The MoTiV project: a holistic exploration of mobility and time value at a European-wide scale

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About Me

- Born in Camerino (IT)
- Graduated in Computer Science at the Univ. of Bologna (IT)
- PhD in Cognitive Science at the Univ. of Jyväskylä (FI)
- International research career: Helsinki (10 years), Brussels (5 years) and Žilina (~2 years)
- Interdisciplinary researcher profile combining academic, business and administrative perspectives

Research Areas & Interests
- *Educational technology*
- *Social computing*
- *Design for sustainable living*
- *Social robotics*
- *Smart mobility & intelligent transport systems*

Context: the ERAdiate project

http://www.erachair.uniza.sk

- **MoTiV implemented by the ERAdiate team and main result of the ERAdiate project**
  - Small international team of researchers led by the ERA Chair Holder (Until September 2017, Dr. Karl-Ernst Ambrosch; since October 2017 Prof. Tatiana Kováčiková)

- **ERAdiate is a FP7 pilot ERA Chair project (CSA) on ITS granted to the University of Žilina**
  - 5-year project (July 2014 – July 2019)

Context: the ERAdiate project
http://www.erachair.uniza.sk
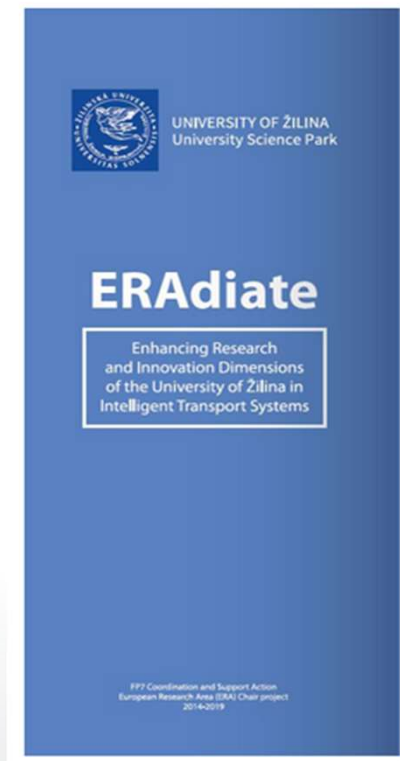
- **ERAdiate follows the ERA Chairs objectives**
  - Attracting high-quality researchers and managers to universities and research organisations with potential for research excellence
  - Contribution to economic and social regional development
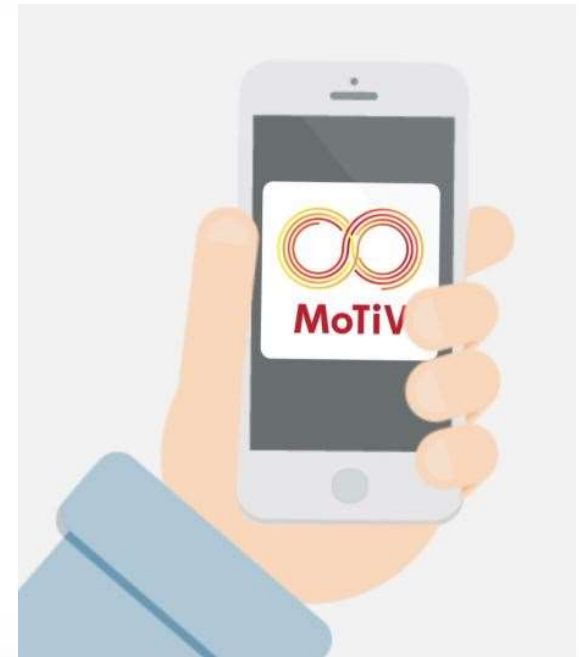 - Increased success and participation in European R&D programmes

- **ERA Chairs grant does not cover infrastructure and research costs**
  - However, its success is also measured by scientific results (publications, research projects etc)
  - Dilemma: ERAdiate as an R&D "enabler", "implementer", or both?
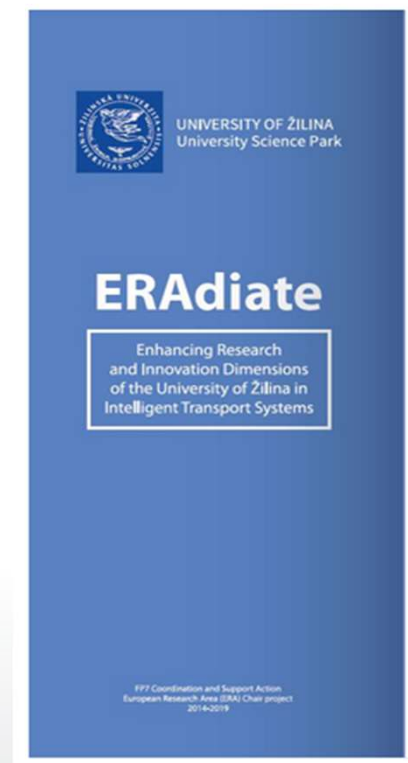
About "Mobility and Time Value" (MoTiV)

