DIGNITY

Digital transport in and for society

Guidelines for digital gap self-assessment [Deliverable 2.1]

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Project: DIGNITY | www.dignity-project.eu
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Executive summary

The digital gap self-assessment framework developed in DIGNITY proposes a new, innovative, and easy to use instrument that allows city authorities to: identify the digital gap in mobility, gain clarity on which vulnerable-to-exclusion groups need attention, and prioritize policy actions in addressing the digital gap.

Document History

Date	Person	Action	Status
July 10	Nina Nesterova	Send document for review	
July 15	Anke Bracke Joy Goodman-Deane Elisabet Roca and Boris Lazzarini (UPC)	Reviewed document, send feedback	
July 20	Lisette Hoeke	Send document for submission	Final

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Introduction

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 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 end 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.

Objectives of the deliverable 2.1

The DIGNITY project is broken down into six work packages, which are described in Figure 1. While work package 1 focusses on understanding the digital gap, work package 2 uses that knowledge to build the DIGNITY approach. The objectives of work package 2 *Building the DIGNITY approach* are:

- To develop a methodology for framing the digital gap in a metropolitan/regional context
- To create co-creating solutions by adapting existing methodologies for inclusive digital transport products and services
- To develop DIGNITY strategies in favour of an inclusive (digital) transport ecosystem
- To build the concept for a Decision Support scheme, the DIGNITY approach

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This deliverable, *D2.1 Guidelines for digital gap self-assessment*, is part of work package 2 and covers the first objective. These guidelines will be used in the pilot regions to frame the digital gap in their region, as part of work package 3. Using this methodology in the pilot regions will enable us to examine the impact of the pilot interventions later on (WP 4 evaluation).

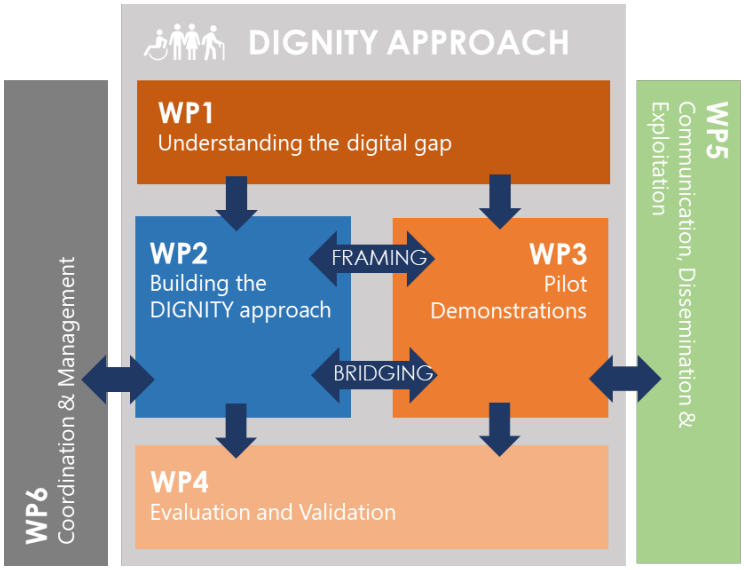

Figure 1 Work package structure for the DIGNITY project

The DIGNITY self-assessment framework, developed within WP2 task 2.1, is closely related to and feeds into different parts of the project. WP1 task 1.1 provides a good understanding of the digital gap in mobility, identifying core challenges and vulnerable-to-exclusion groups and shaping key definitions that are used in this self-assessment framework. The survey on the user factors that affect the use of digital products and services developed within Task 1.2 provides one of the most efficient ways to collect the data necessary for the self-assessment on the Micro level. Task 1.3 provides a starting point for the Meso level analysis, providing a good idea of the types of companies active in the market of digital mobility services and products.

The self-assessment framework is further applied and tested within the DIGNITY pilot regions (WP3, task 3.1). Information from its use in the pilots will be compiled and used to fine-tune the DIGNITY approach (WP2 task 2.3) and improve the framework (task 2.3), before making it available for all cities and regions who want to work towards inclusive and accessible city concepts.

Finally, there is a close link with WP4 task 4.2, which evaluates the project pilots. Once tested on the DIGNITY pilots, the self-assessment framework provides a baseline set of information about the Micro, Meso and Macro levels of each pilot, contributing to the description of the initial transport situation. This enables us to later examine the impact of the pilot interventions (WP4, task 4.2). Finally, the DIGNITY self-assessment framework will be a part of the toolbox, developed by the project (WP4, task 4.6).

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Outline of this deliverable

Deliverable 2.1 consists of this Word document and an Excel template.

The Word document is composed of two chapters: Chapter 1 describes the concept of the DIGNITY self-assessment framework, explaining how the key requirements for the self-assessment framework were addressed, outlining the process of the framework creation, defining its concrete scope and objectives and providing an overall concept. Chapter 2 provides a detailed description of all the components of the self-assessment framework, zooming in on the definition, objectives, indicators, and data collection methods of each framework level, as well as explaining the links between all the levels, bridging it all together in one coherent tool.

While the Word document serves as a guideline, explaining the reasoning behind the self-assessment framework, the Excel tool provides a concrete "fill-in" template that public authorities can use to conduct a self-assessment of the digital gap in mobility. All pages of the Excel tool can also be found in the Appendix of this Word document.

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1. DIGNITY self-assessment framework concept

Digitalization is one of the current trends in society with a major impact on citizens and industry. It facilitates the connectivity between people, businesses, regions, and countries. Location and distance are no longer a barrier to meeting and exchanging information. New types of companies are emerging, fully reshaping some economic sectors and offering companies new market opportunities. The transport sector is not an exception and digitalization in transport is already changing the ways people can access information about transport services and products, as well as changing mobility patterns and the use of some transport options.

However, not everyone benefits from these digital developments. Some people experience difficulties with digitalization (in terms of limited digital skills or access to digital infrastructure) and are therefore at risk of being excluded from some products or services in a society where digitalization plays an increasingly important role. The literature review conducted within the DIGNITY deliverable 1.2 indicated that the digital gap in mobility and specifically its potential effects on mobility poverty have not yet received the necessary attention in national and local mobility policies. If not addressed now, growing digitalization of mobility solutions and of access to them are likely to cause further exclusion of specific vulnerable groups from sustainable mobility solutions, making the switch from private cars to sustainable transport modes even more difficult.

The **main objective** of the DIGNITY self-assessment framework is to provide local authorities with a clear picture of the digital gap in mobility in their region, helping them to prioritize the vulnerable-to-exclusion groups that need the most urgent attention. Chapter 1 explains the key building blocks of the DIGNITY self-assessment framework, defines its scope and positions it within DIGNITY project. It also describes that conceptual idea behind the framework, and the process of framework construction, testing and update (§ 1.2).

1.1. DIGNITY self-assessment framework requirements

The DIGNITY self-assessment framework responds to several contextual and project requirements described in this paragraph. First, the results of the self-assessment framework need to be **beneficial** for its users, **tackling actual challenges** that regions want to address. For this, it necessary that, prior to framework development, a clear set of objectives (translated into research questions) and the scope of the framework are identified. The framework also needs to be **feasible** for the cities/regions to apply. If possible, it should utilise information or indicators that are already being collected on the region level (§ 1.1.1). Third, it needs to be **inclusive** and address the problem of the digital gap in mobility from different angles (e.g. the Micro, Meso and Macro levels suggested by the DIGNITY approach), while establishing the relationship between these angles (§ 1.1.2). Finally, the framework needs to show results in a **visually attractive way** to make the outcome understandable for all stakeholders and parties involved (further developed in § 1.2).

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1.1.1. Objectives of the DIGNITY self-assessment framework

Analysing the digital transition from both users' and providers' perspectives, DIGNITY looks at the challenges brought by digitalization, investigates the relationship between the digital gap and mobility poverty for different population groups and develops an inclusive approach helping policy makers in formulating and developing long-term mobility strategies. It supports public and private mobility providers in conceiving mainstream digital products and services that are accessible to and usable by as many people as possible, regardless of their income, location, social or health situation or age.

The DIGNITY self-assessment framework is developed for cities and regions to identify the digital gap in mobility and to give a clear understanding of the current local situation regarding digitalization in mobility. Based on the Description of Work (DoW) and the literature review conducted within D.1.2, the following vulnerable-to-exclusion population groups, which might experience increased mobility poverty due to the digitalisation of mobility products and services, were identified:

- Older people (those aged 65 years old and over);
- People with disabilities (a capability loss that limits them in daily activities);
- Inhabitants of rural areas (areas with <1000 households per km^2);
- Women;
- People with low income (those on a minimum salary or who receive government support with their income);
- People with low education levels (basic education or no education);
- Migrants (those who were born with a different nationality from their country of residence).

The objectives of the self-assessment framework are:

- To provide an understanding of the current situation in the pilot region regarding digitalization, mobility, and the interaction between the two (e.g. reduced ability to travel due to digitalization).
- To provide knowledge on the ability of citizens to use digital products, identifying any vulnerable-to-exclusion groups that might require additional attention.
- To provide an overview of the current market supply of digital mobility products and services, with a specific focus on the need of vulnerable-to-exclusion groups for digital mobility products and services.
- To assess the policy readiness to address and act on the digital gap in mobility.
- To help cities in their decision making process, by indicating priority policy areas (e.g. in terms of vulnerable-to-exclusion groups, specific markets, regulations etc.) to focus on.

Public authorities are the key target audience of this self-assessment framework. Results from the framework will provide them with an overall understanding of the size of the digital gap in mobility, allowing to zoom into the different assessment levels and getting a more in-depth knowledge about each. The structured approach to digital gap assessment facilitates comparison of the gap

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between different pilot regions and allows for cross pilot transferability analysis. The regions receive a summarized knowledge about measures and solutions that are applied in other pilot regions to address the digital gap. Carrying out self-assessment on a regular basis will allow them to see how the digital gap in mobility changes within their region. In addition, the results of the framework can be used by digital mobility products/services providers to identify where there is still a gap in the demand for vulnerable-to-exclusion groups.

The feasibility of the framework is one of its guiding principles: where possible, it should utilise information or indicators that are already being collected on the national, regional or local level. Where necessary this can be supplemented with additional surveys and interviews.

As explained in § 1.2, the development of the current framework is a two-step process. One of the key objectives of the current edition of the self-assessment framework (D2.1) is to assess the availability of data and indicators on the pilot region level to increase the feasibility of the framework within its last edition as part of the DIGNITY toolkit (D4.6).

1.1.2. Three levels of the DIGNITY self-assessment framework

The DoW indicates that, for "modern metropolitan cities, regions and their inhabitants to develop a healthy and inclusive society, the whole societal system must be coherent. The main and final objective is to develop and cater for sound services that meet the needs of the (potential) end-user on an individual (Micro) level, and that also fit within the policy framework and objectives on a generic (Macro) level. The services themselves can be considered to sit at an intermediate (Meso) level". Therefore, the DIGNITY framework looks at the mobility gap with three separate perspectives, which are related to each other (Figure 2).

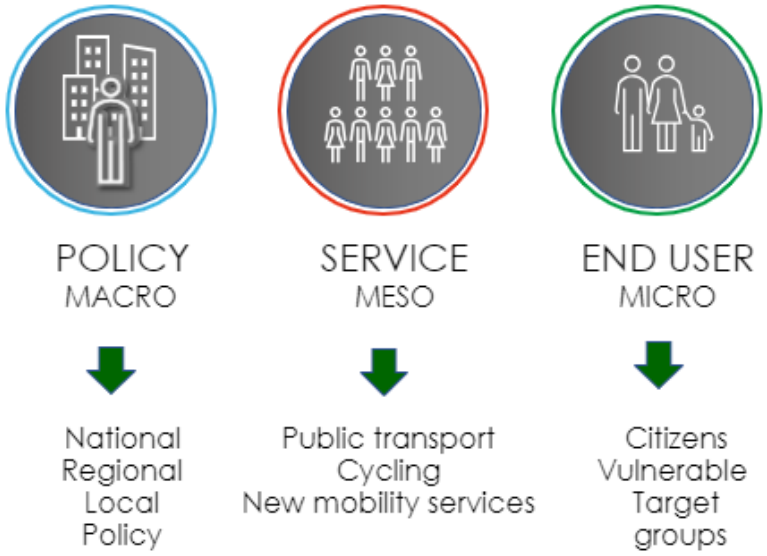

Figure 2 DIGNITY self-assessment framework levels

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The framework has three levels:

- The Micro level: focuses on citizens in general and specifically on the vulnerable-to-exclusion user groups, focusing on their digital skills, potential mobility poverty and the role that digitalization of mobility products and services plays in it.
- The Meso level: focuses on the market side of digital mobility products and services and involves mobility services providers, aiming to get a clear picture of the digital transportation technologies that best meet users' needs of vulnerable-to-exclusion groups.
- The Macro level: includes the perspective of national, regional, and local public authorities, specifically looking at provision of inclusive and accessible mobility to all citizen groups.

The collection of indicators within the framework is performed on each level individually (concrete scope, research questions and indicators per level are discussed in detail in chapter 2). However there is a strong link between each level. This will be described in paragraph 2.4.

1.2. DIGNITY self-assessment framework concept

To keep consistency and ensure compatibility between Micro, Meso and Macro levels of the DIGNITY framework, the same set of key-concept ***definitions*** is used throughout the whole framework:

Vulnerable-to-exclusion group: a group of people with (one or more) similar characteristic(s) that have a higher risk of exclusion and inequality.

Digital ability: The ability of someone to use digital interfaces. This ability is influenced by characteristics such as: cognitive capabilities, neurodiversity, access to technology, technology competence, ability to learn/cope with errors, access to support, psychological factors and other capabilities and skills (Goodman-Deane et al, 2020a).

