Evaluation Guidelines Report
D4.1

Date: 16 February 2021 **Version:** 1.1

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Project: DIGNITY | www.dignity-project.eu
Project duration: 01.01.2020 – 31.12.2022
Grant Agreement N°: 875542

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°875542.

Executive summary

DIGNITY's research initiative aims at fostering a sustainable, integrated and user-friendly digital travel eco-system that improves accessibility and social inclusion, along with the travel experience and daily life of all citizens. The project delves into the digital transport eco-system to grasp the full range of factors that might lead to disparities in the uptake of digitalised mobility solutions by different user groups in Europe.

These guidelines define DIGNITY evaluation principles, processes and tools, as a comprehensive method to facilitate the overall assessment of the research initiative, as well as its monitoring and the adjustments for its successful implementation and continuous improvement.

The evaluation process is aimed at assessing and validating the results of the DIGNITY approach as a whole, as well the impact of its specific actions at local/regional level. Consequently, this process is related to the implementation of pilots' demonstrations, which will be held in different regions/metropolitan areas of the partners' countries.

In order to assure a rigorous and homogeneous evaluation deployment, these guidelines provides project partners with a global view of the evaluation and validation processes, as well as general methodological and operative instructions, respectively regarding: evaluation criteria and timings, partners' responsibilities, and operational procedures and specifications. Based on the common evaluation framework outlined by these guidelines, specific and relevant evaluation criteria will be discussed and agreed with project partners.

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Document History

Date	Person	Action	Status
02.02.2021	Boris Lazzarini (UPC)	Document sent for revision	Draft
08.02.2021	Nick van Apeldoorn, Nina Nesterova (BUas)	Document reviewed	Draft
12.02.2021	Boris Lazzarini (UPC)	Document sent for second revision	Draft
15.02.2021	Boris Lazzarini (UPC)	Update	Final

Status: Draft, Final, Approved, and Submitted (to European Commission).

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°875542.

Contents

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°875542.

List of Figures

List of Tables

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°875542.

1. Introduction

1.1 Project summary

The overarching goal of DIGNITY is to foster a sustainable, integrated, and user-friendly digital travel eco-system that improves accessibility and social inclusion, along with the travel experience and daily life of all citizens. The project delves into the digital transport eco-system to grasp the full range of factors that might lead to disparities in the uptake of digitalised mobility solutions by different user groups in Europe. Analysing the digital transition from both a user and a provider's perspective, DIGNITY looks at the challenges brought about by digitalisation. This will inform the design, testing and validation of the DIGNITY approach, a novel concept that seeks to become the 'ABCs for a digital inclusive travel system'. The approach combines proven inclusive design methodologies with the principles of foresight analysis to examine how a structured involvement of all actors - local institutions, market players, interest groups and end-users - can help to bridge the digital gap by co-creating more inclusive mobility solutions and by formulating user-centred policy frameworks.

The idea is to support public and private mobility providers in conceiving mainstream digital products or services that are accessible to and usable by as many people as possible, regardless of their income, location, social or health situation or age; and to help policy-makers formulate long-term strategies that promote innovation in transport while responding to global social, demographic and economic changes, including the challenges of poverty and migration.

By focusing on and involving end-users throughout the process of designing policies, products, or services, it is possible to reduce social exclusion while boosting new business models and social innovation. The result that DIGNITY is aimed at is an innovative decision support tool that can help local and regional decision-makers to formulate digitally inclusive policies and strategies, and digital providers to design more inclusive products and services.

1.2 Work package structure

The DIGNITY project consists of six work packages: 1. Understanding the digital gap; 2. Building the DIGNITY approach; 3. Pilot demonstrations; 4. Evaluation and Validation; 5. Dissemination and Exploitation and 6. Coordination and Management.

This presented Evaluation Guidelines Report is a deliverable of WP4, which is specifically aimed at evaluating and validating the results and impacts of the overall DIGNITY approach as well as its specific interventions at local/regional level. WP4 is strictly related to WP3, which focuses on the testing of the DIGNITY approach in a selected number of pilot demonstrations in different regions/metropolitan areas in Europe:

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- Ancona, Italy
- Barcelona, Spain
- Flanders, Belgium
- Tilburg, The Netherlands

WP4 specifically consists of six different tasks that will be disclosed in detail, later in the document:

- Task 4.1: Definition of the evaluation methodology
- Task 4.2: Evaluation of the DIGNITY pilot demonstrations
- Task 4.3: Validation of the DIGNITY Approach
- Task 4.4: Assessment of gender differences in the adoption of digital mobility solutions
- Task 4.5: Final recommendations
- Task 4.6: Open-access DIGNITY toolkit

These Guidelines (deliverable 4.1) specifically **focus on the definition of the evaluation methodology that will be applied specifically in Tasks 4.2; 4.3 and 4.4**.

Task 4.2 refers to the assessment of the implementation of DIGNITY methodologies and strategies in pilot demonstration, specifically if these facilitate an improvement of the digital inclusion at local/regional level (deliverable 4.2 – Pilot cases evaluation).

Task 4.3 aims at validating the DIGNITY approach as a whole, assessing the capacity of the overall approach of effectively promote a more inclusive digital transport system; facilitate bridging the digital gap at local/regional level, and ensuring its replicability in other context (deliverable 4.3 – DIGNITY Framework Evaluation Report)

Task 4.4 refers to the evaluation of gender differences in the adoption of digital mobility solutions, and the identification of solutions / strategies to reduce this gender gap (deliverable 4.4 - Building a gender-neutral transportation system: Recommendations and checklist).

The results of these mentioned tasks will constitute the input material for the implementation of:

Tasks 4.5, aimed at drafting conclusions and policy recommendations based on project results for its wide replication (deliverable 4.5 - Report/booklet with recommendations)

Task 4.6, aimed at developing a user-friendly mean supporting public authorities, transport operators and private providers in considering needs and requirements of different segments of the population in their decision-making processes (deliverable 4.6 - Open-access DIGNITY toolkit (website with tools for co-design and education).

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1.3 Outline of the guidelines

The **objective of these guidelines is to define the evaluation principles, processes and tools, as a comprehensive method to facilitate the assessment of the impact of the DIGNITY approach**, as well as the identification of potential adjustments for its successful implementation and continuous improvement.

Chapter 2 presents **the rationale of DIGNITY evaluation**. Specifically, it introduces the general approach of an evaluation process and the main principles that drives it, and then describes in detail the structure of **work package 4** in its different phases and tasks.

Chapter 3 outlines the principles of **the evaluation of the DIGNITY pilot demonstrations**. It starts describing the theoretical approach upon which the evaluation process will be operationalised. Then, it defines the framework of pilots' impact and process evaluation, as well as presents specific operative instructions and responsibilities.

Chapter 4 describes the process of **validation of the DIGNITY approach**. After presenting the theoretical approach, it follows with the description of the principles of process evaluation with which it will be assessed the overall capacity of the research initiative to meet its objectives.

Finally, a description of the principles guiding **the assessment of gender** differences in the adoption of digital mobility solutions is reported in chapter 5.

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2. The rationale of DIGNITY evaluation

2.1 Introduction to the evaluation approach

The DIGNITY approach combines **analysis with concrete actions to make digital mobility services inclusive over the long term**. This approach connects users' needs and requirements with the provision of mobility services connecting, and at the same time, those services **to the institutional framework**.

This combination of aspects related to 'digital inclusion' (specifically related to the mobility sector) and 'urban mobility' requires a tailored evaluation framework that should take into account the specificities of both fields. Consequently, literature focusing on both fields has been consulted for the development of this deliverable.

An evaluation process can be generally described as an 'assessment, as systematic and objective as possible, of an on-going or completed project or specific intervention'. The OECD's 'Glossary of Key Terms in Evaluation and Results Based Management' specifically describes the evaluation as the "*systematic and objective assessment of an on-going or completed project, programme or policy, its design, implementation and results… with the aim of determining the relevance and fulfilment of objectives, development efficiency, effectiveness, impact and sustainability*" (OECD 2002). The Glossary also specifies that an evaluation should provide credible and useful information, enabling the incorporation of lessons learned into the decision–making process.

Therefore, it is important to highlight that the evaluation activity is not a merely monitoring activity, but a process that contributes to the identification of the worth and the significance of specific activities, policies or programs. In other words, it can be described as **a learning tool, which provides essential information on the success or not of specific interventions, to gain an understanding for future projects and for exchanging experience.** Moreover, evaluation also serve the purpose of encouraging upscaling and transferability of interventions, promoting positive result to relevant stakeholders.

Operatively, **the purpose of the evaluation consists in the optimisation/improvement of the interventions of a specific initiative during its implementation**. This is usually achieved through the optimisation of the processes or the detection of key issues to focus on (Dziekan et al. 2013). A sound evaluation process should secure that all project results are generated according to plan and that possible errors will be minimised and not be repeated in the future. In other words, evaluation shows what actually occurred with a specific action, compared to what should have occurred along the lines of what was initially intended, as well as identify unexpected results. This, apart from determining if intended goals have been reached, helps understanding the reason of potential deviations and what can be learned from them.

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The overall purpose of evaluation should be well **defined since the beginning of an intervention** and should be performed for the entire duration of the project, in parallel to the planning and the implementation process, providing **continuous feedback about progress and outcomes' achievement**. For the majority of large-scale projects and interventions, the phenomena to be evaluated are sufficiently complex, requiring **a mixed method approach**, including quantitative and qualitative methods, in order **to give real evidence for success or failure of actions**.

