MOBIDATALAB

Labs for prototyping future mobility data sharing solutions in the cloud

Draft

D5.5 Report on Living Labs Monitoring

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Abstract	This document reports on the execution of the Living Labs instances and also includes a list of good practices, a list of lessons learned and a list of advice for future iterations.

Legal Disclaimer

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Project partners

Organisation	Country	Abbreviation
AKKODIS	France	AKKODIS
AETHON SYMVOULI MICHANIKI MONOPROSOPI IKE	Greece	AETHON
HOVE	France	HOVE
HERE GLOBAL B.V.	Netherlands	HERE
POLIS - PROMOTION OF OPERATIONAL LINKS WITH INTEGRATED SERVICES	Belgium	POLIS
F6S NETWORK IRELAND LIMIDED	Ireland	F6S

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Executive Summary

D5.5 ‘Report on Living Labs monitoring’ offers a comprehensive encapsulation of the MobiDataLab project's Living Labs, detailing their execution and evaluation. It is structured to provide insights into key aspects of the Living Labs, from their conceptual framework to the nuances of their implementation and the impact they have had.

The introduction sets the stage, outlining the objectives of the MobiDataLab project and providing an overview of the Living Labs. The strategic approach adopted for the execution of these Labs is explored in the second chapter, which delves into the key components of the execution plan, including aspects of innovation, physical execution, governance, management, and stakeholder engagement. The report then moves to a detailed analysis of the execution and monitoring of the Living Labs, covering the three main events: the Datathon, Hackathon, and Codagon. This section highlights the unique methodologies, challenges, and outcomes of each event, showcasing the adaptability and innovative spirit of the project in fostering collaborative problem-solving. The interplay between the Living Labs and the Virtual Lab is examined in the subsequent chapter, focusing on how feedback and technological advancements synergistically contributed to the evolution of the project's tools.

A critical component of the report is the analysis of the Living Labs occurrences, which includes an assessment methodology, a performance evaluation against predefined Key Performance Indicators (KPIs), and an analysis of questionnaire results. This section provides valuable insights into participant satisfaction, the effectiveness of the Labs, and areas for future improvement. The report culminates with a chapter on good practices and lessons learned, reflecting on the successful strategies and methodologies that underpinned the events. This chapter serves as a knowledge repository, offering valuable lessons for future initiatives in data-driven technology.

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Abbreviations and acronyms

Abbreviation	Meaning
KPI	Key Performance Indicator
PDCA	Plan-Do-Check-Act
QC	Quality Check
URV	Universitat Rovira I Virgili
x-thon	MobiDataLab Datathon, Hackathon and Codagon

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1. Introduction

1.1. Background

There has been an explosion of mobility services and data sharing in recent years. Building on this, the EU-funded MobiDataLab project works to foster the sharing of data amongst transport authorities, operators and other mobility stakeholders in Europe. MobiDataLab develops knowledge as well as a cloud solution aimed at easing the sharing of data. Specifically, the project is based on a continuous co-development of knowledge and technical solutions. It collects and analyses the advice and recommendations of experts and supporting cities, regions, clusters and associations. These actions are assisted by the incremental construction of a cross-thematic knowledge base and a cloud-based service platform, which will improve access and usage of data-sharing resources.

1.2. Objectives

The objective of this report is to evaluate and document the execution and outcomes of the MobiDataLab Living Labs. It aims to provide a thorough analysis of the implementation process, participant experiences, and the overall effectiveness of these Labs in promoting innovation and collaboration within the realm of mobility and data sharing. This report is intended for a diverse audience, including project stakeholders, data owners, policymakers, and innovators in the field of data sharing. By assessing the success of the Living Labs against predefined Key Performance Indicators (KPIs), synthesizing insights from participant feedback and project partners experience, the report seeks to identify areas of strength, as well as opportunities for improvement. This detailed evaluation is instrumental in guiding future iterations of Living Labs, ensuring they continue to evolve and effectively contribute to the advancement of innovative solutions.

1.3. Overview of MobiDataLab Living Labs

MobiDataLab project aims to establish and assess Virtual and Physical Living Labs to evaluate and enhance the culture of data sharing among stakeholders. This initiative seeks to measure the existing data sharing culture using Key Performance Indicators (KPIs) and project a future qualitative state. The envisioned state will define how data sharing is pictured and outline requirements for the Transport Cloud and the Virtual/Living Labs.

Virtual and Living Labs' concurrent expert sessions foster ideation, discussion, and data generation for evaluating the data sharing culture. They aim to promote good practices, align goals, and improve stakeholder collaboration for achieving desired outcomes. Living Labs function as innovation ecosystems that prioritize user-centered approaches, facilitating co-creation, experimentation, and real-life evaluation of solutions.

These events bring together a diverse range of stakeholders, including innovators, SMEs, citizens, experts, and government officers to co-create, explore, experiment, and evaluate impactful solutions. [1]

MobiDataLab conducted physical and virtual x-athons across three European locations, constituting the project's Living Labs. These x-athons involved:

- A two-day datathon focusing on data exploration, experimentation, and the identification of business cases for data utilization.
- A two-day hackathon for developing new data analytics tools utilizing MobiDataLab's cloud and data.
- A three-week-long Codagon event for remote collaboration. The Codagon emphasizes co-creation by enabling team collaboration and real-time brainstorming, culminating in the evaluation of final solutions by the consortium.

These x-athons aimed to validate project technological outputs and gauge the data sharing culture. Additionally, they aimed to engage local ecosystems, gather innovators/incubators, and encourage participation in MobiDataLab actions.

Figure 1: MobiDataLab Living Labs

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2. Living Labs design and framework

2.1. Overview of Living Lab's Execution Plan

This chapter draws upon the comprehensive framework outlined in "D5.4 Living Labs Execution Plan", drafted in October 2022, before the implementation of the MobiDataLab Living Labs [2]. It encapsulates the strategic approach adopted for the execution and monitoring of the Living Labs within the MobiDataLab project, emphasizing the methodologies, design practices, and requirements that form the core of these innovative environments. The inception of the Living Labs in the MobiDataLab context was driven by a need to foster an integrated and collaborative approach in the realm of mobility data sharing among various stakeholders across Europe. The primary objective was to create a dynamic and interactive setting where real-world experimentation, user involvement, and iterative learning processes could converge to enhance the efficiency and effectiveness of mobility services.

The execution plan of the Living Labs was developed after conducting a comprehensive literature review and analysing existing case studies in the field. This provided a foundational understanding of the critical elements and success factors pertinent to Living Labs. The literature review encompassed a broad range of sources, including academic journals, industry reports, and white papers, focusing on the latest developments, innovations, and best practices in the realm of Living Labs. This review provided valuable insights into various aspects of Living Lab methodologies, such as user-centric design, stakeholder engagement, and iterative development processes. Furthermore, the examination of case studies offered practical, real-world examples of Living Labs in action. These case studies, drawn from diverse geographical and sectoral contexts, presented a rich tapestry of experiences and outcomes. They highlighted successful strategies, common challenges, and effective solutions, offering a nuanced understanding of what works in different scenarios. Particular attention was given to case studies that demonstrated excellence in areas relevant to the MobiDataLab's objectives, such as effective stakeholder collaboration, innovative data-sharing mechanisms, and the creation of sustainable, user-driven mobility solutions. The lessons drawn from these studies were instrumental in shaping the unique approach tailored for the MobiDataLab project.

Central to the execution strategy was the adoption of the Plan-Do-Check-Act (PDCA) methodology. As a notable advancement beyond conventional practices, the MobiDataLab project has forged a groundbreaking methodology for the inception and execution of mobility data labs. This innovative approach seamlessly integrates the well-established Plan Do Check Act (PDCA) tool, Figure 2, bolstering it with invaluable insights distilled from the iterative experiences of MobiDataLab Living Labs. These lessons learned from real world iterations have profoundly enriched our methodology, elevating it to a new standard of effectiveness and practicality. The PDCA cycle involves planning, executing, evaluating, and refining solutions iteratively. It ensures that innovations are not only ideated but also rigorously tested, refined, and aligned with real-world challenges. This methodology, rooted in the Living Lab concept, takes innovation a step further by actively involving a diverse range of stakeholders, including end-users, in each phase of the PDCA cycle.

The basic design principles of the MobiDataLab labs were planning, implementation, and finally the reviewing phase per iteration. The PDCA approach harmonises entirely with the MobiDataLab labs mainly because of the focus on the reviewing phase and the incorporation of the lessons learned (i.e. experiences and insights) from one iteration to the next one.

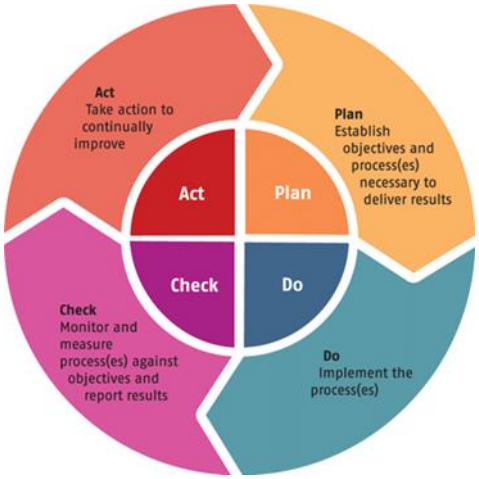

Figure 2: The Plan Do Check Act Cycle [3]

The graph below, Figure 3, illustrates the modified and enhanced PDCA cycle, specifically tailored to serve the unique needs and objectives of the MobiDataLab labs.

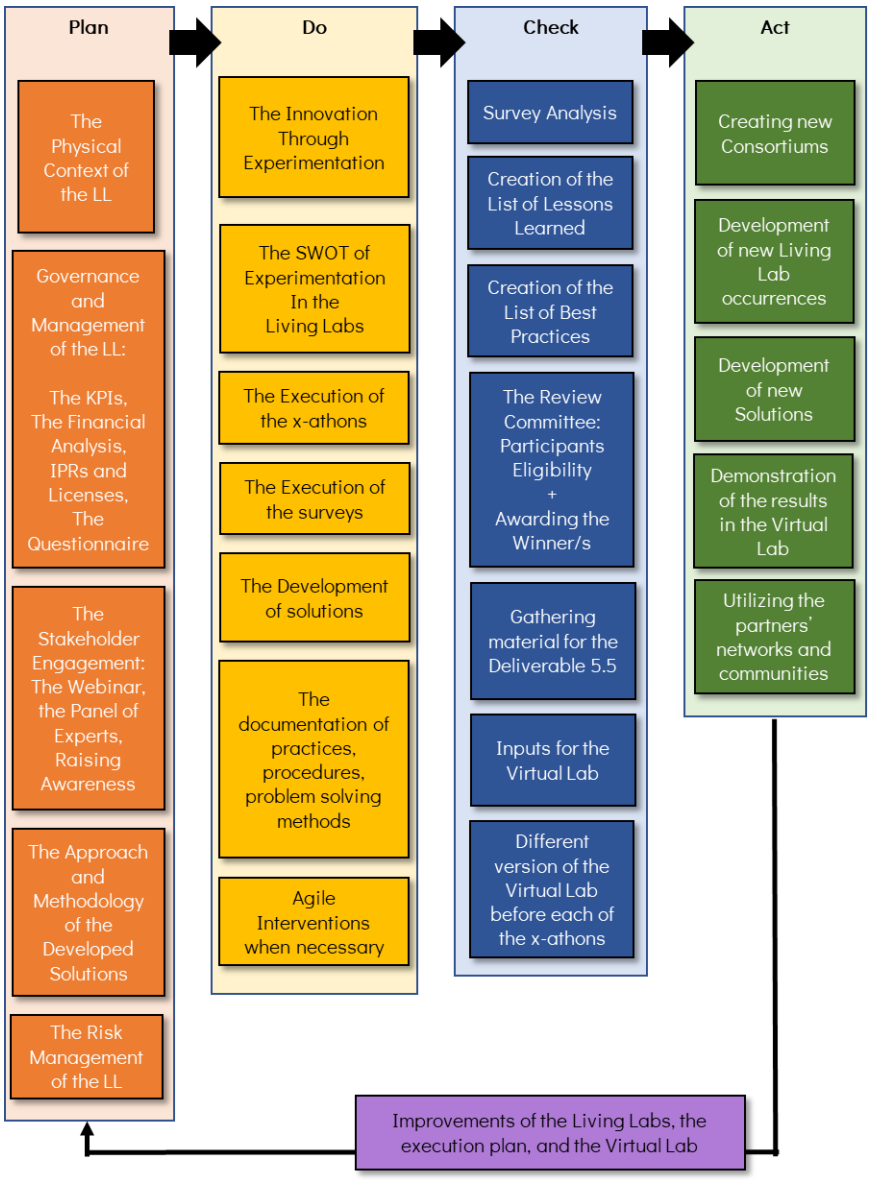

Figure 3: The Plan Do Check Act Cycle in the MobiDataLab labs [2]

This iterative process model was integral in ensuring a structured yet flexible approach to the planning, implementation, review, and enhancement of the Living Labs. Each phase of the PDCA cycle brought a distinct focus: from initial planning and preparation, through the practical execution of activities, to the review and assessment of outcomes, culminating in informed actions for continuous improvement.A critical additional step was the identification of the specific requirements and expected outcomes for each of the three distinct x-thons: the Datathon, Hackathon, and Codagon.

