INTRASOFT INTERNATIONAL

How do Big Data impact the transport domain?

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Identity & Characteristics

A leading European **IT Solutions & Services** company.

Established in **1996** in **Luxembourg**, operations in **13 countries**.

Outstanding record of providing IT solutions to **Governments, Public Organizations** and private **Enterprises** in over **70 countries** around the globe.

A key player in **E.U. Institutions and Agencies** for 20 years.

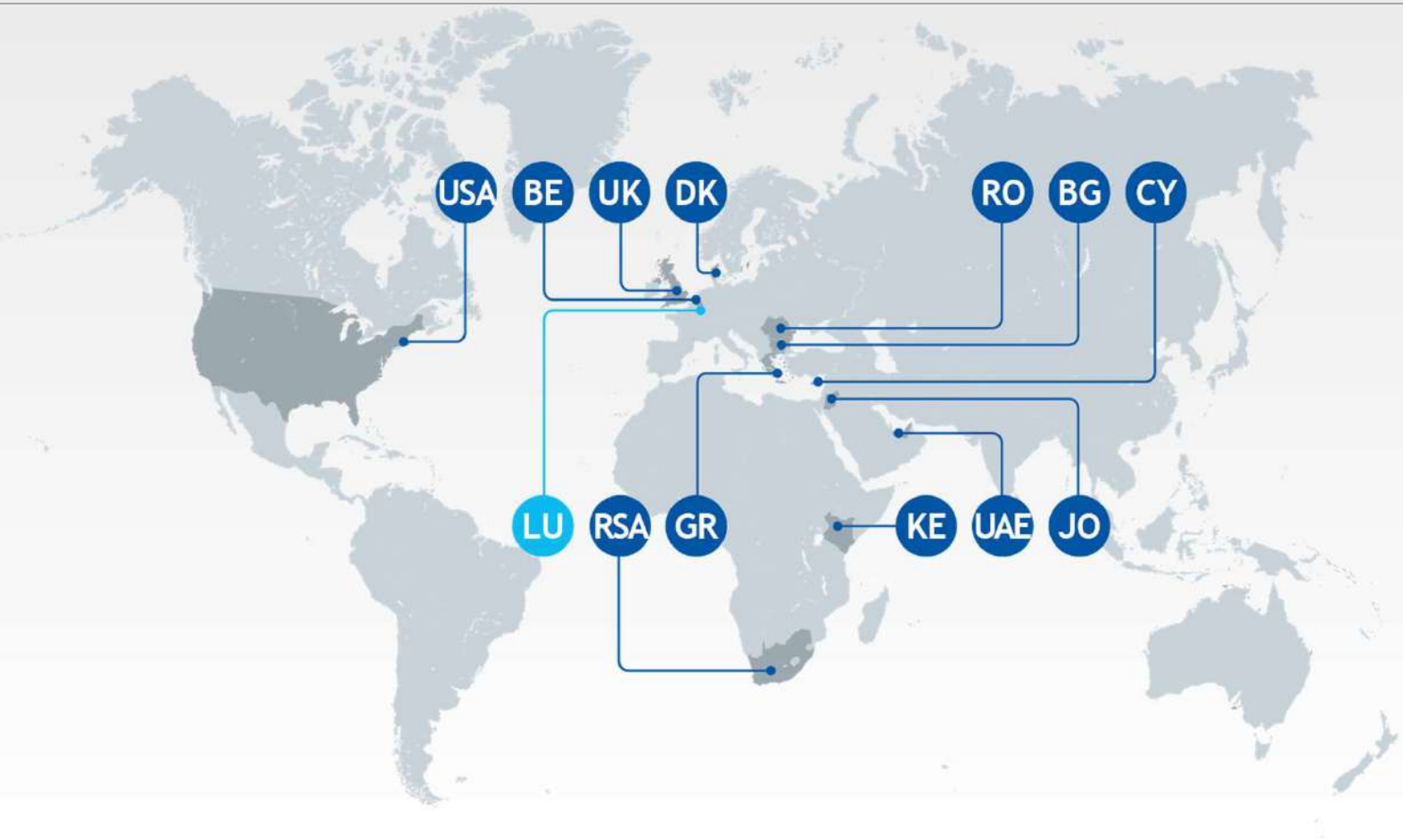
Prestigious **track record** for the successful delivery of large scale-complex projects.

