



D4.2 – Baseline data report for pilots

S. Basu, I. Keseru, H. Delaere, G. te Boveltd (VUB MOBI), G. Rondinella, A. Kilstein, F. Di Ciommo (cambiaMO)

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Authors	Samyajit Basu (VUB MOBI), Imre Keseru (VUB MOBI), Hannes Delaere (VUB MOBI), Geert te Boveldt (VUB MOBI), Gianni Rondinella (CambiaMO), Andres Kilstein (CambiaMO), Floridea Di Ciommo (CambiaMO)
Contributors	Eleonora Tu (ITL), Valeria Montanari (PI), Wim Vanobberghen (IMEC), Michelle Specktor (TECHNION), Thais Lamoza (D2D), Sabina Giorgi (DBL), Miklos Gabor Banfi (MBE), Pasquale Cancellara (POLIS), Evelien Marlier (EPF), Beatriz Royo (ZLC)
Internal reviewers	Juanita Devis Clavijo (IMEC), Michelle Specktor (TECHNION)
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Executive summary

The deliverable D4.2 ‘Baseline data report for pilots’ summarises the baseline data collected in pilot phase 1 in five INDIMO pilots (Emilia-Romagna, Antwerp, Galilee, Madrid and Berlin) corresponding to the evaluation pillars set out in D4.1 ‘INDIMO Evaluation framework’. The aim of the evaluation is to assess to what extent the tools developed in WP2 and co-created within the project as the components of the INDIMO digital mobility toolbox (INDIMO DM toolbox) can facilitate the impact expected from the pilots that serve as testbeds for these developed tools. Given the multifaceted expected impact of the INDIMO tools in various technical, cultural, spatial and policy contexts on diverse set of user groups, especially vulnerable to exclusion ones and potential future users of the tools (stakeholders such as developers, policy makers, operators), the INDIMO evaluation framework is based on five pillars: **(i) user acceptance; (ii) inclusivity and accessibility, including gender aspects; (iii) cyber security and personal data aspects; (iv) process evaluation and (v) applicability and transferability.** The process evaluation pillar is further subdivided into two parts: **(a) Decision making process assessment, and (b) Usability assessment.** Baseline data was collected for all of these 5 evaluation pillars except the fifth pillar, i.e. applicability and transferability and second part of the process evaluation pillar, i.e. usability assessment. Nevertheless, baseline data collected for cyber security and personal data aspects has not been covered in this deliverable and will be reported in D2.6 Guidelines for cybersecurity and personal data protection.

The objective of collecting baseline data in pilot phase 1 in INDIMO pilots is **to establish and understand the baseline condition present** in these pilots. Baseline conditions portray the **current state of the digital mobility and logistics services in terms of user perception and stakeholders’ current way of working** corresponding to various indicators of the INDIMO evaluation pillars in INDIMO pilots before the application or implementation of INDIMO tools. Baseline data was collected through a questionnaire survey and semi-structured interviews with users, operators, developers and policymakers between December 2020 and May 2021. For some pilot locations such as Emilia-Romagna, Berlin and Antwerp where services are currently not running, proxies such as users and stakeholders of similar services running in other locations or potential users were utilized for data collection. In total, we received 130 responses to the end user questionnaire survey and 13 semi structured interviews were carried out with stakeholders. This data was also complemented by data collected in WP1 and communities of practice exercises in WP3.

Contrasts in the performance of the services and general experience, feelings and beliefs of the current users of INDIMO Digital Mobility and Delivery services were observed. In general, a **good level of satisfaction with the service** is there among users in some pilots such as Madrid, Berlin and Emilia-Romagna. On the contrary, respondents in Antwerp have **some doubts about the feasibility and implementation of the proposed service, perceived usefulness and end user support** of the application. In the case of Galilee, there are **issues related with the perceived security, privacy and enjoyment of riding experience** of the users. In Madrid, although users experience the feeling of innovation when they use the service, there are **issues with ability to empower people and privacy and data security.** Digital lockers in Emilia-Romagna can empower vulnerable-to-exclusion people, however, there are **concerns with**

integration of the service in day-to-day life of people and its quality of the output. Berlin has a good assessment from the relevance and cost points of view, but limitation of the service mainly to the care-givers and low acceptance of the child by other passengers and the driver remain as points of concern.

With respect to the current way of working of the stakeholders, all stakeholders especially operators and developers acknowledged that a **good understanding of needs, requirements, capabilities of potential end users from the very first phase of the project is essential** for enhancing user acceptance of the service. Co-creation with end users, especially with vulnerable-to-exclusion ones from the very beginning of the project can ensure that the developed service meets the needs and requirements of end users. However, most of the interviews show that such a **co-creation is either never or rarely done**, which confirm the findings of T1.4. Although when proposed with the idea, almost every stakeholder agreed that the service or application they are developing **should be accessible and inclusive**, collected baseline data shows that these two topics are mostly **never considered** during the development of the services and applications, at times fearing market competition, profitability and project delays. Also, **understanding of terms such as accessibility, inclusivity, co-creation or even objectives of a service, varies from one stakeholder group to another** based on their interests and proficiency. All stakeholders acknowledged the **absence and the need of clear guidelines** for developing and operating digital mobility and logistics services, applications and infrastructures, **but not at the cost of stifling 'innovation'**. In general, regarding newer digital mobility and logistics services and their impact on the society there is a sense of lack of certainty among policymakers. Stakeholders agreed that **cyber security and data protection are important** aspects for digital mobility and logistics services. At the same time, financing, subsidy and licensing requirements from the public authorities should be done in a way that **foster and encourage research and innovation and supports the idea of inclusion of all citizens**.

Data collected in this pilot phase 1 and reported in this deliverable established the baseline condition in INDIMO pilots. Next, in Pilot phase 2, services/technologies in pilot locations will be (re-)design using the tools co-created in INDIMO based on this baseline data report and WP1 inputs. A mid-term small-scale data collection and assessment will be done in this phase to identify shortcomings and additional requirements for the improvement of INDIMO tools before the final implementation in pilot phase 3. Finally, data collected in pilot phase 3 will be compared against this baseline data to assess to expected impact of the tools co-created within the project in 3 INDIMO pilots.

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1. Introduction

This deliverable relates to tasks 4.2, 4.3, 4.5 and 4.6 of WP4 of INDIMO project. WP4 ‘Evaluation and transferability assessment’ monitors and evaluates the pilots conducted in WP3 ‘Pilots and demonstrations’. The aim of the evaluation is to assess to what extent the tools developed in WP2 can facilitate the impact expected from the pilots (WP3). In this regard an evaluation framework was developed in task 4.1 and explained in D4.1 ‘INDIMO Evaluation framework’. This evaluation framework has 5 pillars around which project’s pilot assessment activities have been structured. Each of these pillars has associated evaluation tasks in WP4. Baseline data for these pillars were collected as a part of Task 3.3 ‘Pilot phase 1 - User needs and requirements assessment’ in WP3 and evaluated in WP4 as part of the task 4.2 ‘Evaluation of inclusion and accessibility including a gender perspective’, 4.3 ‘Process evaluation’ and 4.5 ‘Cyber security and personal data privacy assessment’.

1.1. Aim of this deliverable

The report will summarise the baseline data collected in the pilots. As set out in D4.1 INDIMO Evaluation framework, baseline data was collected for 4 of the 5 evaluation pillars. These 4 pillars are:

- 1 User acceptance (how do users perceive and use the improved services and applications?).
- 2 Inclusivity and accessibility (how inclusive and accessible are the new digital mobility or logistics services and applications to the users?).
- 3 Cyber security and personal data aspects (to what extent the cyber security and personal data aspects have improved in the improved services and applications?).
- 4 Process evaluation of the INDIMO Inclusive Digital Mobility Toolbox (how can the tools be used in practice to improve the current way of working?).

The process evaluation pillar is further subdivided into two parts:

- a. Decision making process assessment, and
- b. Usability assessment.

User acceptance and Inclusivity and accessibility were covered under a single task, i.e. T4.2 Evaluation of inclusion and accessibility including a gender perspective. The other two pillars, Cyber security and personal data aspects and Process evaluation were carried out as a part of T4.5 Cybersecurity and personal data privacy assessment and T4.3 Process evaluation respectively. However, baseline data collected for T4.5 will not be covered in this deliverable as the results of this task will be integrated in Task 2.4 Cybersecurity and privacy assessment guidelines and explained in D2.6 Guidelines for cybersecurity and personal data protection. Therefore, this deliverable D4.2 Baseline data report for pilots will summarize baseline data collected for T4.2 and T4.3 only. More details about pilot phase 1 (T3.3) in which the baseline data was collected can be found in D3.4 Pilots phase 1 report.

1.2. Relationship with other relevant deliverables and WPs

Baseline data summarized in this deliverable will be used by task contributors of WP2 to further develop the components of INDIMO toolbox. As the project advances, data collected in pilot phase 2 and 3 as part of WP3 will be compared against the baseline data summarized here to identify impacts of INDIMO tools across INDIMO pilots. Thus, this deliverable as a part of WP 4 contributes to stage 4 of the INDIMO co-creation process.

1.3. Task participants and sharing of responsibilities

Task 4.2 and 4.3 to which this deliverable relates to are led by CambiaMO and VUB respectively with contributions from IMEC, PI, DBL, MBE, POLIS, and EPF. Baseline data collection was carried out by INDIMO pilot leaders and PI, and preparation of SSI questions, survey questionnaires and evaluation of the data were done by CambiaMO and VUB.

1.4. Structure of the deliverable

This deliverable is subdivided into 6 sections.

Section 2 describes the summary of the INDIMO evaluation framework set out in D4.1.

Section 3 describes baseline data collected for INDIMO evaluation pillars User acceptance and Inclusivity and accessibility as a part of T4.2 Evaluation of inclusion and accessibility including a gender perspective.

Section 4 describes baseline data collected for the decision-making process assessment part of the process evaluation pillar as a part of T4.3.

Section 5 and 6 describe lessons learnt, conclusion and next steps.

2. INDIMO Evaluation framework

The evaluation framework along with its objectives, different pillars, methods, possible list of indicators and limitations has been set out in D4.1 INDIMO Evaluation framework. This evaluation process is also a part of the iterative co-creation process of the INDIMO project. Figure 1 shows the INDIMO co-creation process of the INDIMO digital mobility toolbox development and the role of the evaluation process.

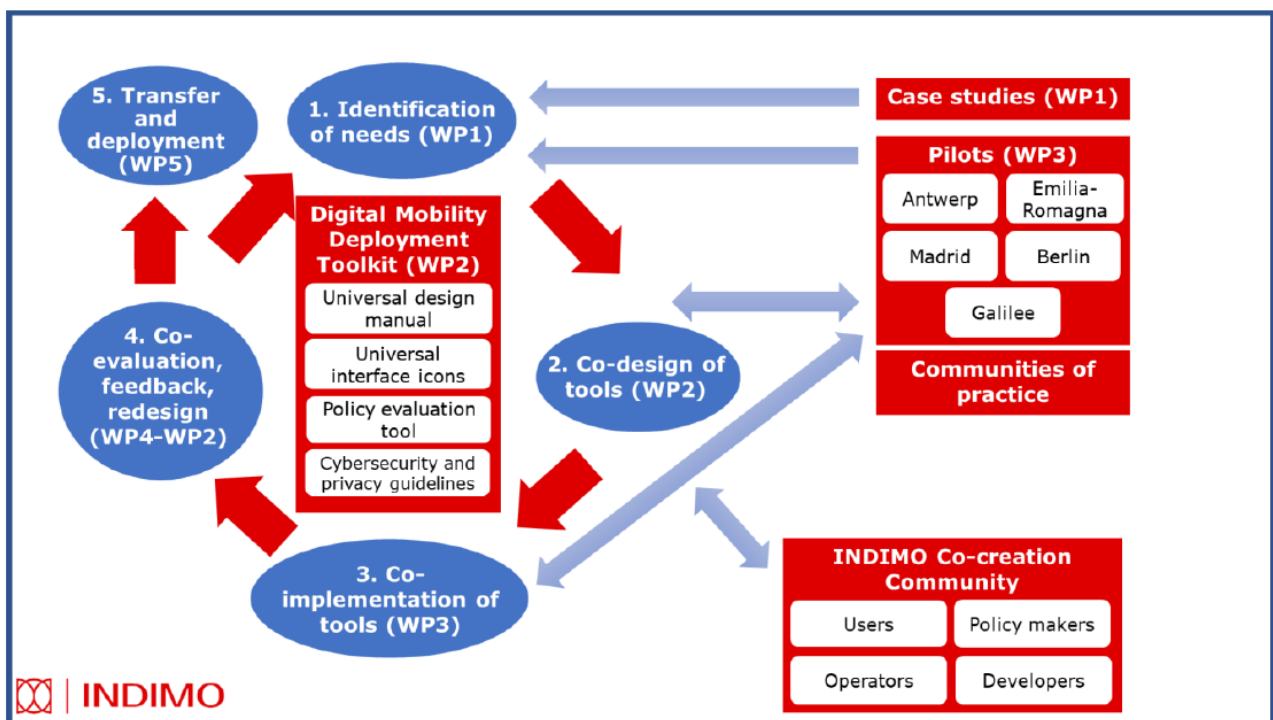


Figure 1 - INDIMO co-creation process (Source: INDIMO DoA)

Figure 2 further details how this five-stage co-creation process (Figure 1) consists of an evaluation feedback synthesis loop so that the tools developed within the project can be improved through multistage process fully utilizing the 3 pilot phases. The first stage of tool development collects inputs from pilot phase 1 and WP1, i.e. analysis of barriers and opportunities for tapping the full potential of the digital interconnected transport system (WP1). This deliverable D4.2 ‘Baseline data report for pilots’ provides a summary of evaluation of the data collected in pilot phase 1 which represents the baseline condition, i.e. condition before implementation of the INDIMO tools. Two other deliverables from WP4, D4.4 and D4.3 will report the synthesis of the data collected in the other two pilot phases, i.e. pilot phase 2 and pilot phase 3.

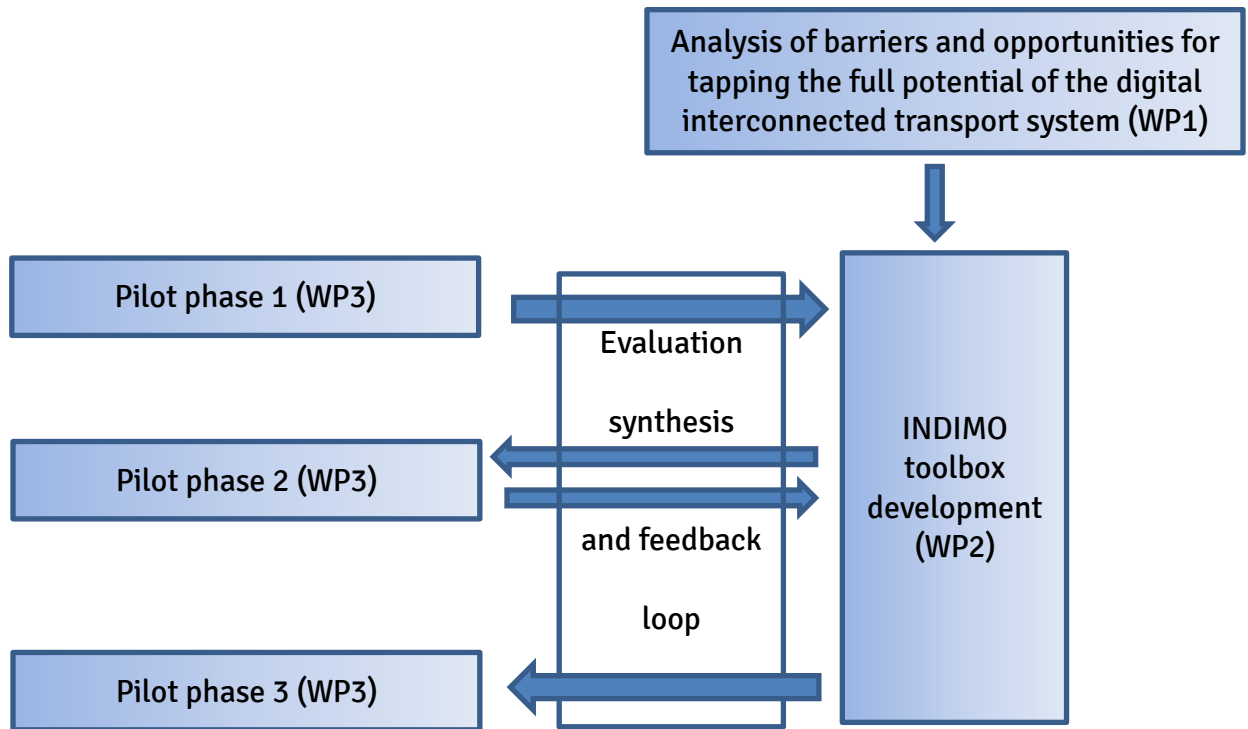


Figure 2: Evaluation and interdependencies of the work packages

As set out in D4.1 the evaluation framework in INDIMO (Figure 3) is structured around the five main pillars described below:

- 1 User acceptance (how do users perceive and use the improved services and applications?);
- 2 Inclusivity and accessibility (how inclusive and accessible are the new or improved digital mobility or logistics services and applications to the users?);
- 3 Cyber security and personal data aspects (to what extent the cyber security and personal data aspects have improved in the improved services and applications?);
- 4 Process evaluation of the INDIMO Inclusive Digital Mobility Toolbox (how can the tools be used in practice to improve the current way of working?);
- 5 Applicability and transferability assessment (How feasible is it to apply INDIMO tools in different local settings and how likely is it that those tools can achieve the same outcomes?)

The process evaluation pillar can be further subdivided into two parts:

- a. Decision making process assessment, and
- b. Usability assessment.

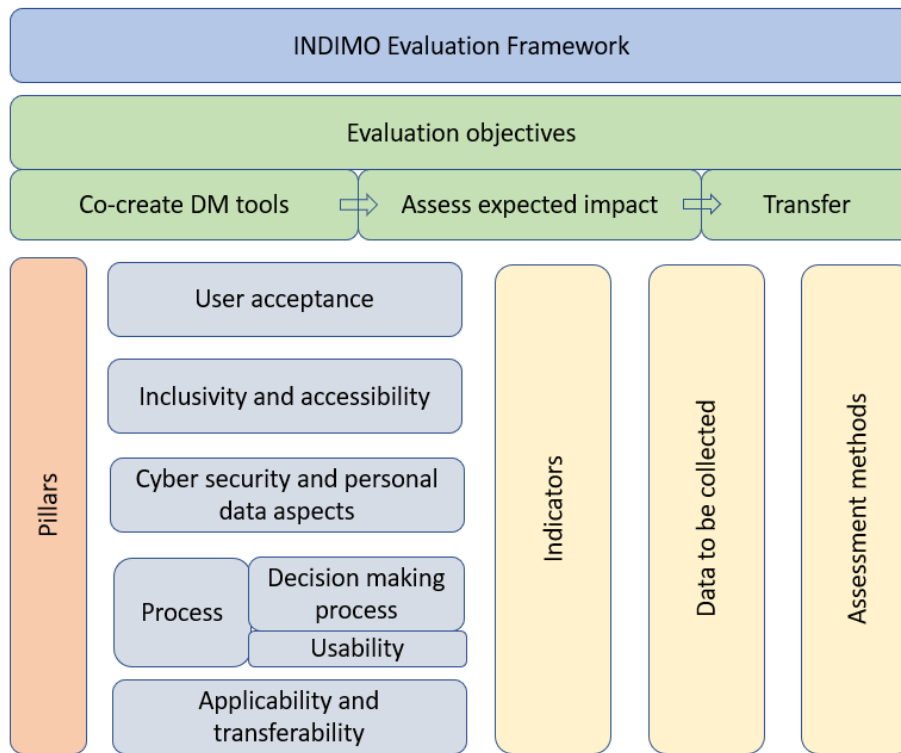


Figure 3: INDIMO evaluation framework

As shown in figure 2, data will be collected and evaluated in INDIMO throughout all pilot phases. This collection and evaluation of data will help first co-creating INDIMO tools and then assess the impact those tools or in other words the project has achieved. Table 1 shows the phase-wise data collection timings for INDIMO evaluation pillars.

Table 1: Pilot data collection timings

Evaluation framework pillars	Pilot Phase 1	Pilot Phase 2	Pilot Phase 3
User acceptance assessment	Baseline data collection	Mid-term data collection for tool improvement	Data collection after final implementation
Inclusivity and accessibility assessment (including gender perspective)	Baseline data collection	Mid-term data collection for tool improvement	Data collection after final implementation
Cyber security assessment	Baseline data collection	Mid-term data collection for tool improvement	Data collection after final implementation

Process evaluation	Decision making process assessment	Potentials/drivers and barriers data collection + current way of working		Data collection after final implementation to identify change in the way of working (presentation of the same in round 2 of policy evaluation tool test (wider test))
	Usability assessment		Data collection after limited/trial implementation for tool improvement	Data collection after final implementation
Applicability and transferability assessment			Applicability assessment in pilot sites	Transferability assessment through Co-creation workshops

As set out in the evaluation framework, in pilot phase 1 baseline data was collected for all INDIMO evaluation pillars except Applicability and transferability assessment. In next two sections of this deliverable evaluation of the collected data corresponding to User acceptance assessment, Inclusivity and accessibility, including a gender perspective assessment and Decision making process assessment will be reported. As explained earlier, evaluation of the collected data related to Cyber security assessment will be reported in D2.6 Guidelines for cybersecurity and personal data protection.

3. User acceptance assessment, inclusivity and accessibility assessment (including a gender perspective)

To understand to what extent the tools developed in WP2 as part of the INDIMO Digital Mobility Toolbox have an impact on user acceptance of digital mobility / delivery services and the accessibility and inclusivity, including gender, a baseline survey has been launched for collecting data on different variables. The data collection process is based on data collection plans elaborated in the Pilot handbook (D3.1) and the assessment proposed indicators in the INDIMO Evaluation framework (D4.1) to compare the baseline (before implementing INDIMO tools) and the situation after applying them.

The design of the baseline survey for the assessment of 3 of the WP4 pillars named user acceptance testing, (i) user acceptance testing; (ii) the inclusivity and accessibility, including gender; and (iii) cyber security and personal data aspects and has been carried out by Task 4.2 contributors (cambiaMO, DBL, Imec, and ZLC) and pilots' partners (i.e. ITL and Poste Italiane, IMEC, Technion, cambiaMO, VIC, CoopCycle, Door-to-Door). A deep data analysis of pillar # 3 of cyber security and personal data aspects has been carried out for D.2.6.

Section 3 presents and analyses the data collected through this baseline survey questions on the defined categories related to previously defined pillars: User capabilities, Facilitating conditions of usage, Task features, Output features, Social factors, User innovativeness, Hedonistic motivation, and Ethics as variables of the indicators of User acceptance testing. The categories of Inclusivity and accessibility, Affordability, Attention to needs, Gender perspective, Transport poverty, Security issues and Comfort as part of the indicators of Accessibility and Inclusivity. The data refer to the five (5) INDIMO pilots: **P1** | Emilia-Romagna | Digital Lockers, **P2** | Antwerp | Inclusive traffic lights, **P3** | Galilee | Informal ridesharing in ethnic towns, **P4** | Madrid | Cycle logistics platform for delivery healthy food and **P5** | Berlin | On-demand ridesharing integrated into multimodal route planning.

3.1. Assessment indicators

As mentioned in the INDIMO Evaluation framework (Deliverable D4.1), the baseline data collection and the qualitative fieldwork were carried out for evaluating the four pillars of user acceptance, accessibility, inclusivity, including gender and cybersecurity for each pilot of digital mobility services (DMS) or digital delivery services (DDS). The evaluation counts on several indicators, grouped in categories, each of them is constructed through the combination of one or more variables that are represented by each question/ statement of the Baseline survey. However, some experiential indicators such as social norms are populated by the SSI data collection of WP1, while in next phase of the pilot implementation quantitative backend data will complete the picture.

Therefore, the data for defining the baseline of the four nourishing WP4 assessment pillars will come from three different data sources (survey, interview, usage data):

- **Baseline Survey** with end users of the (improved) digital mobility service. The data will be provided in each pilot by end users and collected at level of the pilot at the beginning and end of the trial.
- **Semi-structured interviews (SSI)** with a selection of end users (min 3 per pilot) of the improved digital mobility service/digital delivery service to dive deeper into the survey results at the end of the pilot trial.
- **Quantitative backend data:** Usage data collected from the system of the improved digital mobility service. This data will be provided by the owner of the system at the end of the pilot trial. If possible, an overview of the numbers for each month is given to identify increase or decrease or points of usage.

For the readers’ convenience, the definition of the indicators planned is reported from the INDIMO Evaluation framework (Deliverable 4.1) together with the elements from where data were taken to populate each indicator (see Table 2 and Table 3). More details on the operationalisation and the weight given to each Baseline survey question inside each indicator are described in **Annex 3**.

3.1.1. Indicators for User acceptance

The following indicators were used for measuring the end user experience with the improved digital mobility services/digital delivery services in each of the pilots. The concrete and final selection of indicators as well as the concrete questions covering the indicator and its description was elaborated in consultation with the pilots as part of task 4.2 (Evaluation of inclusion and accessibility including a gender perspective). In the current table, a first assessment is based on the applicability of each indicator to one, more or all pilots.

Table 2: List of assessment indicators for user acceptance

Category	Indicator	Description	Data availability from Baseline survey (Q1-Q25) and Semi-Structured Interview from WP1
<i>User capabilities</i>	Perceived usefulness (Davis, 1985; Venkatesh & Davis, 2000)	The degree to which a user believes that using INDIMO’s improved digital mobility service/digital delivery service can have more utility for them or can empower them more working as a capacity building tool.	P1-P4: Q16, Q25 P5: Q16
	Perceived ease of use (Davis, 1985; Venkatesh & Davis, 2000)	The degree to which a user believes that using INDIMO’s improved digital mobility service/digital delivery service is not physically or mentally	All pilots: Q1, Q6

Category	Indicator	Description	Data availability from Baseline survey (Q1-Q25) and Semi-Structured Interview from WP1
		demanding.	
	Experience (Venkatesh & Davis, 2000)	The degree to which a user has previous experience in using similar digital technologies as the one provided by INDIMO.	P4, P5: QS3.3, SSI.
	Self-efficacy (Davis, 1985; Venkatesh & Davis, 2000)	The belief of the user that they are capable of using the INDIMO digitally improved mobility service successfully.	All pilots: Q8
	Digital anxiety (Venkatesh & Davis, 2000)	A user's apprehension, or even fear, when faced with a digital application.	P3, P4, P5: Q7
Facilitating conditions of usage	End user support (Venkatesh & Davis, 2000)	A user's access to specialised instructions and support for using an INDIMO improved digital mobility service.	All pilots: Q18
	Physical accessibility (Venkatesh & Davis, 2000)	The physical accessibility of an INDIMO improved digital mobility service/digital delivery service.	All pilots: Q4-P1-P4; Q4b Q4c-P2; Q4e Q4f-P3 y P5
	Time availability (Venkatesh & Davis, 2000)	Time needed to be invested in learning to use INDIMO improved digital mobility service/digital delivery service.	All pilots: Q8
	Cost (Venkatesh & Davis, 2000; Tornatzky & Klein, 1982)	The monetary cost incurred by a user for using the INDIMO improved digital mobility service.	Berlin, Madrid, Emilia-Romagna, Galilee: Q9
Task features	Task relevance (Davis, 1985)	user's perception that the INDIMO improved digital mobility service/digital delivery service is relevant for the task they want to	All pilots: Q3; Q16

Category	Indicator	Description	Data availability from Baseline survey (Q1-Q25) and Semi-Structured Interview from WP1
		complete.	
	Compatibility (Lee, Kozar, & Larsen, 2003; Mallat, Rossi, Tuunainen, & Öörni, 2009; Moore & Benbasat, 1991)	The degree to which an INDIMO improved digital mobility service/digital delivery service is perceived, by the user, as compatible with their existing needs, values, and past experiences.	All pilots: Q3; Q10; Q12;
Output features	Output quality (Venkatesh & Davis, 2000)	The perceived quality of the outcome produced by the INDIMO improved digital mobility service.	All pilots: Q25; Q11
	Result demonstrability (Davis, 1985)	The tangibility of the outcomes obtained by the use of an INDIMO improved digital mobility service/digital delivery service (i.e. able to demonstrate to others the positive results obtained by the use of the component).	All pilots: SSI
Social factors	Subjective norm/social approval (Davis, 1985)	a user's perception that their significant others may approve (or not) of using an INDIMO improved digital mobility service.	All pilots: SSI; Q4c-P2

Category	Indicator	Description	Data availability from Baseline survey (Q1-Q25) and Semi-Structured Interview from WP1
	<i>Social influence</i> (Maness, Cirillo, & Dugundji, 2015; Paez & Scott, 2007; Carrasco & Miller, 2006; Deutsch & Goulías, 2013; Venkatesh & Davis, 2000)	A user's decision to use an INDIMO improved digital mobility service/digital delivery service as a result of social influence (e.g. community influence).	All pilots: SSI; Q4c-P2; Q12
	<i>Perceived connectedness/communication</i> (Fetscherin & Lattemann, 2008; Park, Baek, Ohm, & Chang, 2014)	A user's perception of being connected with and collaborating with the other users of an INDIMO improved digital mobility service, while using it.	All pilots: Q12
	<i>Perceived Image</i> (Davis, 1985)	The degree to which a user perceives the usage of an INDIMO improved digital mobility service/digital delivery service as able to enhance their status in their community.	All pilots: SSI
<i>User innovativeness</i>	<i>User innovativeness</i> (Venkatesh & Davis, 2000)	A user's willingness to try out an INDIMO improved digital mobility service/digital delivery service due to its innovative features.	All pilots: SSI y Qtext
	<i>Cognitive playfulness</i> (Venkatesh &	A user's cognitive spontaneity when using an INDIMO improved digital mobility service.	All pilots: Q25

Category	Indicator	Description	Data availability from Baseline survey (Q1-Q25) and Semi-Structured Interview from WP1
	Davis, 2000)		
<i>Hedonistic motivation</i>	<i>Expressiveness</i> (Nysveen, Pedersen, & Thorbjørnsen, 2005)	User's perception that the use of an INDIMO improved digital mobility service/digital delivery service allows them to express their social or personal identity and emotions.	All pilots: Q19
	<i>Perceived enjoyment</i> (Venkatesh & Davis, 2000)	A user's perception that an INDIMO improved digital mobility service/digital delivery service is expected to be enjoyable when using it, aside from any performance results	All pilots: Q19 (no en P2 and in P5 is different)
	<i>Flow of experience</i> (Hsu & Lu, 2004)	A user's experience as being absorbed by the activity of using an INDIMO improved digital mobility service. Characteristics of flow, applicable to this case, are: concentration, enjoyment, being in control, and seamless sequence of response, amongst others.	All pilots: Q5
	<i>Integration</i> (Shin, 2010)	A user's perception that an INDIMO improved digital mobility service/digital delivery service is well integrated in their lives, without interfering with other activities.	All pilots: Q17
<i>Ethics (in relation with evaluation of cybersecurity assessment)</i>	<i>Trust</i> (Shin, 2010)	A user's trust that an INDIMO improved digital mobility service/digital delivery service will act as expected (Shin, 2010).	All pilots: Q20; Q22-24
	<i>Perceived security</i> (Shin, 2010)	A user's perception of security while using an INDIMO improved digital mobility service.	All pilots: Q20, Q22, Q23

Category	Indicator	Description	Data availability from Baseline survey (Q1-Q25) and Semi-Structured Interview from WP1
	<i>Privacy</i> (Shin, 2010)	A user's perception that any personal data collected by an INDIMO improved digital mobility service/digital delivery service about themselves or others remain confidential.	All pilots: Q21 (no en P5); Q23, Q22

3.1.2. Indicators for Inclusivity and accessibility

In addition to the user experience indicators related data, in order to understand the concrete use by end users and in order to place the self-reported statements about the end user experience in the right context, the following data about inclusivity and accessibility in each pilot from the improved digital mobility service/digital delivery service was collected.

Table 3: List of assessment indicators for inclusivity and accessibility

Category	Indicator	Additional note on the indicator	Data availability from INDIMO data collection and pilot
Inclusivity & accessibility	Number of downloads of the proposed INDIMO app by people with disabilities or older people.	Making technology and electronic services accessible and usable by people with disabilities or the elderly.	All pilots, specially P1 (N.A.), P2 (todos) and P4 (N.A.).
	Number of people having broadband internet access.	Giving people broadband internet access.	All pilots, specially P1- (all), P4 and P5 (lower income people): SSI, S3.3 and Thais.
	People that have access to e-commerce and public services that save	Preventing economic exclusion from e-commerce and public	All pilots, specially P1, P3 and P4: SSI

Category	Indicator	Additional note on the indicator	Data availability from INDIMO data collection and pilot
	time and money.	services that save time and money.	
	Number of persons involved in digitally connected communities.	Preventing social exclusion from digitally connected communities.	All pilots, specially P1 and P4 (i.e. migrants and socially isolated people): SSI; Desk research; D3.1
	Number of accesses to any digital technology in communities to tackle area-based deprivation.	Using any digital technology in communities to tackle area-based deprivation.	All pilots, specially P3 and P5: SSI; D3.1
	Number of uses of any digital technology to tackle social exclusion.	Using of digital technology to tackle social exclusion.	All pilots, specially P3 and P5: SSI D3.1
Affordability	Proportion of additional household income gained thanks to the introduction of DMS/DDS for the lowest income population ¹ .	Increased household income thanks to the accessibility to jobs by ethnic and migrant groups.	All pilots, specially P1 and P3: Q9; SSI; persona
Attention to needs	Level of the accessibility to key life activities before and after the use of the app and the associated transport service.	An accessibility index has been defined and adopted to this goal in the Pilots' handbook.	All Pilots: Q16; Q12 (no en P1);
	Waiting time between booking transport services and receiving	Digital waiting time.	All pilots, specially P3, P4 and P5: SSI

¹ If it is not feasible to collect this data, self-declared perception of the same can be considered

Category	Indicator	Additional note on the indicator	Data availability from INDIMO data collection and pilot
	them. This is adequate for personal mobility and goods delivery DMS/DDS assessment.		
Gender perspective²	Use of DMS/DDS for care-giving trips purpose and other essential activities.	Adoption of DMS/DDS for care-giving trips.	All pilots, specially P1-no, P2 and P4: Q12
	Number of people empowered to download the INDIMO DMS/DDS apps, specially by low skilled individuals and women.	Closing the gap between those enabled and empowered to download the INDIMO DMS/DDS apps and those who are not.	All pilots, specially P3 and P5: Q13, Q14, Q15; S3.3
	Number of women who can take advantage of DMS/DDS in respect to the mobility of care - giving (e.g. purposes related to food and medicaments shopping, accompanying dependent persons and visit family and friends).	Adoption of DMS/DDS for women who mostly carry out care-giving trips.	All pilots, specially P3 and P5: Q12
Transport poverty	DMS/DDS contribution to complement the capacity, frequencies and network of public transport (PT).	Increasing of PT capacity and services and extending traditional PT networks.	All pilots, specially P3 and P5: Q16
Security issues	DMS/DDS information about service status for reducing sexual	Providing appropriate information on service status for	All pilots, specially P3, P5: Q13

² Specifically women related data are being collected here as it has been seen by comparing world transport and travel-use data men are caregivers in the 18-22% of cases, and women for the rest (Mitra-Sarkar & Di Ciommo, 2019)

Category	Indicator	Additional note on the indicator	Data availability from INDIMO data collection and pilot
	harassments in public transport, disease contagion, etc.	avoiding sexual harassment situations and disease contagion.	
Comfort	Leisure is a key driver of the popularisation of digital mobility solutions. A leisure barometer will be implemented for understanding how much comfortable the use of DMS/DDS is.	The importance to understand social contexts, needs, and aspirations behind DMS/DDS.	All pilots, specially P1 and P4: SSI; CoP #9.

3.1.3. Baseline survey design

The design of the Baseline survey has been carried out by Task 2.4, Task 3.3, Task 4.5 contributors (cambiaMO, DBL, Imec, EPF and ZLC), pilots’ partners (i.e. ITL and Poste Italiane, IMEC, Technion, cambiaMO, VIC, CoopCycle, Door-to-Door) and VUB as WP4 leader.

The evaluation of the User acceptance, Accessibility, Inclusivity, Gender, Cybersecurity and data protection was mainly based on a total of **25 questions / statements** for the whole Baseline survey. The 25 statements are included in Annex 1. For the reader’s convenience, the statements are listed in a synthetic way in Table 4. In some pilots, questions / statements were proposed with a different formulation in respect to the template provided in Annex 1. Some additional questions/statements were answered only in some specific pilot. Annex 2 includes local language translation of the baseline survey for each pilot.

Respondents had provided their **level of agreement or disagreement** with the statements indicating a value on a 6-grade Likert scale. **Error! Reference source not found.** provides a description of the scale used, from 1 (strongly disagree) to 6 (strongly agree).

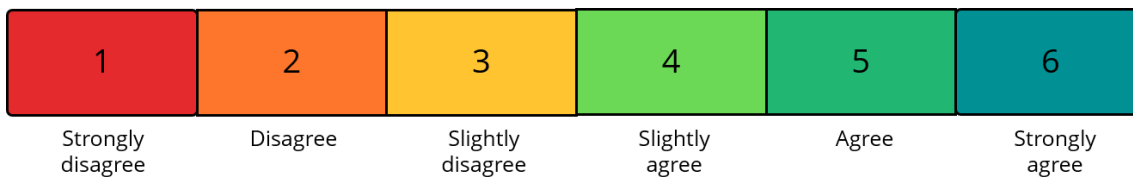


Figure 4: The Likert scale used in the Baseline survey to assess each statement proposed.

Following usual best practices in survey design (Weijters & Baumgartner, 2012), for 9 of the 25 statements survey items were reverted in order to (1) keep respondents from answering carelessly, and (2) help correct the agreement bias³. Consequently, in the analysis the answers given to those nine statements, their formulation was re-reversed to assume the same sense as the rest of questions with positive wordings (i.e. QXXinv).

Table 4: List of questions / statements used in Baseline survey

Question ID	Pillars for assessing	Rev. ⁴	Question / Statement
Q01	Accessibility	0	Icons and images provided in the app make it easy to use
Q02inv	Accessibility	1	The app does not have big fonts and enough contrasts

³ A category of response bias common to survey research in which respondents have a tendency to select a positive response option or indicate a positive connotation disproportionately more frequently.

⁴ In this column value is “1” if the statement was presented in an reverted formulation.

Question ID	Pillars for assessing	Rev. ⁴	Question / Statement
			The app has big fonts and enough contrasts
Q03	Accessibility	0	The app and the service have adaptations for my needs (e.g. voice reader, customizable text option)
Q04inv	Accessibility	1	I face physical barriers for using the app and the service I do not face physical barriers for using the app and the service
Q05	Inclusivity	0	I can clearly understand the information requested by the app/service
Q06	Inclusivity	0	I can easily use the app and the related service
Q07inv	Inclusivity	1	I have difficulty understanding the vocabulary of the app I do not have difficulty understanding the vocabulary of the app
Q08	Inclusivity	0	My digital knowledge is enough to use the application
Q09	Inclusivity	0	I find the service prices are affordable
Q10	Inclusivity	0	I can access the service in the way that best suits my needs (e.g. phone, computer, tablet, smart phone)
Q11inv	Inclusivity	1	I am not satisfied with the payment options provided by the app I am satisfied with the payment options provided by the app
Q12inv	Gender	1	I believe the service doesn't meet the mobility needs of the people I look after (e.g. older people, children...) I believe the service meets the mobility needs of the people I look after (e.g. older people, children...)
Q13	Gender	0	The app minimizes the risks of getting into unsafe situations as a woman
Q14	Gender	0	The app uses a gender-inclusive language
Q15	Gender	0	The app/service provides the same ease of use for women as it does for men
Q16	User Acceptance	0	The service covers my personal mobility needs
Q17inv	User Acceptance	1	I don't use the app frequently I use the app frequently
Q18	User Acceptance	0	When I use the app, I easily find support (e.g. help button) or assistance by phone, by WhatsApp or by chat
Q19inv	User Acceptance	1	The options of service offered by the app are insufficient The options of service offered by the app are sufficient
Q20	Trustworthiness	0	I consider that the app has informed me sufficiently about the use that will be given to my data

Question ID	Pillars for assessing	Rev. ⁴	Question / Statement
Q21inv	Cybersecurity and data protection	1	I'm not sure the app will take care of my privacy (e.g. spamming) <i>I'm sure the app will take care of my privacy (e.g. spamming)</i>
Q22	Cybersecurity and data protection	0	I trust that the app will keep my information safe and not to disclose it to third parties
Q23inv	Cybersecurity and data protection	1	I doubt that the people responsible for the app will contact me immediately if they experience data privacy risks <i>I trust that the people responsible for the app will contact me immediately if they experience data privacy risks</i>
Q24	Cybersecurity and data protection	0	I trust that if, I agree to share my data with third parties, it will be done ethically and responsibly
Q25	User Acceptance	0	It is very likely that I will use the app/service in the future
Q04binv	Accessibility	1	[P2only] I face technical barriers for using the app and the service (battery, memory, ...)
Q04cinv	Accessibility	1	[P2only] I feel embarrassed to other road users that green light was longer than normal because of my situation
Q05b	Inclusivity	0	[P2only] I can clearly understand the information about the crossing provided by the app
Q19b	User Acceptance	0	[P2only] The app will be efficient in all crossing contexts (busy street, large street, ...)
Q04einv	Accessibility	1	[P3+P5only] I face technical barriers for using the app
Q04finv	Accessibility	1	[P3+P5only] I face technical barriers for using the service

3.1.4. Baseline data collection⁵

The Baseline survey was conducted throughout the five (5) pilots between December 2020 and April 2021. A total of **130 answers** were collected among users of the digital mobility and delivery services of the INDIMO pilots. The degree of development of each digital mobility and delivery service and its users are different, therefore, the number of answers by pilot varies: from the 78 answers of the food delivery service in Madrid, collected through an online questionnaire linked to the purchase process to the 5 answers of the Galilee pilot where the survey was carried out through a face-to-face interview to the few regular users of the informal service. During the Baseline survey (beginning of 2021) the P1-pilot still did not have the

⁵ This section presenting the characteristics of the Baseline survey is also replicated in the D2.6 about the guidelines for cybersecurity, since the information contained in that deliverable and the one corresponding the present belong to the same data collection process.

service running at pilot location (Monghidoro in Emilia-Romagna). The Baseline survey has been designed to be answered by current users of the “Punto Poste da Te” digital lockers service. Therefore, this baseline survey has been conducted in Rome where digital lockers have been installed in residential and office buildings. In Antwerp, since the smart traffic light is not running potential users (blind in this case) whose needs will be addressed by the smart traffic light were surveyed. In the case of Berlin the service does not have the commercial license yet for operation. Therefore, users of a similar ride pooling service (Omobi) in Murnau were surveyed. Link to the survey questions were integrated in the app.

