



Séminaire du projet fédérateur Mobilités et Transitions Numériques

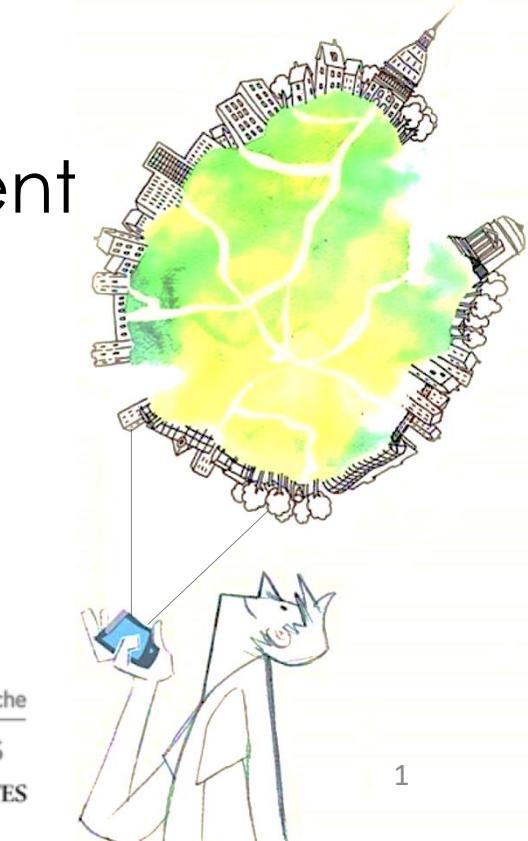
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My-Moby: a customer oriented tool to support integrated transport and resilient communities

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My-Moby project: Layout

- The MIDT research project: vision, objectives and methodology
- The results:
 - The app Mobilité Dynamique
 - The survey
 - Smart card validations
 - Sensors and IoT
- The results: behavioural analysis
- Final outcomes and perspective for the future research

My-Moby project: Vision

OBJECTIVES:

- Develop a framework for collecting, analysing and extracting urban mobility information from several sources



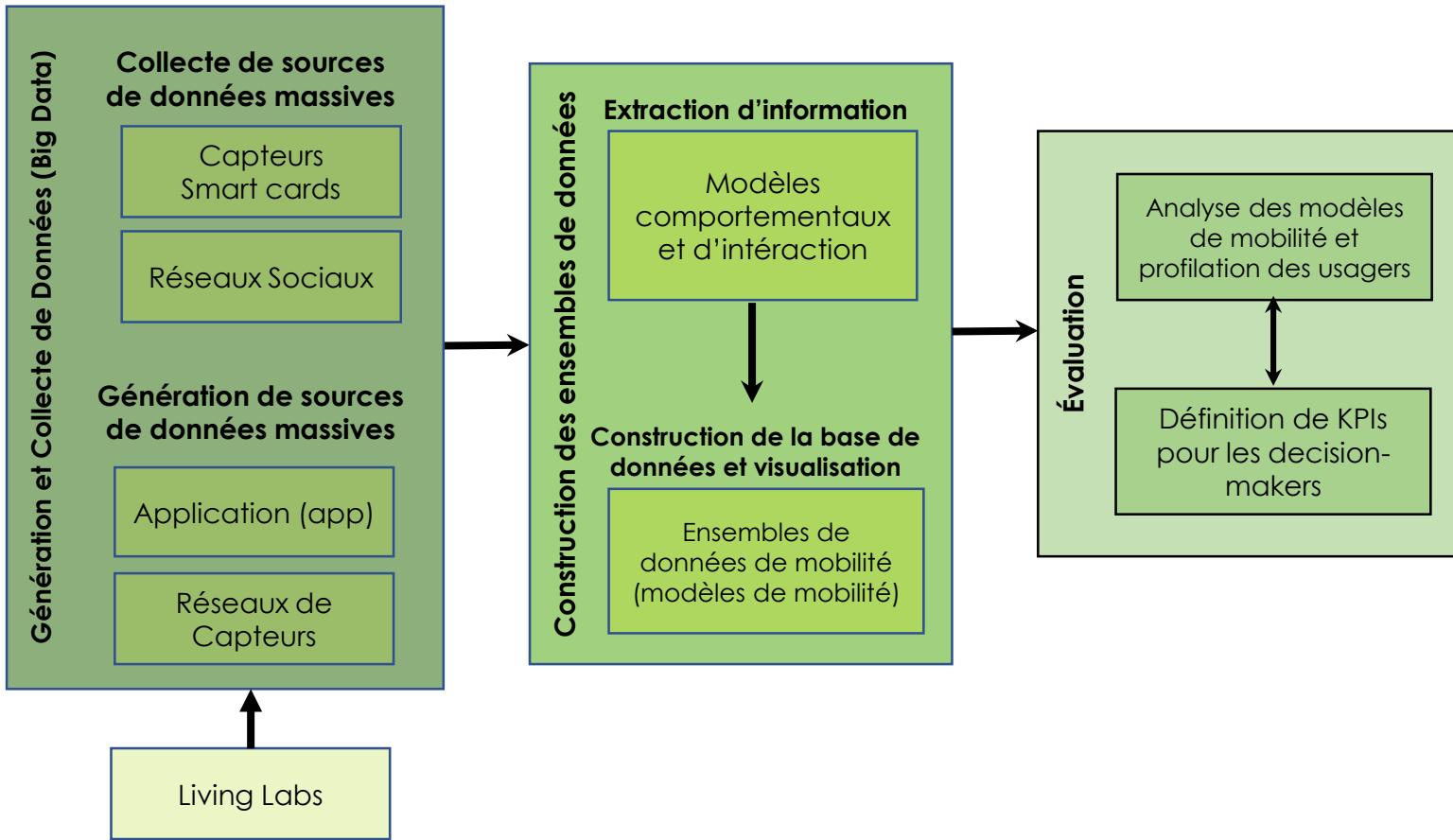
through a *mixed method*, joining a qualitative and a quantitative approach

TO SUPPORT STAKEHOLDERS to:

- Plan and programme public transport
- Control the quality of service
- Manage mobility
- Supply new services

My-Moby project: Key objectives and methodology

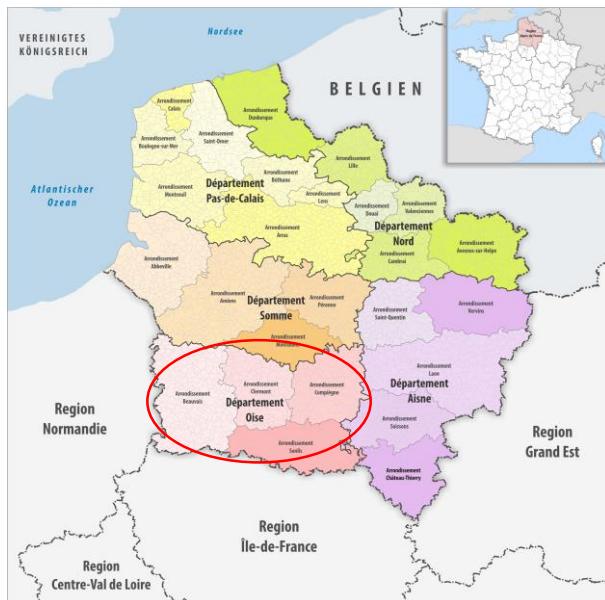
METHODOLOGY: MIXED METHOD



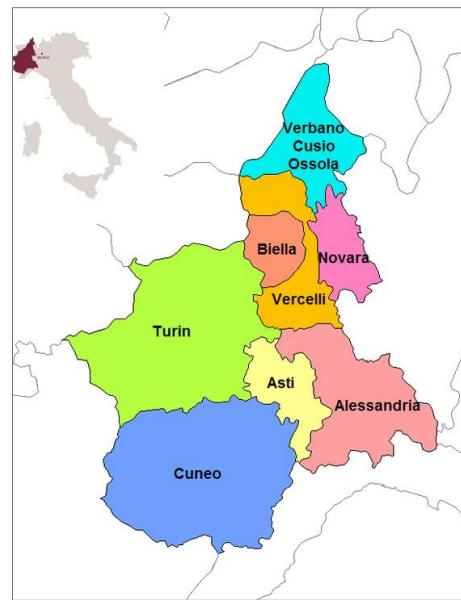
My-Moby project: data collection: the study areas