An overview of common stages and key activities in projects' planning, monitoring and evaluation can be appreciated in Figure 1. The initial planning phase of the intervention should include the design of a specific 'needs assessment', which is aimed at formulating the problem correctly and identify (through initial hypothesis and working assumptions) **what could be done to improve the situation and the choice of specific actions and strategies that fit best**. This initial assessment will enable a more precise definition of baseline data, which will serve as a base of the operational design of the intervention and its objectives. The subsequent phase include the definition of project Outputs (produced as direct results of the intervention) and Outcomes (medium/long term changes caused by the intervention) as well as for the process of design of indicators and respective means of verification. For both aspects, an ex-post evaluation will determined if respective targeted goals have been reached. After project completion final evaluation will be performed, in order to assess how well the intervention achieved, as a whole, its intended objectives. Nonetheless, as highlighted by Dziekan et al. (2013) the "*proper reporting, reflection and learning should occur throughout the whole measure/project cycle. As such, evaluation does not take place once or twice, but is a steady part to the measure's implementation*".

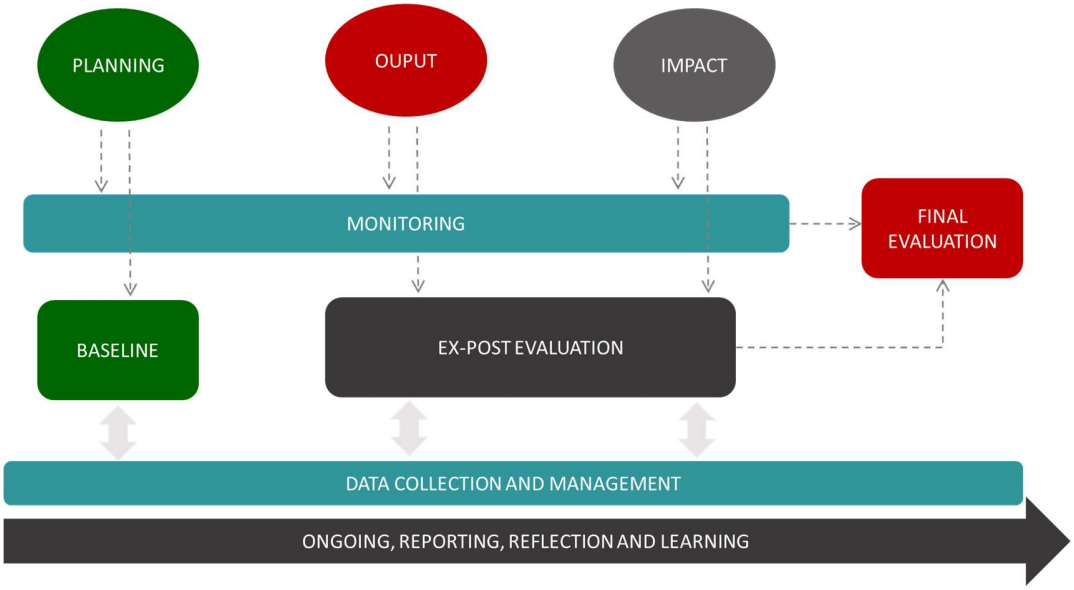

Figure 1. Evaluation stages and key activities (Source: adapted from: Dziekan et al. 2013)

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Two main fields of assessment are usually integrated in a sound evaluation activity, **namely impact and process evaluation**. The former is meant to assess **the effects of project's interventions** before and after their implementation; while the latter focuses on **the means, methods and tools** employed to frame, prospect and co-design interventions. In these guidelines, while 'impact evaluation' will generally refer to the assessment focused at the level of pilot demonstrations, process evaluation will refer to the evaluation of the tools carried out in each pilot as well as to validation of the overall Dignity approach, which falls into evaluation process principles but at more strategic level.

2.2 Organisational aspects of DIGNITY evaluation

Evaluation and validation processes will offer insights on what extent DIGNITY proposed approach improve the inclusivity of the process of transport digitalization, jointly with an analysis of the embedding of digitalization in transport. Furthermore, in each case study it will be estimated the potential reduction of the digital gap and the subsequent increase of well-being among vulnerable users and citizens. This will help to determine the relevance of the DIGNITY approach throughout the long-term strategy formulation. Furthermore, in each case study the potential reduction in the digital gap and a subsequent increase of well-being among vulnerable users will be estimated. This will expose the relevance of the DIGNITY approach throughout the long-term strategy formulation.

The validation process will promote the further applicability of the DIGNITY approach in other locations beyond the pilot cities and will provide evidence-based reliable recommendations for digital inclusion for local, regional, national and European implementations, even beyond mobility sectors.

A list of the expected deliverable of WP4 is presented in Table 1, followed by WP relevant Milestones in Table 2.

Table 1. WP4 Deliverables

No.	Deliverable	Delivery date	Lead
D 4.1	Evaluation Guidelines Report	M13	UPC
D 4.2	Pilot cases evaluation Report	M33	UPC
D 4.3	DIGNITY framework validation Report	M33	UPC
D 4.4	Building a gender-neutral transportation system: Recommendations and checklist	M33	ISINNOVA
D 4.5	Report/booklet with recommendations	M36	UPC
D 4.6	Open-access DIGNITY toolkit (website with tools for co-design and education)	M36	UPC

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Table 2. WP4 Milestones

No.	Milestone name	Related WP	Due date	Means of verification
M4.1	Agreement on the evaluation methodology and KPI required from pilots' demonstrations	WP4	M12	Deliverable 4.1
M4.2	Performance and comparison of KPIs and evaluation of pilot demonstrations.	WP4	M32	Deliverable 4.2
M4.3	Validation of Dignity Framework and lessons learned to replicate it in other contexts	WP4	M32	Deliverable 4.3
M4.4	Formulation robust and inclusive policy recommendation	WP4	M35	Deliverable 4.5
M4.5	Gathering information and elaborating info-graphics designs for the toolkit	WP4	M35	Draft Deliverable 4.6
M4.6	Designing Toolkit prototype	WP4	M35	Final Deliverable 4.6
M4.7	Gender issues analysis	WP4	M36	Deliverable 4.4

The main tasks of the WP Evaluation and Validation (WP4) are described below:

- **Task 4.1: Definition of the evaluation methodology** (Task leader: UPC, participants: ALL)

The objective of this task is to define the evaluation process, as a comprehensive method to facilitate the assessment of the impact of the DIGNITY Approach, as well as its monitoring and the adjustments for its successful implementation and continuous improvement.

An initial framework and workflow proposal will be presented, to achieve a consensus, with the core partners of the project and pilots' cases, for a homogeneous evaluation deployment, where the outcomes of the WP are regarded as inputs for this process.

In this sense, prior to the pilot implementations, the WP3 will provide the criteria to be used (to build a baseline), the selection and consideration of KPI (to have a DIGNITY goal) according to each case study, to plan and execute the assessment of the DIGNITY Approach, based on each local/regional perspective.

Since this WP is related directly to the advance of WP3-Pilot demonstrations, the assessment criteria and KPI will be collected at different stages of the project to enable its monitoring. An integrated assessment will be selected for aggregating criteria and comparing experiences in each region/pilot.

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Some aspects to be taken into consideration are related to the systemic and complex nature of inclusiveness challenge, such as: social inclusion indicators, governance arrangements, changes in social behaviour/attitudes, contextual factors, economic cost of the technology etc. Specifically the data gathering will be taken from end-users and/or other experts, by means of a survey and in-depth interviews (ex-ante and ex-post evaluation tests). Moreover, the introduction of evaluation techniques will be performed according to the needs of each case study, integrating the techniques considered most appropriate (i.e. cost-benefit, cost-effectiveness, among others).

The outcomes of the evaluation will have a direct impact on each case study to bridge the digital gap and build more inclusive digital transport futures. Furthermore, they will be regarded as valuable lessons for the adjustment and refinement of the DIGNITY Approach as a process to reduce exclusion in transport system, which will be incorporated in tasks 4.4 and 4.5.

- **Task 4.2: Evaluation of the DIGNITY pilot demonstrations** (Task leader: UPC, participants: ALL)

This task aims at evaluating the DIGNITY approach throughout the implementation of the WP3-Pilot demonstrations, to frame the gap at the local/regional level and build the meaning of more inclusive digital transport from the experiences of the case studies and to recognise the impacts obtained in their transition towards more inclusive digital transport environments.

The evaluation will be applied transversally to each of the pilots executed in WP3. Specifically, the aim of this task is to gather the information for an ex-post assessment.

A relevant aspect of the evaluation framework is to be grounded on local/regional perspectives, in order to promote the involvement of all partners (core project, case studies, a selected group of the learning Community, and the local partners). Therefore, the process of evaluation could also contribute to the overall experience of the case studies through assessment as the specific pilots´ feedback.

Specific **evaluation of each case study will be carried out against a concrete set of criteria and their selected KPIs**, defined during the **bridging phase, specifically, through the methodologies of Inclusive Design Wheel and Scenario Building, in the framework of WP3**. The outcomes will help to understand and improve the applicability of the set of tools and methodologies. Besides, for each case study it will give evidence of the barriers and opportunities, and will be a valuable input for further advances (i.e. to upscale and transferability demos/pilot cases).

- **Task 4.3: Validation of the DIGNITY Approach** (Task leader: UPC, participants: BUAS, IZT, UoC and ALL Pilots)

To enhance the understanding of the DIGNITY Approach, the challenges selected by each case study will corroborate the local capacity to identify, deal with and transform them in a coherent

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manner through the proposed co-design strategies (Future Scenario Analysis and Inclusive Design Wheel). Likewise, the local/regional agency of the process will be taken into account to confirm the learning on the dynamics and patterns of the processes to involve the different stakeholders in the inclusive designed solutions, the vulnerable groups, citizens' leadership, the collective learning and the communities' engagement.