Customer-oriented culture.

Strong **brand name** in vertical markets.

Combines strong **technical** expertise with a deep understanding of **business**.

Operations



Headquarters

Luxembourg (LU)

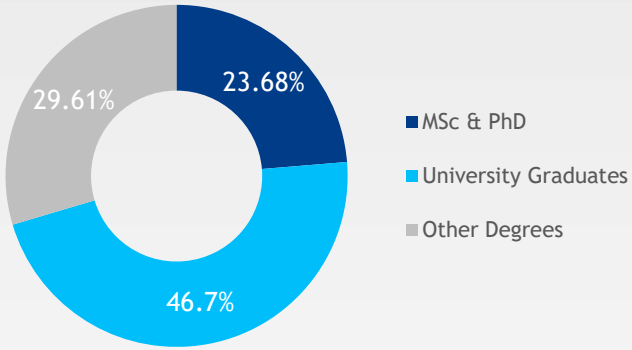
Competence & Development Centers

Athens (GR)
Thessaloniki (GR)
Amman (JO)
Bucharest (RO)
Brussels (BE)
Copenhagen (DK)

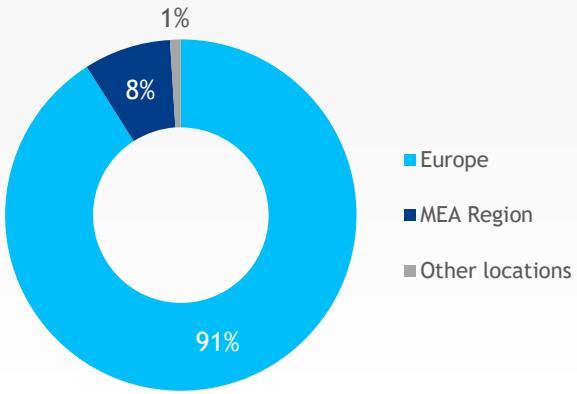
Offices

Nairobi (KE)
Boston (USA)
London (UK)
Ras al-Khaimah (UAE)
Sofia (BG)
Nicosia (CY)
Republic of South Africa (RSA)

People



Brain ware is our most valuable asset



Professionals | 1,700+

Nationalities | 20

Highly-skilled

Results-driven

Diverse cultures with a shared international mentality

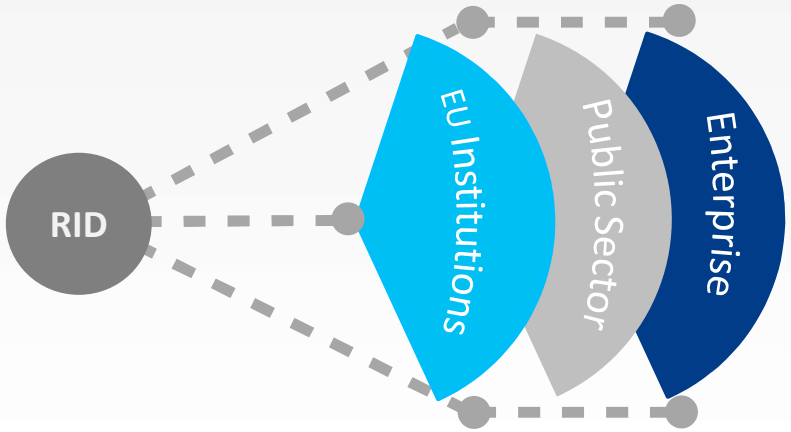
Priority Markets / Business Units

EU Institutions

- Application Development & Integration Services
- Outsourcing & Managed Services
- Professional Services
- Research & Innovation Development (RID)
- Communication & Consulting Services