DATA/INFORMATION COLLECTION

- Agreement with the stakeholders to set up the living labs: SMTCO, agglomerations, transport operators (Transdev, Keolis, GTT, YCDC)



France: Oise department



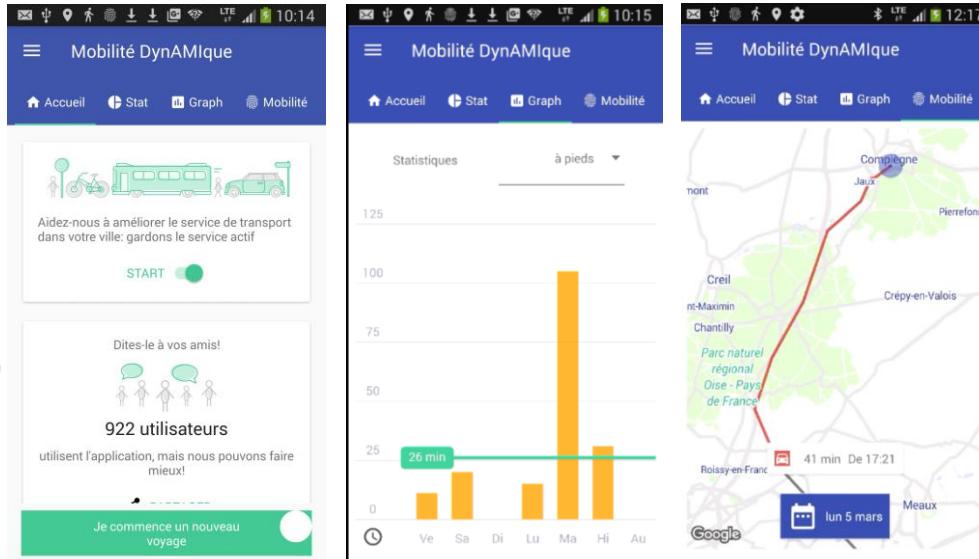
Italy: Piedmont region



Myanmar: Yangon

My-Moby project: data collection. The app

THE APP MobilitéDynAMique



Elle vous suit à la trace pour préparer les transports de demain

Vous galérez dans vos déplacements ? Grâce à une chercheuse de l'Université de technologie, les bouchons ne seront peut-être qu'un lointain souvenir...

[Lire la suite](#)



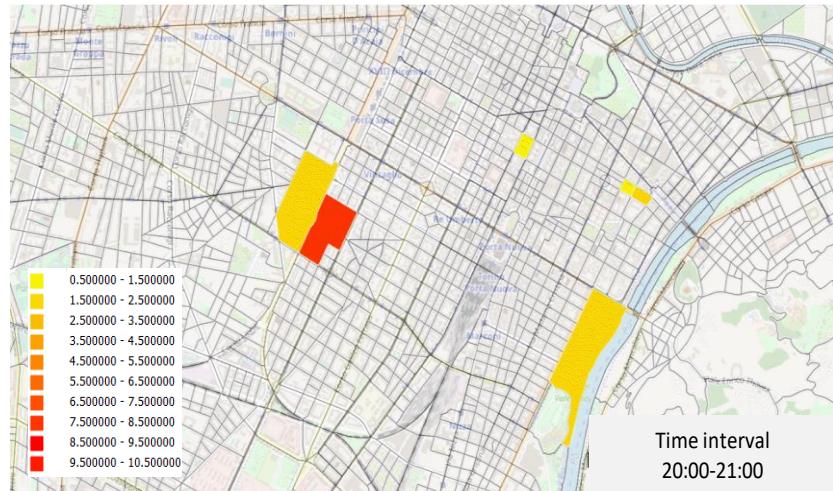
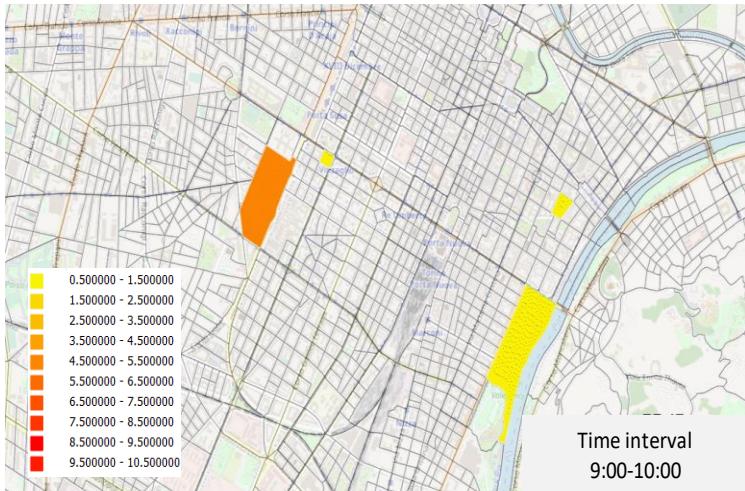
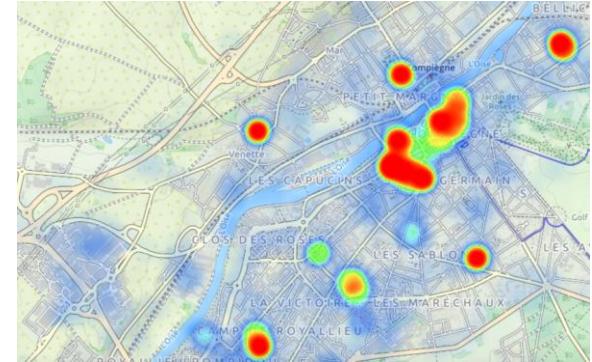
Courrier Picard
Elle veut analyser les déplacements des habitants de l'Oise (lundi 22 octobre 2018 ena.courrier-picard.fr)