Finally, this task **will consider in a comparative and strategic manner, learnings and results gathered from the different case studies**. Specifically, through a **SWOT analysis based on successful factors, weak aspects, opportunities will expose the internal and external impacts, affecting and produced by the DIGNITY Approach**. This process of validation will help, through its adjustment and refinement, to apply the framework in different contexts, building evidence for endorsing the sustainability challenges (i.e. social, environmental, economic) in a collaborative manner with a citizen-centric role and with the engagement of different stakeholders (productive services providers, etc.).

- **Task 4.4: Assessment of gender differences in the adoption of digital mobility solutions** (Task leader: ISINNOVA; participants: ALL)

This task will look at gender differences in the uptake of digital mobility solutions. Data collected over the course of the project will be disaggregated by gender, to give a quantitative picture of how men and women use digital transport products and services differently. Then, qualitative data, including observations in the pilots, will be used to understand why these differences exist, whether these are due to issues regarding personal safety, physical accessibility, affordability, or other factors. This knowledge will then be translated into what needs to be done to close this gender gap, in the form of a series of recommendations for the design of digital mobility policies, products and services, along with a checklist of considerations that can be used to assess how gender-neutral a given mobility policy, product or service is.

- **Task 4.5: Final recommendations** (Task leader: UPC, participants: ISINNOVA, BUAS, MOBIEL21, IZT, UoC)

Based on the results from the previous tasks, a final report with recommendations will be elaborated. The compiled references will focus on linking the different criteria found (i.e. users' attitudes and behaviours, economic costs, governance and legal aspects, etc.) for improving the accessibility to digital transport (i.e. access to decision-making, services, social networks, etc.), as practical strategies supporting the collective learning (oriented towards gender and vulnerable groups) for a more inclusive digital transport.

It will consist of a booklet of lessons learned and best practices, edited in a very direct style with easy-to-apply recommendations addressed to the different actors, with special interest in policy-makers and other practitioners of the field. The booklet will be presented at the DIGNITY Final Event, as defined in Task 5.7.

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- **Task 4.6: Open-access DIGNITY toolkit** (Task leader: UPC, participants: ISINNOVA, MOBIEL 21, all pilots)

This task will be responsible for the design of an open-access DIGNITY toolkit, i.e. a practical digital tool that will provide for step-by-step methods on how inclusiveness could be strategically envisioned and conducted. The toolkit will be designed as an infographic and interactive methodological tool to promote inclusive transport digitalisation throughout improving the awareness of the challenges facing the transport digitalisation for being accessible for the overall society.

Different partners' responsibilities related to pilot impact evaluation results from DIGNITY organisational aspects, and are illustrated in Table 3.

Table 3. Partners' responsibilities in Dignity evaluation.

	Tasks within WP4	Output (internal and external Deliverables)
Universitat Politècnica de Catalunya (WP4 Evaluation and Validation leader)	• Overall evaluation design • Overall evaluation and validation coordination. • Design evaluative surveys to be conducted in the workshops. • Conduct interviews with pilots and partners to collect information on the process and approaches. • Participate in three-monthly go-to meetings the 3-month with pilots. • Comparative analysis of pilots impact and process • Evaluation reporting (Process evaluation plan; Process evaluation report) • Validation reporting • Drafting recommendations • Organisation of final evaluation workshop. • Assist pilots in their evaluation tasks.	• Process evaluation Plans • Process evaluation Reports • Pilot cases evaluation Report (D4.2) • Dignity framework Validation report (D4.3) • Report with Remmendations (D4.5)

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ISINNOVA (project coordinator)	• Overall gender issue coordination • Definition of key indicators related to gender issues • Gender Evaluation reporting • Gender issue analysis • Participate in the evaluation activities (meetings and interviews and final evaluation workshop).	• Building a gender-neutral transportation system. (D.4.4)
MOBIEL21 (WP3 Pilot Demonstrations leader)	• Collect and check pilot's *Impact Evaluation Plans* once defined pilots KPIs through activities IDW and SB. • Collect and check pilots *Impact Briefs* at the end of implementation • Coordinate three-monthly go-to meetings (subtask 3.5.3) to follow up on the implementation and engage in conversation with pilots. • Participate in the evaluation activities (meetings and interviews and final evaluation workshop).	
University of Cambridge	• Support pilots in the definition of objectives and KPIs, mainly focusing at micro-meso level, through coordination of the process of the Inclusive Design Wheel • Provide data of IDW evaluation for each pilot to feed the evaluation process • Participate in the evaluation activities (meetings and interviews and final evaluation workshop).	
IZT	• Support pilots in the definition of medium and long-term objectives and KPIs through coordination of the process of Scenario Building • Provide data of SB evaluation for each pilot to feed the evaluation process.	

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	• Participate in the evaluation activities (meetings and interviews and final evaluation workshop).	
BUAS	• Participate in the evaluation activities (meetings and interviews and final evaluation workshop).	
Pilots	• Agree on a list of indicators and data sources, according to the results of the processes of IDW and SB to draft their Impact Evaluation Plan. • Data gathering/collection and drafting Pilot *Impact Brief*) at the end of the intervention. • Distribute evaluative surveys in the local workshops in coordination with UPC. • Participate in the evaluation activities (In-depth interviews, on-going meetings).	• Pilot Impact Plan (One table per pilot) • Pilot Impact Brief (One brief per pilot)

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3. Evaluation of DIGNITY Pilot demonstrations

3.1 *Theoretical approach*

The impact evaluation mainly focuses on the effects produced by the development of an intervention, specifically "*positive and negative, primary and secondary long-term effects produced by an intervention, directly or indirectly, intended or unintended*" (OECD, 2002). In order to assess the real impact or effect of an intervention in a structured way it is essential to collect and analyse data before and after implementation. A correct data collection enables a comparison between both situation and therefore the possibility to draw consistent analysis and conclusions.

UNEG (2013) guidance identify essential key questions that impact evaluation should answer:

- Did the intervention make a difference?
- What specific contribution did the project make? / What specific part of this difference can be attributed to the project?
- How was the difference made?
- Can the intervention be expected to produce similar results elsewhere?

Table 4 presents a range of potential design approaches for impact evaluation. Starting from the four evaluation questions, the table shows related design factors, respectively: possible related evaluation questions, assumptions, requirements and suitable designs.

Table 4. Impact evaluation design factors (Source: Adapted from Stern et al., 2012).

Key evaluation Question	Related Evaluation Question	Underlying assumptions	Requirements	Suitable designs
To what extent can a specific impact be attributed to the intervention?	What is the extent of the perceived impact? What are other causal or mitigating factors? How much of the impact can be attributed to the intervention? What would have happened without the intervention?	Expected outcomes and the intervention itself are clearly understood and specifiable. Likelihood of primary cause and primary effect. Interest in particular intervention rather than generalization.	Can manipulate interventions. Sufficient numbers (beneficiaries, households etc.) for statistical analysis.	Experiments. Quasi-experiments. Statistical studies. Hybrids with case based and participatory designs.
Has the intervention	What causes are necessary or	There are several relevant causes	Comparable cases where a	Experiments. Quasi-

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made a difference?	sufficient for the effect? Was the intervention needed to produce the effect? Would these impacts have happened anyhow?	that need to be disentangled. Interventions are just one part of a causal package.	common set of causes are present and evidence exists as to their potency.	experiments. Theory based evaluation, e.g. contribution analysis. Case-based designs, e.g. QCA.
How has the intervention made a difference?	How and why have the impacts come about? What causal factors have resulted in the observed impacts? Has the intervention resulted in any unintended impacts? For whom has the intervention made a difference?	Interventions interact with other causal factors. It is possible to clearly represent the causal process through which the intervention made a difference – may require 'theory development'.	Understanding how supporting & contextual factors connect intervention with effects. Theory that allows for the identification of supporting factors -proximate, contextual and historical.	Theory based evaluation especially 'realist' variants. Participatory approaches.
Can this be expected to work elsewhere?	Can this 'pilot' be transferred elsewhere and scaled up? Is the intervention sustainable? What generalizable lessons have we learned about impact?	What has worked in one place can work somewhere else. Stakeholders will cooperate in joint donor/ beneficiary evaluations.	Generic understanding of contexts e.g. typologies of context. Clusters of causal packages. Innovation diffusion mechanisms.	Participatory approaches. Natural experiments. Synthesis studies.

The classic steps of impact evaluation, during the planning of a research action, can be summarised as:

- Identification of main pilot objective(s)
- Identification of clear and measurable specific objectives related to the interventions
- Definition of cause-effect relations between objectives and indicators
- Selection of relevant indicators
- Selection of an appropriate evaluation design and methods of data collection

The initial planning activity is essential, and specific objectives should be well defined before any data collection, taking into account that each intervention is not generic but eventually varies according to the local context and need.

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The analysis and the comparison of data before and after the implementation of an intervention should give a clear picture of what was the situation before its implementation and what changes can be specifically attributed to the intervention.

It is worth highlighting that, in the evaluation design, it is particularly important to identify what would have happened if the intervention was not implemented. This allows drawing consistent conclusions, ensuring that the effects measured principally rely on the introduction of the intervention. Forecasting from available data, modelling or monitoring a control group/site are possible ways to represent 'business-as-usual' trends to compare to the situation after the intervention.