Most respondents were women (56%), belonging to age groups 25-34 (48%) and 35-44 (28%) and holding a master (45%) or a bachelor (36%) certificate. These characteristics of the sample are in line with the key aspect of the mobility in general where the women show higher mobility patterns between 29 and 49 (Di Ciommo, 2020). Most of the times this women hypermobility need is not satisfied by the current transport system. Therefore, the introduction of a new digital mobility service will be more than welcomed by women, especially when they are well educated and have a high level of digital competence.

Table 5: provides a synthetic view of the data collected.

Table 5: Baseline survey descriptive data

Pilot	Age	Gender % answers				Total No. of answers	Total % answers
		Female	Male	Not decl.	Not binary		
Pilot 1							
	18-24	8%				1	8%
	25-34		8%			1	8%
	35-44	31%	23%			7	54%
	45-54	8%	15%			3	23%
	55-64	8%				1	8%
	Total P1	54%	46%			13	10%
Pilot 2							
	25-34	11%	11%			2	22%
	35-44	22%	11%			3	33%
	45-54		11%			1	11%
	55-64	22%				2	22%
	65-74		11%			1	11%
	Total P2	56%	44%			9	7%
Pilot 3							
	18-24	40%				2	40%
	25-34	20%				1	20%
	35-44	20%				1	20%
	65-74	20%				1	20%
	Total P3	100%				5	4%
Pilot 4							
	18-24	6%	1%			6	8%
	25-34	33%	17%	4%	1%	43	55%
	35-44	13%	13%	3%		22	28%
	45-54	5%	3%			6	8%
	55-64	1%				1	1%
	Total P4	59%	33%	6%	1%	78	60%
Pilot 5							
	18-24	4%				1	4%
	25-30		4%			1	4%
	25-34	32%	24%		4%	15	60%
	35-44		16%			4	16%
	36-40		4%			1	4%
	45-54		4%			1	4%
	51-55	4%				1	4%
	66-70		4%			1	4%
	Total P5	40%	56%		4%	25	19%
	Total	56%	38%	4%	2%	130	100%

3.2. Results of the fieldwork

Following, we will show the results of the baseline survey complemented with data collected from the SSI, the CoPs and desk research data. These results correspond to the five different locations of pilots for which all the indicators have been tested. There are some specific indicators that correspond to some pilots but not to others, as it is informed in the previous tables. In those cases, the information will be presented for the relevant pilots. Additionally, some of the indicators have been previously covered by SSI and CoPs exercises, and the important information for these indicators will be taken from those sources. In addition, some indicators are backed up by research obtained from desk research. The analysis will be carried following the path of categories shown in previous tables, first in an aggregated way (data from all pilots integrated) and then by pilot.

Tables and figures below present the analysis indicator by indicator for each pilot. The tables include three descriptive measures: the average of given assessment values; the “Bottom Two Box” (BTB), that is the summation of responses Strongly disagree (1) + Disagree (2) and which gives a measure of the intensity of disagreement; the “Top Two Box” (TTB), that is the summation of responses Strongly agree (6) + Agree (5) and which gives a measure of the intensity of agreement for the given statement. The figures show the graphical distribution of the indicators constructed with the questions / statements as described in Section 3.1.1 and Section 3.1.2. The detail of this figures helps to better understand the nuances in the perceptions and attitudes of each pilot’s current users in terms of user acceptance, accessibility, inclusivity, and gender approach.

3.2.1. Indicators of user acceptance

3.2.1.1. Category 1. User capabilities

The indicators included in in this category are the following: Perceived usefulness, Ease of use, Self-Efficacy, Digital anxiety, and Experience (from SSI data base)

Indicator: Perceived usefulness

Perceived usefulness is defined as the degree to which a user believes that using INDIMO’s digital mobility service/digital delivery service can improve her/his utility or capability. The following table and figures show the results of this indicator for each pilot.

Table 6: Summary table on Perceived usefulness

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	70	47	52	74	56
Bottom Two Box	13	26	0	3	20
Average	4.69	3.84	4.24	5.15	4.32

We observe that Madrid is the pilot with the higher perceived usefulness with a Top Two Box of 74% and a mean of 5.15 between “5. Agree” and “6. Strongly agree”. While Antwerp is the pilot with the worst assessment of perceived usefulness with a Bottom Two Box of 26% and a mean of 3.84 between “3. Slightly disagree” and “4. Slightly agree”. We can find the reasons partially in the SSI. The doubts of the Antwerp pilot were posted on the ability of the chosen device to become universal and meet the needs of different impaired populations. Also, there are doubts about the efficacy of the smart traffic lights without transforming and enhancing the surrounding environment, which would turn the proposed digital mobility solution in “just another gadget”, in the words of the CoPs participants. With regards to Madrid pilot, the usefulness of the Digital Delivery Services is well assessed since it is recognized even during the SSI its relevance for different groups and occasions, although some adjustments may be needed specially for the digital app. For the rest of the pilots, the values of the assessment are aligned and moderately high.

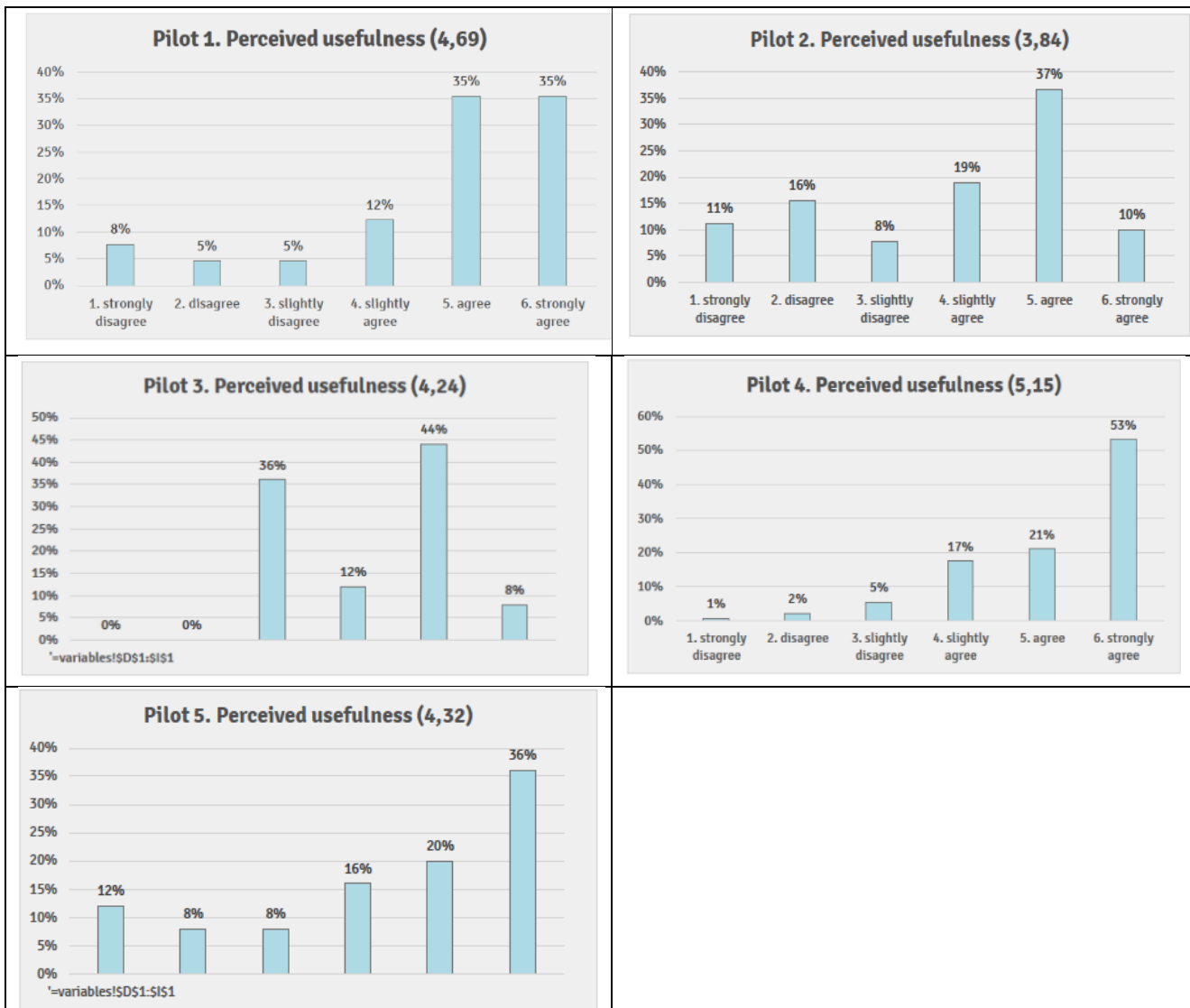


Figure 5. Distribution of answers on Perceived usefulness

Indicator: Ease of use

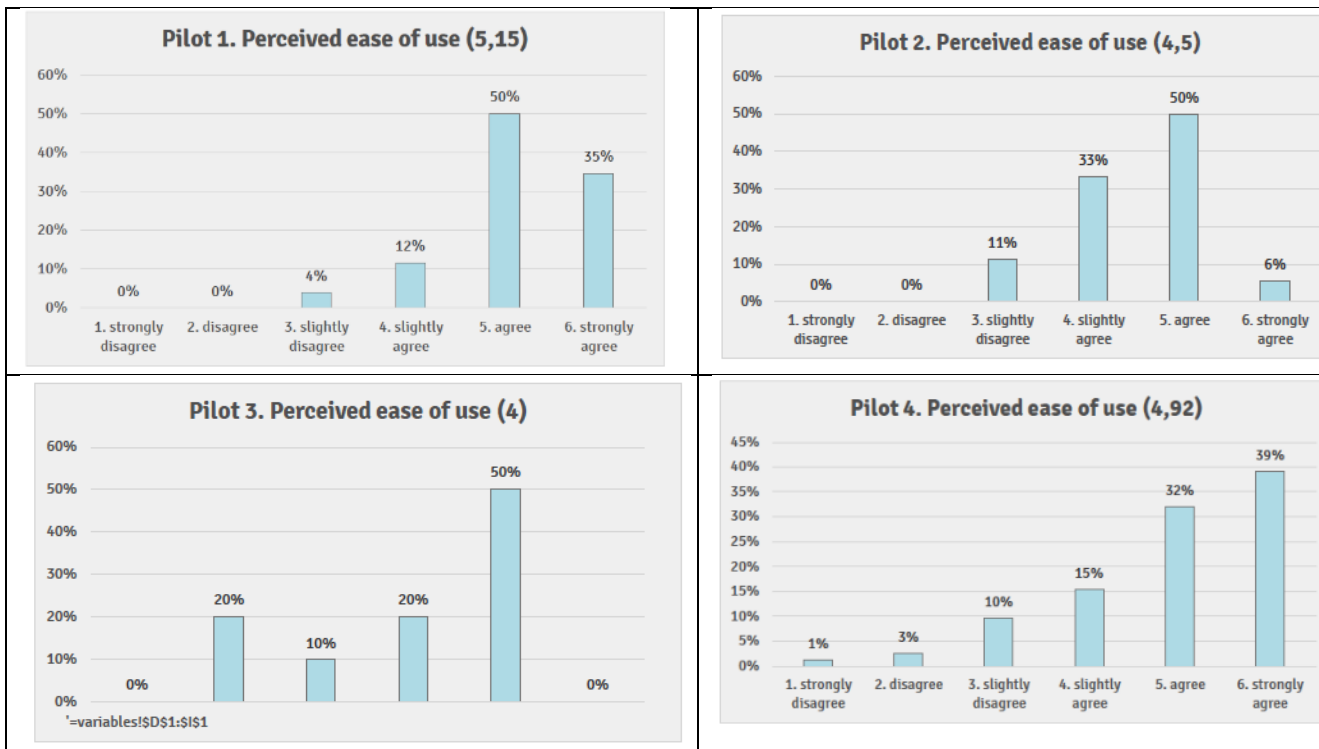
Ease of use is defined as the degree to which a user believes that using INDIMO’s improved digital mobility service/digital delivery service is not physically or mentally demanding. The following table and figures show the results of this indicator at each pilot.

Table 7: Summary table on Ease of use

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	85	56	50	71	78
Bottom Two Box	0	0	20	4	4
Average	5.15	4.5	4	4.92	4.92

We find that the *Ease-of-use* indicator show a relatively good assessment with a peak in Emilia-Romagna, with a very high Top Two Box of 85% and a mean of 5.15 between. In this pilot, the possibility of having human assistance at the locker and the simplicity in the architecture of the locker by itself explains this rating. The lower rating of this indicator in Galilee might be related to the fact that the considered DMS is an informal ridesharing app with minimum Customer service staff. Some of the arguments during the CoP conversation highlights this issue.

The ease of use shows a good performance for both Madrid and Berlin and is slightly lower for Antwerp where, during the SSI and CoP meetings, an observer noticed that there was no consensus about what type of device should be used, and the various options (i.e., sensor, button, mobile signal) prompted some controversies.



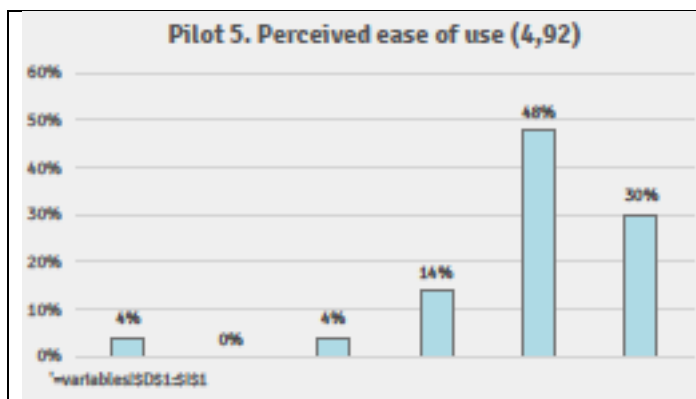


Figure 6. Distribution of answers on Ease of use

Indicator: Experience

Experience indicates the level of previous experience in using similar digital technologies as the one provided by the DMS/DDS of INDIMO. We operationalize this variable by listing and counting the number of previous mobility/delivery apps that are mentioned during the SSI interviews for each pilot.

Table 8: Other similar mobility/delivery apps mentioned in the SSI

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Mobility/Delivery apps mentioned in SSI	<ul style="list-style-type: none"> -Amazon -Shain -Giunti Scuola (online shop for school books) -Royal Canin (online store of pet products) -Zara online -AliExpress 	<ul style="list-style-type: none"> -Google Maps -Blindsquare -Uber -NMBS (app of the public train) -MNB (app of the public transport) -Waze -On Wheels -Route planners without specify -Navigate and park -De Lijn (online) -Google Street Views -Facebook groups of wheelchair users 	<ul style="list-style-type: none"> -Uber -Getty -Waze -Google Maps -Ride-sharing/hailing without specify 	<ul style="list-style-type: none"> -Glovo -Deliveroo -Cleta -Trebol -Cabify -Amazon -Uber -BiciMad -BiciMad Go -E-scooters app without specify -Radio taxi without specify -Amazon Food -City Mapper -Online delivery without specify 	<ul style="list-style-type: none"> -Uber -FreeNow -Belkönig -Amazon -BVG app (public transport) -Google Maps -Flaschenpost (beverage delivery) -MOIA -MyTaxi -Lieferando -Car2Go -DriveNow -HelloFresh -Clevershuttle
Number	6	12	5	14	14

We find a clear gap between pilots where there is a previous consistent experience in using other mobility/delivery services and pilots where this experience is reduced. In the first group we find the urban and metropolitan areas such as Berlin, Madrid, and Antwerp, with a greater number of previous usage of DMS/DDS listed by both users and non-users. In the second group with a smaller previous experience, we find Emilia- Romagna and Galilee, both rural contexts with a lower density and a lack of digital connectivity. The type of apps they know, and use is also connected with the type of impairment of the chosen profile. For instance, in Antwerp, with

the profile of people with reduced vision and reduced mobility, there are no apps of bike-sharing, but users mentioned apps for blind people to navigate the space such as Blindsquare.

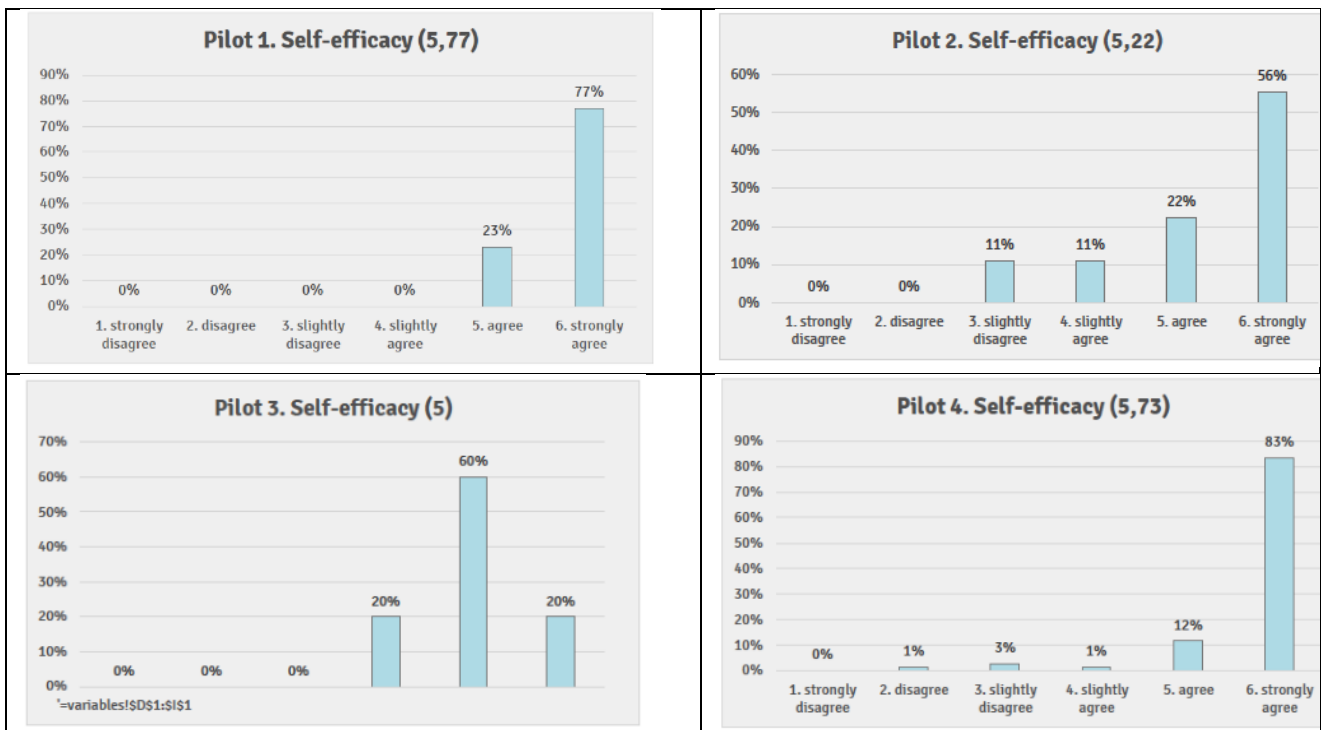
Indicator: Self-efficacy

Self-efficacy is defined as the belief of being successfully capable to use the DMS/DDS of INDIMO. The following table and figures show the results of this indicator at each pilot.

Table 9: Summary table on Self-Efficacy

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	100	78	80	95	88
Bottom Two Box	0	0	0	1	8
Average	5.77	5.22	5	5.73	5.44

Self-efficacy value is generally high. Emilia- Romagna shows the highest value, aligned with the high assessment of the indicator of the Ease of use, while the lowest ratings characterize Antwerp and Berlin. Antwerp has already presented a lower value of the ease-of-use indicator showing some difficulties in physical manoeuvrability of the device and misuse of the DMS by other pedestrians. In Berlin, the analysis of SSI allows observing a lack of equipment and information for people traveling with children, which may diminish the confidence of caregivers to use the DMS.



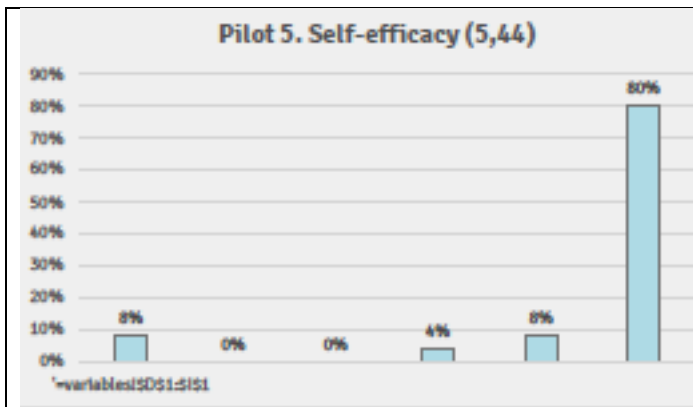


Figure 7. Distribution of answers on Self-Efficacy

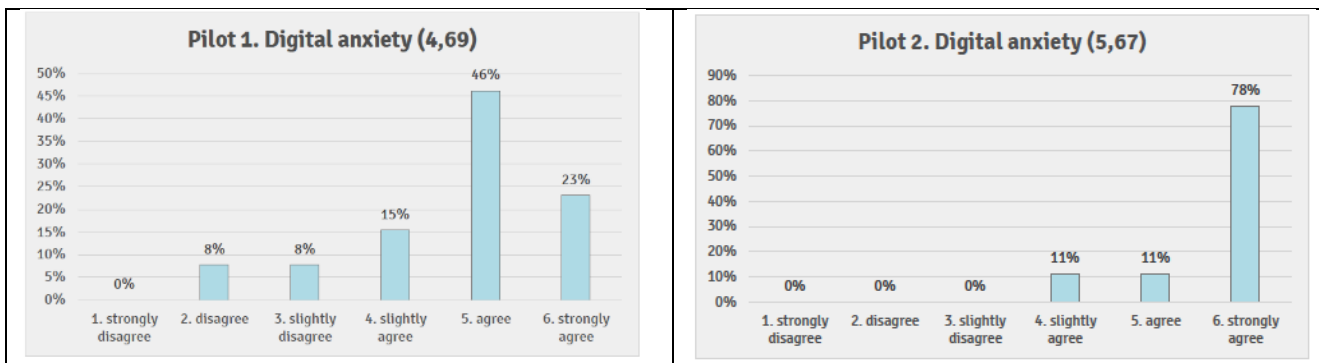
Indicator: Digital anxiety

Digital anxiety is defined as a user’s apprehension, or even fear, when they face a digital mobility or delivery service.

Table 10: Summary table on Digital anxiety

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	69	89	100	86	84
Bottom Two Box	8	0	0	3	12
Average	4.69	5.67	5.2	5.4	5.08

This indicator corresponds to a user’s apprehension or fear when faced with a digital application. We observe that the digital services that best cope with this anxiety are those of Antwerp, Galilee and Madrid, with a mean between “5. Agree” and “6. Strongly agree” for the rest of the cases. The digital mobility service with less capability of reducing the digital anxiety is the one of Emilia-Romagna where it was appreciated during the CoPs that fear of technology, of getting stuck in the process or not getting the right response from the digital device was a common experience.



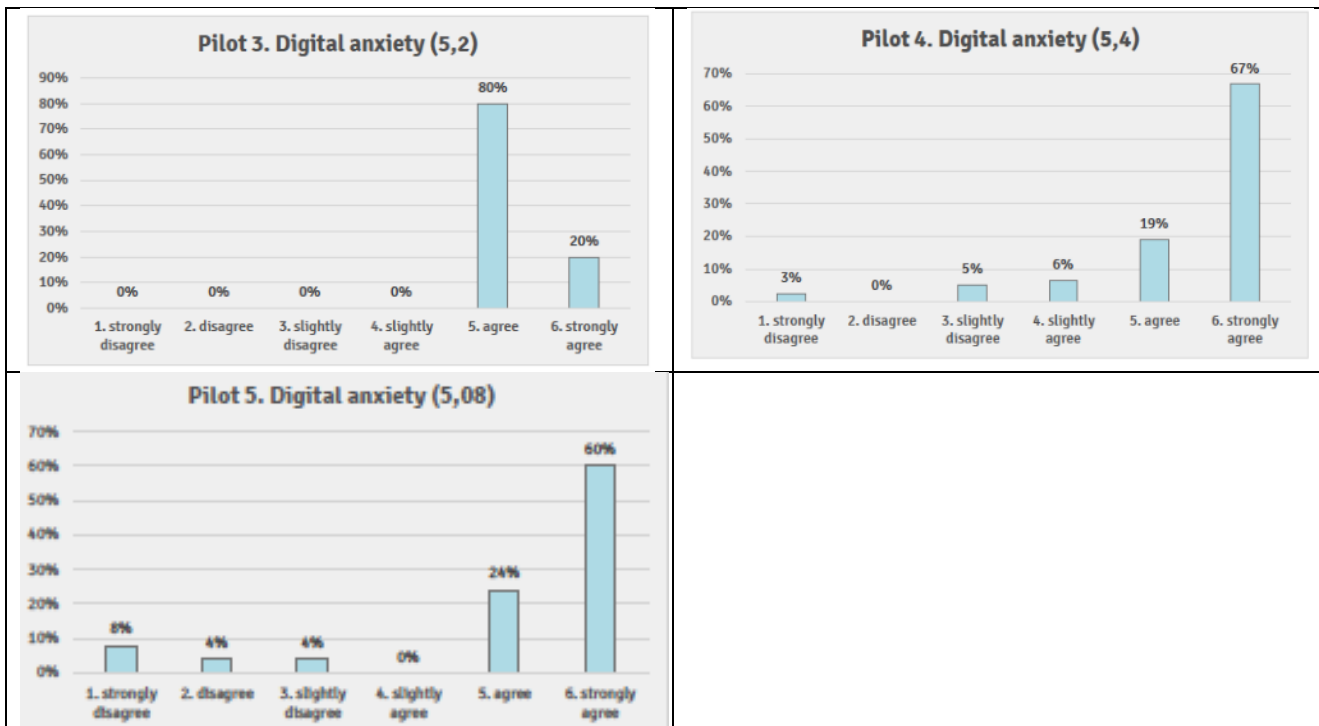


Figure 8. Distribution of answers on Digital anxiety

3.2.1.2. Category 2. Facilitating conditions of usage

The indicators included in in this category are the following: End-user support, Physical accessibility, Time availability and Cost.

Indicator: End-user support

End-user support is defined as a user’s access to specialised instructions and support for using an INDIMO improved digital mobility service (see the results in the following table and figures).

Table 11: Summary table on End-user support

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	46	11	20	39	32
Bottom Two Box	23	44	20	17	28
Average	3.92	2.78	3.6	4.05	3.64

The assessment of the End-user support aspect shows clear contrasts across the pilots and a moderate assessment that never goes beyond the average of “4. Slightly agree”. Regarding the mean, the best evaluated end-user support is found for Madrid pilot, where it is possible to interpret that the personal contact and the human relations that emerge during the SSI have a positive effect on this evaluation. The worst evaluation of the End-user support is for Antwerp, with a Bottom Two Box of 44% and a mean of 2.78, which is between “2. Disagree” and

“3.Slightly disagree”. The lack of support, the feeling of being left alone, had some references during the in-depth interviews.

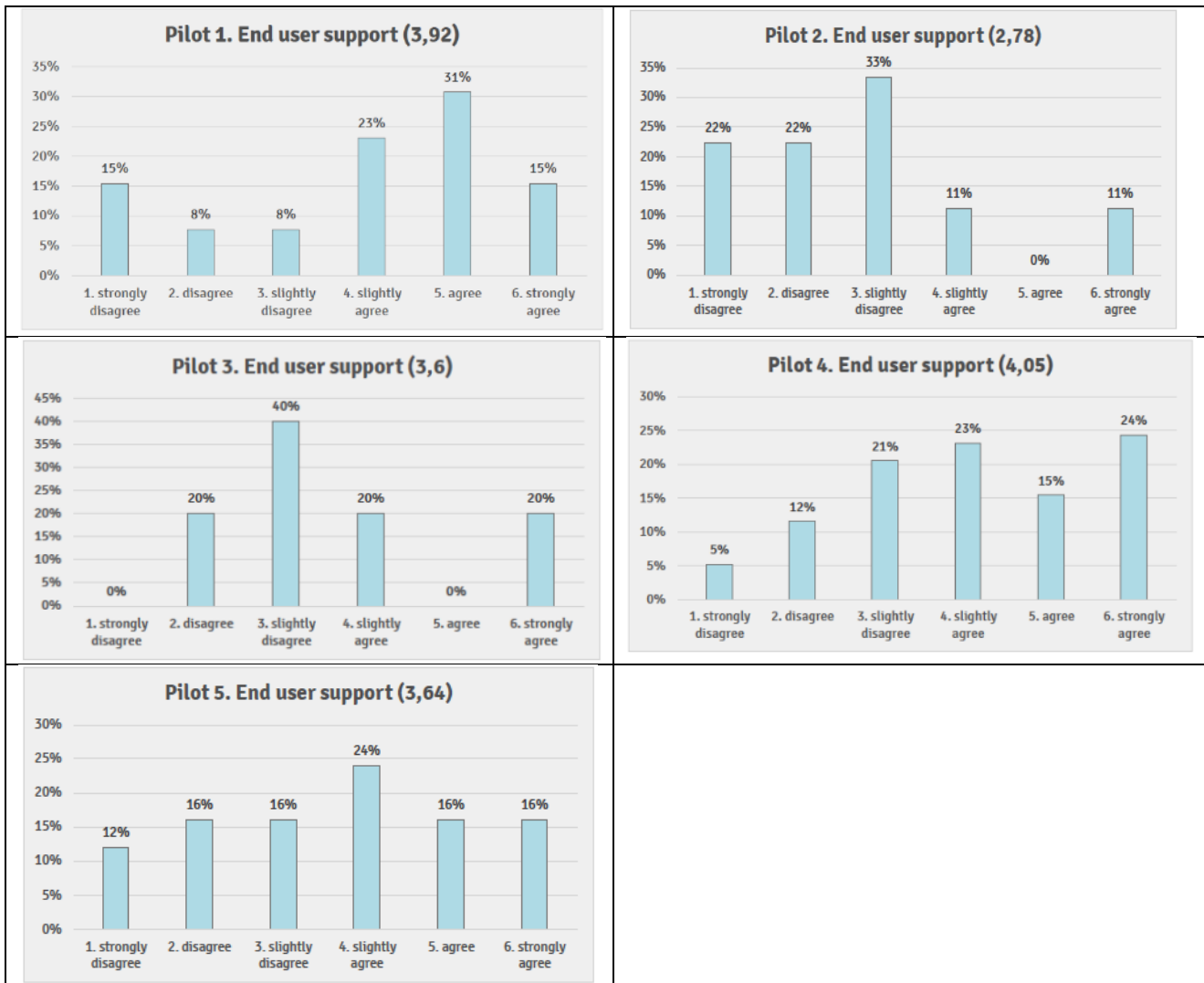


Figure 9. Distribution of answers on End-user support

Indicator: Physical accessibility

Physical accessibility is defined as the physical ability to get access to an INDIMO improved digital mobility service/digital delivery service.

Table 12: Summary table on Physical accessibility

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	92	22	n.a.	90	22
Bottom Two Box	0	55	n.a.	2	10
Average	5.31	3.22	n.a.	5.58	5.14



It can be observed, as in the indicator of conditions of usage, that the pilots with the best assessment are Emilia-Romagna and Madrid with a Top Two Box of 92 and 90 respectively, where, during the CoPs, it was already pointed out the benefit of these services to facilitate the accessibility of older people and people with reduced mobility to the key life activities and goods (i.e., food shopping). The worst assessment is for Antwerp, with a Bottom Two Box of 55 and a mean of 3.22, between “3. Slightly disagree” and “4. Slightly agree”. The elements of negative physical accessibility that appeared in the fieldwork of Antwerp are the state of pavement and sidewalks that do not accompany the implementation, the obstacles in the surrounding, the height of the button, if this is finally added as part of the solution, and other aspects of the physical interface treated in the SSI analysis.

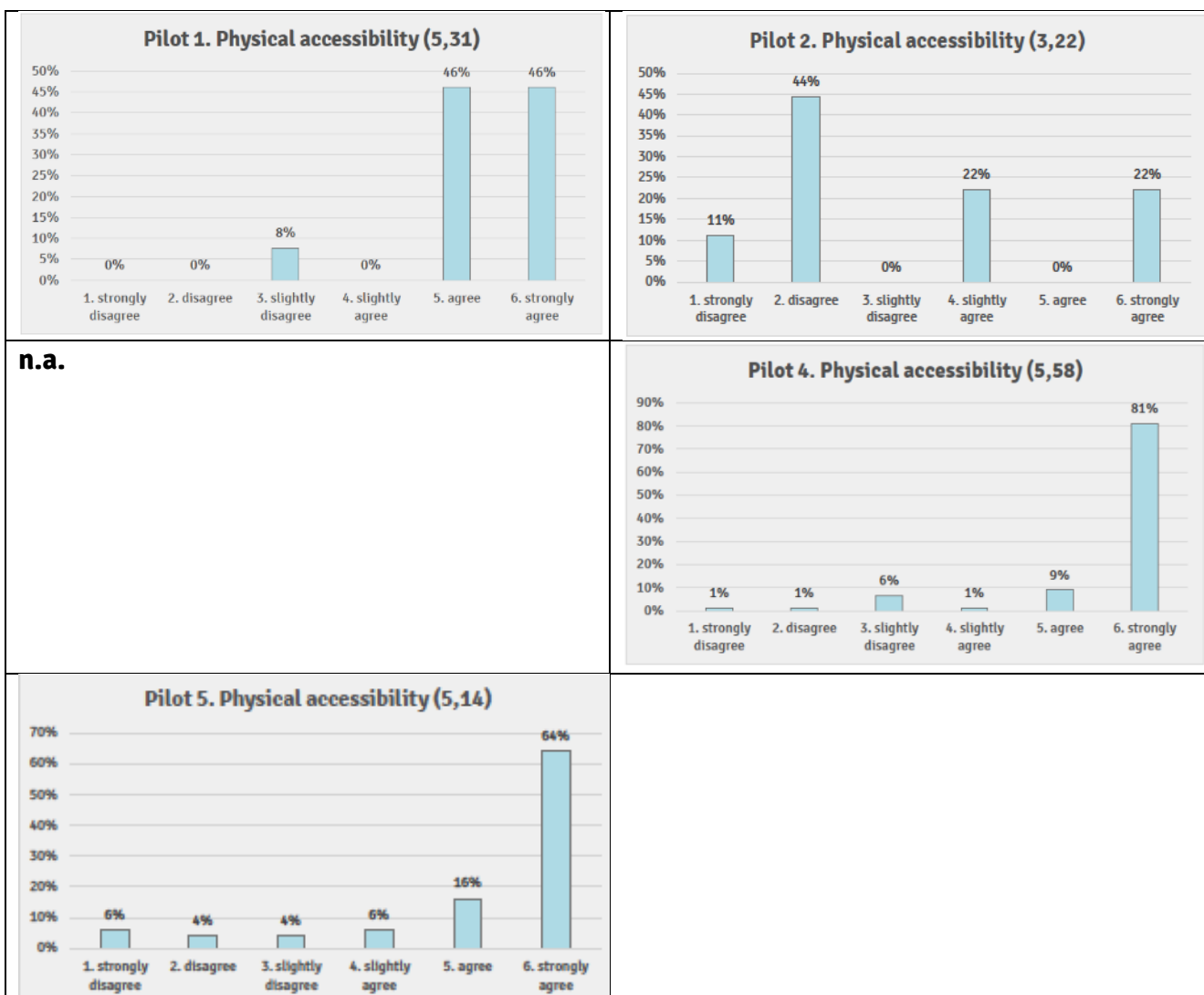


Figure 10. Distribution of answers on Physical accessibility

Indicator: Time availability



Time availability is defined as the time needed to be invested in learning to use INDIMO improved digital mobility service/digital delivery service. The following table and figures show the results of this indicator at each pilot.

Table 13: Summary table on Time availability

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	100	78	80	83	88
Bottom Two Box	0	0	20	12	8
Average	5.77	5.22	5	5.73	5.44

All the pilots present high value of assessment of the time availability that the DMS and DDS provides. All their mean evaluations are above “5. Agree” and the Top Two Box in all cases are far away from the values of the Bottom Two Box. All the pilots are aligned at this level. The indicator is showing the time gains, the more flexible use of this time, that the digital service enables.

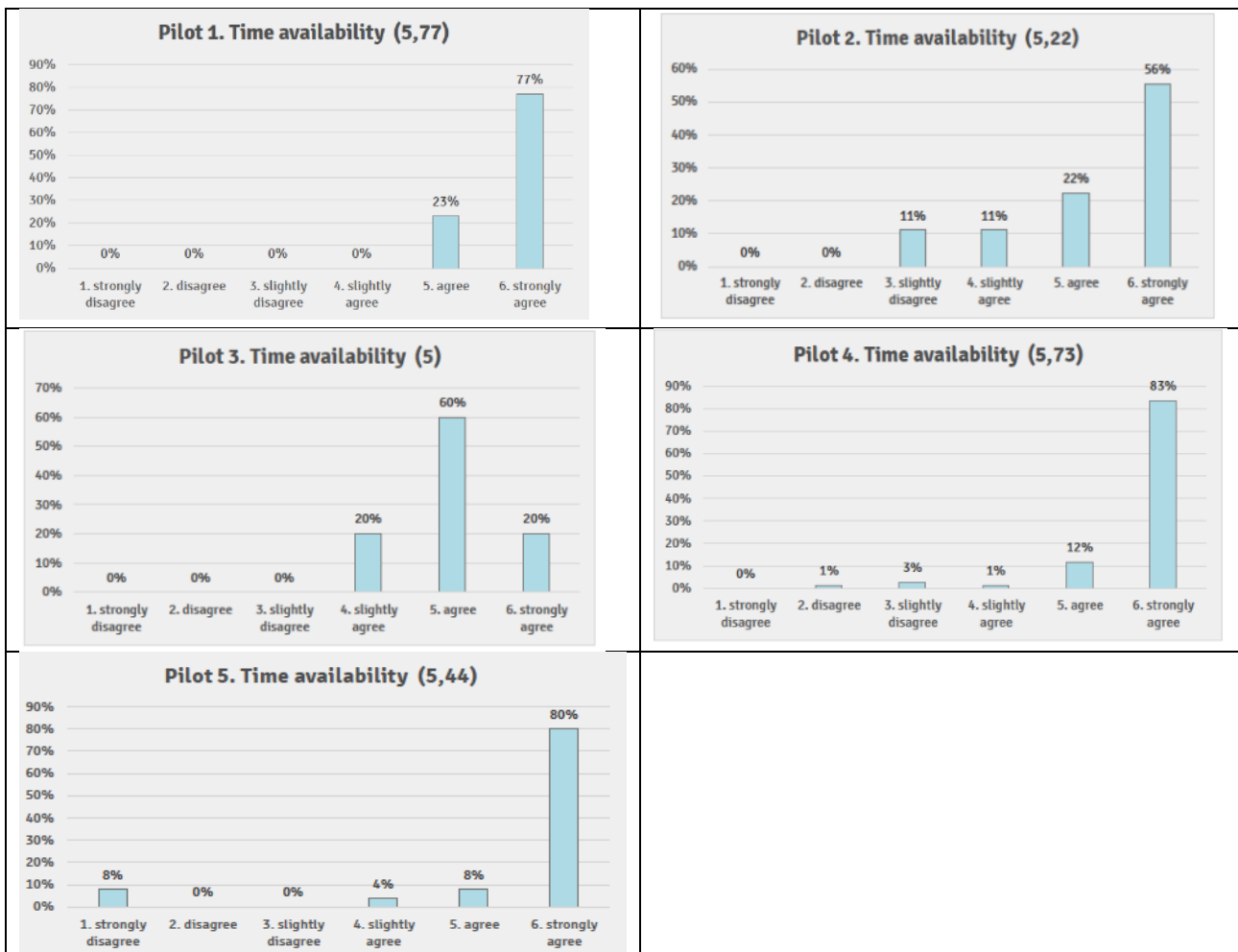


Figure 11. Distribution of answers on Time availability

Indicator: Cost

Cost is defined as the monetary cost incurred by a user for using the digital mobility and delivery service. The following table and figures show the results of this indicator at each pilot.

Table 14: Summary table on Cost

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	61	n.a.	80	69	80
Bottom Two Box	23	n.a.	20	2	8
Average	4.31	n.a.	4.8	4.99	5.04

The cost is a variable that receives a relatively good assessment. The best evaluated pilots with regards to the cost of the service are Berlin, with a Top Two Box of 80% and a mean of 5.04 close to “5. Agree” and Madrid with a Top Two Box of 69% and a mean also around “5. Agree”. The worst evaluation of the cost of the service a deeper attention should be paid to next survey during phase 2 for better understanding the meaning of this result.

