



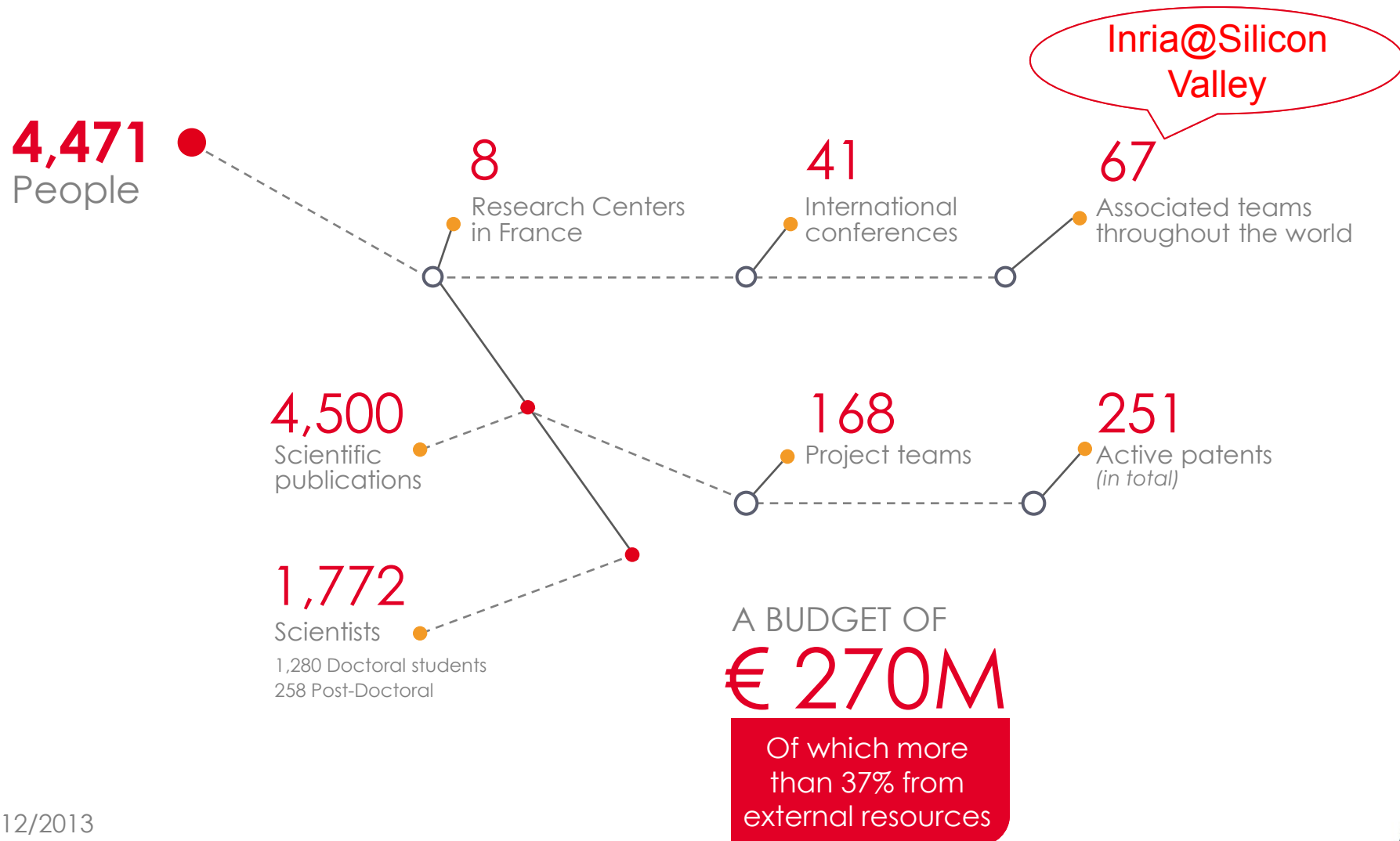
Smart Cities, Smarter Travelers: *Making transit a better experience using smart phones*

