insights,
  3. Analytics details on every parameter

**E.M.A Citizen Reporting Integration**
- Embedded functionality that allow citizens to effectively participate in the local governance by documenting their concerns and sending a report to the government order management services.
  - User takes pictures using the mobile phone camera, classify it in a category of interest and submit the report using the application to municipalities or stakeholders

**E.M.A. External Sensors Integration**
- Python service developed to integrate external sensors data by using LibCitisim library
  - Easy database deployment for any new parameter/sensor that can be located anywhere in the world.
  - Continuously running.
1. Environmental Motion Assistant architecture

Sensor box measuring environmental and motion parameters: CO2, alcohol concentration, temperature, humidity, air quality, dust, speed, accelerations, rotations etc.
1. Environmental Motion Assistant interface

Location and environmental data visualization

Notifications visualization
2. Citizen incident reporting

CitiSim Citizen Incident Reporting facilitates actuation towards problem solving by using AI to categorize the event (ex. damage to a monument, water leakage affecting traffic, parked car affecting the tram, ice on the road), send it to responsible authorities, and inform citizens about events in an area of interest and their resolution. With this application the authorities can monitor all the problems in the city and can find solutions to ensure a better quality of life for the citizens.
2. Citizen incident reporting

Visual Wiki and other media content provider like Google, Youtube, ...

Hololens

Libcitisim

Image Description Service (IDS)

Visualization Dashboard

Report Storage (ER)

Citizen Report Service

Smart Devices

Sensors

Android

iOS
3. Critical infrastructures – energy management

Main features:

- **Monitoring** of energy infrastructure in near-real time;
- **Alarms** and **notifications** pointing out equipment malfunctions or energy provision events;
- **Forecasting** based on the Seasonal Autoregressive Integrated Moving Average;
- **Simulation of KPIs** associated with investments in “green” energy production;
- **Comparison** between scenarios to substantiate investment decisions.
Thank you for your attention!

George Suciu
george@beia.ro