Digital skills: These are one aspect of digital ability. Digital skills can be measured at different levels, from a person's ability to use simple interface components to their ability to perform complex problem-solving tasks with ICT. Digital skills affect how easy or difficult it is for a person to use digital interfaces.

Digital gap: A mismatch between digitalization in society and the digital ability of individuals. It results in people having difficulties with daily/regular activities due to digitalization.

Digital gap in mobility: A mismatch between digitalization in mobility and the digital ability of individuals. It results in people having difficulties with traveling/regular mobility due to digitalization.

Digital mobility services and products: All mobility products and services that can be used for travel, transport and mobility and include digital interaction with the end-user. This category is not limited to applications and online services. It includes an information unit at a bus

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station from which users buy tickets or obtain information about travel times, as well smart travel cards that allow people to travel without buying individual tickets. Other examples are booking a shared car and unlocking it using a digital device, buying tickets for public transport online, finding travel information using a digital device, and the use of navigation apps and devices.

Mobility poverty: This occurs when people experience limitations in their desired regular mobility patterns. Mobility poverty can be caused by multiple factors such as cost, safety, lack of information, poor availability of transport options and digitalization of mobility products/services.

Self-assessment framework: A set of guidelines and forms that enable organizations to conduct an assessment by themselves. The framework enables the assessment to be done in a systematic way. However, information that is not part of the framework can still be valuable to collect, use or have in addition to the framework.

Next, the feasibility of the framework is one of its key requirements. Therefore, the production of the DIGNITY self-assessment framework follows ***a two-step approach*** *(*Figure 3*)*:

- The first edition of the framework develops key data requirements necessary to assess the digital gap in mobility (task 2.1). Application of this framework to the pilots will gather data available within the regions that is necessary to assess the digital mobility gap. Therefore, this first edition of the self-assessment framework focuses on the inclusiveness of data requirements and establishment of the clear links between different levels
- The second edition of the framework (to be produced at the end of the project, within task 2.3) will take into account the feedback from the pilot regions (both on the feasibility of data collection requirements and on the process). It will also include automated functions that calculate indicators, integrate the assessment of the framework usability and introduce visualization options.

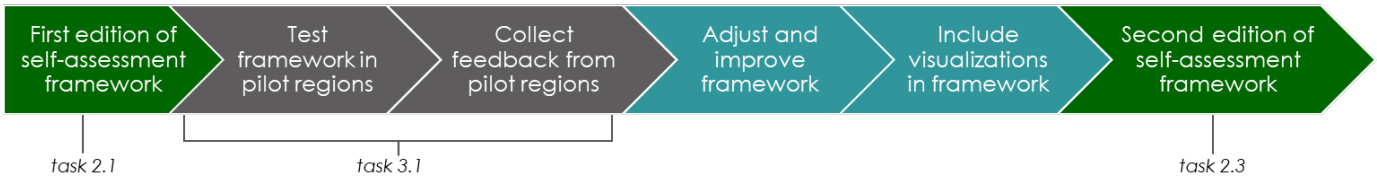

Figure 3 Two-step approach in the development of the DIGNITY self-assessment framework.

The self-assessment framework is ***organised into two documents***:

- The Excel template lists the data requirements for the Micro, Meso and Macro levels. The second edition of the framework will be extended with automated functions producing visualizations of the received results.

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- The Word document acts as a reference document explaining the reasoning behind each framework component and guiding the target audience in filling in the Excel template.

Both documents are built around the Micro, Meso and Macro levels. Within the Word document, the following information is provided for each level:

- The definition of the level and description of the key target groups.
- A set of research questions that are addressed by the level. This indicates the results to be achieved by the data collection for this level.
- A set of indicators and process requirements (frequency; target audience, etc) to be collected from the pilot regions.
- Methods to use for data and information collection.
- The second edition of the framework will also contain examples of end-result visualizations.

The final ambition is to develop a self-assessment framework that allows public authorities (or other interested parties) to get an overall view of the digital mobility gap (Figure 4), as well as more detailed information, zooming into each individual level (Figure 5). In perspective another dimension can be added to the framework, illustrating the evolution of the key parameters.

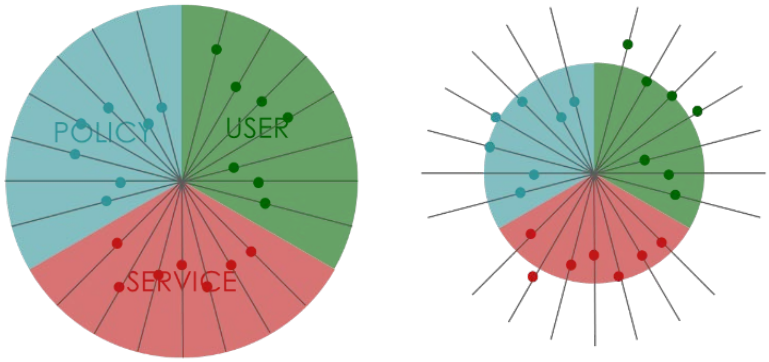

Figure 4 Overall view of the digital mobility gap in the region

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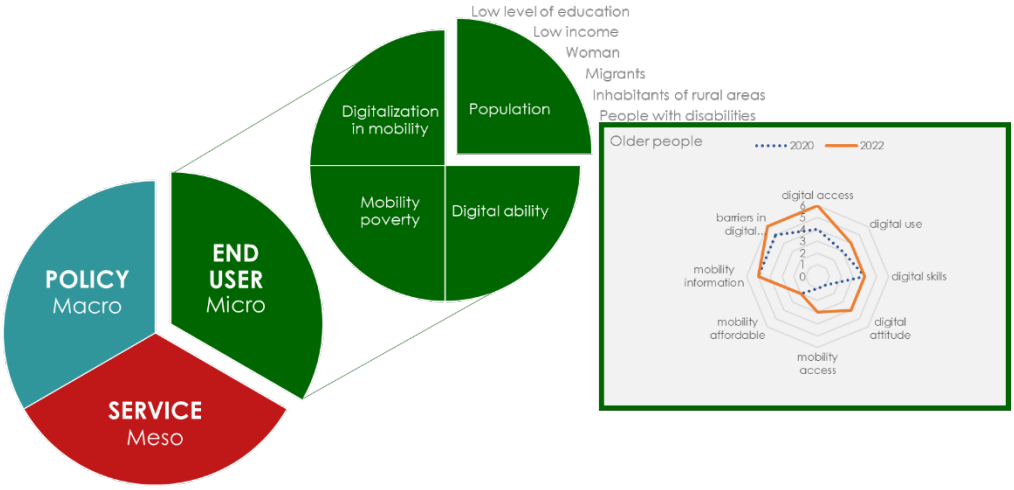

Figure 5 Zooming into the individual levels

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2. DIGNITY digital mobility gap self-assessment framework

The DIGNITY digital gap self-assessment framework is organized into three levels. These levels are further detailed in a set of sub-categories, allowing us to answer the research questions. For each of the sub-categories a set of indicators is developed. Vulnerable-to-exclusion groups that might experience an increase in the mobility poverty due to the digitalization of the mobility products, as well as digital mobility products and services, are the linking pins between all the levels (Figure 6).

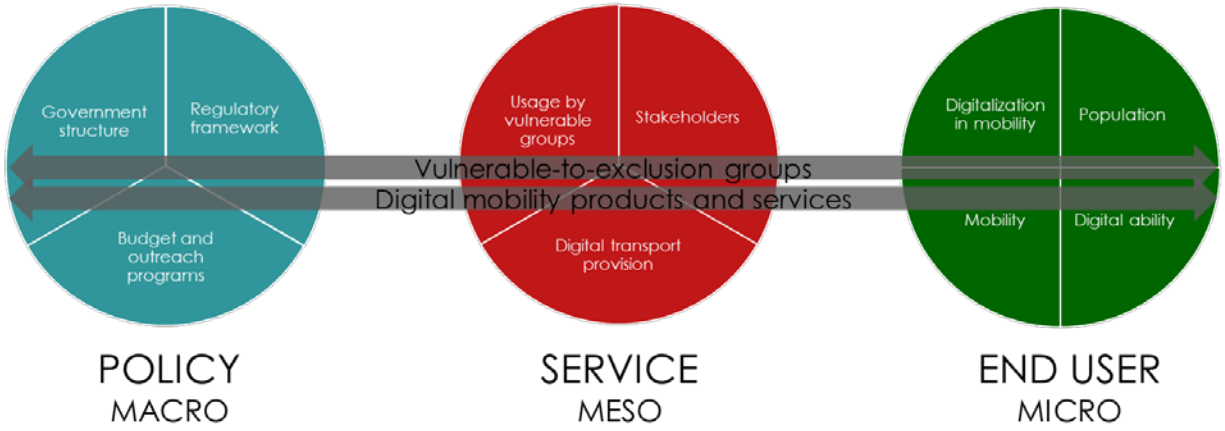

Figure 6 DIGNITY self-assessment framework structure

2.1. Micro level of the self-assessment framework

The Micro level of the DIGNITY self-assessment framework comprises all citizens and all possible users of digital mobility products and services. The Micro level assesses end-user attitudes and requirements, and their digital literacy and inclusion, with a specific focus on the use of digital mobility products and services.

As mention in paragraph 1.1.1, the following vulnerable-to-exclusion groups, which might experience increased mobility poverty due to the digitalisation of mobility products and services, were identified:

- Older people (those aged 65 years old and over);
- People with disabilities (a capability loss that limits them in daily activities);
- Inhabitants of rural areas (areas with <1000 households per km^2);
- Women;

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- People with low income (those on a minimum salary or who receive government support with their income);
- People with low education levels (basic education or no education);
- Migrants (those who were born with a different nationality from their country of residence).

As a result, the Micro level investigates the whole population of the assessment area with a specific focus on the above-mentioned vulnerable-to-exclusion population groups.

2.1.1. Objectives and research questions at the Micro level

The self-assessment framework for regions and cities will help to provide a clear understanding of the digital gap in mobility in the region. At the Micro level, the most important aspect is to understand who is experiencing difficulties in digitalization and in mobility and to what extent the digital gap has been the reason that specific vulnerable-to-exclusion groups experience mobility poverty. The objectives and research questions for this level are summarized below.

The self-assessment on the level of citizens and users results in:

- a clear picture of the characteristics of the population in the region;
- an understanding of the digital skills of the population in the region and their accessibility to digital products and infrastructure;
- an understanding of the characteristics of the population in the region experiencing mobility poverty;
- an understanding of the extent to which the digital gap of specific target groups in the region contributes to their mobility poverty.

The following research questions are identified to meet the objectives for the Micro level.

Population: What does the population look like in the region?

This includes information about the citizens regarding their gender, age, residence (whether they live in an urban or rural area), disabilities, education, etc. This will indicate whether the region has an unusually high proportion of any of the vulnerable-to-exclusion groups.

Digital ability: What is the ability of citizens in the region to use digital products?

Digital ability includes the level of digital skills, access to and use of digital devices and infrastructure (e.g. the internet), and attitude towards digital products for each vulnerable-to-exclusion group.

Mobility poverty: To what extent is mobility poverty is an issue in the region?

This question examines whether (part of) the population experiences mobility poverty in the region, and what the characteristics of these citizens are.

Digital gap and mobility poverty: What is the role of digitalization of mobility products and services in mobility poverty in the region?

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This question identifies the vulnerable-to-exclusion groups that experience a digital gap in mobility in the region. It further examines the extent to which the digital gap for these groups is the reason for their mobility poverty. It considers who is affected and in what circumstances.

2.1.2. Assessment indicators for the Micro level

Derived from the research questions, there are four dimensions described in the Micro level:

1. Population
2. Digital ability
3. Mobility
4. Digital ability and mobility poverty

All pages of the Excel tool that cover Micro level can be found in Appendix 1.

Population

Table 1 describes the indicators used to assess the first dimension of the Micro level: population. To understand the diversity amongst older people, two age groups are considered. First, those aged 65 years and over and, second, those over 80 years old. It is expected that the last group will have more difficulties (then those aged between 65 and 80) with digitalization and mobility in general due to their age. Furthermore, gender is part of the indicators within population. Based on literature study gender inequity still exists (although decreased over the last years) in digital ability.

Education and income are also included. These are measured differently from country to country. For education we are interested in those who have a low level of education. Therefore this group is divided into those who have had no education at all, those with only primary education and those with both primary and secondary education. For income, we are interested in those with a low level of income. Therefore, we focus on people who have less than a minimum salary and/or receive government support with their income, and people with a minimum salary.

Information on the number of inhabitants with disabilities is more difficult to find since this can be measured in many ways. For this work, the focus is on those who experience limitations in daily activities due to any kind of disability.

Finally, a set of questions about the nationalities of people in the region is asked: migrants might be at risk of digital exclusion, due to language, ethnicity, culture, education and other reasons.

Table 1 translates the dimension 1 indicators into concrete data requirements. In the Excel document, some indicators are asked both for the country level and for the region level. If a pilot region conducts the survey on the user factors that affect the use of digital products and services developed within Task 1.2 of the DIGNITY project (further referred to as “DIGNITY survey”) we recommend using the data obtained from this survey to complete the indicators in this table. If this survey data is not available for a region, then it is advised to use whatever data they do have.

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In some cases, this may mean that they cannot meet the specific data requirements in the table. This is especially likely for disability. In this case they should use as close a proxy to the measure as possible.