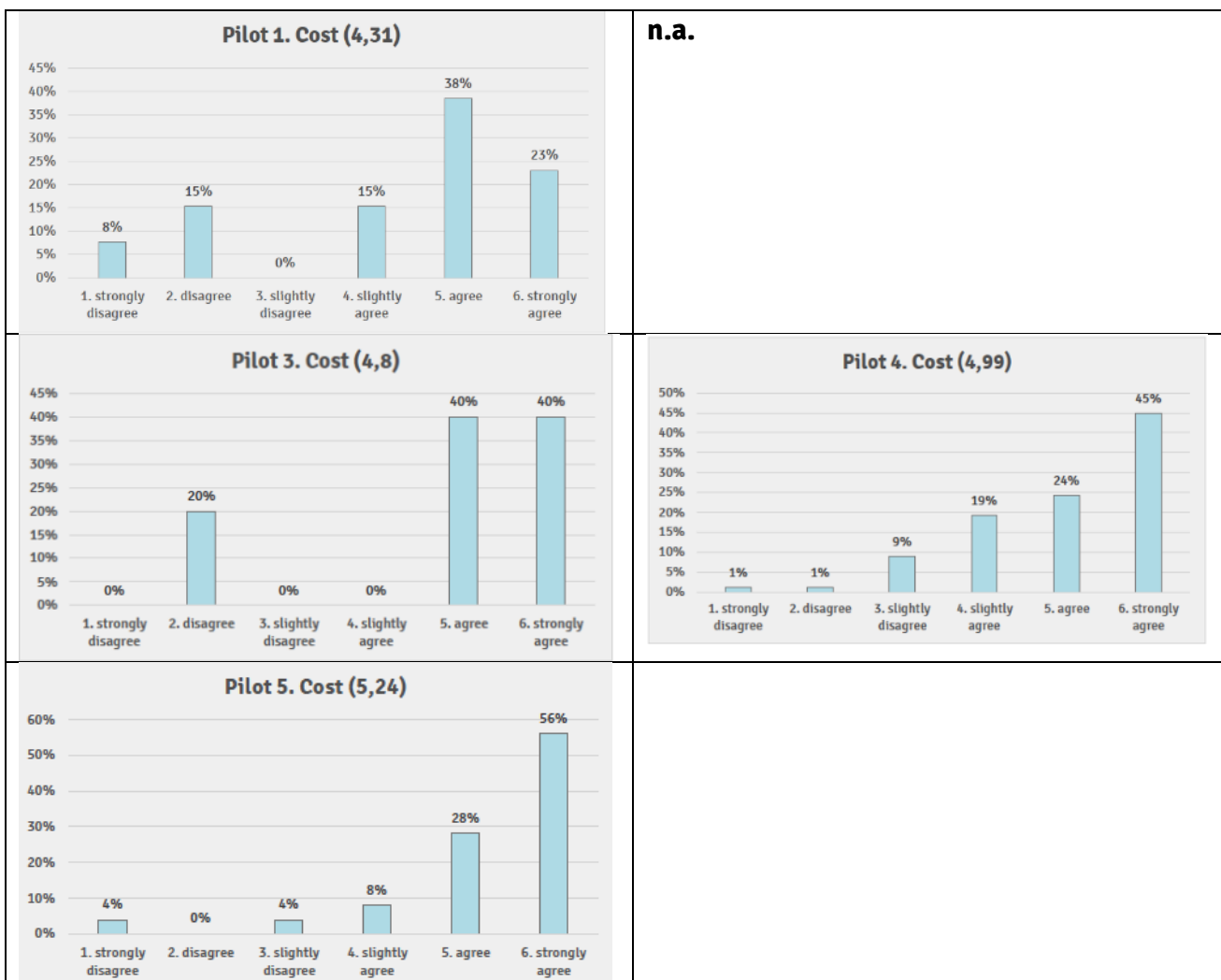


Figure 12. Distribution of answers on Cost



3.2.1.3. Category 3. Task features

The indicators included in this category are the following: Task relevance and Compatibility.

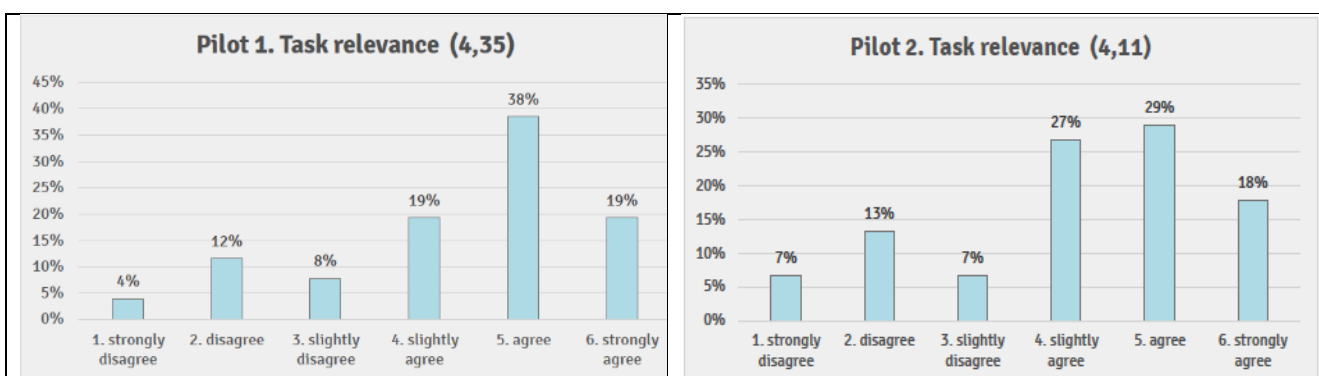
Indicator: Task relevance

Task relevance is defined as the user’s perception that the considered DMS and DDS are relevant for the task they would like to complete. The following table and figures show the results of this indicator at each pilot.

Table 15: Summary table on Task relevance

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	57	47	10	48	61
Bottom Two Box	16	20	0	7	14
Average	4.35	4.11	3.7	4.45	4.56

Regarding the relevance of the proposed solution, there is quite a good assessment among the different pilots, standing out the Berlin pilot which is found the best assessed one regarding relevance. For this item, Berlin had a Top Two Box of 61%, and a mean of 4.56 between “4. Slightly agree” and “5. Agree”. However, we should consider that this baseline survey has been partially filled by the employees of Door2Door. This aspect of the survey could have had some influence on this result. We should check if in the next “phase 2” survey assessment this result will be confirmed. If it will be the case, this good evaluation reveals the sensitive that caregivers are for a special app that thinks in terms of the needs of those who are responsible for children or elderly mobilities. P2 and P3 results highlights some doubts with regards to the relevance of the smart traffic light digital solution for Antwerp and the digital ridesharing for Galilee.



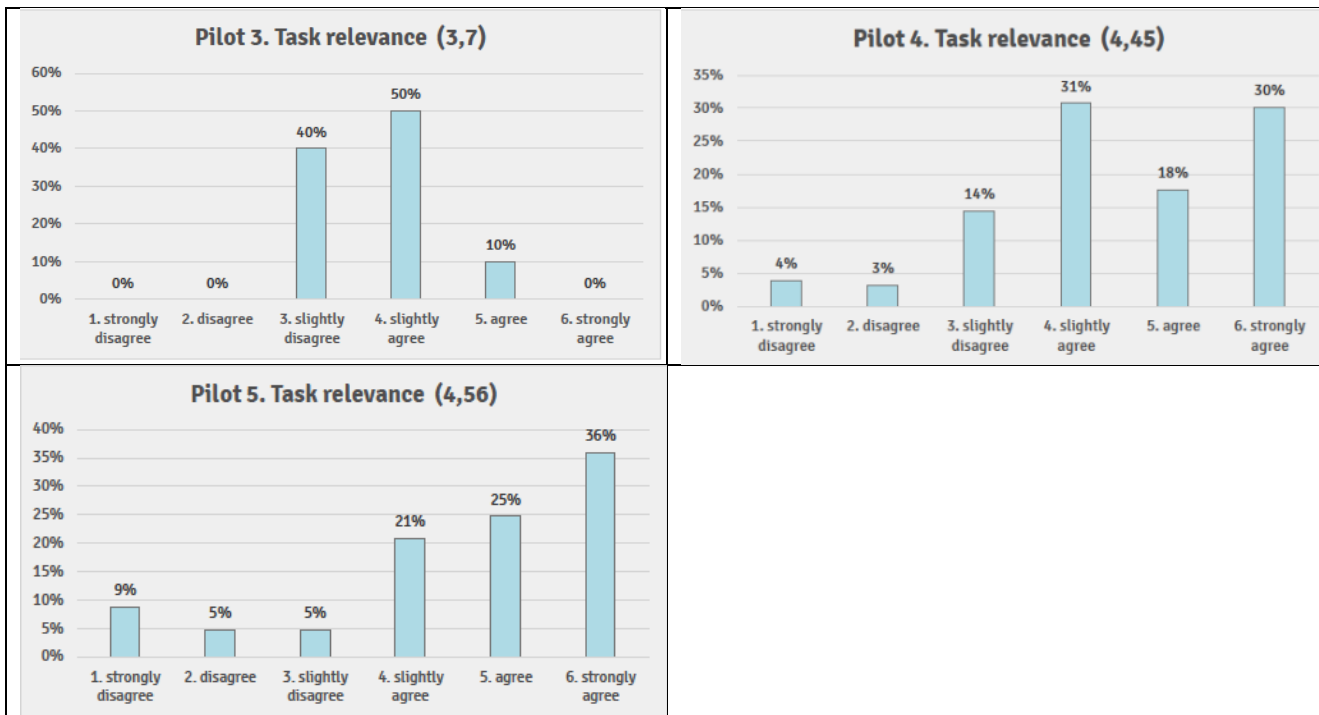


Figure 13. Distribution of answers on Task relevance

Indicator: Compatibility

Compatibility is defined as the degree to which a digital mobility service/digital delivery service is perceived, by the user, as compatible with their existing needs, values, and past experiences. The following table and figures show the related results.

Table 16: Summary table on Compatibility

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	58	38	30	62	60
Bottom Two Box	14	20	14	7	14
Average	4.4	4.02	3.67	4.72	4.52

It appears, aligned with the previous indicator where Galilee and Antwerp find the app/services tested less compatible with the user’s expectations and previous values (Galilee, mean of 3.67 between “3. Slightly disagree” and “4. Slightly agree” and a Bottom Two Box of 20%; Antwerp, mean of 4.02, around “4. Slightly agree” and a Bottom Two Box of 14%). This compatibility is framed by a social and cultural background. In the case of Galilee, It is possible that the service is incompatible with women’s roles in the public sphere due to cultural and gender mandates. In Antwerp pilot, this lack of compatibility deals with the limitations that users still found with the physical interface and with the portability and visibility of the device. The best assessed pilot in this aspect is Madrid with a still low value and a mean of 4.72 close to “5. Agree” and a Top Two Box of 62%. The DMS and DDS variables of this indicator need to be definitely improved and a higher attention to users’ needs paid.

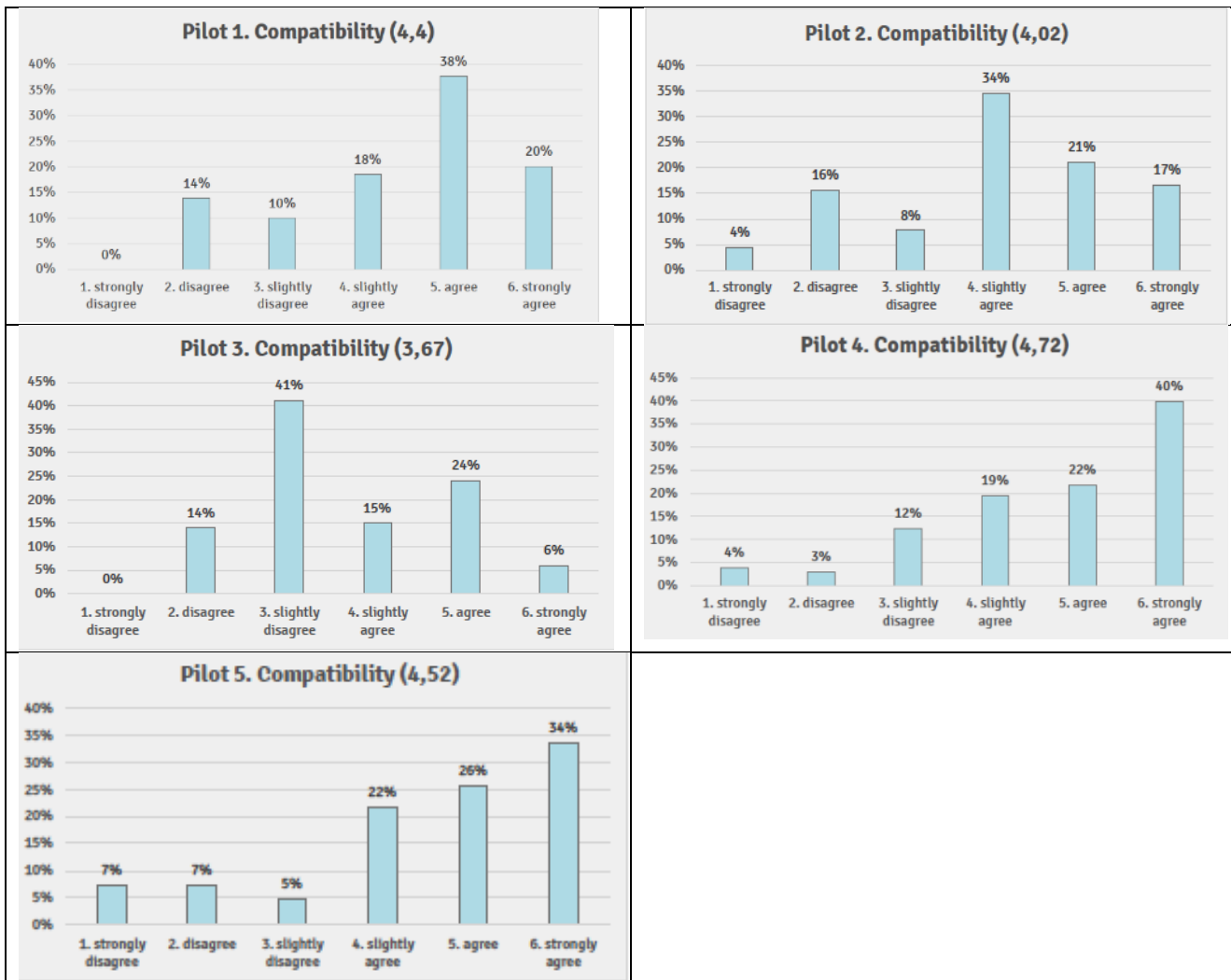


Figure 14. Distribution of answers on Compatibility

3.2.1.4. Category 4. Output features

This category includes two indicators: Output quality and Result demonstrability (SSI).

Indicator: Output quality

Output quality is defined as the perceived quality of the outcome produced by the INDIMO improved digital mobility service. The following table and figures show the main results.

Table 17: Summary table on Output quality

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	70	77	76	86	n.a.
Bottom Two Box	19	11	0	3	n.a.
Average	4.62	4.78	4.72	5.43	n.a.

The Output quality, the perceived quality of the outcome produced by the service, shows a good evaluation, throughout the pilots. All the pilots are, in mean, closer to “5. Agree” than to “4.

Slightly disagree”. The pilot that stands out is Madrid with a TTB of 86% and a mean of 5.43 between “5. Agree” and “6. Strongly agree”. However, as it was highlighted during the community of practice of Madrid, this result needs to be nuanced and a great attention should be paid to the lowest values, people who have more difficulties in using the Digital Delivery Services. INDIMO project goal is to pay attention to minorities and to the difficulties instead of to the majority who seems satisfied with the status of the digital service. The P1 Digital locker service has the highest BTB, but the difference between the positive extreme and negative extreme is still broad.

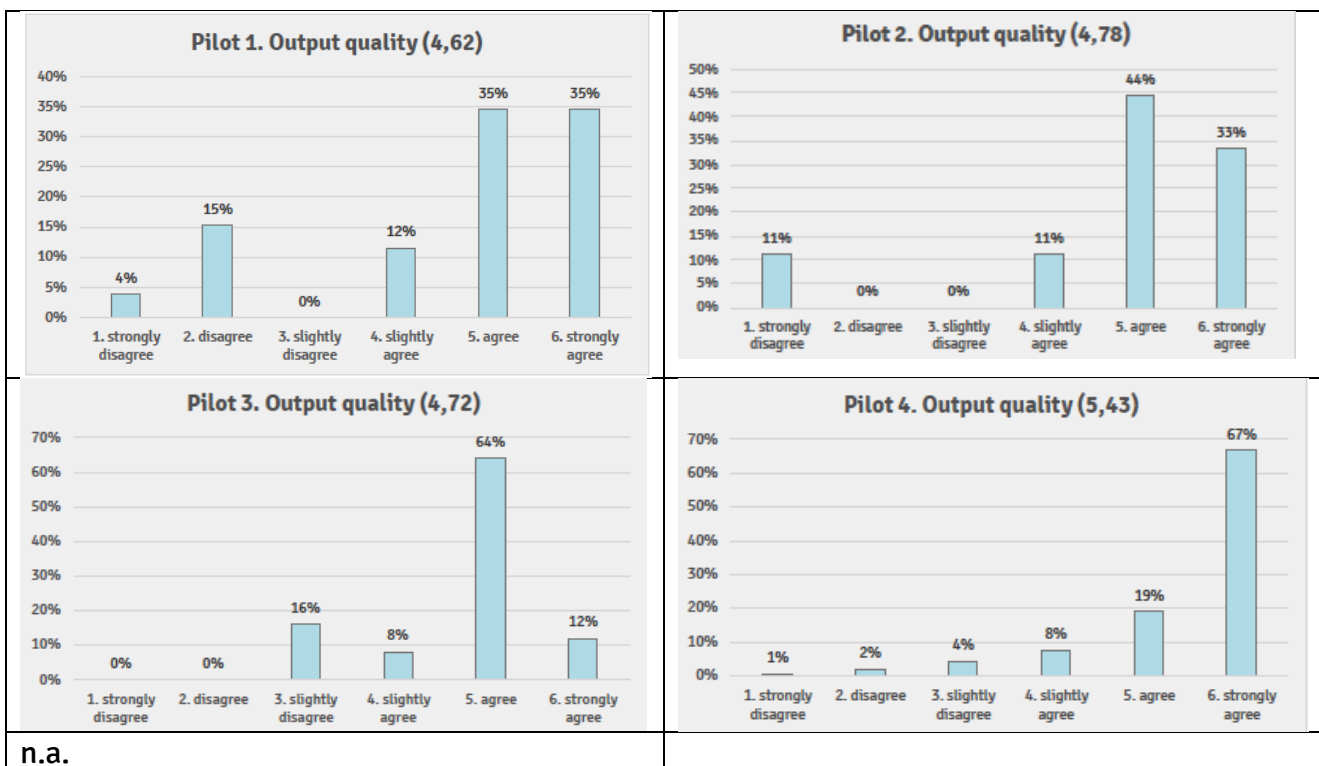


Figure 15. Distribution of answers on Output quality

Indicator: Result demonstrability

Result demonstrability is defined as the tangibility of the outcomes obtained by the use of an INDIMO digital mobility service/digital delivery service (i.e. able to demonstrate to others the positive results obtained by the use of the service). We operationalized this indicator with the difference between positive and negative aspects mentioned by user in dimensions Goals and Needs of the SSI (WP1, D1.3) related to the satisfaction of needs.

Table 18: Number of Mentions by users in the SSI for Result demonstrability indicator

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Positive Goals and Needs items	176	299	116	284	14
Negative Goals and Needs	100	207	77	342	70

aspects					
Difference	76	92	39	-58	-56

The result demonstrability is showing a group of pilots where the satisfaction of needs and goals surpasses the in satisfaction of these aspects: Emilia-Romagna, Antwerp, and Galilee. And there is another group where the negative aspects related to goals and needs are greater than the positive, integrated by Berlin and Madrid.

3.2.1.5. Category 5. Social factors

The indicators included in in this category are the following: Subjective norm/social approval (from SSI), Social influence, Perceived connectedness/communication, Image (from SSI).

Indicator: Subjective norm/social approval

Social norm approval is defined as users' perception of their peers' approval of using an INDIMO DMS/DDS. We operationalized this indicator with the number of mentions emerging from the SSI from WP1-D1.3 where users affirm being conditioned by their family, friends, and community approval in the use of digital services.

Table 19: Mentions by users in the SSI for Social norm approval indicator

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Mentions to social norm/approval in the SSI	Conditioning traditional family (4)	Getting no assistance when outside (because of COVID-19) (6)	Need social consent (2) No social consent (3) Women need other women driving (1)	The act of purchase entails an identity statement about personal values, views, lifestyles and concerns (6)	Social tolerance with children (14)
Total	4	6	6	0	14

Each pilot highlights various factors influencing the social norms of the users. In the case of P1, some factors could be identified in the traditional background of foreign families where young members have some restrictions in the use of Internet and apps. In the case of Antwerp, the influence deals with the assistance that people with impairment require to navigate the space and the greater reluctance of people to provide that assistance during the COVID-19. In Galilee, this aspect is related to the social disapproval of the fact that a young woman rides a vehicle with people other than her family members. Finally, in Berlin women when traveling with children feel pressure coming from other passengers and the driver of the vehicle, a sort of intolerance to the presence of the children they are accompanying.

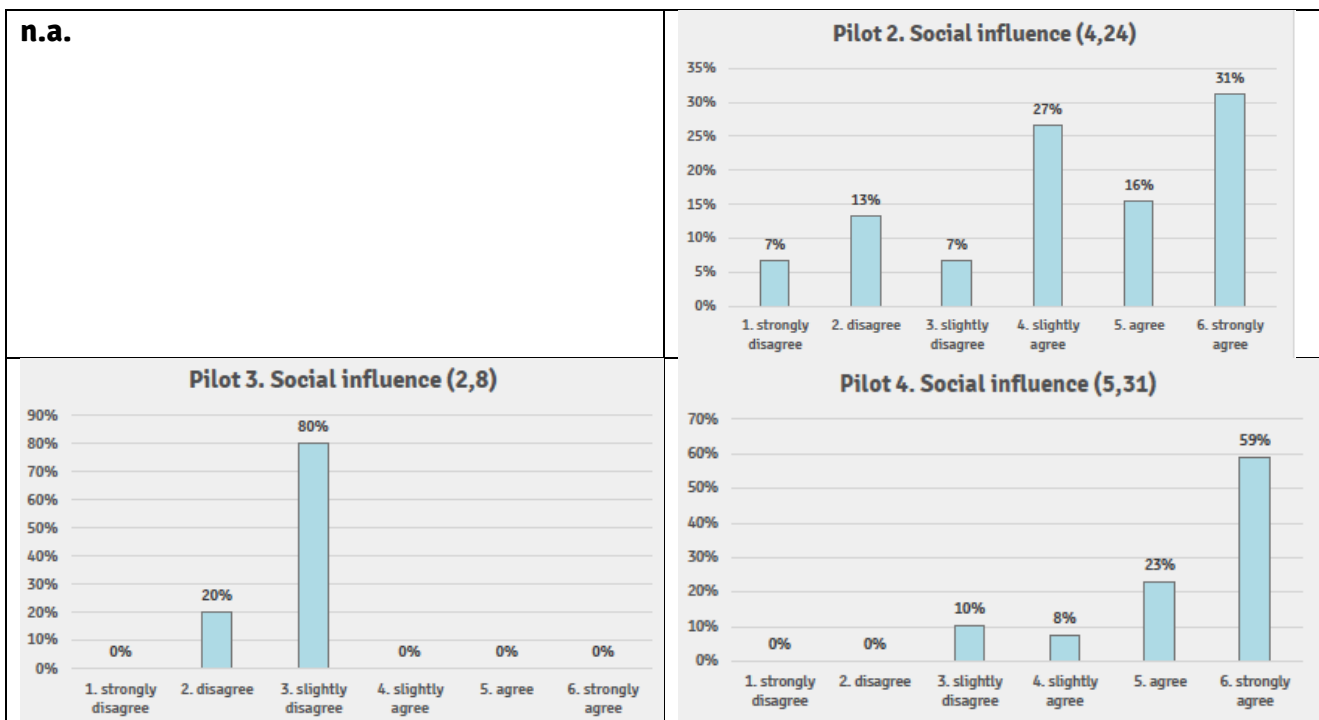
Indicator: Social influence

Social influence is defined as a user’s decision to use an INDIMO digital mobility service/digital delivery service as a result of social influence (e.g. community influence).

Table 20: Summary table on Social influence

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	n.a.	48	0	82	36
Bottom Two Box	n.a.	20	20	0	28
Average	n.a.	4.24	2.8	5.31	3.84

Following the results in the above table, social influence exerts a negative impact in the case of Galilee with no TTB and a BTB of 20%, and a mean of 2.8 between “2. Disagree” and “3. Slightly disagree”. It may be the result of the social pressure that young women face regarding using transport in the public sphere or riding vehicles with people other than their family members. Madrid is the pilot where the social influence is the highest assessed with a TTB of 82% and a mean of 5.31 between “5. Agree” and “6. Strongly agree”. In our interpretation, many adopters of digital tools in this pilot take them up because of the positive influence of friends and relatives. This indicator was not assessed in the P1 because the baseline survey was implemented in the nearby of Rome instead of Emilia-Romagna where the digital lockers will be implemented during Summer 2021. This indicator is quite idiosyncratic; therefore, its assessment should be realized in the place of the INDIMO pilot.



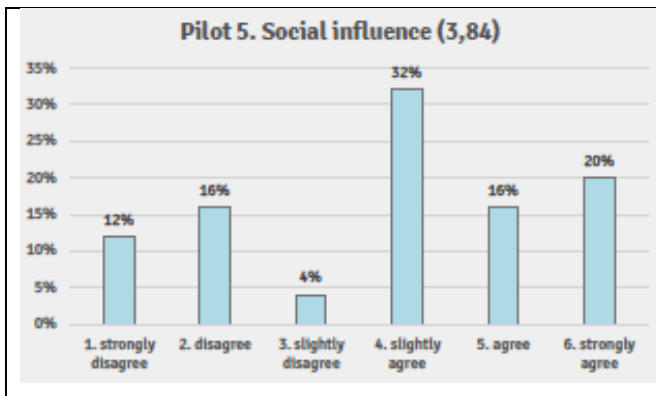


Figure 16. Distribution of answers on Social influence

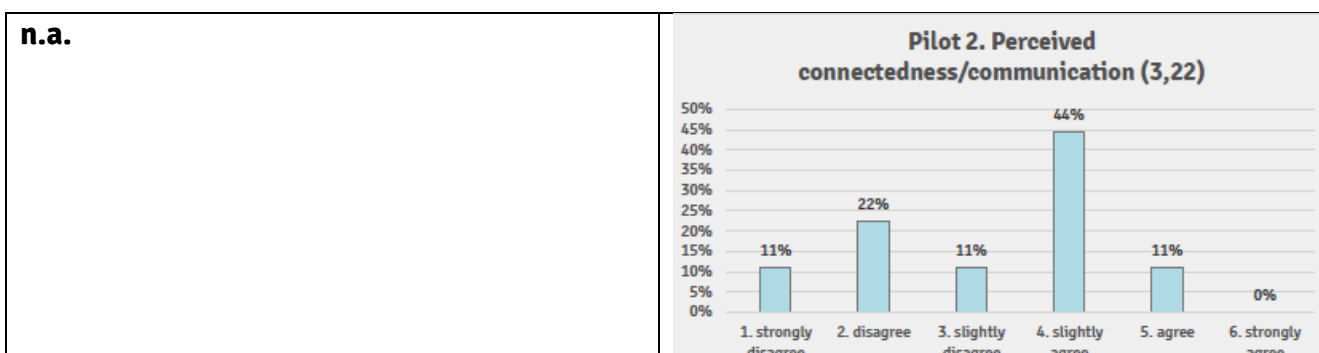
Indicator: Perceive connectedness

Perceive connectedness is defined as a user’s perception of being connected with and collaborating with the other users of an INDIMO digital mobility service, while using it.

Table 21: Summary table on Perceive connectedness.

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	n.a.	11	0	82	36
Bottom Two Box	n.a.	33	30	0	28
Average	n.a.	3.22	2.8	5.31	3.84

This indicator shows a low result for all pilots excepting Madrid. In most cases the mean is around “3. Slightly disagree”, with higher BTB than TTB. Perceived connectedness refers to the user’s perception of being connected with and collaborating with the other users of the digital mobility service, while using it. It appears that, excepting Madrid, users do not feel collaborating with other users. The aspects of ratings, comments and suggestions that can be accessible through the app, and the creation of community should be enhanced. In Madrid, the indicator shows a good performance with a TTB of 82% and a mean of 5.31, between “5. Agree” and “6. Strongly agree”.



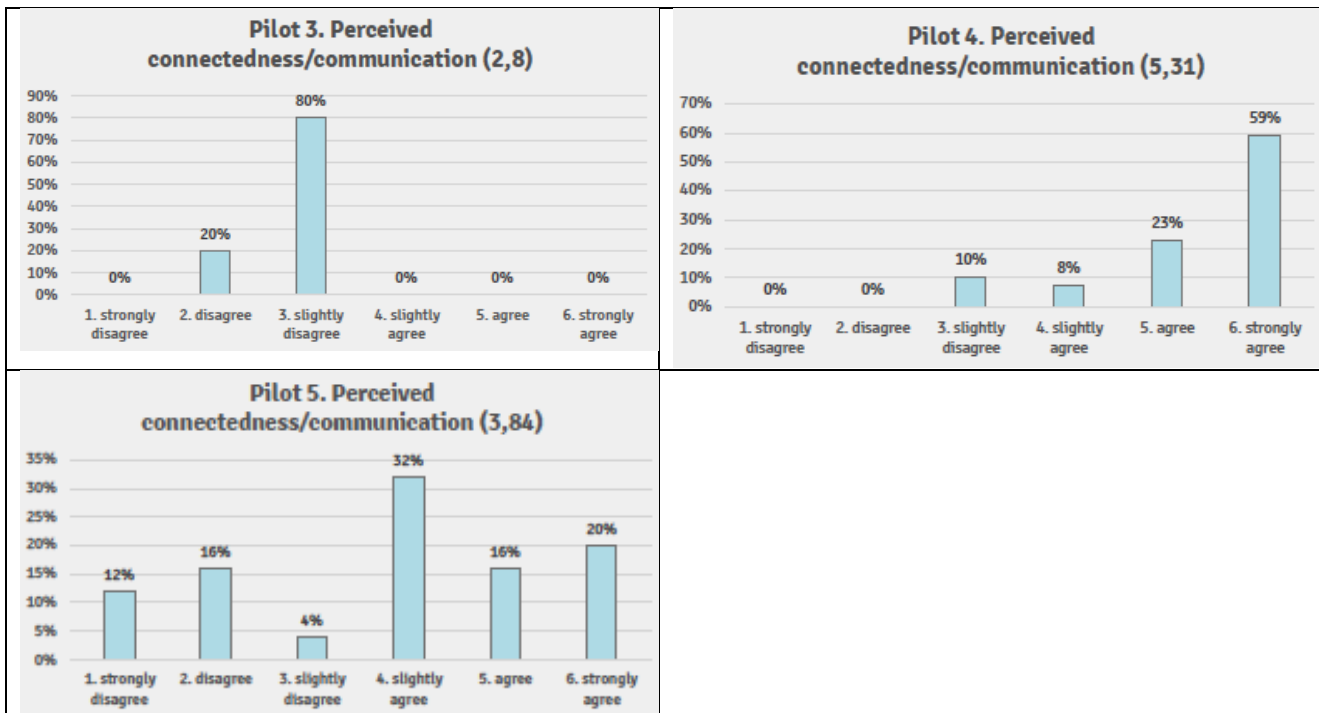


Figure 17. Distribution of answers on Perceive connectedness

Indicator: Image/self-image

Image/self-image is defined as the degree to which a user perceives the usage of an INDIMO digital mobility service/digital delivery service as able to enhance their status in their community. We operationalized this indicator with **the SSIs-WP1 D1.3 and their thematic analysis including codes or nets concerning the social status or the Lifestyle.**

Table 22: Mentions to Image/self-image in the SSI

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Mentions to Image/self-image in the SSI	User of online/digital resources	None	To try new things/modern digital app (3)	-To support social projects (10) -Avoidance of commercial apps (18) - Environmental awareness (5)	Environmental goals: avoid private cars (2)
Total	10	0	3	33	2

The pilots where the use is more associated to some specific images are both Madrid (image of a responsible user) and Emilia-Romagna (image of an up-to-date user that consumes online).

3.2.1.6. Category 6. User innovativeness

The indicators included in this category are User Innovativeness (from SSI) and Cognitive playfulness



Indicator: User Innovativeness

User Innovativeness is defined as a user's willingness to try out an INDIMO improved digital mobility service/digital delivery service due to its innovative features. We operationalized this indicator with the number of responses by user with the codes or nets related to Innovation/novelty in the SSI.

Table 23: Mentions to User innovativeness in the SSI

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Mentions to User innovativeness in the SSI	None	Support of applications (27)	To try new things (3)	Emergence of new needs (5)	None
Total	0	27	3	5	0

This aspect stands out in the Antwerp pilot where, as assistive tools, digital innovation and new apps find a large support from the target population.

Indicator: Cognitive playfulness

Cognitive playfulness is defined as a user's cognitive spontaneity when using an INDIMO digital mobility service.

Table 24: Summary table on Cognitive playfulness

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	85	77	n.a.	95	n.a.
Bottom Two Box	8	11	n.a.	0	n.a.
Average	5.15	4.78	n.a.	5.72	n.a.

The results present a high value for all pilots assessed. This indicator points at the cognitive spontaneity when using an INDIMO digital mobility service. It is a strong measurement of this spontaneity. There is some ludic aspect associated to the use of apps which should be explored in further research. The pilot that stands out with an almost optimal assessment is Madrid, with a TTB of 95% and a mean of 5.72 which is closer to "6. Strongly agree". Antwerp presents the lowest performance of this indicator, which, once more, arises from the doubt users have about the functioning of the solution and their integral implementation.

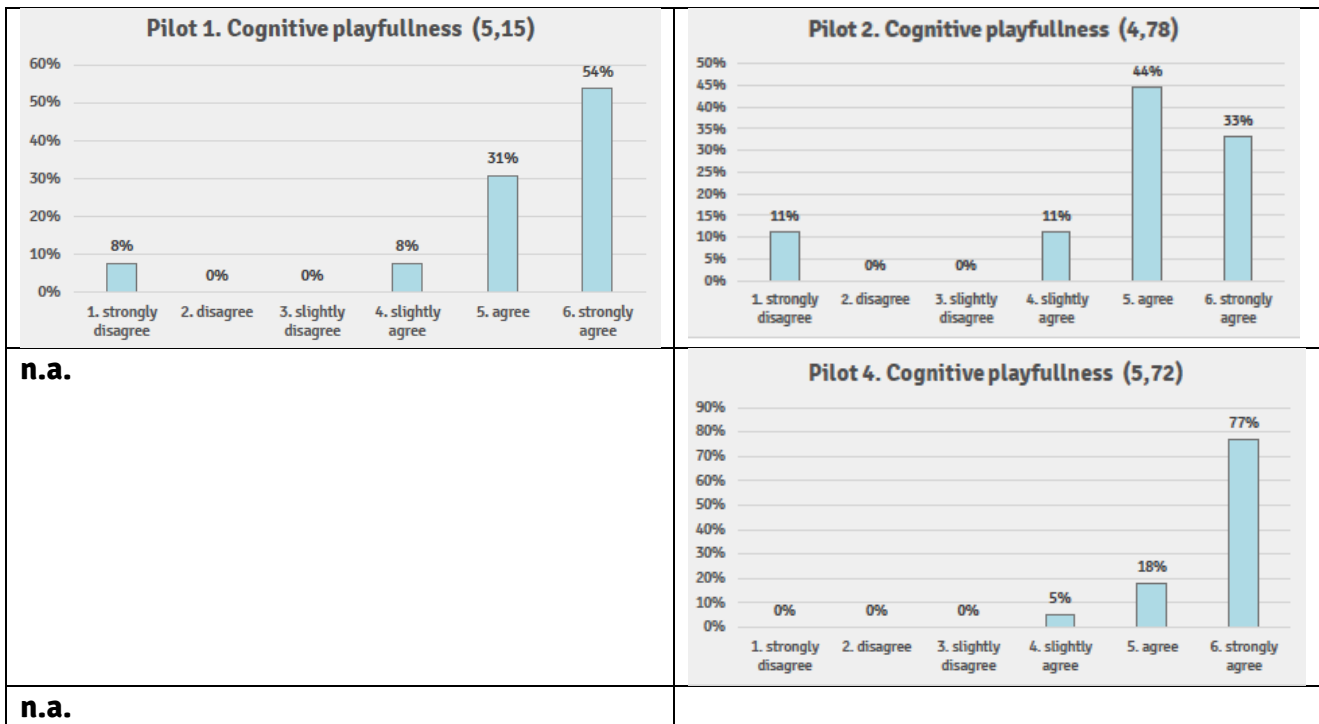


Figure 18. Distribution of answers on Cognitive playfulness

3.2.1.7. Category 7. Hedonistic motivation

The indicators included in in this category are the following: Expressiveness, Perceived enjoyment, Flow of experience, Integration

Indicator: Expressiveness

Expressiveness is defined as the user’s perception that the use of an INDIMO digital mobility service/digital delivery service allows to express social or personal identity and emotions.

Table 25: Summary table on Expressiveness

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	8	n.a.	20	36	35
Bottom Two Box	31	n.a.	60	20	30
Average	3.08	n.a.	2.8	3.78	3.45

The results of this indicator show low values for all pilots. The expressiveness is associated to the ability of the app/service to leave users expressing their social or personal identity and emotions. Judging by the low values, apps do not allow users to affirm their personal identity and are rather neutral in this aspect. All the pilots are between “3. Slightly disagree” and “4. Slightly agree”, with a slight better performance of Madrid (but still low within its general distribution of the assessment of the rest of the indicators. P4 shows a TTP of 36% and a mean of 3.78, but the BTB is not so behind the value of the TTB.

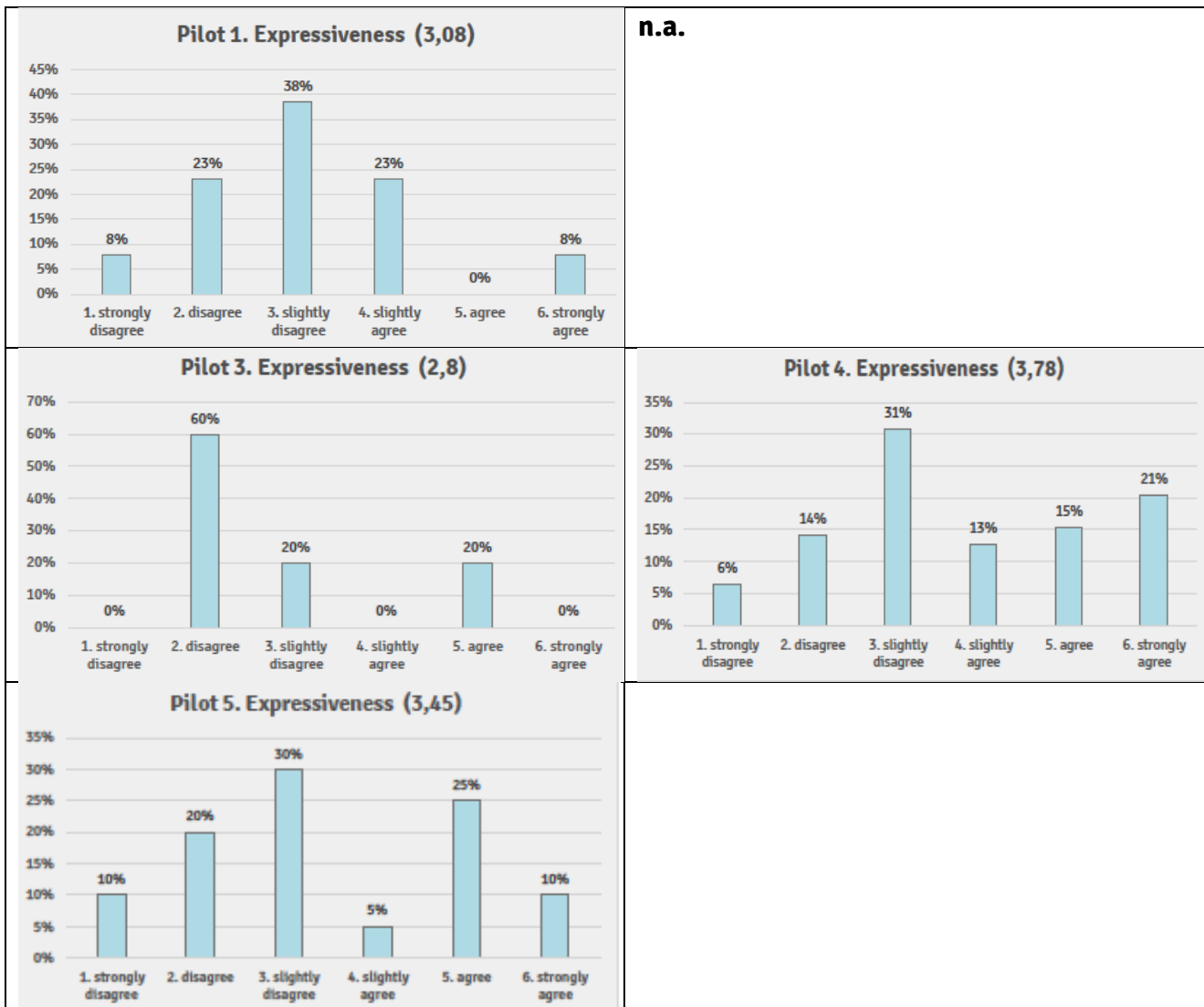


Figure 19. Distribution of answers on Expressiveness

Indicator: Perceived enjoyment

Perceived enjoyment is defined as a user’s perception about how much enjoyable an INDIMO DMS/DDS is expected to be when using it, a part from any performance results.

