GIS Services & Open Data in Public Transit

Sergio Fernández Balaguer (EMT Madrid)
Enrique Diego Bernardo (EMT Madrid)
MADRID: A DINAMIC ECOSYSTEM WITH A COMPLEX TRANSPORT SYSTEM

- Capital and largest city of Spain.
- 3,25 million people in the city (up to 6 million inhabitants in the metropolitan area).
- 8,4 million trips everyday (working day)
- 3,415 km of roads (938 km are high capacity, 790 km of which are free highways). Radial structure, complemented with 2 ring roads and 2 semi-ring roads
- Metro system has 338 stations, 2,157 trains and 339 km network.
- 13 transport interchange stations
- Pedestrian areas, 30-zones, etc
- 4 Car-sharing companies
- Public Electric Bikes System

EMT Madrid: Public Bus Transport Operator
EMT Madrid overview: Company figures

- Created in 1947. 100% owned by Madrid City Council
- 8,000 employees
- 2,000 buses
- 213 lines
- >10,000 bus stops
- 93 million km/year
- 405 million users/year
- Head Office + 6 Operation Centres
First objective: Geographical Plannification of the Transport Network (Routes, Bus Stops, other elements) in order to build a GeoDataBase that supports all the corporative systems.

Second objective: Internal optimization accessing information, promoting efficient use of the data, as well as the reuse of the developed systems.

Third objective: To make information available to third parties, with the intention of encouraging the development of new applications and integration with external information systems allowing third parties (individuals or companies) to create added value by developing new products, integrating EMT data with other services.
Plannification of the Transport Network

GENERAL PLANNING

EMT IT Solutions for Public Transport

Geographical Information System

System for Planification

Routes & bus Stops

Schedules
- Edition client application to routes network.
- Web application of tracking and analysis of operation.
Second objective: Internal optimization accessing information, promoting efficient use of the data, as well as the reuse of the developed systems.
For the INTERNET it was necessary:
Translated Catalogs: Application forms were translated into English, as well as each element, including a parameter “Culture” to choose answer language.
New systems of coordinates: possibility of latitude-longitude degrees coordinates or UTM coordinates.
RSS feeds Development (events, information service …) and GTFS items.
Current offer on open data services:
• Geographical Context: Where Am I? Which are EMT services around me?
• Route calculation: How to go from A to B within the city?
• Service Information: Bus Lines, along with their routes and timetables.
• Arrival times: When is it coming? How long will it take? (both text and streaming audio)
• RSS (events, service information, notices ...)
• GTFS, iframes, etc.
Opening the SOA layer to INTERNET

Third objective: To make information available to third parties, with the intention of encouraging the development of new applications and integration with external information systems allowing third parties (individuals or companies) to create added value by developing new products, integrating EMT data with other services.

The platform provides service to 9,000,000 visitors / month = 3.5 hits per second
TRANSPORT 4 AGOL

A definitive cloud tool for managing transport lines and infrastructures based on ArcGIS Online
Cloud solution for viewing and editing the transport elements in the transport network working on ArcGIS Online.

Focused on provide GIS support for small to medium public transport enterprises that aren't usually disposed for doing great inversions in IT.

Fruit of the collaboration of Esri Spain and EMT Madrid where each part brings his knowledge and experience in order to offer a High Quality product.

End user only need a web browser to manage his transport lines infrastructure.

Licensing model is based in number of transport lines.

Low cost and ready-to-use solution.
• Build and relate stops and transport lines with their linked attributes.

• Manage historic time terms regarding transport lines and their stops.

• Map representation of stops and lines with customizable simbology. Including the capability to operate with these elements.

• Obtain relevant information through dashboard panel including several indicators and KPIs.

• Enabled to share the info with external services in order to provide real time info like waiting times in stops.

• Share the info with the end user (the passenger) in a user friendly interface that is available for multi devices.
TRANSPORT4AGOL

ARQUITECTURE OVERVIEW
• **Real GIS**: A complete System for managing and exploiting spatial information into the urban/public transit context. Not only limited to view and edit the lines, it is able to provide geospatial analysis and services to share your info with internal and external clients.

• **Professional**: Designed by urban transit professionals to be used by urban transit professionals. The value and experience from EMT Madrid available for the transport companies.

• **Economy**: Adapted to your budget requirements, without hidden costs by hw infrastructure or sw development. Pay only what you use!

• **Ready to use**: No sw installations, sw development or hw deployments. You only need your web browser. Login & use.

• **Scalable**: Your consume is according your needs. Grow up when you want depending on how your needs are evolving.
DRIVER NAVIGATION SYSTEM

SUPPORT AND NAVIGATION FOR TRANSPORT LINES AND FLEETS
Driver navigation System

...based on ArcGIS Runtime
THANK YOU VERY MUCH

http://opendata.emtmadrid.es