Table 1 Indicators of Dimension 1: population

Sub-category	Indicator	Description	Merged data requirements
Characteristics of the population	Age	% of population over 65 years	Total number of inhabitants
		% of population over 80 years	Number of inhabitants between 65 and 80 years
			Number of inhabitants over 80 years old
	Level of education	% of population low education levels (only basic education or no education)	Number of inhabitants with no education
			Number of inhabitants with only primary education
	Gender	% of female population	Number of inhabitants that are woman
	Income	% of population with low income (those on a minimum salary or who receive government support with their income)	Number of inhabitants that are man
			Number of inhabitants with minimum salary
			Number of inhabitants who receive government support with their income
	Nationality	% of population who are migrants (were born with a different nationality from their country of residence)	Number of inhabitants who were born with a different nationality from their country of residence
Disabilities	Limited due to disabilities	% of population who have any kind of capability loss that limits them in daily activities	Number of inhabitants who have any kind of capability loss that limits them in daily activities
			Total area of the region (km^2)
Geographical location of household	Living in rural area	% of population living in rural area	Area with <1000 households per km^2 in the region (km^2)
			Number of inhabitants living in rural area
	Living in urban area	% of population living in urban area	Area with >1500 households per km^2 in the region (km^2)
			Number of inhabitants living in urban area

Digital ability

There are multiple factors that influence digital ability (see deliverable 1.1). It is broader than just access to and use of the internet and digital devices. For this self-assessment, four sub-categories are formulated (see Table 2). For both access and use, three technologies are mentioned: internet, smartphone and other digital devices. Since owning a smartphone usually allows people to access the internet and use it anywhere, it is mentioned as a specific indicator. Computers, laptops and tablets could be also borrowed from someone else or available at a specific location

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(e.g. home, work, a library). Skills and attitude are two other sub-categories of digital ability. These are more difficult to measure since a variety of activities and tasks are related to digital skills and attitude has multiple aspects.

In the DIGNITY survey, skills are measured using eight performance tests. These tests involve doing very basic tasks on a smartphone such as using the back button or activating a drop-down list. People who did four or fewer tasks correctly are identified as people with low digital skills. People who did more than four tasks correctly are identified as people with at least basic skills. If the region conducting the self-assessment has not chosen to do the DIGNITY survey, other local research data can be used illustrating the level of inhabitants' digital skills. In case if those are not available the corresponding indicator from the EU Digital Economy and Society Index (DESI) can be used (https://digital-agenda-data.eu/datasets/desi/visualizations).

Attitude towards the use of digital technologies is a sub-category described by three separate indicators:

- Affinity for technology interaction (ATI) refers to a person's tendency to actively engage in intensive technology interaction or to avoid it. It is measured using a standardized scale (Franke et al, 2019)
- Willingness to explore digital interfaces refers to the willingness of a person to explore an interface, e.g. to press buttons that they are not familiar with. This can impact ability to use unfamiliar piece of technology.
- Confidence in using digital technology refers to a person's belief in their ability to use digital products and services effectively.

Those indicators are most easily collected if the DIGNITY survey is conducted. Table 2 details the data requirements necessary for the computation of the Dimension 2 indicators. Within the Excel file, it is suggested that regions collect this data for all individuals in general, as well as for each vulnerable-to-exclusion group.

Table 2 Indicators of Dimension 2: digital ability

Sub-category	Indicator	Description	Data requirements
Access	Internet	% of population without internet connection	Number of inhabitants who have access to internet Number of inhabitants who don't have access to internet
	Smartphone	% of population without smartphone	Number of inhabitants who have a smartphone Number of inhabitants who don't have a smartphone
	Other digital devices (PC, tablet)	% of population without access to computer, laptop and tablet	Number of inhabitants who have access to computer, laptop and/or tablet

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			Number of inhabitants who don't have access to computer, laptop and tablet
Use	Internet	% of population that use internet less than once a week	Number of inhabitants who use internet at least once a week Number of inhabitants who use internet less than once a week
	Smartphone	% of population that use smartphone less than once a week	Number of inhabitants that use smartphone at least once a week Number of inhabitants that use smartphone less than once a week
	Other digital devices (PC, tablet)	% of population that use computer, laptop and/or tablet less than once a week	Number of inhabitants that use computer, laptop and/or tablet at least once a week Number of inhabitants that use computer, laptop and/or tablets less than once a week
Skills	Digital skills	% of population with no of low digital skills	Number of inhabitants with low digital skills Number of inhabitants with at least basic level of digital skills
Attitude	Affinity for technology interaction	% of people who have limited affinity for technology interaction	Number of inhabitants with at least some affinity for technology interaction Number of inhabitants with limited affinity for technology interaction
	Willingness to explore digital technology	% of people who are not willing to explore an digital interface	Number of inhabitants who are willing to explore digital interface Number of inhabitants who are not willing to explore digital interface
	Confidence of using digital technology	% of people who have confidence in using digital interfaces	Number of inhabitants who have confidence in using digital interface Number of inhabitants who have no confidence in using digital interface

Mobility

The dimension of mobility will give insights on the modal split in the region and on mobility poverty (whether people experience difficulties and/or limitations regarding their desired mobility patterns). The first sub-category addresses the modal split. It contains data on the number of trips that are made by all the inhabitants on an average day, as well as those made in each of the vulnerable-to-exclusion groups. The second sub-category examines mobility poverty. This can be caused by multiple factors such as high costs, safety issues, lack of information, lack of transport options, difficulties due to digitalization of mobility products/services etc. On consulting the pilot areas, it became clear that data on mobility poverty is limited. Most regions and cities do collect

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mobility and travel information about the population, such as the frequency of trips, use of transport mode, duration of trips, purpose of trips and so on. However, in most cases this data does not include information on mobility poverty or mobility exclusion. Table 3 details the data requirements for the Dimension 3 indicators. Within the Excel file it is suggested that this data is collected for all individuals in general, as well as for each vulnerable-to-exclusion group.

Table 3 Indicators of Dimension 3: mobility

Sub-category	Indicator	Description	Data requirements/units
Modal split	Amount of trips per transport mode	% of the total amount of trips that are made by inhabitants on an average day for each transport mode	Total amount of trips by all citizens on an average day Total amount of trips by all citizens on an average day by car Total amount of trips by all citizens on an average day by bike Total amount of trips by all citizens on an average day by foot Total amount of trips by all citizens on an average day by train Total amount of trips by all citizens on an average day by bus/metro/tram Total amount of trips by all citizens on an average day by other motorized/electric vehicle Total amount of trips by all citizens on an average day by other transport mode
Mobility poverty	Experience of limitations	% of people who experience limitations on their desired mobility	Number of inhabitants who experience limitations on their desired mobility (in regular travel in their region)
Mobility poverty due to affordability	Price of travel	% of people who experience limitations on their desired mobility due to the cost of the travel	Number of inhabitants who experience limitations on their desired mobility due to the cost of the travel
Mobility poverty due to availability	Infrastructure	% of people who experience limitations on their desired mobility due to limited availability of infrastructure	Number of inhabitants who experience limitations on their desired mobility due to limited availability of infrastructure (e.g. bus stops or bike lanes)
	Transport services	% of people who experience limitations on their desired mobility due limited availability of transport services	Number of inhabitants who experience limitations on their desired mobility due to limited availability of

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			transport services (e.g. bus, trains or shared vehicles
	Support for special needs	% of people who experience limitations on their desired mobility due to special needs or disabilities	Number of inhabitants who experience limitations on their desired mobility due to special needs or disabilities
Mobility poverty due to safety	Safety	% of people who experience limitations on their desired mobility due to concerns about the safety of the transport services	Number of inhabitants who experience limitations on their desired mobility due to concerns about the safety of the transport services

Digital ability and mobility poverty

This dimension provides an awareness whether there are any vulnerable-to-exclusion groups that experience mobility poverty due to digitalization. To understand this, first the use of digital mobility solutions by different groups is investigated. Those are split into different types of digital transport services and digital methods to find travel information. Next, it is necessary to identify the groups that experiences mobility poverty due to digitalisation. There can be several reasons for people to experience limitations to their desired mobility. Missing specific digital skills that are necessary to access or use a mobility product or service is one of the reasons. Finally, this dimension investigates the confidence inhabitants have in planning a unfamiliar trips with either computer or a smartphone. Table 4 covers the indicators for the dimension of digital ability and mobility poverty.

Table 4 Indicators of Dimension 4: digital ability and mobility poverty

Sub-category	Indicator	Description	Data requirements
Use of digital mobility solutions	Use of digital transport services	% of people who used digital transport services in the last three months	Number of inhabitants who used any kind of digital transport service in the last 3 months Number of inhabitants who used car sharing services (on-street car hire) Number of inhabitants who used bike sharing services (on-street bike hire) Number of inhabitants who used other vehicle sharing services (e.g. on-street scooter, motorbike hire) Number of inhabitants who used carpooling services (sharing car journey) Number of inhabitants who used digitally booked taxi services Number of inhabitants who used a mobile phone to pay for parking

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			Number of inhabitants who used any other digital transport service
	Use of digital methods to find travel information	% of people who used digital methods to find information about travel	Number of inhabitants who used digital methods to find information about travel Number of inhabitants who did not use digital methods to find travel information because they already knew the information and don't need to look for it Number of inhabitants who did not use digital methods to find travel information because they don't know where to find the information
Mobility poverty due to digitalization	Digital skills needed for activities before trip	% of people who experience limitations on their desired mobility due to difficulties during planning travel because digital skills are required	Number of inhabitants who experience limitations on their desired mobility due to difficulties during planning travel because digital skills are required
	Digital skills needed for activities during trip	% of people who experience limitations on their desired mobility due to difficulties during trips because digital skills are needed to use transport	Number of inhabitants who experience limitations on their desired mobility due to difficulties during trips because digital skills are needed to use transport
Confidence in using digital travel services	Confidence in planning a journey via PC or smartphone	% of people who are not confident to plan a journey via computer or via smartphone	Number of inhabitants who are confident that they can successfully plan a unfamiliar, local public transport journey with a computer Number of inhabitants who are not confident that they can successfully plan a unfamiliar, local public transport journey with a computer Number of inhabitants who are confident that they can successfully plan a unfamiliar, local public transport journey with a smartphone Number of inhabitants who are not confident that they can successfully plan a unfamiliar, local public transport journey with a smartphone

2.1.3. Data collection methods

For the Micro level of the self-assessment, we chose to make a direct link with the DIGNITY survey. This survey uses an existing method and tool for measuring digital ability (Goodman-Deane et al, 2020b), i.e. to gain insight into the number of people (and their characteristics) who are unable

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to use a product or service because of the demands that it places on users' capabilities. Connecting the DIGNITY survey with the self-assessment allows the pilot regions to utilize this survey data that they have already collected on the project. In addition, it gives other regions and cities a proper method/tool to use if they want to get insight into the Micro level of the digital gap in their region. To get a clear picture of the characteristics of the population, national statistics of population can be used.

If this self-assessment will be done without having the data from the DIGNITY survey, we suggest the following data collection methods.

- **Population**: National statistics and statistics of Eurostat (https://ec.europa.eu/eurostat) per country can be used.
- **Digital ability**: Data about access, use, skills and online activities are available per country via the Digital Scoreboard of the European Commissionhttps://digital-agenda-data.eu/datasets/desi/visualizations) This makes use of Eurostat data to provide a digital score for each country using several indicators.
- **Mobility**: Specific studies per region can be used to explore mobility poverty in the region. If new surveys are developed to get a clear picture of mobility poverty, questions from the DIGNITY survey can be used as an example. The CIVITAS Thematic policy note about transport poverty (Dotter, 2016) lists some indicators and which target groups experience limitations in mobility for each indicator (see Table 5).

Table 5 Relation between indicators and vulnerable-to-exclusion groups in CIVITAS policy note (Dotter, 2016)

	Availability	Physical Access	Information	Costs	Safety & Security
Children and young people	■			■	■
Elderly people		■	■		■
People with reduced mobility		■			■
Women	■	■			■
Migrants and ethnic minorities			■		
Low income and unemployed				■	
Population living in rural and deprived areas	■		■	■	

- **Digital ability and mobility poverty** There is limited data available about this aspect. The questions related to this topic that are currently part of the DIGNITY survey can be used as an example for new studies, surveys or interviews in the region. Interviews would be a good

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method to collect information on this topic. Involving stakeholders and interest groups related to the target groups would help to get more insights into this aspect.

2.2. Meso level of the self-assessment framework

The Meso level of the DIGNITY self-assessment framework is about the digital mobility products and services available within a region. The current era of digitalization is not only changing the way providers communicate with their users, but is also changing the availability of different transport options. New types of services are offered, and new dimensions are explored. As using these services requires a certain level of technical know-how, a lot of people are excluded from the mobility system as a result. To identify both the degree of digitalisation of the current mobility market and the problems that may result for certain user groups, a complete overview of digital mobility provision in the region will be created. The main focus of the Meso level self-assessment is therefore on all **the providers/manufacturers of digital mobility products and services** and on the digital mobility products and services themselves.

The input provided by the Meso level assessment will be used to start a co-creation process towards an inclusive digital mobility eco-system, closely working together with the main stakeholders of the digital mobility services. To accomplish this, the Meso level will give insights into the existing **digital gap in transport provision**. Not only the amount of services but also the usage and non-digital alternatives are considered. That way, a holistic approach will show which service dimensions need specific attention to meet their users' needs and in what way.

2.2.1. Objectives and research questions for the Meso level

At the Meso level, the most important objective is to understand the degree of digitalization of the mobility products and services available within a region, and whether this poses problems for vulnerable-to-exclusion groups. It gives a clear overview of how many digital services are available and how many of them offer a non-digital alternative when needed. The definition of specific target groups for each product, and actual usage numbers of these products by these target groups will tell us if there is a digital gap for each dimension.