This process involved a thorough examination of the unique formats, objectives, and expected participants profiles of each event, ensuring that they were tailored to meet the specific needs and goals of the MobiDataLab project.

The expected outcomes from each x-thon varied depending on the nature of each event, ranging from data-driven solutions and innovative prototypes to actionable insights and collaborative projects. By predefining these outcomes, Figure 4, the MobiDataLab team was able to align the activities and resources of each x-thon and ensured that each event was optimally positioned to yield meaningful and impactful results, in line with the objectives of the MobiDataLab project.

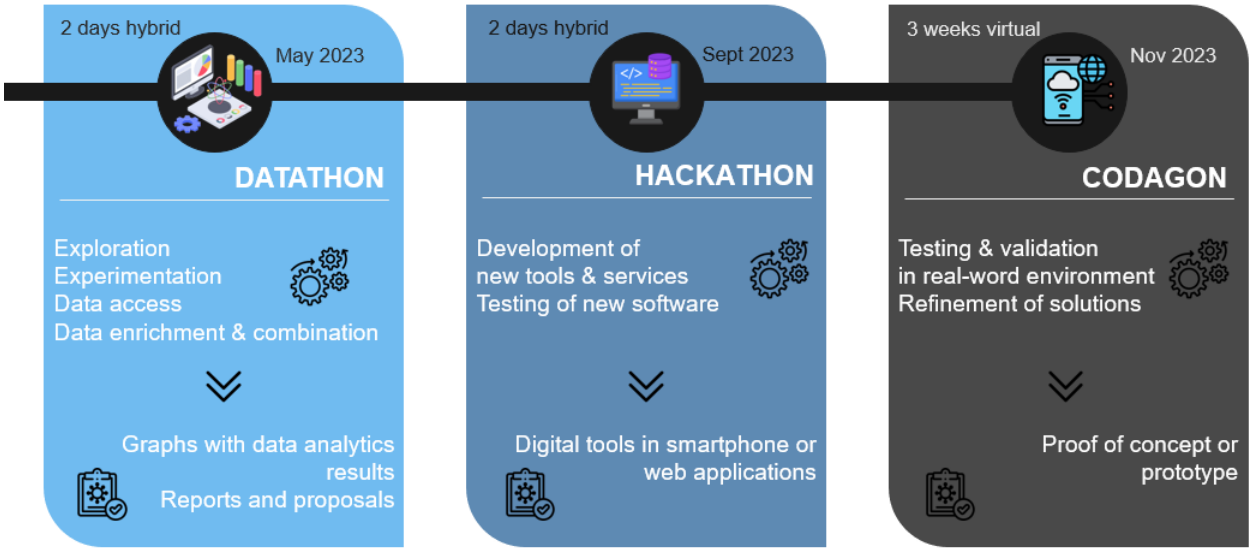

Figure 4: Different formats identified for the MobiDataLab x-thons

In designing the Living Labs, a multi-faceted approach was taken, addressing various aspects such as governance, management, Information and Communication Technology (ICT) infrastructure, and stakeholder engagement. These components were necessary in laying down a solid foundation for the Labs' operations but also ensured that diverse perspectives and needs were considered and integrated. The careful planning and attention to detail in these areas were vital in creating an environment conducive to experimentation, learning, and innovation. The next subchapter 2.2, highlights the key components identified within the Living Labs execution plan.

2.2. Key Components Defined in the Execution Plan

The critical elements forming the foundation of the Living Labs, as meticulously discussed in the Living Labs execution plan D5.4, are integral to understanding the operational dynamics and strategic approaches of these innovative environments.

Below, the key components, including physical execution parameters, governance, and stakeholder engagement strategies, are concisely summarised to provide a clear overview of the essential elements that underpinned the success and efficacy of the Living Labs within the MobiDataLab project.

Innovation through Experimentation

Central to the MobiDataLab Living Labs was the focus on fostering innovation through a hands-on, experimental approach. This methodology encouraged creative problem-solving and the development of novel solutions within the real-world settings of the Labs.

Physical Context of the x-athons

The physical settings of the Living Labs were crucial, with each location chosen for its ability to meet specific needs. Factors like location, cultural/social value, accessibility, and the ability to facilitate the activities of the x-athons were carefully considered to optimize the effectiveness of the Labs.

Governance and Management of the Living Labs

Effective management was key to the successful implementation of the x-athons. This included setting clear Key Performance Indicators (KPIs), financial analysis, managing intellectual property rights and licenses, developing surveys, and maintaining timelines for the execution of the x-athons.

ICT Infrastructure

A well-planned ICT infrastructure was essential for the operation of the Living Labs. This involved the assessment and implementation of various technologies, hardware, software, and networking resources to ensure that the Labs were well-equipped to handle the diverse needs of the projects and participants.

Stakeholder Engagement

Identifying and engaging a wide range of stakeholders was a critical component. Stakeholders from the public sector, universities, companies, and citizens played various roles in the Living Labs, such as Living Lab Manager, Innovators, Human Interactions Manager, Users, Problem Owners, Financial Actors, Pilot Managers, Context Providers, Project Managers, and Panel Managers. This diverse involvement ensured a broad range of perspectives and expertise, contributing to the richness of the Labs' outputs.

Approach and Methodology of Solutions Development

The methodology employed for developing solutions in the Living Labs was built around structured approaches like the PDCA cycle, ensuring systematic progress and allowing for continuous improvement based on feedback and analysis.

Relation to the Virtual Lab

The connection with the Virtual Lab was a vital component, as it extended the functionalities and reach of the Living Labs. It included features like forums, polls, live data exchanges, and live pair working. The Virtual Lab also played a critical role in collecting best practices and lessons learned, thereby contributing to the ongoing development and improvement of the Living Labs.Each of these components was interdependent and essential for the successful development and execution of the Living Labs. They provided a comprehensive framework for the Living Labs, ensuring that they were well-structured, effectively managed, and equipped to foster innovation and produce valuable results.

3. Execution and Monitoring of Living Labs

This chapter delves into the execution and monitoring of the Living Labs within the MobiDataLab project, focusing on the three pivotal events: the Datathon, Hackathon, and Codagon. Each Living Lab represented a unique opportunity to explore and harness the power of data sharing and collaboration in urban mobility.

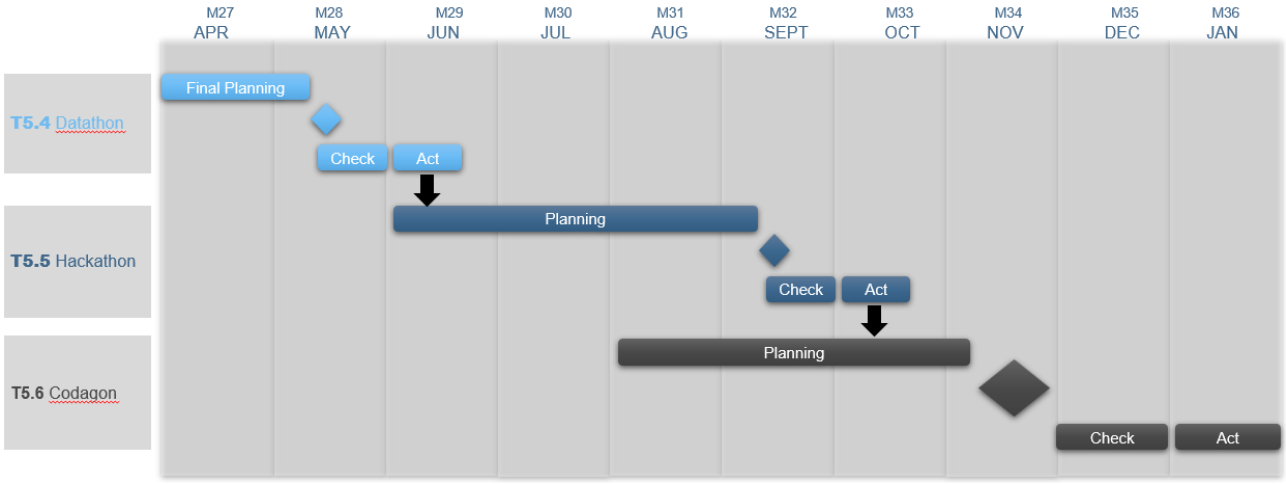

Figure 5: Final implemented x-thons Gantt Chart

The following sections detail the meticulous planning and strategic execution processes of these Labs, highlighting the continuous improvement and adaptation strategies employed to ensure their success.

3.1. Datathon

In the planning phase of the Datathon, the MobiDataLab team focused on raising awareness and engaging potential participants. This was achieved through a series of webinars that introduced the MobiDataLab project and detailed the upcoming Datathon event. More specifically, the first webinar with the central theme of the LivingLabs was organized by F6S, reaching 48 participants in total. It was part of the MobiDataLab webinar series and took place on March 22nd, 2023, titled "Exploring New Frontiers of Data Sharing: MobiDataLab Living and Virtual Labs". Within their talks, the partners presented the project, the Transport Cloud, the virtual and the living labs, as well as the Datathon.

The second webinar, titled "Datathon Instructions Webinar", was organized by HERE Technologies, reaching 69 participants, and took place on May 12th, 2023. The main purpose of this webinar was to provide Datathonists with an overview of the Datathon event, the challenges they will be solving, the rules and guidelines they need to follow as well as the technical resources they can utilise for their solution development.

Additionally, a Pre-Datathon event, involving students from the Technische Hochschule Würzburg-Schweinfurt, served to test and refine the Transport Cloud and other technical aspects of MobiDataLab. Logistics, such as venue selection and registration process setup, were also key components of this phase. The registration process was opened until one week before the event concluding in the final registration numbers:

- 71 teams applied or started the application for the event
- 54 teams were accepted (teams with incomplete registration, duplicate applications and withdrawn registrations were excluded)

The execution phase of the Datathon was marked by its hybrid format, blending on-site activities in Berlin with online participation. This format facilitated the involvement of a diverse group of participants from various countries. The on-site event took place in Berlin, next to the German headquarter of HERE Technologies at the Stellwerk Nordbahnhof in Berlin Mitte. This location has an historical significance in Berlin Mitte, as it used to be a “Ghost station” when Germany was divided in East- and West- Germany by the wall. [4] The choice of venue played a significant role in facilitating collaboration and experimentation. Organizers, reviewers, and participants shared the same space, allowing for real-time interaction, feedback, and exchange of ideas. This setup was conducive to an environment of co-creation, where participants could immediately apply insights and suggestions to their ongoing projects.

During the Datathon, a presentation was given by the NAPCORE initiative at the beginning of the event. NAPCORE is an external entity to the MobiDataLab project, and the presentation provided participants with a broader understanding of data sharing and mobility. This presentation set the stage for the activities that followed. A crucial aspect of the execution phase was the incorporation of external reviewers in the evaluation of the solutions submitted by participants. These reviewers, the majority of whom were present on-site, brought diverse perspectives and expertise to the assessment process. Their presence enhanced the evaluative rigour of the Datathon but also fostered direct interactions with participants during the solutions development. Eleven solutions were submitted during the Datathon. Each submission consisted of three slides describing the solution. Based on these slides, the review committee scored the solutions during the solutions evaluation slot on the second day of the Datathon.

Finally, the Datathon concluded with a networking reception, providing an informal setting for participants, organisers, and reviewers to connect and discuss their experiences. This reception served as an opportunity for further engagement and collaboration, allowing the relationships and ideas sparked during the Datathon to continue evolving beyond the confines of the event.

