Modelling the Quality of User-perceived Travel Experience

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ACT 2018-Ohrid, Macedonia
International Conference "Applied Computer Technologies"

Univerzitný vedecký park
Žilinskej univerzity v Žiline

21-23 June 2018 | Ohrid, R. Macedonia

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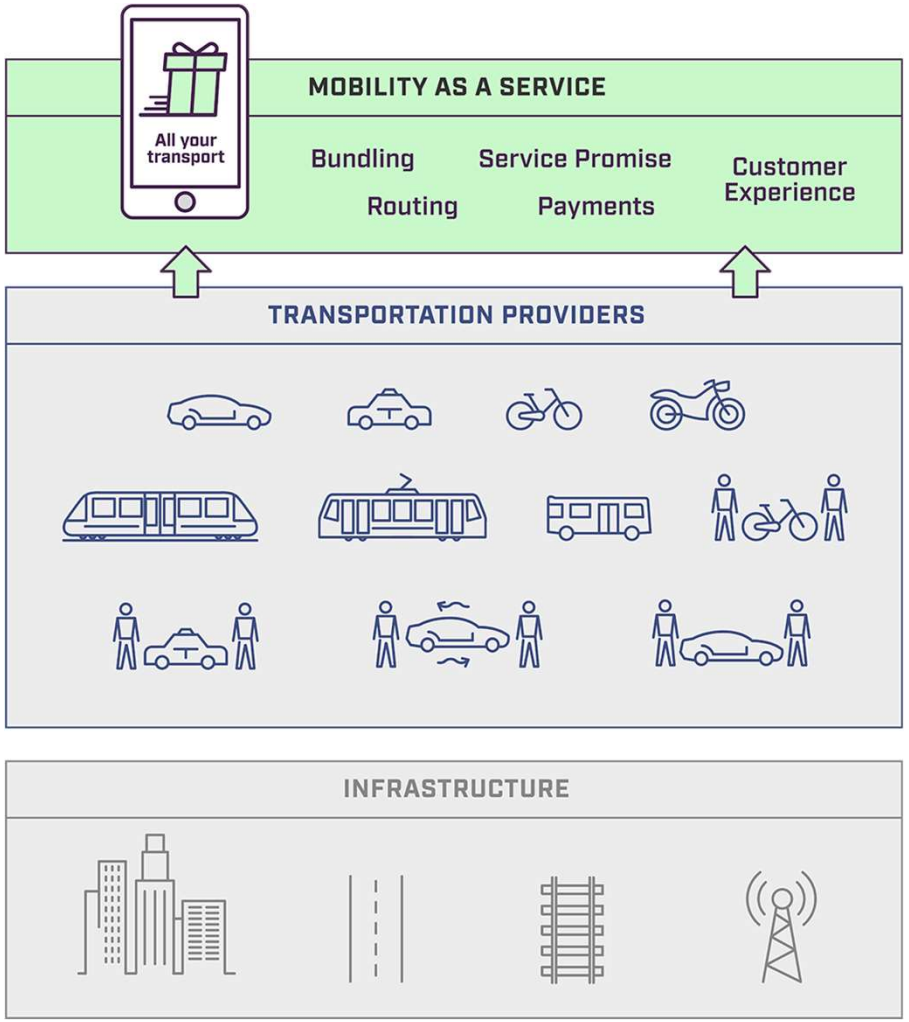
Motivation for research

- Intelligent Transportation Systems (ITS);
- Development of the mobile technology and ICT
- Mobility as a Service (MaaS);
- Citizens can actively engage and contribute to estimating the quality of travel time;
- Customized travel preferences and a possibility to express its perceived quality expectations;
- Value Proposition of Mobility (VPM).