In addition, the Meso level overview creates digital awareness amongst both local authorities and the providers of these mobility services and products. By providing a snapshot of the current situation in a region, discussion about (digital) transport provision as a whole might arise. The objectives and research questions for this level are summarized below.

The self-assessment on the level of digital products and services results in:

- An overview of all the local and regional stakeholders relevant for designing successful digital transport products and services.
- An overview of all the digital transport products and services already in place, their characteristics, and their user groups (intended user groups vs. actual user groups).

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- Awareness about the current situation in transport provision as a whole, the (non-) existence of certain digital mobility products and their problems and possibilities in the region.
- An understanding of the existing digital gap in transport provision, per target group and per category.

To meet the objectives stated above, a series of different research questions have been identified:

Key stakeholders: who are the important (local) players for creating digital transport products and services?

Being the main input for organizing a co-creation trajectory towards an inclusive digital mobility system in the region, a complete overview of all the relevant key players when designing a successful digital mobility product in the region is created. All stakeholders are categorized into the following groups: core business stakeholders (transport operators, data providers, users), extended enterprise stakeholders (IT developers and designers, digital support solutions, insurance companies) and business ecosystem stakeholders (regulators and policy makers, investors, research institutes, media and marketing firms, and unions). For stakeholders connected to transport provision itself, a more detailed overview of characteristics is gathered.

Digital transport provision: which digital products and services are available within a region?

By providing a structured framework for thinking about the main digital products and services in the region, the current situation of digital transport provision in a region will become clear. Not only will this be linked to the main services in actual transport provision in the region, but it will also create awareness and understanding of the current situation and anticipate possible problems and possibilities. Digital transport provision is categorized by its function into: digital journey planning services/platforms, digital vehicle sharing services/platforms, digital information services/platforms and digital payment and booking services/platforms. For every service, a more detailed overview of their characteristics will be created.

Usage by vulnerable-to-exclusion groups: for whom are the existing digital transport products and services made, and who are the actual user groups of these products and services?

An understanding of the usage of individual services and whole categories of services is created by comparing the intended user groups with the actual user numbers of the vulnerable-to-exclusion groups (see paragraph 1.1.1). This way, it will become clear which groups are being excluded in designing these services, and which groups are being excluded unintentionally. Identifying the users' needs will be the first step towards designing an inclusive digital mobility system.

Digital gap: which vulnerable to exclusion population groups are being excluded from what kind of products and services and is there is an alignment between top down and bottom up approaches to the digital products and services within the region?

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Based on the needs of the users (Micro-level) and the digital transport provision in the region (Meso level), a general understanding of the digital gap from both the users' and providers' perspective will be created. Next to it, the gap between bottom up market development (Meso level) and policy priorities (Macro level) can also be assessed.

2.2.2. Assessment indicators for the Meso level

The Meso level involves several steps of data collection. First, a general stakeholder mapping of the main key players in digital mobility in the region will give an overview of who to consider when thinking about an inclusive digital mobility eco-system. Next, a series of indicators will capture the current situation in digital transport provision in more detail, examining digital mobility products per function and digital mobility products per service separately. These indicators will translate into a clear visualisation of the Meso level situation in different dimensions.

Derived from the research questions, there are three categories described in the Meso level:

1. Key stakeholders
2. General overview of digital transport provision
3. Market for each digital transport service/products in the region

All pages of the Excel tool that focus on Meso level can be found in Appendix 2.

Key stakeholders

By mapping the main relevant stakeholders for creating and monitoring digital mobility products and services, a complete overview of the digital mobility provision market is created. This is a way to understand the stakeholder dynamics in digital mobility provision as a whole. This overview is divided into three categories and several sub-categories, following the structure from Christiaanse (2019) about stakeholder mapping for designing an integrated MaaS solution (see Table 6). The three categories are: core business stakeholders, extended enterprise stakeholders and business ecosystem stakeholders. The goal is to make local authorities aware of the different types of key players to consider when designing a successful digital mobility product. In the next step, more detailed characteristics about the transport operators themselves and the current digital services and products will be gathered.

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Table 6 Overview of key stakeholders in making digital mobility provision successful

Categories	Sub-categories	Description of information for every sub-category
Core business	Transport operators Data providers Customers/users	- List of all main groups/companies/individuals per sub-category in the region - Description of how these groups/companies/individuals are involved in the process-making of a digital transport service/platform - Description of how these groups/companies/individuals should be involved according to local government
Extended enterprise	IT Developers (back- & front-end infrastructure, maintenance) IT Designers Digital support solutions (ticketing, payment, etc). Insurance companies	
Business ecosystem	Regulators & policy makers Investors Research institutes & universities Media & marketing firms Unions	

General overview of digital transport provision

To create a general overview about the provision of digital mobility services in a region, an initial breakdown is made based on the main function of the service as follows:

- Digital journey planning
- Digital vehicle sharing
- Digital information gathering
- Digital paying/booking

The breakdown was based on Schreieck et al (2016) but altered to cover a wider range of digital mobility services (not just app and website based), focusing on services with end user digital interaction.

Table 2 shows the indicators needed to achieve this overview. For each sub-category, information is gathered about the digital mobility services and platforms available in that category in the region. This includes information on the number of products and the degree of digitalization in the category, as well as the level of engagement with these services from vulnerable-to-exclusion groups and specialised services aimed at particular user groups. This results in an initial insight into the number and general characteristics of the digital mobility services available in the region, which may already highlight the general problems as perceived and experienced by local authorities.

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Table 7 Overview of digital mobility services/platforms in general, split by their function.

Categories	Sub-categories	Description of information for every sub-category
Digital journey planning services/platforms	Trip planning Navigation	How <u>many</u> services/platforms are available in your region? What are the <u>main</u> services/platforms that are available in your region? (list up to 5) To what extent are the vulnerable-to-exclusion groups engaged with these services in general? Why? Are there services aimed at particular user groups? Which services and which groups? Are there non-digital alternatives for using these services/platforms? Which ones?
Digital vehicle sharing services/platforms	Consumer car sharing (B2C) Personal car sharing (C2C) Corporate car sharing (B2B) Ride sourcing Ride splitting E-hailing (taxis) Demand responsive public transport sharing Bike sharing Other vehicle sharing (e.g. scooters, kick scooters, etc.)	
Digital information services/platforms	Vehicle information provision Parking information provision Facility information provision Travel information provision Roadside assisting	
Digital payment (and booking) services/platforms	Ticket payment (shared) vehicle payment Parking payment	

Market for each digital transport service/products in the region

The objective of this section is to assess the market of digital transport services and products. Therefore for each digital transport service/product in the region details information is needed that will be collected on the level of the company. For this part of the assessment it is important to collect as many of the service/product information for the region (with reasonable effort), including those mentioned in Table 7. Table 8 describes all the information to be filled in for each individual service: the level of operation, company ownership and size, the number of unique users each year, intended user groups, actual user groups, specific measures to include vulnerable-to-exclusion groups, integration in MaaS applications, functions provided by the

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services and non-digital ways to use the service. The results of Table 7 will be used and compared to the results of Table 8 to create a fuller understanding of the current Meso situation in a region.

Not only will this give a complete overview of the key players in the digital mobility market in a region, but it will also show where digital gaps occur and in what way. This input will be used by local policy makers to communicate and work together with key stakeholders to work towards an inclusive digital mobility system. In this way the Meso level forms the glue between the users of digital mobility products (Micro level), and the policy makers (Macro level) taking into account the digital gaps at the Meso level.

Table 8 Overview of digital mobility services/platforms for every product individually.

<table>
<tr><td colspan="2">Name of service/product/platform</td></tr>
<tr><td colspan="2">Name of the company</td></tr>
<tr><td colspan="2">Main type of service offered (list of all the categories of type of service can be found in Appendix 3)</td></tr>
<tr><td colspan="2">Level of operation (international – national – regional – local)</td></tr>
<tr><td colspan="2">Ownership (public – private)</td></tr>
<tr><td colspan="2">Company size (micro enterprise: <10 employees – small enterprise: 10-49 employees - medium-sized enterprise: 50-249 employees - large enterprise: >=250 employees)</td></tr>
<tr><td colspan="2">Intended user groups during the design-making process of the service?</td></tr>
<tr><td colspan="2">Number of people using this services (per year) in total and for each vulnerable-to-exclusion</td></tr>
<tr><td colspan="2">Does this service/platform take specific measures to include vulnerable-to-exclusion groups? (If yes, please specify)</td></tr>
<tr><td colspan="2">Is this service integrated in a MaaS application? (If yes, specify name of application)</td></tr>
<tr><td rowspan="5">Does the service has functions other than the main type of service offered?</td><td>Digital journey planning</td></tr>
<tr><td>Digital vehicle sharing</td></tr>
<tr><td>Digital information provision</td></tr>
<tr><td>Digital payment/booking</td></tr>
<tr><td>Other, please specify</td></tr>
<tr><td colspan="2">Is there a non-digital way to use this service or product?</td></tr>
</table>

2.2.3. Data collection methods

To gather data on the Meso level, several data collection methods are considered. These methods will depend on the data sources available within the region carrying out this self-assessment. Examples of possible data sources or data collection methods will be provided for every step in the process.

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In order to identify the **main actors and stakeholders** for every group in Table 6 and to create a general overview about the provision of **digital mobility services by function** using Table 7, local authorities are mostly guided by their interactions with a broad amount of relevant people in the digital mobility world both inside and outside their own field of work. To gain insight into the available information within the government itself and achieve as complete an overview as possible for every step, an internal and cross department brainstorm with all the involved parties of the various departments of the local government may already result in a good total picture. If this turns out to be insufficient, the expertise of external informants or organisations can be called upon.

Finally, data is collected about the **main digital mobility services separately** (Table 8). To achieve this, every identified important service provider should be contacted individually by the local government. In order to collect this information, the local authority may send a questionnaire to be completed or conduct an interview with the service provider in question. Contacting the service providers individually is the only way to guarantee a correct measurement of all the listed indicators and a therefore quantifiable result from which to calculate the digital gap on the Meso level.

2.3. Macro level of the self-assessment framework

At **the Macro level**, the institutional structure of a region is considered. However, the institutional framework does not only refer to the structure of the political administration. Other forms of political regulation, network governance and the interdependence of political decision-making levels are also considered. Structural and procedural aspects are surveyed. Structural aspects include both the degree of institutionalisation of political administration and concrete laws and regulations. Process-related aspects include the mode of political decision-making, the forms of cooperation among actors and the consideration of disadvantaged groups. It includes the perspective of the European, national, regional, and local public authorities, specifically looking into the provision of inclusive and accessible mobility to all citizen groups based on laws, regulations and plans.

2.3.1. Objectives and research questions for the Macro level

At the Macro level, the most important thing is to understand whether public authorities have the appropriate governance structures and regulatory framework in place to face the digital transition in the transport and mobility domain, ensuring that no-one is left behind. In addition, the self-assessment tool can provide insight into whether and how public institutions can help to decrease the digital gap in mobility via targeted policy and appropriate allocation of budget for incentives, subsidies and educational programmes, as well as supporting initiatives such as research, pilot demonstrations and targeted programmes for start-ups. The self-assessment on the Macro level results in:

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- An understanding of the governance structure and policy making mechanisms, and the level of cooperation between public/private, cross-sectorial domains and governance levels (local, regional, national);
- A clear picture of the regulatory framework in place in the region that includes and integrates elements of mobility, ICT, social inclusion, and data sharing;
- An overview of the budget allocation for supporting outreach programmes to sustain market take-up of new mobility technologies and the inclusion of vulnerable-to-exclusion groups in the digital transition.

The following research questions are identified to meet the objectives for the Macro level.

Governance structures: How participatory and inclusive is the policy-making mechanism in the region?

This includes a mapping of all policy domains and policy actors relevant for designing a digital transport eco-system (politicians and administrations on local, regional and national levels) and information on decision-making processes in terms of open consultation and/or participatory interventions.

Regulatory framework: Are the institutional and policy assets in the region prepared to meet the challenges of digital transition in transport and mobility ensuring social inclusion?

This includes information about regulatory frameworks in place on local, regional and national levels regarding inclusion, transportation, data sharing, etc. that are supporting or hindering an inclusive (digital) transportation system, together with a screening of relevant policy and planning documents regarding technological developments and smart cities, social inclusion, transport, the sharing economy, etc.

Budget and outreach programmes: To what extent is the local authority allocating financial resources to support the digital transition in mobility and to ensure that vulnerable-to-exclusion groups are included in the transition process?
This section will provide an overview of the range of supporting programmes and related budget allocations towards digitalisation in transport in the region. It will include subsidies, incentives and acceleration programmes for start-ups and educational programmes for society at large, together with participation in research and pilot initiatives. This will help to identify to what extent the local authority is investing in the sector.

2.3.2. Assessment indicators for the Macro level

Derived from the research questions, there are three dimensions described in the Macro level:

1. Governance structures
2. Regulatory framework
3. Budget and outreach programmes

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All Macro level pages of the Excel tool can be found in Appendix 4.

Governance structures

These indicators specify and refine the regulatory structure. The processes of decision making according to their degree of inclusiveness are captured. In addition to the processes, the relevant actors and their modes of cooperation are examined. For the analysis of the digital gap it is necessary to determine the degree of institutionalization of inclusion. The indicators of the governance framework contextualize the scope for policy making. This approach is intended to identify which policy instruments or processes have already been defined to design an inclusive and fair mobility system.

With regard to the providers of new mobility services (Meso level), the areas and intensity of cooperation between private and public actors will be examined. The key question is: How is cross-sectorial coordination among policy domains and the private sector developed? The inclusivity of the decision-making process in the political administration itself is relevant for the design of an inclusive mobility system.