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Figure 6: MobiDataLab Datathon

The review phase of Datathon was carried out to analyse the results and feedback obtained from the event. The main objective of this phase was to identify the successful areas and the aspects that would require improvement in future iterations. The purpose of documenting the lessons learned and insights gained from this event was to guide the planning and execution of subsequent Living Labs within the MobiDataLab project.

This comprehensive approach to planning, executing, and reviewing the Datathon aimed to address the challenges and opportunities inherent in data sharing and collaboration in urban mobility, within the scope of the MobiDataLab project. A more detailed description of the Datathon instance is provided within D5.6 deliverable “Report on Datathon” [4].

3.2. Hackathon

The planning of the Hackathon was spearheaded by the WP5 team, with Hove taking the lead as the local coordinator. A comprehensive hour-long virtual webinar, titled “Hackathon Instructions Webinar,” was held on September 12, 2023. This webinar served to confirm the Hackathon details to participants, outlining organizational aspects and proposed challenges.

The agenda covered a broad range of topics, including the project overview, presentation of the Hackathon challenges and the rules and guidelines of the Hackathon competition with interactive sessions for questions and answers.

Registration was facilitated through the F6S portal, requiring applicants to create an account and fill out an application form. The MobiDataLab team conducted a review process post-application to ensure participant eligibility and to communicate additional Hackathon details. The promotional strategy for the Hackathon was multifaceted, leveraging personal emails, project partner networks, social media platforms (LinkedIn, Twitter), and the official MobiDataLab website. Additional promotional efforts included outreach to coding schools, startups in the mobility sector, Parisian incubators, universities, and research institutes in urban planning and transport through outreach and internal newsletters of POLIS. The Hackathon registered teams reached the following numbers:

- 56 teams applied or started the application for the event
- 32 teams were accepted (teams with incomplete registration, duplicate applications and withdrawn registrations were excluded)

Some registrations were individual, whereas others comprised of teams including 2-4 team members. During the first day of the Hackathon, individuals teamed up to combine skills and exchange ideas.

The Hackathon took place from September 15th to 16th, 2023, with a mix of in-person and virtual activities. The on-site event was hosted at makesense venue a coworking space in Paris near La Bastille, adjacent to Hove headquarters. This venue was more than just a workspace; it was a hub for collaboration, fostering a spirit of mutual aid, and a breeding ground for sustainable and inclusive projects. The Hackathon commenced with participant registration and an introductory session, setting the stage for the day's activities. This session covered details about the MobiDataLab project and the specific challenges of the Hackathon. Most of the day was dedicated to the actual 'hands-on' Hackathon, where participants engaged intensely with the challenges, culminating in a conclusion session to wrap up the day's proceedings. The second day began with an opening session, followed by another intense 'hands-on' Hackathon session. After a lunch break, the participants resumed their work, leading up to the pitch session. This was followed by jury deliberations and the awards session, concluding with a networking time for all Hackathon stakeholders.

Throughout the Hackathon, various communication channels were established to facilitate seamless interaction among participants, organizers, and evaluators. The event was broadcast via a Zoom webinar, ensuring wide accessibility. An external service provider was engaged to film and broadcast the event, capturing the essence and atmosphere of the Hackathon. For more interactive sessions, a Slack channel enabled direct communication and collaboration among the participants. Additionally, a dedicated email address was set up to address any issues with other communication channels, ensuring that support requests were resolved in real time by both on-site and online teams.

The Hackathon heavily relied on the Transport Cloud data catalogue, accessed via the Virtual Lab frontend, which consisted of a multitude of datasets. These were collected, harvested, and continuously updated throughout the project's lifecycle. Available on open data portals and specially provided by reference group members for the Hackathon, these datasets formed the backbone of the challenges and solutions devised during the event.

Twelve solutions were submitted during the Hackathon. Each submission consisted of a presentation/pitch describing the solution. Based on the live pitching implemented on the second day of the Hackathon, the review committee evaluated and scored all solutions.

The Hackathon, as part of the MobiDataLab project, successfully exemplified the integration of meticulous planning, diverse promotion, and effective execution. It fostered a collaborative environment conducive to addressing challenges in mobility data sharing. The rich data resources available through the MobiDataLab data catalogue provided a solid foundation for participants to develop innovative solutions, and the event's hybrid format ensured broad participation and engagement, both onsite and online.

A more detailed description of the Hackathon instance is provided within D5.7 deliverable “Report on Hackathon” [5].

Figure 7: MobiDataLab Hackathon

3.3. Codagon

Codagon, derived from the English word "code" and the Greek word "agon", meaning contest, was the third and final Living Lab of the MobiDataLab project. It had a distinct structure compared to its predecessors, the Datathon and Hackathon. This event spanned three weeks, focusing on remote collaboration from 6th to 24th of November 2023 and concluded with an onsite award ceremony on the 27th of November 2023 at KU Leuven, followed by the project's final event on the 28th. Unlike the shorter, more intensive formats of the previous events, Codagon's extended duration was designed to facilitate in-depth co-creation and brainstorming, leveraging the technological and collaborative capabilities of the MobiDataLab platform. The planning phase of Codagon was instrumental in integrating various elements into a structured event. This stage involved detailed strategising and structuring, aiming to align the competition with the overarching goals of the MobiDataLab project. Key aspects such as stakeholder engagement, challenge definition, registration processes, and promotional strategies were methodically planned. The master plan was essential in guiding the diverse activities, ensuring a coherent progression from concept to execution.

The target for participant engagement in Codagon was initially set at 80 participants as described in the Grant Agreement document of the MobiDataLab project. The event eventually registered 54 teams, with a total of 98 participants, indicating a strong response. This group comprised startups, researchers, developers, and students, representing diverse geographical locations including Europe, Africa, the United States, and Canada.

The execution phase of Codagon marked by a series of interactive and informative online activities that led to the prestigious onsite award ceremony in Leuven, Belgium. Key activities included:

- Kick-off Webinar: Launched the competition, providing an overview of the challenges and resources available for participants. The webinar reached 63 attendees, including project members, challenge representatives, and reviewers.
- Challenges Q&As: Facilitated deeper understanding of the problem statements through interactive sessions with challenge providers.
- Technical Support Webinars: Offered guidance on using the MobiDataLab tool stack and other resources.
- Panel Discussions: Featured domain experts and thought leaders discussing urban mobility landscapes.
- Pitching Sessions: Participants showcased their solutions to the Codagon reviewers resulting in real-time scoring and feedback provision.

The Codagon award ceremony was held in KU Leuven, Belgium, and marked the culmination of Codagon, where groundbreaking solutions were recognized and celebrated, highlighting the transition from ideation to tangible impact, Figure 8.

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Figure 8: Codagon Award Ceremony at KU Leuven

The Codagon event was more than just a competition; it was a dynamic platform for collaboration, innovation, and the exchange of ideas. The diversity of the participants and the breadth of the challenges addressed underscored the event's success in bringing together various stakeholders from different backgrounds to collaborate on real-world urban mobility challenges. The unique format of Codagon, spanning three weeks and culminating in an onsite ceremony, allowed for a deeper level of engagement and development of solutions compared to the shorter formats of the Datathon and Hackathon. This extended period for collaboration and innovation not only provided the participants with ample time to refine their ideas but also facilitated a more thorough exploration of the complex issues surrounding urban mobility and data sharing. In summary, Codagon stands out in the MobiDataLab project as a pioneering initiative that successfully leveraged a longer format for more in-depth collaboration and innovation in the field of urban mobility and data sharing. The Codagon model could serve as a blueprint for future events aiming to foster innovation and collaboration in data-driven solutions for urban mobility.

4. Living Labs and Virtual Lab: Integration and Feedback

The Virtual Lab represents a cutting-edge tool designed for the objectives of the MobiDataLab project. As a cornerstone of the project, the Virtual Lab is equipped with a suite of functionalities that include forums, data sharing, challenges creation, and more. It embodies the principles of co-creation, exploration, experimentation, and evaluation, which are central to the ethos of the MobiDataLab project. The Virtual Lab's architecture and components have been meticulously crafted to support the intricate needs of the Transport Cloud, providing an interactive and user-friendly environment for participants. Through its various versions, the Virtual Lab has evolved to include all major functionalities envisioned for hosting a living lab, creating challenges, submitting solutions, and facilitating the access, exchange, reuse, and enrichment of mobility data. For more information about the platform functionalities and design aspects, refer to D5.1 report 'The Virtual Lab' [6].

Feedback from users and the testing of the Virtual Lab by Living Labs participants are integral to its continuous improvement. This feedback is incorporated as enhancements and updates, ensuring that the platform remains responsive to the evolving requirements of the project and its users. This chapter provides an overview of how feedback mechanisms and log reporting have been integral to refining the Virtual Lab experience. This structure not only highlights the importance of feedback in the iterative development process but also showcases the tangible improvements and adaptations made in response to user input, thus underlining the project's commitment to user-centered design and continuous improvement.

4.1. Feedback Mechanisms and Log Reporting

This section focuses on the processes and tools used to collect and analyse feedback from the Living Labs activities and the Virtual Lab usage. More specifically, we explore how feedback from the Living Labs was integrated into the Virtual Lab platform, and the role of log reporting in this process. Additionally, we present how the backlog was managed and utilised by the development team for continuous improvement.

The MobiDataLab project's Virtual Lab platform has been a cornerstone for the Living Labs' activities, emphasizing co-creation, exploration, experimentation, and evaluation. Feedback mechanisms and log reporting have been integral in shaping the evolution of the Virtual Lab. The initial versions of the Virtual Lab were developed with an "Act" phase post each Living Lab event, wherein the development team evaluated feedback from participants. Additional key activities that contributed to feedback collection included the pre-Datathon executed by HERE Technologies and a real-life testing session during the consortium's 4th General Assembly. During these activities, functionalities like subscribing, hosting Living Labs, updating details, and adding challenges were tested. The collected feedback from all these activities played a crucial role in identifying and implementing improvements and updates.

The project has established multiple channels to gather feedback from users, with the most utilized being direct email communications and messages within each Living Lab's communication tools (e.g., Slack, Zoom, Discord). Additionally, a feedback form was developed within the Virtual Lab, allowing users to report any issues or bugs encountered. Post-event, participants were asked to complete an online survey focusing on user experience and their overall impression of the platform. These channels collectively facilitated a continuous influx of feedback from a range of stakeholders, including Living Lab participants, project team members, and external users. The feedback underwent a comprehensive analytical process. Qualitative feedback was examined for recurring themes and patterns, while quantitative data from surveys were analysed statistically. This dual approach provided a well-rounded understanding of user experiences and expectations. Additionally, periodic focus group discussions were held, drawing in a diverse group of users, including development team or task members. These discussions offered a more granular perspective on specific features and functionalities of the Virtual Lab.

For real-time log reporting, the Virtual Lab development team employed a standard product management tool. These logs yielded vital insights into user behaviour, interaction patterns, and areas needing improvement. Log data were also instrumental in monitoring performance metrics, such as load times. Insights from feedback and log reports played a crucial role in the Virtual Lab's iterative development process, with user feedback significantly influencing the prioritization of new features and improvements in subsequent versions.

A structured change management process was established to integrate user feedback into the development pipeline, ensuring that changes were methodically tested and implemented without impacting the Virtual Lab's ongoing functionality. Before finalizing significant updates or changes, a select group of users was invited to test and validate new features.

This validation process was crucial to ensure that the changes aligned with user needs and effectively enhanced the platform's overall functionality.

4.2. Impact on Virtual Lab Improvement

Following the experiences and insights gained from the all the testing activities including Datathon, Hackathon, and Codagon, the Virtual Lab within the MobiDataLab project has undergone significant updates and enhancements.

The feedback and testing activities significantly impacted the development of the Virtual Lab, particularly in its transition from its first version presented in Deliverable D5.1 “The Virtual Lab” to its current MVP state. The complete redesign of the Virtual Lab is a testament to the incorporation of user feedback.

This redesign reflected the project's goal to develop an innovative space for exploration and co-creation.