Animesh Pathak

Project-team MiMove

Inria Paris-Rocquencourt

Inria: The French Research Labs in ICT



31/12/2013

5 Main research topics

1 Applied Mathematics,
Computation and Simulation

2 Algorithmics, Programming,
Software and Architecture

3 Networks, Systems and Services,
Distributed Computing

4 Perception, Cognition, Interaction

5 Computational Sciences for Biology,
Medicine and Environment

Inria's Research Centres



Inria PARIS - Rocquencourt

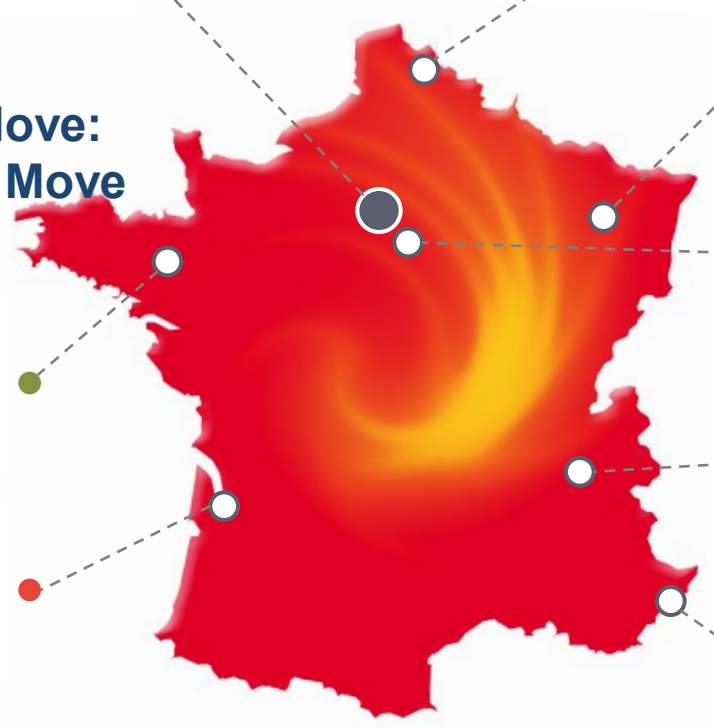


**Project-Team MiMove:
Middleware on the Move**

Inria RENNES
Bretagne
Atlantique



Inria BORDEAUX
Sud-Ouest



Inria LILLE
Nord Europe



Inria NANCY
Grand Est



Inria SACLAY
Île-de-France



Inria GRENOBLE
Rhône-Alpes



Inria SOPHIA ANTIPOLIS
Méditerranée

The Internet of Things (IoT)



- Connecting the **physical** world with the **virtual** world
- Leveraging **sensing** and **actuation** capabilities embedded in Things
- Increasing number of **mobile Things with many benefits => mobile IoT**



www.slashphone.com



www.gizmag.com



www.robotshop.com

Key Challenges of the Mobile IoT

- **Heterogeneity (Representation)**
 - Different Things, different data types
- **Ultra Large Numbers**
 - Millions of Things, large volumes of data
- **Dynamic Environment**
 - Mobile Things, short-life span



Moving on... to moving in the city



Photo: syracuse.com

Transport: in Europe



Photo: Animesh Pathak

Transport: This is what “Smart” means now



Photo: Anjali Sharan



Photo: ParisByTrain

Transport: This is what “Smart” means now



Photo: Anjali Sharan

Same info, smaller screen!