Indicators are quantitative or qualitative variables providing a direct and reliable means to measure and achievement, and to reflect the changes connected to an intervention. There is an emerging consensus in literature that "mixed methods", namely involving a mix of both quantitative and qualitative methods, are the best way to answer the questions related to impact evaluation (UNEG, 2013).

Relevant indicators should be selected after having defined the specific objectives and identified the cause-and-effect relations of an intervention. Indicators should strictly relate to the objectives and, in this way, allow for statements about the degree to which the objectives have been achieved. Consequently, when defining indicators, specific requirements have to be taken into account; specifically, indicators must (Dziekan et al. 2013):

- Reflect, in a clear way, the performance or impact of an intervention.
- Match the objectives of the intervention.
- Be capable of reliable assessment using the experimental tools and chosen measurement methods.

Furthermore, it is recommended that indicators follow the **SMART approach**:

- Specific: They specify concretely what is to be achieved and are well defined and understandable.
- Measurable: The target specified allows a clear measurement of the success or failure of an intervention. The evidence for success is clearly specified.
- Achievable: The objectives set are achievable (they are not too ambitious).
- Realistic: The objectives set fit to the overall objectives of the intervention and are reachable according to available resources (it might take further efforts/resources to reach the objectives).
- Time-related: The objective is achievable according to the timeframe set for the intervention.

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An essential prerequisite for the impact evaluation is to discuss and define objectives, causes, effects and indicators before the implementation of the intervention. Possible given sets of indicators, such as common core indicators provided within EU projects, are useful just for general orientation. Nonetheless, commonly indicators need to be adapted to the specific circumstances of the local intervention, in order to assess impacts related to a specific local problem.

The design of the indicators should include the methods of data collection. The acquisition of data can include primary (when collected by the evaluators) and secondary data (when data that has already been collected is reutilised). Data used in the evaluation usually originates from multiple sources and results. This procedure is called triangulation and is used to ensure reliability of the data gathered and to draw proper conclusions. Triangulation includes the application of diverse methods of data collection, and diverse information resources (collecting information from different respondent groups). The combination of multiple methods and information resources, can help overcoming biases and other possible problems resulting from the application of single method and theory.

DIGNITY evaluation of local demonstration will comprise two kind of assessments, impact evaluation and process evaluation, which will be disclosed in the following sections

3.2 Pilot impact evaluation

DIGNITY approach will be tested in four regions/metropolitan areas located in different parts of Europe (Ancona, Barcelona, Flanders, Tilburg), generally engaging with city and regional decision-makers who play a key role in regulating and providing transport services.

Project pilots will identify and refine specific objectives and actions related to local demonstrations following different steps:

1. Preliminary analysis of the digital gap in their regions and identification of main needs of vulnerable-to-exclusion end users.
2. Identification, with the guidance of DIGNITY approach and methodologies of:
    a. pilots specific objectives related to local actions;
    b. strategies maximising the digital inclusion of targeted groups;
3. Involvement of end-user groups in the inclusive design of innovative digital transport solutions and strategies.

By including users in the design process, pilots will be able to better identify the factors that make a strategy truly inclusive; namely potential solutions that can benefit everyone, regardless of age, income, social status, or disability.

This process will **guide the different pilots in the definition of respective key performance indicators**. Since actions fostered by DIGNITY project pilots are specific to particular vulnerable target groups and local prioritised areas, general established indicators set for assessing transport projects are

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not very useful. As highlighted earlier, indicators must closely relate to the objectives of the intervention to allow for statements about the degree to which the objectives have been achieved.

Pilot demonstrations will be guided in the process of definition of their goals, dimensions to be evaluated and respective KPI by specific methodologies such as the **Inclusive Design Wheel** (IDW – focused at the micro/meso level), and the **Scenario Building** (SB – focused at the macro level). UPC will supervise the overall process.

Specific information about pilots' context and general challenges can be found at project website: https://www.dignity-project.eu/pilots/. Table 5 presents an overview of the characteristics, challenges, group targeted and potential outcomes of DIGNITY local interventions. It is the result of a preliminary analysis of identification of pilots' main challenges, based on the results of the Digital Gap Self-Assessment and specific context-related knowledge of pilots' partners. DIGNITY activities, including the methodologies of IDW and SB, will help pilots to refine the information contained in this table.

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Table 5. Overview of DIGNITY pilots

Pilot	Barcelona (ES)	Ancona (IT)	Tilburg (NL)	Flanders (BE)
Type of area	Metropolitan area	Metropolitan	(Sub)Metropolitan area	Region
Cities involved	City of Barcelona	City of Ancona	City of Tilburg	15 transport regions, including the biggest cities Antwerp & Ghent.
Leading pilot partner(s)	Barcelona Regional, Factual consulting	Municipality of Ancona, Conerobus and myCicero	Municipality of Tilburg (& Nextbike)	The Flemish Department of Mobility and Public Works (DMOW)
Transport Focus	Inclusive MaaS strategy and application; Carpooling Service	Inclusive platform for multimodal journey planning and ticket purchase	Multimodal products inclusive for all, special interest in cycling	Inclusive mobility centre
Vulnerable to exclusion group(s) targeted (gender will be a subgroup of each group targeted)	Unemployed, low educated (particularly immigrants, women) and elderly.	Visually impaired and blind people, disabled or people with reduced mobility, migrants and low-income users.	Elderly people in rural context and with low income in urban context.	Elderly people, low income groups having no access to a car and/or having no driving license, disabled people and/or people living in rural areas.
Main stakeholders involved	Public administrations, public transport operators, MaaS providers, unions, private companies	Public authority, public transport operators, digital service provider	City administrations, public transport providers, province, NGO's on integration/emancipation/ poverty, governmental agencies	Regional authority, transport regions, public transport and shared mobility providers
Social inclusion area	Work commuting	All destinations	All destinations - priorities for action will be analysed as part of the case study	All destinations

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Main gaps / exclusions and needs for improvement	Industry is located in areas with problems with mobility and accessibility	Certain vulnerable to exclusion groups are (more) excluded from using this digital product than the general public.	Limited accessibility of active and sustainable mobility in rural and urban areas.	Poor (digital) connection of different transport options (public transport (PT), collective and shared transport systems, bicycle, car, step, etc.) and limited accessibility of digital products by older people, people with low education levels and people with low income.
Main challenge / objective	To define and design a MaaS implementation including vulnerable groups (particularly regard commuting to industrial areas) and provides alternatives to reduce citizens' dependence on private cars.	To make the ATMA application more accessible and inclusive through improvements including new technological features/services, in order to reach all vulnerable groups.	To increase the accessibility/inclusion of active and sustainable mobility in rural areas (specifically with elderly people. not familiar with digital services) and the urban area (tacking transport poverty, to stimulate active and sustainable mobility or the use of public transport).	To implement the decree 'basic accessibility': integrating initiatives for collective transport or last mile transport, facilitating a seamless connection among different transport options (combimobility); creating a shared responsibility among the various actors.
Potential Outcomes within DIGNITY	Development of a Digital Inclusion chapter in the city's MaaS strategic plan. Development of methodological guidelines for inclusive last-mile services based	Improvement knowledge of user needs for policy makers and digital application developers. A more inclusive transport system by enhancing the quality of the services offered.	Identification of the needs and locations of vulnerable-to-exclusion groups and the barriers they face in using digital mobility products and services.	Assessment of the current digital transport eco-system in Flanders and quantification of the digital gap. Identification of the needs and barriers of vulnerable-to-exclusion groups in

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	on local/regional conditions. Creation of a Digital Gap Commission within Barcelona "Mobility Pact" Development of guidelines for the implementation of an inclusive MaaS provider (prototype), incorporating the digital inclusion attributes identified in the DIGNITY pilot.	Improvement of city access for vulnerable to exclusion passengers. Improvement of passenger environment (citizens, tourists, commuters, etc.)	Development of a regional social inclusion policy strategy. Development of guidelines on how to design a socially inclusive mobility solution, with a special focus on bike sharing systems. Promotion of a better connection between rural areas and the city.	using digital mobility products and services. Development of guidelines for the implementation of inclusive digital interfaces for the design of inclusive digital mobility products and services solutions (as an input for a MaaS ecosystem quality framework). The development of a digital inclusion policy strategy.
Pilot activity within DIGNITY	Co design of inclusive digital mobility services (specifically related to last mile service and connection of public transportation to industrial areas). Future scenario building: Implementation or a full MaaS scheme in Barcelona	App update with new services addressed blind and disabled people (e.g. vocal commands, real-time information about stops and delays, multimodal trip planning) Analysis of new features, measures, actions and business schemas to better include people with low income and migrants	Implementation of a bikesharing system for people with low income (children), together with national organization ANWB.	Implementation of a Mobiliteitscentrale ('mobility centre'), a MaaS application or scheme that will be the interface for journey planning, connecting all regional means of transport.

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Currently, the set of specific interventions to be initiated at each local demonstration is still to be confirmed. As highlighted earlier, the framing phase, based on a set of tools, will draft the digital gap baseline in each pilot. Afterwards, project pilots will conduct *ad hoc* inclusive design activities in order to define more precisely the respective local strategies and interventions, including their specific design. These processes, namely framing phase and bridging phase and in particular, Inclusive Design Wheel and Scenario Building, will guide pilots to determine specific objectives of each strategy/intervention and related indicators to assure a proper evaluation.

Consequently, the aim of this section is to describe the **general framework and the specific steps** that project partners should follow in order to ensure a consistent evaluation process.

Through impact evaluation, WP4 aims at ensuring a robust and methodological approach for the assessment of direct and indirect impacts of project pilots, through quantitative and qualitative analytical methods. Measurable impact objectives should be clearly defined for each one of the pilots. A description of the overall approach and steps that will be followed for each pilot can be appreciated in Figure 2.