Table 26: Summary table on Perceived enjoyment

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	8	n.a.	20	36	35
Bottom Two Box	31	n.a.	60	20	30
Average	3.08	n.a.	2.8	3.78	3.45

All analysed pilots present low values for this indicator. The perceived enjoyment is naturally linked to the ability of expressing oneself. All the pilots are between “3. Slightly disagree” and “4. Slightly agree”, with a slight better performance of Madrid with a TTP of 36% and a mean of 3.78, while BTB is close to the value of the TTB.



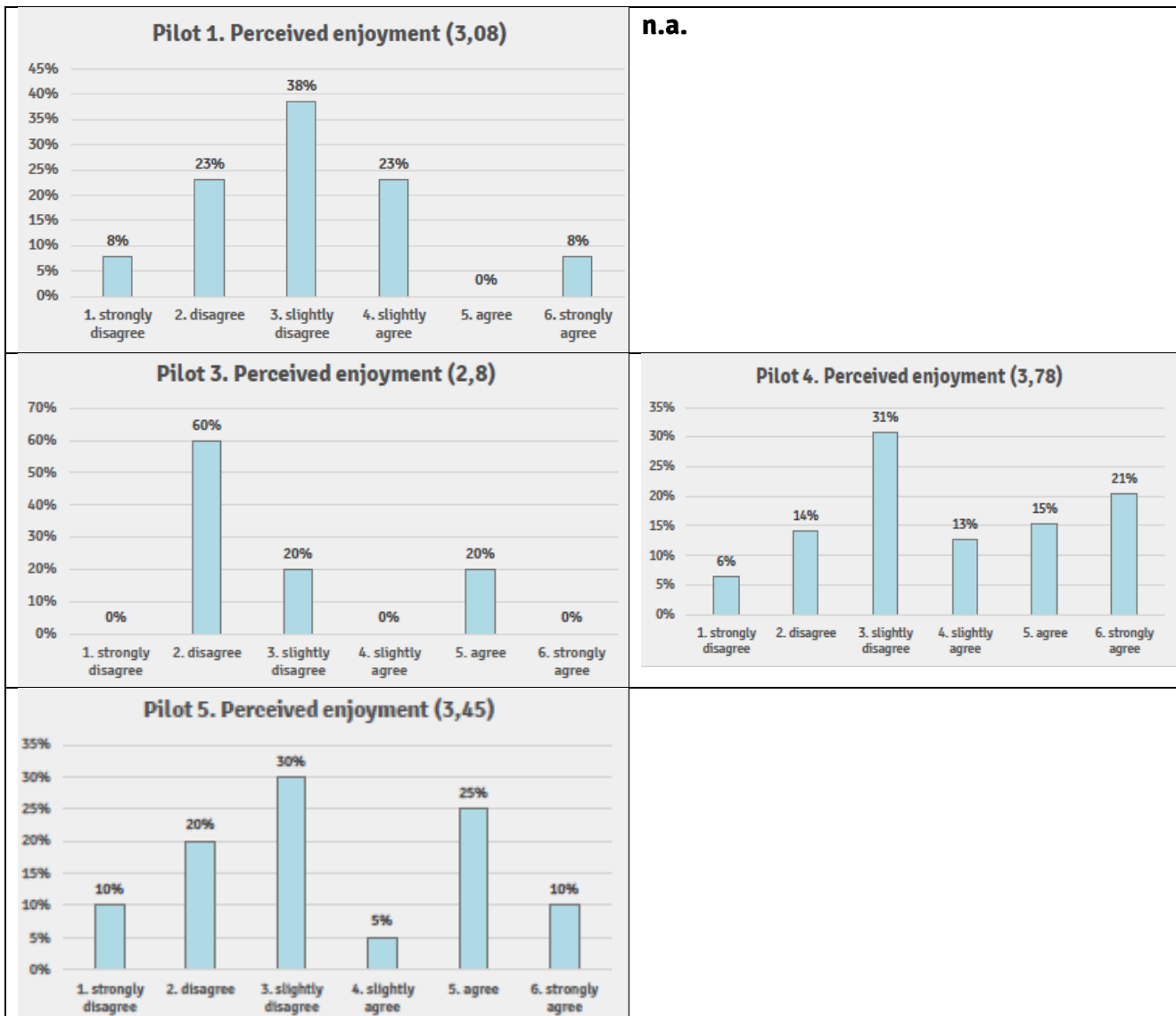


Figure 20. Distribution of answers on Perceived enjoyment

Indicator: Flow of experience

Flow of experience is defined as a user’s experience of being absorbed by the activity of using an INDIMO digital mobility service. Characteristics of this flow include concentration, enjoyment, being in control, and seamless sequence of response.

Table 27: Summary table on Flow of experience

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	69	78	60	76	64
Bottom Two Box	0	11	0	4	4
Average	4.77	5.22	4.6	5.12	4.68



In this case, Antwerp is the pilot where this aspect is the best assessed, with a TTB of 78% and a mean of 5.22, between “5. Agree” and “6. Strongly agree”. This might be associated to the feeling of physical immersion in the activity, the inclusion of all the senses in the flow, that the smart traffic lights propose. The worst assessment for this indicator comes from Galilee and Berlin, with mean of 4.60 and 4.68, respectively. From this result of ridesharing and ride-hailing we could argue that women live the experience of using the digital mobility service in a more stressful way. The indicator has an average baseline value for all the pilots.

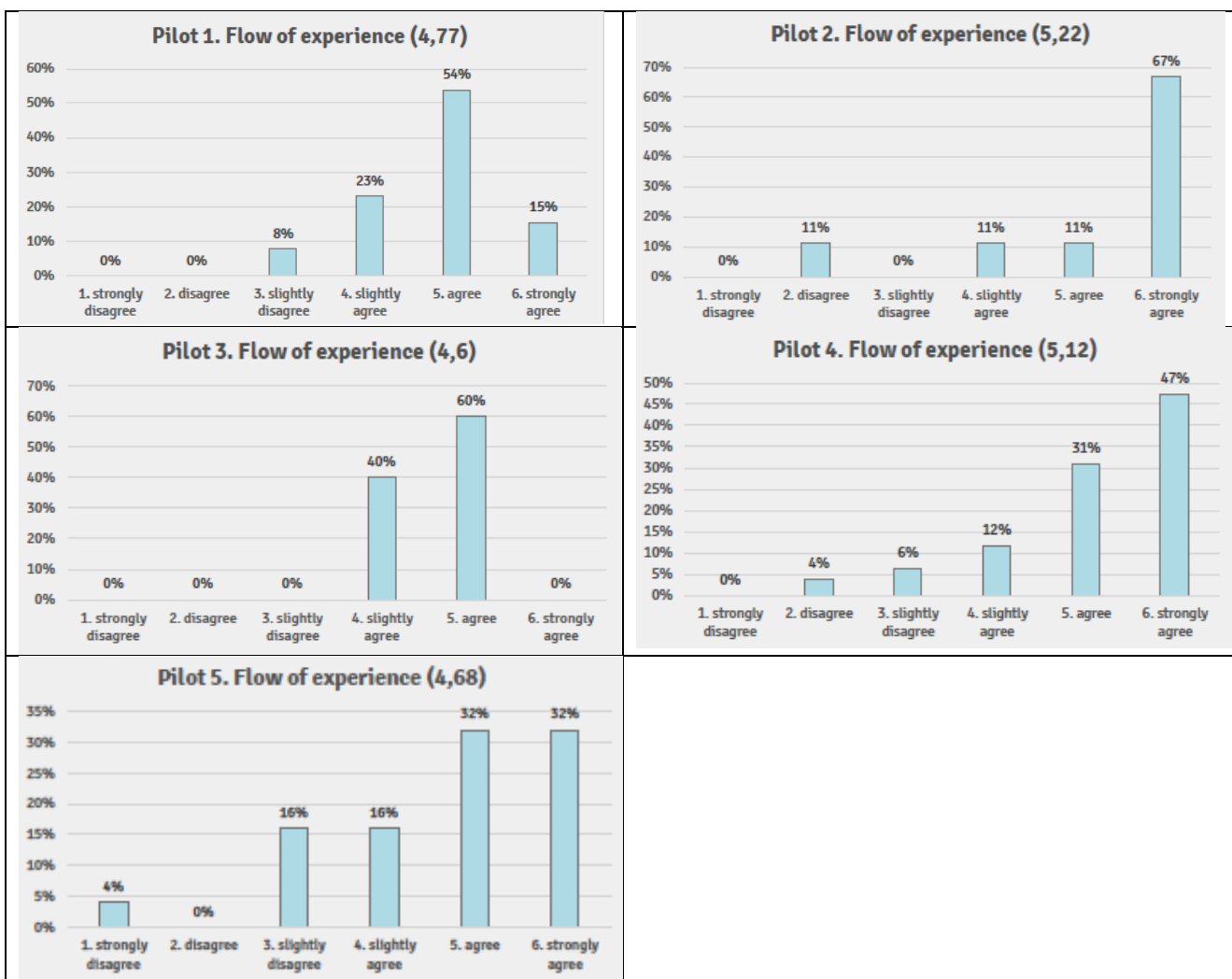


Figure 21. Distribution of answers on Flow of experience

Indicator: Integration

Integration is defined as the user’s perception when a digital mobility service/digital delivery service is integrated in the daily lives, without interfering with other activities.

Table 28: Summary table on Integration

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
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Top Two Box	15	44	0	33	40
Bottom Two Box	31	22	20	18	20
Average	2.92	4	3	3.76	4

In principle, all the pilots show a low value when assessing this indicator. The best assessment is observed in Antwerp with a TTP of 44% and a mean of 4, coinciding with “4. Slightly agree”, and Berlin with a TTP of 40% and a mean of 4. Probably, in both cities, the target audience is familiar with other elements of everyday digital assistance tools already integrated in their own lives. The worst assessment of the indicator is found in Emilia-Romagna, where, during the CoP, doubts about the possibility of the target audience integrating the app/service in their idiosyncrasy emerged.

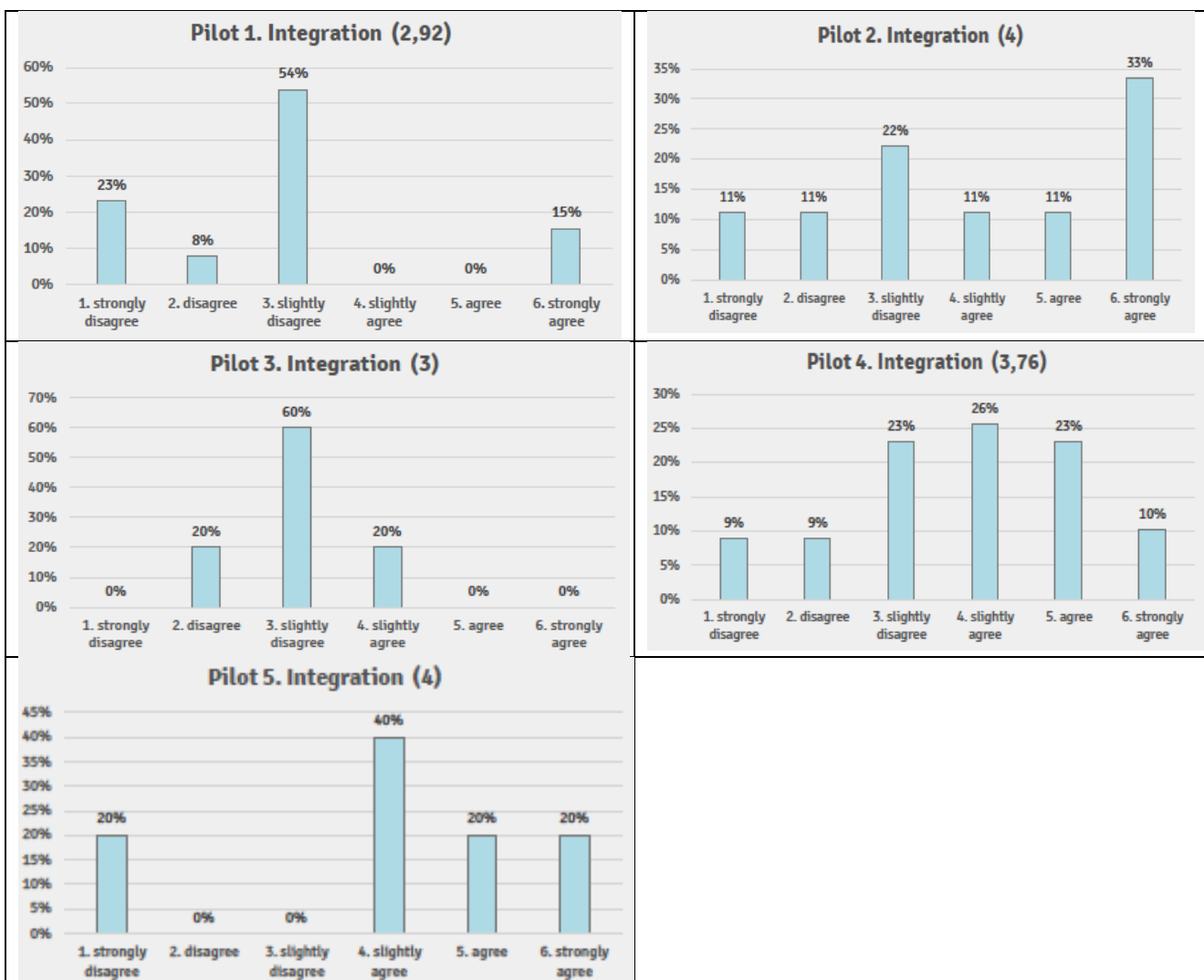


Figure 22. Distribution of answers on Integration

3.2.1.8. Category 8. Ethics (in relation with evaluation of cybersecurity assessment)

The indicators included in in this category are the following: Trust, Perceived security, Privacy.



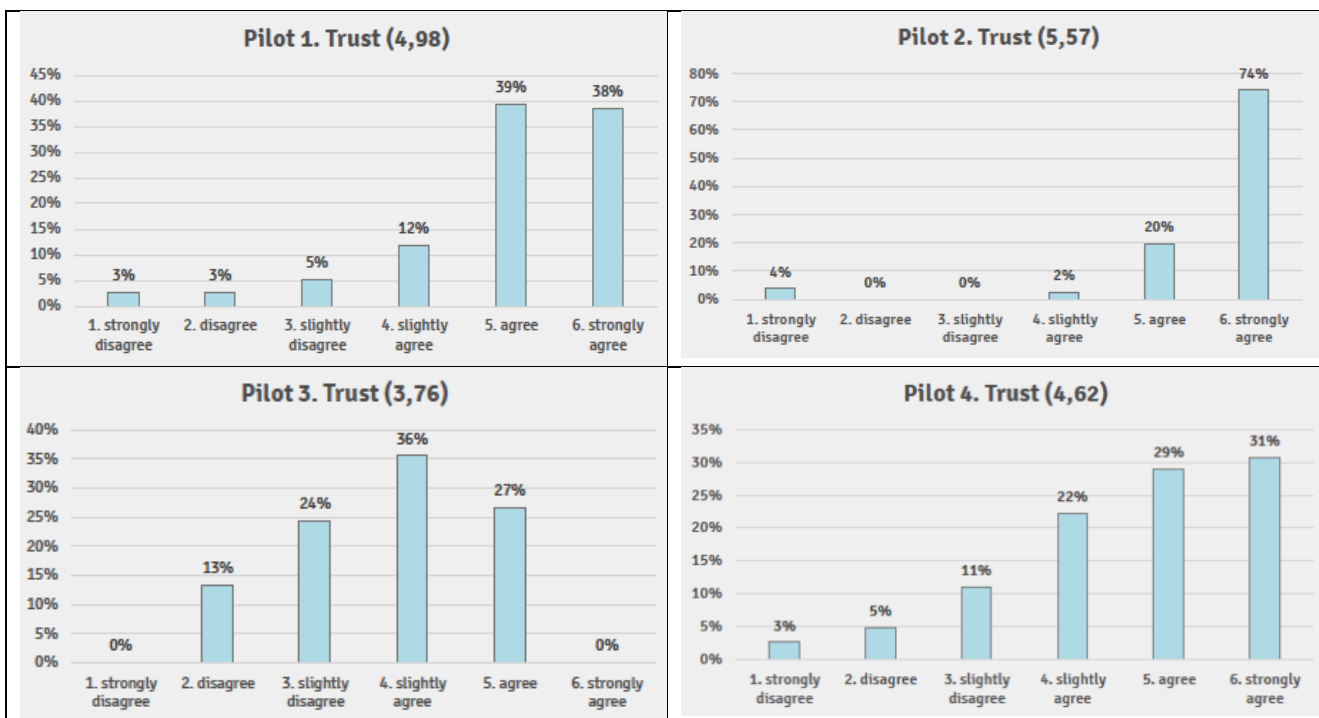
Indicator: Trust

Trust is defined as the user’s confidence that an INDIMO DMS/DDS will act as expected. The following table and figures show the results of this indicator for each pilot.

Table 29: Summary table on Trust

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	77	94	27	60	69
Bottom Two Box	6	4	13	8	7
Average	4.98	5.57	3.76	4.62	4.77

This indicator shows a great dispersion and heterogeneity both across pilots and within each pilot. It is better evaluated in Antwerp, with a TTB of 94% and a mean of 5.57 between “5. Agree” and “6. Strongly agree”. It is not surprising that the pilot where the target-groups need the highest degree of assistance on which they should trust. Another related aspect could deal with the fact that the smart lights pilot doesn’t need to share any payment data, since that was one of the key aspects for trusting or not an application. The pilot where Trust was worst evaluated is Galilee. In Galilee, as it emerges in the SSI, there were concerns about the use of the personal data violating privacy statements, mainly the possibility of filtering the identity of those who use the app (aspect for which there is also cultural sensitivity, as we explored in the qualitative analysis).



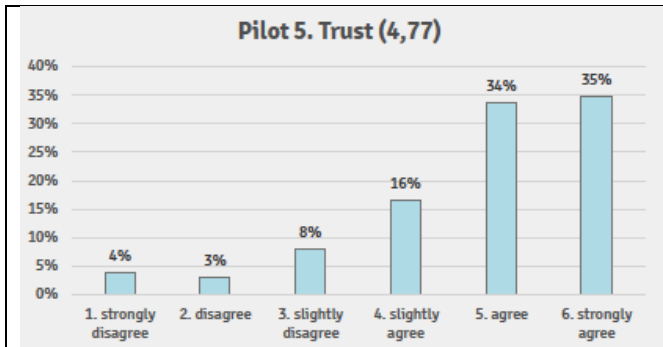


Figure 23. Distribution of answers on Trust

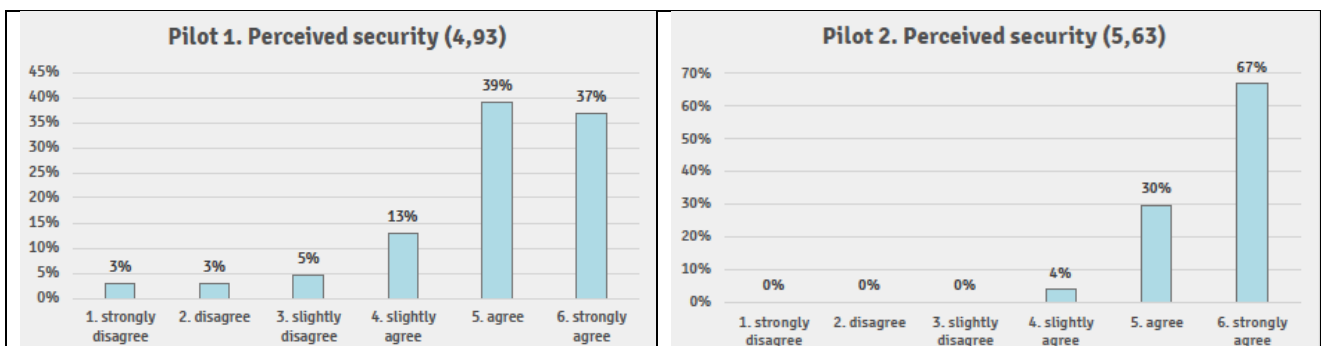
Indicator: Perceived security

Perceived security is defined as a user’s perception of security while using an INDIMO digital mobility service.

Table 30: Summary table on Perceived security

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	76	97	12	59	66
Bottom Two Box	6	8	16	6	8
Average	4.93	5.63	3.5	4.58	4.69

The assessment of perceived security shows a similar distribution than Trust, both indicators are aligned. The reasons why Antwerp is in the positive extreme and Galilee in the negative of the evaluation might be like those of the previous indicator. It is interesting to remark that Antwerp achieves an extremely high score, concentrating almost all the evaluations in the TTB. Meanwhile, Galilee reaches a BTB which is higher than the TTB in a bad evaluation of the indicator.



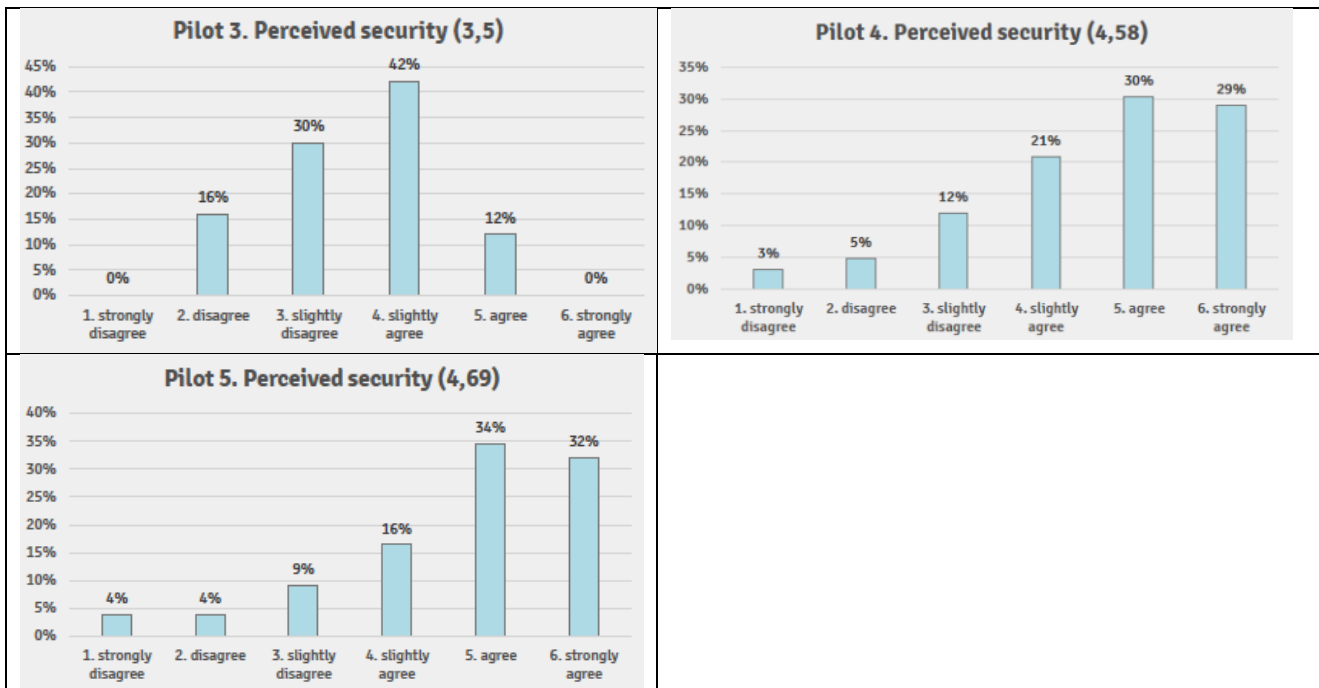


Figure 24. Distribution of answers on Perceived security

Indicator: Privacy

Privacy is defined as a user’s perception of the confidentiality of personal data collected by digital mobility service/digital delivery service.

Table 31: Summary table on Privacy

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	84	90	18	61	72
Bottom Two Box	0	0	16	8	6
Average	5.26	5.74	3.5	4.59	4.86

This indicator is associated with the perception of both previous indicators and presents a similar behaviour where Antwerp stands out positively and Galilee user is less confident in this aspect.

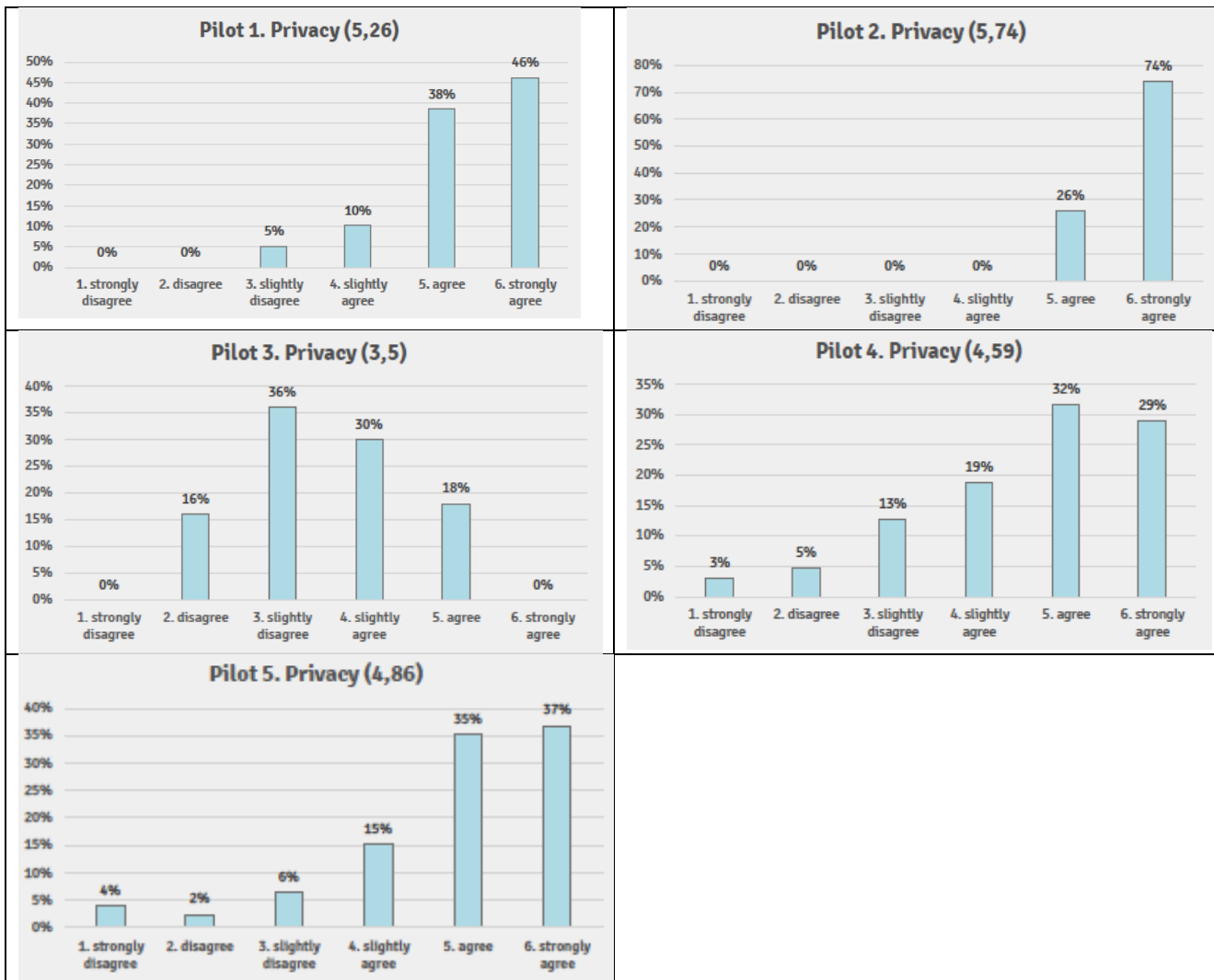


Figure 25. Distribution of answers on Privacy

3.2.2. Indicators of accessibility and inclusivity

3.2.2.1. Category 9. Inclusivity & accessibility

This category includes six indicators. Most of them are qualitative and are nourished by National and local statistics, as well as back-end data. They include 1. number of downloads (back-end data), 2. people with broadband Internet access (statistical data at pilot level), 3. access to e-commerce (back-end data), 4. people involved in digitally connected communities (statistical data at pilot local level, back-end data), 5. access to digital technology in communities (statistical data at pilot local level, SSI), 6. uses of technology to tackle social exclusion (SSI). These indicators are more difficult to assess because of the availability of local data are reduced. For this first baseline data report, we provide a more qualitative based assessment of these indicators.

Digital connected communities, Digital technology in communities, Users of technology to tackle social exclusion.

Table 32: Mentions by users in SSI for Accessibility and Inclusivity indicators

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Social networks mentioned in the SSI	-Facebook -Whatsapp	-Whatsapp	-Facebook -Instagram -Whatsapp	-Facebook -Instagram -Whatsapp	-Facebook -Whatsapp
Mobility/Delivery apps mentioned in SSI	-Amazon -Shain -Giunti Scuola (online shop for school books) -Royal Canin (online store of pet products) -Zara online -AliExpress	-Google Maps -Blindsquare -Uber -NMBS (app of the public train) -MNB (app of the public transport) -Waze -On Wheels -Route planners without specify -Navigate and park -De Lijn (online) -Google Street Views -Facebook groups of wheelchair users	-Uber -Getty -Waze -Google Maps -Ride-sharing/hailing without specify	-Glovo -Deliveroo -Cleta -Trebol -Cabify -Amazon -Uber -BiciMad -BiciMad Go -E-scooters app without specify -Radio taxi without specify -Amazon Food -City Mapper -Online delivery without specify	-Uber -FreeNow -Belkönig -Amazon -BVG app (public transport) -Google Maps -Flaschenpost (beverage delivery) -MOIA -MyTaxi -Lieferando -Car2Go -DriveNow -HelloFresh -Clevershuttle
Number	8	13	8	17	16

3.2.2.2. Category 10. Affordability

This category includes one indicator that is the additional household income through introduction of DMS/DDS.

Indicator: Additional household income through introduction of DMS/DDS

Additional household income through introduction of DMS/DDS is defined as the increased household income thanks to the accessibility to jobs by ethnic and migrant groups.

Table 33: Summary table on Additional household income

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	61	n.a.	80	69	84
Bottom Two Box	23	n.a.	20	2	4
Average	4.31	n.a.	4.80	4.99	5.24

There is a positive assessment of this accessibility indicator for all the pilots, although there is more dispersion of answers for Emilia-Romagna. Here the mean is 4.31 between “4. Slightly



agree” and “5. Agree”. The BTB adds up 23%. Probably in Emilia-Romagna, the service is perceived as expensive for the context of placement. In Madrid and Galilee, the affordability receives the best assessment from all the pilots, probably because the considered DMS acts as substitute of more expensive alternatives of transport modes (i.e. individual taxi).

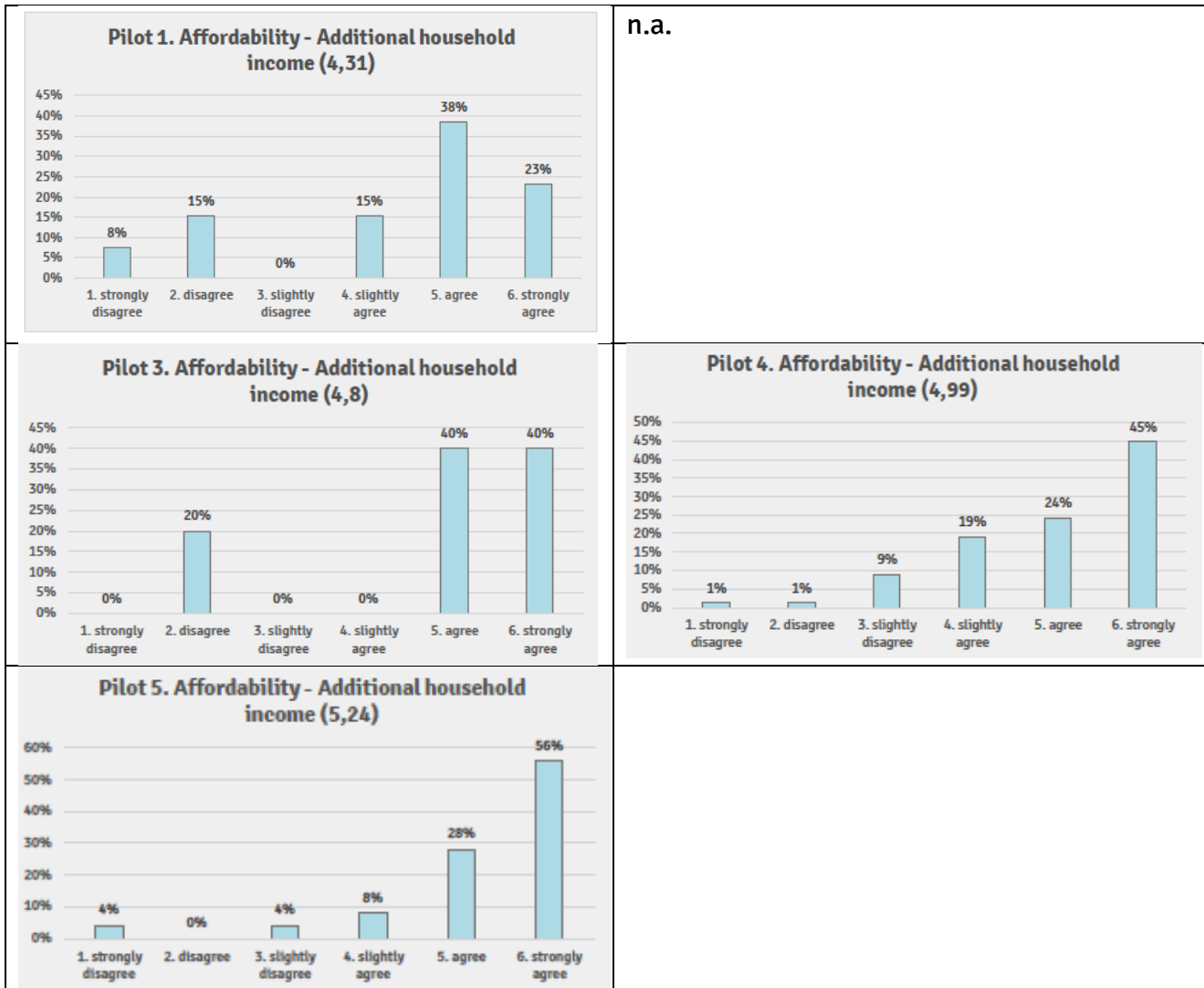


Figure 26. Distribution of answers on Additional household income

3.2.2.3. Category 11. Attention to needs

The indicators included in in this category are the following: Level of the accessibility to key life activities, waiting time between booking transport services and receiving the service (from SSI).

Indicator: Accessibility to key life activities

Accessibility to key life activities is defined as the level of the accessibility to key life activities (i.e., food shops, pharmacy, school, health centres) before and after the use of the app and the associated transport service.

Table 34: Summary table on Accessibility to key life activities

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	61	22	8	71	46
Bottom Two Box	16	33	12	3	24
Average	4.38	3.33	3.12	5.04	4.08

The indicator of the Level of the accessibility to key life activities before and after the use of the DMS and DDS shows a moderate value for all the pilots. It receives the best assessment in the Madrid pilot, in line with other aspects of covered needs that are well evaluated. Here the positive extreme of responses gathers 71% and the mean is 5.04, almost coinciding with “5. Agree”. In Antwerp and Galilee this indicator shows the lowest value, with a greater negative extreme of answers with respect to the positive one.

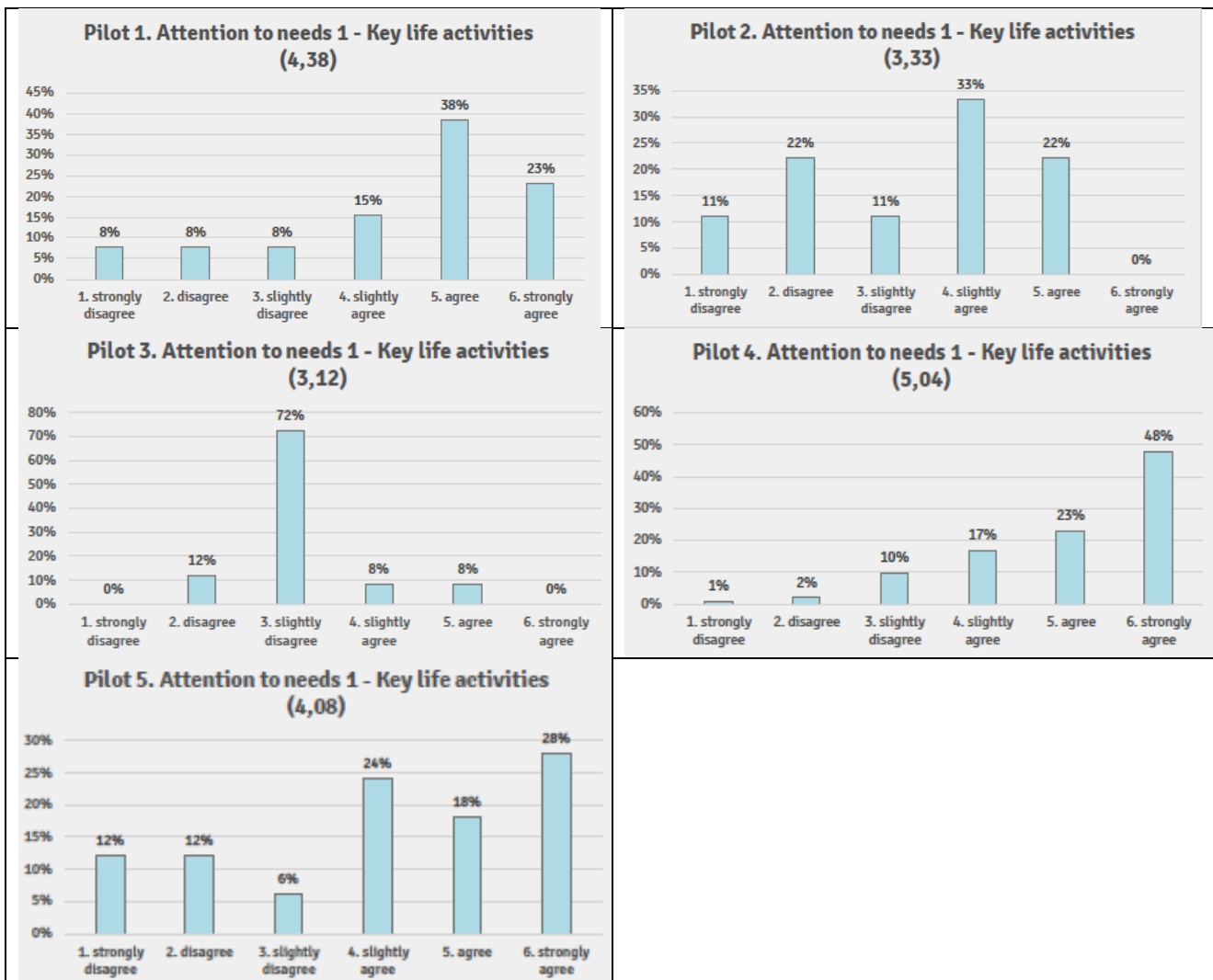


Figure 27. Distribution of answers on Accessibility to key life activities

Indicator: Digital waiting time

Digital waiting time is defined as the waiting time between booking mobility or delivery services and receiving them. This is adequate for personal mobility and goods delivery DMS/DDS assessment. We operationalized this indicator with the number of references to timesaving or waiting time in the SSI codebooks.

Table 35: Mentions to Waiting time in the SSI

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Mentions to Waiting time in the SSI	Time-saving (2) Avoid queues (4)	Current evaluation of time to cross (16)	Rides planned in advance (1)	Lack of time to cook (6) No planning in advance (2)	Time constraint (17)
Total	6	16	1	8	17

The time is the greatest issue in Berlin because of the constraints of time for caregivers. Therefore, the service should be punctual, flexible with unexpected delays, while in Antwerp the main point is the possibility of expanding the time to cross the street, and the implications for the rest of the traffic). In Emilia-Romagna, the timesaving potentially increased by the digital locker is recognized.

3.2.2.4. Category 12. Gender perspective

The indicators included in in this category are the following: Use of DMS/DDS for care-giving trips purpose and other essential activities (not measured for this pilot), People empowered to download the INDIMO DMS/DDS apps, Women who can take advantage of DMS/DDS in respect to the mobility of care -giving (not measured for this pilot),

Indicator: Use for caring

Use for caring is defined as the adoption of DMS/DDS for care-giving trips. The following table and figures show the results of this indicator at each pilot.

Table 36: Summary table on Use for caring.

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	n.a.	11	0	81	36
Bottom Two Box	n.a.	33	20	0	28
Average	n.a.	3.22	2.8	5.31	3.84

The use of the pilots' digital mobility and delivery services for care-giving trips and activities shows an heterogenous and disperse distribution. It is well assessed in Madrid, moderately assessed in Antwerp and Berlin, and very poorly assessed in Galilee. In Galilee such a low assessment may respond to the fact that most of the users are students and do not still have caring responsibilities for others (as a general tendency). In Madrid, the care-giving purpose was related with catering food for isolated people, older people who live in their own house, people with various difficulties in providing meals for themselves without assistance.