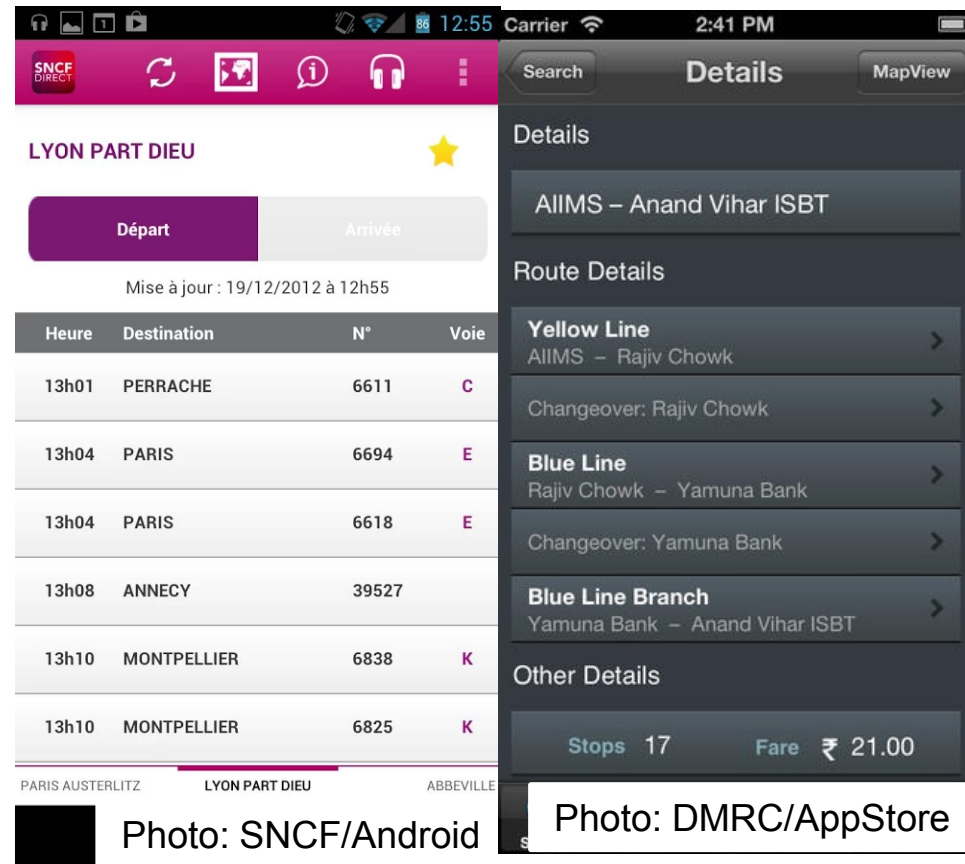


Photo: SNCF/Android

Photo: DMRC/AppStore



... but there are more things to do!

The Telegraph

Home News **World** Sport Finance Comment Culture Travel Life Women Fashion
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France | Francois Hollande | Germany | Russia | Vladimir Putin | Greece | Spain | Italy

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Smelly Paris metro to get multimillion pound spring clean

Paris' notoriously smelly metro system is to receive a multimillion pound spring clean to eradicate bad odours and make the capital's underground system more bearable.



Our Inspiration: Connected Things, Smart Cities, Mobile Citizens



<http://revistamoviles.blogspot.com.es/2012/03/telefonica-convertira-alcala-de-henares.html>

Scenario

A football match just ended and the train station is crowded. Charlie is going to Alice's place with his son and he does not want to catch the Metro 7 if it is crowded.



Photo: Dailymail



Photo: Reuters

Idea: Participatory Sensing, for Mass Transit

Like Waze, but for the Metro, Bus, RER...



Waze Social GPS Maps & Traffic

Waze - February 20, 2014

Travel & Local

Install

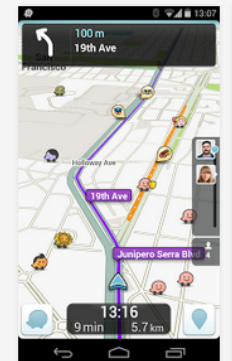
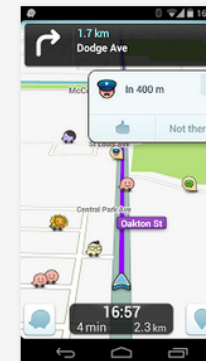
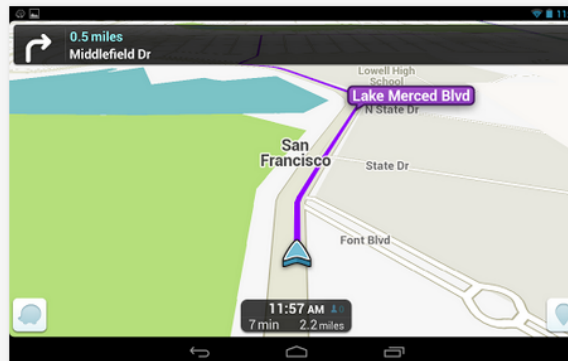
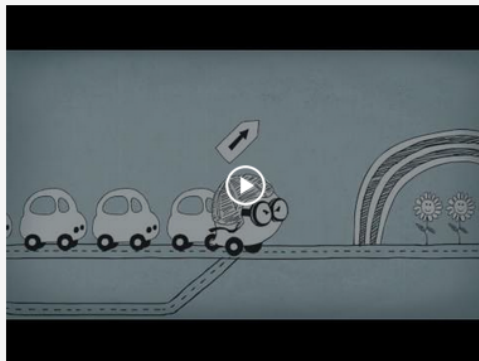
Add to Wishlist

This app is compatible with all of your devices.