Application: MY-Moby
Site web: <https://my-moby.com>

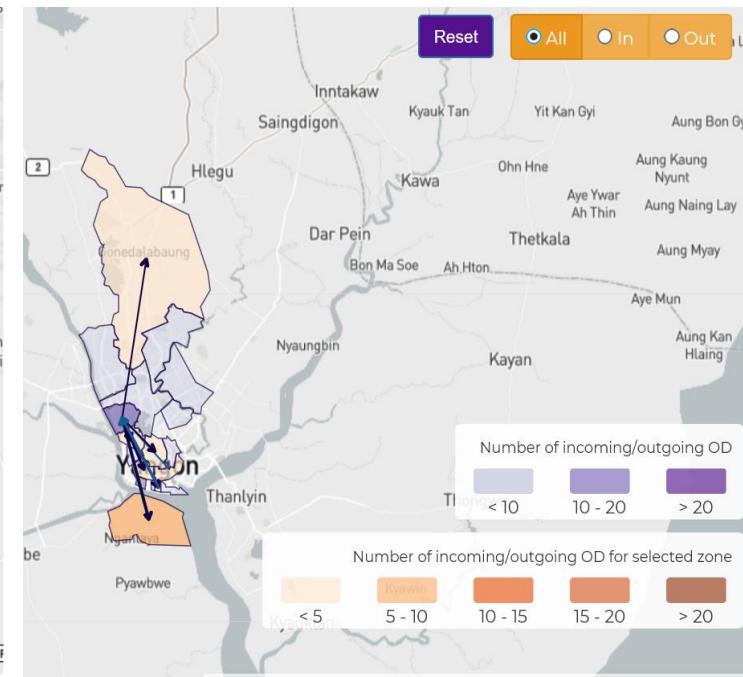
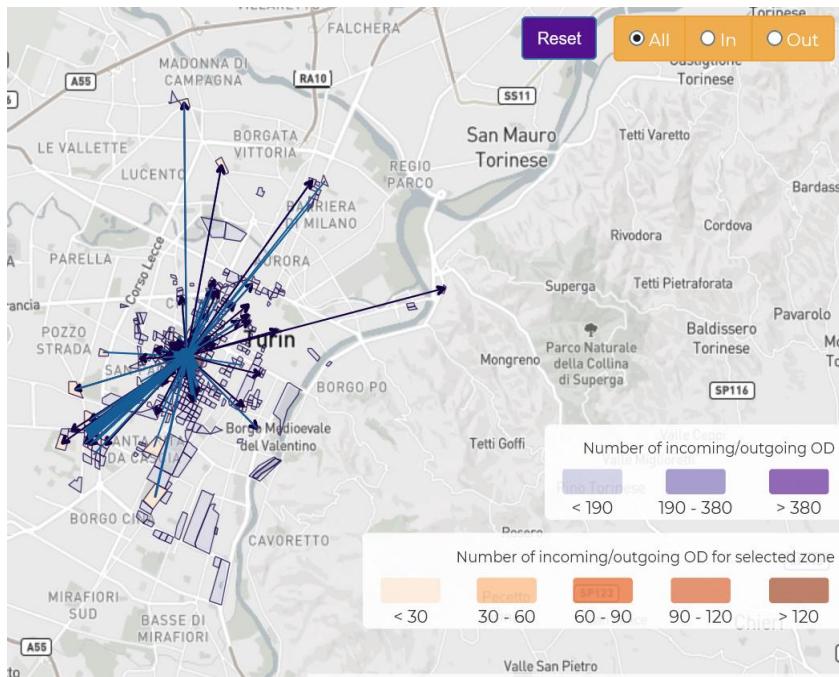
My-Moby project: data collection. The app

THE APP Mobilité DynAMIque: results and visualisation



My-Moby project: data collection. The app

THE APP Mobilité DynAMIque: results and visualisation



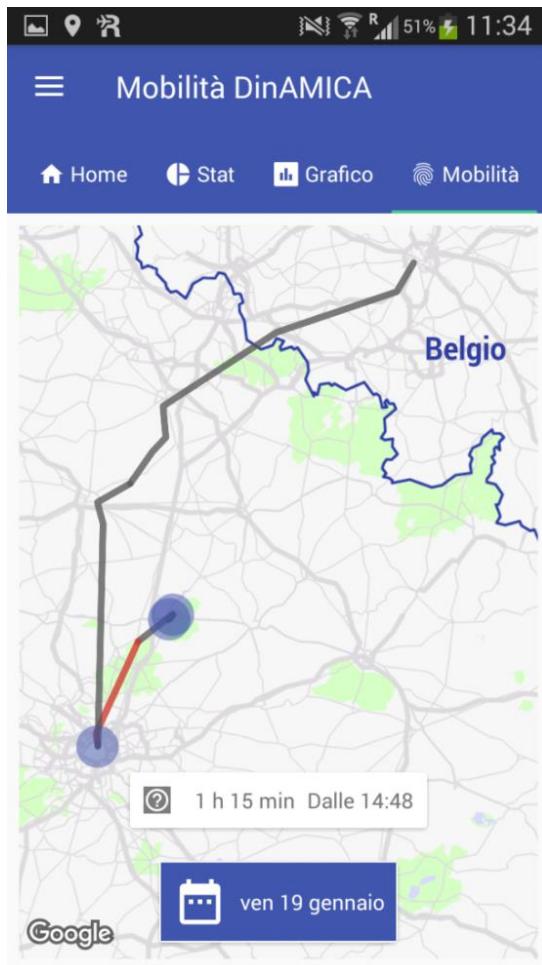
My-Moby project: data collection. The app

THE APP Mobilité DynAMIque: results and visualisation



My-Moby project: data collection. The app

DATA/INFORMATION COLLECTION: mode detection, a challenge



- Google APIs does not provide high reliability in transport mode detection
- Mode detection is fundamental to understand the user's travel behavior
- The information is essential in order to carry out more accurate and efficient transport plan

My-Moby project: data collection. The app

METHODOLOGY AND RESULTS for mode detection

- Sensors choice
- Selection of data source
- Selection of the training classifier: Recurrent Neural Networks
- Learning phase
- Identification of the transport mode

