



# INDIMO

**INCLUSIVE DIGITAL MOBILITY SOLUTIONS**

## POLIS

CITIES AND REGIONS FOR TRANSPORT INNOVATION

ANNUAL  
CONFERENCE

## 2022

30 November – 1 December

**INDIMO Digital Mobility Toolbox: Helping stakeholders to make digital mobility more inclusive and accessible**

**Dr. Imre Keseru – Vrije Universiteit Brussel – Mobilise Research Group**  
**Dr. Florida Di Ciommo – cambiaMO | changing MObility**



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

## New mobility - for all?

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44 % - no digital skills



35 million – never used the  
internet

**The INDIMO project enables developers, policymakers and service operators to advance inclusive and user-centric digital mobility solutions**

**Project duration: January 2020 - December 2022**

**EU contribution: € 2.999.773**

**Coordinator: VUB - Vrije Universiteit Brussel**



# People vulnerable to exclusion



Lower-income citizens



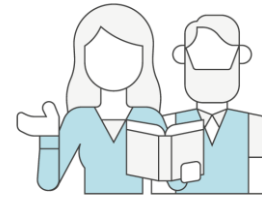
People living in peri-urban or rural areas



Ethnic minorities



Foreigners



Lower-educated citizens



Caregivers



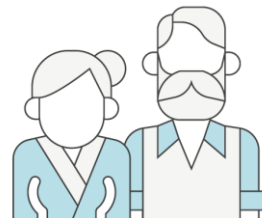
Women



People lacking digital skills



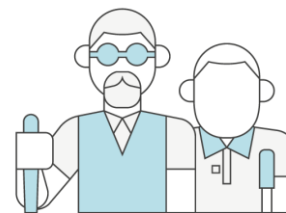
Non-connected people



Older people



People with mental health impairments



People with reduced vision or mobility

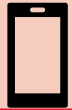


Socially isolated people



Covid-19 confined people

## Barriers to digital mobility



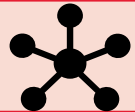
Access to a smartphone



Internet access



Digital literacy



Service coverage



Credit card

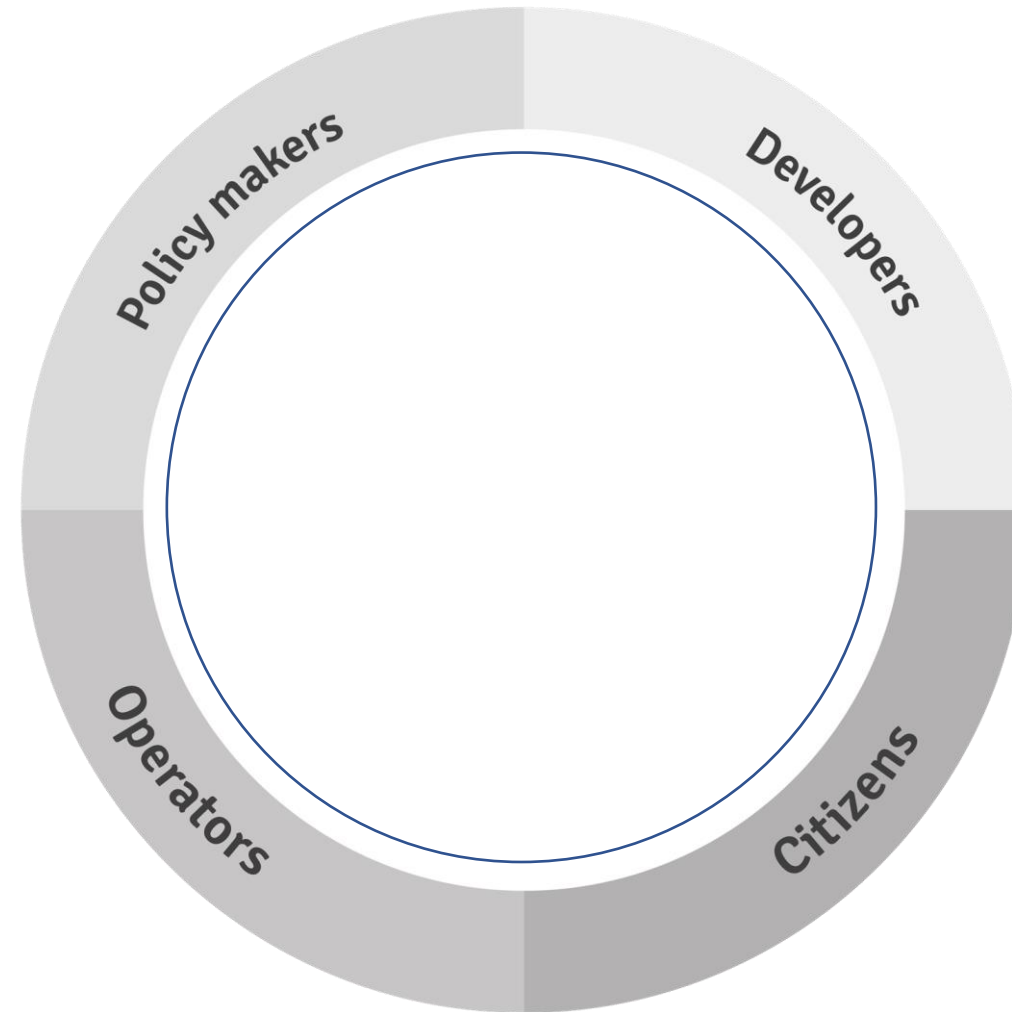
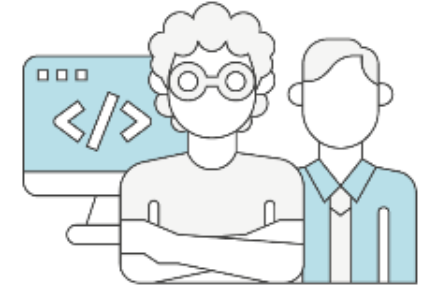