★★★★★ (1,343,501)

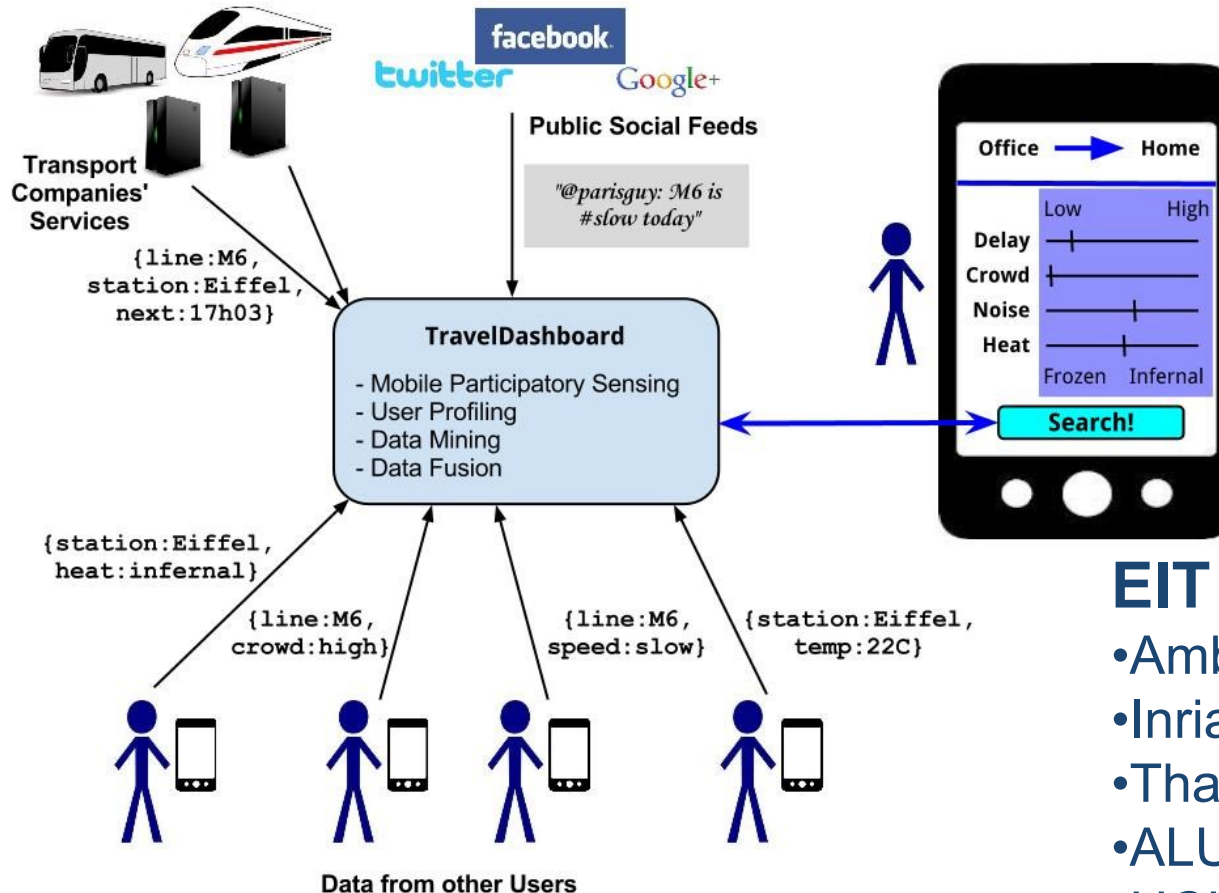
+370824 Recommend this on Google

Top Developer



Description

TravelDashboard: Participatory Sensing for Urban Transport

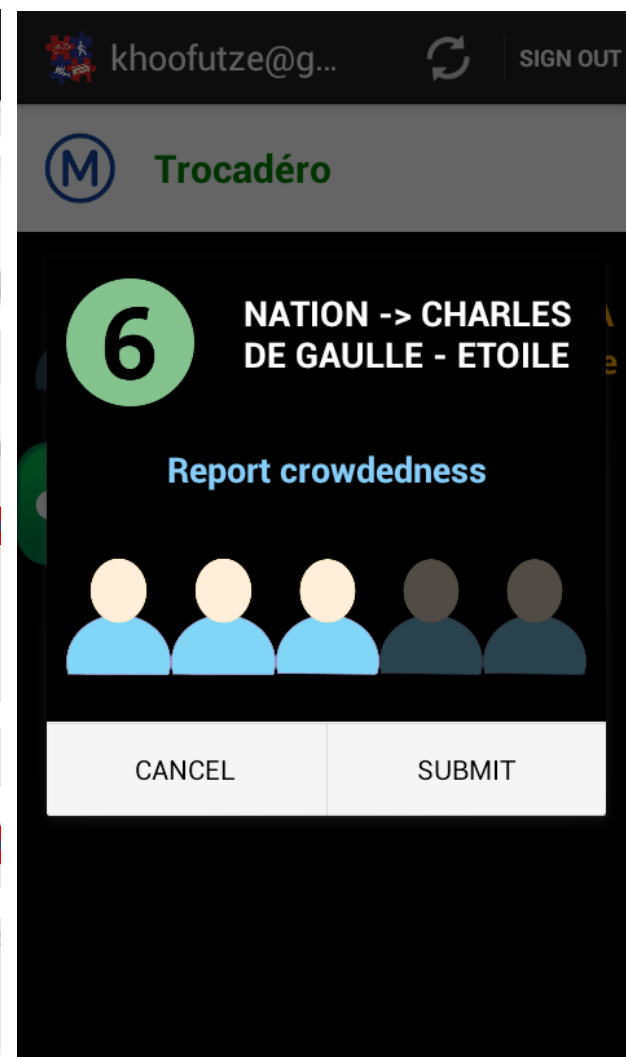
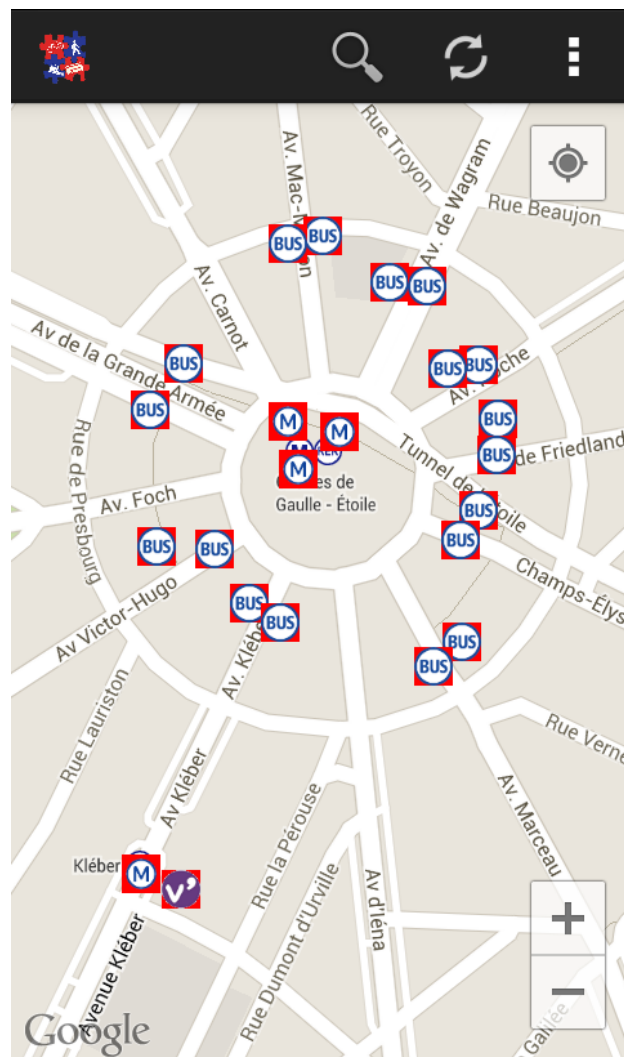


EIT ICT Labs

- Ambientic
- Inria
- Thales
- ALU
- UCL
- Systematic

<https://www.rocq.inria.fr/arles/traveldashboard>


Prototype: TravelDashboard Paris



Prototype: TravelDashboard Paris (2)




Charles de Gaulle-Etoile





khoofutze@gmail.com

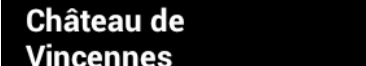
1

Château de Vincennes
Ligne 1 RATP - Wed Oct 16 11:40:50
13:40, Le trafic est de nouveau normal sur l'ensemble de la ligne #Ligne1. #RATP




 6 votes 


Château de Vincennes
Charles de Gaulle-Etoile platform
1 min

 3 min

Château de Vincennes
Charles de Gaulle-Etoile platform


 4 min

Château de Vincennes
Charles de Gaulle-Etoile platform

 5 min

Château de Vincennes
Charles de Gaulle-Etoile platform

Dismiss






khoofutze@gmail.com

SIGN OUT


1



CHATEAU DE VINCENNES <- LA DEFENSE
Ligne 1 RATP - Wed Oct 16 11:40:50
13:40, Le trafic est de nouveau normal sur l'ensemble de la ligne #Ligne1. #RATP




 6 votes 


NATION -> PORTE DAUPHINE
Ligne 2 RATP - Wed Oct 16 11:03:51
Bienvenue, Antoine vous tient informés sur l'état du trafic sur la #ligne2. #RATP.



