



Estimation of environmental and societal impact of new mobility services deployment

Joint Research Centre, University of Cantabria

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Introduction

Administrative

- Collaborative Doctoral Partnership between JRC and University of Cantabria
- Beginning of the PhD in Q1 2020
- Projected defence date Q3/Q4 2022
- Working with innovation in mobility at the Future Mobility Solutions Living lab

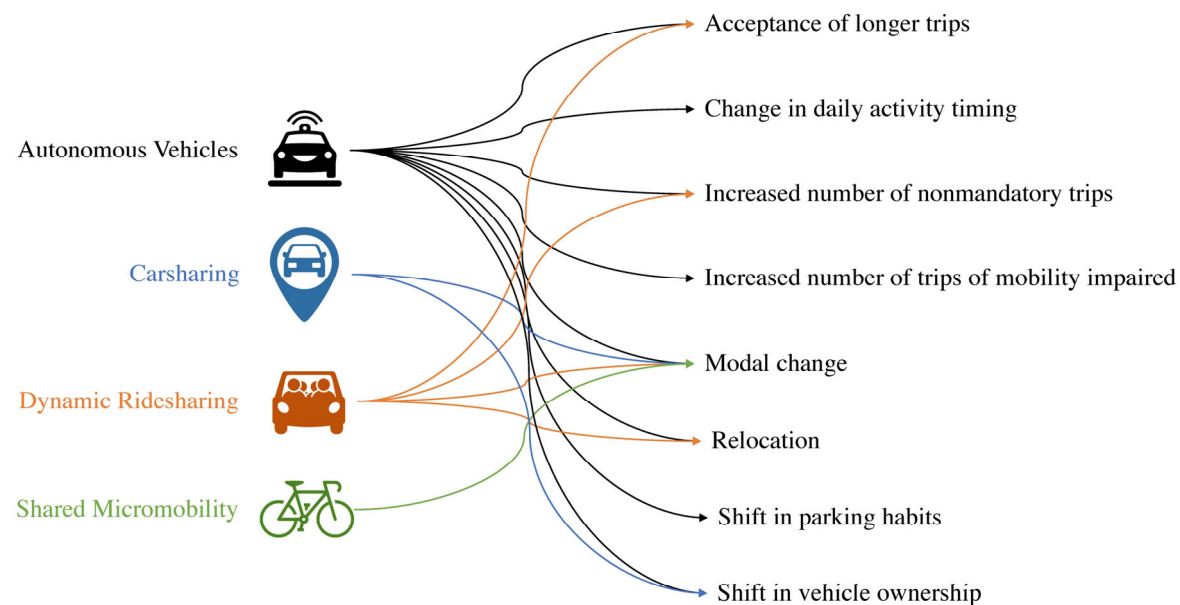
Performed activities

- Literature review focusing on the representation of behavioural changes caused by NMS deployment in demand models.
- Sustainability assessment and environmental impact qualification of last mile delivery solution tested at the JRC LL.
- Mobility survey for JRC employees attending missions, aiming to understand the preference for private vs. shared vehicle. With a complimentary sustainability and behavioural assessment of preference for shared versus private transportation
- Stated preference survey on the parking preference of private AVs considering four alternatives: on-street parking nearby, dedicated garage on the outskirts of a city, sending the vehicle back home and cruising. Considered attributes: parking cost, fuel cost (environmental proxy), waiting time.
- Ad-hoc activities and support to the Future Mobility Solutions living lab