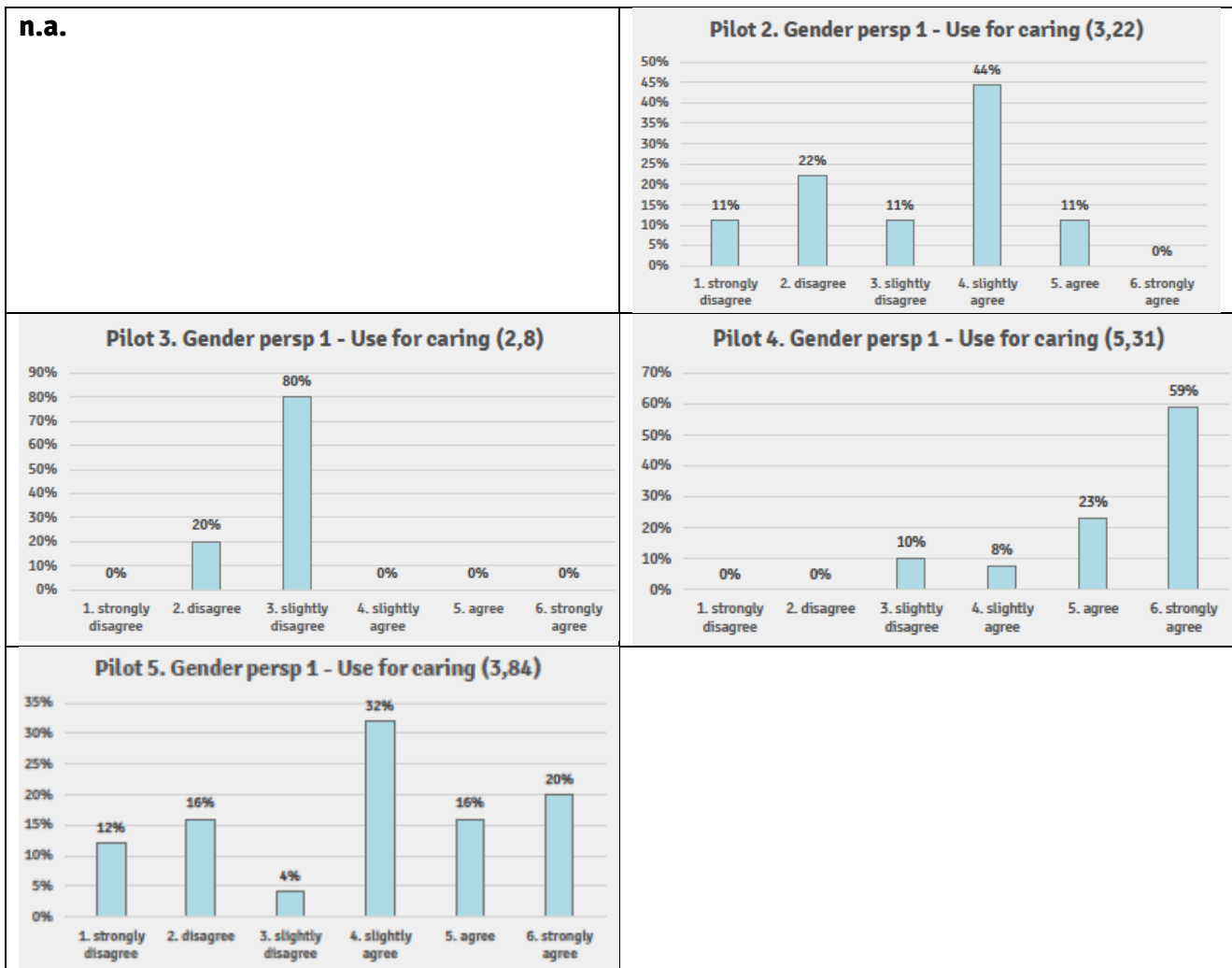


Figure 28. Distribution of answers on Use for caring

Indicator: People empowered.

People empowered is defined as the number of people empowered to download the INDIMO DMS/DDS apps, specially by low skilled persons and women. The following table and figures show the results of this indicator for each pilot.

Table 37: Summary table on People empowered

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	90	72	52	32	73
Bottom Two Box	3	0	16	15	4
Average	5.33	5.33	4.2	3.86	4.92

This indicator is better evaluated by Emilia-Romagna and Antwerp. It seems that people perceive benefits in the execution of the pilots. In Antwerp, this empowerment is related with the experience of the target-users in the public space, while in Emilia-Romagna the empowerment is related to a more flexible use of the time. The worst assessment is in Madrid, where the TTB are relatively close to the BTB.

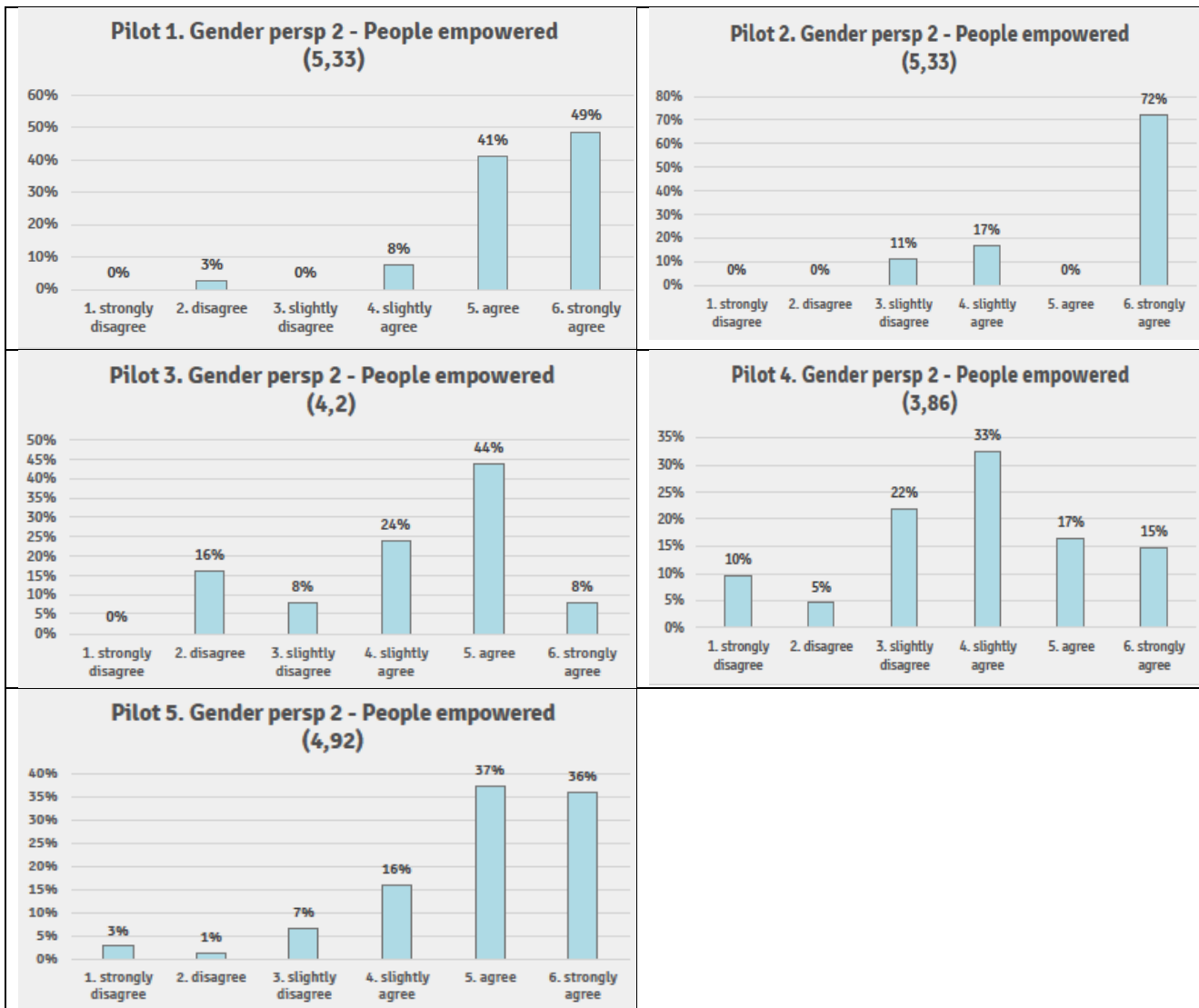


Figure 29. Distribution of answers on People empowered

Indicator: Women empowered

Women empowered is defined as the adoption of DMS/DDS by women who mostly carry out care-giving trips.

Table 38: Summary table on Women empowered

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	n.a	11	0	82	36



Bottom Two Box	n.a	33	20	0	28
Average	n.a	3.22	2.8	5.31	3.84

Surprisingly, the worst evaluation of the indicator takes place in a pilot where women are the main users' target group: Galilee. In this pilot, the BTB is greater than the TTB, and the mean is around "3. Slightly disagree". Also, in Berlin, The TTB and the BTB are close and slightly agree.

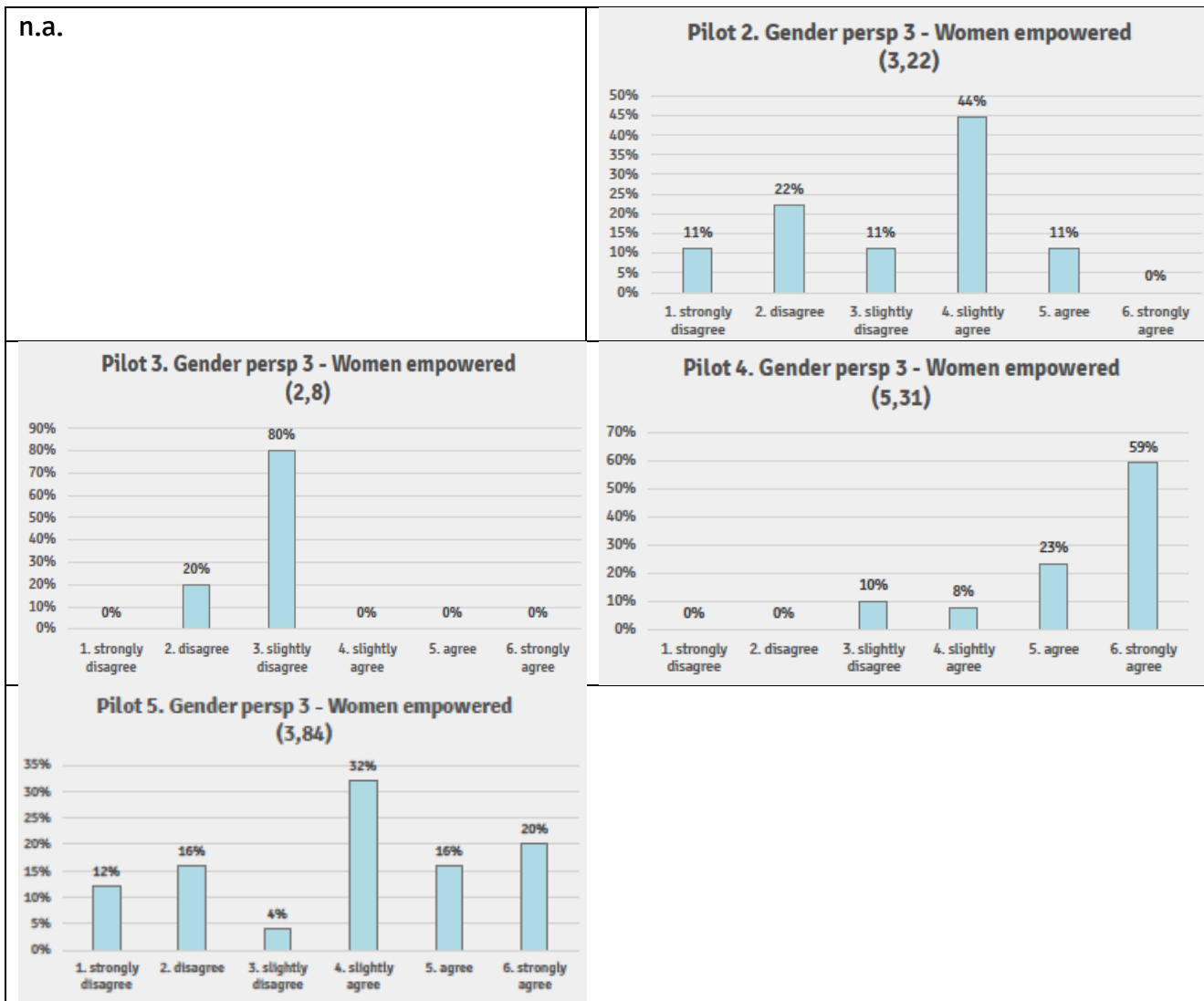


Figure 30. Distribution of answers on Women empowered.

3.2.2.5. Category 13. Transport poverty

Indicator: Frequencies and network of public transport (PT)



Transport poverty is defined as the DMS/DDS contribution to complement the capacity, frequencies, and network of public transport (PT).

Table 39: Summary table on Transport poverty

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	61	33	20	60	56
Bottom Two Box	16	33	0	6	20
Average	4.38	3.44	3.60	4.77	4.32

The measured indicator was about the contribution of the app/service to complement the capacity, frequencies, and network of public transport (PT). Generally,, this indicator receives a quite low value with relevant differences across pilots. The trust of users in the DMS/DDS in mitigating transport poverty is higher in Emilia-Romagna and in Madrid. In Antwerp, the indicator shows the lowest assessment because of the persisting doubt about the smart traffic lights implementation.



Figure 31. Distribution of answers on Transport poverty

3.2.2.6. Category 13. Security issues

Indicator: security issue

Security issue is defined as the DMS/DDS information about service status for reducing sexual harassment in public transport, disease contagion during COVID19, etc.

Table 40: Summary table on Security issues

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Top Two Box	92	n.a.	20	25	52
Bottom Two Box	8	n.a.	20	21	0
Average	5.15	n.a.	3.6	3.6	4.6

This indicator in term of reducing opportunities for sexual harassment shows a relatively high value across pilots. Nevertheless, as expected, it shows a lower performance in the case of Galilee mainly related with the contact with drivers in a cultural context that may be hostile for women and in the case of Madrid because of the contact with the rider in a limited visible place as the interior of a building.



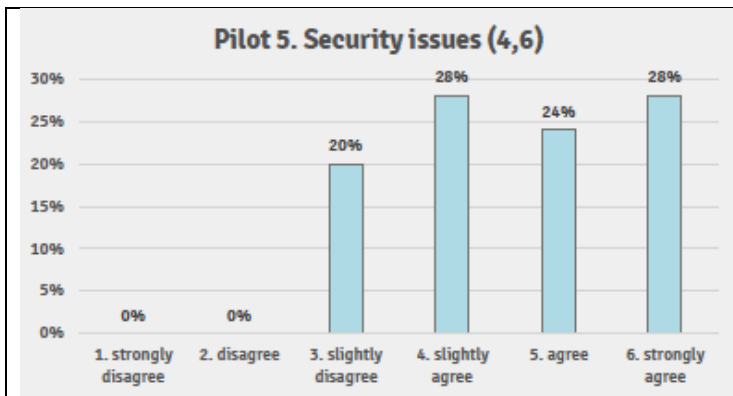


Figure 32. Distribution of answers on Security issues

3.2.2.7. Category 15. Comfort

Indicator: Leisure

Leisure is a key driver of the popularisation of digital mobility solutions. A leisure barometer will be implemented for understanding how much comfortable the use of DMS/DDS is. We operationalized this indicator using the SSI with the number of responses by respondent related to Lifestyle/ Leisure etc.

Table 41: Mentions to Leisure in the SSI

	P1 Emilia-Romagna	P2 Antwerp	P3 Galilee	P4 Madrid	P5 Berlin
Mentions to Leisure in the SSI	Comfort without specify (4)	None	Entertainment (3) Ridesharing can be enjoyable (1)	Leisure at home (3) Buying online can be enjoyable (1) Youngsters enjoy buying online (2) For meetings or dates (4) Comfort without specify (3)	None
Total	4	0	4	13	0

The pilot where the app/service is more associated to enjoyment and comfort is Madrid, since the delivery of food is, many times, associated with spending quality time with family and friends.

3.3. Discussion on results

Throughout this section we examined the results of an extensive fieldwork based on a qualitative-quantitative baseline survey. This survey covered the five different pilots, yet with heterogenous sample characteristics. **The purpose was to establish the baseline values of various indicators** for assessing the pillars: user acceptance testing, inclusivity & accessibility, gender consideration, cybersecurity and data protection. Using a comparative approach, we observed the contrasts in the performance of the variety of pilots and provided an interpretation of the general experience, feelings and believes of the current users of INDIMO Digital Mobility and Delivery services.

In general, there are pilots with a **higher level of satisfaction** with the digital delivery service (**Madrid**), pilots with a **good level** of satisfaction with digital mobility and delivery service (**Berlin and Emilia-Romagna**) and pilots where **respondents have some doubts** about the feasibility and implementation of the proposed DMS and DDS, as the case of **Antwerp**. In Antwerp, for example, the main doubts of the potential users are connected to the perceived usefulness of the app. Interviewed people are afraid that this app could be an additional gadget, a promise that does not addresses the real problem of the mobility of the users' target group with reduced vision. The lack of end-user support and the physical accessibility difficulties due to the **low infrastructural quality of the urban built environment**, together with the lack of coherent action across regions, both remain the main concerns for potential smart lights new digital application. During subsequent phases, the impacts of the Universal Design Manual suggestions of implementation should be analysed with a second survey like the present baseline. On the other hand, in Antwerp, users highly value the trust, which arises probably from the fact that people are confident about the treatment of personal data and the fact that there is not payment needed for this DMS.

In the case of **Galilee**, **there are issues related with the perceived security of the users**. In addition, the cultural context plays a relevant role in the use of the service specially by women. The worst assessed values are related with the privacy indicator and the aspects related to the enjoyment of the experience. Phase 2 of the pilot should pay particular attention to both aspects and try to implement the UDM requirements oriented to improve them.

P4 of **Madrid** shows a particularly good overall rating of the indicators. It stands out the physical accessibility to which the digital delivery service contributes and the cognitive playfulness. The interviewed users translate the **feeling of innovation** that they experience while using the digital service. Madrid gets relative worse marks when referring to the ability to empower people and the indicators of privacy and data security. On the contrary, P1 digital lockers pilot hits summon in the **evaluation of the empowerment** of the vulnerable populations, and the gains in time that the service offers, which is the clear strength of this pilot. The worst indicators assessed for this DDS is the integration of the service in every day's life of people and its quality of the output.

Berlin has a particularly good assessment of the relevance of the task and a good assessment of the cost of the service. Its weakness is related with the social factors that limit the use of the service mainly by the caregivers while the acceptance of the child by other passengers and the driver is low.

It must be noted that sample sizes of the data collected in pilots, especially in P1, P2 and P3 are not large and hence, may not be suitable for quantitative analysis. Some of the reasons contributing to this smaller sample size are: (1) low user base of the services, (2) non-existence of some services at pilot locations, and (3) the global covid-19 pandemic which resulted in strict lockdown and regulations imposed by governments on social interaction and physical meeting around the globe. Prime focus of INDIMO is on vulnerable-to-exclusion people groups and these pandemic related restrictions made reaching them extremely difficult through digital means, the very cause that makes them vulnerable to exclusion vis-à-vis digital mobility and logistics ecosystem. Nevertheless, this collected baseline data give an indication of the current status and can be used as a qualitative baseline in the further assessment of the pilots.

4. Decision making process assessment

In order to develop tools that can be useful for stakeholders to develop, deploy and operate accessible and inclusive digital mobility/delivery services, it is necessary to understand the current way of working of the stakeholders. In INDIMO, this is being done as a part of process evaluation task, for which the framework has been set out in D4.1 INDIMO Evaluation framework. Process evaluation focuses on the internal dynamics and actual operations of a measure in an attempt to understand its strengths and weaknesses (Dziekan, et al., 2013). This objective is achieved by evaluating experiences and perceptions of the stakeholders who are closely related to the measure. In case of INDIMO, these stakeholders are the users of the INDIMO digital mobility toolbox, i.e. the developers, operators, and policymakers of different digital mobility services/digital delivery services. Rather than quantitatively measuring the impact of the INDIMO tools, in process evaluation, efforts are being made to understand how INDIMO can impact stakeholders' current way of working. The process evaluation pillar in this project is further subdivided into two parts:

- a. Decision making process assessment; and
- b. Usability assessment.

Since, usability assessment deals with data that can be collected only after implementation of INDIMO tools, baseline data collected in pilot phase 1 deals only with the process evaluation sub pillar about decision making process assessment. Analysing the decision-making process of the stakeholders not only allows us to explore their current way of working, but also provides insight into the 'stories behind the figures'. Throughout the lifetime of any project, several decisions made by the stakeholders, depending on the situation and objectives, determine the success and failure of an enterprise. In order to successfully develop INDIMO tools, it is essential to understand the explanations behind these successes, failures, delays, challenges faced during development and implementation of the existing services.

4.1. Data collection

Data for the decision making assessment was collected from operators, developers and policymakers associated with 5 INDIMO pilots. It was gathered through semi structured interviews. In total 13 interviews were conducted between February 2021 and May 2021. Building on the framework and indicative list of data to be collected mentioned in D4.1 INDIMO Evaluation framework, interview questions were developed to gather data on the following:

1. Steps taken, issues faced, and drivers and barriers present during the planning, designing, deployment and operating phase of the service/app.
2. Political support for the development and operation of the service/app.
3. Understanding of user needs, requirements, capabilities, especially of vulnerable-to-exclusion people groups.

4. Presence of co-creation with stakeholders and end-users in the planning and designing of the service/app.
5. Financial aspects, data collected by the service/app, license/concession needed for operating the service/app.
6. Consideration of accessibility, inclusivity, cyber security and personal data protection in the service/app.
7. Presence and need of clear guidelines from city/regional authorities.
8. Improvements needed in the service/app.

Annex 4 and 5 contain the semi structured interview (SSI) questions and informed consent form used in the data collection process. The list above is a compact version of the referred list of questions. Stakeholders were contacted by the pilot leaders and a protocol was followed:

1. SSI questions and informed consent form (ICF) were sent to the stakeholder with a brief description of the objective of the task in an email at least 7 days before the one-on-one interview session.
2. Online one-on-one interview session was scheduled with the stakeholder.
3. Interview was conducted.
4. SSI debriefing was saved in a designated SharePoint folder.

However, based on the type of stakeholders, in consultation with pilot leaders, some questions and data collection process were slightly modified for some pilots. Also, some stakeholders did not respond to a few questions as they were either not relevant for them or there were some organizational reasons for skipping them. In the next sub sections, the evaluation of collected data is presented for each pilot.

4.2. P1 Emilia-Romagna

The 1st INDIMO pilot in Emilia-Romagna is about a smart locker device, which enables advanced logistics and payment services in an innovative and completely autonomous way. ITL is the pilot leader for this pilot. One of the INDIMO partners, Poste Italiane is operator and developer for this service. Three different types of stakeholders were interviewed by ITL and Poste Italiane to gather baseline data on this service. They were:

1. Marketing manager for third party networks of Poste Italiane: Operator of the service. (Interview duration: 50 min)
2. Digital, Technology & Operation (DTO) Engineer of Poste Italiane: Developer of the service. (Interview duration: 60 min)
3. Mayor of San Benedetto Val di Sambro (BO): Policymaker. (Interview duration: 60 min)

It must be noted that the interviewed policymaker was not involved in the development and deployment process of the smart locker service. So, his responses are about the role he would have played as a policymaker if such a smart locker service were to be implemented in this municipality. Also, unlike the INDIMO pilot case where the smart locker is being installed in a rural municipality, so far in Italy, Poste Italiane has installed the smart lockers only in urban areas. So, the responses of operator and developer are based on their experiences in urban situation.

4.2.1. Results

Three stakeholders were asked questions on topics mentioned in sub-section 4.1 to understand their current way of working which is presented below.

1 Steps taken, issues faced during the planning phase of the service.

- **Operator:**

The business idea and the concept (e.g., development of a new network of touch points in the area) were defined in this phase with the support of ad hoc market surveys dedicated to selected targets. Following which, the business investment was approved. No delay was experienced, and we did not come across any specific issues during this phase.

- **Developer:**

The Marketing department of Poste Italiane (PI) had developed a new business idea regarding the extension of the Italian postal network with new delivery and collection points for parcels and correspondence. The high-level requirements expressed by the marketing department were then processed by the PI Security, Privacy, and ICT department. They managed the main data protection and technological problems by applying methodologies and processes to create a solution capable of guaranteeing security for the new delivery points, integrated with the existing PI IT systems for managing correspondence and parcel shipments.

Since similar solutions were not available in the market, it was necessary to identify and select the hardware and software components with suitable characteristics and connection protocols. It was also important to design the communication methods and protocols to allow the new device to integrate and manage all the components. For the device implementation, an in-depth market scouting was carried out to select the necessary and suitable components for the solution, benchmarking the available products, comparing the various solutions according to

the cost, reliability, type of interface parameters and functionality of the various components. A Proof of Concept (POC) was carried out to test the actual functionality of each element and related interoperability checks.

The "Punto Poste Da Te" device (consisting of a master unit and one or more slave units) has the shape of a container cabinet, equipped with compartments of different sizes, one of which is specifically dedicated to house the electronic management and control of the entire system components, while the others function as logistic space for the sending/receiving of shipments. Some of the other components are:

- Electronic locks for opening the slot doors;
- Parcel presence sensors inside the slots;
- Sensor for detecting the opening of the rear door of the device;
- Sensor to check the status (open / closed) of each of the device doors;
- Gyroscope sensor for identifying any tampering attempts;
- Board with micro-controller for interfacing all sensors;
- Modem for connection to the telephone network;
- Power board with automatic reset;
- Backup battery;
- LCD Touch Screen;
- One and two-dimensional barcode reader;
- A small size chip and contactless payment card Point of Sale (POS) reader; and
- A communication unit with the 3G and 4G mobile network equipped with a SIM slot.

Further project documentation produced in this phase is the following: description of the delivery processes and methodologies in the new identified points, description of the identified security solutions, the project plan with the effort estimates of resources and investments, the planning of the main project milestones, economic estimate of the intervention and the requirements level coverage. There was no significant delay or change needed in organization and planning during this phase.

- **Policymaker:**

The mayor was asked a general question about his knowledge of smart lockers. His response was: "To be honest, I did not know very much about this kind of services before the neighbouring Municipality of Monghidoro (situated in Emilia-Romagna) got a proposal for this pilot project. In general, my opinion is that the more services are available for small rural areas, the better".

2 Steps taken, issues faced during the designing phase of the service.



- **Operator:**

First a project Gantt chart was developed and an interfunctional Working Group for the project was defined. Then functional and technical requirements were defined and the related feasibility check was performed in relation to the following tasks: mechanical design of the device, identification of new technologies and processes for the management of the logistics last mile, identification of solutions in the App for the development of functionalities (logistics and payment) to be released in subsequent phases, definition of the interfunctional processes for managing the activation of the service and registration for the service by the concerned users. The Final Business Case was approved and then the identified solutions were implemented. The related UAT (user acceptance testing) was done. Developing the smart locker solution according to the requirements of the tender specifications took more time than that initially planned. Hence, there was some delay, but it was compensated by other parts of design and implementation phase.

- **Developer:**

Main steps taken during this phase were:

- Mechanical and appearance device design: graphic design of the master central unit with display section and Point of Sale device, together with industrial technical drawing of the different device components and of the various solutions (including the selection of the internal and external device hardware components to be integrated for the solution implementation).
- The extensibility of the solution was obtained by adding additional devices controlled by the same central unit and graphic design of the expansion slave units.
- In the implementation phase, aspects related to the structural stability and physical safety of the machine were taken into account by studying and implementing a solution that avoids unauthorized opening or overturning of the device.
- Analysis and Design of the core network solution necessary for the selection of the mobile network on which the 4G SIM could be registered. Implementation of this solution.
- Procurement: The hardware, software and connectivity requirements of the device were subjects of technical specifications, on the basis of which the tender procedures were carried out and a supplier was identified and assigned.
- Functional design to enable the delivery and dispatch of parcels at home and the delivery of signed correspondence with legal validity (e.g., registered mail).
- Design of the functions enabling payments of postal bills and telephone and prepaid Postepay cards top-ups.
- Development of a remote monitoring console for the Punto Poste da Te devices.
- Master data management of active customers in the service for the mobile terminal supplied to the Poste Italiane workforce.

- Adjustment of the delivery workflow on Poste Italiane systems to manage deliveries to Punto Poste da Te.
- Introduction of new tracking statuses for tracing the deliveries at Punto Poste da Te.
- Adjustment of the parcel monitoring systems following the introduction of delivery to Punto Poste da Te.
- Adjustment of the payment management systems for accounting deliveries to Punto Poste da Te.
- Logistics performance monitoring, parcel/correspondence delivery staff training and operational monitoring staff training.
- Enabling the Punto Poste da Te on the PI systems as a new delivery / collection channel for parcels and correspondence.
- Management of digital identity and related signature acquisition.
- Adaptation of the correspondence monitoring systems following the introduction of delivery to Punto Poste da Te.

In the detailed design phase, the security requirements were also met and implemented in agreement with the competent IT Security Function. Furthermore, in order to ensure that the solution implemented meets the safety and quality requirements, specific software Quality and Safety verification activities were carried out during the implementation phase, conducted through the Code Review performed in an integrated Test environment.

The realization of the device with all the physical and safety features indicated in the tender requirements took longer than initially planned. However, the delay was compensated by the other phases of software application design and implementation.

3 Steps taken, issues faced during the deployment phase of the service.

- **Operator:**

Communication plan and contractual kits were defined in this phase. A Business Simulation was done with a limited set of users, in order to verify the features implemented and collect feedback on the user experience. Then the service was spread out nationally. No delay or specific issue was experienced during this phase.

- **Developer:**

Following steps were taken in this phase:

- Design and execution of all the technical/functional, integration and security test included in the Test Plan (together with penetration test and vulnerability assessment) and execution of the user testing.

- Development of project documentation (Integrated Test report, user manuals, operating and installation manual and "What if" manual).
- Release of the tested product to the certification function (pre-production environment), which contained the necessary checks before releasing the product in the production environment.
- Release and configuration of the product in the production environment for product usability.
- Design and execution of Sanity Checks in the production environment before declaring the service active.

No delay or specific issue was experienced during this phase.

- **Policymaker:**

Approaching the administration of the Municipality is a good first step for the operator. "It is important to talk to those who manage these services." At this specific point in time, it is necessary to apply a top-down approach because the services are not yet known to the citizens, so it is unlikely that they will ask for the installation. Following steps should be taken. First, the project must be shared with the Municipality. The Municipality must understand the benefits and opportunities related to this service and why it should be implemented. If the Municipality finds it suitable, it should be approved by its executive board (i.e. Giunta Comunale). After the approval of the project, the offices of the municipalities would be asked to take care of the process and to bring the installation to completion. The administrative process is quite simple, especially from the perspective of a small Municipality.

4 Steps taken, issues faced during the operating phase of the service.

- **Operator:**

Being an inter-functional project, it required a considerable engagement of various corporate stakeholders. The organization of dedicated work groups and weekly meetings undoubtedly helped to oversee time and activities.

- **Developer:**

Being a complex project that involved different company functions, a considerable effort was put into the coordination of activities and the control of times. Dedicated meetings and continuous exchange of information were the activities implemented during this phase to ensure the success of the implementation, guaranteeing alignment to all functions with a weekly meeting on the progress of the work.

5 Political support for the development and operation of the service.



- **Policymaker:**

It depends on a number of things, for example the cost of such a service. In the case of the INDIMO pilot, the service is offered for free. If there is a cost, different logic needs to be applied. Generally, the smaller the municipality the easier the decision. Usually, small municipalities are much more flexible, even though sometimes the follow-up can be quite lengthy, especially because the human resources in a small municipality are scarce. For instance, San Benedetto Val di Sambro has 4200 inhabitants and the Giunta is made of 4 councillors and 1 mayor.

- 6 Understanding of user needs, requirements, capabilities, especially of vulnerable-to-exclusion people groups.

- **Operator:**

This service introduces an innovative channel of interaction for users directly at home. This enriches the list of physical touch points (Post Offices, Post Offices, Postamat, Locker Punto Poste and Third-Party Networks of Partners) and digital (Web, App and Social Networks) already used by citizens, whose needs were therefore already known. However, the characteristics of the service guarantee the operation even in the less accessible peripheral areas of the country (e.g., small municipalities), in line with the process of change in daily uses and habits. This has the aim of reducing the digital divide, improving the user experience even for those who are not experts in full digital solutions and time saving services.

“Vulnerable-to-exclusion groups were neither directly considered nor ignored.”

- **Developer:**

Since the smart locker service, Punto Poste da Te is another way for users to take advantage of the shipping and payment services directly at home, the range of opportunities offered to users have been enriched with the aim of meeting everyone's 'habits'. Although this project was started for urban areas, the methods for the provision of the service are also suitable for smaller and/or peripheral areas.

“Vulnerable-to-exclusion groups were neither directly considered nor directly ignored.”

The responses of the operator and developer for this issue should be interpreted with the consideration that unlike the rural setting of the INDIMO pilot in Monghidoro, these Punto Poste da Te smart lockers were installed in residential complexes in urban areas.

- **Policymaker:**

“Every service should be universal. i.e., everyone should have the chance to use it. A digital locker should be the same. So, rather than looking at a single target group, we should look at a



service which is for everyone, especially if it is placed in public spaces.” Accessibility is a top priority and it is perhaps more of a concern for low-income families/citizens, rather than higher-income ones. However, the differentiation made based on types of people is not so important.

7 Presence of co-creation with stakeholders and end-users in the planning and designing of the service/app.

- **Operator:**

Other stakeholders were never involved in the planning and designing of the service. However, potential end-users were often involved in the planning and designing of the service through dedicated surveys and questionnaires. Regarding vulnerable-to-exclusion groups there was neither any effort to involve them nor any effort to prevent their involvement.

- **Developer:**

Other stakeholders were never involved in the planning and designing of the service. However, potential end-users were often involved in the planning and designing of the service through collection of their needs/habits by providing specially designed questionnaires. With regards to vulnerable-to-exclusion people groups there was neither any effort to consider them nor any effort not to consider them.

- **Policymaker:**

“All stakeholders should be always involved in the consultation process before deploying a smart locker service. Stakeholders should be contacted and asked questions directly. Potential end-users should always be involved in the consultation process before deploying a smart locker service.” In a small community, many forms of involvement are possible. Public events (even online ones depending on situation) can be utilized.

8 Securing finance for the project and related demands/requirements (if any).

- **Operator:**

The R&D project benefited from a company investment with the expectation of potential benefits from the deployment of the service. In some cases, there were budget reductions due to contextual company priorities.

- **Developer:**

Company investment dedicated to innovative research and development projects was used, sometimes remodelled during the course of the project according to company priorities.

9 Data collected during the development of the service/app.

Stakeholders did not give any response on this topic.

10 License/concession needed for operating the service/app.

Stakeholders did not give any response on this topic.

11 Consideration of accessibility during the development in the service.

- **Operator:**

Accessibility was rarely considered during planning, designing, deployment and operating phases of the service. Only for the arrangement of the cells and the height of the display screen, some studies were done during the mechanical design of the locker to find suitable positions.

- **Developer:**

Accessibility was rarely considered during planning, designing, deployment and operating phases of the service. Only for the physical characteristics relating to the cells and the display of the Punto Poste da Te some studies were done during the device design phase.

- **Policymaker:**

“Accessibility should always be considered during planning, designing, deployment and operating phases of the service. e.g., the level of income plays a very important role.” Accessibility and inclusivity should be guaranteed, much like data privacy. These two are very important for a public service, in the same way like public infrastructures that offer universal access. So, it should be a requirement in tenders. However, from a developer point of view, it is important to make a service that is for everyone. This can also open more market opportunities.

12 Consideration of inclusivity during the development in the service/app.

- **Operator:**

Inclusivity was rarely considered during planning, designing, deployment and operating phases of the service. The goal was the reduction of the digital divide, improving the user experience even for those who are not experts in full digital solutions and time saving services.



- **Developer:**

Inclusivity was rarely considered during planning, designing, deployment and operating phases of the service. One of the objectives of the project, when the idea was born, was to meet the needs and habits of users by reducing the digital divide, and make the service easily accessible even to people who are less experienced in using digital solutions.

- **Policymaker:**

“Inclusivity should always be considered during planning, designing, deployment and operating phases of the service.”

- 13 Consideration of cyber security and personal data protection during development and operation of the service/app.

- **Operator:**

The Punto Poste da Te has been developed with a security by design criterion, taking into account the security requirements from the very beginning of the project. This is valid for any project in Poste Italiane. In addition, the IT security function followed the project by verifying compliance with the security requirements at the established verification and control points, possibly preparing a risk analysis recovery plan, if necessary.

- **Developer:**

The Punto Poste da Te, like all the applications created by Poste Italiane, has been developed with a security by design criterion, i.e. by taking into account the security requirements from the beginning. Poste Italiane IT security function follows a plan-do check-act procedure, constantly verifying (at the verification and control points) compliance with the security requirements, preparing, if necessary, a recovery plan analysing the risk.

- **Policymaker:**

“Yes, it is fundamental that these aspects are considered.” However, there are also regulations in place (e.g. GDPR). So, it is more of a matter of complying with existing regulations. This kind of principles apply not only to small municipalities but actually to all kinds of municipalities, irrespective of their size.

- 14 Presence and need of clear guidelines from city/regional authorities.

- **Operator:**

In Italy, the Communications Guarantee Authority is evaluating the definition of measures to encourage the use of smart lockers for the delivery and collection of parcels.

- **Developer:**



The Italian communications supervisor is examining the adoption of measures to encourage the use of smart lockers for shipping/receiving packages.

- **Policymaker:**

It surely depends on the specific type of service the Municipality is thinking of acquiring. Also, there are different types of lockers. For small rural municipalities there are not many opportunities for innovative services such as the smart digital locker. In the specific case of the digital locker getting installed in Monghidoro, the process of installation is relatively clear and simple. The Municipalities are not really concerned with the development of innovative services at the moment. So, there are no immediate need of guidelines for them. However, ideally there should be guidelines, at local level too. However, it could be beneficial to have national/centralised guidance, for the reasons explained earlier such as accessibility and inclusivity, something which should be universal, regardless of where digital and innovative services are getting installed. How digital lockers are used and applied at local level should be considered as well.

15 Improvements needed in the service/app to cater to the needs of the potential end-users.

- **Operator:**

The service fulfils its objectives. Improvements are always possible, also through the results of specific case studies, as in the case of this pilot in Monghidoro.

- **Developer:**

Punto Poste da Te was created to meet the current habits of users and become part of the daily routine of each of them. With an increasing use of the locker, more ideas for improvement may emerge.

16 Some of the strong and weak points and overall rating of the service/app between 1 and 5, ranging from very bad to very good.

- **Operator:**

Score: 3. The user activation process can be improved, while the degree of technologies and integrations developed between company systems (e.g. logistics and financial), which make the service unique compared to other parcel lockers, is definitely high.

- **Developer:**

Rating: 4. The Punto Poste da Te is the only locker currently on the market able to offer logistics and payment services at the same time. Being able to carry out these operations independently, at any time of day and in safety is a very important feature, especially in current times.

4.3. P2 Antwerp

The 2nd INDIMO pilot in Antwerp is about an inclusive smart traffic light. IMEC is the pilot leader for this pilot. There is no separate operator for this service. Therefore, following two stakeholders were interviewed by IMEC to gather baseline data on this service:

1. IMEC consultant: Developer of safe crossing. (Interview duration: 90 min)
2. Representative/s from the city administration of Antwerp: Policymaker/s associated with the Smart Crossing project. (Interview duration: 75 min)

The inclusive smart traffic light is yet to be implemented in INDIMO Antwerp pilot. These interviewees were associated with another smart traffic light project in the city of Antwerp and hence serve as the perfect proxy for collecting information on stakeholders' current way of working in smart traffic light projects.

4.3.1. Results

Three stakeholders were asked questions on topics mentioned in sub-section 4.1 to understand their current way of working which is presented below.

- 1 Steps taken, issues faced during the planning phase of the service.

- **Developer:**

During the planning phase a lot of management issues were sorted out. Following things were thought about: requirements, planning of multiple phases and strategy, setting up agile technology cycle, period when counting of people will be done, type of technology to use, use of AI, backup plan for if the technology does not work etc. There was no delay.

It must be noted that the developer interviewed joined the project after this phase. Therefore, his answers may not be accurate.

- **Policymaker:**

In 2017 there was the launch of a smart zone covenant with the proposal to launch innovative smart city projects in the street and to design it within a Living Lab philosophy. Survey among citizens revealed that green lights were not long enough to cross the street. The collaboration with IMEC as a developer was done to keep the innovative aspect. Initially the idea was to have a project that could make crossing safer. The hypothesis/idea was: “on certain crosswalks the green light was not long enough and gave an unsafe feeling. Cameras will be used to detect pedestrians crossing the road and if a pedestrian could not reach the other side of the road before the end of the green light, the green light time would be prolonged.” However, the city administration reacted by stating that green light durations follow certain parameters and it cannot be changed like that. Also, the rule should be uniform throughout the city. Moreover, often at crosswalks there is red light for nothing. So, it is better to provide a button for pedestrians to push and activate green light very fast. Then, there is the provision of clearance time, certain time between going from red to green and back. Hence, in most of the cases, there is enough time to cross, but people do not know about this.

So, then the project objective was reoriented and became: how many pedestrians are at the crossing? Often the crossing time allowed is restricted and not so long, but there are a lot of pedestrians crossing. Therefore, it was decided to perform some observations and interviews. This again confirmed that the initial thought of detecting pedestrians and changing the length of the green light was not realizable as every pedestrian has different needs. Brainstorm sessions were organized and the idea generated was to extend the project to include *smartphone zombies* (those who use cell phones blindly while walking and do not look around) or daredevils that cross the red light in order to catch the public transport at the stop close to the crossing. However, when some observations were done again it appeared that these phenomena were limited and that the biggest number of pedestrians crossing the red light were those that look left and right and then cross the road if there is no car.