				
<p>ModeDetection</p> <pre>TensorFlow: WALK, 25,388588 TensorFlow: WALK, 22,361670 TensorFlow: WALK, 19,069090 TensorFlow: WALK, 21,110172 TensorFlow: WALK, 15,991891 TensorFlow: WALK, 11,688311 TensorFlow: WALK, 21,855061 TensorFlow: WALK, 22,418253 TensorFlow: WALK, 17,651087 TensorFlow: WALK, 23,711370 TensorFlow: WALK, 13,379716 TensorFlow: WALK, 23,251423 TensorFlow: BUS, 11,066740 TensorFlow: WALK, 21,773699 TensorFlow: WALK, 14,121702 TensorFlow: WALK, 15,461451 TensorFlow: WALK, 21,133627 TensorFlow: WALK, 19,450256 TensorFlow: WALK, 22,721512 TensorFlow: BUS, 17,037233 TensorFlow: STILL, 16,349550 TensorFlow: WALK, 19,263481 TensorFlow: WALK, 25,049181 TensorFlow: WALK, 20,482870 TensorFlow: WALK, 23,686556 TensorFlow: WALK, 15,022796 TensorFlow: WALK, 26,547876 TensorFlow: WALK, 16,586905 TensorFlow: STILL, 15,614859 TensorFlow: WALK, 31,363827 TensorFlow: WALK, 15,862298 TensorFlow: WALK, 14,614553 TensorFlow: WALK, 25,307352 TensorFlow: WALK, 13,871793</pre>	<p>ModeDetection</p> <pre>TensorFlow: BUS, 25,592554 TensorFlow: STILL, 5,642115 TensorFlow: STILL, 11,472190 TensorFlow: BIKE, 19,270296 TensorFlow: BIKE, 46,584042 TensorFlow: BIKE, 37,430290 TensorFlow: BIKE, 43,067604 TensorFlow: BIKE, 41,901810 TensorFlow: BIKE, 39,244400 TensorFlow: BIKE, 25,582964 TensorFlow: BIKE, 41,972233 TensorFlow: BIKE, 53,276325 TensorFlow: BIKE, 38,136093 TensorFlow: BIKE, 45,662926 TensorFlow: BIKE, 36,422955 TensorFlow: BIKE, 44,054386 TensorFlow: BIKE, 17,489407 TensorFlow: BIKE, 32,614044 TensorFlow: BIKE, 21,473579 TensorFlow: BIKE, 34,106514 TensorFlow: BIKE, 21,323946 TensorFlow: BIKE, 45,227333 TensorFlow: BIKE, 17,388092 TensorFlow: BIKE, 27,485987 TensorFlow: BIKE, 31,227600 TensorFlow: BIKE, 28,401300 TensorFlow: BIKE, 8,705078 TensorFlow: MOT_CYCLE, 2,201614 TensorFlow: BUS, 7,288978 TensorFlow: MOT_CYCLE, 2,659638</pre>	<p>ModeDetection</p> <pre>TensorFlow: TRAIN, 26,915863 TensorFlow: TRAIN, 20,180927 TensorFlow: TRAIN, 14,984707 TensorFlow: TRAIN, 22,130974 TensorFlow: TRAIN, 9,464305 TensorFlow: TRAIN, 15,106714 TensorFlow: STILL, 9,995022 TensorFlow: BIKE, 7,591897 TensorFlow: TRAIN, 16,916492 TensorFlow: TRAIN, 16,005341 TensorFlow: TRAIN, 12,319075 TensorFlow: BUS, 6,668858 TensorFlow: STILL, 6,372694 TensorFlow: TRAIN, 13,339722 TensorFlow: TRAIN, 9,545637 TensorFlow: TRAIN, 16,214777 TensorFlow: TRAIN, 22,249132 TensorFlow: TRAIN, 34,730961 TensorFlow: TRAIN, 22,677956 TensorFlow: TRAIN, 30,473026 TensorFlow: TRAIN, 23,081448 TensorFlow: TRAIN, 18,092146 TensorFlow: TRAIN, 25,775242 TensorFlow: TRAIN, 10,049528 TensorFlow: TRAIN, 18,665596 TensorFlow: BUS, 9,434086 TensorFlow: WALK, 16,964354 TensorFlow: CAR, 10,175941 TensorFlow: STILL, 13,941339 TensorFlow: TRAIN, 12,894963 TensorFlow: TRAIN, 15,665993 TensorFlow: STILL, 7,610606 TensorFlow: TRAIN, 9,926825</pre>	<p>ModeDetection</p> <pre>TensorFlow: CAR, 20,588324 TensorFlow: BUS, 9,069777 TensorFlow: CAR, 10,747246 TensorFlow: BUS, 11,122822 TensorFlow: CAR, 21,084045 TensorFlow: CAR, 22,421082 TensorFlow: BUS, 18,413950 TensorFlow: CAR, 17,848444 TensorFlow: BUS, 5,809497 TensorFlow: BUS, 9,798946 TensorFlow: BUS, 8,009836 TensorFlow: BUS, 23,579014 TensorFlow: BUS, 12,928488 TensorFlow: BUS, 10,021007 TensorFlow: CAR, 10,575356 TensorFlow: CAR, 23,465359 TensorFlow: CAR, 10,401186 TensorFlow: CAR, 12,875990 TensorFlow: CAR, 14,807667 TensorFlow: BUS, 10,555031 TensorFlow: CAR, 21,097481 TensorFlow: BUS, 21,352274 TensorFlow: CAR, 13,617880 TensorFlow: CAR, 14,076668 TensorFlow: BUS, 19,012911 TensorFlow: BUS, 13,975887 TensorFlow: BUS, 9,437742 TensorFlow: BUS, 16,202269 TensorFlow: CAR, 17,139776 TensorFlow: CAR, 26,728706 TensorFlow: CAR, 4,074195 TensorFlow: BUS, 16,959106 TensorFlow: TRAIN, 4,244262 TensorFlow: TRAIN, 14,375109</pre>	<p>ModeDetection</p> <pre>TensorFlow: TRAIN, 17,252586 TensorFlow: TRAIN, 8,046176 TensorFlow: BUS, 11,857683 TensorFlow: BUS, 5,119129 TensorFlow: BUS, 4,762483 TensorFlow: ? TensorFlow: BUS, 9,402408 TensorFlow: BUS, 9,557061 TensorFlow: STILL, 7,600737 TensorFlow: TRAIN, 16,411093 TensorFlow: BUS, 7,549205 TensorFlow: BUS, 13,467662 TensorFlow: BUS, 14,108302 TensorFlow: BIKE, 7,394526 TensorFlow: BUS, 6,110522 TensorFlow: STILL, 12,731576 TensorFlow: TRAIN, 14,501553 TensorFlow: TRAIN, 1,854415 TensorFlow: BUS, 9,072354 TensorFlow: BUS, 13,689791 TensorFlow: CAR, 5,352037 TensorFlow: BUS, 26,120228 TensorFlow: MOT_CYCLE, 9,923311 TensorFlow: BUS, 6,208172 TensorFlow: TRAIN, 22,458241 TensorFlow: TRAIN, 9,081311 TensorFlow: BUS, 7,782171 TensorFlow: BUS, 19,855467 TensorFlow: BUS, 14,339458 TensorFlow: CAR, 13,018296 TensorFlow: TRAIN, 11,552732</pre>

My-Moby project: data collection. The app and the survey

Découvrez MyMoby

Application multi-langues pour Smartphones permettant la veille des voyages personnels et la synthèse statistique des déplacements

TÉLÉCHARGER MAINTENANT

LE PROJET NOS VALEURS

En-Quête de Mobilité

L'objectif est d'étudier la possibilité d'offrir aux usagers une offre de mobilité intégrée, capable de combiner les différentes offres de transports publics traditionnelles avec des services à la mobilité innovants afin d'améliorer l'expérience individuelle des usagers des transports.

PARTICIPEZ À NOTRE ENQUÊTE

Recueillir les **données**, croiser les **informations**, retenir les **faits** et choisir les **stratégies** adaptées voici, en quelques mots, notre approche pour le développement d'un système de **transport durable**

Le projet, porté par la chaire MIDT (Mobilités Intelligentes et Dynamiques Territoriales) a pour objectifs scientifiques de

- faire **avancer la recherche** sur les **comportements de mobilité**
- comprendre les **effets de l'information** sur le comportement de mobilité de **differentes typologies d'usagers**
- proposer des **politiques des transports** sur-mesure, **adaptées aux besoins des citoyens**

A partir de différentes **expérimentations** qui seront conduites dans trois agglomérations de l'Oise (Compiègne, Beauvais et Creil), et la **participation active** des acteurs et citoyens du territoire, il sera possible de collecter des données sur la mobilité et d'identifier les **modèles de mobilité** utiles pour remodeler les **villes de demain**

Application Mobile

Les données brutes sur les déplacements seront collectés grâce à différents capteurs et l'utilisation d'une application mobile dédiée

Télécharger maintenant

Questionnaire

Visant à recréer des données quantitatives et qualitatives sur la perception, les besoins et la satisfaction des services de transports

Accéder au questionnaire

Laboratoires Vivants

Les informations qualitatives (perceptions, besoins réels, préférences, sensibilités et points de vue) sont recueillies à travers l'organisation de groupes de discussions entre participants et expérimentateurs

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My-Moby project: data collection. The survey

DATA/INFORMATION COLLECTION



A survey page titled "EN-QUÊTE DE MOBILITÉ". The main heading is "AIDEZ-NOUS A FAIRE AVANCER LA RECHERCHE SUR LES COMPORTEMENTS DE MOBILITÉ". Below it is "VERS UN SYSTEME DE TRANSPORT PLUS DURABLE...". It shows icons of a person walking, a bicycle, a bus, and a car. The text "3 OUTILS À VOTRE DISPOSITION :" lists three options: "QUESTIONNAIRE HABITUDES DE MOBILITÉ" with a QR code, "GROUPES DE DISCUSSION LABORATOIRE VIVANT" with the website "WWW.MY-MOBY.COM", and "APPLICATION MOBILITÉ DYNAMIQUE" with download links for Google Play and App Store.

