

# Atos Breakout session 11 09 2019 – 10.00

How we're helping change  
the world of mobility  
(collaboration with Siemens Mobility ITS)

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# How we're helping change the world of mobility (collaboration with Siemens Mobility ITS)



As part of collaboration and support efforts with our partners Siemens we were invited to support a Siemens Mobility ITS team on developing a cloud-based AI solution that aims to change the world of mobility as we know it today – specifically, with a vision to optimize traffic flow through cities by controlling traffic intersection signalling with AI agents.

As an introduction to the story, it is important to understand the setting:

Traffic flow is dynamic, unpredictable and generally defined as stochastic, it is described by traffic science models,

Traffic increases by 2-4% every year in major cities, traffic congestion is getting worse over time due to insufficient increase of traffic infrastructure capacity,

Building a model of traffic based on detection data is a very complex task, simulators however do exist to some extent,

Siemens Mobility is one of the largest producers of traffic controlling hardware and has many deployments throughout the world,

Siemens was granted access to controllers with cooperation with several customers in general EU area to develop AI controlled traffic actuation with general scope of:

- Reducing traffic congestion during peak traffic hours,
- Optimize waiting times,
- Reduce carbon emissions

Aim was to develop this as a cloud-based, hyper-scalable and easily-customizable extension to Siemens Mobility products that can be plugged into existing projects as an add-on and provide immediate effect

There were/are some attempts to do something like this in the world today but none of these have proven to be fully effective or easily applicable to cities (note: Alibaba does this in China, there is “dynamic traffic actuation” already based on current detected traffic rates, but no AI based solution that takes into account various other sources)

Chosen platform is Microsoft Azure and Microsoft is also selected as one of partners providing Solution Architect support as well as services that are in preview mode

The solution itself had three major aspects:

security is of utmost importance and has to be in sync with Siemens regulations as well as use best-practices applicable data collection is a Big Data / IoT challenge and wide range of standards are used all over the world, in EU we focused on OCIT-C (DIN VDE V 0832-601 and 0832-602) and ISO-19091:2017

AI has to be developed from scratch and running using MS Cloud services, actual ML paradigm was to be defined during the project – what eventually came to be is a form of supervised learning (SL) based on existing traffic data

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We are still active in this project and our contribution was in all aspects mentioned above as well as we served to stabilize the maturity of the sub-system. We're still doing that and moving the product sub-system into cloud-based hyper-scalable big-data-ready territory with a number of cities willing to take part in testing.

Currently running system is able to optimize traffic such that measure called Arrival-On-Green (AOG), which is a traffic theory measure, shows improvements in the range of up to 10% expected improvement.

The target is to further optimize this and by increasing number of controlled junctions come up to 20% overall (mean) improvement of traffic flow.

The presentation itself is going to focus on:

Overall project setting (mentioned above in scope) and disseminate architectural approach chosen in devising a cloud-based solution for this project,

Security aspects of the solution and interconnected systems,

Interesting technical details on how the data collection and storage was performed

- Data volumes
- Brokering of messages
- Services used on cloud infrastructure
- Storage options chosen
- Interesting aspects of Azure cloud we encountered during implementation

Show a run of a small traffic model in SUMO – Simulation of Urban Mobility (of a number of roads around the venue, based on whichever publicly available data can be retrieved, i.e. Google-maps/traffic/congestion data and similar),

Possible AI approaches and give hints where this solution went (no detailing nor demonstration without prior partner clearance),

Wrap with consulting methods employed in approaching this project and how we helped facilitate it's successful execution

# Shipment Digitalization - revolutionizing transport and logistics

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**Presenter:**

**Blaz Vincetic**  
B - Software