Affordability



Physical access

# Concept and Methodology



# INDIMO Inclusive Digital Mobility Toolbox



**Universal Design  
manual** for digital  
transport services



**Universal interface  
language** for digital  
transport services



**Cybersecurity and  
privacy assessment  
guidelines**



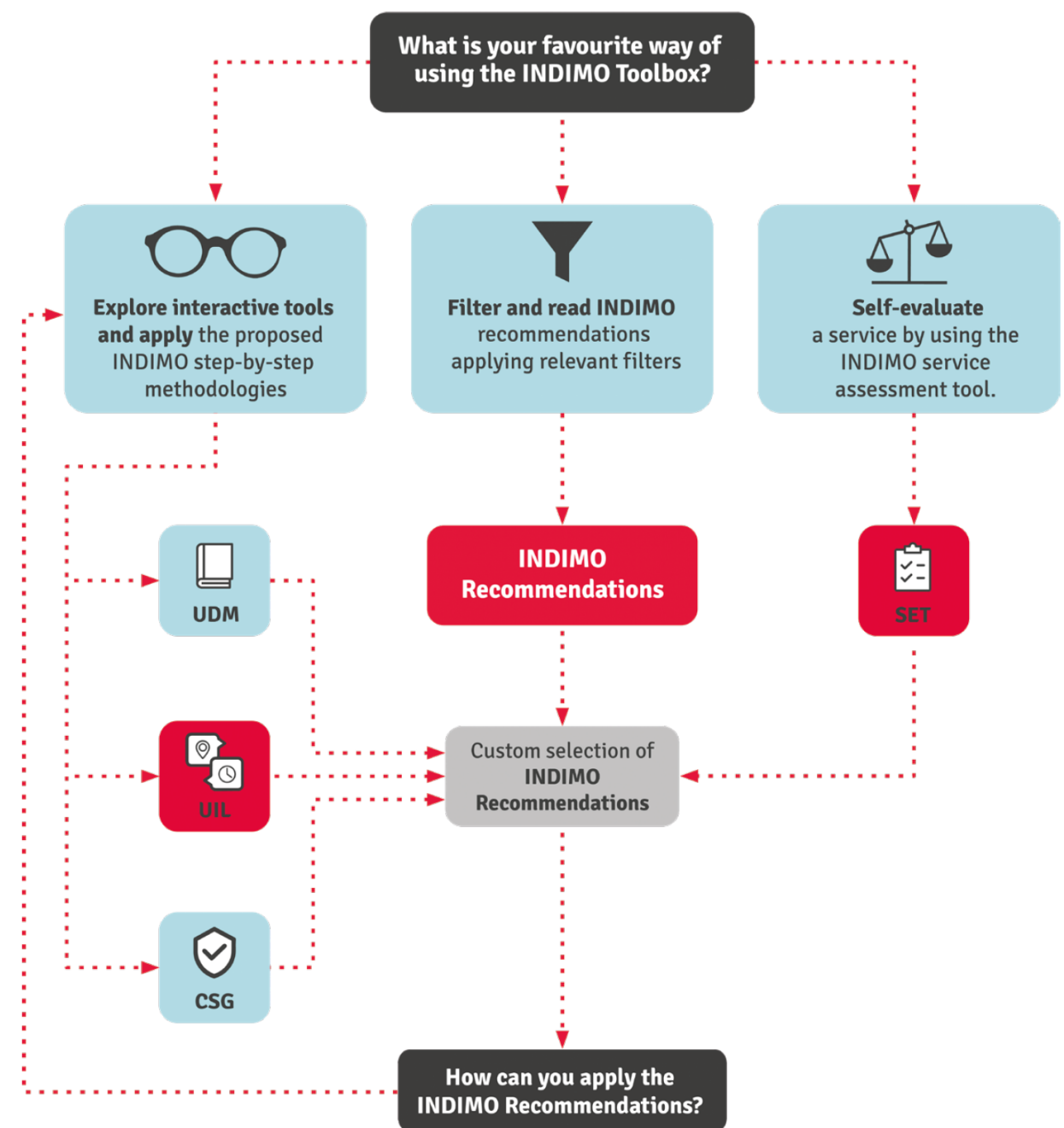
**Policy evaluation  
tool**



# INDIMO toolbox



<https://www.indimoproject.eu/indimo-digital-mobility-toolbox/>





## 3. How can I use the UDM?

A step-by step digital Universal Design methodology

In the following slides you will find all materials needed to apply the UDM methodology:

### STEP 1

The **Checklist for service assessment**, to identify your target audience, weak points and to create a preliminary roadmap for development.

### STEP 2

The **Capabilities-limitations spectrum**, to identify typical users and intervention areas for implementation.

### STEP 3

The **Requirement ranking template** to assess the demands and effects of your possible interventions.

### STEP 4

The **Personas** concept to build context-specific user types and their user experience (UX).

### STEP 5

The **User journey** concept to identify the difficulties users may experience while using your service.

### STEP 6

The **UDM Guidelines** include a general guidance for the design and development process.



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# Service Evaluation Tool (SET)



## Digital capability

The skills needed to access digital tools and use them according to individual needs

65) Is the application usable also for those with limited digital skills. (e.g. people who don't know how or find it difficult to install and/or navigate through new/additional apps)?

Not applicable option / I don't know

No, not at all  Yes, to some extent  Yes, absolutely

66) Is assistance provided for people with limited digital skills?

Not applicable option / I don't know

No  Yes

## Auditory assistance

Auditory assistance provided within the application to help people use a service (e.g. by telephone)

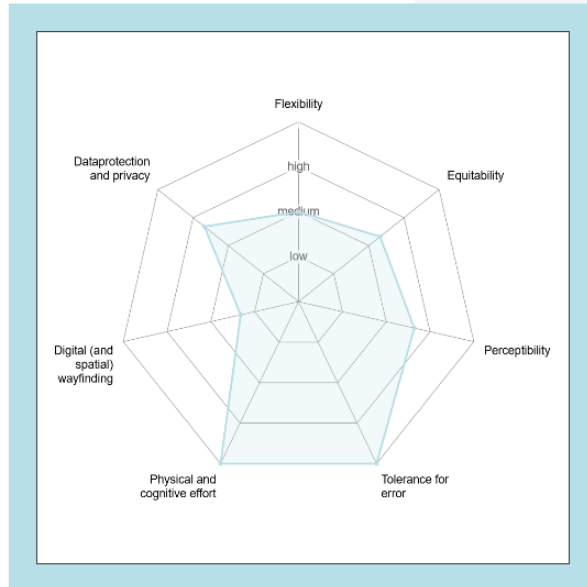