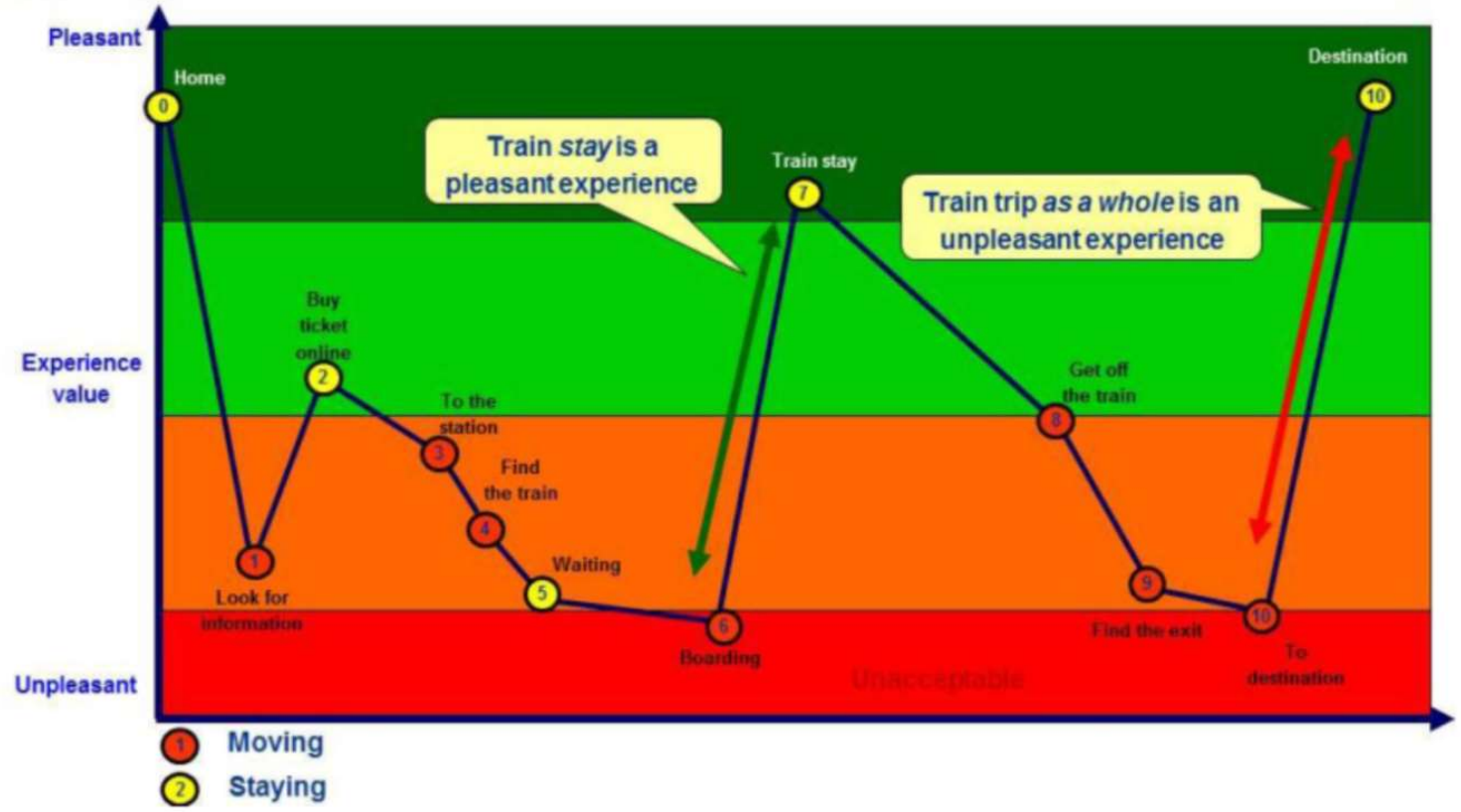
Mobility as a Service (MaaS)



Related work

- Definition of the utility of an action in terms of the pleasure or pain obtained, and proposes taxonomy of four types of utility;
- Experienced utility;
  - Quality of *Experience* (QoE);
  - *Quantification* of end user experience;
- Remembered utility;
- Predicted utility;
- Decision utility.