Basic skills

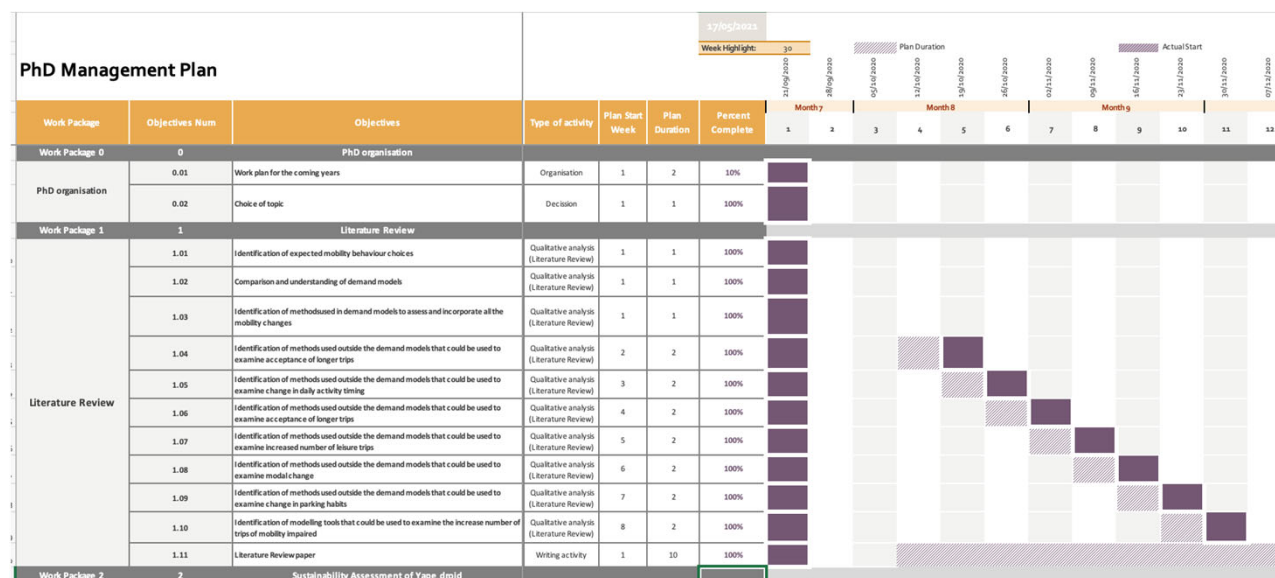
Skill CB11 – Systematic understanding of a field of study and command of the skills and research methods related to the field

- A systematic understanding of the field was built during the first months of the PhD.
- Activities included a systematic literature reviews study with pending publication, and technical overview of possible models and tools to use and complementary courses required to better comprehend the field.