Public Sector

- Customs
- Taxation
- Social Security
- Healthcare
- Compliance
- e-Justice
- Structural Funds Mgt
- e- Procurement
- Transportation
- Public Financials /Treasury



Enterprise

- Banking & Finance Solutions
- Services & Products
- Telecom Solutions
- SAP Solutions
- Security Solutions & Services
- New Ventures

INTRASOFT & Big Data

INTRASOFT International has managed to be **exposed in and contribute to state-of-the-art solutions** in the Transportation Industry.

INTRASOFT is working on:

- **building data management web applications** for handling:
  - big data stored across clusters of computers and
  - processed using distributed processing technologies applied in the supply chain domain.
- **enhancing its commercial products with Big Data Analytics functionality** to
  - increase process quality and performance
  - increase customer loyalty and retention
  - expand revenue streams from existing and entirely new (data) products
  - be used side by side with other research and innovation assets, such as the Streamhandler Platform, developed by INTRASOFT International's RID department to offer data curation and data quality related functionality.

TransformingTransport

Big Data Value in Mobility and Logistics

Large scale pilot action within EU Big Data Value PPP

18.7 M EUR budget, 30 months duration

Major ICT providers + key industry / public bodies in transport + research

https://www.youtube.com/watch?v=GWpmoxJDtAg https://transformingtransport.eu/

Transport and Logistics Domain

- One of the most-used industries in the world and in EU…
  - **15% of GDP** (source: KLU), employment of **11.2 million persons** in EU-28 (source: DG MOVE)
  - **3,768 billion tonne-kilometres** and **6,391 billion person-kilometres** in EU-28
  - Key contributor to emissions: **4,824 megatonnes CO2** (source: DG MOVE)
- …and growing
  - Business and tourism travel expected to grow significantly over next decades
  - Freight transport slated to **increase by 40 % in 2030** and by 80% in 2050 (source: ALICE ETP)
- Need for paradigm shift!
  - A **10% efficiency improvement = EU cost savings of 100 B€** (source: ALICE ETP)
  - Big Data expected to lead to **500 billion USD in value worldwide in the form of time and fuel savings, and savings of 380 megatons CO_2 in transport and logistics** (source: OECD)
- But: Current Situation
  - **Only 19 % of EU transport and logistics companies** employ **Big Data solutions** as part of value creation and business processes, and 70% do not plan to do so in the future (source: Price Waterhouse Coopers)

TransformingTransport

- The aim of TT..
  - Demonstrate in a realistic and measurable manner the transformations that Big Data can bring in the mobility market.
  - Prove that Big Data solutions are technically and economically viable and able to transform transport processes and services.

- Big Data
  - **Predictive analytics - What will happen and why ?** e.g. predictive analytics may help predict whether there may be a delay in a transport process, helping transport authorities & logistic companies to be proactive and take action to decrease or prevent delays.

  - **Predictive maintenance -**takes into account **predictions gained from data about the actual condition of the equipment**, in this way predictive maintenance helps authorities identify the best time to conduct maintenance tasks – helps optimize maintenance frequency and avoids unnecessary routine inspection – resulting in regular maintenance, ensuring that the equipment will last longer.