 0 votes 

NATION <- PORTE DAUPHINE
Ligne 2 RATP - Wed Oct 16 11:03:51
Bienvenue, Antoine vous tient informés sur l'état du trafic sur la #ligne2. #RATP.






khoofutze@gmail.com

SIGN OUT


1

CHATEAU DE VINCENNES <- LA DEFENSE
Ligne 1 RATP - Wed Oct 16 11:40:50
13:40, Le trafic est de nouveau normal sur l'ensemble de la ligne #Ligne1. #RATP





2

NATION -> PORTE DAUPHINE
Give rating and click SUBMIT




CANCEL

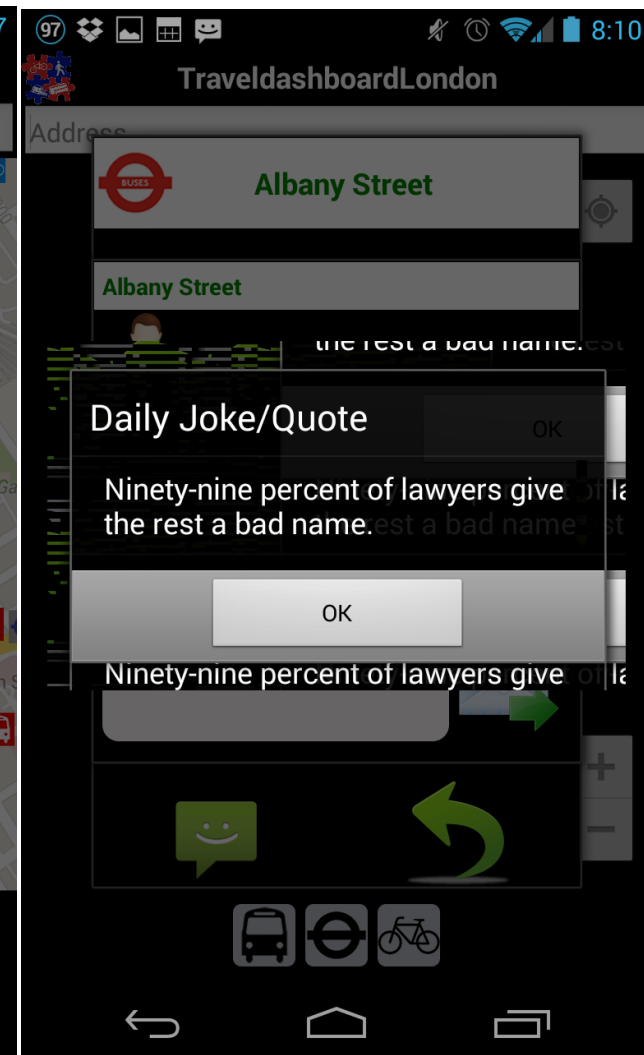
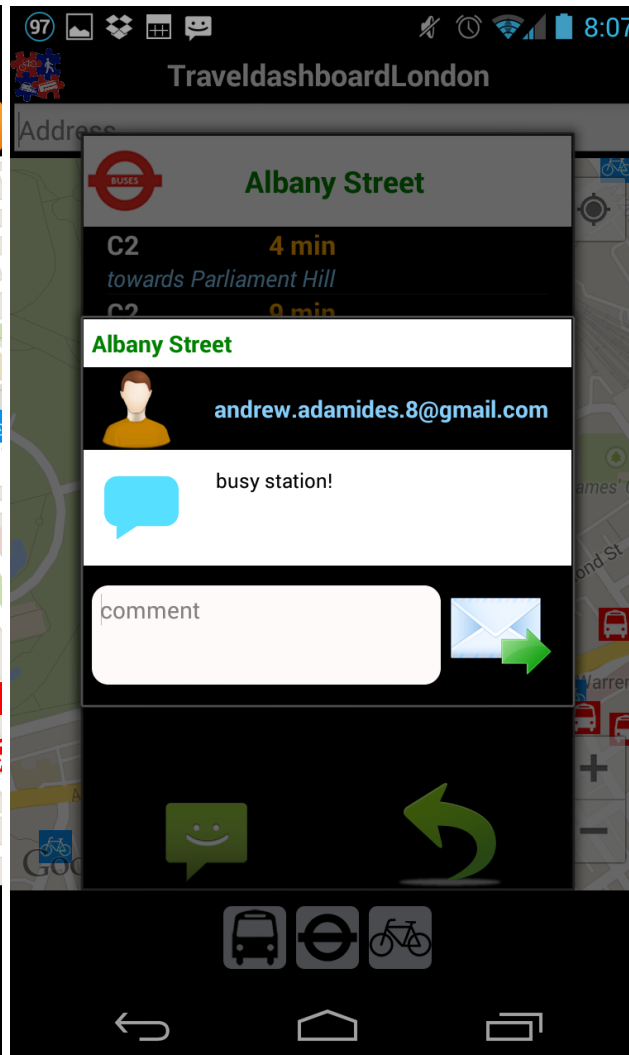
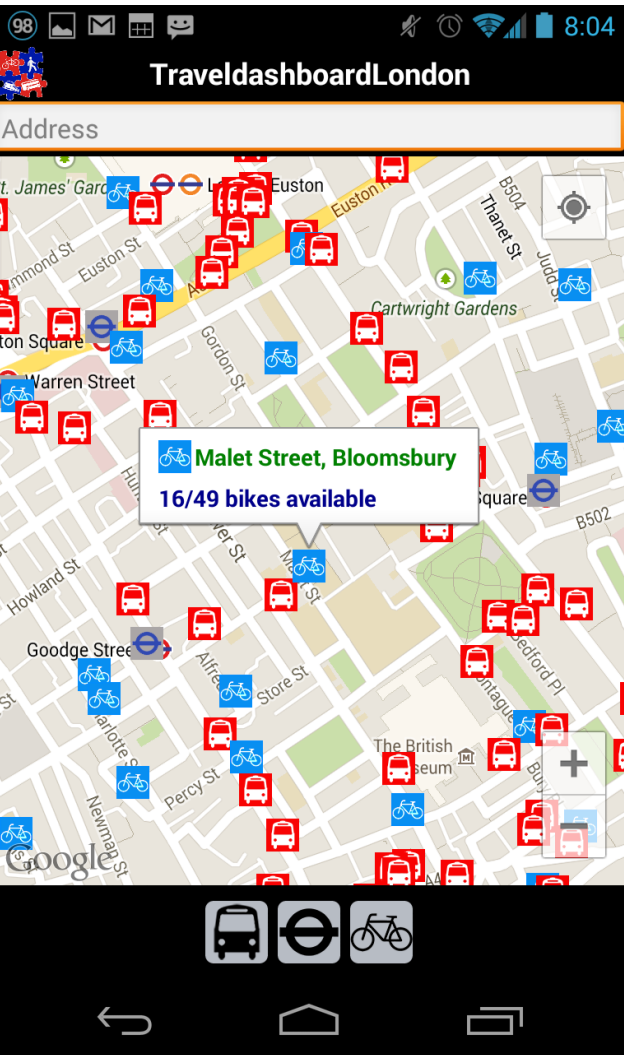
SUBMIT