A survey page titled "EN-QUÊTE DE MOBILITÉ". It features the UTC Sorbonne Universités logo. The text "L'Université Technologique de Compiègne souhaite impliquer la population de l'Oise au sein d'un processus participatif visant à comprendre les comportements de qui, au quotidien, expérimente la mobilité." is present. It describes three tools: "Questionnaire", "Application", and "Laboratoires vivants". It also mentions the "Mobilité Dynamique" app and its availability on App Store and Google Play. An aerial view of a highway is shown on the right.

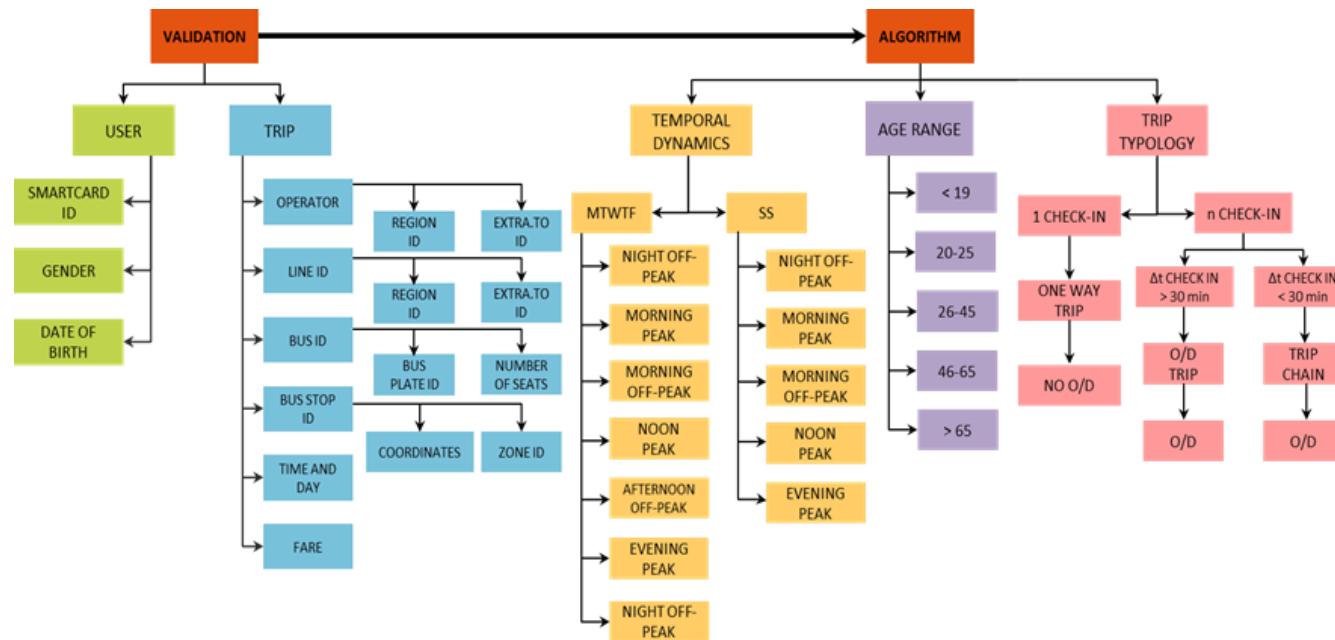
<https://my-moby.com/>

<https://www.comecimuoviamo.it/>

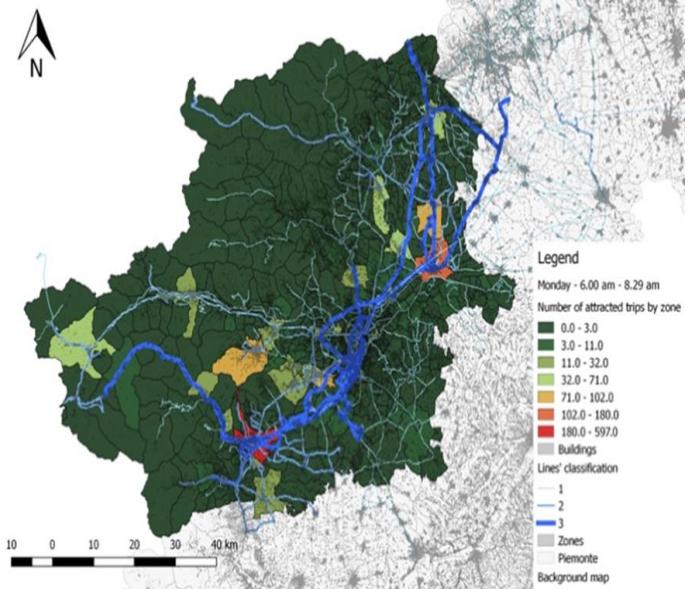
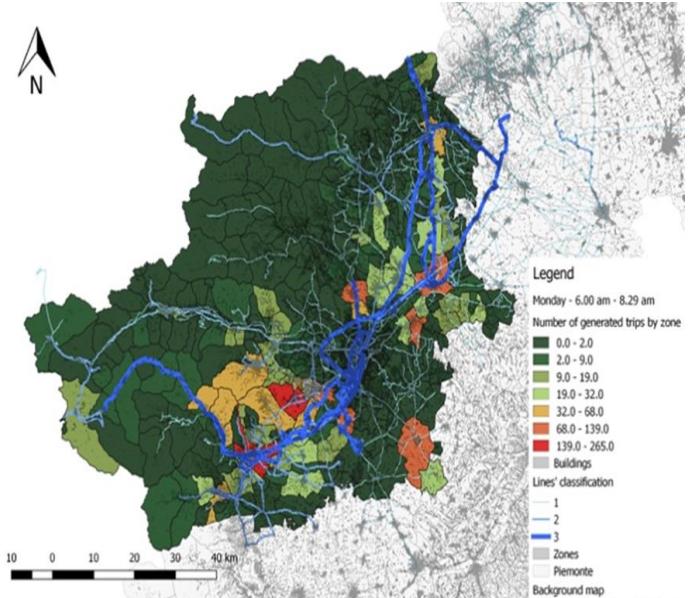
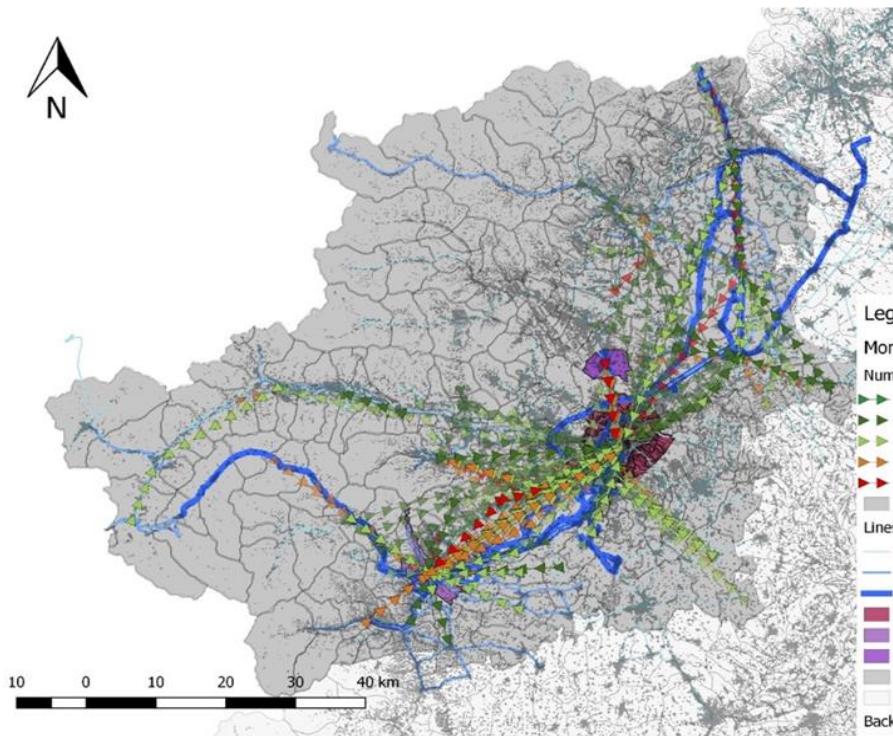
My-Moby project: data collection. The smart cards