MoTiV in a nutshell (02:33 video)

About MoTiV: project figures

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- **European-wide exploration of "Mobility and Time Value".** How value of travel time is perceived across transport modes, generations, genders and cultures
  - **30-month project:** Nov. 2017 – Apr. 2020 (now: M7)
  - **Overall funding:** ~2M EUR
  - **Small consortium** (7 partners):
    - 3 academic institutions/research organisations (UNIZA, SK; Eurecat, ES; INESC-ID, PT)
    - 2 business partners (routeRANK, CH; CoReorient, FI)
    - 1 mobility consultancy organization (TIS.pt, PT)
    - 1 European-wide association (ECF, BE)
    and 3 Linked Third Parties affiliated with ECF (HR, IT, RO)

About MoTiV: a success story

- **UNIZA Success Story:** currently, the only Research and Innovation Action in Slovakia funded under Horizon 2020 managed by an academic institution

- **EU Success Story:** to our knowledge, the only Research and Innovation Action in Europe granted within an ERA Chair project and coordinated by an ERA Chair team (i.e. contributing to the sustainability of the project beyond EU funding)

Changing Value of Travel Time:
traditional and emerging views

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"Travel Time is not productive": "lost" time as an economic loss (justifying aim of travel time savings as cost savings, the rationale of transport projects)

vs

"Travel time may be valuable": value "measured" in terms of quality of experience, not necessarily to productivity or economic indicators (time/cost savings)

What does represent value in mobility from the traveler perspective?

Changing Value of Travel Time: business perspective

Canadian rail company promoting **time spent in trains as fully productive despite longer travel time** (compared to car and plane)

Assumption: **time value** connected to **possible activities**, in line with traveller needs, expectations and lifestyle

Changing Value of Travel Time:
business perspective

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Audi's context:
self-driving cars

Three categories of Time Perception
- Quality Time
- Productive Time
- Down Time

AUDI'S 25TH HOUR PROJECT MAKES TIME THE ULTIMATE DRIVING LUXURY

With the help of Fraunhofer scientists, Audi hopes to figure out how to give us that magical extra hour
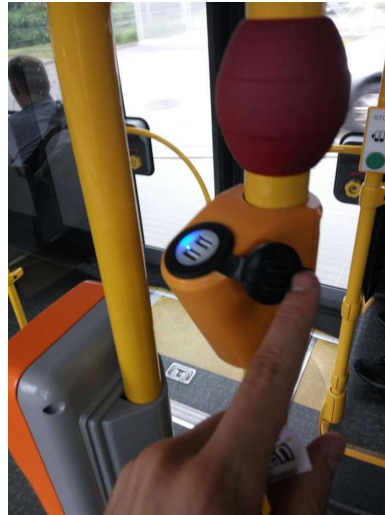
Changing Value of Travel Time:
relevance for transport operators

- Public transport operators recognize that **even short-distance travel time (i.e. urban context) is not only about getting people rapidly and safely to destination**

- **Increasing amount of free-of-charge services enhancing travel experience and supporting activities while on the move**
  - USB chargers
  - Wi-Fi onboard
  - Entertainment and information displays
  - Bike racks
  - …

MoTiV Rationale and MoTiVation

- **Smart City Transition:** focus on perceived "quality of time"
  - Strategic objective: designing smart city, its services and infrastructure for "worthwhile" use of time

- **Why "worthwhile time" instead of "productive time"?**
  - Quality of living is not only about "effective" and "productive" use of time
  - Need to extend "time and cost savings" with other relevant dimensions of value

Approach: What makes time valuable while on the move?