4.2.1. Evolution Pre-Datathon

- User Interface Overhaul: The Virtual Lab was completely redesigned with a modern, intuitive aesthetic, featuring a darker background, vivid colour palette, sharper edges, and 3D elements to enhance user engagement and experience.
- Metadata Catalogues Integration: Integration of CKAN and GeoNetwork metadata catalogues from the MobiDataLab Transport Cloud into the Virtual Lab allowed users to browse a wide range of dataset sources and obtain detailed information about each dataset directly within the Virtual Lab environment. This feature streamlined the user experience by providing seamless access to critical data resources.
- Improved Services and Accessibility: The integration of services provided by various consortium partners via an iFrame interface enabled users to navigate and access the MobiDataLab assets directly. This integration was key to the successful completion of the Living Labs, as it allowed participants to effectively utilize the tools and embed them into their solutions.
- Terms and Conditions and Privacy Policy Updates: The implementation of comprehensive Terms and Conditions and Privacy Policy within the platform was crucial in ensuring user awareness and compliance with platform guidelines and GDPR regulations. These updates enhanced the legal framework and user understanding of the platform's operations.
- Central Challenges Interface: The introduction of a central challenges page simplified user navigation and access to challenges.
- Flexible Solution Submission: The solution submission process was refined to accommodate specific requirements of the Datathon, including the ability to submit presentations in various formats and the inclusion of dataset references used in solutions. This facilitated a more efficient and comprehensive review process.
- Simplified Navigation Menu: The replacement of the previous navigation bar and sidebar with a simpler, more intuitive menu significantly reduced the navigation learning curve, improving the overall user experience on the platform.
- Enhanced Challenge Experience: Challenges were augmented with direct links to related datasets, providing contestants with immediate access to relevant data.
- Optimized User Interface: Reorganization of user action buttons, including prominent call-to-action features on the profile dashboard, to improve accessibility and user interaction.

4.2.2. Enhancements Post-Datathon

- Diversified Dataset Availability: Expansion in the variety of datasets available, coupled with a focused selection of challenges, aimed to enhance user engagement and the quality of solutions.
- Platform Responsiveness Improvements: Significant upgrades were made to ensure a fully responsive experience across various devices, catering to a wider user base.
- Expanded Submission File Types: Acceptance of a broader range of file formats for solution submissions, encouraging greater flexibility and inclusiveness in participant contributions.
- Social Media Integration: Introduction of social media account linking during user subscription, enhancing participant visibility and community engagement.

- Guided Input Fields: Addition of clearer descriptions to various input fields, aiding users in providing accurate and comprehensive data.

4.2.3. Developments Post-Hackathon

- Community Networking Enhancement: Addition of a community network page to foster better connectivity and collaboration among the platform users.
- Introduction of Ranking System: Implementation of a user ranking feature based on solution submissions, adding a competitive and motivational aspect to the platform.
- Public Profiles Implementation: Establishment of public profiles for users to display their expertise and accomplishments, promoting interaction and collaborative opportunities.
- Challenge Achievement Recognition: Introduction of badges for challenge achievements, providing users with a tangible marker of their successes and participation.
- Extended Comment Capacity: Expansion of the comment length limit, allowing users to provide more comprehensive and insightful feedback on challenges.

5. Analysis of Living Labs Occurrences

This section of the report delves into a comprehensive evaluation of the MobiDataLab Living Labs, a pivotal component of the project. It outlines the methodologies employed to assess each occurrence, including questionnaires, surveys, data analysis techniques, one-on-one meetings, and feedback from all stakeholders. This chapter also presents and interprets the findings from these assessment tools, offering a detailed analysis of the questionnaire results. Finally, it assesses the success of the Living Labs by evaluating the project's performance against its predefined Key Performance Indicators (KPIs), providing a critical overview of the achievements and areas for improvement within the MobiDataLab project.

5.1. Assessment Methodology

The evaluation of the MobiDataLab Living Labs was meticulously conducted through a comprehensive, multifaceted methodology designed to gather a broad spectrum of insights and feedback from various stakeholders. This approach was integral to understanding the effectiveness and impact of the Living Labs in a nuanced manner.

Structured questionnaires and surveys formed a primary tool in this evaluation process. Distributed to all participants at the end of each Living Lab, these instruments were tailored to capture quantitative data on user satisfaction, relevance of challenges, effectiveness of communication channels, and the overall experience. The objective was to secure a well-rounded perspective on the Living Labs' performance. The results of the questionnaires are presented in the following chapter 5.3.

In addition to these quantitative tools, qualitative feedback played a crucial role. Individual discussions with participants during the execution phase of each Living Lab (especially during the networking sessions) offered depth and context, revealing insights into personal experiences, suggestions for improvement, and specific observations on various aspects of the Living Labs. This qualitative approach complemented the statistical data, providing a more holistic view of the Living Labs' impact.

Monitoring and reporting tools were employed throughout the Living Labs, tracking progress, participation levels, engagement rates, and other relevant metrics. This continuous monitoring provided real-time data crucial for immediate adjustments and informed the long-term assessment strategy, ensuring that the Living Labs remained aligned with their intended goals and objectives.

The evaluation also placed significant emphasis on obtaining feedback from all stakeholders, including task members, external reviewers, and consortium partners. This inclusive strategy ensured that diverse perspectives and experiences were accounted for, offering a comprehensive picture of the Living Labs' effectiveness. External reviewers, with their expertise in data sharing initiatives, contributed valuable insights, especially in assessing the technical aspects and the overarching impact of the Living Labs. Their input was instrumental in contextualising the findings within the broader field.

Interactive workshops and discussion forums, primarily organised by the task partners during the planning phase of each Living Lab, served as dynamic platforms for assessing and refining the Living Labs' approach. These sessions, focused on evaluating findings from previous iterations, played a critical role in shaping the planning for the subsequent iteration. They provided opportunities for open discussions, idea exchanges, and collaborative reflections on the lessons learned. During these workshops, partners engaged in detailed analyses of what worked and what could be improved, setting the stage for enhanced execution in future iterations. This iterative process of reflection and improvement was pivotal in enriching the overall evaluation and development of the Living Labs.

5.2. Performance Evaluation

In assessing the success of the Living Labs within the MobiDataLab project, it's crucial to evaluate how the project performed against its predefined Key Performance Indicators (KPIs). The Living Labs KPIs were defined with the project's Grant Agreement and played a crucial role during all phases of the MobiDataLab Living Labs, page 12 of Part B, chapter 1.1.3.2 [1].

KPI: 3 Living Lab Occurrences to be Accomplished

This KPI was successfully met. The MobiDataLab project effectively conducted three Living Labs: the Datathon, Hackathon, and Codagon. Each event was implemented as planned, fulfilling the project's objective of organising three distinct Living Labs.

KPI: 40 SMEs/Innovators Participating in the Datathon and Hackathon

The Datathon saw significant interest with 71 teams applying, and 54 teams (consisting of 81 individuals) accepted and completed the application. This indicates strong engagement from SMEs and innovators, surpassing the KPI target for this event.

The Hackathon also witnessed considerable participation, with 56 teams starting the application and 32 teams (comprising 50 individuals) completing it. Although the number of teams completing the application was below the Datathon's, the combined total for both events indicates a robust participation level.

KPI: 80 SMEs/Innovators Participating in the Codagon

The Codagon event attracted substantial interest, with 78 teams beginning the application process. A total of 56 teams, comprising 98 individual participants, completed their applications. This figure signifies a remarkable achievement, meeting the notably ambitious target of 80 SMEs/innovators set for the Codagon.

Unlike the more conventional short-term formats of the Datathon and Hackathon, Codagon spanned three weeks, primarily in an online setting, with a single day on-site. This extended and hybrid format posed unique challenges in terms of maintaining sustained engagement and participation over a longer period. This experience provides valuable lessons for future projects, indicating that setting high targets, while challenging, can lead to exceptional outcomes if supported by strong planning and execution.

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The achievement of these KPIs demonstrates the MobiDataLab project's success in engaging a diverse and extensive group of SMEs, innovators, and other stakeholders across the three Living Labs. The numbers reflect not only the interest and involvement of these groups but also underscore the project's capability to attract and retain participants through its phases.

KPI: 80% of participants to be appreciative and satisfied with the technical outcomes of x-athons

The MobiDataLab project's Living Labs were evaluated against the Key Performance Indicator (KPI) of achieving 80% participant satisfaction with the technical outcomes of x-athons. However, the assessment presented a complex scenario due to the additional feedback received from participants regarding the efficiency and inspiration derived from the final outcomes and solutions.

The initial assessment showed that most participants expressed agreement or strong agreement with the technical outcomes, indicating a positive trend in participant satisfaction. However, a significant portion of the participants remained neutral, suggesting a potential gap in fully meeting participant expectations or in the comprehensive showcasing of the technical outcomes. This aspect of neutrality in participant responses poses an interesting challenge in the overall assessment of satisfaction.

Further, responses to whether participants found the final outcomes efficient and inspiring show a similar trend. Although the majority viewed the final solutions positively, the presence of neutrality persisted. This consistency in neutrality across both sets of responses suggests areas where the Labs might not have fully resonated with all participants, possibly due to limited engagement during online events, insufficient exposure to a range of solutions developed, or the need for clearer communication on the impact and relevance of the outcomes.

Therefore, to improve the participant experience in future iterations of the Living Labs, it becomes crucial to adopt strategies that promote more active engagement and comprehensive exposure to the solutions developed.

This approach might include enhanced engagement techniques, particularly in online formats, and ensuring broader exposure to all solutions, not just the winning entries. Such measures could potentially reduce the rate of neutrality and elevate overall satisfaction levels.

Overall, while the target of 80% satisfaction was not entirely met, the overall positive reception to the technical outcomes and final solutions indicates a measure of success. However, the consistent rate of neutrality across responses underscores the importance of continuous improvement, particularly in refining engagement and communication strategies. This nuanced understanding is crucial for the ongoing refinement of the Living Labs' methodology and structure, aiming to enhance the participant experience in future collaborative endeavors.

KPI: 10 experts participating in panel discussions and ideation activities in the datathon and codagon

This KPI aimed to ensure that the events were enriched with expert insights and diverse perspectives, contributing to the depth and quality of discussions.

Expert Participation in the Datathon: At the outset of the Datathon, a representative from NAPCORE, presented the initiative, followed by a Q&A session with participants on accessing and utilising National Access Points (NAPs). This session provided an opportunity for direct engagement between participants and an expert in the field, setting a knowledgeable tone for the event.

Codagon Panel Discussion 1: "Accelerating Your Solution: Opportunities for Growth": The panel featured Aleksandar Zobec (Innovation Manager at F6S), Jordi Casas (City Development Manager at EIT Urban Mobility), and Hannah Boomgaarden (Senior Manager of Open Innovation at PLUG AND PLAY). This discussion offered insights into growth opportunities and innovation acceleration, crucial for the participants developing their solutions post-competition.

Codagon Panel Discussion 2: "Combining Data from Different Sectors": This panel included Marco Comerio (Mobility Research Lead & PMI-PMP project manager at CEFIREL), Rodric Frederix (Senior Researcher at Transport and Mobility Leuven), Luca Pappalardo (Senior Researcher at CNR and part of the SOBIGDATA project), Tu-Tho Thai (Manager, Projects & Partnerships at ITxPT), and Johannes Lauer (Principal Technical Product Manager at HERE Technologies). The discussion focused on the integration of data across various sectors, providing a multi-dimensional perspective on data usage in mobility.

The successful engagement of experts in the Datathon and Codagon not only met but significantly enhanced the project's objective of expert participation. Their diverse insights deepened participants' understanding of urban mobility and data sharing, inspiring innovative thinking, and broadening perspectives on key topics. This collaboration underscored the project's commitment to incorporating professional insights, enriching the learning and developmental environment of the Living Labs.

KPI: 3 versions of the Virtual Lab based on feedback from Living Labs & KPI: Identification and implementation of at least 10 improvements for each version of the Virtual Lab

The KPIs pertaining to the development of three versions of the Virtual Lab and the identification and implementation of at least 10 improvements for each version were successfully met, as detailed in Chapter 4.2. This accomplishment underscores the iterative and responsive nature of the Virtual Lab's development, driven by constructive feedback from the Living Labs.

KPI: 2 established collaborations among SMEs/innovators participants of Living Labs and data owners

The MobiDataLab project set a KPI to establish two collaborations between SMEs/innovators participating in the Living Labs and data owners, primarily municipalities. While the Living Labs effectively acted as facilitators, bringing these groups together and demonstrating the capability of innovators to develop solutions for real-world challenges, the formalisation of these interactions into concrete collaborations presents inherent challenges. The responsibility for formalising collaborations, such as service agreements or real-life pilots, lies beyond the immediate scope of the Living Labs. The project successfully showcased the potential and readiness of innovators, laying the groundwork for potential collaborations. However, the decision to move forward with more formal partnerships depends on the strategic priorities and objectives of the data providers. In this context, the MobiDataLab project has played a crucial role in initiating these connections and highlighting the possibilities for future formal collaborations.