DATA/INFORMATION COLLECTION

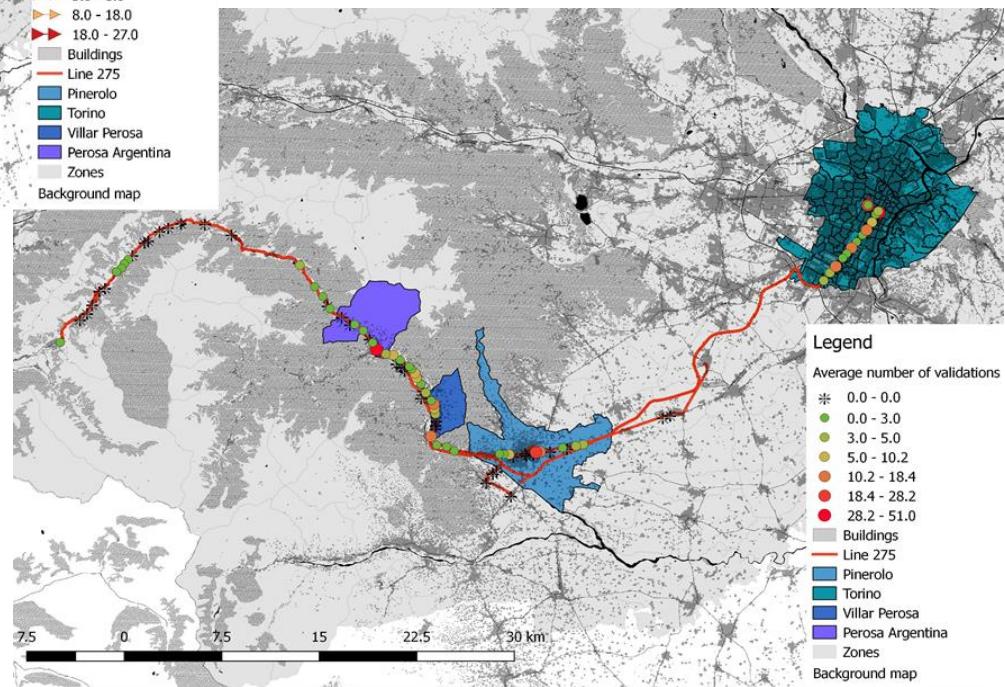
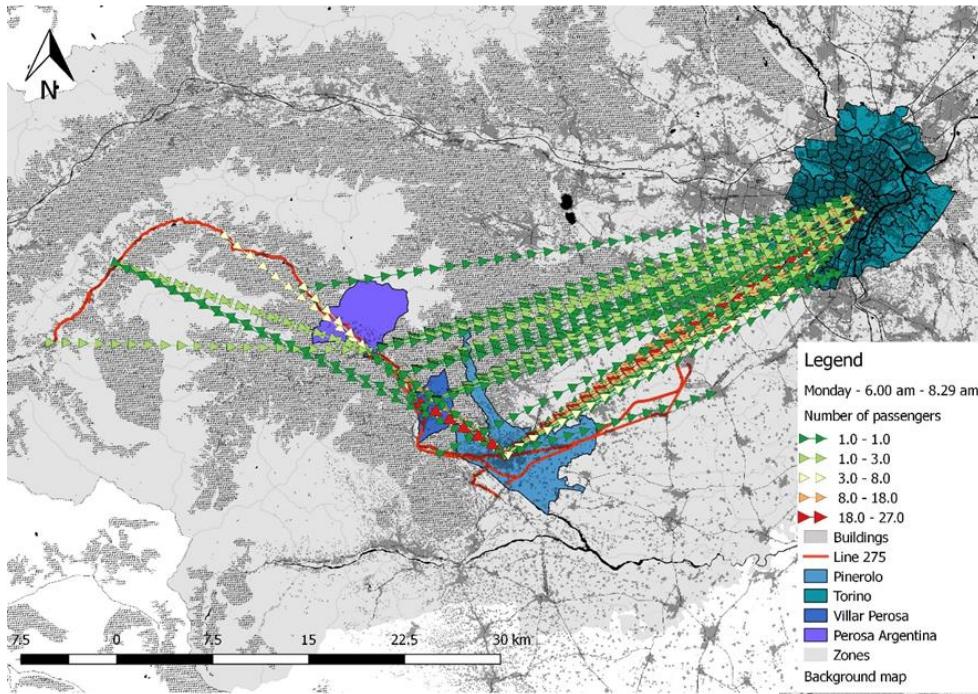
- Data from validation of smart cards to build the O/D matrixes of public transport passengers
- Data from the sensors to calibrate the algorithm for building O/D matrixes from the validation data



My-Moby project: data analysis



My-Moby project: data analysis



My-Moby project: data collection. Sensors

DATA/INFORMATION COLLECTION

- To count the passengers on board (buses in Oise) on each vehicle and the passengers getting on and getting off at each stop
- Typologies of equipment:
 - a router to be put on the bus with a GPS receiver. It is conceived to stay on vehicles (buses and trucks) and it has a series of accessories that make the installation easier: <https://teltonika.lt/product/rut955/#tab-features>