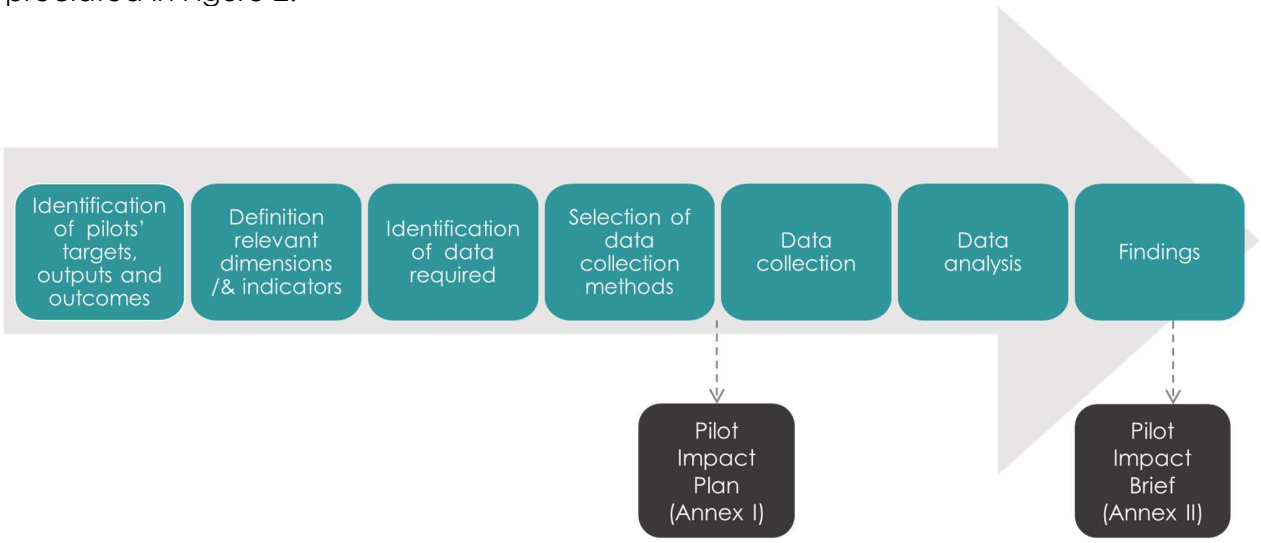

Figure 2. Steps of impact evaluation

Each project pilot – under the supervision of the partners in charge of performing the activities of framing and bridging phase – will contribute to **identify main and specific objectives and define respective outcomes and outputs**, as well as **relevant dimensions and indicators** to be assessed, and will draft specific Impact Evaluation Plans. This implies that definitive objectives, targets and characteristics of different local interventions are currently in a process of definition and will be first drafted in D.3.2 Dignity Pilot Implementation Plans, and adjusted through the progress of IDW and SB activities. The incremental nature of the project makes challenging establishing a fix set of evaluative criteria and indicators since the beginning, as they should be fit-tune adapted to the specificities of each pilot. However, in Annex V, pilots can find a list of potential criteria and KPIs,

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developed in collaboration of practitioners and experts in mobility, which can be eventually used/adapted for different evaluative requirements.

Figure 3 outlines pilots' **Impact Plan**, consisting in a set of criteria/indicators that pilots responsible will define as result of a process focusing on specific methodologies integrated in DIGNITY approach, such as the IDW and SB. This process should take shape of specific tables, one for each action identified including the following information:

1) General objective associated with the intervention.

2) Specific Outputs (items/aspects produced as direct results of the implementation of the intervention) and Outcomes (medium/long term changes caused by the intervention, the knowledge transferred etc.).

2) Key Performance Indicators associated with expected output or outcomes (quantitative/ qualitative measurable values demonstrating how effective was the intervention).

3) Target values related to KPIs (planned level of result to be achieved for considering successful of the intervention).

4) Intended method of data collection.

5) Stakeholders involved in the data collection/provision

Table 6. Impact Plan

Title of the intervention	Objective	Outputs/ Outcomes	KPIs	Target Values	Data Collection Methods*	Stakeholders involved**

Impact Plans should be provided by pilot partners once defined, through workshops and activities of tasks 3.2 'Implementing co-design process in digital transportation products and services in the four pilots' and 3.3 'Implementing the scenario building process in the pilot cities/regions'. Partners of the University of Cambridge and IZT will guide and assess pilots throughout this process until the

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completion of Impact Plans tables. These tables should be understood as a "work-in-progress" tool that support pilots in coordination with partners to define their evaluation route. They can start to fill them at the end of the framing phase, as soon as they have a clear picture of their specific goals and interventions they want to implement and they might evolve at the time SB and IDW progress.

Pilots' partners will be responsible for the collection of data related to pilots' impact evaluation. Namely, the data reported in **Impact Plans** providing specific information on dimensions and criteria to be assessed for each pilot. Once completed local demonstration activities, pilot responsible should draft specific **Impact Briefs,** detailing information on the fulfilment of previously set objectives. These briefs are relevant to reflect and describe pilots experience and learnings after the interventions. That would represent one of the inputs for D4.2 Pilots Cases Evaluation Report The collection of this information should be centralised by WP3 leader Mobiel 21, that should check the completeness and coherence of the information provided by project pilots and validate it before the assessment process.

3.3 Evaluation of DIGNITY tools implemented in pilots

Bridging and framing phases integrate a number of methodologies that are at the basis of the DIGNITY approach and should be specifically assessed in terms of usefulness and effectiveness. Along with impact evaluation, also an **evaluation of DIGNITY tools applied in the pilots will be performed at pilot level**. Specifically, with the aim of assessing the usefulness and effectiveness of DIGNITY activities and methodologies employed, as well as their correct application in the different local demonstrations.

Figure 3 describes project tools that will be assessed.

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	PROJECT TOOLS AND TASKS		DESCRIPTION	
WP4 PHASES	TOOLS	TASK	RESPONSIBLE PARTNER	GOALS
FRAMING PHASE	Surveys	1.2	UCAM	Gather population level data on user factors that affect people's use of digital products and services. This contribute to gain a holistic perspective on who would be excluded from using a particular product or service and why.
	Self-Assessment Digital Gap	2.1 3.1.1	BUAS	Collect a baseline set of information for each pilot to frame the current transport situation with specific attention to digital gap related to mobility in a specific metropolitan/regional context.
	Customer Journey Mapping	3.1.2	Mobiel21	Get insights in the daily activities and trips (user choices, difficulties, opportunities, etc.) of vulnerable-to-exclusion groups in a specific metropolitan/regional context.
	Workshops with vulnerable groups	3.1.3	Mobiel21	Get insights in motivation and reasons why mobility solutions, services and products are (or not) used. Get in-depth knowledge of which aspects help to understand the mobility behaviour of the target groups.
BRIDGING PHASE	Inclusive Design Wheel	2.2/3.2	UoC	Facilitate the co-design of initial ideas and concepts in the four pilots. Assess and refine the 'inclusivity' of initial ideas and concept and select the most promising to take forward for further development.
	Scenario Building	2.3/3.3	IZT	Provides a foundation for strategic decision-making focused on future strategies. Increase the ability of organizations to deal with future uncertain environments.
	Developing long term strategies	2.4/3.5	Mobiel21	Development of long-term strategies for each pilot, starting from the input of Inclusive Design Wheel (micro and meso) and Scenario Building (macro strategies).

Figure 3. DIGNITY tools/activities employed.

The assessment of this variety of tools applied at pilot level will be mainly qualitative, and will involve the majority of DIGNITY partners. Surveys, semi-structured interviews, groups dynamics, participant observation in WP3 workshops etc. will be used to the assessment of the activities. Specific evaluation criteria, assessment tools and actors to be involved in the evaluation of each activity/ methodology will be agreed with responsible partners on a basis of a general framework provided in Table 6. This table offers a general picture of main dimensions and aspects that needs to be assessed to concrete Tool Evaluation Plan (Annex III), which will be developed for each tool.

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Table 7. General evaluative framework for DIGNITY tools assessement.

Evaluation Criteria	Evaluative questions	Target – Goal
Effectiveness	According to the goals planned: ● How successful was the implementation of the tool in pilots' interventions? ● Were the set goals accomplished? ● To what extent the tool has been implemented in each pilot as was initially planned? ● To what extent target groups have been involved? ● What part of the tool implementation generated more difficulty? ● Is the digital gap issue that the pilot/activity intends to address eventually improved?	The tool is verified by being conceptually sound and effective to approach the target population in all pilot demonstrations.
Efficiency and resources	According to the resources planned: ● Has it been planned properly, terms of time, human resources? ● Was the chronological chain of activities correctly implemented? ● Are the resources implemented related proportionally to the benefits obtained? ● Could other tools be considered that could have the same outcomes with less resources (human resources, time consumption, etc.)?	Time, human and financial resources have been planned properly. Activity chain has been implemented correctly.
Participation and Collaboration	According to the vulnerable groups and other stakeholders involved: ● Was the implementation of the tool conducted with the vulnerable groups and stakeholders initially planned? ● Does the tool facilitate collaboration among involved parties? ● Has the Information and communication flows been fluid? ● Does the tool favour trust, commitment? ● Which are the main barriers and problems encountered in recruiting and involving participants?	Group composition (for activities, workshops) reflects targets initially planned. The tool fosters collaboration and involvement of actors implicated.
Expectations & social learning / Capabilities acquired	According to the vulnerable groups and other stakeholders involved: ● Have the overall pilot's expectations been fulfilled? ● To what extent do the participants perceive as benefits what they have learned along the implementation? ● Has the implementation fostered empowerment of participants?	The tool promotes reflexive learning and the development of key capabilities related to the reduction of the digital gap, as well as the empowerment of participants. Involved

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	• Which are the main capabilities acquired by participants? • What mechanisms / arrangements could be provided to improve the implementation of the tool by the participants?	parties express satisfaction for the activity attended.
Relationship with other Dignity tasks.	• Does the tool establish bridges with the other Dignity activities? • What resources/benefits does the tool provide to the other tasks within the Dignity project?	The tool facilitates clear connections and linkages with other project activities. The results and activities promoted within the tool benefit other tasks of the DIGNITY framework.

