Using technology to enhance public transport services

Sandra Vasconcelos Lameiras
slameiras@opt.pt
OPT

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Traffic issues are a major concern for governments, authorities and municipalities.

Due to congestion issues and the green agenda there has been a Massive investment in transport infrastructure.

Challenges of the new cities

There is a strong demand for cities to develop well structured mobility plans

Promoting the use of public transport is vital, for environmental sustainability and to reduce carbon emissions.

Public transportation plays a key role in smart cities

OPPORTUNITIES

- Make public transportation attractive and financially sustainable
- Improve the service by:
  - efficiently managing and optimizing the network and the operation
  - improving the quality and reliability of the service
  - using data science to make services more flexible and responsive
- Attract new, loyal passengers by:
  - providing relevant, timely information
  - promoting citizenship, trust and confidence
  - establishing partnerships with other city services
  - offering user friendly payment options

Hard infrastruture investments are important but it's time for intelligent investments to connect the transport networks

Investments in platforms like:

Traffic Apps

MOVE-ME App

Mobile payment transport apps

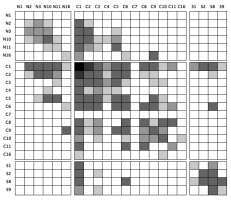
Information transport systems

Public transport new challenges

Data science and Internet technologies enable not just smart things but smarter decisions

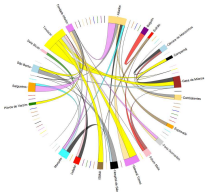
Unveiling mobility

EXAMPLES

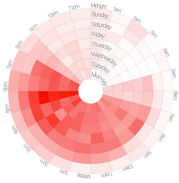


Origin-destination matrix where each cell corresponds to the number of validations in buses and metros in a Porto metropolitan area zone

2D Geographic Heat Map combined with data from citizens' locations whilst using a route planner mobile application, during their search for nearby stops based on their location.



Radial convergence visualization, depicting travel intentions (route plans) between origin-destination pairs.



Radial heat chart representing ticketing data for one bus stop. Each circular row represents a day of the week, and each circular column represents a day hour…

T. Sobral, T. Galvao, J. Borges. Vumo: Towards an Ontology of Urban Mobility Events for Supporting Semi-Automatic Visualization Tools. Proceedings of the 19th IEEE International Conference on Intelligent Transportation Systems (ITSC), IEEE, pp. 1700-1705, 2016

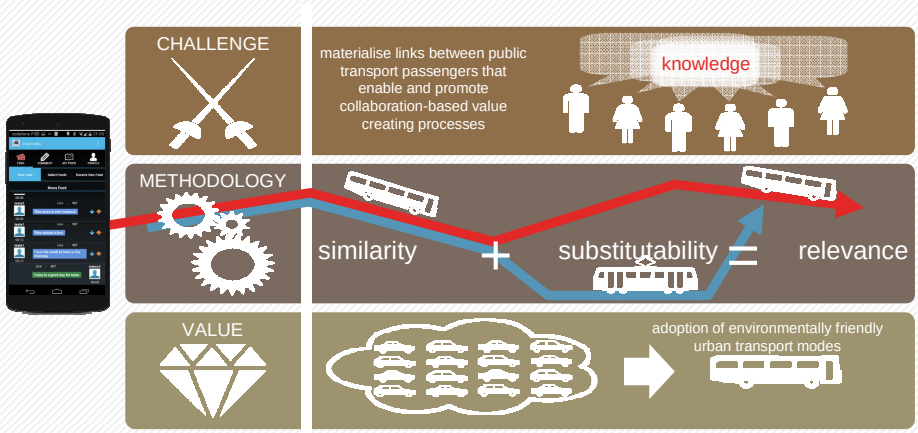
How to Encourage the Use of Public Transport? A Multiservice Approach Based on Mobile Technologies

EXAMPLES

Ferreira M.C., Dias T.Galvao (2015) How to Encourage the Use of Public Transport? A Multiservice Approach Based on Mobile Technologies. In: Nóvoa H., Drăgoicea M. (eds) Exploring Services Science. IESS 2015. Lecture Notes in Business Information Processing, vol 201. Springer

A user collaboration model for urban passenger transport

EXAMPLES



António A. Nunes, Teresa Galvão Dias, Chris Zegras, João Falcão e Cunha, Temporary user-centred networks for transport systems, Transportation Research Part C: Emerging Technologies, Volume 62, January 2016, Pages 55-69

The role of tecnologies in public transport…

- Passengers demand and expect more of public transport services.
- Updated and real time passenger information promotes the use of public transports.
- For tourists and newcomers the quality of the passenger information is an important issue.
- The provision of public transport is now mandatory to attract new customers and retain the current ones.
- The growing use of the internet and the widespread use of technologies allows the public to access information anywhere and anytime.
- The quality of the public transport experience is an important indicator of the development and sustainability of a city.

"The ability for new and return transit customers to have the precise information they need to reach their destinations is key to the passenger experience."