Technology



Hardware



Firmware

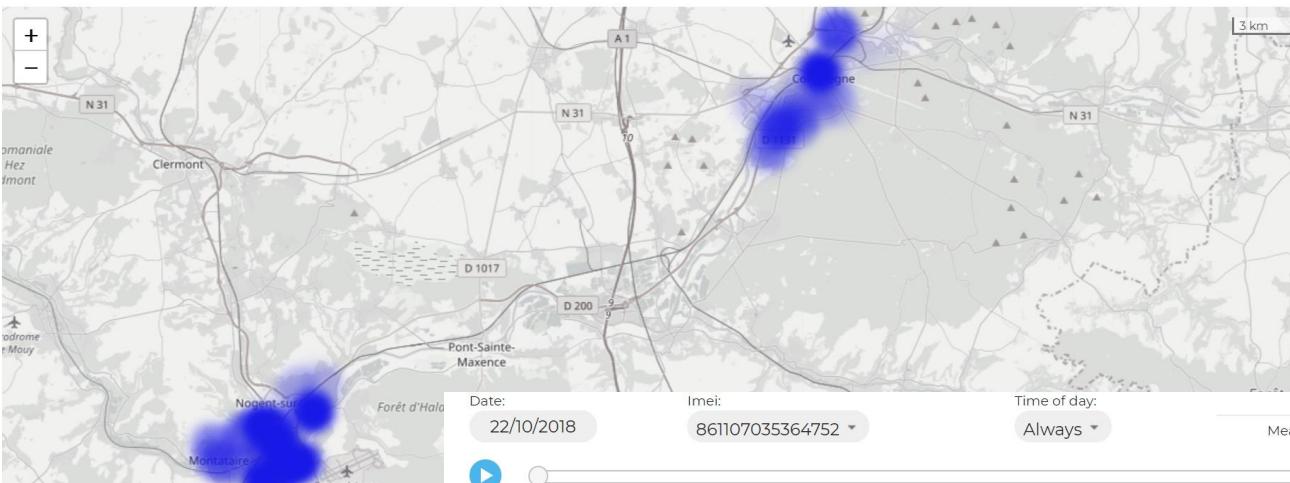


My-Moby project: data collection. Sensors

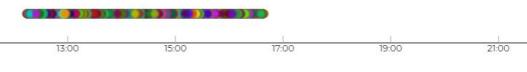
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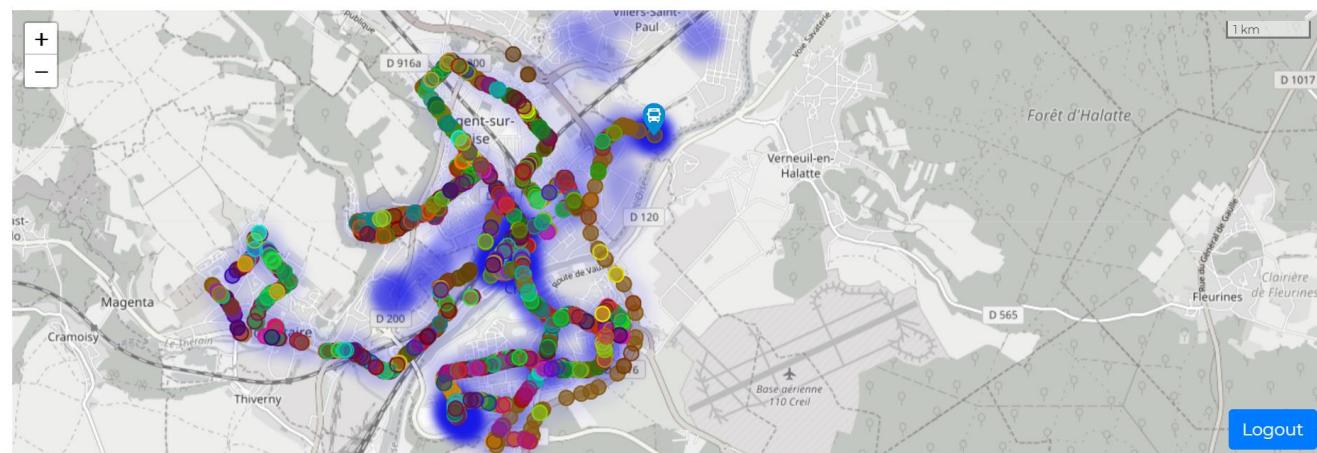
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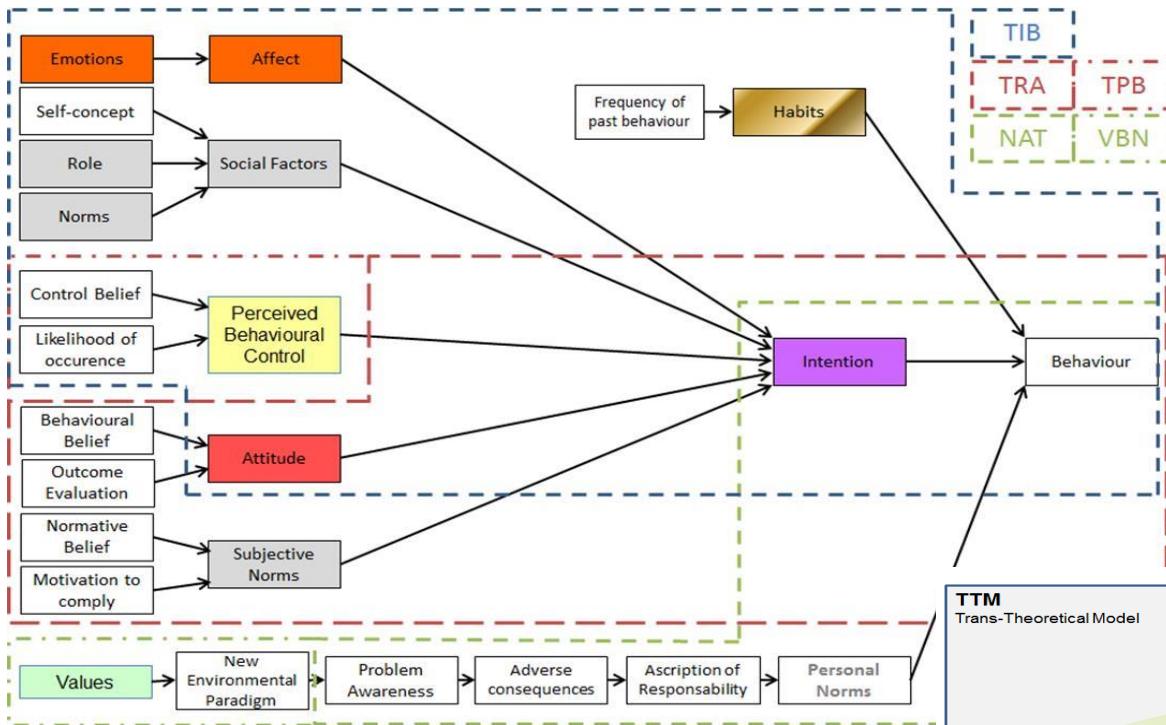
Selected records : 4475