How peak experiential value affects the overall traveller's experience



Travel time metrics

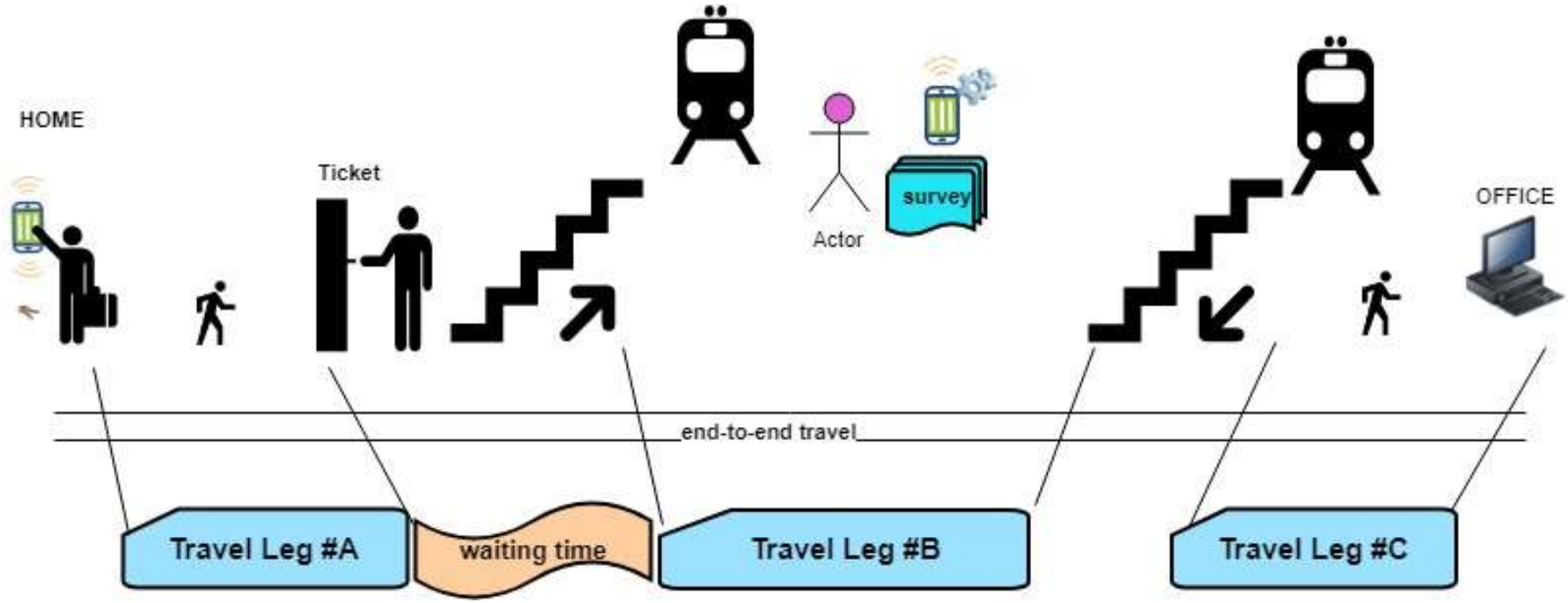
- Conventional view of *Value of Travel Time* (VTT)
- *Value of Travel Time Savings* (VTTS)
- *"Travel Time Budget"* (TTB)
- *Reasonable Travel Time* (RTT)
  1. RTT is about the full *door-to-door* trip,
  2. RTT comprises the full *experience* of the trip,
  3. RTT is also about *activities at destinations,*
- “Quantified traveller" approach
- **Value Proposition of Mobility (VPM)**
- *Subjective, dynamic and contextual valuation*
- *Focused on the individual traveller and his/her perceived travel experience*

Travelling key concepts and definitions

- Trip, travel and journey
- Trip leg and trip route
- Transfer locations and interchanges
- Activities
  - Travel activities
  - Location activities
  - Activities while travelling
- Travel or trip purpose
- Travel experience, satisfiers and dissatisfies

Travelling key concepts and definitions

- End-to-end Trip
- Trip leg
- Waiting time



Mobile devices use sensors to track user experience

- Phone usage:

Light sensor – Screen dimming

Proximity – Phone usage

- Content capture:

Camera – Image/video capture

Microphone – Audio/noise capture

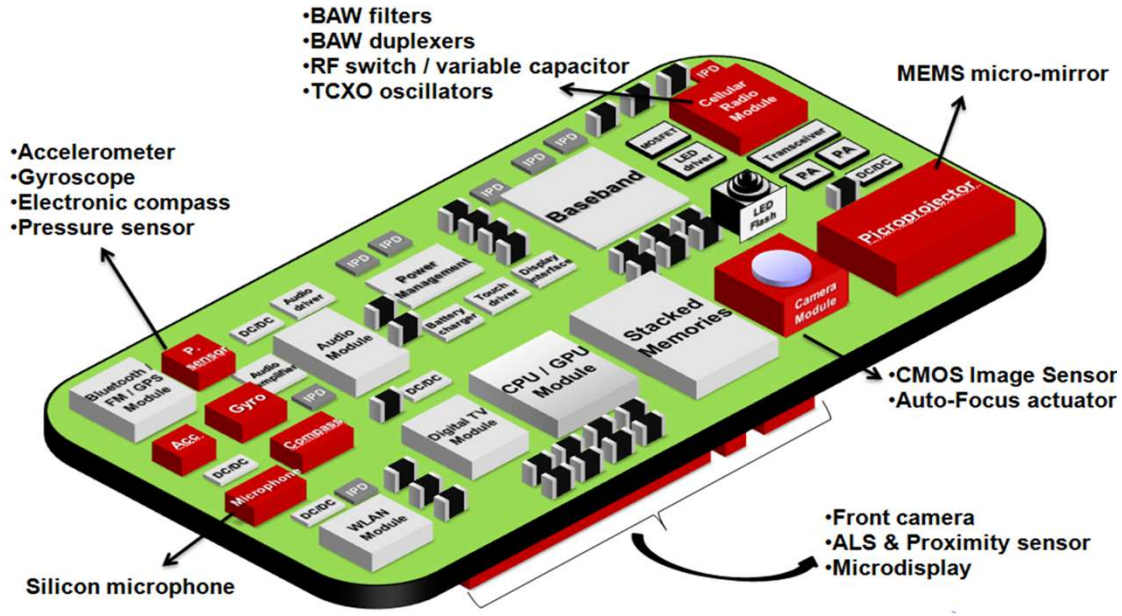
- Location, mapping:

GPS – Global location

Compass – Global orientation

- Device orientation:

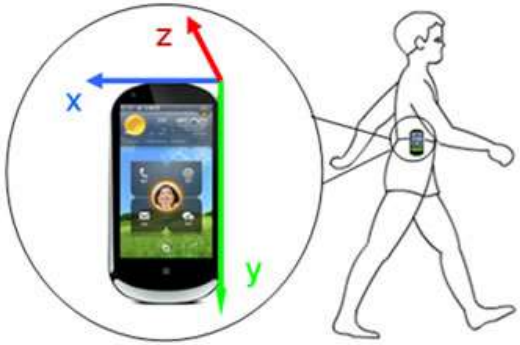
Accelerometer & Gyroscope – Local orientation



Mobile devices - Detection of tracking

- Sensors can also collect data about users and their surroundings.

- Accelerometer data can be used to classify a user's movement:



Running

Walking

Stationary

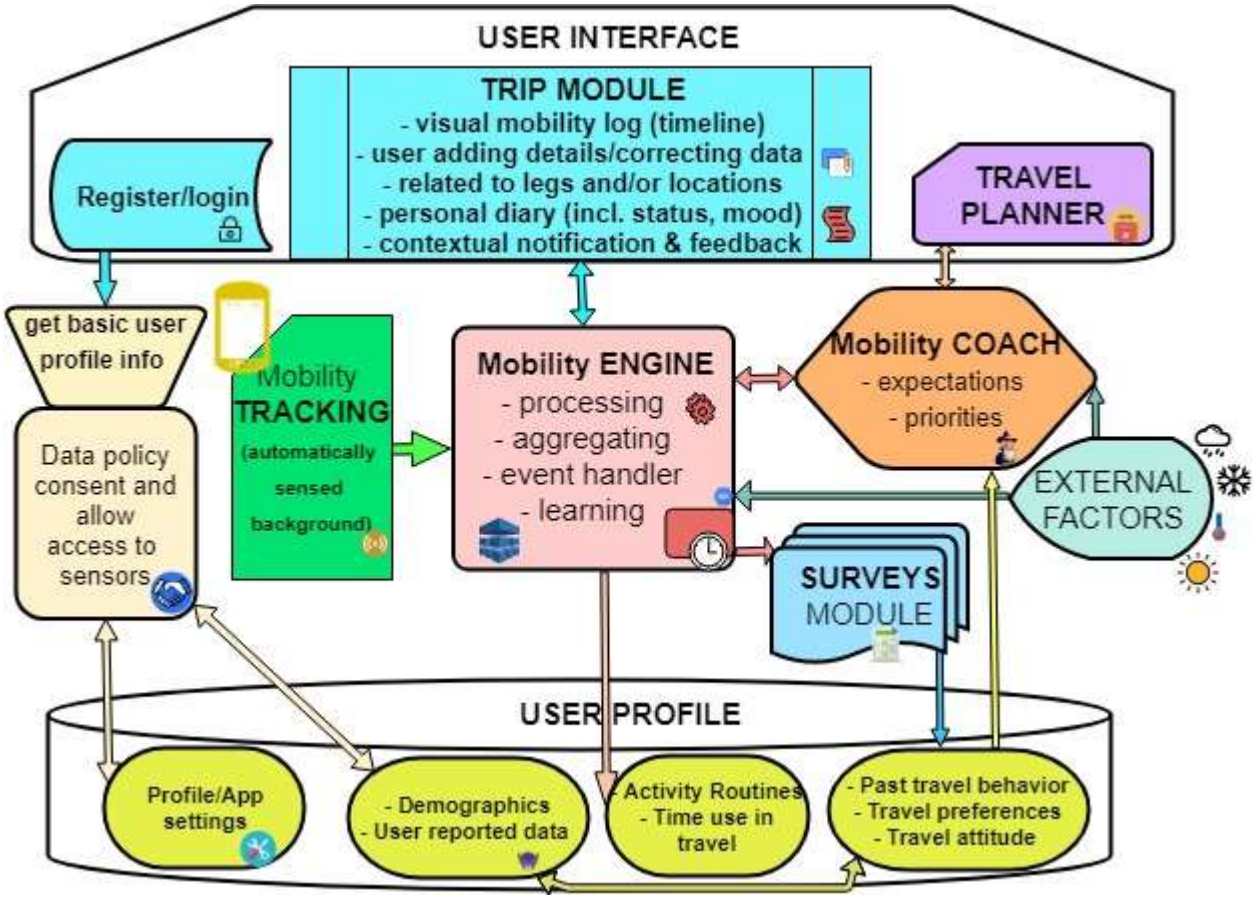
- Combining motion classification with GPS tracking can recognize the user's mode of transportation:

Subway, bike, bus, car, walk…

- Mobile sensor data are collected from device

by app in background;

Basic modules of the proposed MoTiV smartphone app



Citizens involvement in sensing

- A user's phone can constantly monitor and classify their daily life; the data collected is highly personal.
- Targeted advertising would love to know just when to show you a certain ad
- Your phone can provide personalized recommendations targeted to your location and travel activity
- A common sensing application could feed classifications and data to give value for travel experience.