- **Identifying "enablers / satisfiers"** (as well as "dissatisfiers") **of worthwhile travel time**

- **Focus on the individual Travel Experience**
  - **Personal characteristics** including (but not limited to)
    - Attitudes and preferences towards mobility and time
  - **Exploring travel activities**
    - Leisure / Work-related activities
    - Role of digital connectivity and devices
  - **Investigating role of contextual factors**
    - Cognitive and emotional status
    - Space and locations (transit / destination location)
    - Transport and mobility services / infrastructure
    - Weather
    - …

Approach: Collecting and analyzing Data on Travel Experiences

- **Smartphone-based data collection via the MoTiV app** (available by the end of 2018)

- **Continuous collection of mobility/activity behaviours**
  - smartphone-based sensing of mobility behaviour
  - traveler's input on activities and time appreciation (e.g. ratings, contextual surveys on influence factors)

- **Smart mobility coach ("quantified traveller" approach)**
  - Trends and statistics for self-learning and increased awareness

- **Gamification and campaign incentives for user engagement**
  - Completion of tasks (e.g. validating day trips, filling contextual survey) associated to e.g. points/credits, badges
  - "Offline" incentives to also engage users less interested in gamification aspects

MoTiV
App

MoTiV app functionalities

- **Automatic detection of mobility/transport mode and trip leg**
  - Add/Correct details about trip, trip legs and locations

- **Timeline of the day**
  - Trips, trip legs and locations with basic statistics (e.g. kms, time-spent at locations or in transport)

- **Activities carried out by travelers while on the move and at locations**

- **Indicator of traveler's appreciation for time spent while on the move and at locations**
  - General appreciation
  - Appreciation in relation to specific factors (transport infrastructure / mobility services / external context variables e.g. weather)

- **Insights:** trends and statistics connected to app use (e.g. modal split, most popular activities)

Work in progress...testing concepts and visual outlook

- **Challenge:** find the right trade-off between **accuracy** and **acceptability** / engagement

- **Pre-testing of the app** to provide useful insight

MoTiV Data Collection Campaign (DCC)

- **Target:** Minimum 5.000 valid samples (active use for minimum 2 weeks) from as many users from at least 10 EU countries

- **Obtain a balanced sample** in terms of:
  - **Age:** young adults (16-24 y), adults group 1 (25-49 y), adults group 2 (50-64 y), older population (65+).
  - **Gender:** male, female.
  - **Transport modes:** walking, cycling, public transport, car use, shared mobility, long-distance train, plane.
  - **Residence:** urban/sub-urban, rural.
  - **Socioeconomic status**
  - **Other demographic indicators**

MoTiV Data Collection Campaign (DCC)