 0 votes 

NATION <- PORTE DAUPHINE
Ligne 2 RATP - Wed Oct 16 11:03:51
Bienvenue, Antoine vous tient informés sur l'état du trafic sur la #ligne2. #RATP.



Meanwhile in London... new incentives!

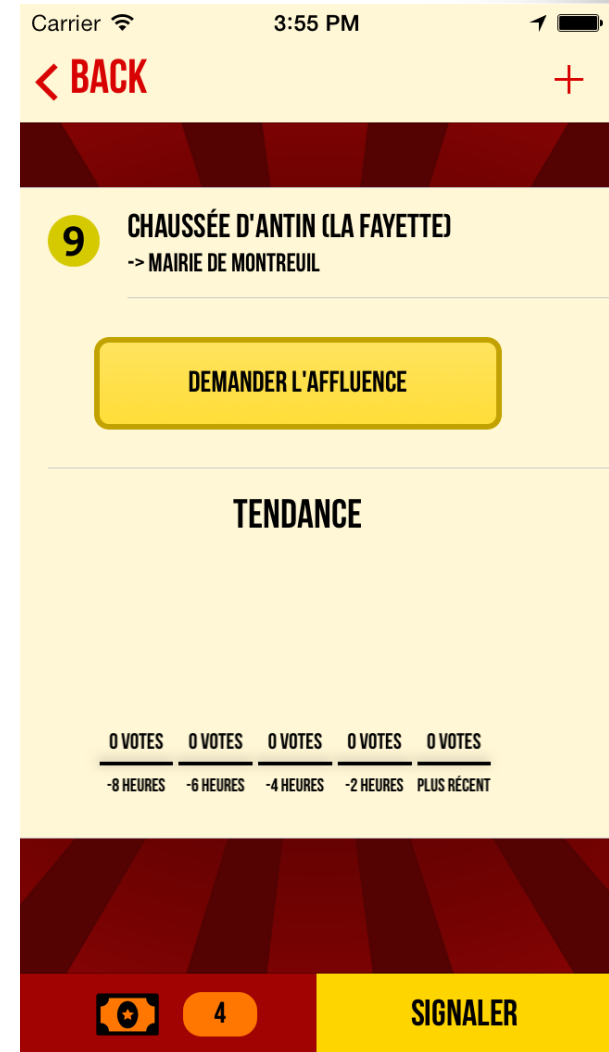


and now... a short video...