5.3. Questionnaires' Results and Analysis

In this section, we delve into the findings from the questionnaire titled "Assessment of the Living Lab" This questionnaire was a critical tool in gauging the effectiveness, impact, and overall success of the Living Labs within the MobiDataLab project.

The responses gathered provide valuable insights into participants' experiences, satisfaction levels, and the areas that stood out as well as those that may need improvement. This analysis aims to synthesize these findings, offering a clear and concise overview of the Living Labs' outcomes as perceived by the participants.

The limited response rate poses a challenge in drawing comprehensive conclusions about the Living Labs' overall effectiveness and participant satisfaction.

This analysis, while based on the available data, should be considered in the context of these limitations in response rates.

While all quantitative answers from the questionnaire are comprehensively compiled in Annex 1, this chapter aims to highlight and interpret key findings that are particularly indicative of the Living Labs' performance and impact. This focused analysis will enable us to distil essential insights from the participants' feedback, shedding light on areas such as participant satisfaction, effectiveness of the Living Labs in meeting their objectives, and potential areas for improvement.

By concentrating on specific responses, we can delve deeper into understanding the participants' perspectives, identifying trends, and drawing meaningful conclusions that can inform future iterations of the Living Labs.

- **Effectiveness of Participation in the Labs:** The general sentiment among participants indicates a productive experience, with many expressing that their involvement was significantly beneficial. This points to a high value derived from the Living Lab activities. However, a portion of participants reported mixed experiences, signalling areas where the labs could potentially be more engaging or relevant to all attendees.
- **Understanding of Challenge Descriptions:** Participants' responses varied regarding the comprehensibility of challenges. While a noticeable segment found the challenges easy to understand, indicating clarity in their presentation, there was also a significant number of participants who struggled with comprehension. This variation suggests a need for more universally accessible challenge descriptions, potentially catering to a wider range of backgrounds and expertise levels.
- **Stimulation of Provided Challenges:** Many participants found the challenges intellectually stimulating, suggesting that the labs were successful in engaging their problem-solving and creative skills. However, the existence of neutral responses indicates that not all challenges resonated equally with every participant, pointing towards a potential refinement of challenge design to ensure broader appeal and engagement.
- **Satisfaction with Final Outcomes/Solutions:** A large number of participants viewed the final outcomes and solutions as efficient and inspiring, reflecting positively on the Living Lab's ability to foster impactful innovation. The presence of neutral responses, however, indicates room for enhancement, possibly in the practical application or the presentation of these outcomes.

- **Willingness to Share Data Post-Participation:** There was a noticeable shift towards a greater willingness to share data among participants, a key objective of the Living Labs. This shift signifies the labs' role in positively influencing attitudes towards data sharing. However, the presence of some reluctance or neutrality in sharing data underscores the need for continued efforts to build trust and demonstrate the value of data sharing.
- **Success in Experimentation and Co-Creation:** The majority of participants felt that the environment fostered effective brainstorming and experimentation, crucial for co-creation and innovation. Nevertheless, the feedback also highlights some missed opportunities in facilitating collaboration effectively for all groups, suggesting a need for more inclusive or diverse methods of engagement.

The questionnaire results reflect a generally positive experience among participants in the Living Labs, with notable achievements in areas like the effectiveness of participation, stimulation from challenges, and fostering a culture of data sharing. However, the presence of neutral responses across several areas suggests room for improvement in aspects such as clarity in challenge descriptions, engagement levels in tasks, and facilitating universally effective brainstorming and experimentation sessions.

These insights are crucial for enhancing future iterations of the Living Labs, ensuring more consistent and universally positive experiences for all participants.

6. Good Practices and Lessons Learned

In the journey of the MobiDataLab project, the organisation and execution of the Datathon, Hackathon, and Codagon events have been pivotal milestones. These events, each unique in their scope and objectives, have provided a wealth of practical experiences, insights, and learnings. This chapter delves into the crucial lessons learned from these events, offering a reflective analysis that is instrumental for the planning and execution of future initiatives within the realm of mobility data sharing and beyond.

The essence of these lessons transcends the specificities of each event, encompassing broader themes such as effective communication strategies, the importance of diverse and skilled teams, the challenges and opportunities of hybrid event formats, and the nuances of participant engagement over varying durations and formats. These learnings are not just retrospective but are forward-looking, providing a guiding framework for future projects and initiatives.

The following subchapters focus on both the successes and the challenges encountered. The successes serve as a testament to the strategies and practices that worked well, setting a benchmark for future endeavours.

Conversely, the challenges faced – and more importantly, how they were addressed – offer invaluable insights into adaptive strategies, resilience, and the agility required in dynamic project environments.

6.1. Lessons Learned

6.1.1. Datathon Lessons Learned

The MobiDataLab Datathon, being the inaugural iteration of the MobiDataLab Living Labs, presented a unique learning opportunity.

Despite certain challenges, the successful implementation of the event provided valuable insights for future iterations [4].

Clearly Defined Roles and Responsibilities

The importance of establishing clear roles and responsibilities for each partner involved in each Living Lab instance cannot be overstated. A lack of understanding regarding responsibilities and interdependencies among task partners led to imbalances and confusion, impeding progress and cooperation. Ensuring a fair and balanced distribution of work and clearly defining dependencies, requirements, and internal procedures of each organisation is crucial to promote a collaborative environment and allow all partners to thrive.

Effective Communication and Coordination

Regular communication and coordination are essential for the success of such events. Forming a task force team for each Living Lab that facilitates open, transparent communication and regular progress updates can prevent misunderstandings and allow for timely adjustments or support when needed. One critical feedback received during the execution of the Datathon concerned the communication of important information and changes during the event. The lack of a clearly defined communication strategy led to confusion and disconnection among participants. To remedy this, future events should adopt regular updates and announcements from a centralized point of contact. This approach will ensure clarity, reduce misunderstandings, and maintain consistent engagement with participants throughout the event.

Challenges of a Hybrid Participation

The Datathon allowed for both on-site and virtual participation, presenting unique challenges. On-site participation typically fosters stronger networking, collaboration, and in-person support. However, a virtual-heavy environment can limit these opportunities, affecting the overall experience and potential for connection. Virtual platforms may also face technical issues, leading to miscommunications or delays in virtual communication. Additionally, tracking virtual participants' activities and engagement levels can be challenging, impacting effective coordination and mentorship.

Adaptability to event planning

The organisers considered adapting to a fully virtual setup depending on the mix of on-site and virtual registrations. However, with an increasing rate of on-site participation and logistical constraints, a hybrid nature for the Datathon was maintained. This decision underscores the importance of flexibility and adaptability in event planning.

Streamlined Communication Channels

The Datathon utilised multiple communication channels, causing confusion and making it difficult for participants to track important updates. For future iterations, it is recommended to use streamlined communication channels. A centralized communication platform or channel accessible to all participants can reduce confusion and aid in tracking important updates and discussions. A platform like Microsoft Teams with integrated video and chat functionalities can be effective in centralizing and streamlining all communications.

Effective event promotion

Effective strategies to increase event participation included direct outreach to potential participants, extending the registration deadline, and partnering with universities, tech companies, and local meetups. These actions helped in reaching a broader audience and ensured a diverse participant pool. Additionally, to raise event awareness and reach a wider audience, the organisers leveraged social media and other innovation networks effectively. Sharing information through European Commission channels like DG RTD and CINEA also contributed to a higher reach and awareness.

6.1.2. Hackathon Lessons Learned

Webinar for Reviewer Instruction

A dedicated webinar for the Review Committee proved to be a successful action, ensuring reviewers were well-prepared and actively engaged throughout the event. This preparation improved the quality of evaluations and overall reviewer engagement. Future iterations should prioritize detailed preparation and communication for reviewers.

Diverse Reviewer Panel

Inviting a diverse and multidisciplinary panel of reviewers from various backgrounds and areas of expertise resulted in more comprehensive and insightful evaluations. This diversity brought unique perspectives to the evaluation process, enhancing the quality of discussions and decision-making. Future events should continue to seek a diverse range of skills and knowledge among reviewers.

Incorporation of Pitching Sessions

An improvement from the Datathon, the Hackathon included live pitching sessions, significantly increasing participant engagement and interest. This format allowed participants to present their solutions directly to the jury and challenge providers, followed by Q&A sessions, leading to deeper understanding and more thorough evaluations.

Consistent Event Format

The change from onsite to a hybrid format close to the event date caused confusion in media promotion and participant expectations, highlighting the need for establishing and maintaining a consistent event format from the beginning. Clear communication of the event format to participants, sponsors, and media is crucial to avoid confusion and ensure a cohesive event experience.

Handling Staff Changes

The Hackathon team managed the departure of key staff members effectively, with limited impact on event planning and execution. This experience underscores the importance of seamless staff transitions and comprehensive handover processes. Future Living Labs should focus on thorough documentation, knowledge transfer, and clear roles and responsibilities to ensure smooth event continuity in case of staff changes.

Bridging Registration and Participation Gap

Despite high registration rates, actual participation was lower than expected, indicating a need to convert initial interest into active engagement. Future organizers should focus on proactive communication, pre-event engagement activities, and follow-up reminders to registered participants. Understanding the reasons behind low participation rates will also inform future improvements in event planning and promotion.

Clear Challenge Descriptions

The lack of specific problem statements and clear expectations in challenge descriptions led to confusion and hindered effective solution development. Providing clear, detailed, and specific challenge descriptions is essential for the success of a hackathon. Future challenges should be well-defined, with concise problem statements and clear deliverables.

Effective Communication Platform Selection

The use of Zoom for communication had its drawbacks, especially when participants logged out and back in, resulting in the loss of previous communications. This experience highlights the importance of selecting communication platforms that preserve chat history and provide easy access to past discussions. Organizers should also provide clear guidelines on how to use these communication tools to minimize disruptions and loss of important information.

Balancing Online and Onsite Participant Support

There was a notable difference in momentum between online and onsite teams, with onsite teams having more direct access to experts and resources. This imbalance led to less engagement from online participants. To create a fair and equitable hackathon experience, it's essential to implement strategies that bridge the gap between these groups. This could include virtual access to experts and ensuring that challenge providers and jury members engage effectively with online participants, promoting a level playing field and encouraging diverse participation.

6.1.3. Codagon Lessons Learned

Effective Use of the F6S Platform

The Codagon successfully employed the F6S platform for registration and communication, streamlining these processes and enhancing the participant experience. This highlighted the importance of using a robust registration platform to make it easier for participants to engage with the competition and access relevant information.

Collaborations for Codagon Promotion

Partnering with industry-related organizations and academic institutions expanded Codagon's reach and credibility, attracting a diverse pool of participants. Collaborations with external entities proved effective in extending the competition's reach and fostering innovation by engaging participants from various backgrounds.

Hosting Engaging Panel Discussions

Organizing panel discussions with expert panellists provided valuable insights and fostered discussions on critical topics. These expert-led discussions served as platforms for knowledge exchange and networking, enriching participants' experiences and fostering a sense of community.

Informative Webinars on Technologies and Resources

Hosting webinars on available technologies and resources equipped participants with valuable tools and insights for solution development. Providing resources through webinars empowered participants to leverage advanced technologies effectively, enhancing the quality of solutions and promoting innovation.

Involving External Reviewers with Diverse Expertise

Engaging external reviewers with diverse expertise enriched the evaluation process and contributed to fair and comprehensive assessments. The inclusion of external experts in the review committee enhanced the objectivity and credibility of the evaluation process, ensuring that solutions received thorough assessments.

Successful Onsite Award Ceremony

The onsite award ceremony, especially the synergies session, fostered open discussions among Codagon stakeholders, promoting equality and diversity. In-person events like award ceremonies provide valuable opportunities for networking, collaboration, and knowledge exchange among participants, stakeholders, and experts.

Effective Utilisation of the Virtual Lab

Leveraging the virtual lab platform facilitated easy access to challenges and streamlined the solution submission process. A well-designed virtual lab platform can enhance the Codagon experience by simplifying access to essential components, making it more user-friendly for participants.

Receiving Feedback from Diverse Stakeholders

Positive feedback from a diverse group of stakeholders indicated that Codagon successfully catered to a broad range of participants' needs and expectations. Tailoring the competition to meet the diverse needs and expectations of participants can result in a more inclusive and successful event, generating enthusiasm and participation.

Realistic KPIs for Participant Registration

The challenge of meeting ambitious KPIs for participant registration, especially in comparison to previous events, highlighted the need for setting realistic KPIs based on the event's unique characteristics and constraints. This approach is crucial to manage expectations and avoid undue pressure on the organizing team.