Table 9 Indicators of Dimension 1: governance structures

Category	Sub-category	Description
Leadership	Specific position within the administration responsible for the connection: Transport and digitalization Transport and social inclusion Transport, digitalization and social inclusion	Presence of a clear reference position towards an inclusive digital transition in transport and mobility Survey of the number of persons or groups involved
Degree of institutionalization of inclusion	Relevant positions and units	Specific positions or administrative units that deal with the inclusion of potentially disadvantaged groups (e.g. Equal Opportunities Officer, Diversity Manager)
Cross-disciplinary collaboration	Economy Justice Social Transport Environment Other	Policy domains and units that are involved in mobility digitalization
Degree of public/private cooperation	Forms of cooperation: Public private Partnerships Cooperation on specific topics in working groups and projects	Level of networking and cooperation between private and public actors Types of organization and cooperation (mechanisms)

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	Experimental spaces: agile, temporary and clearly regulated new forms of cooperation Open forms of cooperation Actors with which cooperation takes place: Transport operators Data providers IT Developers (back- & front-end infrastructure, maintenance) IT Designers Digital support solutions (ticketing, payment, etc.) Insurance companies Investors Research institutes & universities Media & marketing firms Unions	Identification of the specific actors
Degree of participation in decision-making process	Level of involvement for each type of group, organization, company in the decision-making process	To what extent are relevant actors involved in the decision-making process? *See the list of actors in the previous category*

Regulatory framework

The information on the regulatory framework in place in the region will help to generate understanding on the level of readiness of the region to meet the challenges of the digital transition in transport, while also ensuring social inclusion. The complete regulatory framework is not covered here. The focus is on selected programmes that already exist for the implementation and maintenance of an inclusive mobility ecosystem. The link to the Meso level, which specifically asks about references to relevant mobility services, is made at this point.

The documents are differentiated according to their formal status (document type, administrative level) and specified in relation to specific mobility services and target groups (see Table 10).

This analytical framework allows an adequate collection and evaluation of the relevant policy documents.

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Table 10 Indicators of Dimension 2: regulatory framework

Category	Sub-category	Reference to specific digital mobility product and/or services	Reference to specific vulnerable-to-exclusion group	Description
Policy and planning documents	Type of document Level of governance Period of implementation Type of provision	Digital journey planning Digital vehicle sharing Digital information provision Digital payment/booking Other	Older people People with disabilities Inhabitants of rural areas Women People with low income People with low education levels Migrants Other groups	List of relevant documents with qualified analysis. To what extent they include the vulnerable groups in their elaboration?

Budget and outreach programmes

In the budget and outreach programme category, the proportions and scope of inclusive mobility activities are examined even more closely and quantified. In addition to the modes of budget share, the concrete use in specific thematic fields is recorded. Outreach programmes are designed to help and encourage disadvantaged or vulnerable people or groups.

Table 11 Indicators of Dimension 3: budget and outreach programmes

Category	Sub-category	Formal status	Reference to specific digital mobility product and/or services	Reference to specific vulnerable-to-exclusion group
Budget and outreach programmes	Mode of budget share: Subsidies Incentives Educational programmes Acceleration programmes for start-ups	Amount of the budget Level of governance Programme affiliation	Digital journey planning Digital vehicle sharing Digital information provision Digital payment/booking Other	Older people People with disabilities Inhabitants of rural areas Women People with low income

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	Research programmes/pilot implementations Other			People with low education levels Migrants Other groups

2.3.3. Data collection methods

To gather data on the Macro level, multiple data collection methods can be considered.

We suggest first analysing the **governance structure** in place (Table 9) and identify the main policy and planning actors that contribute to the digitalization of the transport system. If there is a leadership position in charge of the process (question 1), an interview with the responsible person will possibly provide most of the information requested at the Macro level or he/she can guide the researchers to the various data sources. If such a position is not covered within the local authority, it is then suggested to look at the organigram of the administration and identify the persons in charge in the different departments related to the topic: transport & mobility, social affairs, ICT, etc.

Different one-on-one interviews can be carried out with different policy and decision makers to get a wider perspective on the decision-making system in terms of cooperation between departments as well as cooperation and dialogue with the outside. In addition, a cross-check with the information gathered from the business ecosystem at the meso level can help defining more precisely the level of public-private cooperation and detect whether there are expectations for a closer collaboration that are not met yet by either sides. Additional interviews and/or surveys with interest groups, civil society organisations and representatives of vulnerable to exclusion groups can help assessing the level of participation in the decision-making process and how and to what extend the needs and requirements of these groups are taken into consideration in the formulation of policies and plans.

In addition to, or in combination with, the interviews, desk research can be conducted to identify the main policy and planning documents that constitute the **regulatory framework** in place (Table 10). By looking at the registers of the public administration, the relevant regulations, directives, operational programmes or other relevant reference documents, can be easily found by making a search by key words, for example. The analysis of the official texts of the policy and planning documents, together with the accompany documents that normally precede and follow the official publications, should provide all the information requested for this step.

As for the data requested on the **budget and outreach programmes**, the same mix of interviews the public officials in the different departments of the administration, combined with desk research, can be used, especially when it comes to participation in research or pilot initiatives. A direct contact with the financial department might be a plus and speed up the gathering of data, especially to fill in the information on the amounts and percentages of budget allocated iN the different categories (subsidies, incentives, educational programmes, etc.). A cross-check

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with the information gathered from the business ecosystem at the meso level can help better defining the use of the subsidies, incentives, and outreach programmes, to support specific digital products or services. At the same time, it is suggested to add interviews and/or surveys with interest groups, civil society organizations and representatives of vulnerable to exclusion groups to better assess if and how they have benefited from the regional support programmes.

2.4. Bridging the self-assessment framework

Chapter 1 states the ambitions of the self-assessment framework to provide public authorities with an overall understanding of the size of the digital gap in mobility, allowing to zoom into the different assessment levels and getting more in-depth information for each of the levels. Table 12 summarises the objectives of the framework and in which of the levels or combination of levels this objective is achieved.

Table 12 Each objective of self-assessment framework related to level

Objectives of the self-assessment framework	**Level in framework**
To provide an understanding of the current situation in the pilot region regarding digitalization, mobility, and the interaction between the two (e.g. reduced ability to travel due to digitalization).	Micro level and Meso level
To provide knowledge on the ability of citizens to use digital products, identifying any vulnerable-to-exclusion groups that might require additional attention.	Micro level
To provide an overview of the current market supply of digital mobility products and services, with a specific focus on the need of vulnerable-to-exclusion groups for digital mobility products and services.	Meso level
To assess the policy readiness to address and act on the digital gap in mobility	Macro level
To help cities in their decision-making process, by indicating priority policy areas (e.g. in terms of vulnerable-to-exclusion groups, specific markets, regulations etc.), digital transport and services to focus on.	Combining input from Micro, Meso and Macro level

To help cities in their decision-making process, results from Micro, Meso and Macro level will be combined. In this self-assessment framework, results from two levels are brought together to show a particular potential gap. Figure 7 summarizes the added value that will be obtained when the results of the levels of the self-assessment framework will be combined. More detailed information and further explanations of each combination of two levels is provided in the next pages.

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For each combination of levels, the following information will be described:

- Description of the general thoughts of the combination of levels
- Examples of specific results for each of the levels that are needed
- The potential gap that can be calculated with these results
- The focus area for policy makers in order to bridge the potential gap

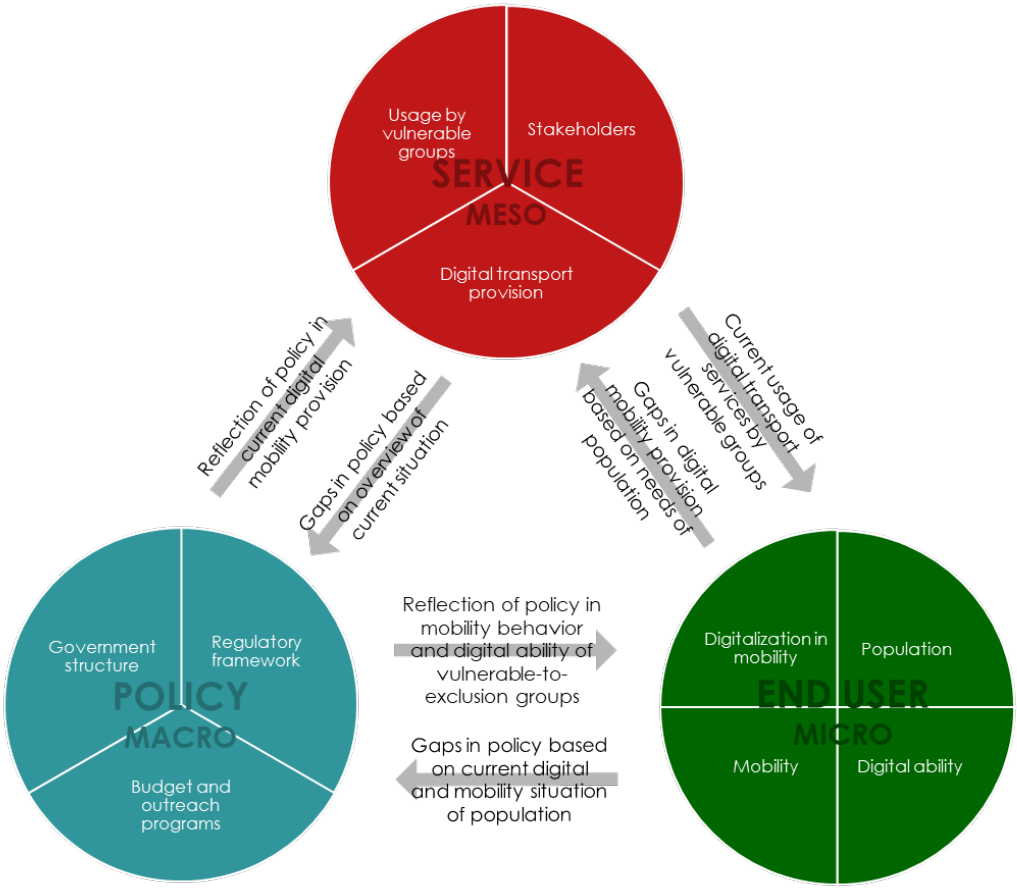

Figure 7 Links between three levels of the self-assessment framework

The combination of Micro level and Meso level

The recognition of the user-centred approach to the development of products and services is growing in its importance, including within the mobility sector. This is especially relevant for the design of digital mobility products that address the needs of vulnerable groups. The information from the Micro level allows local authorities to identify the size of vulnerable-to-exclusion groups within the pilot region. It also indicates whether these groups experience mobility poverty and difficulties with digitalization (and, to which extent mobility poverty is caused by digitalisation of the mobility sector). The Meso level provides information on the availability and diversity of digital mobility products and services within the region, specifically looking at the use of those by the

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vulnerable-to-exclusion groups and the intended users groups during the design-making process of the service. Bringing the information from these levels together allows us to identify whether there is a gap in the supply of digital mobility products and services to specific vulnerable group(s). To provide an example, a disproportion can be found between the proportion of people in a particular group (e.g. those with disabilities) who use a particular type of digital mobility service (Meso level) and the overall proportion of people in that group in the region (Micro level). Such a result would indicate that that group is underrepresented in the use of those services. With this vulnerable-to-exclusion groups that require more attention and type of digital mobility products and services where inclusive design is particularly important can be identified. For service providers, inclusive design can be a selling point and may broaden the potential customer base. Table 13 shows examples of the potential gaps that can occur when results from Micro and Meso level are combined.

Table 13 Examples of potential gaps for combination of Micro and Meso level

Results from Micro level	Results from Meso level	Potential gap
Largest vulnerable-to-exclusion group with lowest digital ability	Number of digital mobility products/services in the region that are aimed for vulnerable-to-exclusion groups, that engage vulnerable-to-exclusion group and are used by them	A vulnerable-to-exclusion group that requires attention in the region and addressing their needs within digital products/services offered in the region
Largest vulnerable-to-exclusion group experiencing mobility poverty due to digitalisation	Type of digital mobility products/services in the region for which no non-digital alternatives exist and aren't used by these vulnerable-to-exclusion group	A vulnerable-to-exclusion group experience mobility poverty due to digitalization and digital mobility products and services in region do not offering non-digital alternatives

From these potential gaps, two focus areas can be described.

- The vulnerable-to-exclusion group that needs attention in designing and providing digital mobility products and services
- The type of digital mobility products and services where extra focus on the needs and inclusion of vulnerable-to-exclusion groups is needed.

The combination of Meso level and Macro level

The growing degree of digitalization in transport provision does not only affect its users, but also the institutional frameworks facilitating this. By comparing the number of current digital mobility products and services with its usage of vulnerable-to-exclusion groups and the existence of non-digital alternatives, the digital gap in digital mobility provision emerges. The output of the Meso level acts as a guideline for organizing and prioritizing mobility strategies on the Macro level taking into account the specific concerns of each mobility function. This way, it should become clear whether public authorities have the right governance structures and regulatory frameworks in

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place to tackle the digital mobility transition mobility in an appropriate and therefore efficient way. In addition, there is a strong link and overlap between the actors involved at both levels. Providers of digital mobility products and services identified at the Meso level will be mapped and contextualized at the Macro level. The intensity and quality of this relationship between the political actors and mobility service providers in a region characterizes the political policy mechanisms, dynamics and therefore digital mobility ecosystem as a whole. Table 14 shows examples of the potential gaps that can occur when results from Meso and Macro level are combined.