<https://www.youtube.com/watch?v=mZyWWwm-dN8>

Back to Paris... and to industrial adoption!



from Passenger to Operator...

Most Popular Stations



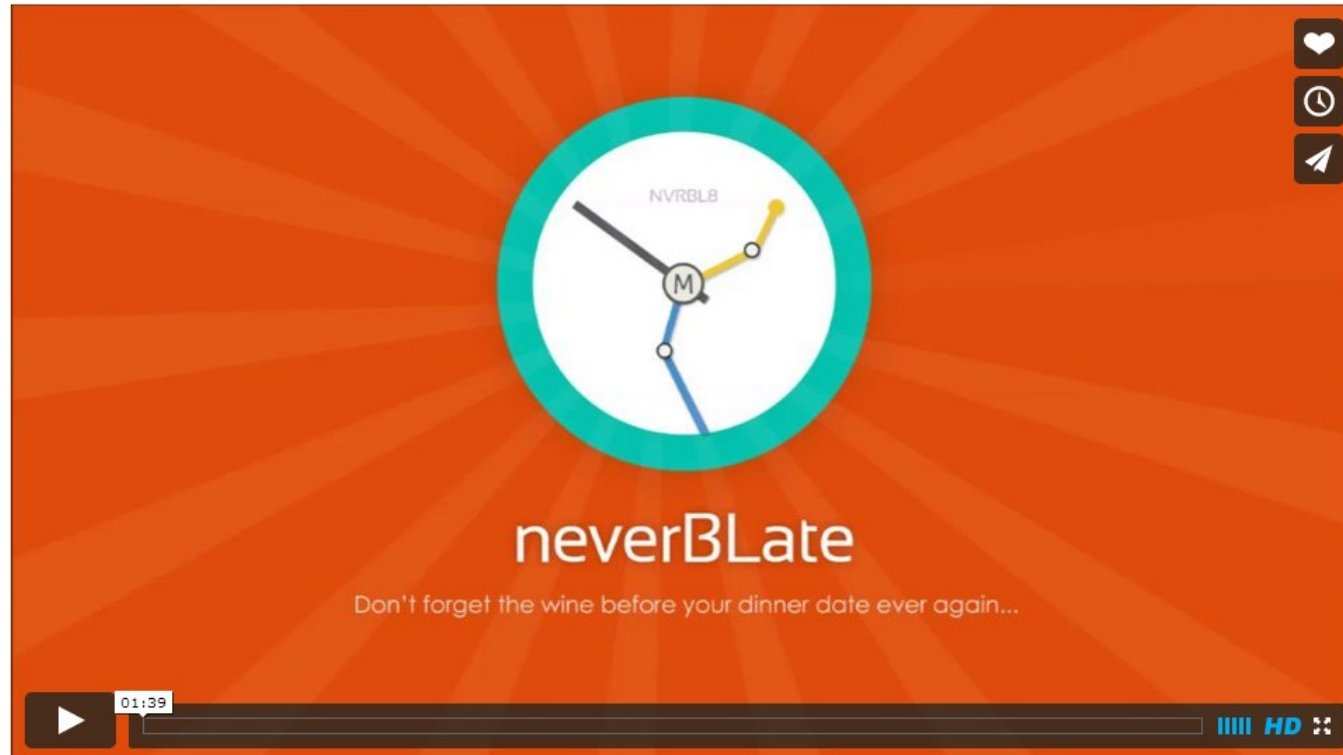
Second Most Popular Stations



Other Popular Stations



and now... another short video...



<http://vimeo.com/69621153>

3cixty Platform (2014-)

Platform for comprehensive view for city travelers



- Uses Traveldashboard capability.
- Provides preference based inputs to the user by querying related data.
- Customizable platform



POLITECNICO
DI MILANO



Recognition and Future Directions

- Awarded the “Prix Mashup” (€2500) at the RATP OpenDataLab in May 2013
 - Led to appearance on TVFIL78 evening programming
- Federated Social Networking
 - Privacy policies for mobile social networks
- Incentive Mechanisms
 - How to encourage people to share their inputs
- Project “Sarathi”, and Inria Lab CityLab (<http://citylab.inria.fr>)
 - Tackling smart-city challenges in Europe, India, and the Silicon Valley!



MERCI!

Members of MiMove@Inria
(previously known as ARLES)

The TravelDashboard and 3cixty project partners

Animesh.Pathak@inria.fr