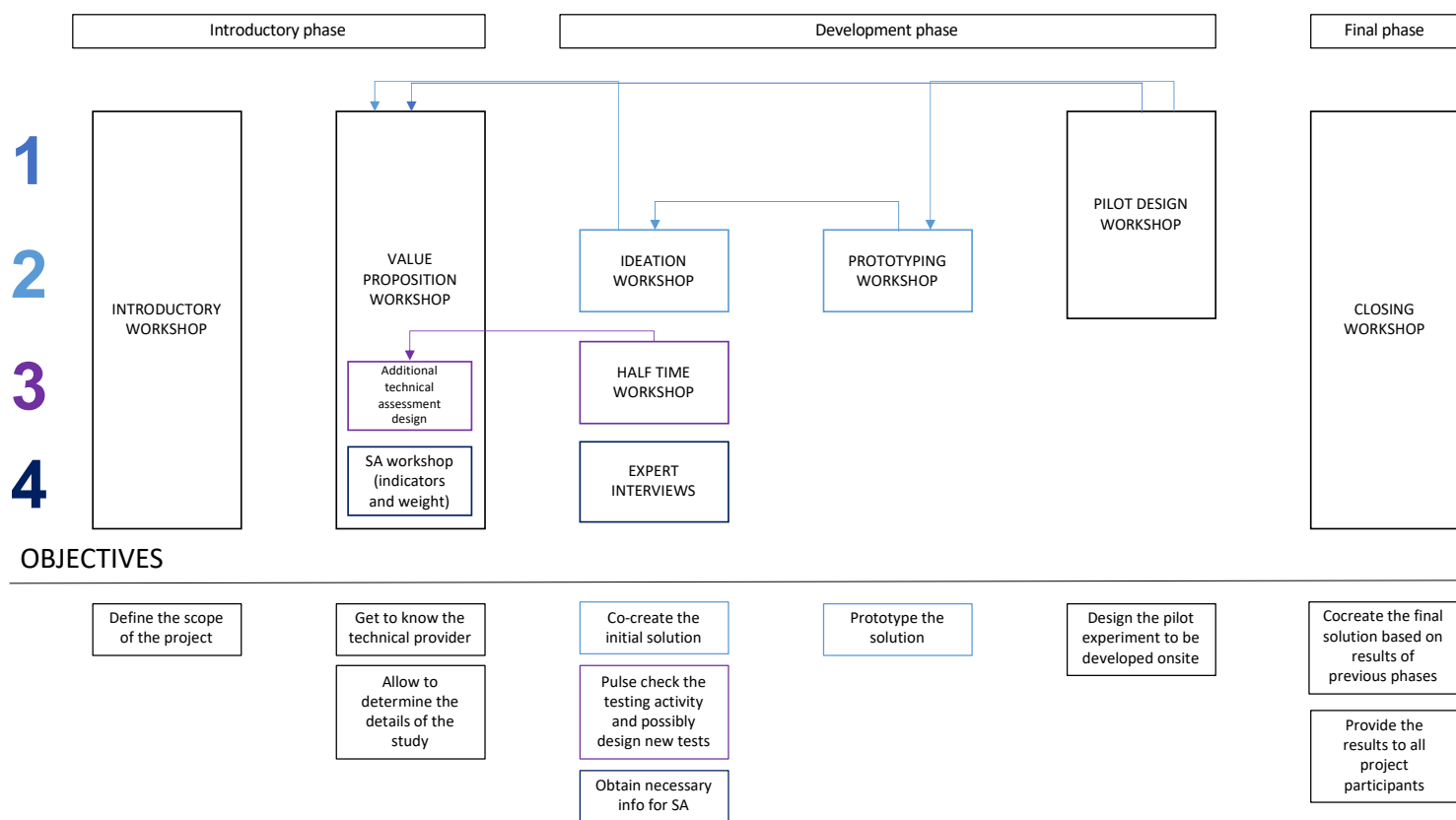


CB12 – Skill to conceive, design or create, implement and adopt a substantial process of research or creation

- Skill was enhanced during the first months of the PhD, after tightening the scope of work and creating the PhD workflow plan (divided the PhD into a series of work packages, milestones and objectives).
- Skill was further improved during each of the activities performed with the living lab, especially while designing the operational plan of the living lab project execution.
- Finally the skill is used with each of the planned activities at the JRC, as part of the strategic planning.



CB12 – Skill to conceive, design or create, implement and adopt a substantial process of research or creation



CB13 – Skill to contribute to the enlargement of the knowledge limits through an original research

- Skill expressed during the design of new sustainability assessment framework that allows to capture the importance of environmental and social factors while deciding on the future implementation of innovation.
- Skill expressed during all other activities – for instance design of a stated preference survey on parking alternatives with autonomous vehicles, something not considered before in the field.



A

	Parking in a dedicated area
Parking cost	0 €
Fuel cost	5 €
Time waiting for AV	5 min

B

	Parking nearby
Parking cost	15 €
Time waiting for AV	0 min

C

	Sending AV home
Fuel cost	4 €
Time waiting for AV	5 min

D

	Cruising
Fuel cost	6 €
Time waiting for AV	0 min

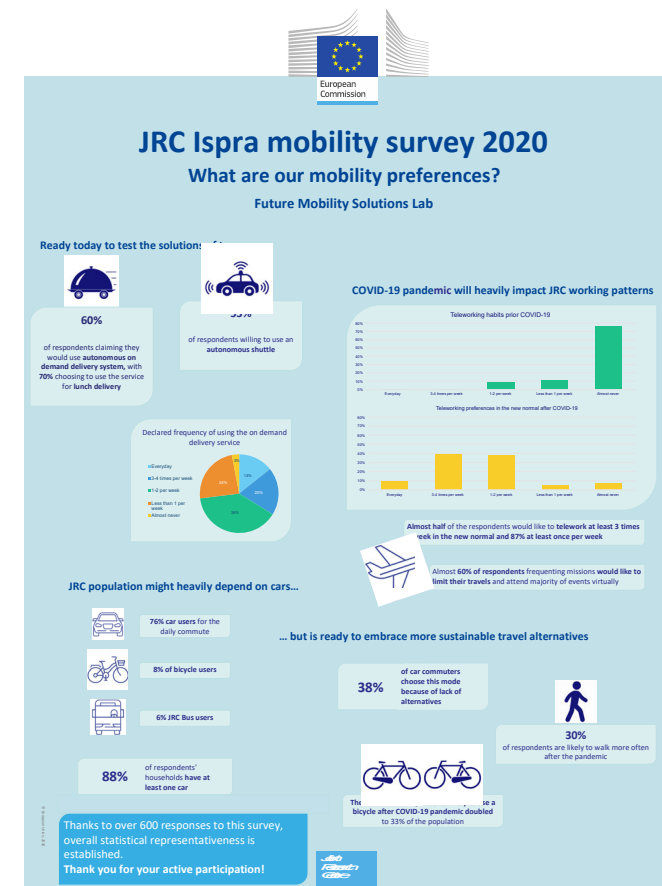
CB14 -Skill to carry out a critical analysis and assessment and synthesis of new and complex ideas.

- Frequent feedback with the supervisors from UNICAN and from the JRC, helps to untangle the opportunities and threats that arise with a new idea.
- The skill of critical analysis was being developed during a review of the research papers as well as other deliverables created at the FMS Living lab,
- As well as during the yearly assessment which requires a SWOT analysis.