Logout

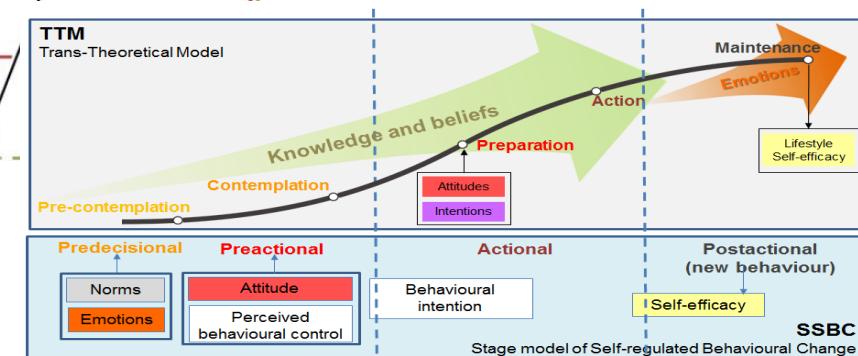
My-Moby project: data analysis

- Identification of mobility datasets/patterns



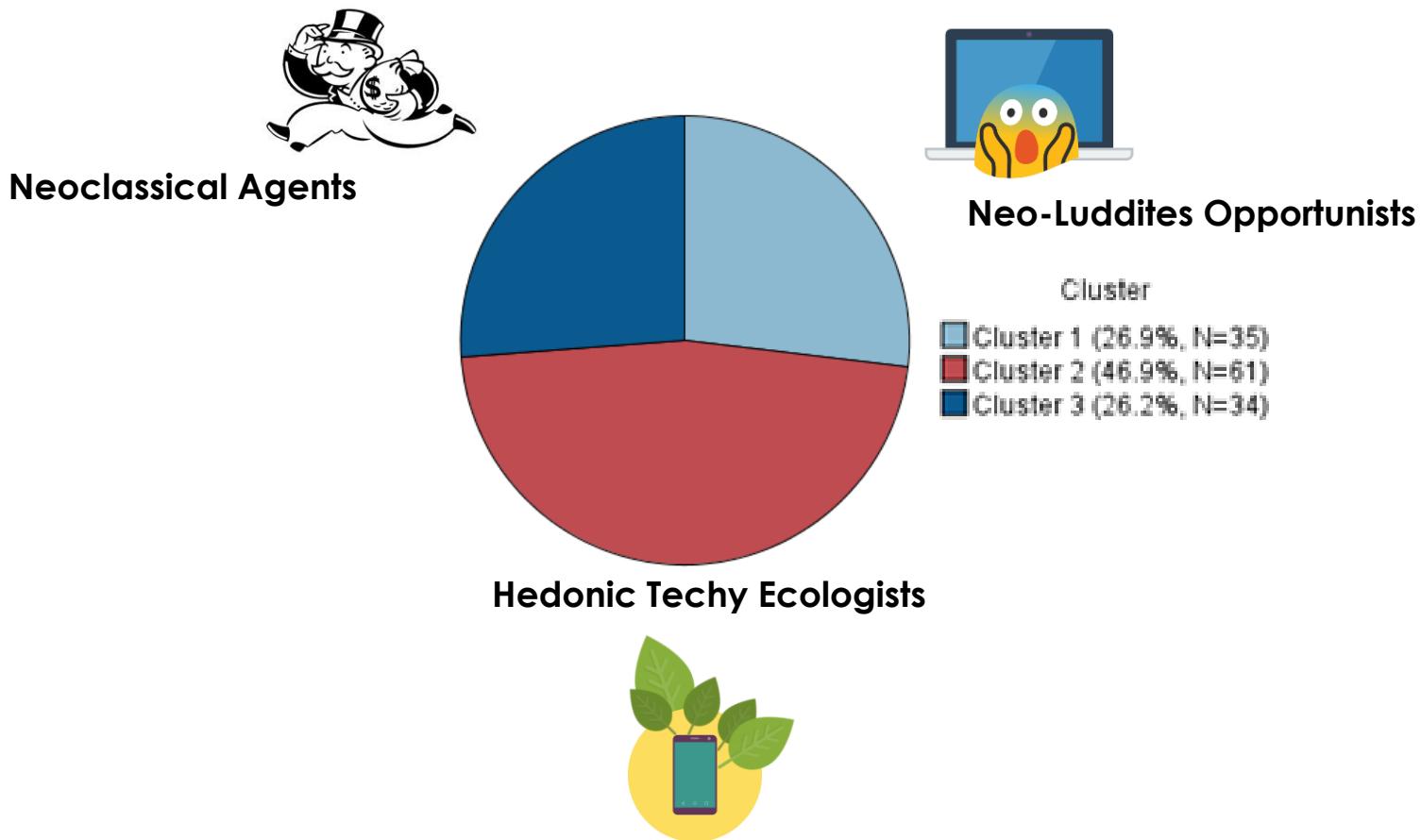
Individual-focused theories of decision making

Individual-focused theories of behavioural change



My-Moby project: data analysis

Psychological-based market segmentation of ATIS users



My-Moby project: final outcomes

Continuous monitoring:

- Mobility
- Users' attitudes
- Preferences

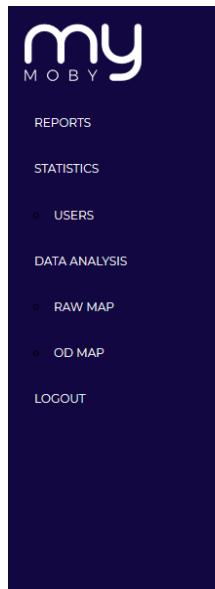
USEFUL TO

- Transport Authorities
- Cities
- Transport operators

ALLOWING

- To improve QoS
- Market segmentation
- Tailor made services

Involving Users Testing new ideas and new mobility services Defining KPIs



PERSPECTIVE FOR THE SHORT-MEDIUM TERM

Extended Travel Investigation

- Regional travel Surveys
- Establishment of Living Labs



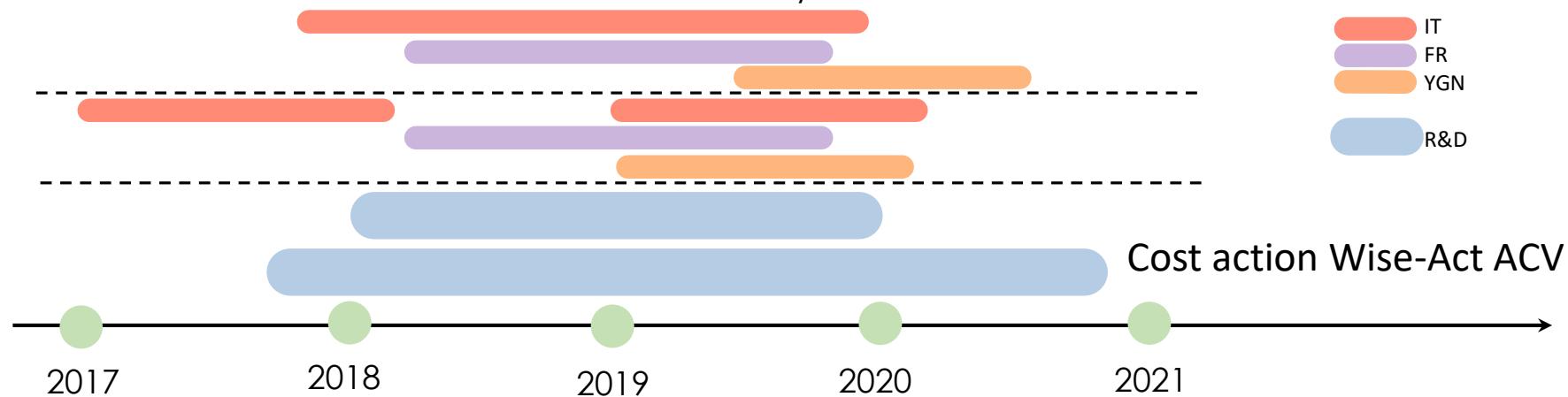
Automatic Data Collection

- Smart cards data collection and analysis
- Passengers' counting



R&D for crowdsourced data and UX

- Transport mode detection
- App additional features (Cost, ecological footprint, personal advices, customer satisfaction, extended social section)



THANKS FOR YOUR ATTENTION



CONTACT:

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