HOW BIG DATA CAN TRANSFORM EVERYDAY MOBILITY AND LOGISTICS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731932

This project is part of BIG DATA VALUE PUBLIC-PRIVATE PARTNERSHIP

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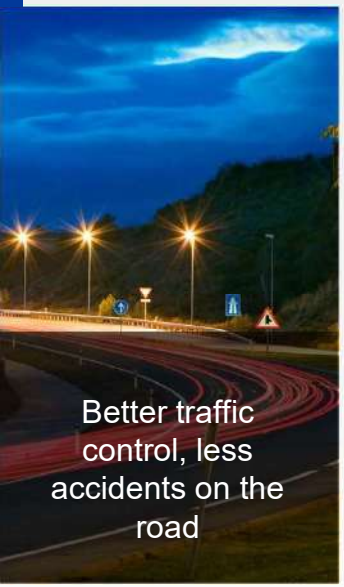
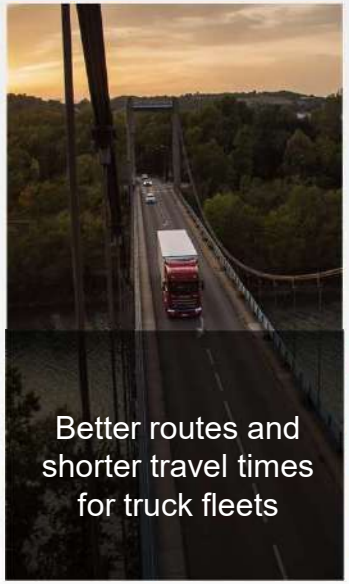
SAFER AND BETTER MOBILITY IN EUROPEAN ROADS AND CITIES





2H Accurate traffic and accidents predictions

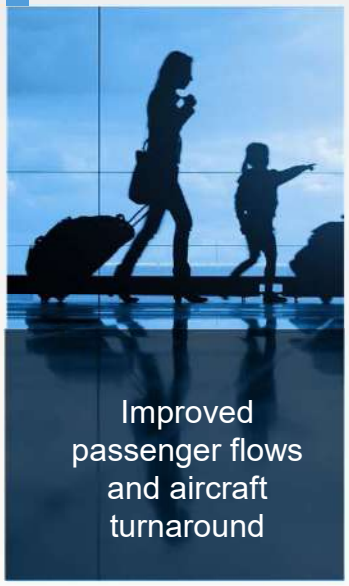
↓17% Truck driving and handling process

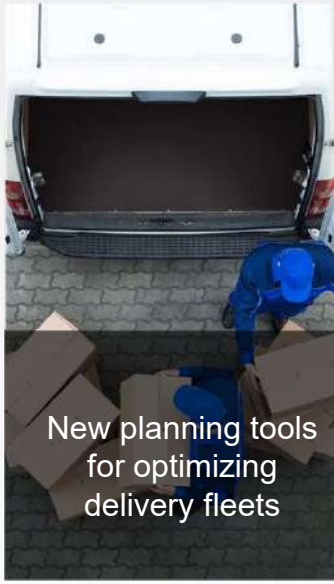
MORE RELIABLE AND PRODUCTIVE TRANSPORT SERVICES AND OPERATIONS

↓34% Rail infrastructure maintenance costs

↓10% Terminal operational costs

ENHANCED TRAVELER AND CUSTOMER EXPERIENCE





Optimization of airport resources and creation of new data-driven business models

↓38% Number of distribution vehicles used

TRANSFORMING TRANSPORT

INTRASOFT INTERNATIONAL

Large-scale piloting and demonstrations of the Big Data technologies in the transport sector

Smart Highways (WP4)

- Load Balancing in Malaga
- Load Balancing for Norte Litoral

Sustainable Connected Vehicles (WP5)

- Sensing Passenger Cars
- Sensing Trucks

Proactive Rail Infrastructures (WP6)

- Predictive Rail Asset Manage-ment
- Predictive High Speed Network Maintena-nce

Ports as Intelligent Logistics Hubs (WP7)

- Valencia Sea Port
- Duisport Inland Port

Smart Airport Turnaround (WP8)

- Smart Passenger Flows (Athens)
- Smart Turnaround (Malpensa)

Integrated Urban Mobility (WP9)

- Integrated Urban Mobility & Logistics in Tampere
- Integrated Urban Mobility & Freight in Valladolid

Dynamic Supply Networks (WP10)