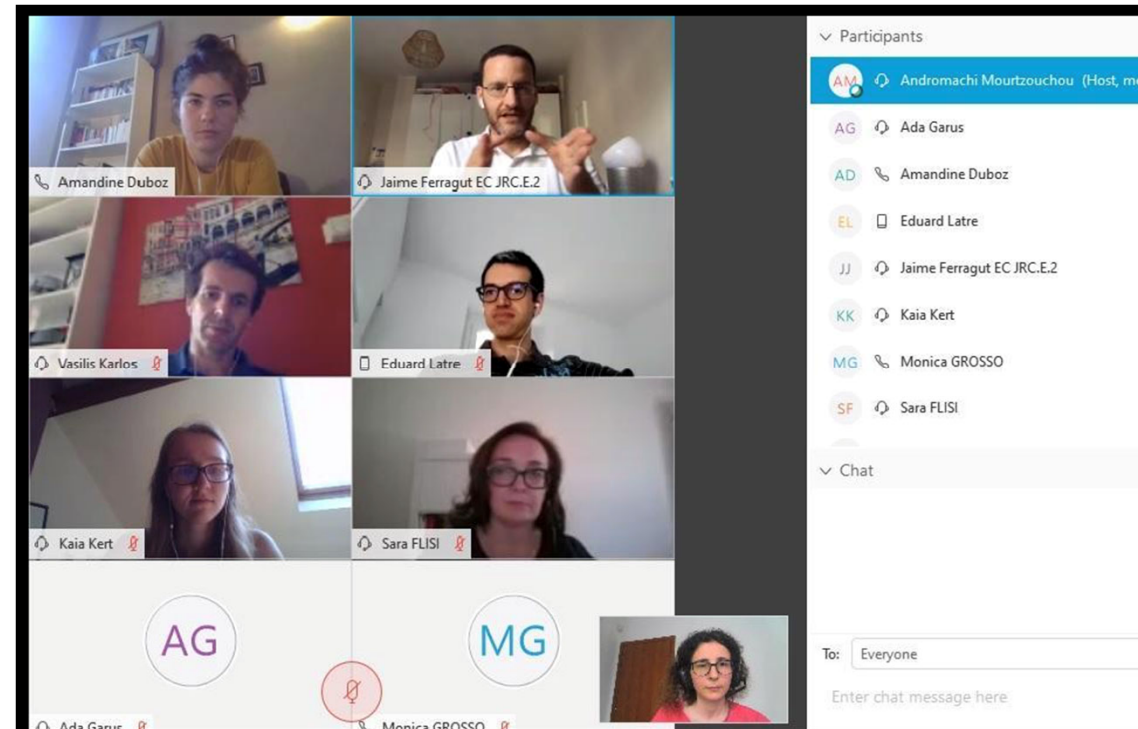
CB15 – Skill to communicate with the academic and scientific community and with society in general about the scope of knowledge in the ways and languages of common use in the international scientific community

- Skill used and presented in two articles with pending publication through usage of appropriate language.
- Skills used and improved during the numerous presentation given to living lab activities participants as well as during an internal JRC conference presenting the results of the JRC Mobility survey as well as the sustainability assessment.
- Skills improved by transversal courses (social media scientific communication, efficient presentations).



CB16 – Skill to encourage, in academic and professional contexts, the scientific, technological, social, artistic or cultural progress in a society based on knowledge

- Skilled obtained during the social activities of the living lab (focus groups, interviews, codesign sessions as well as surveys and questionnaires).
- Skill obtained through the communication of the living lab activates and encouragement to participate in cocreating innovations.
- Skill used and presented in two articles with pending publication through designing the publications in a way that an individual with no prior knowledge in the field would understand them.



Capabilities and personal abilities

CA01 – Cope in contexts in which there is little specific information

- A systematic understanding of the field in form of literature review helped to widen the scope and breach the gaps given in the singular papers
- More than a year of living with pandemic where uncertainty is the only certainty allows one to reevaluate the need for context

CA02 – Find the key questions to be answered to solve a complex problem

- Systematic literature review along with strategic planning allowed to obtain the knowledge gaps in the field and therefore scope the questions needed to be answered.
- The key questions that need to be found to solve a problem were evaluated at the strategic planning level of each activity, so that the results of the activity are not random.

CA03 – Design, create, develop and undertake new and innovative projects in the knowledge scope

- The collaboration with the FMS living lab with the changing nature of its project scopes is a perfect place to enhance this skill

CA04 – Work both in teams and individually in an international or multidisciplinary context

- The whole PhD is made in collaboration with JRC and the FMS living lab.
- For the past year I was lucky enough to be an active member of the team supporting its many activities and contributing to the research they are doing.

CA05 – Integrate knowledge, face complexity and formulate judgements with limited information

- Skill used while working on the sustainability assessment of the last-mile delivery droid in which numerous objectives (social, economic and environmental) needed to be evaluated. The study required to find adequate assumptions based on limited information available.

CA06 – Intellectual criticism and defence of solutions

- Skill tested after getting a rejection letter from the journal. Upon the rejection the comments were considered critically and the paper was significantly restructured.

Thank you



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