That is why the scope of the project again changed and it was decided to work on the nudging aspect, i.e., how to keep pedestrians safe by making the waiting time at the red light a more pleasant experience in order to be sure that they don't cross the red light anymore. Also, it was decided to install counter lights that will inform how much time is effectively left before the red light turns green. There was a chance that it may lead to an opposite effect and people might start complaining that they are having to wait too long.

2 Steps taken, issues faced during the designing phase of the service.

- **Developer:**

Design issues were discussed with the team. Location of display screen, how to display data on the screen, how to involve people etc. were discussed. Every two weeks there was a meeting to discuss how to improve the project based on test results. No big issue was faced in this phase, barring a day when network issues were found while connecting the display screen with traffic light. There were some issues about latency in installation, but they were fixed quickly.

- **Policymaker:**

Once the scope was defined, the possible install locations were investigated and similar projects were researched on. At a crossing at Nationale Straat, there were restrictions because it was being renovated. Also, it was not possible to install new big hardware in the public domain, such as putting red lights on the pavement between the pedestrian path and the crosswalk to warn people with mobile phones. It was technically achievable but not realistic to actually install. Then idea of the screens was adopted, after doing some research on similar projects in Europe (e.g. dancing people on the light, a dynamic footpath in 3D that only emerges when the traffic light is green). Similar concept was employed to make it nicer to wait at the traffic light by showing the counting and by providing a screen with a quiz or some information. The idea was to nudge in this way to concretely change the behaviour of pedestrians. This process was done by regular meetings with the project team and monthly meetings with the steering group. IMEC, city of Antwerp and an IT consultant firm Digipolis were present in these meetings.

3 Steps taken, issues faced during the deployment phase of the service.

- **Developer:**

Before implementing in real life scenario there were many testing sessions. It improved and counting become more accurate with iterations (4 times). Data was corrected for latency, the count starting time was fixed and then cameras were checked. There were some issues with night images, direction detection and the AI system. Sometimes it was counting cars and bikes as people. Robovision was contacted for these issues.

- **Policymaker:**

In order to measure the effects of the installation of the screen on crossing behaviour, it was decided to connect a camera to traffic light phases to detect if pedestrians crossed the street during red light. There were some hurdles in the beginning regarding the data-streams of the traffic regulator. Necessary approvals to count people was in place as it was in the Smart Zone in Antwerp and part of Living lab. This counting exercise lasted for a few months. Then the images were no longer used to count (verify/check). Results of the installation were analysed. Citizens were communicated about the measurement via the Smart Zone communication. The analysis of the data was done by IMEC. Reports of the results were presented during the steering board and project meetings.

4 Steps taken, issues faced during the operating phase of the service.

- **Developer:**

“It was a fun project to work in as it combined AI and such technologies. However, we often had to go to the crossing to check when there was an issue or the screen was not displaying

something. Robovision had to be contacted for the AI issues. Sometimes we had to count the crossings manually.”

- **Policymaker:**

Once the setting was installed and started running, the city administration did not have much to do as most of their efforts were needed for setting things up (previous phases). Nonetheless they were closely involved in monitoring the results, measuring the impact and counting the no. of people that did not respect the red light. The remaining red-light time counting lights was sometimes switched on and off to see the effect. Impact of the screen and the quiz were measured via a ‘nulmeting’ (baseline measurement). It turned out that they were not significant. Effect was not good enough to deploy screen further on a large scale in the city. Only some effect was noted in busy moments. However, it is not sure if it was due to increase in car traffic or the screens. The remaining red-light time counting lights had minimally higher effect, but not enough to draw further conclusion. However, the deployment of counting lights in the city is still ongoing.

5 Political support for the development and operation of the service.

- **Developer:**

There was a lot of support from the city administration. “We had access to camera and streams. They were always helpful. Cameras were changed in the middle. Overall, it was a good experience.” This project was also a fit for City of Things.

- **Policymaker:**

There was political/policy support for the smart zone projects because of the covenant. “It was also good that we did a survey among citizens to build the use case.” This helped for the approval by the city council. The fact that many cabinets (innovation, mobility and public domain) in the city administration were involved had a positive effect. There was a cooperation along different cabinets when selecting and implementing the project.

6 Understanding of user needs, requirements, capabilities, especially of vulnerable-to-exclusion people groups.

- **Developer:**

Basic understanding of why somebody crosses a red light was there and based on data collected it was possible to analyse it. “However, it was not much about the display screen. We were more involved in the data and server part.” There was no focus on needs on vulnerable-to-exclusion people groups.

- **Policymaker:**

“We got a good understanding, but we never observed these aspects in depth. We started from absolute numbers and then we moved to dividing them in categories of user profiles. We had 20 profiles in the end going from moms with stroller to blind persons and smartphone zombies. It was a combination of mobility patters and demographic characteristics. For example, a wondering shopper.” Observations and in-depth interviews at the crossing were done, but not focusing on a specific target group. Whoever passed at that moment was interviewed. There was no specific focus on needs on vulnerable-to-exclusion people groups.

- 7 Presence of co-creation with stakeholders and end-users in the planning and designing of the service/app.

- **Developer:**

Other stakeholders were almost never involved in the planning and designing. Potential end-users too were never involved in the planning and designing. They were more passive players.

- **Policymaker:**

Other stakeholders were often involved in the planning and designing. With the local citizen movement/association we co-created the screens starting from mock-ups. Potential end-users (also vulnerable-to-exclusion people ones) individually were never involved in the planning and designing.

- 8 Securing finance for the project and related demands/requirements (if any).

- **Developer:**

“Financing was okay given it was a smart zone project and a data project.”

- **Policymaker:**

Financial budget in smart zone and the covenant was divided 50-50 between IMEC and the city administration. Products that were acquired during the project were mostly covered by IMEC as they could also be reused (such as the screens). The cameras were provided by the city. Because of the financing within the framework of the smart zone projects, the budget was mainly focused on the technical components.

“We learned with the project a lot about the technological components and how to perform similar projects.” Also, because this project was in the first wave of smart zone projects. The lessons were meant to be for a general evaluation than to really focus on getting lessons learned for a specific target group of users. “We are now more aware due to the project about crossing behaviour of pedestrians, how people react and experience a situation, what people

think they know but don't know etc. These are things we learned about end users during the project.”

9 Data collected during the development of the service/app.

- **Developer:**

Numbers of people crossing when the light is red, insight into who is crossing and what moment. On screen the number of persons that crossed red light was shown so that people could be influenced not to cross.

- **Policymaker:**

The number of pedestrians at the crosswalk ignoring the red light. There was a need for better calibration. Therefore, at certain moments and periods real people were put to validate the numbers but also to make the profiles. Using the software developed by Robovision images were processed to count and classify, but this was not always straightforward. “We had to make the classification ourselves if a biker was someone walking with a bike or a biker crossing the road riding a bike. Thus, the numbers were very rough. People inside the tram and bus got sometimes counted as well.”

10 License/concession needed for operating the service/app.

- **Developer:**

Some permissions were needed from the police to access to proxy server in order to access the stream on their server.

- **Policymaker:**

No. Just a partnership agreement with one partner (Robovision) for the image procession was needed.

11 Consideration of accessibility during the development in the service.

- **Developer:**

Accessibility was often considered during planning, designing, deployment and operating phases. Screen, text size, data display was chosen in such a way that its big enough for everyone to notice standing at the crossing.

“I am not sure if there was any requirement specified by the city or regional authorities that had to be met in terms of accessibility.”

- **Policymaker:**

Accessibility was rarely considered during planning, designing, deployment and operating phases. For designing the screen and show the images, there was an UX designer present from IMEC. Basic inclusive and accessibility requirements were taken care off such not placing the screen too high and making sure that people in wheelchairs or kids could see the screens as well. It remained on a general level, no real specific focus was there.

12 Consideration of inclusivity during the development in the service/app.

- **Developer:**

Inclusivity was often considered during planning, designing, deployment and operating phases. “I am not sure if there was any requirement specified by the city or regional authorities that had to be met in terms of inclusivity.”

- **Policymaker:**

Inclusivity was rarely considered during planning, designing, deployment and operating phases.

13 Consideration of cyber security and personal data protection during development and operation of the service/app.

- **Developer:**

Developer had special keys to access the server and access the proxy to fetch the streams from the cameras (only one as developer had the access to this information). Only one person could watch the streams and a consent was signed regarding personal data aspects. Robovision had an agreement with the police.

- **Policymaker:**

In order to send the images from the camera to the server and from there to the place where it could be analysed, relevant rules along privacy and data protection needed to be followed. e.g. limited access, protocols, designated persons, password protection. Also, a legitimation was needed to justify why access was needed.

14 Presence and need of clear guidelines from city/regional authorities.

- **Developer:**

It is new technology. So, there are not many guidelines. So, privacy of people need to thought about.

“We had questions regarding what’s allowed to do and what’s not and if written approvals are needed. Projects like this can help to create new guidelines.”

- **Policymaker:**

“We try to work starting from a problem or an opportunity that arises around a certain problem. Then the next question is: from whom the opportunity or idea is coming? We have our own ideas, but we also need to prioritise ideas. So, we prefer to start from a concrete problem and questions around it. If there is no clear question and problem, we see it more as ‘spielerei’ (insignificant activity). It has to have sense and connect with our role as administration and policymakers.”

15 Improvements needed in the service/app to cater to the needs of the potential end-users.

- **Developer:**

“I don’t have hard numbers about that if the project catered to the need of end users.”

16 Some of the strong and weak points and overall rating of the service/app between 1 and 5, ranging from very bad to very good.

- **Developer:**

Rating: 4.

There was a specific goal, if not something very significant. The project used latest technology, AI. There was data collection as well on which in next cities can work further. I would like to work on this type of project again.

- **Policymaker:**

Rating: 3

“It was a useful exercise with useful insights. We consider it as a good basis and good exercise that allowed us to gather insights and operational experiences for future projects. Smart zone was the broader framework and made things easier. Other project that are not running in the smartzone demand more action (like installing boards with warnings or reference to the contact details of a DPO in case of privacy issues). Smart crossing was a trial that allowed us to move fast if needed without having to think much about formalities.”

4.4. P3 Galilee

INDIMO’s 3rd pilot in Galilee Israel is about an informal ridesharing service in ethnic towns, with main focus on catering to Arab Women. TECHNION is the pilot leader for this pilot. Since it is an



informal service, there was just a developer who developed the app, but there was no operator. So, two stakeholders were interviewed by TECHNION to gather baseline data on this service were:

1. NADSoft: Developer of the informal ridesharing app SAFARCON (Interview duration: N/A)
2. Research & ITS program manager, Ministry of Transport, Government of Israel. (Interview duration: 31 min)

4.4.1. Results

Two stakeholders were asked question on topics mentioned in sub-section 4.1 to understand their current way of working which is presented below.

1 Steps taken, issues faced during the planning phase of the service.

- **Developer:**

The idea of informal ridesharing was researched, and the requirements were discussed. Then appropriate roadmap was built, starting from the UI/UX ending with the development. There was no delay or any specific issues during this phase.

- **Policymaker:**

SAFARCON informal ridesharing application was built specifically for women in the Galilee Arab-Israeli sector. It had the support of the Office of the Chief Scientist at the Ministry of Transportation (MOT). The Israeli Ministry of Transport financed the research and development of SAFARCON for two years. During the planning phase the role of the interviewee was to represent the interest of the Israeli MOT Chief Scientist office, and to help address any regulatory issues. There were no delays and no regulatory issues requiring special attention given its intent was to start a social platform based informal ridesharing App rather than a ridesharing service which would have required to conform to existing regulations and restrictions.

2 Steps taken, issues faced during the designing phase of the service.

- **Developer:**

The app was designed considering the users. Market requirements were divided into tasks following the estimations of the development time. There was no delay or any specific issues during this phase.

- **Policymaker:**

The role of the interviewee was to ensure SAFARCON was designed in accordance to existing regulations and if needed to assist in regulatory processes. During the design phase, Technion legal department confirmed the App users' consent, and hence there was no need for the interference of the Israeli regulator. There were only minor delays, as it is common in research and development processes.

3 Steps taken, issues faced during the deployment phase of the service.

- **Developer:**

There was no delay or any specific issues during this phase.

- **Policymaker:**

There were some delays during the deployment phase, but it is something that happens in R&D projects. "We didn't wish to pressurize the development team too much. But notified them that financing would end according to the contract schedule." MOT transferred the budget to guarantee that the deployment was successful.

4 Steps taken, issues faced during the operating phase of the service.

- **Developer:**

"SAFARCON is one of the apps that we enjoyed working on. It has a new and nice idea. One of the worst things was the way to distinguish between the different types of users."

- **Policymaker:**

The App rollout and operating phase has not matured as foreseen. The App intent is to support informal ridesharing, limited to 2-3 rides a day, mainly in a common route to/from work for the purpose of sharing the rides' expense. Unlike formal ridesharing services that require formal insurance and compliant to strict regulations as Taxi, and other public transportation services, this App intent is to operate as a social platform for shared mobility in rural areas of Israel, specifically in the Galilee region.

5 Political support for the development and operation of the service.

- **Policymaker:**

The App secured its development financing and political support by means of winning an Israeli government research call in cooperation with the Technion – Israel Institute of Technology. Overall, this had a positive impact on the project. The Arabic-language SAFARCON is free to users, and it connects drivers with passengers who need to reach the same destination.

- 6 Understanding of user needs, requirements, capabilities, especially of vulnerable-to-exclusion people groups.

- **Developer:**

“I believe we understand the needs and the capabilities of the app. Yet I also believe that we can always improve the behaviour of the app and add new features to make it more useful for different users.”

Vulnerable-to-exclusion groups were not that much considered during the planning and designing or in any phase of the app.

- **Policymaker:**

“I feel I have a good understanding of the potential user groups. I requested the developer team to focus on traits of specific geographical area, given Arab women in different regions have different needs, requirements, and capabilities. For example, Arab women in the Negev region in the southern part of Israel. The Negev is largely a desert region. Some live in underdeveloped cities, yet many share a semi-nomadic lifestyle requiring different mobility needs than Arab women in Eastern Jerusalem, or in the Galilee area in north of Israel near Haifa metropolitan area.”

Vulnerable-to-exclusion groups such as ethnic minorities, Arab women, people with transportation poverty, and rural residents were considered during the planning and designing. Knowledge about their needs, requirements and capabilities was gathered through interviews. They were invited to focus group meetings and a local NGO, Kayan, provided insights on the mobility needs of the Arab women in Galilee community.

- 7 Presence of co-creation with stakeholders and end-users in the planning and designing of the service/app.

- **Developer:**

Other stakeholders were always involved in the planning and designing of the app. “We have discussed and talked about everything.”

However, potential end-users were never involved in the planning and designing of the app.

- **Policymaker:**

Other stakeholders, e.g., Developers, Kayan and Technion were always involved in the planning and designing of the app. Also, potential end-users were often involved in the planning and designing of the app. End-users were represented by Kayan, the feminist Arab women organization based in Haifa, and active in the Galilee region.

8 Securing finance for the project and related demands/requirements (if any).

- **Developer:**

There were no specific demands from the financier and financing was sufficient.

- **Policymaker:**

As explained earlier, the App secured its development financing and political support by means of winning an Israeli government research call, in cooperation with the Technion – Israel Institute of Technology. The specific demands from the financier were: to conduct an exploratory meeting with R&D team, define the experimental transportation study limited to address the needs of Arab women residing in the Galilee community, complete development in 2 years, and promote the use of the App hand in hand with Arab women employment. Financing was sufficient for the R&D. However, for marketing and promotion it could use additional and ongoing support.

9 Data collected during the development of the service/app.

- **Developer:**

Car owners' requirements were collected, but also those of the end-users were taken into account.

- **Policymaker:**

Data was collected for understanding of preliminary preferences of Arab women for the user interface and ease of use of this informal ridesharing transportation option.

10 License/concession needed for operating the service/app.

- **Developer:**

It was not needed.

- **Policymaker:**

The funding of the R&D was achieved through a competitive tender/research call. Given the original intent of the App, as a social platform for informal ridesharing in the Arab community of the Galilee, it doesn't require an operating license.

11 Consideration of accessibility during the development in the service.

- **Developer:**

Accessibility was rarely considered during planning, designing, deployment and operating phases of the app. There was no requirement specified by the city or regional authorities that had to be met in terms of accessibility.

- **Policymaker:**

Accessibility was rarely considered during planning, designing, deployment and operating phases of the app. There was no requirement specified by the city or regional authorities that had to be met in terms of accessibility. Personalization of font size and colour could be considered in future as improvements in terms of accessibility.

12 Consideration of inclusivity during the development in the service/app.

- **Developer:**

Inclusivity was always considered during planning, designing, deployment and operating phases of the app. “We took into consideration that we need a unique design and the special features that we already have in the app.”

There was no requirement specified by the city or regional authorities that had to be met in terms of inclusivity.

- **Policymaker:**

Inclusivity was always considered during planning, designing, deployment and operating phases of the service. The intent of the App was to include ethnic minorities of Arab women living in rural areas in the regional employment sphere. There was no requirement specified by the city or regional authorities that had to be met in terms of inclusivity. No additional improvements needed in the service/app in terms of inclusivity. The App was developed by a team of Arab developers and implemented in Arabic to specifically provide equal access to digital mobility solutions to the people who might otherwise get excluded.

13 Consideration of cyber security and personal data protection during development and operation of the service/app.

- **Policymaker:**

Cyber security and personal data protection were not considered while developing and operating the app.

14 Presence and need of clear guidelines from city/regional authorities.

- **Policymaker:**

This App provides an informal social platform enhancing mobility options in socio-demographic and geographic periphery areas. Clear guidelines should allow for the deployment of informal ridesharing to overcome transportation poverty in rural areas. Also, enforcement is a must to



guarantee such apps don't provide a weak link for the introduction of unauthorized public transportation services.

15 Improvements needed in the service/app to cater to the needs of the potential end-users.

- **Policymaker:**

The App addresses well the needs of the potential end-users, enhancing employment and education opportunities.

16 Some of the strong and weak points and overall rating of the service/app between 1 and 5, ranging from very bad to very good.

- **Developer:**

“In a scale between 1 and 5, ranging from very bad to very good I would rate the app 5.”

- **Policymaker:**

In terms of expectations the App deserves a 5, but in terms of successful mass deployment, time will tell.

4.5. P4 Madrid

The 4th INDIMO pilot in Madrid is about a cyclelogistics platform for deliveries on-demand ride-pooling service. CambiaMO is the pilot leader for this pilot. Three different types of stakeholders who were interviewed by CambiaMO to gather baseline data on this service were:

1. La Pájara: Operator of a cyclelogistics platform for deliveries in Madrid. (Interview duration: 60 min)
2. Coopcycle: Developer of a cyclelogistics platform for deliveries in Madrid. (Interview duration: 90 min)
3. Technical officer at D. G. Economy, Socioeconomic Analysis Department, Madrid City Council. (Interview duration: 50 min)

In this case, the service is running at INDIMO pilot location and these stakeholders are associated with the service.

4.5.1. Results

Three stakeholders were asked question on topics mentioned in sub-section 4.1 to understand their current way of working which is presented below.

1 Steps taken, issues faced during the planning phase of the service.

• Operator:

During the development of the La Pajara Project, it was investigated how can a delivery alternative be set up in Madrid. The concept of home delivery with technological support was thought about. The intention was to promote a courier service and a food delivery service in addition to the services that already existed in many parts. The developer Coopcycle was contacted and integration process was started for the use of their digital tool.

• Developer:

There was no plan in the beginning.

“Things happened by chance since I started the project as a recreational project, rather a side-project. Then colleagues got together. Now we have plans. But we didn’t have plans at the beginning. Nobody “got together” because I started implementing the technology directly, by myself, without anyone else, discovering what I needed along the way.”

• Policymaker:

There was policy support to the social economy from the City Council in the period 2015-2019 towards the assistance of the social economy and the European project MARES in Madrid, with the intention of helping the growth of companies working in this field. Aid and courses for sustainable mobility entrepreneurs were given from the Madrid city council.

Barriers: lack of adjustment of the public programs to support entrepreneurship to meet the needs of companies. The accompaniment model of MARES (the UIA project that fostered the creation of La Pájara cooperative) was not a complete model as it lacked support in financial resilience of the initiatives, which is not only a financial barrier but a political/strategical one. La Pajara had structural weakness in its business model. However, this is not on the side of the policymaker. The program should have been more complex and comprehensive, supported by funding.

Large attractor companies can be an element of demand for small ones and in MARES they were missing. There was a lack of vision. “We could have tried that the most solvent private initiative could help smaller entrepreneurs.”

2 Steps taken, issues faced during the designing phase of the service.

• Operator:

Development part was entrusted to Coopcycle. Coopcycle was established a year before La Pajara, but there was not much progress in the development of the application. La Pajara helped through testing, opening backs, identifying needs and continue to do so, along with the other cooperatives that are part of the Coopcycle network. In this way operator supports the improvements of the app. La Pajara has been pioneers in Spain, because Coopcycle is an

application that was born in France but we have translated all language-related parts into Spanish and now it is being used by other cooperatives that have joined.

- **Developer:**

The location of the riders was initially a problem. This issue was noticed long time ago, but it was left behind. However, as we had to distribute the logistics work, we needed to know where the riders are to optimize the distribution of tasks. Knowing where they are in real time was quite important. There were many evolutions and it was not easy to do it. Precise locations are needed without consuming too much battery. It was ground reality check. In the first version, we did not see the movement of the riders and it was improved. There were many riders sending positions at the same time. So, it required a lot of server resources as well. Then some changes were made to make the localization faster.

- **Policymaker:**

“We could have been more active from the administration to favour access to clients (restaurants in this case) that require delivery services.”

Since it was an alliance of the administration with the companies, accompaniment of the administration could have helped the company reach the client a little more equipped and active. It also could have helped with the credibility of customers. Awareness processes were missing. Now there are financial aid lines for acquiring instruments that are incorporated into a business model. It is more internalized in the mentality of policymakers than before. For example, later on in the accompaniment of a cooperative supermarket, it was done.

3 Steps taken, issues faced during the deployment phase of the service.

- **Operator:**

In terms of delivery area, central Madrid was targeted, to focus not only on the offer of organic and vegan food, but also considering the limitation that the delivery by bicycle provides such as limitation of size of the area covered, typical advantages of alternative vehicles. Distribution distance of a maximum 3 kilometres was established, with concerns for the quality of service, in order to avoid spoiled food. The Almendra Central of Madrid was the focus due to concentration of restaurants there.

“In the beginning, we started by delivering ourselves, the 4 founding partners. We all knew the Coopcycle app. Hence, we handled it well. Over time, we added 3 more people, one of whom later became a partner. We established this way of adding people, with a contract first with the possibility of integration as a partner later. Today we are 5 partners and 2 hired persons.”

There is no specific person who is dedicated to a specific function. As there is rotation in the staff engaged to delivery itself, there is rotation in the other functions of the firm. This encompasses accounting, platform management, customer service, billing, etc. Regarding Customer service, there is more than one person who is attentive. Most of the times it is handled by the interviewee, but if he is delivering, the functions are changed.

- **Developer:**

When internationalization of coopcycle started, some problems arose. At first the service was only in Belgium, France and Spain and it was easy because everything was with euro currency and in the same time zone. Then it was expanded to the UK which is in another time zone and uses another currency. In the UK, addresses are written differently, with postal code in the beginning. This led to some problem in the software. Local adaptations had to be made.

4 Steps taken, issues faced during the operating phase of the service.

- **Operator:**

The application was ready but with a few things to clean up and some updates to do. There were technical problems such as some restaurants that did not receive the sound notification or the sound of the app, and hence they did not realize that there was an order. Also, there were issues related to communication and trust. It was not easy generating the trust among restaurants to use our service. However, now the situation is different as there is an overload of restaurant requests. So, La Pajara is no longer looking for it themselves. In the beginning, it was difficult to increase those collaborations with restaurants.

Otherwise, there were not many technical problems. A balance had to be found between demand and the number of people available in a shift. For moments of low demand there was no problem, but when there were high demands such as 30 orders at the same time (it is difficult to foresee it), there were technical issues. In some cases, La Pajara had to consciously limit the possibility of more orders. The platform got blocked and it had to be said it is not possible to fulfil more orders because there was high demand. This happened only for some nights and it had to be solved technically, with some delays, making calls to clients to clarify. Over time La Pajara have been able to study demand patterns and the number riders needed. According to the number of orders per hour, adaptations had to be made. With the covid-19 pandemic, for example, the shifts with the greatest number of orders are for Friday night and Sunday lunch. In pre-pandemic times, Sunday lunch was not a particularly demanding day. These continual changes if identified help in planning.

It is being deliberated whether to add an area for each cooperative or not. Another point of discussion was the map service we use on the platform. Until now Google Maps was used. It works well with search results. For customers, it is the app where the location is searched. The accuracy of Google Maps is higher than other route trackers. However, the Google bill is starting to get too high. Therefore, a shift has been made to Open Street Maps. However, alternative options were just two.

- **Developer:**

Different countries have different tax systems. In Canada there is a state and a federal rate. In Europe it is tax per product. Local adaptation was a difficult.

5 Political support for the development and operation of the service.

- **Operator:**

In a meeting with the Health department regarding the issue of food delivery, Health department clarified that for now there is no need for any specific document, food handling requirements, or special boxes to carry food. However, there are grey areas in general, but as of now Health department does not require anything. The only need is to register as a cooperative. There are no mobility obligations. Our bikes have been registered at the Ministry of Mobility at the municipal level because it is mandatory for operating cargo bikes.

- **Developer:**

“We got the proposal from the government department that deals with the social and solidarity economy and sponsors related projects. We submitted the proposal and after deliberation they decided on us.”

- **Policymaker:**

Support must be provided at the political level. For this project the support was provided at the level of MARES. There was political will for these services to succeed. However, policy making has many bureaucratic parts and regulatory changes which often take too long. The change includes so many elements of management that administration ends up acting as a barrier. Technical officers must evolve to more modern concepts and not hold aged concepts not believing in change,.

6 Understanding of user needs, requirements, capabilities, especially of vulnerable-to-exclusion people groups.

- **Operator:**

There are technological issues. However, the communication and dissemination issues are also important. Adapting the app and the platform for greater ease of use, communication activities and thereby expanding the usage of the app to a wider population are missing. More coordination between La Pajara and Coopcycle is needed to arrive at a good trade-off between the minimum information a person needs to order and the images. The intention should be to make it as simple as possible to order. In some cases, users are not able to place orders as they are not able to use the app properly. However, it is important that the information about exactly where users are getting stuck needs to reach La Pajara. However, it is always not possible. User's phone number can help in this regard, but it is not mandatory to give the phone number in the app. From the operator side we do not think there should be fear of privacy. This is a demand from the developer side, as they (Coopcycle) operate internationally. They have decided not to make this a mandatory info to provide in the application, because the same has to be applied in multiple contexts.

Vulnerable-to-exclusion people groups were not thought about in the beginning as there were so many other topics to be handled. It was left for a later development phase. Among the users who have shown difficulty in using the app and who call La Pajara by phone, no specific profile could be found. There is a lot of homogeneity in the public. There were also a few older people who asked through the app. The problems come from all age and gender groups. There is also a comment field in the app where anything can be typed. e.g. A client who orders with La Pajara once every two weeks, asked not to use the doorbell, because the child sleeps at that time. Some requirements come written like this. When they are seen, they are analysed and needed action is taken. The telephone communication channel is always open. However, it must be noted not all requests can be fulfilled.

- **Developer:**

Demands regarding means of payment is common. Users want more payment alternatives, such as Ticket restaurant and Ticket Gourmet. The employer sponsors half of your food. These tickets are very common in France and with the lockdown people accumulated that type of money, because they stay at home and cannot spend it. Those tickets have been added and will continue to be added. There are also demands that simplify the experience, for example, saving addresses, saving credit card data in the app. Some people opine that the app is not as well built as that of the big platforms. However, unlike large platforms who have large no. of employees, as a small platform we need prioritize actions. Features such as saving card data are quite easy and even safe to implement as there are providers who readily offer such service.

“We have not involved vulnerable-to-exclusion people in the development of our app and we have not considered their needs. Many things related to digital inclusivity are yet to be implemented.”

- **Policymaker:**

No needs assessment was done by the administration we did not see the investigation of user needs as a necessity. “Considering needs of vulnerable-to-exclusion groups has been a hallmark of concept, but perhaps we do not dedicate sufficient resources to meeting the needs of these groups.”

- 7 Presence of co-creation with stakeholders and end-users in the planning and designing of the service/app.

- **Operator:**

Other stakeholders were never involved in the planning and designing of the service/app. “The possibility of collaborating with INDIMO came to us at the perfect moment. After meeting with CambiaMO and VIC, we began to think in terms of inclusivity. However, until now nothing much has been implemented.”

Potential end-users (not vulnerable-to-exclusion ones) were often involved in the planning and designing of the service/app. “We performed some tests with them, although not many. With fictitious restaurants and real end users, known to us, a series of tests were performed in September 2018. No immediate problem or solution was found. However, issues such as



making phone no. as mandatory data to be given in the app were discussed with different institutions.”

- **Developer:**

Other stakeholders were never involved in the planning and designing of the service/app. However, potential end-users (not vulnerable-to-exclusion ones) were often involved in the planning and designing of the service/app.

- **Policymaker:**

Other stakeholders were sometimes involved in the planning and designing of the service/app. In the co-creation process, business angels have been lacking, e.g. strong attractor companies that generate their own demand and are a starting point for new companies to start.

Potential end-users were never involved in the planning and designing of the service/app. The co-creation processes with the end users would have been a good idea and maybe the process of designing considering user needs would have gone better, but unfortunately it did not happen. Vulnerable-to-exclusion groups never participated. In a pilot in Villa de Vallecas, there was an attempt to link the end-user's analysis to the pilot to improve the system. However, it did not flourish.

8 Securing finance for the project and related demands/requirements (if any).

- **Operator:**

Direct financing was neither looked for nor obtained. Indirect financing was obtained in the beginning within the MARES program. It provided advice on economic, political, communication, invested expert hours on La Pajara and helped to create the website through their services. Then an unsuccessful attempt was made for securing financing through a call for innovative projects. The project was self-financed through crowdfunding done at the end of 2019 and in the beginning of 2020.

- **Developer:**

It was financed by the city of Paris. The city officials guided us on the grant application process.

9 Data collected during the development of the service/app.

- **Operator:**

A study on economic feasibility and another study on the customer profile that we could target to reach were performed. A market niche was identified rather than a more general public. Niche with two factors: 1) sensitivity towards labour issues and 2) environmental sustainability awareness. We targeted clients sensitive to these two topics. From that point, this project could be differentiated as an alternative project as it offers food collaborating with restaurants (including the small ones) that offer vegan, vegetarian, ecological, organic food.

- **Developer:**

As coopcycle is decentralized, local operators associated with us perform the market research. We do not do it globally.

10 License/concession needed for operating the service/app.

- **Operator:**

No, an operation license was not required. As explained earlier, only being registered as cooperative and registering the cargo bikes for the courier system were enough.

- **Developer:**

No, it was not needed.

- **Policymaker:**

Public spaces must be provided in cities to operate these services. Cities are not designed for these new services.

11 Consideration of accessibility during the development in the service.

- **Operator:**

Accessibility was never considered during planning, designing, deployment and operating phases of the service. We started thinking about after collaborating with CambiaMO and VIC.

- **Developer:**

Graphical interface of the app is not completely adapted to people with reduced vision. A colour-blind user told coopcycle "here you are using red and green, but for me there is no difference". Instead of using colours, pictograms that they can see must be used. Accessibility is a topic coopcycle has not dealt with in general.

- **Policymaker:**

Accessibility was sometimes considered during planning, designing, deployment and operating phases of the service.

12 Consideration of inclusivity during the development in the service/app.

- **Operator:**

Communication channel is always open. Users can call and make a specific request. However, not all requests can be met. e.g. Cash payments are not accepted. Only card payment via the app is allowed. This excludes people with no banking service or cards. However, the risk of cash payment is fraud. It may happen someone would decline to pay after receiving the food delivery or demand things that are not part of the service. For prepayment using cards via app these situations can be avoided. If there are genuine issues, after verifying it in the delivery platform, money can be returned. Leaving the possibility of paying at the end of everything is risky. Based on the inputs from the INDIMO project, the possibility of expanding the forms of payment is being/will be evaluated.

In relation to the users having direct contact with the riders, it is triangulated through the dispatcher. Someone who is not delivering at that moment works as the dispatcher.

- **Developer:**

It wasn't considered.

- **Policymaker:**

Inclusivity was sometimes considered during planning, designing, deployment and operating phases of the service.

13 Consideration of cyber security and personal data protection during development and operation of the service/app.

- **Operator:**

Privacy and data security policies are those of the developer, Coopcycle. The data is stored on the platform and La Pajara as a cooperative has access to this data only for operational use. "If we want to use the data in some other way, we need to add a note that the user has to accept." From the users, there is no fear of giving away card details as card details are not saved. On the contrary, some users have called and told La Pajara "why is the card data or address data not saved in your application like in the other applications?" These features might look useful, but it can generate logistical problems. For example, if someone makes an order, the address is saved from before, but now she/he is at a friend's house and the order goes to the incorrect address. History of past orders is not kept and hence La Pajara/Coopcycle is not authorized to make suggestions. The data that is saved is exclusively for solving operational issues. It is not used for any other purpose.

- **Developer:**

Personal data is collected as it is needed to make delivery, but newsletters are not sent as coopcycle does not have the authorization of the people to use their data for commercial purposes. It could be done by adding a checkbox, but Coopcycle try to respect privacy as much as possible. Coopcycle uses analytics services but does not use cookies. So, coopcycle knows how many visits we have but we can't see when someone returns. There is no suggestion algorithm as well.

The servers have restricted access with a SCH key as per the best practices, the minimum that must be done for cyber security. It is almost impossible to enter the server, without hacking coopcycle computer. The servers use the best practices that exist and access is only for authorized persons. The SCH key is an authentication system with public and private cryptographic keys. Coopcycle users are used to making online purchases and giving away their personal data. The terms and conditions are adjusted for each country. Coopcycle provides the technical service, but the cyclelogistics service is local. Terms and conditions are general, but cyclelogistics services in each country can change them if they have other conditions.

- **Policymaker:**

It was taken into account, but cybersecurity is an issue that has been progressively gaining strength. It is being dealt with differently day by day. In terms of security, more active policies have been made to ensure the data is not traded.

14 Presence and need of clear guidelines from city/regional authorities.

- **Policymaker:**

Parking spaces should be allocated to cargo. The administration needs to be more active and think and make policies jointly. If the administration is not active enough, the private initiative will not succeed.

15 Improvements needed in the service/app to cater to the needs of the potential end-users.

- **Operator:**

Location accuracy needs to be improved. Sometimes if the search engine does not find the exact location, it puts it at the beginning of the street. There may be a 4 km difference between the beginning of the street and the actual location. At times, the search engine finds the address, but sets 28001, the first postal code as the postcode by default. Many times, the problem was due to the instability of the wi-fi in customer's house. It takes alternate communication to solve such issues or find a workaround. With regard to payment, there are requests to integrate cards like Ticket Restaurant or Sodexo cards.

Overall, we provide a very good service.

- **Developer:**

Some of the alternative payment options requested have been added and others will continue to be added.

- **Policymaker:**

On a scale between 1 and 5, ranging from very bad to very good, I would rate the service 4. However, I am not sure if the service is currently working.

It must be noted that the policymaker, although was close to the co-creation process of La Pajara cooperative, was not enough involved in the day-to-day activities performed by the other implementation partners of MARES Madrid project.

4.6. P5 Berlin

The 5th INDIMO pilot in Berlin is about an on-demand ride-pooling service. Door2door is the pilot leader for this pilot and they are also the developer of this service. Three different types of stakeholders who were interviewed by Door2door to gather baseline data on this service were:

1. Stadtwerke Augsburg (SWA): Operator of a flexible ridesharing service called Swaxi in Augsburg.
2. Door2door: Developer of LOOPmünster, an on-demand shared local transport in Münster.
3. Representative in the Berlin Parliament from Marzahn-Hellersdorf, an area on course to start an on-demand ride-pooling service.

Each interview lasted around 50 min. It can be seen that two out of the three stakeholders interviewed in this case were not associated with the Berlin pilot directly. It is because at this moment, the service is not running in Berlin as it lacks license for commercial operation there. However, the operator and developer interviewed in this case were closely associated with similar ride-pooling service developed by door2door and running elsewhere in Germany. Therefore, information from these interviews serves as the perfect proxy for investigating current way of working of stakeholders associated with ride-pooling services. The policymaker, on the other hand, represents the area of Berlin where the INDIMO pilot service will run.

4.6.1. Results

Three stakeholders were asked question on topics mentioned in sub-section 4.1 to understand their current way of working which is presented below.

- 1 Steps taken, issues faced during the planning phase of the service.

- **Operator:**

The most important step in the beginning was to set up the team that was a good fit. After a change in the project lead, around one year mark of the project, efforts were needed in this regard, but finally it was achieved. Planning was made mainly from the corporate perspective. Customer perspective was ignored. For traditional public transportation planning it is often the case. However, for an on-demand ridesharing service, this was probably not a good idea to start with, and it created an obstacle. The project experienced constant delays, around 6-12 months in total. Some of the reasons were: goals with which the project began changed later. Issues were dealt with, but unforeseen issues popped up every now and then. There are some issues with ride-pooling stops. Some personnel changes needed to be done in the team as some members were not suitable for some tasks. Unsuccessful funding application costed some time

loss and some topics took more time than expected. Covid-19 pandemic changed mobility pattern. However, the service began with different conditions with just 1-month delay in May 2020 vis-à-vis the target start.

- **Developer:**

In the planning phase the most important thing is to analyse problem statements and prioritize them keeping in mind the objectives and target groups of the service. e.g. spending time on implementing a futuristic payment technology such as blockchain may not be judicious when the target end-users are older people groups or the ridesharing service planned is a nightshift service or a feeder service. Hence, it is really important to make sure understanding of operators and developers about the product are in line with one another. This way managing the expectations becomes easier for developers and knowing the product clients, i.e., operators also can envision their dreams. Therefore, prioritizing problems by asking the right questions is essential. For LOOPmünster while payment related issues were addressed immediately, some issues such as luggage booking and child seat booking etc. were pushed to later dates. Another initial request from the client side was to have a tool or solution to identify passengers frequently cancelling rides. They wanted to start a ride pooling service only after having such a tool or feature to stop users like that, to find them and deactivate their accounts. Later on, it was found from other running operation that only 2.5% of total rides are cancelled in that fashion. So, project went ahead without provision for such a tool. However, constant collaboration and trust among stakeholders are needed to take decisions on such issues which are not worth delaying the whole project for. Otherwise, sudden or later stage request from any stakeholder side may delay projects. For LOOPmünster there was no delay from the developer side, and it was delivered on time within 2 ½ months.

- **Policymaker:**

Marzahn-Hellersdorf policymaker was asked a general question to know about his take on ride pooling services. According to him, ride pooling services are like taxis offering cheaper rides, more accessible for people residing far from the city centre. For a neighbourhood like Marzahn-Hellersdorf it is a good option as instead of running empty buses, on-demand ride pooling services can take people to places such as stations, groceries etc. It is the future of mobility.

2 Steps taken, issues faced during the designing phase of the service.

- **Operator:**

The interviewee was on leave during this phase. Therefore, no separate answer was given for this phase. Planning and deployment phase answers cover some aspects of this phase as well.

- **Developer:**

Parameters and requirements that were not discussed at the time of product concept were addressed in this phase before the rollout phase begins. For LOOPmünster, there was a



requirement for driver to have a button that, if clicked, will ensure dispatcher will call them on phone. Project managers were together with the client and mock-ups were created before the real upload in the tool. Idea was discussed, problems were identified and then prototype was developed and validated. During the field test it was found out that some configurations were not ideal. Configurations were taken from insights tool, which were based on theory and examples/modelling. Then, configurations were adapted and waiting time was modified based on the experiences and learning from the field tests. Deep diving into the product before rolling out a service, shedding light on the operations and early identification of issues by each stakeholder are very important. For LOOPmünster, operators identified issues with the dispatching tool, planning, shift and break management very early. They had contractual obligations that drivers need to have a lunch break or can have guarantee breaks. Dynamic ride pooling system doesn't really care about breaks. Sometimes, 5 min before shift end, next ride is offered and it eats into the break time. So, solutions had to be found out and later on a tool was developed to guarantee shift breaks. It is still getting more and more mature day by day. From operator side issues in this phase are often about practicalities such as management, storage and maintenance of the smartphones, SIM cards and power cables etc.

3 Steps taken, issues faced during the deployment phase of the service.

- **Operator:**

Since it was a new service, there were many apprehensions and fears among general population. Some found it even a bit aggressive as they felt like they might not be able to take the bus anymore and will have to take the ridesharing service swaxi always. In general it is always difficult to target and attract new customers to a new service. Project started with wrong dates and time. As a result, it took a lot of time to explain the right timing to the people. Target groups barely used the service. These things were not considered in the beginning of the project. Virtual stops were too less in number and names of the stops were not suitable or customer oriented. Numbering of stops instead of naming them like traditional bus stops did not make sense. Marketing & communication department also didn't identify this topic as relevant enough; barely communicated project which is essential for a good start of a new project. "However, starting with less customers in the beginning was not all bad as the service grew slowly and issues were handled as they came along." Car related issues were solved. Tablets were too big to drive with and didn't suit the vehicles. Smartphones were used as alternative. Branding of the vehicles related issues were addressed slowly.

- **Developer:**

In this phase white labelling and branding was done as agreed in the service design and product consent base. Desk tests, GPS test with mockups were also done. Management strategy of the app in app store was decided. Transactional emails such 'Please confirm your password' etc. was set up. However, more work in this phase was on operator side such as hiring the drivers, obtaining the vehicles, hiring marketing agencies, developing the websites, selecting vehicles colour etc. There were no delays for this project. However, it was on the edge

of being delayed because the operator was not able to guarantee the shift breaks/ lunch breaks etc. and the drivers started to protest that they would not start driving before they were guaranteed breaks.