UPC will lead this activity and will implement, as a result, a **Tools Evaluation Plan** (Annex III), reporting specific assessment criteria for each methodology employed, as well as data collection methods and respective partners involved. Specific results will be included in **Tool Evaluation Brief** (Annex IV), one for each methodology assessed in all pilots. Tools evaluation will provide essential information for comparing and deepening pilot's impact results. Furthermore, these qualitative data will also feed Task 4.3 Validation of the DIGNITY approach.

3.4 Data gathering

The following methods of data collection will be employed:

1. **Semi – structured evaluative surveys addressed to workshop participants**: a mix of qualitative and quantitative data should be collected, Open-ended questions will be integrated giving workshop participants the possibility to explain his/her ideas/impressions on some issues and activities. Semi-structured surveys will be designed to allow comparison among the different local interventions and will be validated among project partners. At the end of each workshop a brief evaluative survey will be conducted.
2. **Semi – structured interviews to pilots partners**: the Dignity tools and approach evaluation may need collecting information allowing pilot partners expressing their personal vision and opinions of a given situation using their own perceptions and terminology. Semi-structured interviews will be designed to allow comparison among the different tools and interventions implemented at pilot level. Specifically, an interview guide comprising the main issues that have to be explored, will be validated among project partners, in order to guarantee the consistency of the whole process. Nonetheless, the guide should be flexible so that both the respondent and the interviewer can decide which topics should be deepened / discussed in detail. Semi-structured interviews to pilot partners will be carried out at the end of the framing phase and the bridging phase.

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3. **Group discussions / participatory dynamics**: different meetings and workshops will be held under the activities of task 3.5 'Coordination and support to pilot implementation', specifically On-going meetings with pilots (Task 3.3.5). WP4 will take advantage of such meetings to propose discussions or participatory dynamics in order to obtain perceptions, attitudes and opinions of the participants about specific aspects of local demonstrations. Other ad hoc group meetings could be organised. These discussion dynamics will be conducted in an informal, interactive and non-threating environment, which should encourages an open group discussion, providing the opportunity to deepen specific topics. These meetings will take place each three months. A validation workshop explained in the following sections will take place to contribute to the D4.3 Validation of the Dignity Apprach report.
4. **Participant observation**: A member of UPC will ideally attend each pilot workshop, in order to follow the activity implementation through participant observation. The information collected through this qualitative data collection is relatively unstructured and require interpretive analysis, nonetheless, it will provide essential information for the general understanding of pilots' dynamics and relations among partners in a specific local context.
5. **Other methods** of data collection might be proposed in impact evaluation plans. These methods will be validated as remarked earlier.

Table 6 shows how data gathering process will feed both pilots' process evaluation and DIGNITY validation approach. In this way, both processes will be constantly monitored along the duration of the project and, consequently, Validation Workshop will be able to count with solid analysis upon which establish final discussions.

Table 8. Data gathering overview.

Data gathering	Pilot tools	Validation approach	Timeframe	Partners involved
Semi-structured surveys	✓	✓	End of workshops (SB, IDW, strategies)	All partners
Semi-structured interviews	✓	✓	End of framing phase End of bridging phase	All partners
Group discussions / Participatory dynamics	✓	✓	Every three month (Activity 3.5.3)	Mobiel 21, UPC, Pilots
Participant observation	✓	✓	Pilots' workshops and activities	UPC
Validation Workshop	✓	✓	End of bridging phase	Steering Group

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4. Validation of DIGNITY approach

4.1 Theoretical approach

The process evaluation focuses on the internal dynamics and the overall operations and management of a project, serving different objectives, specifically: to understand strengths and weaknesses of the organisation / implementation of a specific action or intervention, to identify barriers and drivers, to obtain crucial information related to project follow-up and continuous improvement, for the justification at political or management level. In fact, according to Dziekan et al. (2013) process evaluation "*begins during project development and continues throughout the life of the project. Its intent is to assess all project activities, negative and positive factors which are influencing the measure implementation process and thus provide information to monitor and improve the project*".

In a nutshell, the main objective of the process evaluation can be described as the process to get insight from the stories behind the figures and learn from them. Consequently, methods for process evaluation should be descriptive and flexible enough to collect and analyse different kind of information, including perceptions of people involved in the intervention. In fact, these different viewpoints can provide important insights into different understanding and experience of the intervention's process. Process evaluation methods include mainly qualitative approaches, such as interviews, groups' dynamics etc. already described in the previous section. Other descriptive tools, can be Standardised Forms – templates/documents collecting relevant information for process evaluation though open questions – or specific workshops, to be held several times and at different stages of the project, such as ''Learning Histories Workshops' – based on the idea to learn from 'story telling' involving different perspectives and stakeholders (Kleiner, A. and Roth, G., 1997). Workshops based on learning histories should count with a variety of participants including project partners, politicians, representatives of public or private companies, representatives of categories associations etc. Group discussions should be structured around meaningful aspects of the project such as: main lessons learned; actions that can be regarded as successes or failures; main drivers and barriers found etc. (Dziekan et al. 2013).

The method, or the mix of methods chosen, should allow gathering the information on a regular base, and during all phases of the intervention. Besides, they should document all relevant activities linked to the processes of preparation, implementation and operation of a specific action. Aside from mentioned characteristics, it is worth noting that tools with the capacity to communicate stories and transfer experiences, especially for data collected over a long period, should be preferred. Furthermore, it should be taken into account that evaluation involves a broad spectrum of people and institutions. This implies that evaluators should consider different backgrounds, interests and sensitivities of the actors involved. Figure 4 resumes the kind of information usually collected for process evaluation.

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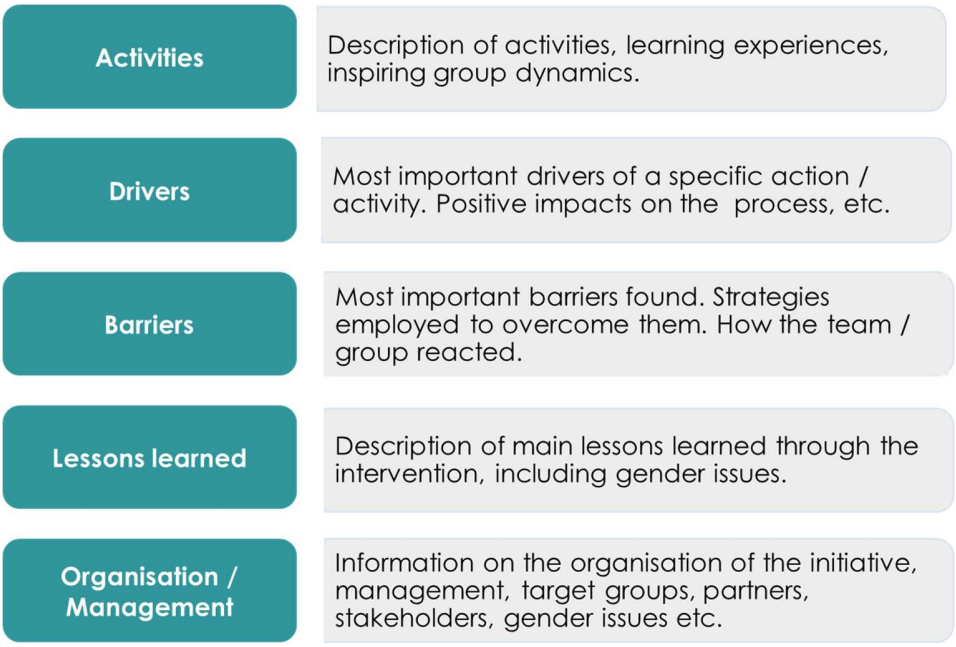

Figure 4. Main information to address process evaluation.

4.2 Validation of the approach

The validation of the DIGNITY approach will be essentially based on the assessment of the **overall capacity of the research initiative to meet its different goals** and, specifically, **how well the different project strategies employed worked together and had a positive impact on the project outcomes** – as a whole, and through its different local demonstrations.

The objective of the process of validation is to offer meaningful insights regarding:

- the extent to which the proposed approach has eventually improved the inclusivity of the process of transport digitalization;
- whether such approach can be promoted for further applicability in other locations, beyond the specific contexts of local demonstrations;
- the capacity to provide evidence-based reliable policy recommendations for digital inclusion for possible implementations at different geographical scales.

Having in mind these aspects, the validation process will try to grasp the complex reality beyond project results, get insight about the drivers of success of the project, as well as the strategies used to overcome barriers found during its implementation. This assessment process will follow the

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whole life of the project, with the aim of developing new findings in order to provide a continuous improvement to project activities and solid recommendations. Besides, the results of such process should allow for the formulation of a robust policy framework, which will ensure that social inclusion is embedded in transport policies and strategies. This, in turn, will lay the groundwork for further standardization and exploitation.