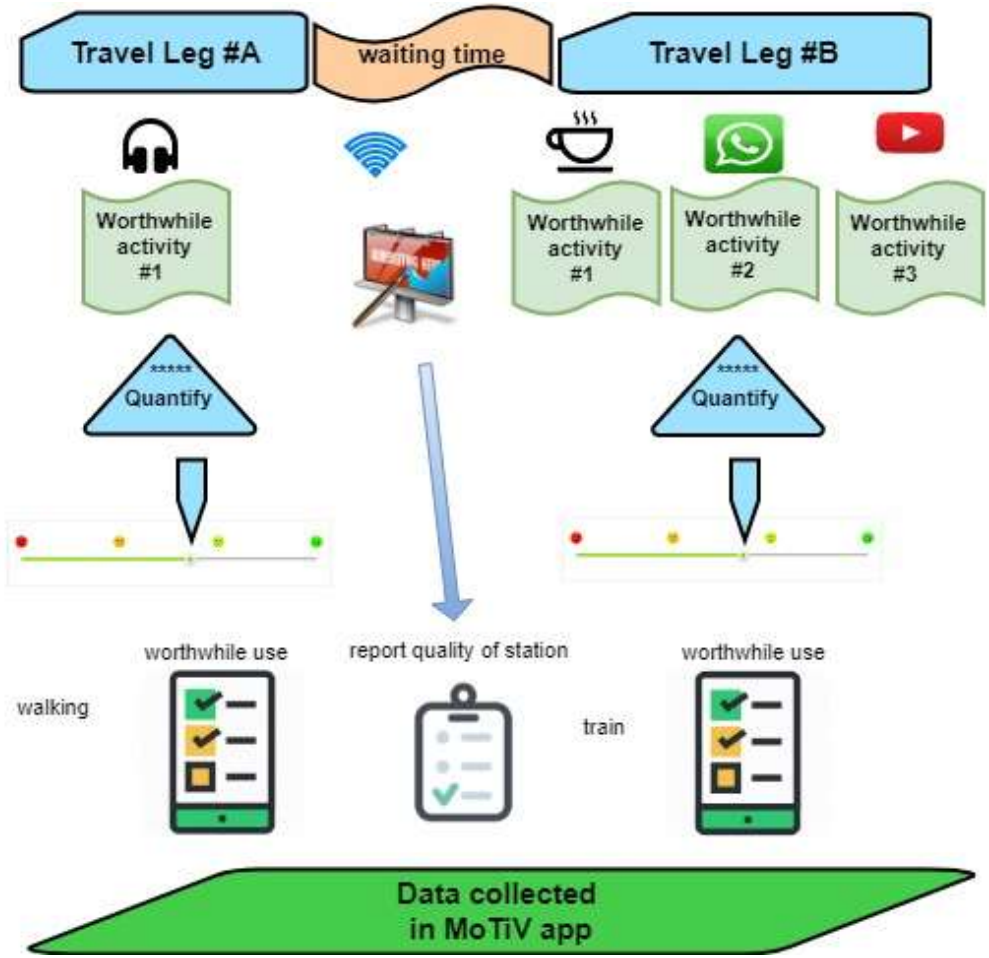
Citizen’s involvement in data collection process

- Use of digital devices, smartphones and IoT wearable's;
- “Quantify" one’s life and to obtain a visual representation of personal activities;
- Tracking of participants for a limited period of time;
- Large data processing techniques;
- Determine the user habits for using certain mobility services.

Citizen's involvement in data collection process

- Collect mobility, activity and demographics related data, external influence factors;
- Analyse value of travel time;
- Motivations, preferences and behaviours linked to the concept of individual well-being;
- Personal data will be collected acc.to GDPR Article 6 (1) and Article 9 (2);
- Open dataset - pseudo-anonymised data.

Citizen's involvement in data collection process



Conclusion and future work

- Smart services to improve the process of estimation and delivery of content for mobile users while traveling;
- Established of hypothesis to be verified during the MoTiV data collection campaign;
- The citizen's feedback is used to collect valuable information on the quality of the transport;
- Mobility tracking and time/event triggered surveys that will collect personal data, preferences, and expectations.
- Gamming user interface and application interaction approach are expected to engage wider population.

ACKNOWLEDGMENT

- MoTiV project, funded from the European Union's Horizon 2020 http://motivproject.eu/
- ERAdiate Enhancing Research and innovation dimensions of the University of Zilina
- Short-Term Scientific Mission implemented within the COST Action CA15212, supported by COST (European Cooperation in Science and Technology).

MoTiV project video

https://www.youtube.com/watch?v=_2kXrRhqBxM

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