- **Policymaker:**

Berlin has a Transport Plan that sets the guidelines for the public transport operator. According to the new Transport Plan, a ride pooling service is planned in Marzahn-Hellersdorf to test how the costs are, who will have to pay, if it should be for free, how much it should cost depending on the need etc. This test phase is exciting, and it should still start this year. Cab operations in the city centre, such as Uber and others, are a business model, but ride pooling service should work as part of the public transport and should be funded differently. Although funding is the biggest challenge. In this test phase it is important to collect usage information and gather experience. Berlin has decided on the Transport Plan and BVG, the operator has to open tender to offer such service. The neighbourhood is of course involved in local decisions, maybe like to whom it should be for free, name of important stop locations etc. However, the decision-making power is at the Berlin level, because they are responsible for regulating public transport.

4 Steps taken, issues faced during the operating phase of the service.

- **Operator:**

The navigation system of the driver app wasn't good in the beginning but it was constantly developed further. It is working better, still have small issues arising. Otherwise most problems are same as other car sharing service such as, car door doesn't open, car cannot be refuelled, car is booked falsely, vehicle is too dirty, driver was too late etc.

- **Developer:**

Passenger behaviour was slightly better than simulated, but the simulation did a good job there. The insight simulation was on point. So, ride cancelation did not appear to be a real issue as predicted. Feature booking of luggage and child seat booking were all delayed. It was promised to developed by September 2020, then it was delayed to December 2020, but until now it has not been still delivered.

5 Political support for the development and operation of the service.

- **Operator:**

Political support was rather less for developing the project. Politicians were interested in the project to start and run, but did not provide any real support. Also, there has been no negative impact so far. A lot of paperwork had to be done in the beginning, but there were no obstacles for approvals. At the starting politicians were a bit sceptical towards the project, but not completely against new mobility solutions. They asked us a lot of questions which could be answered easily from our side. While applying for funding it was found out financial support



will be only for the purchase of vehicles. “We did not want to buy new cars as we are using the car-sharing vehicles which were already available.” Therefore, very little would have been paid to the drivers, which was too less to keep going. Efforts are being made to apply again for another funding ‘smart city’.

- **Developer:**

In another project in Holzkirchen a workshop was conducted and representatives from political parties were invited for explaining the project to them. “Sometimes we observed overlapping interests, sometimes not. An important learning was not to over go decision makers. Because local taxi companies, or bus drivers’ associations which have been there for several years & generations, are highly influential. For new mobility service developers, often it requires a lot of lobbying in advance even 2/3 years before the project starts. Public Transport in Germany is a federal system that is highly political. Influencing and convincing politicians and commune administration is required for securing funding for the services.”

- **Policymaker:**

“In Berlin, we worked about 3 years for a ride pooling concept, always bringing up that we, in the neighbourhood, need a such solution. There was a lot of lobbying. At the end, because it was included in the Transport Plan, test phase will begin. Now, the interesting question will be how such a model can be sustainable, how much will the city of Berlin invest in the project. Ride pooling cost per person is higher than metro or bus. But maybe that is necessary to support the need for mobility in specific regions. These will be the questions for the next steps. For sure, it's really important to start the pilot to start the discussion. How many private cars can we substitute, this is also a relevant criterion. If we can show a good number, that's a strong argument to pay more for such a project. If the offering only makes public transport passengers ride more comfortably it will be harder to get money to support the project. Ride pooling should offer more than only a comfortable service. It should reduce private cars going to the city centre. Until now there was a lot of discussions, but finally it is becoming about funding and hence becoming interesting. We are curious to see numbers and how it can be financed. Especially after covid-19 pandemic, the financial situation is different, it's all more uncertain and insecure.”

- 6 Understanding of user needs, requirements, capabilities, especially of vulnerable-to-exclusion people groups.

- **Operator:**

There is a very little understanding and knowledge of needs, requirements, capabilities of users and drivers. A rather general survey on mobility solutions was conducted. There was also a survey within the organization. However, surely there was no knowledge of these things. Otherwise, it would not have been decided to start the service on ‘random’ date and times. As a result, no one was actually using the service in the beginning. “We are still working on creating



knowledge about who is actually using the service, when and where to, as those information are still rather unknown.”

- **Developer:**

As a developer door2door rather listened to the knowledge and needs of operator. Therefore, door2door didn't really know what the end-customer needs are as they didn't talk to them. The project developer team has one idea and what the end-customers want might be slightly different. “Knowledge about needs, requirements, capabilities of vulnerable-to-exclusion people groups are even less. e.g. For a project in Holzkrichen, in the workshop the engineers were represented by the representative of engineers of the city and the youth was represented by the representative of the youth who was a 16-year-old teenager. A wheelchair user or some with cognitive or physical impairment never participated. The teenager was very proactive, fast comprehending and experienced in digital tools. He gave solutions for issues and never just said no this doesn't work. Even the workshop or political discussion during the service design in Holzkrichen was a one time situation. Most projects even do not have that. It is mostly privileged people who design or participate in the design.”

- 7 Presence of co-creation with stakeholders and end-users in the planning and designing of the service/app.

- **Operator:**

Often other stakeholders were involved in the co-creation process of planning and designing of the service. e.g., discussion with politicians and decision makers regarding ‘What are we allowed to do in a testing?’. However, potential end-users were never involved in the planning and designing of the service. Sometimes students from internal departments were asked some questions and some workshops were done, but any external user was never involved.

- **Developer:**

Other stakeholders were always involved in the planning and designing of the service. However, it was mostly with a kick-off meeting in the beginning and a field test at the end. Frequent exchanges with project manager from the operator side did happen, sometimes overlapping meetings and exchanges from both sides. “Depending on stages of the project some other stakeholder groups too were involved if they were important for that stage. Co-creation with potential end-users rarely took place. If they were involved, then in a field test, to install the app, go around and give feedback. Sometimes only for feedback, sometimes only for marketing purposes also. They would be asked to share their experience.”

- **Policymaker:**

“For a similar service running in Berlin, the Senate, BVG (public transport operator) and BerlKönig (ride pooling running in Berlin) were in a lot of talks, but no details are known to me. For the pilot phase here, it is an important task to bring stakeholders together, speak with the locals, with the neighbourhood, and have feedback rounds. The pilot has not started. However,

this consultation process is a building block, because the service will only work if local users are heard and other stakeholders know information such as the most needed route, the best time etc. Therefore, such public involvement is essential, but nothing has been published yet for the pilot phase here.”

8 Data collected during the development of the service/app.

• **Operator:**

No other data was gathered, other than the one from internal users as mentioned before. Basically, we started from ‘zero’, only looking at data such as: When the busses or trams are being used? What is the specific utilization rate? just to orient and get some understanding of the usage. Generally, there is very few data available or known about the customers of ride pooling services.

• **Developer:**

Configuration data (usually algorithm configuration), data regarding the visuals for the app branding and essence branding were collected. IT team collected data from test or pre-release apps, using google firebase to get the reporting and analytics how the app is behaving.

• **Policymaker:**

9 License/concession needed for operating the service/app.

• **Operator:**

At the moment the service is being allowed to run without a license since it is not operating as a commercial service. Hence, there is no pricing yet. “To agree on a tariff, we need a license which we are now trying to achieve and agree upon.”

• **Developer:**

It is operator’s responsibility and it was already there.

• **Policymaker:**

Formally, there is a financial limit for concession. If the value is lower than the established there is no need for concession. If there will be money from the Berlin city or EU it has to be through a tender. For a pilot like the one in Marzahn-Hellersdorf there is the need for tender because money from the senate of Berlin will flow in. “Wherever there is public funding, there is no way out of the tender. Other operators can offer under their own cost a pilot, this is also possible. This is how BerlKönig started in the city of Berlin.”

10 Consideration of accessibility during the development in the service.

• **Operator:**



Accessibility related topics arose very often in several discussions. However, they were never considered since it could have hindered the project to move on. Currently the focus is only on people who can operate smartphones. Other groups, although sometimes discussed, are not in the focus at the moment in order not to block the overall process.

“As of now from city or regional authorities there are no requirements on this. We also never raised this topic and tried to avoid it as much as possible fearing as soon there will be requirements, we would have to make sure we are able to meet those. e.g., currently we don't have vehicles, which are suitable for wheelchair users. Currently the focus is on reducing costs and focus on one target group.”

Further improvements needed in this regard are telephone booking and/ or suitable cars for wheelchairs for example. Already there are some other ideas: telephone reservations via car sharing hotline, cooperating with other companies that offer transportation for people with disabilities, starting cooperation with the taxi industry to increase the fleet numbers. “We always check which resources are available and which can be further used for our service. However, these are just ideas, nothing has happened so far.”

- **Developer:**

Accessibility was rarely considered during planning, designing, deployment and operating phases of the service. e.g., when asked in a workshop in Holzkirchen we realized the text reader in the app does not read maps. So, a blind person won't know whether she/he is within the operating area. There was no question ever about contrast or colour. These issues are mostly never given any thought.

Even from city or regional authorities the requests are mostly about ride booking from home for elderly people.

- **Policymaker:**

“Accessibility is extremely discussed on many levels in Berlin. However, Berlin is far from offering completely accessible mobility services. e.g., in London all taxis are accessible, but in Berlin people with disabilities still have to make reservations months before to get a ride in Christmas time. We want to reduce difficulties for this group and make it an easier for them to access mobility services. We managed to have a mobility guarantee now. In case an elevator is broken, the BVG is obliged to offer an alternative. This is in approval stage now. BVG will have to offer a special vehicle to bring the physically impaired persons to their destination, like inclusion taxis. Defective elevators are no excuse anymore. The new law might start at the beginning of next year. It means everyone has the right of mobility. I feel some of the building blocks for accessibility are having space for trollers, wheelchairs, walkers etc. However, politicians like me are not experts in accessibility. It is also important to offer telephone booking options. It increases the cost, but it should be a part of ride pooling services. Finally, it's important to check where older people meet, go there and explain how the service works. This is also one aspect of accessibility. In cooperation with locals, service can be put to test and then support users if needed. BVG as the transport operator in Berlin create the accessibility concept, sometimes inviting external experts in the area.”

11 Consideration of inclusivity during the development in the service/app.



- **Operator:**

Inclusivity was never considered during planning, designing, deployment and operating phases of the service. However, it must be noted that we only have 'indirect' influence on the App and the service, as we are depended on the offerings of the software developer.

- **Developer:**

Inclusivity was rarely considered during planning, designing, deployment and operating phases of the service/app.

- **Policymaker:**

“Although accessibility and inclusivity are different terms, I wouldn't really use them as different terms. In Berlin BVG, the public transport operator works on issues such as accessibility of elevators as I mentioned earlier, but that is mostly it. They think it is enough, whereas inclusion is more than this, e.g. location of lightings, size of writings and etc. In Berlin there are many actors working on inclusion in mobility and other services. In our political party we have related discussions and are producing papers on this, but such inclusion concept is really complicated to implement. Within the mobility we tend to interpret inclusion in a broad sense. e.g. for an accessible visit to the doctor, not only its about the journey to the doctor, but also how to enter their office, where do you find this information, which doctors are accessible etc. We are writing about a concept that everyone should be able to access toilets, also in supermarkets. There is a lot of discussion around what exactly mobility inclusion means and how to adapt the same to reality. I think in Berlin there is a lot being discussed regarding accessibility and we are on a good way, but there is still a long path to go for achieving real inclusion. All this discussion runs in Berlin city and neighbourhood level.”

12 Consideration of cyber security and personal data protection during development and operation of the service/app.

- **Operator:**

In the beginning this topic was underestimated and little attention was given to it, but gradually more attention is being given. “We are in very close contact with the developer and enquire how this actually works. We take this topic very seriously and also have someone who is responsible for the data security within our company. IT department, Data Protection Officer & Works Council are responsible for this topic and they evaluate everything. EU privacy shield was cancelled and therefore this topic is being highly discussed at the moment.”

- **Developer:**

“This is always a topic of discussion. e.g. questions such as ‘How do I delete my account?’ etc. This is a scheme in Germany which needs to be followed. We send them our example files for

data protection, where they can find text blocks. Then we can cycle in their position and policies etc. For other questions such as ‘What data is tracked?’ etc. we conduct meeting with other stakeholders, mainly operator/s and going through these topics and questions. e.g. for a ridesharing service ‘swaxi’ we developed an opt-out feature, which if switched on tracking will be deactivated.”

- **Policymaker:**

“Today it’s relatively easy, the GDPR runs on European level and the rules have to be followed in Germany. For ride pooling anonymized data is important for further development and you need to plan which data is necessary. Developers or cities might want to have it as open data to support the common development of the service.”

13 Presence and need of clear guidelines from city/regional authorities.

- **Operator:**

“No, it does not exist. Therefore, the PBefG (Personenbeförderungsgesetz - passenger transport act) is being modernized. Non-existence of clear guidance is quite difficult. You have to apply old laws on a digital project, laws from a time when internet did not exist. It creates a lot of issues. Therefore, we were in close contact with the politicians from Swabia for the project and we consciously applied for a licence of the old law, as we did not want to wait for the new PBefG. We applied for a line concession and there was a lot of help from the politician.” A clear guidance from the EU which gives a broad ‘room’ to act will be helpful. It would help to have a general EU concept rather than having just a German concept as this would create other problems. Services that run in several countries would need to adapt to different laws, which results in not a united concept of a service.

- **Developer:**

“No, clear guidelines do not exist and yes, there is a clear need. Systems tend to unify and connect to one. This scheme we can see worldwide. The same is with technology. There will be one tariff, one ticket in the future for public transport. To make this happen, we need one defined guideline, to get one unified system instead of several smaller ‘kingdoms’.”

- **Policymaker:**

Berlin city is preparing a mobility regulation for new mobility forms, for example, a regulation for parking shared scooters. In Berlin there is a chaos in this regard. Scooters are parked everywhere blocking pedestrians.

“Otherwise, I’m not sure if country or European level regulation, which one is actually good, because there is a risk of blocking innovation. We are in a discovery phase. In Berlin we noticed a particular problem, and now it’s being discussed. For ride pooling too perhaps issues will

come up, for example location of stops, safety etc. This is already being discussed in Berlin and once there is a need, there will be regulation in place. Hopefully with digital tools will help, because until today at neighbourhood level we still have to work on paper maps for many activities. In general, I think the regulations are developed according to new technologies. Therefore, it's important to gather experience and then create regulations. If we create laws first, before experiencing and really thinking about the influence of these new tools, I think we won't support innovation. On the other side, if there will be guidelines and good practices of new mobility solutions, cities can orient and develop their own concept.”

14 Improvements needed in the service/app to cater to the needs of the potential end-users.

- **Operator:**

At the moment, the service does cater well for the needs of all potential end users as explained earlier. However, there are good reviews from the customers/users. So, I think we meet the needs of those groups. “We are still on our way to get better. In terms of improvements, pre booking function needs to be added. At the moment, we have rather spontaneous rides but the pre booking would add value if you are able to plan it well. At the same time, the app needs to be made as easy as possible to use. The customer just wants to go from A to B, nothing else should be in the focus. Therefore, this should be optimized. Walking distance should be as little as possible. We are getting better, but this still can be optimized.”

- **Developer:**

Some of the further improvements that are needed are: option of pre-booking, integration of mobility options in public transport app (e.g. if someone is using the Deutsche Bahn App or something similar, the flexible service options should be shown in those apps), recurring booking (e.g. if a worker uses the service regularly, she/he should be able to do recurring booking at the same time or can order the service with one click), provision for anti-cannibalisation (e.g. when there is a bus or train, people should better use this instead of ride pooling), intermodality (providing assurance the user to reach her/his connecting mode, book the whole multi modal ride in one app).

15 Some of the strong and weak points and overall rating of the service/app between 1 and 5, ranging from very bad to very good.

- **Operator:**

Overall rating: 4. “I’m very convinced of the project. We meet many needs. It is not about meeting the needs of everyone. Ride pooling is an additional service to the public transport services.”

Strong points: It adds value to the public transport and create a better connectivity and attract more people. Normal or traditional public transport usually lacks in some areas and doesn't provide enough accessibility or is rather static and 'old'. Ride pooling service uses resources better. Weak points: Economic aspect. It is difficult to run such a project which can 'carry' itself financially.

- **Developer:**

“In future, you should not need a separate ride pooling app. One mobility app should satisfy all your mobility needs.”

4.7. Discussion on results

In this pilot phase, an effort has been made to understand the current way of working of stakeholders through extensive semi-structured interviews. These interviews covered a wide range of topics such as experiences of stakeholders during different stages of development and operation of the services, understanding of user needs, aspects of co-creation, finance, accessibility, inclusivity, data protection and cybersecurity, collection of data, licensing needs, political support and possible future improvements needed in the services. Stakeholders from all five INDIMO pilots explained in varying details their experiences and opinions on the topics, which establishes the baseline view and way of working of stakeholders. Although experiences and steps taken by different types of stakeholders, i.e. operators, developers and policymakers are different for each INDIMO pilot as the type of services each pilot represent are diverse, some common interesting observations emerge.

1. All stakeholders, especially operators and developers acknowledge **that a good understanding of needs, requirements, capabilities of potential end users is essential** from the very first phase of the project **for enhancing user acceptance of the service**. This results in higher usage of the service and success of the project. Experiences shared by stakeholders during the interviews exemplify that starting without due consideration of user needs, requirements and capabilities resulted in lower usage. e.g. in the case of Swaxi.

2. **Co-creation with end users from the very beginning** of the project can ensure that the developed service meets the needs and requirements of end users. However, most of the interviews show that such a **co-creation was either never or rarely done**. Even when end users were involved, it was through representatives of associations on behalf of end users. Given practicalities, this strategy is perhaps the only feasible option and better than no involvement of end users at all. However, whenever possible, the direct involvement of some end users from the widest possible range of groups is preferable. Also, if the idea and advantages of the new digital mobility or logistics option is not disseminated properly, potential users may see the new offering as a threat to the existence of their traditional mobility or logistics choice instead of using it.

3. **Vulnerable-to-exclusion people** such as older people, lower income residents, people with reduced mobility, persons lacking digital skills, lower educated residents, ethnic minorities, foreigners, or rural residents **were never considered** during the planning and designing or in any phase of the service development in any of the cases interviewed. The only exception, to some extent, is the case of Galilee where a feminist organization representing Arab women was involved in the development of the informal ridesharing app.

4. When proposed with the idea, almost every stakeholder acknowledges the service or application they are developing should be accessible and inclusive. Some even go to extent of saying the **concept of accessibility and inclusivity should be universal in the development of a service or application**, especially when public resources are involved. However, results from the interviews show **accessibility and inclusivity was mostly never considered** during the development of the services and applications. In this regard, it is worth noting that although most stakeholders support these two concepts, out of **market competition, interest and profitability**, many of them do not focus on these as they fear delays in the project if they want to meet all the requirements necessary to make their service truly inclusive and accessible. Focusing on vulnerable-to-exclusion people is often not financially profitable as well. Moreover, the interviews revealed that, there were no requirements to be met in terms of accessibility and inclusivity set out by the financier or city/regional authorities for any of the services.

5. The **understanding terms such as accessibility, inclusivity, co-creation** or even objectives of a service, **varies from one stakeholder group to another** based on their interests and proficiencies. **Co-creating the service, the app or the infrastructure** involving all types of stakeholders from the very beginning can lead to **reconciliation of all points of views and requirements**. At the same time, as revealed by the interviews, this co-creation process also helps to avoid delays due to popup requests from a certain stakeholder. It is also important to prioritize the tasks, features and objectives based on feasibility and essentiality. In many of the cases, co-creation involving stakeholders did happen sometimes or often, albeit with varying degree of efficiency and success.

6. All the stakeholders acknowledged the absence and the **need of clear guidelines for developing and operating digital mobility and logistics services**, applications, and infrastructures. Older regulations are often not fully relevant or appropriate for and difficult to implement or comply in the context digital mobility and logistics services since they were made for a different era when these services or even internet were not available. **A European Union level guideline will be helpful**. However, most agreed that this **should be broad enough not to stifle the 'innovation'**. The city and the regions can then add more details to these guidelines if there is a need based on their experiences and requirements of a service. In this way, there will be a room for research and innovation and at the same time the guidelines will improve gradually over time.

7. When approached by operators and service developers **for newer forms of digital mobility and logistics services or infrastructures** such as smart lockers, delivery by bicycles or smart traffic light often there is a sense of **lack of certainty and understanding among policymakers**. Perhaps it is because the impact of such services on society as a whole is not fully known or established yet. **Case studies done on similar services elsewhere and small-scale**

implementation in a limited 'living lab' environment can address these concerns. Experience from INDIMO pilots and universal design guidelines and policy evaluation tool that are being developed in INDIMO will be useful in these scenarios, too.

8. All stakeholders consider **cyber security and data protection** to be important aspects for operation of digital mobility services and applications. With GDPR in effect in the European Union, there has been a sense of uniformity as well. However, a few respondents mentioned some issues arising from this. One example are people with low digital skills not able to easily receive assistance from the operator directly via other channels, such traditional phone calls.

9. Stakeholders expect that **financing, subsidy and licensing requirements** from the public authorities should be done in a way that **foster and encourage research and innovation** and supports the idea of inclusion of all citizens.

10. Stakeholders were asked to rate the service or application they have developed and are operating in a scale between 1 to 5, ranging from very bad to very good. Most stakeholders rated their service or application 3 or 4 and mentioned the improvements they wanted to see in the services or application. It shows the enthusiasm, motivation, and honesty of the stakeholders. Also, this is where INDIMO toolbox can help the stakeholders to develop better, accessible, and inclusive digital mobility and logistics services, applications, and infrastructures.

Many of the findings in this baseline data collection exercise are in line with the findings of T1.4 in WP1 of INDIMO. Here, case studies were done on deployment of digital mobility services though desktop research, semi-structured interviews with stakeholders and a stakeholder co-creation workshop.

5. Lessons Learnt

Baseline data collection was an insightful exercise. Apart from the technological knowledge we gained, it gave us many lessons in practicalities of data collection as well, especially during the covid-19 pandemic time. In general, the data collection took more time than foreseen. Given the focus of INDIMO on vulnerable-to-exclusion people groups, end-users data collection through digital means was never going to be an easy task. Therefore, the integration of end user survey in some of the application at INDIMO pilot sites took a lot of time as consent of several stakeholders were needed. For the decision-making assessment part when stakeholders were contacted with the proposal of conducting an interview, quite a few of them were reluctant to take part in it even though they were ensured that nothing from the interview would be released in the public domain in a non-anonymized form. Some of the reasons behind their reluctance could be: they did not see any motivation or organization's interest to take part in the interview, they did not feel comfortable sharing honest information when appearing for an interview on behalf of their organization.

6. Conclusions and next steps

Data collected in this first phase and reported in this deliverable established the baseline condition in INDIMO pilots, i.e., condition before implementation of the INDIMO tools. In Pilot phase 2 (M16-M24) services/technologies in pilot locations will be (re-)design using the tools co-created in INDIMO based on this baseline data report and WP1 inputs. A mid-term small-scale data collection and assessment will be done in this phase to identify shortcomings and additional requirements for the improvement of INDIMO tools before the final implementation in pilot phase 3. The same will be reported in D4.4 Recommendations for the tool development at the end of M25.

7. Acronyms

ACRONYM	
DMS	Digital mobility services
WP	Work package
DDS	Digital delivery services
DM	Digital mobility
CBA	Cost-benefit Analysis
SSI	Semi-structured interview
POS	Point of Sales
PT	Public transport
BTB	Bottom Two Box
TTB	Top Two Box
GDPR	General Data Protection Regulation

Table 42: List of acronyms

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Annex 1: Baseline Survey Questionnaire

Survey Intro – Welcome

[A welcome text will be based on Pilot’s specificity. P4 included the following introduction related to the delivery service of CoopCycle / La Pájara:]



Figure 1: Madrid pilot welcome page related to the delivery service of CoopCycle/La Pájara

We are going to improve our service/app to make it more inclusive

CoopCycle / La Pájara, cambiaMO | changing MObility and the Citizens’ Initiatives Incubator-VIC are actively participating in the European INDIMO project | Inclusive Digital Mobility solutions. The mission is to make the service accessible to the most vulnerable groups of the population that are currently excluded from some digital mobility services.



Thanks to your participation in filling this questionnaire, you will receive a promotional code for your next order free of shipping costs (€ 0) and, most important thing, you will contribute to a more inclusive delivery service.

CoopCycle / La Pájara

Time to complete: 5 – 10 minutes

Disclaimer – Informed Consent

This survey is part of the INDIMO EU Horizon 2020 project (www.indimoproject.eu). In this context, data will be collected and processed **to assess the inclusiveness of digital services** in 5 locations (Antwerp, Madrid, Galilee, Emilia-Romagna and Berlin). In [*Pilot location*] the survey is geared to users of app [*DMS name*, i.e. for P4: CoopCycle/La Pájara].

The record of your survey responses does not contain any identifying information about you, unless your e-mail address in order to participate in the promotional campaign associated to the app [*DMS name*: description of the promotion or the recruitment strategy carried out, i.e. for P4: “free delivery for next food order”].

Your e-mail address will be exclusively used for the purpose of providing you the promotional code and to contact you in case you agree to be involved in the two following assessment surveys.

If you have any questions about this survey please contact us at [*Pilot leader’s e-mail address*, i.e. for P4: indimoproject@cambiamo.net]

Yes, I consent to take part in this survey by providing my e-mail address in order to receive the promotional code.

No, I do not want to take part in this survey.

[If consent is given, please ask for an e-mail address and/or eventually other data allowing the linkage between the app/platform service and the users. If consent is not given the survey ends with the following text:]

Thanks for your time!

We are waiting for you in case you want to answer the questionnaire later.

You can now close this window.

Filter question

Have you recently used the [DMS/DDS application name] application /platform/service or something similar? *This field is required*
[Please, feel free to provide here an image of the app]

Yes No

[If answer is NO the survey ends with the following text:]

Thanks for your availability.

The survey is aimed at users of [DMS/DDS application name]. We invite you to download the application, to use it and then provide us your feedback.

DOWNLOAD THE APP on Google Play *[link provided]*

DOWNLOAD THE APP on the Apple Store *[link provided]*

We are waiting for you after your first use of the DMS/DDS service!

You can now close this window.

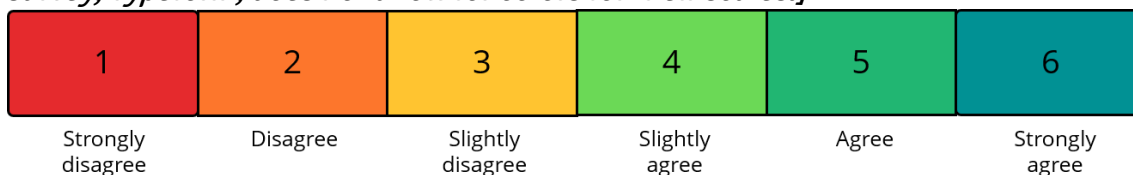
Introduction to Likert questions

Let's start! Please, we would like to know **your level of agreement or disagreement** with the statements that we propose in the following pages.

These are the **instructions** to answer all the following questions:

If you strongly agree, please answer 6, and if you strongly disagree, please answer 1. You can also answer intermediate values such as 2 (disagree), 3 (slightly disagree), 4 (slightly agree) and 5 (agree). *[It is useful to repeat these instructions at each question]*

[At this point it is useful to visualize the "level of agreement or disagreement" by providing an image with the scale, associating each grade with a color although the platform used for the survey, Typeform, does not allow for colors for their scales.]



[From now on, all the Likert questions are proposed one item at the time, without any grouping by pillar (accessibility, inclusiveness, gender, acceptance, trustworthiness). Here they are grouped for researcher's convenience]

Accessibility questions



1. Icons and images provided in the app make it easy to use [*Pilots 1,3,4 and 5*]
2. The app does not have big fonts and enough contrasts [*Pilots 1,3,4 and 5*]
3. The app and the service have adaptations for my needs (e.g. voice reader, customizable text option) [*Pilots 1,2 and 4*]
4. I face physical barriers for using the app [*All pilots*]
- 4b. I face physical barriers for using the service (All pilots)
- 4c. I feel ashamed lights were required to go longer than needed [*Only pilot 2*]

Inclusiveness questions

5. I can clearly understand the information requested by the app/service [*All pilots*]
6. I can easily use the app and the related service [*All pilots*]
7. I have difficulty understanding the vocabulary of the app [*Pilot 1,3,4 and 5*]
8. My digital knowledge is enough to use the application [*All pilots*]
9. I find the service prices are affordable [*Pilot 1,3,4 and 5*]
10. I can access the service in the way that best suits my needs (e.g. phone, computer, tablet, smart phone) [*Pilot 1,3,4 and 5*]
11. I am not satisfied with the payment options provided by the app [*Pilot 1,3,4 and 5*]

Gender questions

12. I believe the service doesn't meet the mobility needs of the people I look after (e.g. older people, children...)
13. The app minimizes the risks of getting into unsafe situations as a woman [*Pilot 1,3,4 and 5*]
14. The app uses a gender-inclusive language [*Pilot 1,3,4 and 5*]
15. the app/service provides the same ease of use for women as it does for men [*All pilots*]

Acceptance questions

16. The service covers my personal mobility needs (*All pilots*)
17. I don't use the app frequently [*All pilots*]
18. When I use the app, I easily find support (e.g. help button) or assistance by phone, by WhatsApp or by chat [*All pilots*]
19. The options of service offered by the app are insufficient [*All pilots*]

Trustworthiness questions

20. I consider that the app has informed me sufficiently about the use that will be given to my data
21. I'm not sure the app will take care of my privacy (e.g. spamming)
22. I trust that the app will keep my information safe and not to disclose it to third parties

23. I doubt that the people responsible for the app will contact me immediately if they experience data privacy risks

24. I trust that if, I agree to share my data with third parties, it will be done ethically and responsibly

Acceptance question (postponed)

25. It is very likely that I will use the app/service in the future.

Closing Likert questions

We have almost finished!

Before asking you for information on education, age and gender, would you like to add something else that has not been mentioned above?

[open question] _____

Section socio-economic data

Level of study completed

did not attend school	1
primary school	2
secondary school	3
high school	4
Bachelor certificate	5
Master certificate	6
PhD	7
Don't Know/No Answer /Prefer not to say	9

Age

16-24	1
25-34	2
35-44	3
45-54	4
55-64	5
65-74	6
+75	7
Don't Know/No Answer /Prefer not to say	9

Gender

Female	1
Male	2
Other	3
Don't Know/No Answer/Prefer not to say	9

Other classification data (not included in P4)

Digital access/ Digital skills

Which of the following tools have you used the past month? *Please select each tool you used from the list below*

- Desktop computer (1)
- Laptop (2)
- Tablet (3)
- Smartphone (4)
- Apps (Google Maps, Local transport provider, ...) (5)
- Online banking (6)
- Vending machines (7)
- Landline telephones (8)
- None of the above (9)
- Prefer not to say (10)

Current mobility

What modes do you have access to?

- micro-mobility means (scooter, step etc.)
- bicycle
- car (as passenger)
- car (as driver)
- Bus / tram
- Train / metro
- shared car/Bike/step
- other

Section for potential incentive integration

[At this point, data about incentive integration should be asked: e.g. e-mail address associated to app and/or code of the last order]

Closing remarks

Thank you for making our platform more inclusive!

The INDIMO project foresees the launch of a **second survey** to evaluate the improvements of the [DMS/DDS name] application.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875533.

Please tell us if you are available for us to contact you in order to evaluate the changes made thanks to your responses to this first questionnaire.

- Yes, I am available.
- No, I am not available.

Your responses have been recorded correctly. [E.g. in P4: You will receive an email with your promotional code with which your next order will be free of shipping costs (€ 0)]

Thank you for helping us to make digital mobility services more inclusive!

[*The DMS/DDS provider name*] + INDIMO

You can now close this window.

Annex 2: Questions/Statements for each pilot

Table 1: Questions/Statements for each pilot

Question ID	P1 formulation	P2 formulation	P3 formulation	P4 formulation	P5 formulation
Q01	Le icone e gli ausili visivi presenti nelle interfacce (app PT su smartphone/tablet, app su locker Punto Poste Da Te) mi aiutano ad utilizzare i servizi disponibili	Auditory icons (whistle or status light) provided in the app make it easy to use	Icons and images provided in the app make it easy to use	Los íconos e imágenes proporcionadas en la aplicación facilitan su uso	Die in der App bereitgestellten Icons und Bilder machen die Bedienung einfach.
Q02inv	Le app non hanno caratteri grandi né contrasto di colore utili per una migliore visibilità	---NOT ASKED IN P2---	The app does not have big fonts and enough contrasts	La aplicación CoopCycle / La Pájara no tiene letras suficientemente grandes ni contraste de color	Die Schriftgröße in der App ist angemessen und hat genügend Kontraste, welches die Inhalte angenehm lesbar macht.
Q03	Le applicazioni sono adeguate alle mie esigenze (ad es. lettore vocale, opzione di testo personalizzabile)	The app and the service have adaptations for my needs (e.g. voice reader, customizable text option)	The app and the service have adaptations for my needs (e.g. voice reader, customizable text option)	La aplicación y el servicio tienen adaptaciones para mis necesidades (p.ej. lector de voz, opción de texto customizable)	Die App und der Dienst passen sich meinen Bedürfnisse an (z. B. Sprachleser, anpassbare Textoption).
Q04inv	Devo affrontare barriere fisiche nell'utilizzo del Punto Poste Da Te (es. schermo del locker troppo alto o troppo basso)	I face physical barriers for using the app and the service (e.g. keep hand in pocket or hand)	---NOT ASKED IN P3; see questions Q04einv and Q04finv---	Me enfrento a barreras físicas para usar la aplicación y el servicio de CoopCycle / La Pájara	---NOT ASKED IN P5; see questions Q04einv and Q04finv---
Q05	Riesco a capire chiaramente le informazioni richieste dalle	I can clearly understand the instructions provided on the	I can clearly understand the information requested by the	Puedo entender claramente la información proporcionada	Die Anweisungen auf dem App sind klar und verständlich.

Question ID	P1 formulation	P2 formulation	P3 formulation	P4 formulation	P5 formulation
Q06	applicazioni Posso facilmente utilizzare le applicazioni e il servizio Punto Poste Da Te	app to select the route/traffic light I can easily use the app and the related service	app/service I can easily use the app and the related service	por la aplicación Puedo usar fácilmente la aplicación y el servicio de entrega de CoopCycle / La Pájara	 Ich kann die App und den Dienst ohne Probleme nutzen.
Q07inv	Ho difficoltà a capire i termini utilizzati dalle applicazioni	I have difficulty understanding the terminology of the app	I have difficulty understanding the vocabulary of the app	Tengo dificultades para entender el vocabulario de la aplicación	Ich habe Schwierigkeiten, die Sprache in der App zu verstehen.
Q08	Le mie conoscenze digitali sono sufficienti per utilizzare le applicazioni	My digital knowledge is enough to use the application	My digital knowledge is enough to use the application	Mis conocimientos digitales son suficientes para utilizar la aplicación CoopCycle / La Pájara	Meine digitalen Kenntnisse reichen aus, um die App zu nutzen.
Q09	Penso che il servizio sia molto utile per le funzionalità e i benefici offerti, pertanto sarei disposto a valutarne l'acquisto se un giorno mi venisse proposto con una formula di pagamento	---NOT ASKED IN P2---	I find the service prices are affordable	Encuentro que los precios del servicio son asequibles	Ich finde den Dienst bezahlbar.
Q10	Posso accedere al servizio Punto Poste Da Te nel modo che meglio si adatta alle mie esigenze (cellulare o tablet)	I think the app is the way to suits my needs compared to an artefact	I can access the service in the way that best suits my needs (e.g. phone, computer, tablet, smart phone)	Puedo acceder al servicio con el modo que más se adapta a mis necesidades (p.ej. teléfono móvil, ordenador, tablet)	Ich kann mit dem Tool auf den Dienst zugreifen, das meinen Bedürfnissen am besten entspricht (z. B. per Telefon, Computer, Tablet, Smartphone).
Q11inv	Non sono soddisfatto delle modalità di pagamento fornite dall'applicazione	---NOT ASKED IN P2---	I am not satisfied with the payment options provided by the app	No estoy satisfecho con las opciones de pago que proporciona la aplicación	---NOT ASKED IN P5---

Question ID	P1 formulation	P2 formulation	P3 formulation	P4 formulation	P5 formulation
				CoopCycle / La Pájara	
Q12inv	---NOT ASKED IN P1---	I will have difficulties for using the application with a person I take care off	I believe the service doesn't meet the mobility needs of the people I look after (e.g. older people, children...)	Tengo dificultades para usar el servicio para cubrir las necesidades de comida de personas a mi cargo (p.ej. personas mayores, niños y niñas, etc.)	Der Dienst erfüllt die Mobilitätsbedürfnisse von Menschen, die Aufmerksamkeit benötigen (z. B. ältere Menschen, Kinder...)
Q13	Il modo in cui il servizio è erogato mi trasmette sicurezza nel suo utilizzo e non mi sento mai in pericolo (es. nell'effettuare transazioni di pagamento, nello spedire un pacco personale)	---NOT ASKED IN P2---	The app minimizes the risks of getting into unsafe situations as a woman	La aplicación minimiza los riesgos de ser atacada por ser mujer	Eine Notfallknopf in der App minimiert die Risiken, als Frau in unsichere Situationen zu geraten.
Q14	Le applicazioni utilizzano un linguaggio inclusivo relativamente al genere e pari opportunità	The app uses a gender-inclusive language	The app uses a gender-inclusive language	La aplicación utiliza un lenguaje inclusivo	Die App spricht Männer und Frauen gleichermaßen an, ohne einen Gender-Bias (z.B. Nutzer\innen).
Q15	L'app e il servizio sono facilmente utilizzabili senza distinzione di genere	As the app is designed, I believe that women participated in its development	The app/service provides the same ease of use for women as it does for men	Tal cual está diseñada la aplicación, considero que en el desarrollo de la misma participaron mujeres	Die App bietet für Frauen den gleichen Bedienkomfort wie für Männer.
Q16	Il servizio Punto Poste Da Te soddisfa le mie esigenze di consegna e pagamento	The service covers my needs to cross a street with traffic lights	The service covers my personal mobility needs	El servicio cubre mis necesidades de acceso a la comida	Der Service deckt alle meine persönlichen Mobilitätsbedürfnisse ab.
Q17inv	Non utilizzo frequentemente il servizio Punto Poste Da Te	I won't use the street for all my trajectories	I don't use the app frequently	No utilizo con frecuencia CoopCycle / La Pájara	Ich nutze die App häufig.
Q18	Quando utilizzo le applicazioni, se ho bisogno di	When I use the application, I think user support will be	When I use the app, I easily find support (e.g. help button)	Cuando utilizo la aplicación de CoopCycle / La Pájara,	Wenn ich die App benutze, finde ich leicht Unterstützung

Question ID	P1 formulation	P2 formulation	P3 formulation	P4 formulation	P5 formulation
	supporto, posso contattare facilmente il servizio assistenza (numero verde dedicato)	necessary to implement on the app (phone, WhatsApp)	or assistance by phone, by WhatsApp or by chat	encuentro fácilmente soporte (p.ej., botón de ayuda) o asistencia telefónica, por Whatsapp o por chat propio	(z. B. Hilfe-Button) oder Hilfe per Telefon, per E-Mail oder per Online-Chat.
Q19inv	Il servizio Punto Poste Da Te è ben integrato nella mia routine di vita	---NOT ASKED IN P2---	The options of service offered by the app are insufficient	Las alternativas de comida que ofrece CoopCycle / La Pájara son insuficientes	---NOT ASKED IN P5 Omobi survey!---
Q20	Sono stato sufficientemente informato sull'uso che verrà fatto dei miei dati	I consider that the app has informed me sufficiently about the use that will be given to my personal data	I consider that the app has informed me sufficiently about the use that will be given to my data	Considero que la aplicación me ha informado suficientemente sobre el uso que se dará a mis datos	Die App hat mich ausreichend darüber informiert, wie meine Daten verwendet werden.
Q21inv	Dubito che sarà tenuto conto della mia privacy	I'm not sure the app will take care of my privacy (e.g. spamming)	I'm not sure the app will take care of my privacy (e.g. spamming)	No estoy seguro de que se cuidará mi privacidad (p.ej. envío de publicidad no deseada)	Ich bin mir sicher, dass die App auf meine Privatsphäre achtet (z.B. Tracking).
Q22	Confido che le applicazioni manterranno le mie informazioni al sicuro e non saranno divulgate a terzi	I trust that the app will keep my information safe and it will not be disclosed to third parties	I trust that the app will keep my information safe and not to disclose it to third parties	Confío en que la aplicación mantendrá mi información segura y no será divulgada a terceras personas	Ich vertraue darauf, dass die App meine Daten sicher aufbewahrt und diese nicht an Dritte weitergibt.
Q23inv	Dubito che il personale responsabile delle applicazioni mi contatterà immediatamente in caso di rischio per la privacy dei dati	I doubt that the people responsible for the app will contact me immediately if they experience data privacy risks	I doubt that the people responsible for the app will contact me immediately if they experience data privacy risks	Dudo que las personas responsables de la aplicación se comunicarán de inmediato conmigo si experimentarían riesgos en la privacidad de los datos	Ich bin mir sicher, dass die Verantwortlichen der App mich sofort kontaktieren, wenn sie Datenschutzrisiken feststellen.
Q24	Confido che, se acconsento a condividere i miei dati con terze parti, ciò sarà fatto in modo etico e responsabile	I trust that if I agree to share my data with third parties, it will be done ethically and responsibly	I trust that if, I agree to share my data with third parties, it will be done ethically and responsibly	Confío en que si doy mi acuerdo en compartir mis datos con terceras personas se hará de forma ética y	Ich vertraue darauf, dass, wenn ich der Weitergabe meiner Daten an Dritte zustimme, dies auf ethische und verantwortungsvolle

Question ID	P1 formulation	P2 formulation	P3 formulation	P4 formulation	P5 formulation
Q25	In futuro continuerò ad usare sicuramente il servizio Punto Poste Da Te	it is very likely that I use the app in the future.	It is very likely that I will use the app/service in the future	responsable Es muy probable que use el servicio CoopCycle / La Pájara en el futuro	Weise geschehen wird. Es ist sehr wahrscheinlich, dass ich die App/den Dienst auch in Zukunft nutzen werde.
Q04binv	[P2only]	[P2only] I face technical barriers for using the app and the service (battery, memory, ...)	[P2only]	[P2only]	---NOT ASKED IN P5---
Q04cinv	[P2only]	[P2only] I feel embarrassed to other road users that green light was longer than normal because of my situation	[P2only]	[P2only]	---NOT ASKED IN P5---
Q05b	[P2only]	[P2only] I can clearly understand the information about the crossing provided by the app	[P2only]	[P2only]	---NOT ASKED IN P5---
Q19b	[P2only]	[P2only] The app will be efficient in all crossing contexts (busy street, large street, ...)	[P2only]	[P2only]	---NOT ASKED IN P5---
Q04einv	[P3+P5only]	[P3+P5only]	[P3+P5only] I face technical barriers for using the app	[P3+P5only]	Ich stoße manchmal auf Barrieren bei der Nutzung der App. Ich habe z.B. eine Sehbehinderung.
Q04finv	[P3+P5only]	[P3+P5only]	[P3+P5only] I face technical barriers for using the service	[P3+P5only]	Ich stoße manchmal auf physische Barrieren bei der Nutzung des Ridepooling Dienstes. Ich habe z. B. einen Kinderwagen, den ich nicht



Question ID	P1 formulation	P2 formulation	P3 formulation	P4 formulation	P5 formulation
					mitnehmen kann.