Adequate Planning Time

The compressed planning timeline of 1.5 months posed significant challenges, such as late confirmations from panelists, impacting the promotion and execution of the event. Future competitions should allocate sufficient time for preparation and coordination to ensure smoother operations.

Innovative Promotion Strategies Without a Marketing Budget

The lack of a marketing budget required creative strategies for effective promotion. Leveraging partnerships, social media, and existing networks proved to be effective means of promoting an event with limited resources.

Sustaining Participant Engagement Over Extended Periods

Maintaining participant engagement over a three-week period required a well-structured program with various activities like webinars, discussions, and networking opportunities. This approach is necessary to keep participants motivated and involved throughout the event.

Managing Diverse Stakeholder Communication

Coordinating communications with a wide range of stakeholders, each with different interests and expectations, presented complex management challenges. Effective communication, adaptability, and responsiveness are key in dealing with diverse stakeholders.

Logistical Planning for Onsite Events

Organizing the onsite award ceremony in a different country posed significant logistical challenges. Thorough logistical planning, including venue selection and coordination with vendors, is crucial to ensure the success of onsite events. Strategic connections with local partners can significantly assist with communication and organization aspects.

Tailoring Support to Participant Profiles

Managing the varying needs and expectations of a diverse participant group, from business-oriented startups to research teams, highlighted the need for segmenting participants based on their profiles and expectations to provide tailored support and resources.

6.2. Good Practices

This chapter encapsulates the effective strategies and methodologies that underpinned the success of the MobiDataLab events: the Datathon, Hackathon, and Codagon.

These good practices are distilled from thorough analyses and feedback, offering a blueprint for replicating success in similar future initiatives.

- **Effective Planning and Organization:** The foundation of each event's success lay in meticulous planning and organization. Key elements included the early selection of suitable platforms for registration and communication, detailed scheduling, and resource allocation. The planning phase also involved contingency planning, ensuring readiness for unforeseen challenges.

- **Stakeholder Engagement and Collaboration:** A cornerstone of these events was the active engagement and collaboration with a diverse range of stakeholders. Strategies included targeted outreach to potential participants, partnerships with academic institutions and industry partners, and involving local communities. These collaborations enriched the events with diverse perspectives and expertise, enhancing the overall value and outcomes.

- **Innovative Use of Technology:** Technological tools played a crucial role in streamlining event processes and enhancing participant engagement. This included the use of virtual labs for project development, real-time communication tools for coordination, and data analytics platforms for evaluation. The strategic use of technology facilitated a more interactive and productive environment.

- **Diversity and Inclusivity Practices:** Diversity among participants, organizers, and reviewers was actively promoted, resulting in a rich exchange of ideas and collaborative problem-solving. Inclusivity was ensured through deliberate outreach and the creation of an environment conducive to diverse contributions.

- **Effective Communication Strategies:** Communication was pivotal in the successful execution of these events. This encompassed comprehensive pre-event information dissemination, regular updates during the events, and constructive post-event feedback mechanisms. Effective communication ensured clarity, alignment of expectations, and a continuous feedback loop.

- **Adaptability and Crisis Management:** The events demonstrated the importance of adaptability and effective crisis management. Challenges such as changing event formats or staff turnovers were met with swift and effective responses, ensuring minimal disruption to the event flow and outcomes.

- **Participant Engagement and Experience:** Participant engagement was maintained through interactive formats, networking opportunities, and collaborative sessions. These elements ensured that participants remained motivated and engaged throughout the events, leading to higher quality outcomes and a more fulfilling experience.

- **Evaluation and Feedback Mechanisms:** Structured evaluation processes and open channels for participant feedback were integral to these events. Regular evaluations allowed for ongoing improvements, while post-event feedback provided insights for future planning and enhancements.

The good practices identified through the MobiDataLab events form a repository of knowledge that can be applied to future projects. These practices are not only relevant to the field of mobility data sharing but are also adaptable to a wider range of data-driven and technological initiatives. The key takeaway is the value of learning from experience, the importance of stakeholder engagement, and the need for flexibility in an ever-evolving project landscape.

The successful implementation of these practices during the MobiDataLab events serves as a testament to their efficacy. Future projects can draw from these experiences, adapting and refining these practices to suit their unique contexts. This chapter documents the journey and achievements of the MobiDataLab project but also stands as a guide for future endeavours aiming to navigate the complex terrain of innovation and collaboration in the digital age.

7. Conclusions

The MobiDataLab project's Living Labs - the Datathon, Hackathon, and Codagon - have resulted in a variety of experiences, insights, and innovations in the field of mobility and data sharing. These events have not only demonstrated the potential of collaborative problem-solving in this dynamic field but also highlighted key lessons and strategies that are critical for future endeavours in similar domains.

The Living Labs have successfully fostered an environment of innovation and collaboration, bringing together diverse stakeholders to address multifaceted challenges in urban mobility. The adaptability and innovative spirit of the project were clearly reflected in the unique methodologies and outcomes of each Living Lab event. Furthermore, the integration of the Living Labs with the Virtual Lab played a crucial role in enhancing the overall experience, with feedback mechanisms and technological advancements contributing significantly to the evolution of the project's tools.

Several important lessons have emerged from these experiences. First, the need for clear and accessible communication of challenges and solutions is paramount. This not only ensures effective problem-solving but also enhances participant engagement and satisfaction. Second, the importance of maintaining participant engagement, particularly in online formats, cannot be overstated. Strategies to ensure active and sustained participation are essential for the success of such collaborative initiatives. Finally, the experience of managing and adapting to different event formats and participant dynamics offers valuable insights into the planning and execution of future projects.

Considering these findings, the call to action for future Living Labs is clear. Emphasizing fostering innovative collaborations, refining stakeholder engagement, and improving communication and presentation strategies will be key to elevating the effectiveness of such initiatives. Future Living Labs should build on these lessons, aiming to create interactive, inclusive, and impactful platforms that address the complexities of urban mobility challenges. The ultimate goal is to leverage collective intelligence and creativity to develop sustainable, efficient, and forward-thinking solutions in data sharing and beyond.

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8. Annexes

8.1. Annex 1

Questionnaires Quantitative Results "Assessment of the Living Lab"

In this Annex the quantitative results from the questionnaire are presented. For the answers following the likert scale (1-5), 1 stands for strongly disagree and 5 stands for strongly agree.

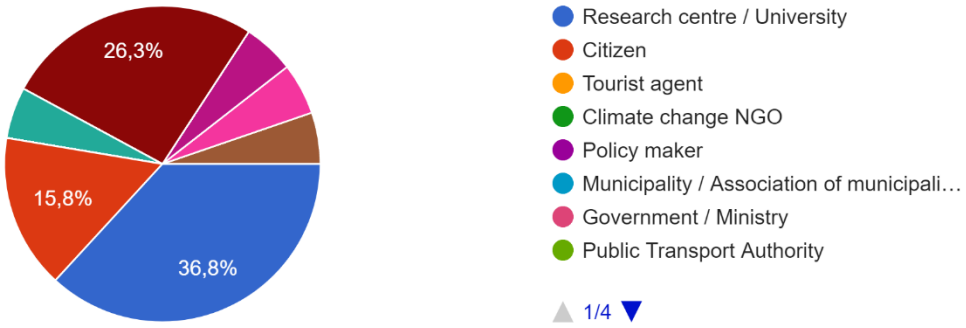

Figure 9: Results of Q1 'Which type of actor are you?'

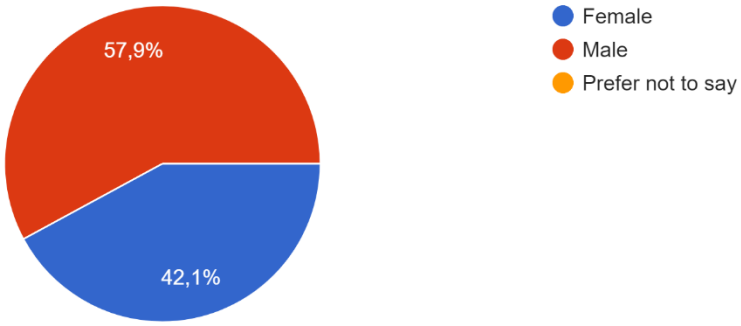

Figure 10: Results of Q2 'Are you male or female?'

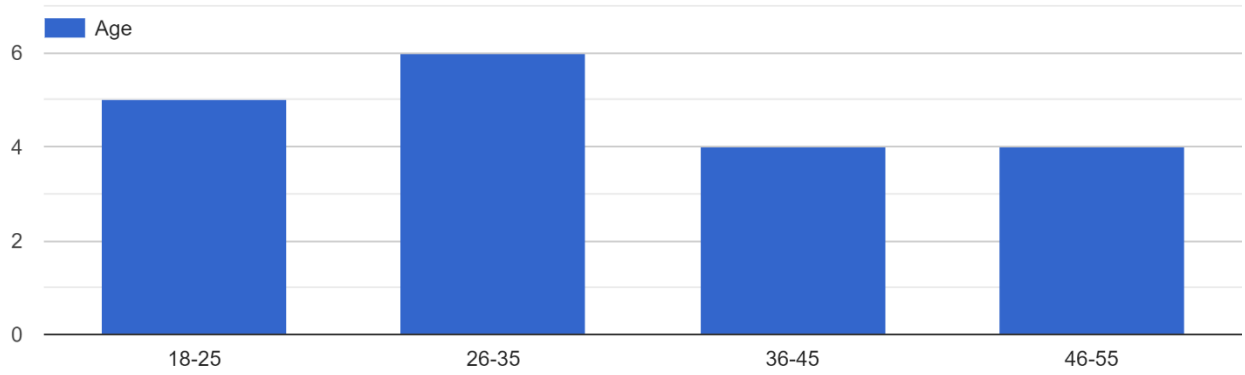

Figure 11: Results of Q3 'What is your age?'

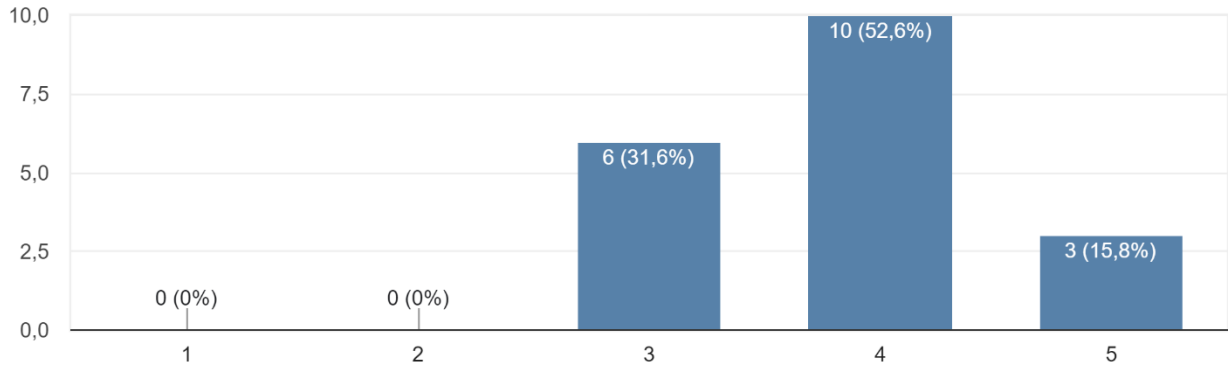

Figure 12: Results of Q4 'Are you satisfied with the technical outcomes of the Living Lab?'

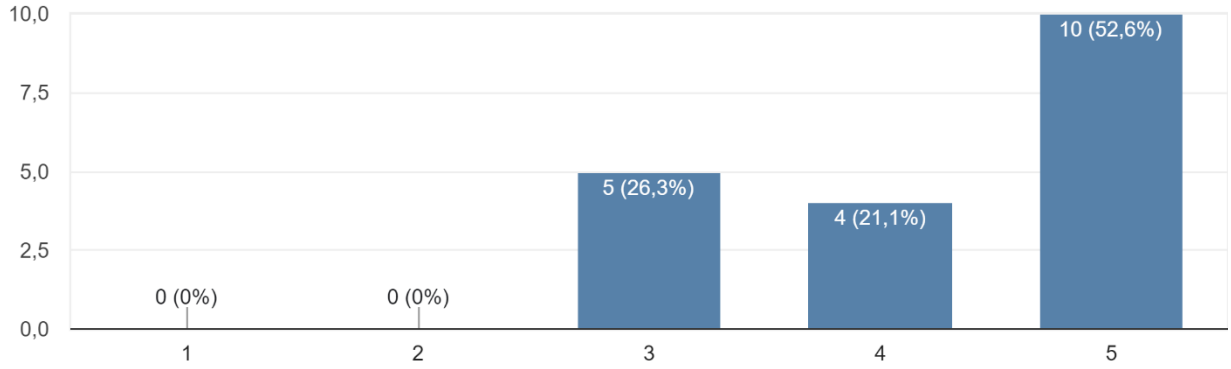

Figure 13: Results of Q5 'Do you believe that your participation in the Living Lab was productive in any way?'