Rick Wood

(President & CEO at CHK America, Inc.)

Even so...

Where is the public information?

S. Paulo
2014, FIFA WORLD CUP BRAZIL

The eight second rule…

- Consumers have eight seconds worth of patience to wait for information or whilst trying to understand something...
- Taking more than eight seconds to deliver information creates frustration and anxiety and will cause consumers to give up.
- This rule can be aplied in many fields e.g.marketing, fashion, internet searches...

So…

- Public Information has to be easy to understand!

Otherwise…

- Passengers will take another option!!

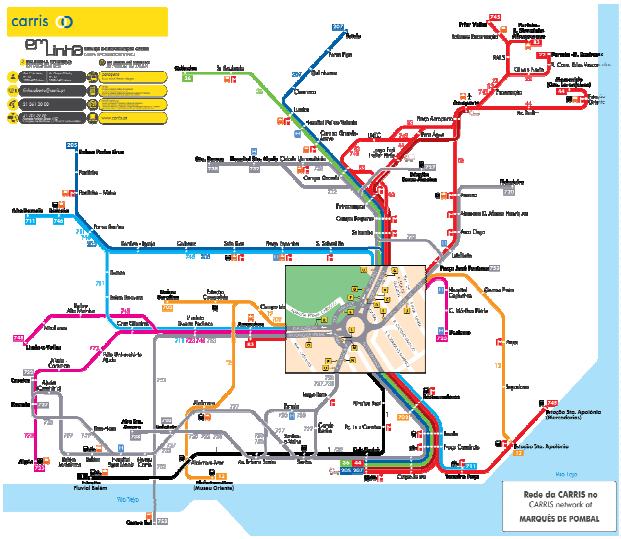
KEEP IT SHORT AND SIMPLE!

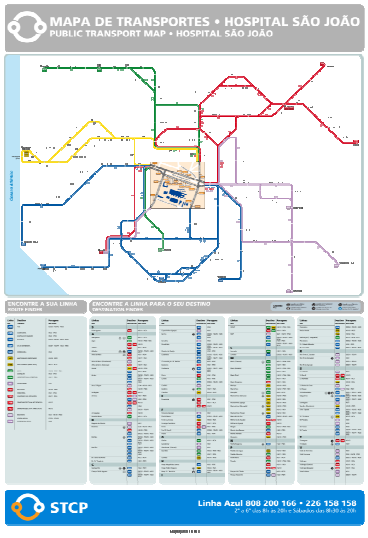
Static Geographic information

Spider Maps

(District map)

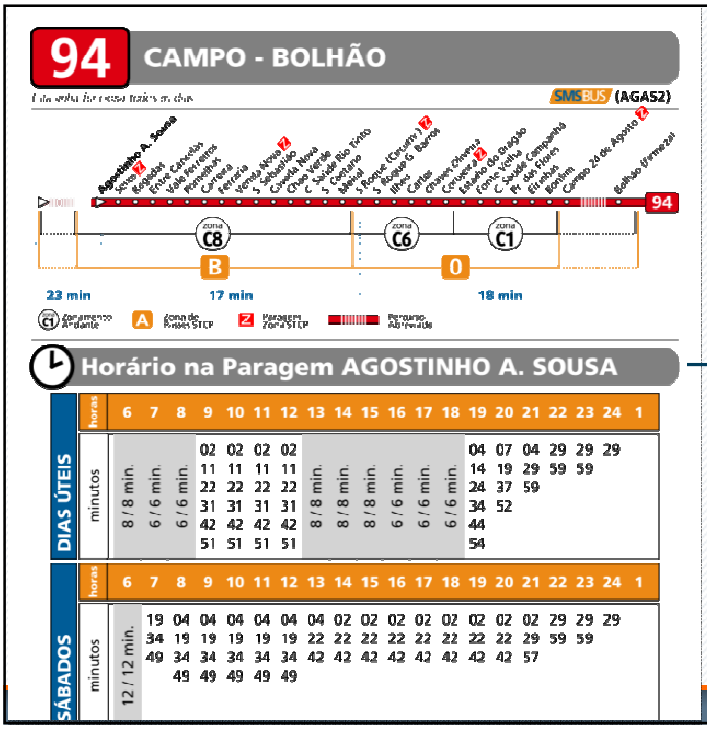
SPIDER MAPS - Close up on a specific area with information about possible destinations





Bus stop static Information

Automatic production linear route maps, fare information and timetables.