Annex 3

Weighting the responses to build the indicators

The following criteria responds to the questions: what weight should be given to each question inside the measured indicator? We follow two simultaneous criteria:

1. On one hand, some questions are conceptually and theoretically more central to the indicator, while other are more lateral. This criterion deal with the **Relevancy** of the question with regard to the indicator.
2. Secondly, we want to assign a greater weight to those questions that show higher number of responses in the negative extreme values of the scale, as a recognition that these evaluated elements are especially problematic. Since the scale used for all questions is a 6 level Likert scale, from “Strongly agree (6)” to “Strongly disagree (1)”, we should consider and give a greater weight to the questions which presents a greater “Bottom Two Box (BTB)”, that is the summation of responses with Strongly disagree (1) + Disagree (2). This criterion deal with the **Deviation** of the answers given to the question with regard to the indicator.

The criteria to assign weight to the questions within an indicator has the form of an algorithm, as follows:

- If all questions in the indicator are equally relevant from a conceptual and theoretical point of view AND the differences in their BTB between the variables is below 10% ==> all questions receive the same weight.
- If all questions in the indicator are equally relevant from a conceptual and theoretical point of view AND the differences in their BTB is above 10% ==> the question with the highest BTB receives additional 0.10 of weight than the remaining questions (subtracted from the other questions’ weight. Example: Highest BTB: 0.60, Lowest BTB: 0.40).
- If one question in the indicator is more relevant from a conceptual and theoretical point of view than the others AND the differences in their BTB between questions is below 10% ==> the most relevant question for the indicator receives additional 0.10 of weight.
- If one question in the indicator is more relevant from a conceptual and theoretical point of view than the others AND the differences in their BTB between questions is above 10% ==> the most relevant question for the indicator receives additional 0.10 of weight AND the question with the highest Bottom Two Box receives additional 0.10 of weight.

Based on the criteria above (synthetised in Table 1), the weighting dynamically changes for each pilot because of the differences in BTB from pilot to pilot.

Table 1: Synthesis of criteria to assign weight to the questions within an indicator

Relevancy	Deviation	The differences in their BTB between the variables is <u>below</u> 10%	The differences in their BTB between the variables is <u>above</u> 10%
All questions in the indicator are <u>equally</u> relevant		All questions receive the same weight	The question with the <u>highest</u> BTB receives additional 0.10 of weight than the remaining questions
One question in the indicator is <u>more</u> relevant		The <u>most</u> relevant question for the indicator receives additional 0.10 of weight	The <u>most</u> relevant question for the indicator receives additional 0.10 of weight AND the question with the <u>highest</u> Bottom Two Box receives additional 0.10 of weight.

Table 2: List of assessment indicators for user acceptance and correspondent weights⁶

Category	Indicator	Description	Pilot /#QBLs, S3.3, SS1.3	Weight	Justification of the weight
1. User capabilities	Perceived usefulness (Davis, 1985; Venkatesh & Davis, 2000)	The degree to which a user believes that using INDIMO's improved digital mobility service/digital delivery service can have more utility for them or can empower them more working as a capacity building tool.	All pilots: Q16, Q25 (Q25, P5-no)	<u>Q16 and Q25</u> <u>Differences in BTB over 10 p.p.:</u> P1: No (Bottom Two Box: 16 vs 8) P2: Yes (Bottom Two Box: 33 vs 11) P3: No (Bottom Two Box: 0 vs 0) P4: No (Bottom Two Box: 5 vs 0) P5: Only Q16 here	Relevance: "covers my needs" is directly related to Perceived usefulness, while "willingness to use in the future" is more lateral. Additionally, for P2 the differences in BTB was considered to assign additional weight to Q16.

⁶ Table 2: and **Error! Reference source not found.** (Assessment of accessibility and inclusion) contain some indicators which have similarities. During data collection attention will be given so that duplication of data collection can be avoided.

Category	Indicator	Description	Pilot /#QBLs, S3.3, SSI1.3	Weight	Justification of the weight
				<u>Proposed weight:</u> For P1, P3 and P4: Q16 (covers my needs): 0.60 Q25 (willingness to use in future): 0.40 For P2: Q16 (covers my needs): 0.70 Q25 (willingness to use in future): 0.30 For P5: only one question.	
	Perceived ease of use (Davis, 1985; Venkatesh & Davis, 2000)	The degree to which a user believes that using INDIMO's improved digital mobility service/digital delivery service is not physically or mentally demanding.	All pilots: Q1, Q6	<u>Q1 and Q6</u> <u>Differences in BTB over 10 p.p.:</u> P1: No (Bottom Two Box: 0 vs 0) P2: No (Bottom Two Box: 0 vs 0) P3: No (Bottom Two Box: 20 vs 20) P4: No (Bottom Two Box: 2 vs 4) P5: No (Bottom Two Box: 0 vs 0) <u>Proposed weight:</u> For all pilots: Q1 (contribution of images to ease of use): 0.50 Q6 (general ease of use): 0.50	Both questions are directly related to the indicator of perceived ease of use. No differences between BTB of questions in any pilot. Thus, they are assigned the same weight.
	Experience (Venkatesh & Davis, 2000)	The degree to which a user has previous experience in using similar digital technologies as the one provided by INDIMO.	Berlin, Madrid: QS3.3, SSI.	SSI: number of apps used in the past mentioned in question "Have you ever used the digital mobility/delivery applications/services to..." of the SSI	From SSI, not numerical. No weight is assigned. I would suggest including Q25 as well.

Category	Indicator	Description	Pilot /#QBLs, S3.3, SS1.3	Weight	Justification of the weight
	Self-efficacy (Davis, 1985; Venkatesh & Davis, 2000)	The belief of the user that they are capable of using the INDIMO digitally improved mobility service successfully.	All pilots: Q8	Only Q8, no need to weight (If there is only one question, that question will be the 100% of the indicator. No need to observe the Bottom Two Box to assign a weight).	
	Digital anxiety (Venkatesh & Davis, 2000)	A user's apprehension, or even fear, when faced with a digital application.	All pilots: Q7	Only Q7, no need to weight	
Facilitating conditions of usage	End user support (Venkatesh & Davis, 2000)	A user's access to specialised instructions and support for using an INDIMO improved digital mobility service.	All pilots: Q18	Only Q18, no need to weight	
	Physical accessibility (Venkatesh & Davis, 2000)	The physical accessibility of an INDIMO improved digital mobility service/digital delivery service.	All pilots: Q4 P2: Also Qb	Q4 and Q4b <u>Differences in BTB over 10 p.p.:</u> P2: Yes (Bottom Two Box: 55 vs 33) <u>Proposed weight:</u> For P2: Q4 (physical barriers): 0.6 Q4b(memory, battery): 0.4	Both questions have same level of relevance but, according to the previously explained weighting procedure, we assign additional 0.10 pp of weight for the question with the <u>highest BTB</u> (since the difference between both BTB is greater than 10p.p.)
	Time availability (Venkatesh & Davis, 2000)	Time needed to be invested in learning to use INDIMO improved digital mobility service/digital delivery service.	All pilots: Q8	Only Q8, no need to weight	
	Cost (Venkatesh & Davis, 2000; Tornatzky & Klein, 1982)	The monetary cost incurred by a user for using the INDIMO improved digital mobility service.	Berlin, Madrid, Emilia-Romagna, Galilee: Q9	Only Q9, no need to weight	

Category	Indicator	Description	Pilot /#QBLs, S3.3, SSI1.3	Weight	Justification of the weight
Task features	Task relevance (Davis, 1985)	user's perception that the INDIMO improved digital mobility service/digital delivery service is relevant for the task they want to complete.	All pilots: Q3; Q16	Q3 and Q16 <u>Differences in BTB over 10 p.p.:</u> P1: No (Bottom Two Box: 15 vs 16) P2: Yes (Bottom Two Box: 0 vs 33) P3: No (Bottom Two Box: 0 vs 0) P4: No (Bottom Two Box: 10 vs 5) P5: Yes (Bottom Two Box: 3 vs 20) <u>Proposed weight:</u> For P1, P3 and P4: Q3(presence of adaptations): 0.5 Q16(covers my needs):0.5 For P2 and P5: Q3(presence of adaptations): 0.4 Q16(covers my needs):0.6	Both questions are directly related to the indicator, thus they hold the same relevance. But, following the explanation of the weighting procedure, a higher weight is given to the question with highest BTB for the pilots where this difference exists.
	Compatibility (Lee, Kozar, & Larsen, 2003; Mallat, Rossi, Tuunainen, & Öörni, 2009; Moore & Benbasat, 1991)	The degree to which an INDIMO improved digital mobility service/digital delivery service is perceived, by the user, as compatible with their existing needs, values, and past experiences.	All pilots: Q2; Q3; Q10; Q12;	Q2, Q3, Q10, Q12 <u>Differences in BTB over 10 p.p.:</u> P1: Yes (Bottom Two Box: 23 vs 15 vs 0. Q12 not asked) P2: Yes (Bottom Two Box: 0 vs 22 vs 33. Q2 not asked)	All these questions are directly related to the indicator; thus, they have the same relevance. But, following the explanation of the weighting procedure, a higher weight is given to the question with highest BTB for the pilots where this difference exists.

Category	Indicator	Description	Pilot /#QBLs, S3.3, SS1.3	Weight	Justification of the weight
				<p>P3: Yes (Bottom Two Box: 20 vs 0 vs 0 vs 20)</p> <p>P4: No (Bottom Two Box: 11 vs 10 vs 7 vs 5)</p> <p>P5: Yes (Bottom Two Box: 0 vs 0 vs 5 vs 30)</p> <p><u>Proposed weight:</u></p> <p>For P1:</p> <p>Q2 (large fonts and enough contrast): 0.40</p> <p>Q3(presence of adaptations):0.30</p> <p>Q10(device that best suits my needs):0.30</p> <p>For P2:</p> <p>Q3(presence of adaptations):0.30</p> <p>Q10(device that best suits my needs):0.30</p> <p>Q12 (mobility needs of people I look after):0.40</p> <p>For P3:</p> <p>Q2 (large fonts and enough contrast): 0.35</p> <p>Q3(presence of adaptations):0.15</p> <p>Q10(device that best suits my needs):0.15</p> <p>Q12 (mobility needs of people I look after):0.35</p> <p>For P4:</p> <p>Q2 (large fonts and enough contrast): 0.25</p> <p>Q3(presence of adaptations):0.25</p> <p>Q10(device that best suits my needs):0.25</p>	

Category	Indicator	Description	Pilot /#QBLs, S3.3, SS1.3	Weight	Justification of the weight
				Q12 (mobility needs of people I look after): 0.25 For P5: Q2 (large fonts and enough contrast): 0.20 Q3(presence of adaptations):0.20 Q10(device that best suits my needs):0.20 Q12 (mobility needs of people I look after): 0.40	
Output features	Output quality (Venkatesh & Davis, 2000)	The perceived quality of the outcome produced by the INDIMO improved digital mobility service.	All pilots: Q25; Q11 (not applicable for P3 and P5)	<u>Q11, Q25</u> <u>Differences in BTB over 10 p.p.:</u> P1: Yes (Bottom Two Box: 31 vs 8) P2: only Q25 here P3: No (Bottom Two Box: 0 vs 0) P4: No (Bottom Two Box: 6 vs 0) P5: No Q11 nor 25 here <u>Proposed weight:</u> For P3 and P4: Q11(satisfaction with payment options): 0.40 Q25(willingness to use in the future): 0.60 For P1: Q11(satisfaction with payment options): 0.50	“Willingness to use in the future” is more directly indicative of the Output quality than the “satisfaction with payment options”, which is more lateral. In P1 where there is a difference in BTB, a different weight was assigned that reverts the relevance weight.

Category	Indicator	Description	Pilot /#QBLS, S3.3, SSI1.3	Weight	Justification of the weight
				Q25(willingness to use in the future): 0.50	
	Result demonstrability (Davis, 1985)	The tangibility of the outcomes obtained by the use of an INDIMO improved digital mobility service/digital delivery service (i.e. able to demonstrate to others the positive results obtained by the use of the component).	All pilots: SSI	Number of positive aspects mentioned by user in dimensions Goals and Needs of the SSI related to the satisfaction of needs and goals.	From SSI. No weight is assigned.
Social factors	Subjective norm/social approval (Davis, 1985)	a user's perception that their significant others may approve (or not) of using an INDIMO improved digital mobility service.	All pilots: SSI; Q4c for P2	<u>Proposed weight:</u> Only Q4c, no need to weight	
	Social influence (Maness, Cirillo, & Dugundji, 2015; Paez & Scott, 2007; Carrasco & Miller, 2006; Deutsch & Goulias, 2013; Venkatesh & Davis, 2000)	A user's decision to use an INDIMO improved digital mobility service/digital delivery service as a result of social influence (e.g. community influence).	All pilots: Q4c (only P2); Q12	<u>Q4c, Q12</u> <u>Differences in BTB over 10 p.p.:</u> P2: Yes (Bottom Two Box: 0 vs 33) <u>Proposed weight:</u> For P2: Q4c(embarrassed for delaying others): 0.4 Q12(mobility needs of people I look after):0.6	Both questions are directly related to the indicator, thus they have the same relevance. But, following the explanation of the weighting procedure, a higher weight is given to the question with highest BTB For all the pilots except Antwerp, 100% of the weight is for Q12.
	Perceived connectedness/communication (Fetscherin)	A user's perception of being connected with and collaborating with the	All pilots: Q12	Only Q12, no need to weight	

Category	Indicator	Description	Pilot /#QBLs, S3.3, SSI1.3	Weight	Justification of the weight
	& Lattemann, 2008; Park, Baek, Ohm, & Chang, 2014)	other users of an INDIMO improved digital mobility service, while using it.			
	Image (Davis, 1985)	The degree to which a user perceives the usage of an INDIMO improved digital mobility service/digital delivery service as able to enhance their status in their community.	All pilots: SSI	Number of responses by user with the codes or nets Social status/status/lifestyle in the SSI.	From SSI. No weight is assigned.
User innovativeness	User innovativeness (Venkatesh & Davis, 2000)	A user's willingness to try out an INDIMO improved digital mobility service/digital delivery service due to its innovative features.	All pilots: SSI y Qtext	Number of responses by user with the codes or nets related to Innovation/novelty in the SSI.	From SSI. No weight is assigned.
	Cognitive playfulness (Venkatesh & Davis, 2000)	A user's cognitive spontaneity when using an INDIMO improved digital mobility service.	All pilots (P5-no): Q25	Only Q25, no need to weight	
Hedonistic motivation	Expressiveness (Nysveen, Pedersen, & Thorbjørnsen, 2005)	User's perception that the use of an INDIMO improved digital mobility service/digital delivery service allows them to express their social or personal identity and emotions.	All pilots: Q19 (not in P2 and in P5 is different)	Only Q19, no need to weight	
	Perceived enjoyment (Venkatesh & Davis, 2000)	A user's perception that an INDIMO improved digital mobility service/digital delivery service allows them to express their social or personal identity and emotions.	All pilots: Q19 (not in P2 and in P5 is different)	Only Q19, no need to weight	

Category	Indicator	Description	Pilot /#QBLs, S3.3, SS1.3	Weight	Justification of the weight
	2000)	service/digital delivery service is expected to be enjoyable when using it, aside from any performance results	different)		
	Flow of experience (Hsu & Lu, 2004)	A user's experience as being absorbed by the activity of using an INDIMO improved digital mobility service. Characteristics of flow, applicable to this case, are: concentration, enjoyment, being in control, and seamless sequence of response, amongst others.	All pilots: Q5	Only Q5, no need to weight	
	Integration (Shin, 2010)	A user's perception that an INDIMO improved digital mobility service/digital delivery service is well integrated in their lives, without interfering with other activities.	All pilots: Q17	Only Q17, no need to weight	
Ethics (in relation with evaluation of cybersecurity assessment)	Trust (Shin, 2010)	A user's trust that an INDIMO improved digital mobility service/digital delivery service will act as expected (Shin, 2010).	All pilots: Q20, Q22-24	<u>Q20, Q22, Q23, Q24</u> Differences in BTB over 10 p.p.: P1: Yes (Bottom Two Box: 16 vs 0 vs 0 vs 0) P2: Yes (Bottom Two Box: 0 vs 0 vs 0 vs 11) P3: Yes (Bottom Two Box: 0 vs 0 vs 40 vs 0)	All questions are directly related to the indicator, thus they have the same relevance. But, following the explanation of the weighting procedure, a higher weight is given to the question with highest BTB in those pilots

Category	Indicator	Description	Pilot /#QBLS, S3.3, SS1.3	Weight	Justification of the weight
				P4: No (Bottom Two Box: 6 vs 7 vs 10 vs 6) P5: Yes (Bottom Two Box: 12 vs 0 vs 60 vs 0) <u>Proposed weight:</u> For P1 Q20 (informed about use of data): 0.33 Q22 (trust on information safe): 0.23 Q23 (trust on notify risks):0.22 Q24 (trust on responsible share of data) :0.22 For P4 Q20 (informed about use of data): 0.25 Q22 (trust on information safe): 0.25 Q23 (trust on notify risks):0.25 Q24 (trust on responsible share of data) :0.25 For P3 and P5: Q20 (informed about use of data): 0.22 Q22 (trust on information safe): 0.22 Q23 (trust on notify risks):0.33 Q24 (trust on responsible share of data) :0.23 For P2: Q20 (informed about use of data): 0.22	where there is difference.

Category	Indicator	Description	Pilot /#QBLs, S3.3, SS1.3	Weight	Justification of the weight
				Q22 (trust on information safe): 0.22 Q23 (trust on notify risks):0.23 Q24 (trust on responsible share of data) :0.33	
	Perceived security (Shin, 2010)	A user's perception of security while using an INDIMO improved digital mobility service.	All pilots: Q20, Q22-Q23	<u>Q20, Q22,23</u> <u>Differences in BTB over 10 p.p.:</u> P1: Yes (Bottom Two Box: 16 vs 0 vs 0) P2: No (Bottom Two Box: 0 vs 0 vs 0) P3: Yes (Bottom Two Box: 0 vs 0 vs 40) P4: No (Bottom Two Box: 6 vs 7 vs 10) P5: Yes (Bottom Two Box: 12 vs 0 vs 60) <u>Proposed weight:</u> For P1: Q20 (informed about use of data): 0.40 Q22 (trust on information safe): 0.30 Q23(trust on notify risks): 0.30 For P2 and P4: Q20 (informed about use of data): 0.34 Q22 (trust on information safe): 0.33 Q23(trust on notify risks): 0.33 For P3 and P5: Q20 (informed about use of data): 0.30	All questions are directly related to the indicator; thus, they have the same relevance. But, following the explanation of the weighting procedure, a higher weight is given to the question with highest BTB in those pilots where there is difference.

Category	Indicator	Description	Pilot /#QBLs, S3.3, SS1.3	Weight	Justification of the weight
				Q22 (trust on information safe): 0.30 Q23(trust on notify risks): 0.40	
	<i>Privacy</i> (Shin, 2010)	A user's perception that any personal data collected by an INDIMO improved digital mobility service/digital delivery service about themselves or others remain confidential.	All pilots: Q21 (not in P5); Q22, Q23	<p><u>Q21,Q22, Q23</u></p> <p><u>Differences in BTB over 10 p.p.:</u></p> <p>P1: No (Bottom Two Box: 0 vs 0 vs 0)</p> <p>P2: No (Bottom Two Box: 0 vs 0 vs 0)</p> <p>P3: Yes (Bottom Two Box: 0 vs 0 vs 40)</p> <p>P4: No (Bottom Two Box: 6 vs 7 vs 10)</p> <p>P5: Yes (Bottom Two Box: 0 vs 60. Q21 not here)</p> <p><u>For P1 to P4:</u></p> <p><u>Proposed weight:</u></p> <p>For P1, P2 and P4:</p> <p>Q21 (care of privacy): 0.33</p> <p>Q22(trust on information safe): 0.33</p> <p>Q23(notify risk of privacy violation): 0.33</p> <p>For P3:</p> <p>Q21 (care of privacy): 0.30</p> <p>Q22(trust on information safe): 0.30</p> <p>Q23(notify risk of privacy violation): 0.40</p> <p>For P5:</p> <p>Q22: 0.40</p> <p>Q23:0.60</p>	<p>All questions are directly related to the indicator; thus they have the same relevance.</p> <p>But, following the explanation of the weighting procedure, a higher weight is given to the question with highest BTB in those pilots where there is difference.</p>

Table 3: List of assessment indicators for inclusivity and accessibility

Category	Indicator ⁷	Additional note on the indicator	Data availability from INDIMO data collection and pilot	Weight	Justification of the weight
Inclusivity & accessibility	Number of downloads of the proposed INDIMO app by people with disabilities or older people.	Making technology and electronic services accessible and usable by people with disabilities or the elderly.	All pilots, specially P1 (N.A.), P2 (todos) and P4 (N.A.).	Back-end data	
	Number of people having broadband internet access.	Giving people broadband internet access.	All pilots, specially P1- (all), P4 and P5 (lower income people) S3.3 and Thais.	Population data	
	People that have access to e-commerce and public services that save time and money.	Preventing economic exclusion from e-commerce and public services that save time and money.	All pilots, specially P1, P3 and P4	Population data	

⁷ Most of the indicators here are largely inspired by articles written by Saha (2014), Arora (2019) and INDIMO D1.1. Indicators that are expressed in terms of numbers will be collected in the term/format (such as absolute numbers, percentages with respect to the population etc.) that represents the case in the most suitable or appropriate way.

Category	Indicator7	Additional note on the indicator	Data availability from INDIMO data collection and pilot	Weight	Justification of the weight
	Number of persons involved in digitally connected communities.	Preventing social exclusion from digitally connected communities.	All pilots, specially P1 and P4 (I.e. migrants and socially isolated people): SSI; Desk research; D3.1	Population data. SSI: number of apps used in the past by respondent, mentioned in question “Have you ever used the digital mobility/delivery applications/services to...” of the SSI	From SSI. No weight assigned.
	Number of accesses to any digital technology in communities to tackle area-based deprivation.	Using any digital technology in communities to tackle area-based deprivation.	All pilots, specially P3 and P5: SSI; D3.1	SSI: number of mobility/delivery apps used in the past mentioned in question “Have you ever used the digital mobility/delivery applications/services to...” of the SSI	From SSI. No weight assigned.
	Number of uses of any digital technology to tackle social exclusion.	Using of digital technology to tackle social exclusion	All pilots, specially P3 and P5: SSI D3.1	SSI: number of other social apps used in the past mentioned in question “Have you ever used the digital mobility/delivery applications/services to...” of the SSI	From SSI. No weight assigned.

Category	Indicator7	Additional note on the indicator	Data availability from INDIMO data collection and pilot	Weight	Justification of the weight
Affordability	Proportion of additional household income gained thanks to the introduction of DMS/DDS for the lowest income population ⁸ .	Increased household income thanks to the accessibility to jobs by ethnic and migrant groups.	All pilots, specially P1 and P3: Q9; persona	<p><u>Proposed weight:</u></p> <p>Only Q9, no need to weight.</p> <p>From the SSI, mentions to price/affordability/economic menus in dimension Goals/Values</p>	
Attention to needs	Level of the accessibility to key life activities before and after the use of the app and the associated transport service.	An accessibility index has been defined and adopted to this goal in the Pilots' handbook.	All Pilots: Q16; Q12 (no en P1);	<p><u>Q12, Q16</u></p> <p><u>Differences in BTB over 10 p.p.:</u></p> <p>P1: Only Q16 here</p> <p>P2: No (Bottom Two Box: 33 vs 33)</p> <p>P3: Yes (Bottom Two Box: 20 vs 0)</p> <p>P4: No (Bottom Two Box: 0 vs 5)</p> <p>P5: No (Bottom Two Box: 30 vs 20)</p> <p><u>Proposed weight:</u></p> <p>For P2, P4 and P5:</p> <p>Q12(covers the needs of people I look after): 0.5</p> <p>Q16(covers my needs): 0.5</p>	<p>Both questions are directly related to the indicator; thus they have the same relevance.</p> <p>But, following the explanation of the weighting procedure, a higher weight is given to the question with highest BTB in those pilots where there is difference.</p>

⁸ If it is not feasible to collect this data, self-declared perception of the same can be considered

Category	Indicator7	Additional note on the indicator	Data availability from INDIMO data collection and pilot	Weight	Justification of the weight
				For P3: Q12(covers the needs of people I look after): 0.6 Q16(covers my needs): 0.4 <u>Differences in pattern of response:</u> P1: Q12 not applicable P2: Slight (TTB 11+0 vs 33+0) P3: Slight (TTB: 0+0 vs 20+0) P4: Slight (TTB: 23+58 vs 23+37) P5: Yes (TTB: 20+5 vs 20+35)	
	Waiting time between booking transport services and receiving them. This is adequate for personal mobility and goods delivery DMS/DDS assessment.	Digital waiting time.	All pilots, specially P3, P4 and P5: SSI	Number of references to waiting time in SSI codebooks.	
Gender perspective⁹	Use of DMS/DDS for care-giving trips purpose and other essential activities.	Adoption of DMS/DDS for care-giving trips	All pilots, specially P1-no, P2 and P4: Q12	Only Q12, no need for weight	

⁹ Specifically women related data are being collected here as it has been seen by comparing world transport and travel-use data men are caregivers in the 18-22% of cases, and women for the rest (Mitra-Sarkar & Di Ciommo, 2019)

Category	Indicator7	Additional note on the indicator	Data availability from INDIMO data collection and pilot	Weight	Justification of the weight
	Number of people empowered to download the INDIMO DMS/DDS apps, specially by low skilled persons and women.	Closing the gap between those enabled and empowered to download the INDIMO DMS/DDS apps and those who are not.	All pilots, specially P3 and P5: Q13, Q14, Q15; S3.3	<p><u>Q13, Q14, Q15</u></p> <p><u>Differences in BTB over 10 p.p.:</u></p> <p>P1: No (Bottom Two Box: 8 vs 0 vs 0)</p> <p>P2: No (Bottom Two Box: 0 vs 0. Q13 not asked in this pilot)</p> <p>P3: Yes (Bottom Two Box: 20 vs 20 vs 0)</p> <p>P4: Yes (Bottom Two Box: 21 vs 7 vs 12)</p> <p>P5: No (Bottom Two Box: 0 vs 0 vs 5)</p> <p><u>Proposed weight:</u></p> <p>For P1 and P5:</p> <p>Q13(minimizes unsafety for women): 0.33</p> <p>Q14(gender-inclusive language): 0.33</p> <p>Q15(same ease of use for women than men): 0.33</p> <p>For P2</p> <p>Q14(gender-inclusive language): 0.50</p> <p>Q15(same ease of use for women than men): 0.50</p> <p>For P3:</p> <p>Q13(minimizes unsafety for women): 0.40</p> <p>Q14(gender-inclusive language): 0.40</p> <p>Q15(same ease of use for women than men): 0.20</p> <p>For P4:</p> <p>Q13(minimizes unsafety for women): 0.40</p> <p>Q14(gender-inclusive language): 0.30</p>	<p>All questions are directly related to the indicator; thus, they have the same relevance.</p> <p>But, following the explanation of the weighting procedure, a higher weight is given to the question with highest BTB in those pilots where there is difference.</p>

Category	Indicator7	Additional note on the indicator	Data availability from INDIMO data collection and pilot	Weight	Justification of the weight
				Q15(same ease of use for women than men): 0.30	
	Number of women who can take advantage of DMS/DDS in respect to the mobility of care -giving (e.g. purposes related to food and medicaments shopping, accompanying dependent persons and visit family and friends).	Adoption of DMS/DDS for women who mostly carry out care-giving trips.	All pilots, specially P3 and P5, P1-no: Q12	Only Q12, no need for weight	
Transport poverty	DMS/DDS contribution to complement the capacity, frequencies and network of public transport (PT).	Increasing of PT capacity and services and extending traditional PT networks.	All pilots, specially P3 and P5: Q16	Only Q16, no need for weight	
Security issues	DMS/DDS information about service status for reducing sexual harassments in public transport, disease contagion, etc.	Providing appropriate information on service status for avoiding sexual harassment situations and disease contagion.	All pilots (P2-no), specially P3, P5: Q13	Only Q13, no need for weight	
Comfort	Leisure is a key driver of the popularisation of digital mobility solutions. A leisure	The importance to understand social contexts, needs, and aspirations behind	All pilots, specially P1 and P4: SSI; CoP #9.	From SSI, number of responses by respondent related to Lifestyle/ Leisure etc.	From SSI. No weight assigned.

Category	Indicator7	Additional note on the indicator	Data availability from INDIMO data collection and pilot	Weight	Justification of the weight
	barometer will be implemented for understanding how much comfortable the use of DMS/DDS is.	DMS/DDS.			

Annex 4

Decision making process assessment SSI questions

General information:

Pilot No.		
Location		
Name of app/service		
Company name		
Type of stakeholder		<input type="checkbox"/> Developer <input type="checkbox"/> Operator <input type="checkbox"/> Policymaker
Interviewee's information	Name	
	Position in the company	
	Email	
Interviewer's information	Name	
	Email	
Interview date		
Interview starting time		
Interview duration		

Questions:

1. Please explain the main steps taken during the planning phase of the development of the service/app. (e.g. identifying and estimating the demand, making a list of permissions needed, estimating the technology needed)
 - a. Did you experience any delay or come across specific issues during this phase?

2. Please explain the main steps taken during the designing phase of the development of the service/app. (e.g. designing different features of app/service)
 - a. Did you experience any delay or come across specific issues during this phase?



3. Please explain the main steps taken during the deployment phase of the development of the service/app.
 - a. Did you experience any delay or come across specific issues during this phase?
4. Please explain your experience with the operating phase of the service/app until now, especially mention what went better and what went worse than foreseen. How were the issues resolved?
5. Please explain your experience about securing political support for developing and running this service/app. Overall did it have a positive or negative impact on the project?
6. Do you feel that you have a good understanding of needs, requirements, capabilities of all the potential user groups of the service/app? How did you gather this knowledge about the potential end-users?
7. Were vulnerable-to-exclusion people groups such as older people, lower income residents, people with reduced mobility, persons lacking digital skills, lower educated residents, ethnic minorities, foreigners, rural residents etc. considered during the planning and designing or in any phase of the service/app? If yes, how did you gather knowledge about the needs, requirements, capabilities of these vulnerable-to-exclusion people groups?
8. Co-creation:
 - a. To what extent other stakeholders were involved in the planning and designing of the service/app?
 Never Rarely Sometimes Often Always
 - b. If yes, how were other stakeholders involved in the co-creation process? What were the forms of collaboration?
 - c. To what extent the (potential) end-users were involved in the planning and designing of the service/app?
 Never Rarely Sometimes Often Always
 - d. If yes, how were the (potential) end-users involved in the co-creation process?
9. Were vulnerable-to-exclusion people groups involved in the planning and designing of the service/app? if yes, how?



10. Please explain the type of financing that was secured for the development and operation of the service/app and the process of securing the same.
- Were there specific demands from the financier? (e.g. the service/app has to serve a particular group of people or area)
 - Was the financing sufficient? If not, what were the reasons? (e.g. underestimation of costs, something that drove up costs etc.)
11. What type of data were collected during the planning, designing, deployment and operating phase of the service/app? How and with what objectives were these data collected?
12. Was a license/concession needed for operating the service/app? Was this achieved through a competitive tender? If not, how?

13. Accessibility:

Accessibility is defined as the physical and cognitive ability to get access of digital interfaces of transport services. (e.g. special feature for people with visual impairments).

- To what extent accessibility was considered during planning, designing, deployment and operating phases of the service/app?
 Never Rarely Sometimes Often Always
- If yes, what were those considerations and how were the requirements met?
- Was there any requirement specified by the city or regional authorities that had to be met in terms of accessibility?
- What are additional improvements needed in the service/app in terms of accessibility?

14. Inclusivity:

Inclusivity is defined as the ability to provide equal access to digital mobility solutions to the people who might otherwise get excluded or marginalized, such as older people or people belonging to minority groups in terms of socioeconomic, language and spatial barriers etc.).

- To what extent inclusivity was considered during planning, designing, deployment and operating phases of the service/app?
 Never Rarely Sometimes Often Always





- b. If yes, what were those considerations and how were the requirements met?
 - c. Was there any requirement specified by the city or regional authorities that had to be met in terms of inclusivity?
 - d. What are additional improvements needed in the service/app in terms of inclusivity?
15. Were cyber security and personal data protection considered while developing and operating the service/app? If yes, how?
16. Do you feel there are clear guidelines from city/regional authorities for developing and operating this kind of service/app? Do you think there is a need for EU wide guidelines? Please explain why.
17. How well do you feel the service/app caters to the needs of the potential end-users? What are the improvements needed?
18. Rate the service/app between 1 and 5, ranging from very bad to very good. It is an overall rating. What are some of the strong and weak points of the service/app?

Annex 5

Informed Consent Form

INDIMO project

This Informed Consent Form has three parts:

- **Part I: Information Sheet** (to share information about the study with you)
- **Part II: Statement of Privacy and confidentiality** (to be signed by researcher)
- **Part III: Certificate of Consent** (for your signature if you choose to participate)

Part I: Information Sheet

You are asked to participate in a study included in the INDIMO project (EU Horizon 2020 No. 875533, <https://www.indimoproject.eu/>). Your participation is voluntary and you are therefore not obliged to participate in this study. If you do not wish to participate, this will not have any (negative) consequences.

You can ask the interviewer/researcher questions at any time if something is not clear. Take enough time to decide whether or not you want to participate. You can stop your participation at any time (in writing or orally- see below for the contact details of the researcher) and you do not have to give a reason.

Below you can find more information about the study and how it will proceed. If you want additional information, you can contact the interviewer/researcher and/or project co-ordinator.

This research is conducted by (NAME OF THE RESEARCHER), within the INDIMO research group coordinated by the Vrije Universiteit Brussel (VUB).

Contact details

NAME OF THE RESEARCHER

NAME OF THE ORGANIZATION (a consortium member of INDIMO project)

E-mail: EMAIL OF THE RESEARCHER

ADDRESS OF THE RESEARCHER

Co-ordinator of INDIMO project: Imre Keseru (email: imre.keseru@vub.be), Vrije Universiteit Brussel (VUB)

Course and purpose of the study

This interview aims at collecting data for the purposes of the project concerning the improvement of the accessibility and social inclusion of digital mobility services. The project in particular aims to break the barriers that people face in accessing digitally interconnected transport systems. The data will be analysed separately in order to fully assess the needs, capabilities, limitations and constraints of the specific profile.

The interview does not have any commercial purpose. The involved participants do not receive any monetary benefits by conducting this activity. They participate on a voluntary basis and can withdraw from the activities at any time.

The interview results may be published in project reports, journal articles, conference presentations, and via any other mode of scientific exchange and dissemination considered appropriate, while protecting the participants' anonymity. Data collected will be published in anonymous form.

If any audio/picture/video recording is made of the individual interview, the participant can refuse this without being excluded from the study. If informed consent is granted, audio/picture/video recordings taken during the interview activity may be used for dissemination purposes, while protecting the participants' anonymity and in the respect of the consent provided.

Participants' personal data (Name, e-mail address, address, current profession, phone number) will only be used by the INDIMO for the purposes of the project.

Personal data will be collected, processed and protected according to the General Data Protection Regulation (GDPR) (EU) 2016/679. Participants will have the right to request access to and rectification or erasure of personal data or restriction of processing concerning the data or to object to processing as well as the right to data portability just sending an email to the responsible of data treatment listed hereafter. They will also have the right to lodge a complaint with the supervisory authority indicated in Part II.

Part II: Statement of Privacy and confidentiality

During this research, personal data will be collected from/about you. I, (NAME OF THE RESEARCHER), am responsible for storing and processing these data correctly and I have an obligation to inform you about it. For this reason, I draw your attention to the fact that I will collect Name, e-mail address, address, current profession, phone number from/about you.

First of all, you must know that I as a researcher have an obligation of confidentiality in regard to the data that are collected. This means that I, for example in the context of a publication or conference, will never reveal your name or other information that might identify you. Individual results are never published.

Secondly, your personal data will be processed in accordance with the principles imposed by the new European General Data Protection Regulation (GDPR) that has been in force since 25 May 2018. I, (NAME OF THE RESEARCHER) am responsible for processing your personal data correctly and the VUB acts as the controller of the personal data. Data controller can be reached at the following phone numbers and email addresses.

Andries Hofkens
Data Protection Officer
T : +32 2 629 1099
M : +32 (0)498 345 271
DPO@vub.be - Andries.Hofkens@vub.be

Your personal data is collected and processed in the context of the INDIMO project. The collection and processing of your personal data is only possible if you give your explicit consent. I may only use your personal data for scientific research purposes.

You have the right to request access to and rectification or erasure of personal data or restriction of processing concerning the data subject or to object to processing as well as the right to data portability. If you have any questions please contact the interviewer/researchers and/or project co-ordinator (contact details mentioned in part I).

To guarantee your privacy, a number of protection measures will be taken:

- The data and results that are collected from/about you are not anonymous in the first phase, therefore they are converted into codes or categories as quickly as possible. This means that a second data set is created. Only the researcher and the interviewer have access to the key of this code and therefore to the non-anonymous data. This ensures that only the researcher can link this data to you as a person.
- Audio recordings are converted to transcriptions as quickly as possible and then deleted.
- Your data will be initially stored on the servers of the project consortium member/s involved in the task and then transferred to be stored on SharePoint. This is an online platform that is highly secured and has strict access conditions. Your data will not be saved on the personal computer or on a USB stick of the researcher and will never be emailed.
- Your data will (possibly) be shared with the consortium members of the INDIMO project. These members (except one) are within the European Union. In that case, agreements will be made to guarantee comparable guarantees. Access to data will be granted on a "need to know" basis and will not be extended any further than absolutely necessary. The data is

stored for 5 years on SharePoint and for not more than the project duration on the other platforms. They are then deleted.

If you want to exercise your rights and/or have further questions about your rights and the processing of your personal data, you can always contact the Data Protection Officer of the VUB: dpo@vub.be.

Finally, you also have the right to submit a complaint about how your personal data are processed. You can do this at the Belgian Data Protection Authority that is responsible for enforcing data protection legislation:

Gegevensbeschermingsautoriteit (GBA)
Drukpersstraat 35
1000 Brussel
Tel. +32 2 274 48 00
e-mail: contact@apd-gba.be
Website: www.gegevensbeschermingsautoriteit.be

Researcher

I, the undersigned (NAME OF THE RESEARCHER), researcher, declare that I have provided the required information about this study orally, as well as a copy of the information document to the participant.

I confirm that no pressure has been exerted on the participant to have him / her consent to participate in the study and I'm willing to answer any additional questions.

I confirm that I work in accordance with the ethical principles as stated in "The Code for Scientific Research in Belgium" and the ethical principles within my specific research discipline.

I confirm that I work in accordance with the legal obligations regarding the correct processing of personal data as stated in "General Data Protection Regulation (GDPR)".

Signature

Date: _____

Part III: Certificate of Consent

Name and Surname of participant: _____

Organisation (if applicable): _____

E-mail address: _____

- I declare that I'm informed about the nature, purpose, duration, potential benefits and risks of the study and that I know what is expected of me.
- I declare that I am aged 18 or older
- I have had enough time to think and I have been able to ask all the questions that have come to mind and I have received a clear answer to my questions.
- I understand that my participation in this study is voluntary, I have the right to withdraw my consent and that I'm free to stop my participation in this study without having to give a reason.
- I understand that during my participation personal data about me will be collected and that the researcher ensures the confidentiality of these data in accordance with the relevant Belgian and European privacy legislation (Cf. AVG or GDPR)
- I agree to the processing of my personal data in accordance with the modalities described in the "Privacy and confidentiality" section.
- I also authorize the transfer to and processing of my encrypted data in countries other than Belgium.
- I'm aware that the interview will audio / video recorded. If I wish that no audio / video recording is made of my interview, I can still participate in the study.
- I'm aware that I have the right to withdraw from this study at any given moment.

Choose what fits among the following two statements:

- I agree** that my interview/survey will be recorded with an audio / video recorder.
- I do not agree** that my interview/survey will be recorded with an audio / video recorder. I agree that notes will be taken instead.

-
- I agree to participate in the study described and I have received a copy of the signed information and consent form.

Signature

Date: _____

