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TITSA

Companies, Big Data and the evolution towards zero emissions transport



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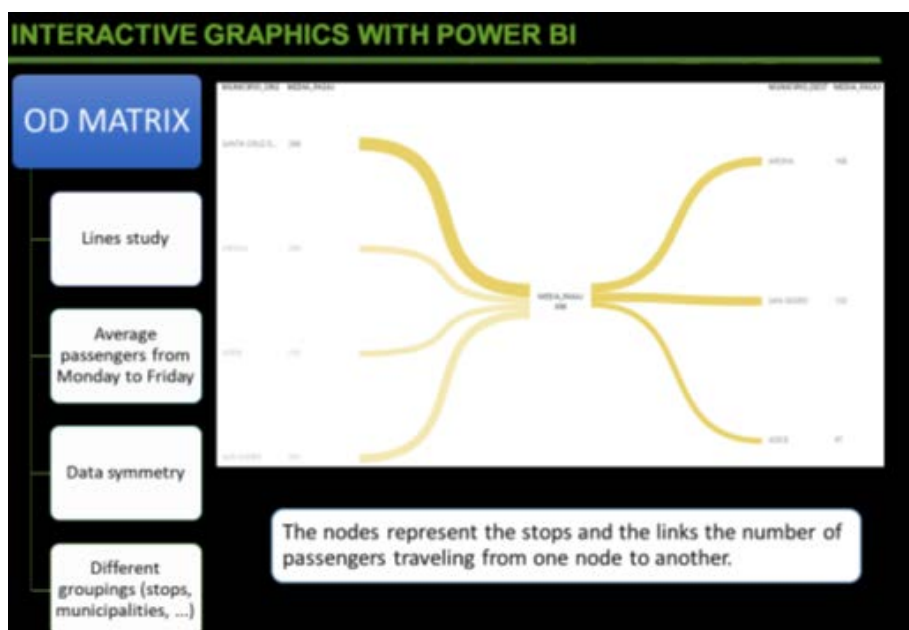
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In recent years, the departments in charge of Big Data have begun to make a name for themselves within their company's organization charts, becoming a cross-disciplinary area for all departments. Regardless of the sector and services involved, companies base their area of knowledge on information, which is generated by data, the raw material of Big Data.

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There are several definitions of what Big Data is, but they all refer to the management and exploitation of large amounts of information, which is possible due to the reduction of the computational cost, that is, the hardware and the computing power that we need to analyze large amounts of data. Also, it is possible to process all this information in the cloud, for which we can hire or access large computers to execute the algorithms at a reduced cost or rely on programming tools that support distributed computing.

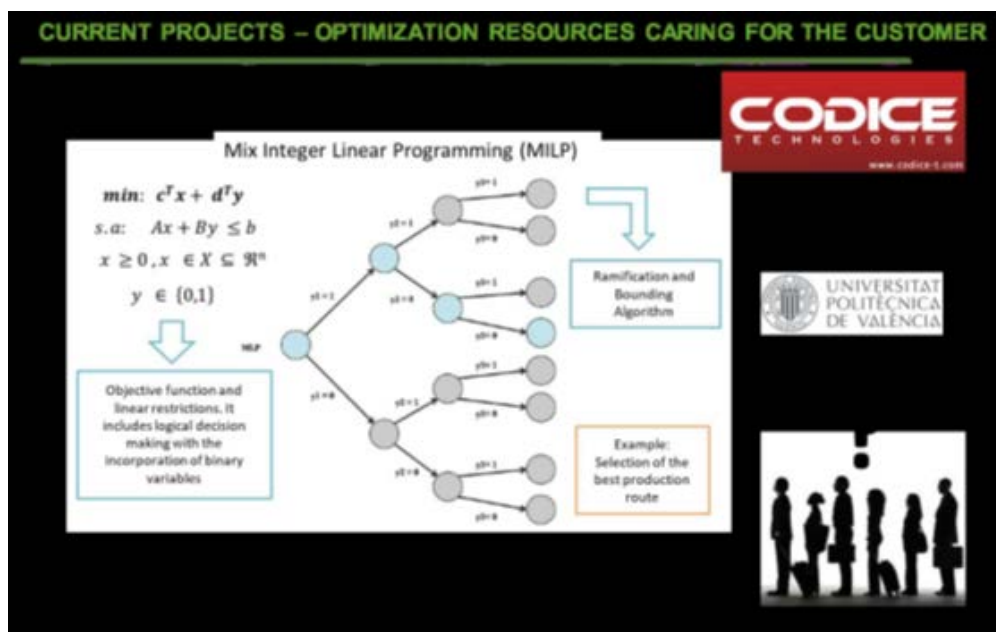


A graphing of the Origin/Destiny Matrix . Source: Big Data Area, TITSA.

The expansion of Big Data has also been achievable due to the rising number of low-cost software tools currently offered by the market for data management and treatment. Another peculiarity that has contributed to the development of this new methodology is the source of the data, which is no longer found just within the company but also outside of it, either through Social Networks, Open Data sources or from those devices that are increasingly around us and share their data, which encompass what we refer as the IoT (Internet of Things).

These devices include electric or zero-emissions vehicles, and also industrial ones, such as buses, trains and subways. These are fully monitored, so they generate considerably large amounts of data that present several problems to be solved:

1. Real-time data transmission
2. Its analysis and alert presentation to speed up the decision-making process
3. Its storage for further study and analysis



An example of an Optimization Problem Formulation.
 Source: Big Data Area – TITSA

This information is already being used to:

- prevent inappropriate wear of the key elements of the vehicle
- avoid accidents
- decide if the mechanical configuration of the vehicle is the most appropriate for the established route
- determine if that route is the most optimal for the passengers or if the frequency is adjusted to their needs.

Moreover, it is also possible to use this knowledge to identify the best places to install charging stations, so that their location is efficient, adapts to the service provided, and guarantees that the vehicles will have sufficient charge at all times, allowing them to perform the scheduled service.

In the field of logistics, data management is becoming increasingly important as well, since cost control is the main focus of their departments, and the amount of data collected within this area is experiencing almost exponential growth, considering the number of devices that have been integrated throughout the supply chain (SCM).

Regarding transport companies, tools and methodologies offered by Big Data are being implemented to study mobility flows and thus being able to improve the service network. For instance, by monitoring movements through Mobile Phones, it is even possible to restructure the bus route network so that it can adjust to the demand, making it more efficient and adaptive to the passenger's behaviour.



TITSA has recently acquired new hybrid buses, allowing travelling between the capital's main station and Las Teresitas beach in 100% electric mode, with an initial charge point at the central station via pantograph. Source: Marketing Area – TITSA

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eBussed project supports regions in the transition towards low-carbon mobility and more efficient public transport in Europe by promoting the use of e-buses.