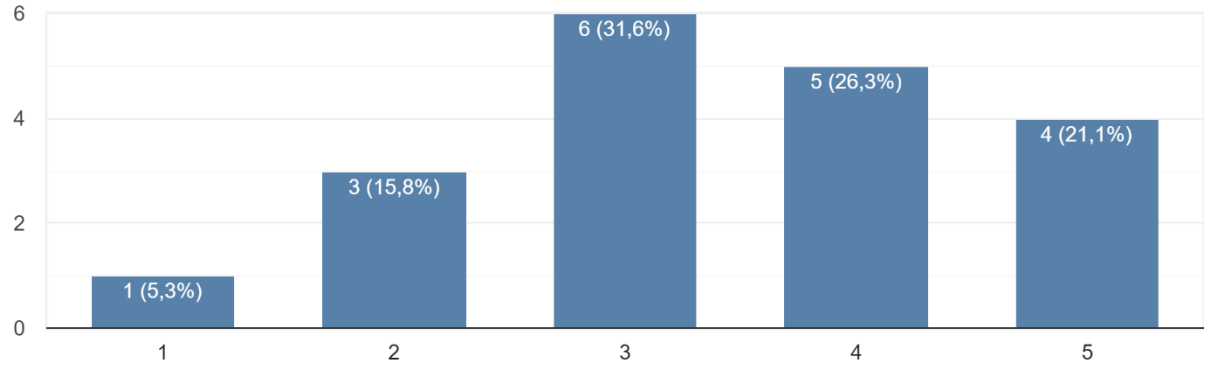

Figure 14: Results of Q6 'Were the challenges easy to comprehend?'

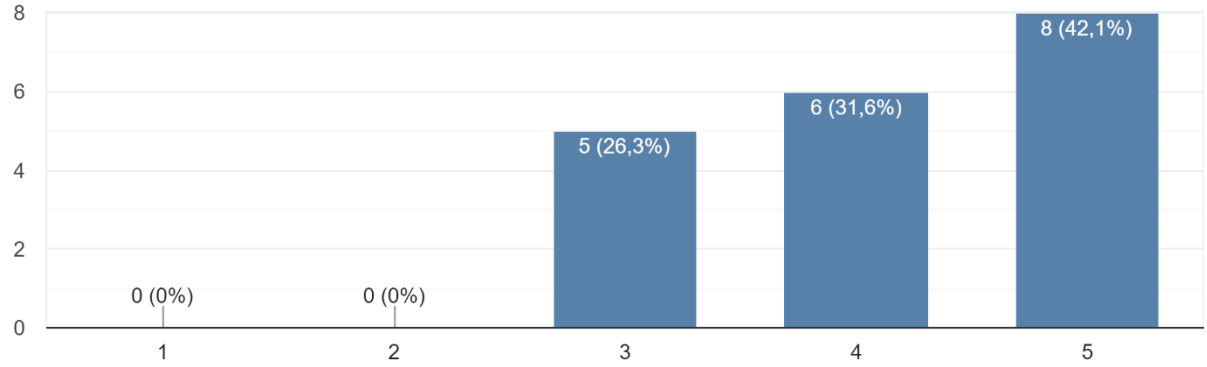

Figure 15: Results of Q7 'Were the challenges provided stimulating and challenging?'

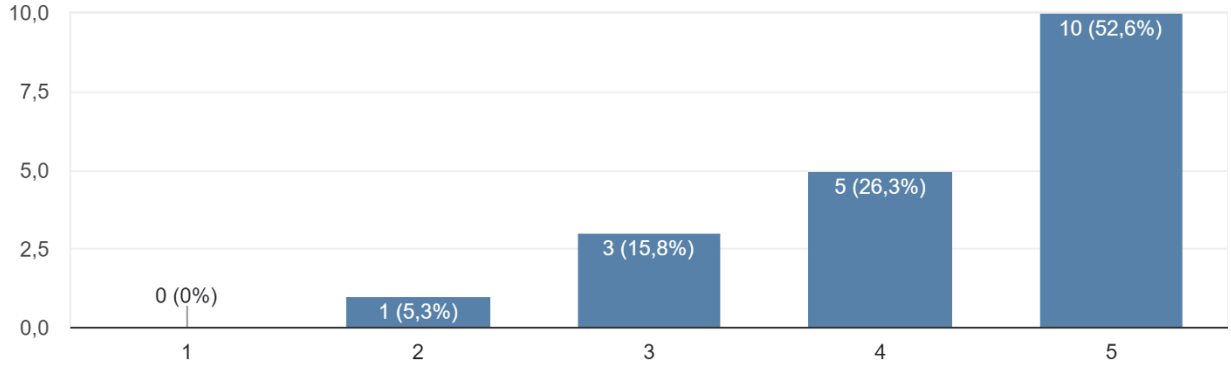

Figure 16: Results of Q8 'Were you and your team able to brainstorm and experiment during the Living Lab?'

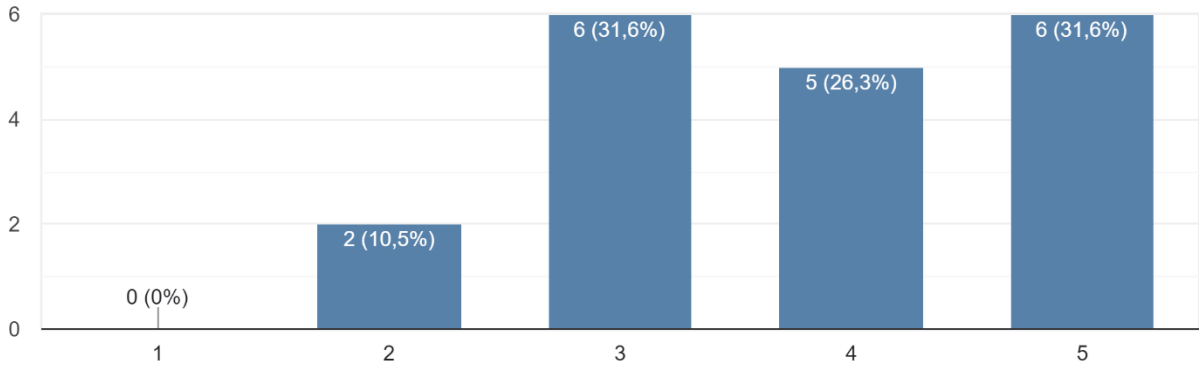

Figure 17: Results of Q9 'Was the data-providing process efficient?'

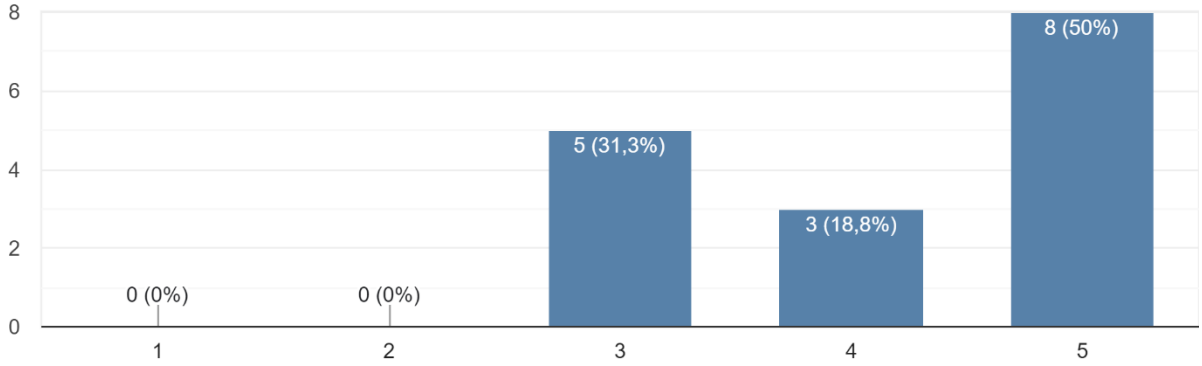

Figure 18: Results of Q10 'Was the virtual or onsite set-up easily accessible?'

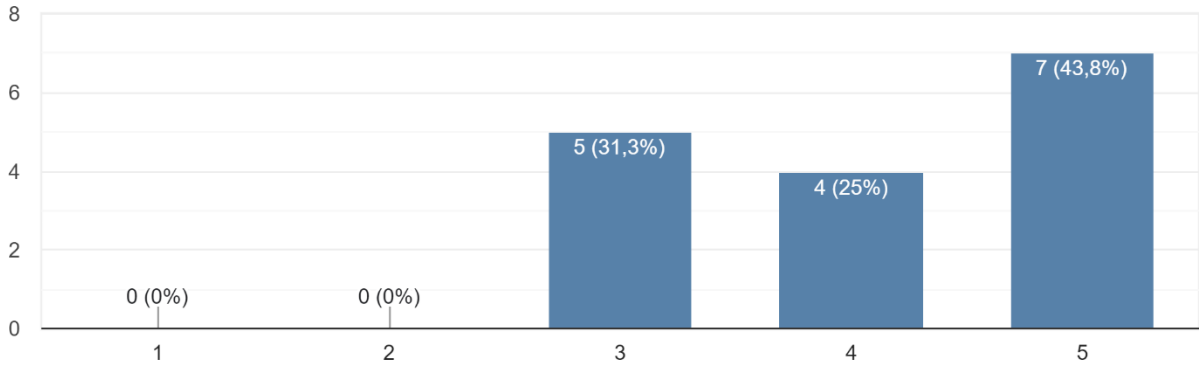

Figure 19: Results of Q11 'Was the virtual or onsite set-up suitable for the teams to experiment and co-create?'

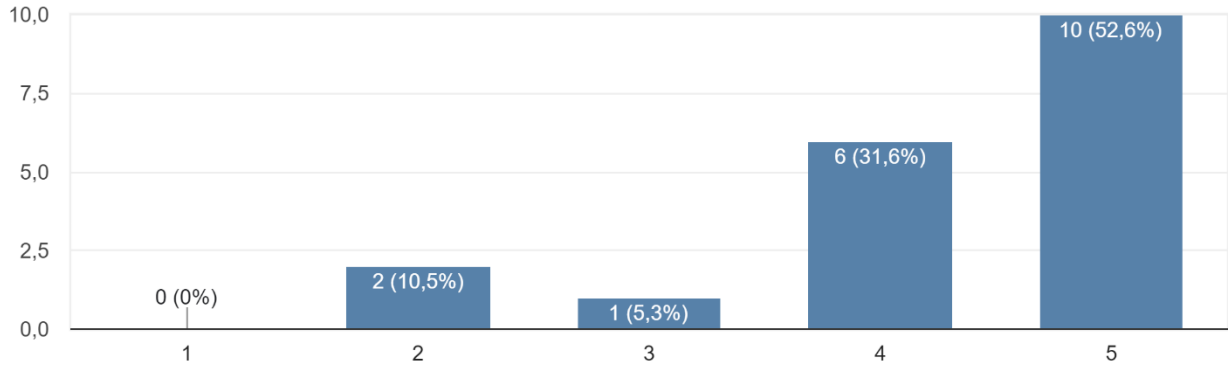

Figure 20: Results of Q12 'Did you and/or your team had everything you need in terms of ICT infrastructure?'