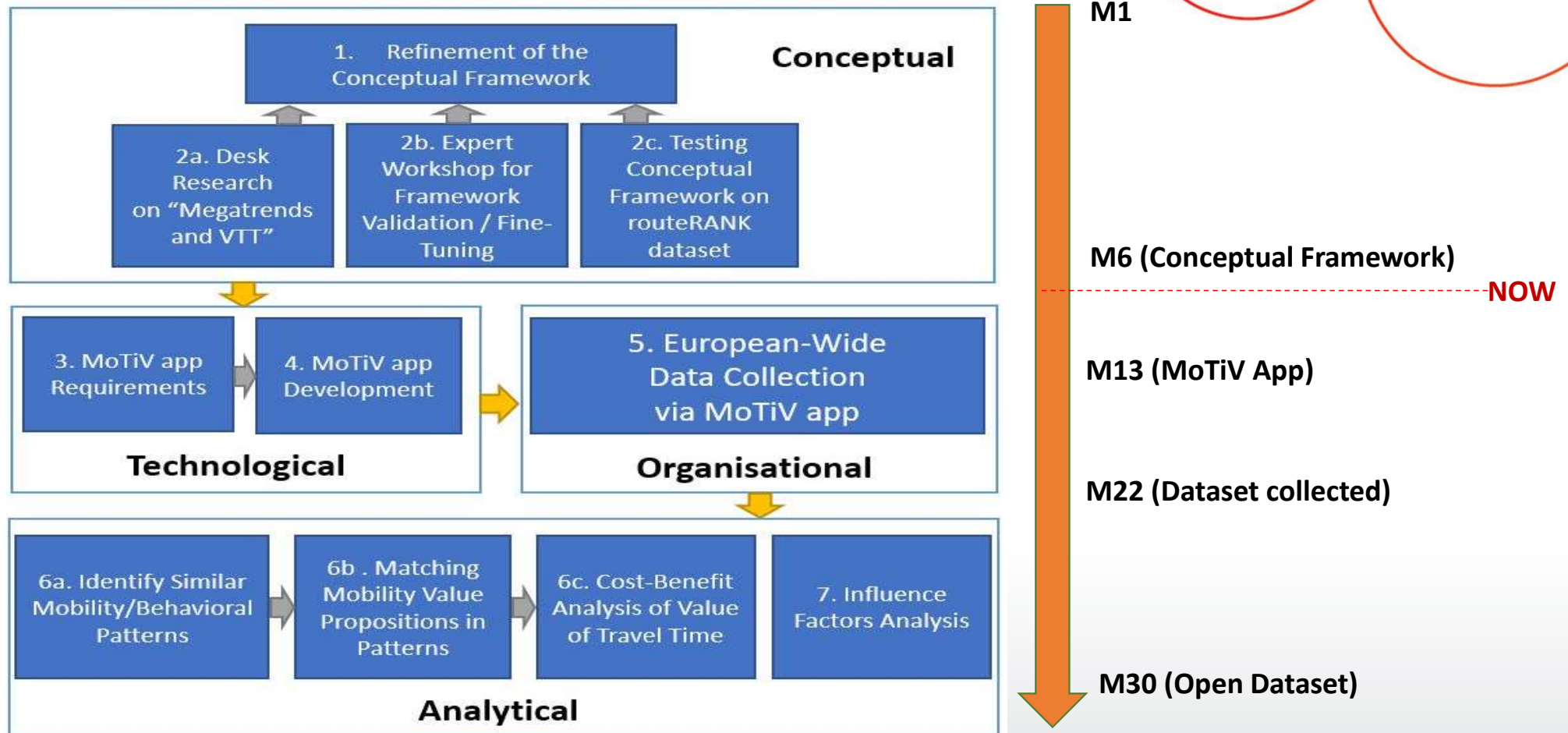**Data Collection Campaign**

Sampling | Recruitment | Promotion | Monitoring

Ethics and Data Protection

- **Sampling:** target groups and the plan to meet the expected sample size and characteristics
- **Recruitment:** reaching and involving DCC participants (via stakeholders and networks of volunteers)
- **Promotion Channels:** marketing and promotion channels, including outreach events and incentives
- **Monitoring:** campaign management. Progress of the campaign towards achieving the sample, coordinating communication with consortium, stakeholders and DCC participants
- **Ethics and Data Protection:** procedures to implement the DCC according to research ethics standards and in compliance with data protection legislation (national and European i.e. GDPR)

About MoTiV: project framework

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M1

M6 (Conceptual Framework) --- NOW

M13 (MoTiV App)

M22 (Dataset collected)

M30 (Open Dataset)

MoTiV: a high-risk high-gain project

- **The ambition of MoTiV implies a series of risks and challenges, including:**
  - **MoTiV app reliability and potential for user engagement:** built from scratch and in limited time (less than 12 months).
  - **Very broad scope of the data collection:** any transport mode, any age group, multitude of cultures.
  - **Quality of data to be collected:** challenge to achieve the target sample of active use of the app for at least 2 weeks and by minimum 5.000 users across 10 EU countries.
  - **Most partners of the Consortium have never collaborated before**, and the Coordinator itself has limited experience in H2020 project management.

- **Addressing challenges and minimising risks for high returns**
  - New knowledge for advancing theory, models and applications
  - Open Dataset available for further research and applications
  - Potential to further develop the app

High Risk
High Return

Awareness and collaborations around the theme of "mobility and time value"

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- First MoTiV outreach event organized in Žilina on 28 May

- Today's talk at AIT

- **COST Action CA16222 on "Wider Impacts and Scenario Evaluation of Autonomous and Connected Transport" (WISE-ACT)**
  - Working Group exploring value of travel time in the context of autonomous vehicles

- **Civitas Forum 2018** (Umeå, 19-21 September 2018)**:** Thematic Session on *"Extracting actionable knowledge from user attitudes and behavior in mobility"*
  - Joint organization with H2020 STARS project on shared mobility

- **OECD International Transport Forum roundtable "Zero value of time"** (Paris, 25-26 September 2018)

MoTiV preliminary results: Conceptual Framework

References

1. MoTiV public deliverable D2.1 "Outlook on Value of Travel Time: Futures Study and Related Hypotheses".
2. MoTiV public deliverable D2.2 "Mobility and Travel Time report".
3. Lugano G., Kurillova, Z., Hudak, M. & Pourhashem, G. (2018). Beyond Travel Time Savings: Conceptualizing and Modelling the Individual Value Proposition of Mobility. *Proceedings of the CSUM 2018 conference.*
4. Kováčikova, T., Lugano, G. & Pourhashem, G. (2018). From travel time and costs savings to value of mobility. In: Kabashkin I., Yatskiv I., Prentkovskis O. (Eds) Reliability and Statistics in Transportation and Communication. RelStat 2017. Springer Lecture Notes in Networks and Systems 36

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Any Questions?

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