Table 14 Examples of potential gaps for combination of Meso and Macro level

Results from Meso level	**Results from Macro level**	**Potential gap**
The number of digital products/services that are available in a region and for which the intended user groups differ from the actual vulnerable-to-exclusion user groups for each specific mobility product/service by function.	The number and type of policy and planning documents that are available in the regulatory framework a region, for each specific digital mobility product/service by function.	A type of digital mobility products/services that requires specific attention and regulatory guidance due to a mismatch between design and usage and a lack of policy and planning documents in the regulatory framework.
The number of digital products/services in the region that are available in a region for which no non-digital alternatives exist and for which this is a problem to specific vulnerable-to-exclusion groups, for each specific mobility product/service by function.	The allocation of budgets or provision of subsidies for each specific digital mobility product/service by function.	A type of digital mobility products/services that requires specific attention due to the fact that they don't have non-digital alternatives available while this is needed for specific vulnerable-to-exclusion groups. Additional subsidizing or supporting initiatives might decrease this gap.
The number and type of stakeholders that are involved in designing an inclusive digital mobility product or service.	The type and intensity of the cooperation between the policy actors and the different stakeholders involved in designing an inclusive digital mobility product or service.	A type of stakeholder might not be (enough) involved in the dynamic policy making process, while this is an important player in the field of inclusive design.

From these potential gaps, three focus areas can be described.

- The type of digital mobility products/services that need extra support regarding inclusiveness.
- The type of digital mobility products/services that need extra attention and support in order to meet needs of specific vulnerable-to-exclusion groups
- Important key players in digital mobility provision that are not enough involved in the policy making process

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The combination of Macro level and Micro level

The data gathered at the Micro level allows local authorities to draw important conclusions at the Macro level. The identification of the vulnerable-to-exclusion groups gives important insight into the population structure of the region. For example, knowing the proportion of older people in the region helps local authorities to assess the magnitude of certain challenges or even to identify the budgetary consequences of certain measures. To provide another example, if it is known how many people lack access to transportation because of financial restraints, the amount of subsidies can be assessed. Insights in mobility poverty of the population might indicate a need for political and regulative support. The same applies to the modal split - knowing the distribution of individual traffic modes can provide important insight into the main challenges.

The insights of the Micro level might also provide important hints about the need for certain regulations. For example, if the analysis of the Micro level finds that a lot of people have trouble using applications on their smartphone, this should be taken into consideration when considering possible regulations. Results from Macro level will show how strategies, programmes and budget is currently used and what focus local authorities have regarding vulnerable-to-exclusion group. Potential gaps in the combination of these levels will give local authorities the change to rethink their current policy in order to support those vulnerable-to-exclusion groups that need it the most. Table 15 summarizes the results for Macro and Micro level that is needed in order to define the potential gaps.

Table 15 Examples of potential gaps for combination of Macro and Micro level

Results from Macro level	Results from Micro level	Potential gap
Budget allocated to specific vulnerable-to-exclusion group in mobility and programmes focus on specific vulnerable-to-exclusion group in mobility	Vulnerable-to-exclusion group that experience mobility poverty due to specific reason	The support of public authority for specific vulnerable-to-exclusion group in mobility and the vulnerable-to-exclusion group that experience mobility poverty
Budget allocated to specific vulnerable-to-exclusion group and digitalization and programmes focus on specific vulnerable-to-exclusion group and digitalization	Largest vulnerable-to-exclusion group with lowest digital ability	The support of public authority for specific vulnerable-to-exclusion group in digitalization/digital skills and the vulnerable-to-exclusion group with low digital ability

From these potential gaps in Macro-Micro combination, the follow focus areas can be described.

- The vulnerable-to-exclusion group that experience mobility poverty that need extra support in regulatory framework and budget allocation of the local authority.
- The vulnerable-to-exclusion group that is the largest in the region with the lowest digital ability need extra attention to provide exclusion from society due to digitalization.

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In the first edition of the Excel tool the results and potential gaps will be calculated by a manual approach where results from different levels will be combined (see Appendix 5). The second edition of the Excel tool will allow automated generation of the results from combined levels and this will be shown in a visual attractive way that will be easy to understand for local authorities. With this approach an understanding of the potential digital gaps in mobility of the region will be achieved.

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References

- Christiaanse, R. (2019). Mobility as a Service, 83–92. https://doi.org/10.1145/3308560.3317050
- Dotter, F. (2016) CITIVAS Thematic Policy Note Transport poverty https://civitas.eu/sites/default/files/civitas_policy_note_transport_poverty.pdf
- European Commission (2019) DESI, The Digital Economy and Society Index (DESI). Available at: https://digital-agenda-data.eu/datasets/desi/visualizations
- Eurostat (2020) Statistics in Europe. Available at: https://ec.europa.eu/eurostat/data/database
- Franke, T., Attig, C., & Wessel, D. (2019). A Personal Resource for Technology Interaction: Development and Validation of the Affinity for Technology Interaction (ATI) Scale. International Journal of Human–Computer Interaction, 35(6), 456-467, DOI: 10.1080/10447318.2018.1456150
- Goodman-Deane, J., Bradley, M., Waller, S. and Clarkson, P.J. (2020a). Quantifying exclusion for digital products and interfaces. In Langdon et al (eds). Designing for Inclusion. Springer.
- Goodman-Deane, J., M. Bradley and P. J. Clarkson (2020b). Digital technology competence and experience in the UK population: who can do what. Proceedings of Ergonomics and Human Factors 2020, Stratford-upon-Avon, UK.
- Schreieck, M., M. Wiesche and H. Krcmar (2016). Modularization of Digital Services for Urban Transportation. Twenty-second Americas Conference on Information Systems, San Diego.

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Appendix

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Appendix 1 Excel pages of Micro level

Self assessment for digital gap
MICRO-level

Date	
Version	
Country	
Region or city	
Name of organisation	
Name of employee	
Function of employee	

DIGNITY
Digital transport in and for society

DIMENSION 1: POPULATION

The population data will help to get insights in the charateristics of the citizens in the region. More specific, we would like to know the share of vulnerable-to-exclusion groups.
Please fill in the numbers for the country (column C) and region (column D). If the DIGNITY survey is conducted in the region, fill in the number of respondents per row (column G). To make sure the information can be used in a later stage, it is very important to know the source that is used (Column K) and the year of which the data is collected (Column J).

		Country	Region/City	If the region has conducted the DIGNITY survey, fill in the number of respondents per row using data of the related		Year	Data source
1	Total number of inhabitants			Number of respondents			
2	Number of inhabitants between 65 and 80 years			Section F - Q1			
3	Number of inhabitants that are 80 years and older			Section F - Q1			
4	Number of inhabitants with no education			Section F - Q4			
5	Number of inhabitants with only primary education			Section F - Q4			
6	Number of inhabitants that are woman			Section F - Q2			
7	Number of inhabitants that are man			Section F - Q2			
8	Number of inhabitants with minimum salary			Section F - Q3			
9	Number of inhabitants who receive government support with their income			Section F - Q3			
10	Number of inhabitants who were born with a different nationality from their country of residence.						
11	Number of inhabitants have any kind of capability loss that limits them in daily activities			Section E - Q3			
12	Total area in km^2						
13	Urban area (area with >1500 households per km^2)						
14	Rural area (area with <1000 households per km^2)						
15	Number of inhabitants living in urban area			Section F - Q6			
16	Number of inhabitants living in rural area			Section F - Q6			

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Self assessment for digital gap
MICRO-level

Date	00-01-1900
Version	0
Country	0
Region or city	0
Name of organisation	0
Name of employee	0
Function of employee	

DIMENSION 2: DIGITAL ABILITY

The data about digital ability will help to get understanding of the amount of citizens that have limited digital ability caused by access, use, skills and/or attitude.
Please fill in the number of inhabitants for each vulnerable-to-exclusion group. If the DIGNITY survey is conducted in the region, fill in the number of respondents per vulnerable-to-exclusion group.
Choose to either fill in the whole row with DIGNITY survey data or use an other data source. Tick the box in column K if the DIGNITY survey data is used.

ACCESS

	all individuals	65+ years	people with disabilities	inhabitants of rural area	Women	people with low income	people with low education levels	Migrants	Did you use the data of DIGNITY survey	If the region has conducted the DIGNITY survey, fill in the number of respondents per row using data of the related question		Year	Data source
1 Number of inhabitants who have access to internet										Section A - Q3	count if answer is: yes		
2 Number of inhabitants who don't have access to internet										Section A - Q3	count if answer is: no		
3 Number of inhabitants who have a smartphone										Section A - Q5	count if answer is: yes		
4 Number of inhabitants who don't have a smartphone										Section A - Q5	count if answer is: no		
5 Number of inhabitants who have access to computer, laptop and/or tablet										Section A - Q1 and Q10	count if answer is: yes for either Q1 or Q10		
6 Number of inhabitants who don't have access to computer, laptop and tablet										Section A - Q1 and Q10	count if answer is: no for both Q1 and Q10		

USE

	all individuals	65+ years	people with disabilities	inhabitants of rural area	Women	people with low income	people with low education levels	Migrants	Did you use the data of DIGNITY survey	If the region has conducted the DIGNITY survey, fill in the number of respondents per row		Year	Data source
7 Number of inhabitants who use internet at least once a week										Section A - Q4	count if answer is: 'every day or almost every day' or 'at least once a week'		
8 Number of inhabitants who use internet less than once a week										Section A - Q4	count if answer is: 'less than once a week' or 'more than 3 months ago'		
9 Number of inhabitants that use smartphone at least once a week										Section A - Q7	count if answer is: 'every day or almost every day' or 'at least once a week'		
10 Number of inhabitants that use smartphone less than once a week										Section A - Q7	count if answer is: 'less than once a week' or 'more than 3 months ago'		
11 Number of inhabitants that use computer, laptop and/or tablet at least once a week										Section A - Q2 and Q12	count if answer is: 'every day or almost every day' or 'at least once a week' for either Q2 or Q12		
12 Number of inhabitants that use computer, laptop and/or tablets less than once a week										Section A - Q2 and Q12	count if answer is: 'less than once a week' or 'more than 3 months ago' for both Q2 and Q12		

SKILLS

	all individuals	65+ years	people with disabilities	inhabitants of rural area	Women	people with low income	people with low education levels	Migrants	Did you use the data of DIGNITY survey	If the region has conducted the DIGNITY survey, fill in the number of respondents per row using data of the related question		Year	Data source
13 Number of inhabitants with low digital skills										Section D - Q1-Q8	count if repondent has done 4 of less preformance tasks correct		
14 Number of inhabitants with at least basic level of digital skills										Section D - Q1-Q8	count if repondent has done 5 or more preformance tasks correct		

ATTITUDE

	all individuals	65+ years	people with disabilities	inhabitants of rural area	Women	people with low income	people with low education levels	Migrants	Did you use the data of DIGNITY survey	If the region has conducted the DIGNITY survey, fill in the number of respondents per row using data of the related question		Year	Data source
15 Number of inhabitants with at least some affinity for technology interaction										Section C1 - Q1-Q9	Count if respondent has a ATI-score of 4 or more. To calculate the ATI-score, go to sheet MICRO-Knowledge		
16 Number of inhabitants with limited affinity for technology interaction										Section C1 - Q1-Q3	Count if respondent has a ATI-score of 3 or less. To calculate the ATI-score, go to sheet MICRO-Knowledge		
17 Number of inhabitants who have confidence in using digital interface													
18 Number of inhabitants who have no confidence in using digital interface													
19 Number of inhabitants who are willing to explore digital interface										Section C2 - Q1 and A3	Count if respondent has a mean score of 4 or more. Calculate the mean score for Q1 and Q3 - since Q3 is using negative words, this need to be reversed		
20 Number of inhabitants who are not willing to explore digital interface										Section C2 - Q1 and A3	Count if respondent has a mean score of 3 or less. Calculate the mean score for Q1 and Q3 - since Q3 is using negative words, this need to be reversed		

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Self assessment for digital gap
MICRO-level

Date	00-01-1900
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Region or city	0
Name of organisation	0
Name of employee	0
Function of employee	

DIGNITY
Digital transport in and for society

DIMENSION 3: MOBILITY

The mobility data focuss on the mobility patterns of the citizens in the region and whether people experience mobility poverty. Mobility poverty can be explained as when someone experience limitations in their desirable mobility patterns (related to regular trips in the region). For the first part, regional statistical data can be used. For the second part, data from the DIGNITY survey can be used as well. If this is not conducted in the region, use other available data. Please indicate if the DIGNITY survey data is used (tick the box in column K)

MODAL SPLIT

		all individuals	>65 years	people with disabilities	inhabitants of rural area	Woman	people with low income	people with low education levels	Migrants	Year	Data source
1	Total amount of trips by all citizens on an average day										
2	Total amount of trips by all citizens on an average day by car										
3	Total amount of trips by all citizens on an average day by bike										
4	Total amount of trips by all citizens on an average day by foot										
5	Total amount of trips by all citizens on an average day by train										
6	Total amount of trips by all citizens on an average day by bus/metro/tram										
7	Total amount of trips by all citizens on an average day by other motorized/electric vehicle										
8	Total amount of trips by all citizens on an average day by other transport mode										

MOBILITY POVERTY

		all individuals	>65 years	people with disabilities	inhabitants of rural area	Woman	people with low income	people with low education levels	Migrants	Did you use the data of DIGNITY survey	If the region has conducted the DIGNITY survey, fill in the number of respondents per row using data of the related question		Year	Data source
9	Number of inhabitants who experience limitations for desirable mobility (regular travel in their region)										Section B1 - Q6	count if any of the statements in the question is answered with 'slightly limited' or 'very limited' or if the respondent indicare that they feel limited because of any other reason		
Of those people who experience limitations:														
10	Number of inhabitants who experience limitations for desirable mobility due to limited availability of transport services (e.g. bus, trains or shared vehicles)										Section B1 - Q6.2	count if answer is: 'slightly limited' or 'very limited'		
11	Number of inhabitants who experience limitations for desirable mobility due to limited availability of infrastructure (e.g. bus stops or bike lanes)										Section B1 - Q6.3	count if answer is: 'slightly limited' or 'very limited'		
12	Number of inhabitants who experience limitations for desirable mobility due to the cost of the travel										Section B1 - Q6.1	count if answer is: 'slightly limited' or 'very limited'		
13	Number of inhabitants who experience limitations for desirable mobility due to special needs or disabilities										Section B1 - Q6.5	count if answer is: 'slightly limited' or 'very limited'		
14	Number of inhabitants who experience limitations for desirable mobility due to concerns about the safety of the transport services										Section B1 - Q6.4	count if answer is: 'slightly limited' or 'very limited'		