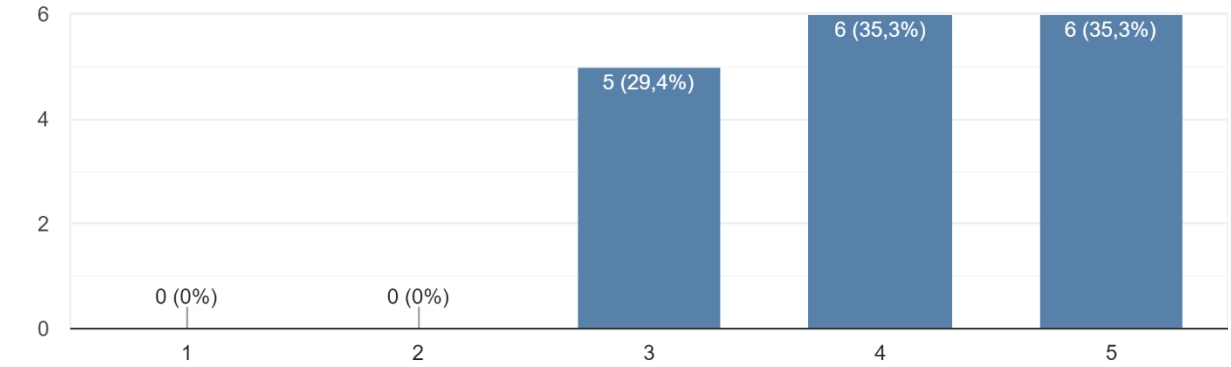

Figure 21: Results of Q13 'Did you find the Governance and Management of the Living Lab effective and helpful?'

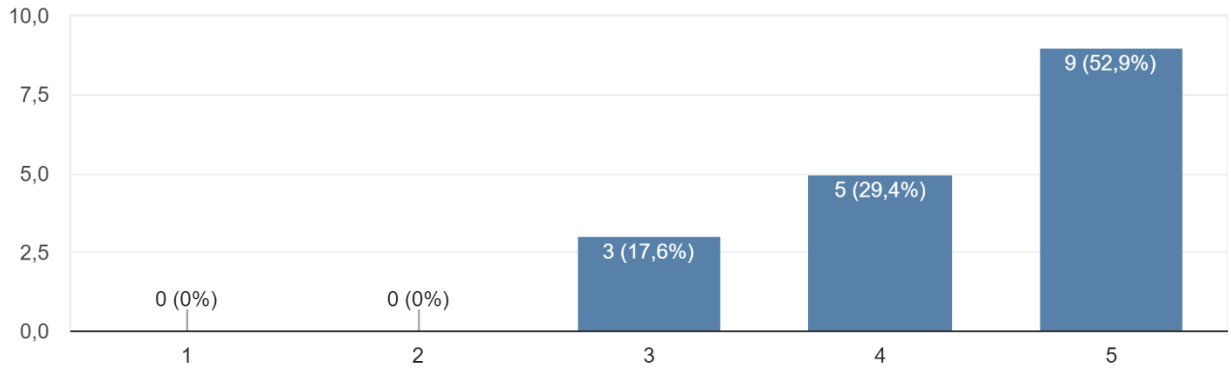

Figure 22: Results of Q14 'Did the Governance and Management team provide adequate technical resources and support for participants?'

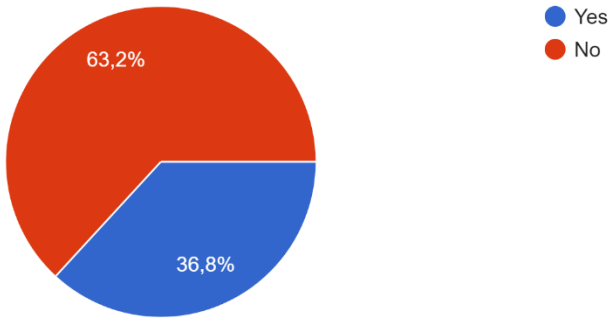

Figure 23: Results of Q15 'Were you or your team able to establish any collaboration with other participants or stakeholders?'

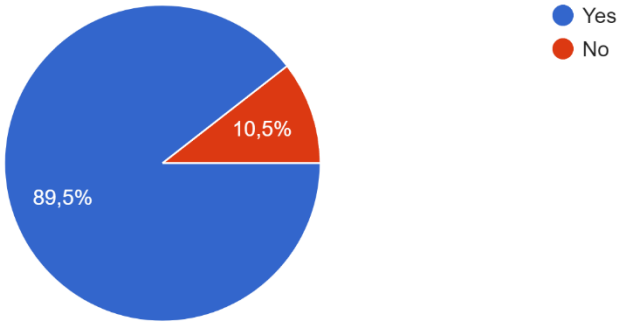

Figure 24: Results of Q16 'Were you able to develop and submit a solution?'

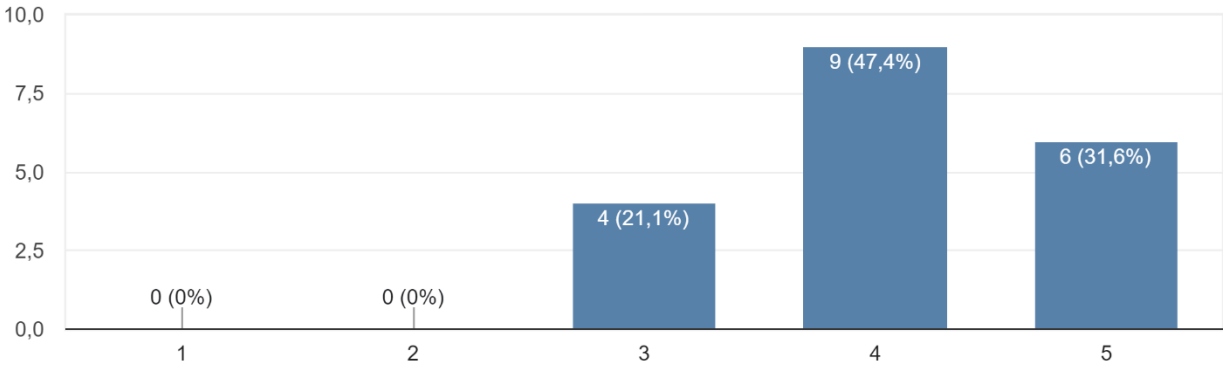

Figure 25: Results of Q17 'Do you find the final outcomes/solutions efficient and inspiring in any way?'

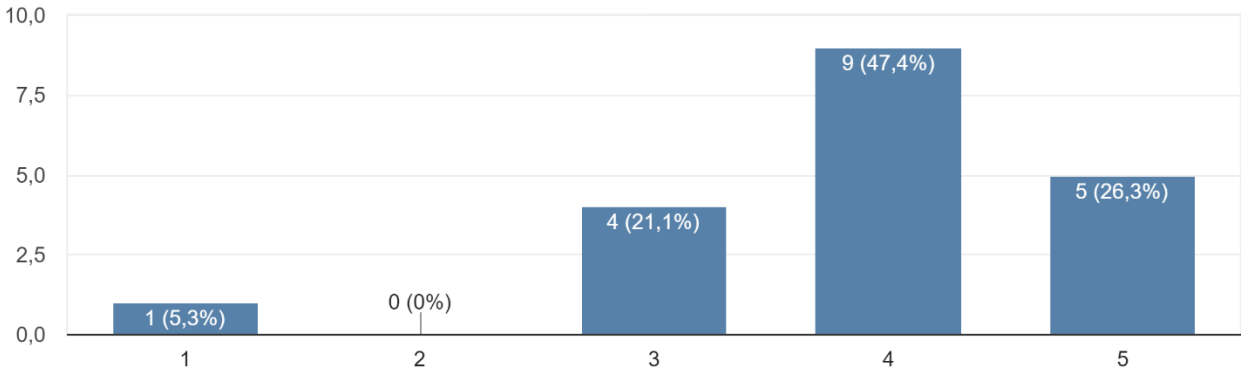

Figure 26: Results of Q18 'On a scale of 1 to 5, to what extent did data sharing contribute to the development of your solution during this Living Lab experience?'

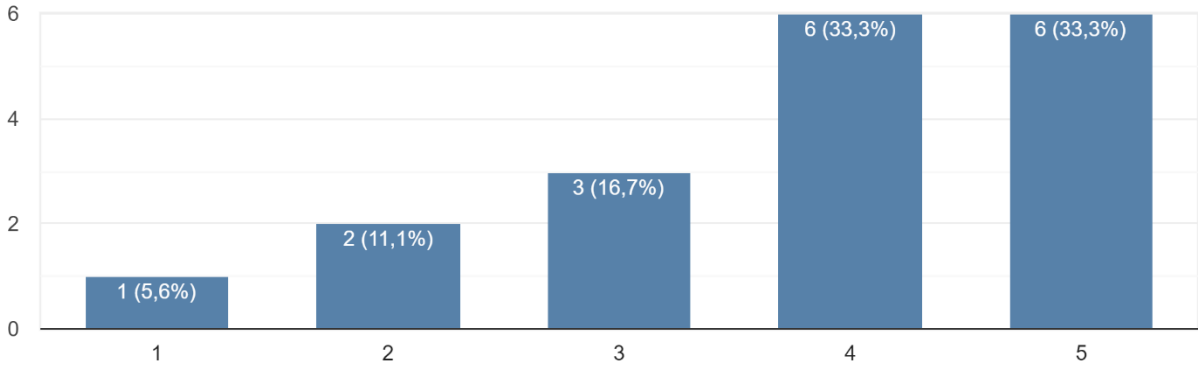

Figure 27: Results of Q19 'On a scale of 1 to 5, how willing are you to share your data with others now compared to before participating in this Living Lab experience?'

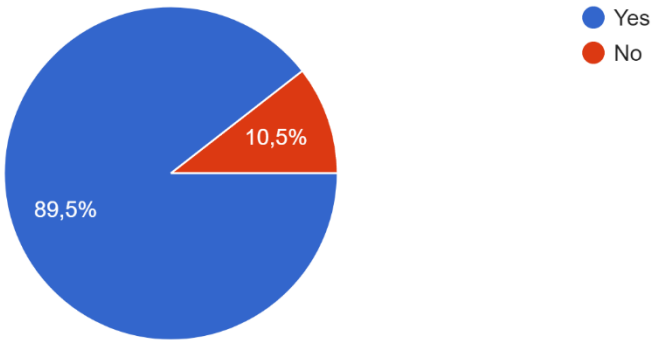

Figure 28: Results of Q20 'Do you believe that there is room for improvement for next occurrences?'

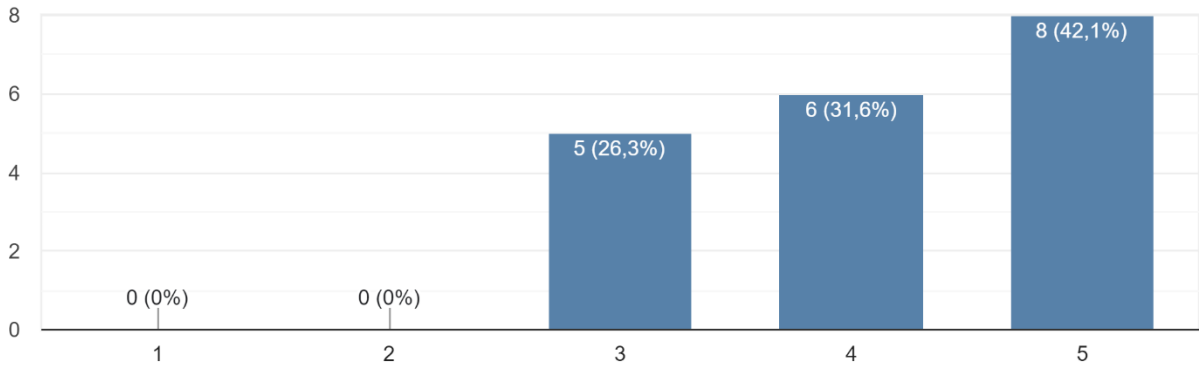

Figure 29: Results of Q21 'How likely are you to recommend the next MobiDataLab Living Lab to other technical professionals in your network?'

9. References

[1] “Grant Agreement-101006879-MobiDataLab”.
[2] A. Tyrovolas and A. Papacharalampous, “MobiDataLab-D5.4-LivingLabsExecutionPlan-v1.0 (1)”.
[3] ASQ, “PDCA Cycle.” Accessed: Jan. 10, 2024. [Online]. Available: https://asq.org/quality-resources/pdca-cycle
[4] J. Lauer, A. Kontini, L. Babio Somoza, and R. Obregon Gonzalez, “MobiDataLab-D5.6_ReportOnDatathon_v1.0.”
[5] B. Plot, A. Kontini, R. Obregon Gonzalez, and H. Mechyakha, “MobiDataLab-D5.7_ReportOnHackathon_v1.0 (1)”.
[6] Anestis Merdani and Alexis Efraimidis, “MOBIDATALAB-D5.1-TheVirtualLab-v1.0”.

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MobiDataLab consortium

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