Lesson learned about negative and positive factors influencing the success of the initiative will provide essential information for possible adjustment and refinement prior to assess the potential application of the framework in different contexts. The assessment and comparison of the results of local demonstrations, as translations into practice of project strategies, will offer tailored information regarding further applicability of the DIGNITY approach in other locations beyond the pilots' contexts and sectors.

DIGNITY conceptual drivers and methodologies will be assessed at pilot level. Specifically, through a set of tools aimed at collecting information on how different methodologies and strategies have been applied, focusing on the subsequent phases of the DIGNITY approach and according to their specific function/objective within the research initiative, respectively:

- Framing: identify and frame the main shortcomings and gaps related to digital inclusion in transport.
- Bridging: provide solid instruments and mechanisms aimed at identifying of problems and solutions for the design of more inclusive policies, products and services and ensure that inputs are successfully translated into practice through local demonstrations.

As outlined in Figure 5, Framing and Bridging phases will be assessed in order to define:

- usefulness, appropriateness of conceptual drivers and methodologies;
- correct application of the processes established by methodologies applied.

Eventually, process evaluation will assess if final results, at the level of local demonstration, followed correctly the indications/input of previous phases. Otherwise, the causes should be identified and assessed, with further analysis of Framing and Bridging phases.

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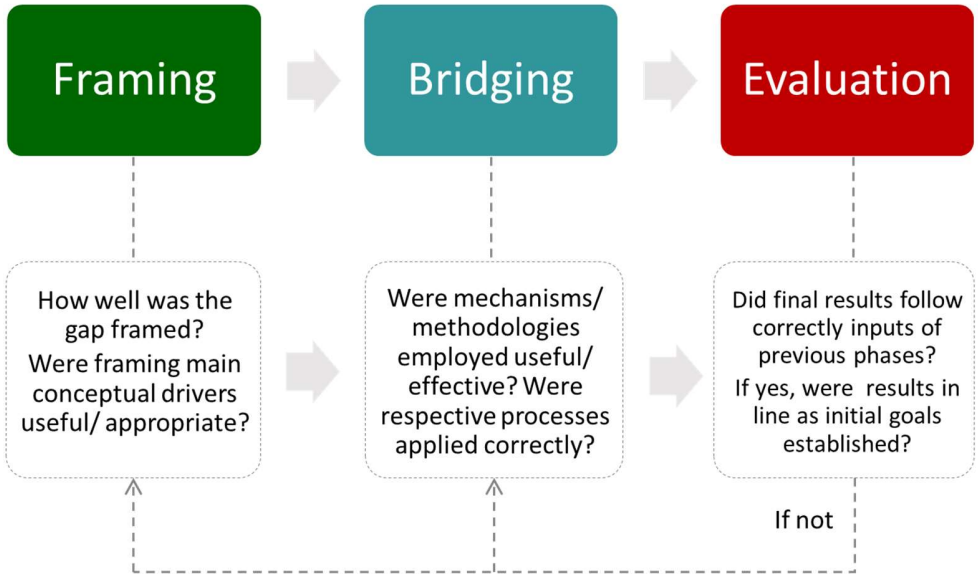

Figure 5. Evaluation of DIGNITY methodologies and strategies.

Diverse data inputs will form the basis of DIGNITY validation process, the majority of which implemented for pilots' process analysis, such as:

- Deliverables, Workshops and Meeting of WP3 on ongoing activities of local demonstrations.
- Evaluation of DIGNITY methods and strategies at pilot level.
- Periodical surveys and semi-structured interviews to project partners and key stakeholders implemented for pilot impact evaluation.
- Validation Workshop (month 30) specifically focused at validating the overall approach of the initiative with the members of the Steering Group.

4.3 Validation Workshop

A final workshop – named Validation Workshop – with the purpose of fostering final discussion on the validation of the **DIGNITY approach, as a whole,** will be held at the end of the project initiative (Month 30). This activity represents the key tool aimed at discussing relevant information related to the integral experience of the intervention, which will allow the **overall evaluation of the research initiative, at strategic level**. The workshop is primarily addressed at DIGNITY research

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partners, nonetheless, it will be considered the possibility to host field experts, policy makers and other key actors who have been involved in the development of the intervention.

The overall objective of this activity is to share the experience and the knowledge acquired by project partners along the development of the project and, particularly, through the implementation of the DIGNITY approach. Specifically, this process should help defining success factors, barriers and key improvement that should be applied for possible transferability and upscaling of the framework in different context.

Specific questions around which discussion will be focused are:

- Have main project objectives been achieved?
- Which are main drivers identified?
- Which are the main barriers that need to be overcome?
- Which improvements/refinements should be integrated to foster the upscaling and transferability of the Dignity approach?
- Which are main lessons learned and policy recommendations derived from them?

Methodologically, the workshop will consist of sharing process and discussion around:

- Preliminary results of pilots evaluation, both in terms of impact and implemented activities. (Impact evaluation Reports and Activity evaluation reports).
- Partners experience in the Project in terms of barriers / drivers / lessons learned.
- Discussion and agreement on key points to be highlighted in the Validation Report.

The results of the meetings will be recorded in a report that will guide the D.4.3 Validation report.

Figure 6 visually resumes the overall DIGNITY evaluation approach.

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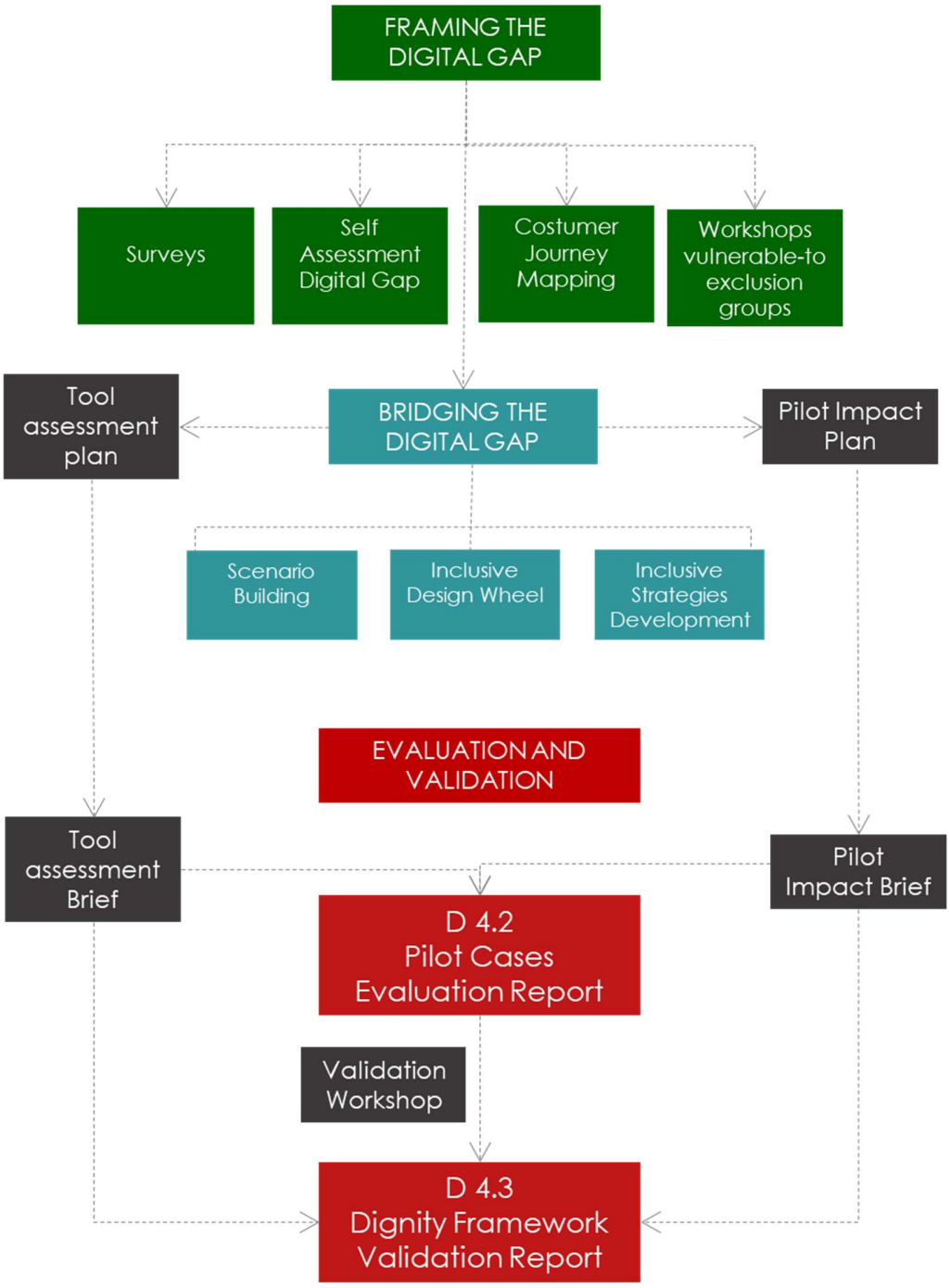

Figure 6. Overall DIGNITY Evaluation Approach.

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5. Gender issues

A large number of research studies has proved gender differences in mobility in the last decades (Kronsell et al. 2016; Den Braver et al. 2020). Such differences risk being exacerbated by the introduction of digital technologies in mobility services. In fact, transport and mobility is an area that has an enormous impact on women, users of different cultural backgrounds, and vulnerable groups. For these reasons, the importance of integrating a gender perspective in the analysis and design of mobility plans is widely recognized to avoid barriers and gender inequalities.