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Self assessment for digital gap
MICRO-level

Date	20-01-1900
Version	0
Country	0
Region or city	0
Name of organisation	0
Name of employee	0
Function of employee	

DIMENSION 4: DIGITALIZATION IN MOBILITY

This data will show the link between digital ability and mobility and will give an overview of who is facing mobility issues due to digitalization. Please indicate if the DIGNITY survey data is used (tick the box in column K)

USE OF DIGITAL RELATED MOBILITY SOLUTIONS

		all individuals	>65 years	people with disabilities	inhabitants of rural area	Women	people with low income	people with low education levels	Migrants	Did you use the data of DIGNITY survey	If the region has conducted the DIGNITY survey, fill in the number of respondents per row using data of the related question		Year	Data source
1	Number of inhabitants that use any kind of digital transport services in the last 3 months										Section B1 - Q4	count if any of the statements in the question is answered with 'at least once in the last 3 months' or more the answer-		
2	Number of inhabitants that use car sharing services (on-street car hire)										Section B1 - Q4.1			
3	Number of inhabitants that use bike sharing services (on-street bike hire)										Section B1 - Q4.4	count if answer is: 'at least once in the last 3 months' or more the answer-options that indicate more often		
4	Number of inhabitants that use other sharing vehicle services (on-street scooter, motorbike etc hire)										Section B1 - Q4.5	count if answer is: 'at least once in the last 3 months' or more the answer-options that indicate more often		
5	Number of inhabitants that use carpooling services (sharing car journey)										Section B1 - Q4.2	count if answer is: 'at least once in the last 3 months' or more the answer-options that indicate more often		
6	Number of inhabitants that use digitally booked taxi services										Section B1 - Q4.3	count if answer is: 'at least once in the last 3 months' or more the answer-options that indicate more often		
7	Number of inhabitants that use mobile pohne to pay for parking										Section B1 - Q4.6	count if answer is: 'at least once in the last 3 months' or more the answer-options that indicate more often		
8	Number of inhabitants that use any other digital transport service										Section B1 - Q5	count if answer is: 'at least once in the last 3 months' or more the answer-options that indicate more often		
9	Number of inhabitants that use digital methods to find travel information										Section B1 - Q3	count if at least one digital option is selected		
10	Number of inhabitants that use no digital methods to find travel information because they already know and don't look for the information										Section B1 - Q3	count if answer is: 'I do not look up this information because I already know it and do not expect any additional iznew'		
11	Number of inhabitants that use no digital methods to find travel information because they don't										Section B1 - Q3	count if answer is: 'I do not look up this information because I do not know where to find it'		

LIMITATIONS IN MOBILITY DUE TO DIGITALIZATION

		all individuals	>65 years	people with disabilities	inhabitants of rural area	Women	people with low income	people with low education levels	Migrants	Did you use the data of DIGNITY survey	If the region has conducted the DIGNITY survey, fill in the number of respondents per row using data of the related question		Year	Data source
12	Number of inhabitants who experience limitations for desirable mobility due to difficulties during planning travel because digital skills are required										Section B1 - Q6.6	count if answer is: 'at least once in the last 3 months' or more the answer-options that indicate more often		
13	Number of inhabitants who experience limitations for desirable mobility due difficulties during trips because digital skills are needed to use transport										Section B1 - Q6.7	count if answer is: 'at least once in the last 3 months' or more the answer-options that indicate more often		

CONFIDENCE IN USING DIGITAL TRAVEL SERVICES

		all individuals	>65 years	people with disabilities	inhabitants of rural area	Women	people with low income	people with low education levels	Migrants	Did you use the data of DIGNITY survey	If the region has conducted the DIGNITY survey, fill in the number of respondents per row using data of the related question		Year	Data source
14	Number of inhabitants who are confident to succesfully plan a unfamiliar, local public transport journey with a computer										Section B1 - Q1	count if answer is 6 or higher		
15	Number of inhabitants who are not confident to succesfully plan a unfamiliar, local public transport journey with a computer										Section B1 - Q1	count if answer is 5 or lower		
16	Number of inhabitants who are confident to succesfully plan a unfamiliar, local public transport journey with internet or application on a smartphone										Section B1 - Q2	count if answer is 6 or higher		
17	Number of inhabitants who are not confident to succesfully plan a unfamiliar, local public transport journey with internet or application on a smartphone										Section B1 - Q2	count if answer is 5 or lower		

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Appendix 2 Excel pages of Meso level

Self assessment for digital gap
MESO-level

Date	
Version	
Country	
Region or city	
Name of organisation	
Name of employee	
Function of employee	

DIGNITY
Digital transport in and for society

KEY STAKEHOLDERS IN MAKING DIGITAL MOBILITY PROVISION SUCCESSFUL

This information will help to get an overview of the keyplayers in digital mobility in the region. We distinguish three main categories; core business, extended enterprise and business ecosystem. Each category consists of sub-categories. Please answer the two questions for each sub-category

CORE BUSINESS		
Sub-categories	Who are the main groups/companies/individuals in the region for each sub-category?	How are they involved in the process-making of a digital transport service/platform? How should they be involved according to local government?
Transport operators	This will be asked about in further detail in step 1	
Data providers		
Customers/users		

EXTENDED ENTERPRISE		
Sub-categories	Who are the main groups/companies/individuals in the region for each sub-category?	How are they involved in the process-making of a digital transport service/platform? How should they be involved according to local government?
IT Developers (back- & front-end infrastructure, maintenance)		
IT Designers		
Digital support solutions (ticketing, payment, etc).	This will be asked about in further detail in step 1	
Insurance companies		

BUSINESS ECOSYSTEM		
Sub-categories	Who are the main groups/companies/individuals in the region for each sub-category?	How are they involved in the process-making of a digital transport service/platform? How should they be involved according to local government?
Regulators & policy makers		
Investors		
Research institutes & universities		
Media & marketing firms		
Unions		

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Self assessment for digital gap
MESO-level

Date	
Version	
Country	
Region or city	
Name of organisation	
Name of employee	
Function of employee	

DIGNITY
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GENERAL OVERVIEW OF DIGITAL TRANSPORT PROVISION

This information will help to get an understanding of the current digital transport services and products that are available in the region.
This dimention has four main categories with several sub-categories. For each sub-category as a whole, please answer the five questions.

Digital journey planning services/platforms					
Sub-categories	How many services/platforms in this sub-category are available in your region? (more or less)	What are the main services/platforms in this sub-category that are available in your region? (max. 5)	To what extent are the **vulnerable-to-exclusion groups** engaged with these services in general? Why?	Are there services aimed at particular user groups? Which services and which groups?	Are there non-digital alternatives for using these services/platforms? Which ones?
Trip planning services provide information for the users to help them plan their itineraries within and between cities.					
Navigation services support the user in following a route by giving directions. Navigation services are mostly used in-car or by pedestrians and cyclists. Some navigation services have evolved to tripplanners by includina different means of transportation.					

Digital vehicle sharing services/platforms					
Sub-categories	How many services/platforms in this sub-category are available in your region? (more or less)	What are the main services/platforms in this sub-category that are available in your region? (max. 5)	To what extent are the **vulnerable-to-exclusion groups** engaged with these services in general? Why?	Are there services aimed at particular user groups? Which services and which groups?	Are there non-digital alternatives for using these services/platforms? Which ones?
Consumer car sharing (B2C) is a car sharing system where a company owns a fleet of vehicles to provide this for its members or clients. This can be one way or round trip.					
Personal car sharing (C2C) a peer-to-peer car sharing system where private vehicle owners make their cars available for other drivers to rent.					
Corporate car sharing (B2B) is a business car sharing system where government agencies and employers replace their own private fleets with car sharing services. These cars are not open to anyone who registers, but only to members of a specific company/community.					
Ride sourcing a vehicle sharing system where private car owners drive their own vehicles to provide for-hide rides. Only one (group of) customer(s) is picked up along the way.					
Ride splitting a vehicle sharing system where private car owners drive their own vehicles to provide for-hide rides, and additional passengers can be picked up along the way. That way, customers split their ride and the costs with other customers.					
E-hailing (taxis) a vehicle sharing system by which taxis can be reserved via internet or mobile phone applications maintained by either a third-party provider or the taxi company.					
Demand responsive public transport (DRT) is a flexible mode of public transportation that changes its operation scheme based on the demand of its users. Typically this involves users calling a booking service, which will plan a personal route for them on the day					
Bike sharing a vehicle sharing system where a company owns a fleet of bikes to provide this for its members or clients. This can be one way or round trip, and station based or free floating.					
Other vehicle sharing (e.g. scooters, kickscooters, etc.) Other vehicle sharing sytem might be similar to car and bike sharing systems, but with special target groups and characteristics. Think about step sharing, scooter sharing or other relevant shared					

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Digital information services/platforms					
Sub-categories	How many services/platforms in this sub-category are available in your region? (more or less)	What are the main services/platforms in this sub-category that are available in your region? (max. 5)	To what extent are the **vulnerable-to-exclusion groups** engaged with these services in general? Why?	Are there services aimed at particular user groups? Which services and which groups?	Are there non-digital alternatives for using these services/platforms? Which ones?
Vehicle information provision provide the users with real-time information about the availability of vehicles. This can be the availability of shared bikes, shared cars, shared scooters or shared kickscooters. This can be station-based or free-floating.					
Parking information provision provide the users with real-time information about the availability of parking spots.					
Facility information provision provides the users with information about the location an availability of facilities. This can be charging stations for electrical cars, but also the locations of bike stations or car stations. This can be realtime or static.					
Travel information provision provide the users with real-time information about travel related issues and problems. This can be the delays of public transport, traffic jams, etc.					
Roadside assisting services provide the users with the option to reach out to assitance when needed on the road. This can be when you have a car of bike accident.					

Digital payment (and booking) services/platforms					
Sub-categories	How many services/platforms in this sub-category are available in your region? (more or less)	What are the main services/platforms in this sub-category that are available in your region? (max. 5)	To what extent are the **vulnerable-to-exclusion groups** engaged with these services in general? Why?	Are there services aimed at particular user groups? Which services and which groups?	Are there non-digital alternatives for using these services/platforms? Which ones?
Ticket payment are mobile paying/booking services that are mainly focused on buying tickets in order to book and use your transport vehicle. This can be done with a subscription, a mobile on the go paying application or a smart card.					
(shared) Vehicle payment are mobile paying services that are mainly focused to pay and book a (shared) vehicle that you want to use in the near future. This can be done with a subscription, a mobile on the go paying application or a smart card.					
Parking payment are mobile paying services that are mainly focused on paying your parking spot. This can be in a parking garage or along the road, and ist mostly done with a mobile on the go paying application.					

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Self assessment for digital gap
MESO-level

Date	
Version	
Country	
Region or city	
Name of organisation	
Name of employee	
Function of employee	

MARKET FOR EACH DIGITAL TRANSPORT SERVICE/PRODUCT IN THE REGION

This information will help to get an understanding of the current digital transport services and products that are available in the region.
This dimention has four main categories with several sub-categories. For each sub-category as a whole, please answer the five questions.

Name of the service/product/platform	Name of the company	Select the main type of service offered Trip planning | Navigation | Consumer car sharing | Personal car sharing | Corporate car sharing | Ride sourcing | Ride splitting | E-hailing (taxis) | Demand responsive public transport sharing | Bike sharing Other vehicle sharing | Vehicle information provision | Parking information provision | Facility information provision | Travel information provision | Roadside assisting | Ticket payment | shared| Vehicle payment | Parking payment | Other function	Select the level of operation International national regional local	Select ownership Public Private	What is the size of the company? Select one of the options < 10 employees 10-49 employees 50-249 employees >= 250 employees	Insert the number of unique users per year	What were the intended users groups during the design-making process of the service?	Number of people using this services (per year) for each vulnerable-to-exclusion group							
								all individuals	>65 years	people with disabilities	inhabitants of rural area	Women	people with low income	people with low education levels	Migrants

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Does this service/platform take specific measures to include vulnerable-to-exclusion groups?		Is the service integrated in MaaS application?		Does the service has functions other then the main type of service selected in column B? Please indicate per category (yes/no)						Is there a non-digital way to use this service or product?
Yes/No	if yes, please specify	Yes/No	if yes, please specify name of application	Digital journey planning	Digital vehicle sharing	Digital information provision	Digital payment possibility	Other	if other, please specify	

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Appendix 3 Definitions of categories for functions of digital services/platforms (Meso level)

Categories	Sub-categories	Definition
Digital **journey planning** services/platforms	Trip planning	Trip planning services provide information for the users to help them plan their itineraries within and between cities.
	Navigation	Navigation services support the user in following a route by giving directions. Navigation services are mostly used in-car or by pedestrians and cyclists. Some navigation services have evolved to tripplanners by including different means of transportation.
Digital **vehicle sharing** services/platforms	Consumer car sharing (B2C)	Consumer car sharing (B2B) is a car sharing system where a company owns a fleet of vehicles to provide this for its members or clients. This can be one way or round trip.
	Personal car sharing (C2C)	Personal car sharing (C2C) is a peer-to-peer car sharing system where private vehicle owners make their cars available for other drivers to rent.
	Corporate car sharing (B2B)	Corporate car sharing (B2B) is a business car sharing system where government agencies and employers replace their own private fleets with car sharing services. These cars are not open to anyone who registers, but only to members of a specific company/community.
	Ride sourcing	Ride sourcing is a vehicle sharing system where private car owners drive their own vehicles to provide for-hide rides. Only one (group of) customer(s) is picked up along the way.
	Ride splitting	Ride splitting is a vehicle sharing system where private car owners drive their own vehicles to provide for-hide rides, and additional passengers can be picked up along the way. That way, customers split their ride and the costs with other customers.
	E-hailing (taxis)	E-hailing is a vehicle sharing system by which taxis can be reserved via internet or mobile phone applications maintained by either a third-party provider or the taxi company.
	Demand responsive public transport sharing	Demand responsive public transport (DRT) is a flexible mode of public transportation that changes its operation scheme based on the demand of its users. Typically this involves users calling a booking service, which will plan a personal route for them on the day they required.
	Bike sharing	Bike sharing is a vehicle sharing system where a company owns a fleet of bikes to provide this for its members or clients. This can be one way or round trip, and station based or free floating.
	Other vehicle sharing	Other vehicle sharing sytem might be similar to car and bike sharing systems, but with special target groups and characteristics. Think about kick scooter sharing, scooter sharing or other relevant shared mobility modes in your region.