- Shared Logistics for E-Com-merce

Smart highways – Lessons learnt
improve traffic flows and mobility patterns

	Malaga Ausol	Notre Litoral
Main objectives:	Understanding mobility patterns, optimizing Operation & Maintenance and make safer roads for a barrier-toll scenario	Understanding mobility patterns, optimizing Operation & Maintenance and make safer roads for a free-flow scenario
End-users:	Drivers Concession's staff	
Main Achievements:	• More than 100% increase in the volume of data collected daily • Reduction of 80% in minutes of queue in Calahonda Toll Station	• More than 100% increase in the volume of data collected daily • Up to 19% of time savings per users

Sustainable Connected Vehicles- Lessons learnt

	Cars	Trucks
Main objectives:	Reduction of emissions & breakdown messages to drivers	Route optimization for trucks fleets, focusing on logistic hot spots
End-users:	Drivers Fleet Managers	Logistics Service Providers Providers using satellite images
Main Achievements:	• Around 6% less emissions • 56% reduction of breakdown messages to drivers	• Around 60% of improvement on time savings

Proactive Rail Infrastructures – Lessons learnt

	Rail UK	Rail Malaga
Main objectives:	Reduction of operating cost, maintenance time and track-side activities	Reaching to 100% predictive maintenance system
End-users:	Maintenance engineers & business analysts within Network Rail	Adif Ferrovial + Ci3 Thales España
Main Achievements:	• 44% of cost reduction • 50% of reduction in time spent in performing maintenance • 9% of reduction in track activities	• 43% of reduction in maintenance interventions

Ports as Intelligent Logistics Hubs- Lessons learnt

	Valencia Port	Duisport Inland Port
Main objectives:	To improve efficiency in both Terminal and Port levels	Develop a Terminal Productivity Cockpit (TPC) for predictive decision-making
End-users:	Noatum Terminal	Terminal managers & maintenance managers
Main Achievements:	• Savings around 10% in Turnaround time among Terminal and Port • 33% of maintenance cost reduction per monitored terminal equipment	• 100%+ of increment in container handlings between failure • Improvement around 5% on nº of trains leaving the terminal on time

Smart Airport Turnaround- Lessons learnt

	Athens	Malpensa
Main objectives:	Enhancement of efficiency and predictability of the Passenger-Side	Enhancement of efficiency and predictability of the Passenger-Side
End-users:	Corporate Information & Market Intelligence Unit Airport Security Screening Retail Services Airport Operations-Aviation Scheduling and Planning function	Terminal managers & maintenance managers
Main Achievements:	• Around 90% of improvement in the accuracy of the predictive models	• Around 75% of improvement on predicting aircrafts time of arrival

Integrated Urban Mobility – Lessons learnt

	Tampere	Valladolid
Main objectives:	Development of tools for traffic management, drivers and for delivery parking places	To generate traffic models and planning tools for improving and supporting freight transport
End-users:	Traffic Management Centre Logistic Operator	Valladolid City Council as mobility manager Grupo Lince as logistic operator PTV Group as traffic modeller
Main Achievements:	• More than 100% of enhancement in citizens awareness and in the number of freight delivery places covered by the logistics applications	• 40% of reduction for driving and parking time • 55% less NOx emissions

Dynamic Supply Chain Networks – Lessons learnt

Main objectives:

Improvement of delivery patterns and forecasting
To develop alternative shipping methods
Enhancement and optimization of delivery routes
To improve customer satisfaction related with e-commerce logistics processes

End-users:

LOGIKA

Main Achievements:

- 60% of reduction in the total distance from hub to customers
- Decreasing of 77% in transportation and warehousing costs
- 73% of reduction in the number of vehicles used per day for return orders via forecasting

Valencia Pilot

Big Data technologies have a key role to play in port logistics as new IoT information from equipment, such as trucks, containers or cranes, becomes available.

Valenciaport the Spain's leading Mediterranean port in terms of containerised commercial traffic: 50,000 movements of cranes, trucks and other equipment per day to handle the 4.7 million of TEU movements per year.