Over the years, scholars have deepened their understanding of the relationship between gender and mobility, finding significant differences between men and women's mobility habits (Cubells et al. 2020). In general, women's daily mobility is concentrated around the home, especially for commuting, compared to men's more extensive mobility. However, women perform more journeys per day due to the chain of tasks related to domestic responsibilities, which play a major role in women's mobility.

These differences regard women in general. Nevertheless, specific underestimated women's needs can vary in different socio-demographic groups. It is important to understand the variation of mobility related to age, economic status, household composition, employment, housing, urbanization etc. The **absence of gender-disaggregated data makes difficult to make sound decisions in transport planning**. It is worth noting that **the fast introduction of digital technologies in mobility solutions could enlarge the gap in equal accessibility** and affordability of transport means.

The DIGNITY project is an excellent opportunity to apply a methodology for the definition, **collection and analysis of gender-disaggregated data and the understanding of the relevance of this component is to be kept in mind in all stages of the work**. In particular, surveys and case studies should disaggregate results both in demographic composition of the target groups, and in the access, use and confidence in digital equipment and systems, and in the identification of specific limitations encountered in mobility.

The **hypothesis that a larger participation of women in the decision making process is a condition for a better consideration of women's mobility** needs is also to be confirmed by the results of the project. Therefore, it is important to consider the gender balance in stakeholders organizations also in the meso and macro level. Whenever possible, it should be reported how many women are present in management position in the organizations and administrations considered, in order to possibly link and assess the solutions proposed with this indicator.

In order to ensure that gender perspective is considered since the beginning in all activities of pilot's demonstration, and that gender-disaggregated data is regularly collected along the duration of the project, a specific checklist, integrated in Table 7, has been developed as guidelines for partners and pilots representatives.

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Table 9. Gender Issues checklist.

Phase	Description
Evaluation Design	• Pilot demonstrations ensure a gender balance representation of participants in workshops, activities, etc. • All evaluation tools are designed integrating gender-disaggregated data. • KPI include gender-sensitive indicators and are developed to measure both qualitative and quantitative gender aspects. • Data sources support the collection of sex-disaggregated data. • Surveys include specific questions for the assessment gender equality issues. • Interviews ensure a gender balance representation of the participants in workshops, activities. Interview guide includes gender sensitive aspects. • Groups' discussions/dynamics among project partners include gender issues aspects.
Data collection & analysis	• Appropriate data collection and analysis methods use sex-disaggregated data. • The gender balance in stakeholders organizations is considered and, the number of women present in management positions of such organisations is reported. • Data collection methods used enables specific gender analysis. • Data analysis aims at understanding gender issues aspects in all stages of the analysis and allow recommendations for replication and policy development.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°875542.

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Annexes

Annex I – Pilot Impact Plan

Title of the intervention	Objective	Outputs/ Outcomes	KPIs	Target Values	Data Collection Methods*	Stakeholders involved**

* IMPORTANT: Data collection should be always gender-disaggregated.

** IMPORTANT: Gender balance should always be considered when stakeholders are involved (target groups, workshops/activities, etc.).

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Annex II – Pilot Impact Brief

PILOT IMPACT BRIEF
Title of the intervention:
Objective:
Expected Output/Outcomes:
Key Performance Indicators:
Target values:
Data collection methods:
Stakeholders involved:
MAIN RESULTS - ANALYSIS KPIs
Describe main results achieved. You may or may not have meet target values set in the Pilot Evaluation Plan. Analyse in detail data related to each KPIs.
BARRIERS FOUND
Describe eventual barriers found related to: meet target values, lack of information, quality of information, organisational aspects, lack of participation etc.
LESSON LEARNED
Describe main lesson learned thanks to the development of the intervention. Include gender issues.
FURTHER COMMENTS
Other comments / suggestions etc.

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Annex III – DIGNITY Tools Evaluation Plan

	ACTIVITIES AND TASKS		EVALUATION PHASE		
	ACTIVITIES	TASK	CRITERIA	TOOLS METHODS	ACTORS INVOLVED
FRAMING PHASE	Surveys	1.2			
	Self-assessment Digital Gap	3.1.1			
	Customer Journey Mapping	3.1.2			
	Workshop with vulnerable groups	3.1.3			
BRIDGING PHASE	Inclusive Design Wheel	3.2			
	Scenario Building	3.3			
	Developing long-term strategies	3.5			

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Annex IV – Tool Assessment Brief

TOOL ASSESSMENT BRIEF
Activity / Task:
Evaluation Criteria:
Tools / Methods employed:
Actors / Partners involved:
Timeframe:
ANALYSIS – PILOT ANCONA
ANALYSIS – PILOT BARCELONA
ANALYSIS – PILOT FLANDERS
ANALYSIS – PILOT TILBURG
OVERALL ASSESSMENT
- Drivers - Barriers - Lesson learned

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Annex V – Potential criteria and KPI

MICRO-LEVEL IMPACT EVALUATION

Dimensions / Criteria	Potential KPI/ Indicators
Level of participation	N° and profile of the participants of the different vulnerable groups (immigrants, disabilities, low income, women, etc.) involved in the workshops/activities
Digital access: Users' accessibility to technology	Rate of smartphone ownership
	Rate of offline alternatives/ low-tech tools
	N° of free public internet access points (hotspots)
	N° of free public charging stations
Digital use of technology	Frequency of a smartphone/tablet use for mobility purposes
Digital abilities skills	N° and type of digital skills training facilities/initiatives
	N° and type user-centred solutions (applications) designed with participation of vulnerable-to-exclusion groups representatives
	Self-rating of ability to use mobility websites/applications
	N° of users who experience limitations for desirable mobility due to difficulties during planning travel because digital skills are required
	N° of user who have confidence in using digital interface
	N° of users who are willing to explore digital interface
Attitude towards technology and digitalisation	N° of users with at least some affinity for technology interaction
	N° of users with limited affinity for technology interaction
	N° of users who have confidence in using digital interface
	N° of users who are willing to explore digital interface
Micro-mobility: Changes in behavioural patterns by vulnerable-to-exclusion groups/	Private car occupation rate before/after the activity
	Changes in modal split rates

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Mobility Poverty	Nº of users who experience limitations for desirable mobility due to special needs or disabilities
	Nº of users who experience limitations for desirable mobility due to the cost of travel?
	Nº of users who experience limitations for desirable mobility due to limited availability of infrastructure
	Nº of users who experience limitations for desirable mobility due to a perception of lack of confidence related to service
	Variation of the cost of the trip due to modal shift
	Reduction in travel time due to modal shift
	Comfort improvements
Use of Digital Related Mobility Solutions	Increase in the use of digital solutions en other areas, beyond the pilot activities
Others aspects and KPI might be considered during the project	

MESO-LEVEL IMPACT EVALUATION

Dimensions / Criteria	Potential KPI/ Indicators
Level of participation Stakeholder engagement	Representativity of meso-key stakeholders involved (core business, extended enterprise and business ecosystem, others)
Gender	Representativity/involvement of women in product and service providers
Digital service Development/ Technology Improvement	Experts/Customers' RATING of digital service
	New functionalities designed
	Main digital services improvements
	Level of usefulness integrated in a mobility platform with other transport options.
Economy & Costs	Costs of technology adaptation to improve digital inclusivity
	Variation of providers' revenues
Mobility service improvement.	Increase of mobility offer for vulnerable-to-exclusion groups thanks to inclusive digital interfaces.

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	Description of main service improvements
Others aspects considered during the project	Reduction in the costs for help desk, client support related to digital services/products
	Reduction in marketing costs for digital services/products
	Needs of the industry: Training, labour, auxiliary industry ...
	Costs of producing/distributing this technology
Others aspects and KPI might be considered during the project	

MACRO-LEVEL IMPACT EVALUATION

Dimensions / Criteria	Potential KPI/ Indicators
Governance models/ arrangements promoting digital inclusion in mobility	Creation of a new institution/ department/ commission
Leadership	New actors leading digital inclusion in mobility.
	Gender leadership
	Level of leadership of each actor.
Degree of public/ private cooperation	New agreements on public-private cooperation on digital inclusion
	New bilateral agreements signed among mobility ecosystem key stakeholders on digital inclusion
	N° of end-users potentially affected by the agreements.
Cross Disciplinary / Cross Sectoral Cooperation stakeholder's engagement, network cohesion	N° of activities conducted with key stakeholders of mobility ecosystem
	Diversity of stakeholders involved
	N° of activities conducted with representative of vulnerable-to-exclusion groups
	N° of new key stakeholders involved during the project pilot
	Strengthening cooperation, meet new strategic contacts etc.

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Degree of Participation in Decision-Making Process	Variation in the level of involvement of each type of group/ organisation/company in the decision-making process
	Creation of new mechanism/channels of participation for each group in decision-making process
	Perception of variation of impact/Influence of each group in the decision-making process (qualitative)
Regulatory framework changes to improve technology accessibility	N° of new draft legislation or improvements proposed
	N° of new plans and programmes proposed
	New vulnerable to exclusion group targeted integrated in regional legislation
Budget, pricing policies and outreach programmes	N° of beneficiaries of some type of mobility social pricing
	Increase of global government expenditure of mobility social pricing
	Reduction of ticket pricing
	Variation of transport operator revenues (from extra tickets, subscriptions, etc.)
	Increase in the N° of clients/users of transport services compared to the current digital product/service
Socio-environmental externalities (travel cost :congestions/time, road safety)	GHG emission reduction (per trip/per km/capita)
	Global reduction of travel costs: congestions, time, safety.
	Variation in inter-modality/public transportation coverage
Others aspects and KPI might be considered during the project	

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