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Categories	Sub-categories	Definition
Digital **information** services/platforms	Vehicle information provision	Vehicle information platforms provide the users with real-time information about the availability of vehicles. This can be the availability of shared bikes, shared cars, shared scooters or shared kick scooters. This can be station-based or free-floating.
	Parking information provision	Parking information platforms provide the users with real-time information about the availability of parking spots.
	Facility information provision	Facility information provision provides the users with information about the location an availability of facilities. This can be charging stations for electrical cars, but also the locations of bike stations or car stations. This can be realtime or static.
	Travel information provision	Travel information platforms provide the users with real-time information about travel related issues and problems. This can be the delays of public transport, traffic jams, etc.
	Roadside assisting	Roadside assisting services provide the users with the option to reach out to assitance when needed on the road. This can be when you have a car of bike accident.
Digital **payment and booking** services/platforms	Ticket payment	Tickey payment services are mobile paying/booking services that are mainly focused on buying tickets in order to book and use your transport vehicle. This can be done with a subscription, a mobile on the go paying application or a smart card.
	(shared) Vehicle payment	Vehicle payment services are mobile paying services that are mainly focused to pay and book a (shared) vehicle that you want to use in the near future. This can be done with a subscription, a mobile on the go paying application or a smart card.
	Parking payment	Parking payment services are mobile paying services that are mainly focused on paying your parking spot. This can be in a parking garage or along the road, and ist mostly done with a mobile on the go paying application.

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Appendix 4 Excel pages of Macro level

Self assessment for digital gap
MACRO-level

Date	*00-01-1900*
Version	*0*
Country	*0*
Region or city	*0*
Name of organisation	*0*
Name of employee	*0*
Function of employee	

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DIMENSION 1: GOVERNANCE STRUCTURE

	For each of the connection below, please answer the questions	Is there a specific position within the administration responsible for the connection?	How many people are involved in the connection?	Do you have comments related to this?
Leadership	Transport and digitisation			
	Transport and social inclusion			
	Transport, digitisation and social inclusion			
	Other			

	Are there **specific positions** or administrative units that deal with the inclusion of potentially disadvantaged groups (e.g. Equal Opportunities Officer, Diversity Manager)?	If yes, please name these positions and/or units	How many people are involved in these specific positions and/or administartive units? *Please indicate for each of the units/positions that are named in column C*	Do you have comments related to this?
Degree of institutionalization of inclusion				

	Which administrative units are involved in the digitisation of transport? *Please answer yes/no in column C*		In what forms do these units work together? Select one of the options Specifically constituted committees Continuous collaboration in working groups Spontaneous and topic-related meetings None	Do you have comments related to this?
Cross-disciplinary collaboration	Transport			
	Justice			
	Social			
	Economy			
	Environment			
	Other			

	In what form do public institutions cooperate with private actors and vice versa? *Please answer yes/no in column C*		For each of the categories of organisations does your administration cooperates with them? *Please answer yes/no in column E*		Do you have comments related to this?
Degree of public/private cooperation	Public private Partnerships		Transport operators		
	Cooperation on specific topics in working groups and projects		Data providers		
	Experimental spaces: agile, temporary and clearly regulated new forms of cooperation		IT Developers (back- & front-end infrastructure, maintenance)		
	Open forms of cooperation		IT Designers		
			Digital support solutions (ticketing, payment, etc).		
			Insurance companies		
			Investors		
			Research institutes & universities		
			Media & marketing firms		
			Unions		

	What is the level of involvement for each type of group/organisation/company in the decision making process? Not involved Somewhat involved Highly involved Does not apply		For each of the vulnerable-to-exclusion group, indicate the involvement in the decision-making process Not involved Somewhat involved Highly involved Does not apply		Do you have comments related to this?
Degree of participation in decision-making process	Transport operators		Older people (> 65 years)		
	Data providers		People with disabilities		
	Customers/users		Inhabitants of rural area		
	IT Developers (back- & front-end infrastructure,		Woman		
	IT Designers		People with low income		
	Digital support solutions (ticketing, payment, etc).		People with low education levels		
	Insurance companies		Migrants		
	Investors				
	Research institutes & universities				
	Media & marketing firms				
	Unions				

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Self assessment for digital gap
MACRO-level

Date	00-01-1900
Version	0
Country	0
Region or city	0
Name of organisation	0
Name of employee	0
Function of employee	

DIMENSION 2: REGULATORY FRAMEWORK

The information on the regulatory framework in place in the region will help to get understanding on the level of readiness to meet the challenges of the digital transition in transport, ensuring at the same time social inclusion.
Please fill the table with the laws and regulations that are supporting or hindering an inclusive (digital) transportation system, together with a screening of relevant policy and planning documents regarding technological developments and smart cities, social inclusion, transport, sharing economy, etc.

Policy and planning documents *Provide the title and/or link of the document*	Select the type of document Political framework Regulation Directive Operational programme Other	Select the level of governance National Regional Local	Select the period of implementation Expired Inforce (from/to) Outstanding Scheduled for	Select the type of provision Accessibility Technical requirements Design Economic provisions Equity	Is there any reference to specific digital mobility product and/or services? *Please answer for each category below (yes/no)*						Is there any specific vulnerable-to-exclusion group targeted? *Please answer for each of the vulnerable-to-exclusion groups below (yes/no)*								
					Digital journey planning	Digital vehicle sharing	Digital information provision	Digital payment/booking	Other	If other, please specify	>65 years	people with disabilities	inhabitants of rural area	Women	people with low income	people with low education levels	Migrants	Other group	If other, please specify

Self assessment for digital gap
MACRO-level

Date	00-01-1900
Version	0
Country	0
Region or city	0
Name of organisation	0
Name of employee	0
Function of employee	

DIMENSION 3: BUDGET & OUTREACH PROGRAMMES

Budget and outreach programmes *Provide the name of the programme and/or link*	Select category of the programme Subsidies Incentives Educational programmes Acceleration programmes for start-ups Research programmes/pilot implementations Other	Select the level of governance National Regional Local	What is the budget that is allocated to this (in euro's)?	% (need to be described in more detail: percentage of what?)	Select the sector that is linked to this programme Mobility Inclusion Digitalisation	Is there any reference to specific digital mobility product and/or services? *Please answer for each category below (yes/no)*						Is there any specific vulnerable-to-exclusion group targeted? *Please answer for each of the vulnerable-to-exclusion groups below (yes/no)*								
						Digital journey planning	Digital vehicle sharing	Digital information provision	Digital payment/booking	Other	If other, please specify	>65 years	people with disabilities	inhabitants of rural area	Women	people with low income	people with low education levels	Migrants	Other group	If other, please specify

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Appendix 5 Excel pages of results

Self assessment for digital gap
Potential gaps

Date	00-01-1900
Version	0
Country	0
Region or city	0
Name of organisation	0
Name of employee	0
Function of employee	

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Population and region	Digital ability (access, use, skills and attitude)		Mobility poverty and Digitalization
Collect the numbers from sheet Micro – population Insert total inhabitants of each group (Column B and Column D) and devide by all inhabitants (Column C and Column E)	Collect the numbers from sheet Micro – Digital ability Insert for access: total number from 2+4+6 devided by total inhabitants of the group Insert for use: total number from 9+10+12 devided by total inhabitants of the group Insert for skills: total number from 13 devided by total inhabitants of the group Insert for attitude: total number from 16+18+20 devided by total inhabitants of the group		Collect the number from sheet Micro – Mobility Insert for Colum B and C: total number from 9 Collect the numbers from sheet Micro – Digital + Mobility Insert for Column D and E: total number from 12 and 13

	National level		Regional level		Digital access		Digital use		Digital skills			Digital attitude			experience limitations in mobility		mobility poverty due to digitalisation	
	Total	% of population	Total	% of population	Total	% of population	Total	% of population	Total		% of population	Total	% of population		Total	% of group	Total	% of group
All inhabitants		100%		100%														
Older people																		
People with disabilities																		
Inhabitants of rural areas																		
Woman																		
People with low income																		
People with low education levels																		
Immigrants																		

Based on the results in the table above, please indicate:	
	The largest vulnerable-to-exclusion group in the region
	The differences between the country and region
	The vulnerable-to-exclusion group that is overrepresented in the region (compared with national numbers)
	The vulnerable-to-exclusion group with the highest percentage of people facing difficulties in digitalisation
	The sub-category (access, use, skills or attitude) that is the main problem in digitalization in the region
	The vulnerable-to-exclusion group with the highest percentage of people experiencing limitations in mobility
	The vulnerable-to-exclusion group with the highest percentage of people experiencing difficulties with digitalisation in mobility (experience mobility poverty due to that)?

Digital transport products/services	Policy documents, involvement and budget
Collect the numbers from sheet Meso – list of services Count the products/services that are aimed for a specific group Count the products/services that take specific measures for the group Count the products/services that had this group as intended users groups during the design-making process of the service Sum up the usage per vulnerable-to-exclusion group for all products/services in the category devided by all inhabitants of that vulnerable-to-exclusion group	Collect the numbers from sheets Macro Count all policy documents targeted this vulnerable-to-exclusion group Count all policy documents targeted this vulnerable-to-exclusion group in relation to mobility / ..... to inclusion / ..... to digitalisation The level of involvement in decision making process for this vulnerable-to-exclusion group Count budget allocated for this vulnerable-to-exclusion group Count budget allocated for this vulnerable-to-exclusion group in relation to mobility / ..... to inclusion / ..... to digitalisation

				Usage of all products that are mentioned in these category				Policy documents				Involvement	Budget			
	Are aimed at	Take measures for	Intended user group	Digital journey planning	Digital vehicle sharing	Digital information provision	Digital payment/ booking	Vulnerable-to-exclusion group	Group in relation to mobility	Group in relation to inclusion	Group in relation to digitalisation	Indicare level	Vulnerable-to-exclusion group	Group in relation to mobility	Group in relation to inclusion	Group in relation to digitalisation
All inhabitants																
Older people																
People with disabilities																
Inhabitants of rural areas																
Woman																
People with low income																
People with low education levels																
Immigrants																

Based on the results in the table above, please indicate:	
	The vulnerable-to-exclusion group that is most often intended and/or product/service is aimed for them
	The vulnerable-to-exclusion group for whom are most often measures taken by products/service companies
	The usage for each vulnerable-to-exclusion group for each category of digital transport prodcuts/services
	The vulnerable-to-exclusion group that is most often targeted in policy documents
	The vulnerable-to-exclusion group with most budget allocated from local government

Digital transport products/services
Collect the numbers from sheet Meso – list of services
Count all products/services with intended user group differ from actual users group for each category
Count all products/services that can not be used in a non-digital way
Collect the numbers from sheets Macro – regulatory and budget
Count all policy documents that have reference to these specific digital mobility services/products
Count budget allocated for these digital mobility services/products

	Mismatch user groups	No non-digital way	Policy documents	Budget
Digital journey planning				
Digital vehicle sharing				
Digital information provision				
Digital payment/ booking				

Based on the results in the table above, please indicate:	
	The type of digital transport services/products that most often have a mismatch between intended and actual use
	The type of digital transport services/products that most often do not have a non-digital way to use it
	The type of digital transport services/products that are mentioned the most in policy documents
	The type of digital transport services/products that have the most budget allocated by local government

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Stakeholders involvement				
Collect numbers from sheet Macro- governance Indicate collaboration with stakeholders (yes/no) Indicate level of involvement in decision-making process with stakeholders Collect numbers from sheet Meso- keystakeholders Indicate involvement in process making of products Indicate desired involvement according local government				
		Involvement		
	collaboration (governance)	level of involvement (governance)	process making of products (meso)	desired involvement (meso)
Transport operators				
Data providers				
Customers/users				
IT Developers (back- & front-end infrastructure, maintenance)				
IT Designers				
Digital support solutions (ticketing, payment, etc).				
Insurance companies				
Regulators & policy makers				
Investors				
Research institutes & universities				
Media & marketing firms				
Unions				

Based on the results in the table above, please indicate:	
	The key stakeholders who collaborate with local government
	The key stakeholders with a high level of involvement in decision making proces
	The key stakeholders who are involved in the process making of products
	The key stakeholders who should be involved in process making according local government

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