Specifically this pilot has three main goals to address:

- Develop an advanced Cockpit for better decision-making, including predictive KPIs that consider as a whole the historical data available at the Valenciaport and Noatum information systems
- Design, implement and deploy and optimization algorithm that provides the user with the best sequence of crane movements
- Apply Predictive Maintenance models to cranes' spreaders, starting with the study and deployment of a set of sensor devices to gather relevant information from critical equipment parts.

Policy brief of TT –13 Pilots

Emerging trends towards digital innovation

- Data fusion,
- High performance computing,
- Machine learning,
- AI,
- Real time applications and automation of traffic and automation applications
- Automated actuation idea of industry 4.0 (how to get and manage data)

- The partners also identified some additional Key trends of significance that may be of interest:
  - Data driven operations across the network (rail)
  - Optimization of railway infrastructures placing safety first
  - Collaborative business models with a clear emphasis on X2C practices (e-commerce logistics)
  - Real automation on processes

Policy brief of TT

What did the pilots face and recommend ?

Data protection “made in Europe” could give European companies a competitive edge as users become increasingly privacy-aware.

- push the EU member states to adopting GDPR  **GDPR fragmentation**

Data Interoperability to foster collaboration - The advancements in the organization's work flow include data storage, data management, data maintenance, data integration, and data interoperability.

- more guidance on how data should be stored / used etc.
- push stakeholders on the type of data they provide across platforms and to ensure that these data are reliable and of good quality
    - **TT can provide guidance to the authorities on the type of quality standards that may be required springing from needs expected from big data technologies**
- **Standardization:** the issue of data digitization for cases where not all data follow the necessary format required by big data technologies so that these data are useful.

Policy brief of TT

What did the pilots face and recommend ?

The EC is moving to an open data landscape – PSI Directive on Open Data

- TT experts can work towards the harmonization of the high value datasets to make data economy more efficient
- contribute at W3C and Joinup working teams

- Open data being necessary for the offerings of new services or to generate research since the accessibility of open data and cloud services allow industries and citizens to develop new services and applications.
  - the **understanding of what is open and big data**,
  - the value of **open and big data**
  - how we **can monetize its use** and **develop new business models** and
  - to assist them to think more openly on sharing information.

TT suggests that Data Market Economy should move to a structure where agreements and sharing becomes easy to understand.

Policy brief of TT

What did the pilots face and recommend ?

TT Logistic experts

- Lack of governance and regulation to support collaborative practices. Example: regulation to allow easily to appoint authorization: stakeholder B to collect a parcel if a parcel shipped to stakeholder A cannot be collect by stakeholder A.
- Changes require face to face dialogue and shared understanding
- The need to white label public click and collect points. Such recommendation is considered to end up with a distributed system to manage traffic, reduce conjunction and facilitate on city decarbonization.

Suggestion is that governments act as a neutral place where all data sharing happens and since they have the strength through regulation, to decide on data handling for appropriate use.

What are the opportunities in the Big data transport market?

Skills in the use of Analytics and Big data related technologies is a high-growing demand from Companies - Data integration and data interoperability are complex challenges for the organizations deploying big data architectures due to the heterogeneous nature of data used by them.

Business operation expertise is needed as much as Artificial Intelligence techniques.

End-users and their stakeholders are directly involved in the Solution Design and Demonstration fostering the market uptake in post-project stages (exploitation and post-replication) > *Common strategy and vision*

Shift-thinking towards data-driven Organizations. Data as "Core" resource of companies to develop resources

High-demanding of data-scientist profiles to develop Big data and Analytics solutions

Is Big data triggering a New Business model?

- **Companies & actors coming from across industries are working together to create new revenue streams, disrupt markets and create value based on data-monetization Uses Cases.**

- **Open data marketplaces are emerging as places to create new services**

- **Data as “strategic resource” for new era of Business modelling - no need for one company to develop its product & services in-house and take it to the market**

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Thank you for your attention

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