

see public transport...  
the right way.

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“SIADE leverages the power of big data enabled by a next generation parallel processing architectures”

## Getting Started

*By M. Argüelles, CEO*

The global demand for bus transportation is huge. Large metropolises like London are managing fleets of hundreds of buses per million persons. We can't forget that public transport is the lifeblood of a city's economy; particularly in Europe, public transport by motor coaches, buses and trolley buses is one of the main drivers of 21st century mobility and economy, with Hungary (22,3%) and Turkey (34.9%) being the countries with the highest use share.

The demand for passenger transport is estimated to grow up to 51% by 2050 and infrastructure will reach its performance limits. With a growing market of €100.6 billion by 2019, Intelligent Transport Systems (ITS) could raise the capacity of existing infrastructure by 20-30%. Particularly, for the Transport Sector and Public Authorities, the potential of data from citizens' transport cards for bus transport optimization and planning is immense.

However, a great challenge remains unresolved today: how to accurately describe the actual state of transport networks in terms of flow while transforming smart card data into intelligence and knowledge.

SIADE SaaS objective goes beyond this challenge. It also aims at becoming a fundamental tool that will improve any public transport network performance. Thanks to the EU Horizon 2020 Programme support, it's on the right track to achieve this aim.

## Concept and Methodology

By J. Bermejo, CTO

SIADE SaaS effectively solves the problem of public transportation data mining, knowledge extraction and representation. It allows the input from any e-ticketing system available today on the market and delivers accurate user mobility patterns.

The technical requirements and specifications have been defined based on a comprehensive study of target market requirements and through application scenarios built in cooperation with Transport Operators, mobility consultants and technology suppliers from seven countries. SIADE SaaS will be a complete controlling service that turns data management into a user-friendly and highly reliable application for traffic modelling, prediction and planning.

At the core of SIADE SaaS are the accurate OD matrices obtained through our proprietary algorithms and Spatial Big Data computing tools. SIADE is built upon several modules:

1. SIADE SaaS Data Mining: raw data obtained from AFC systems is processed to generate a highly accurate and discrete OD Matrix, segmented by other available dimensions (e.g. route, day, time, fare group, etc.). This information is combined with geospatial data including -if available- AVL data in order to provide information and knowledge about the network and people's mobility patterns.
2. SIADE SaaS Simulator and Optimizer: based on the Data Mining module, simulates the network performance, allowing the planner assess any potential change and -if needed- provides the most cost-effective solution, including service, vehicle and crew scheduling.
3. SIADE SaaS Big Data will resolve complex interactions where many TOs operate in the same area with different organizational schemes, refine its algorithms to efficiently manage huge databases. It will be tested in Istanbul (Turkey).

**“SIADE SaaS is being tested in seven different scenarios with increasing complexity”**



## Phase I deployment

By J. López-Rivas, GIS Architect

After a few months we have successfully concluded the development and deployment of Phase I.

With the support of EMTUSA, the public transport operator in Gijón (Spain) -who has proven to be an excellent collaborator- we have been able to deliver a product that allows the company to understand the citizens' mobility patterns, assisting EMTUSA's decisions affecting changes in headways, routes, bus stops, etc. while improving the service provided to citizens and therefore increasing patronage.

Besides the mobility patterns analysis of different kind of users, we have included in this version bus bunching analysis and several KPIs (Key Performance Indicators) as proposed by EMTUSA.

Moreover, this good and agile relationship with EMTUSA allowed succeeding our first pilot in the best conditions making possible to point out the SIADE strengths like:

- Interactive and responsive GIS representations of KPIs.
- Allows real time queries on any represented elements.
- Quick and complete adaptation to client needs.

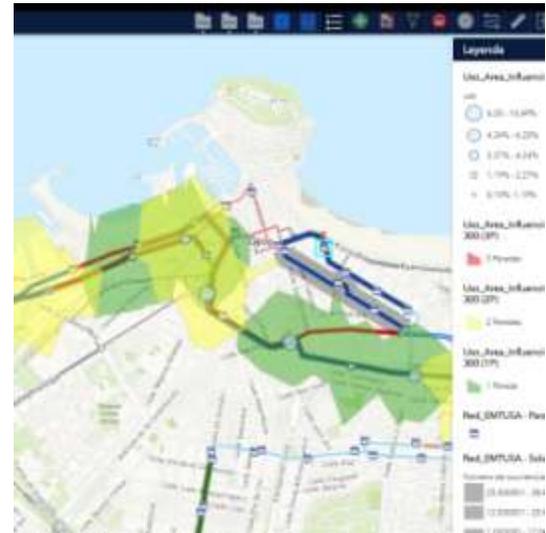
## Starting Phase II

By O. González, AI Architect

Now that Phase I has been successfully concluded, it is the time to tune SIADE according to the valuable feedback and comments obtained from EMTUSA.

At the same time, we have started the development of SIADE SaaS' flagship component, the simulator and optimizer. It is a predictive analytics tool that will include the possibility of defining "what-if" scenarios. Requires the deployment of a new algorithm complementary with SIADE that iterates the possible alternatives of the network and choose the most logical regarding several parameters whose weight can be predefined by the user.

Thanks to the collaboration with our partners, we will be able test the validity of SIADE's simulator.



SIADE SaaS - Graphical Interface.



Closing Phase I with EMTUSA

**"The use of Artificial Intelligence will bring SIADE SaaS' Optimizer a huge competitive advantage."**

## What's next?

By C. Fernández, Business Development Manager

In the beginning of March, representatives of Terrain Technologies attended the Phase II kick-off meeting in Milan (Italy) with the following participants:

- T Bridge, an ICT Italian company with more than 30 years of experience in the field of planning and consulting services.
- SETA SpA (Società Emiliana Trasporti Autofiloviari) is the sole operator of the local automotive public transport service in the provincial territories of Modena, Reggio Emilia and Piacenza.
- aMo, (Agenzia per la mobilità e il trasporto pubblico locale di Modena S.p.A), a company born within the process of reforming the local public transport system with the aim of opening the sector to competition while ensuring a unified mobility management in Modena.

During the meeting, several aspects of the project development were discussed, such as SIADE SaaS capabilities, the role of Italy in Phase II Italian pilot, its scope, the potential outcomes of the project, its life cycle and compliance with the Data Protection Directive 95/46 /EC as well.

Next May 28<sup>th</sup>, another kick-off meeting with representatives from Mobilissiums (Hungary) and OTL (Oradea, Romania) will be held in Budapest in order to set the basic framework ruling the Phase II Romanian pilot.



*Phase II kick-off meeting in Milan (Italy)*



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