Bus stop static Information

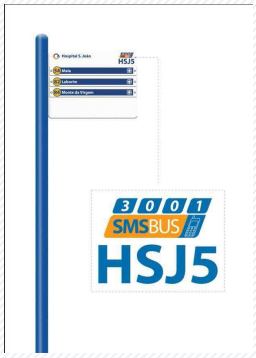
Tariff zoning and average travel time

Bus Stop Identification

Timetable for each bus stop

Real time information

TriMet – QR CODE

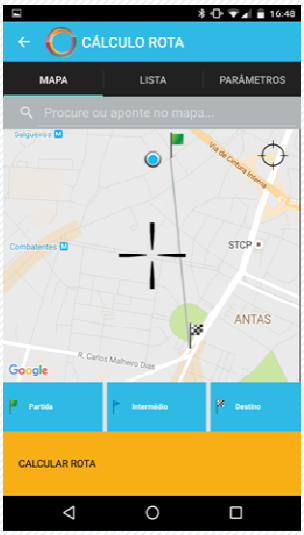


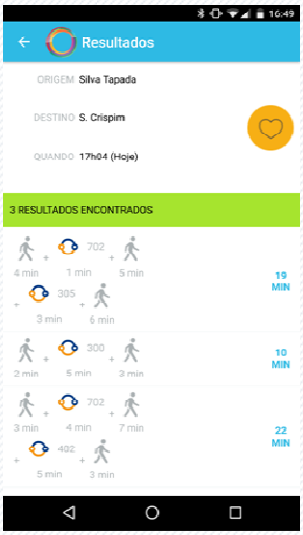
SMS BUS

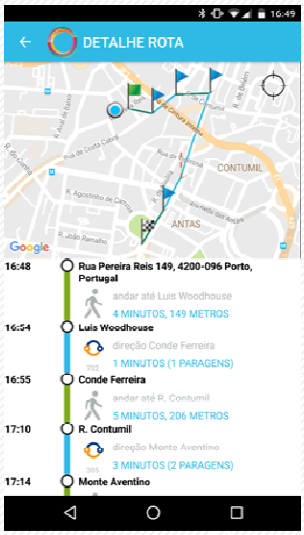
MOVE-ME - APP

MOVE-ME

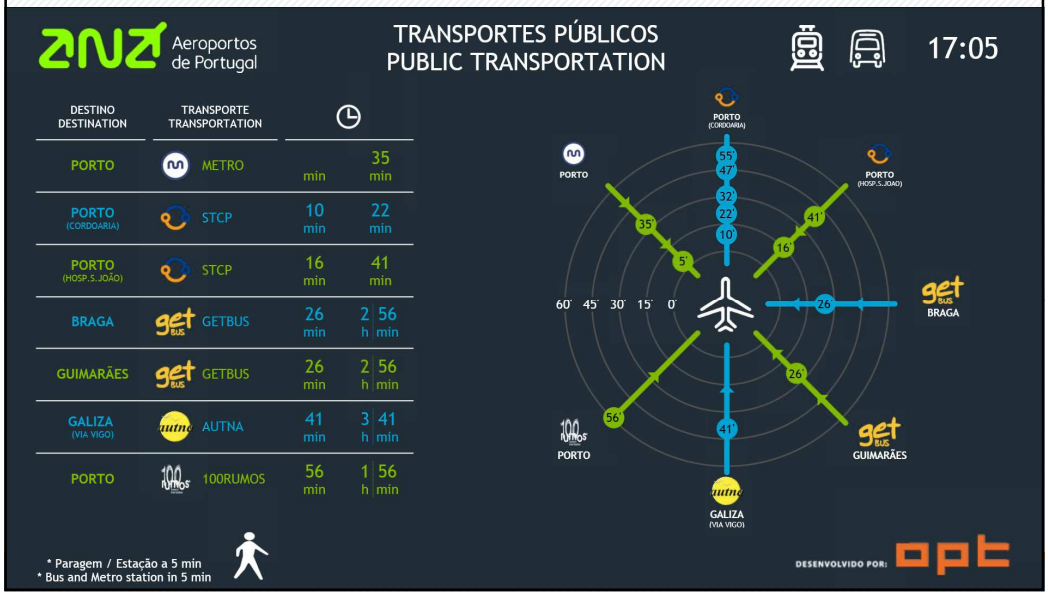
Keeping it easy and portable!





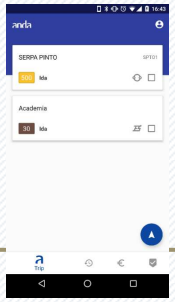


Keeping it short and simple!



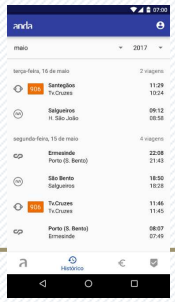
ANDA: a pilot of a mobile payment app based on BLE beacons

Passengers register in the system and are billed monthly based on the trips performed

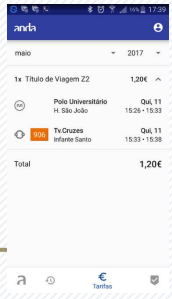


Check in – Be Out: the passenger validates on entry but the exit is detected automatically

BLE beacons are installed inside the buses and in metro/railway stations



The history of all the performed trips is stored in the system



An optimization algorithm guarantees the passenger pays the minimum possible value.

OPT

It’s time for intelligence in transport systems!

THANKS FOR YOUR ATTENTION!

Contacts:
E-mail: slameiras@opt.pt
Skype: sandra.vasconcelos74