67) Is there a phone number available for assistance/help?

Not applicable option / I don't know

No  Yes

# Service Evaluation Tool (SET)

## Universal Design Principles



Theme score: **67.77%**

### Guidelines

The universal design principles, are a set of guidelines developed to increase the accessibility and inclusivity of the physical and digital environment. Your service/application has an average score under this theme, indicating that the service/application is rather accessible and inclusive for people who are already vulnerable to exclusion, but some improvements are still possible. A higher rating under this theme could be achieved by following the recommendations provided by this tool. For a more elaborate explanation please follow the **recommendations in the Universal Design Manual**, to achieve a service that will be more equitable, flexible, simple and more intuitive to use for users.

AVAILABLE RECOMMENTATIONS: 30

Expand/Collapse all

- source  
CS

**Adopt shield protection against intrusive cyber-attacks on impaired users' devices** -

  - Use advanced technologies for detecting intrusion anomalies, e.g., online scanners, and pen-testing software
  - Protect APIs using tokens that are renewed hourly, and enhance awareness and processes to avoid theft of API keys
  - Consider and evaluate security of third party services, especially if are major components of your system
  - Paying attention to bugs and vulnerabilities is essential. The vulnerabilities discovered must be fixed or mitigation measures must be taken to reduce the risks. A continuous check and update is better than having larger ones. The system must be designed so that the service is not impacted by security updates
  - Use backup systems to ensure redundancy

Recommendation code: cs\_cs\_175

Themes: **Universal Design Principles**  
Topics: **Dataprotection and privacy**  
Aspects: **Cyber security aspects**

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source  
UIL

**Digital User Interface – Adaptability – Provide additional fields for special needs** +

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source  
UIL

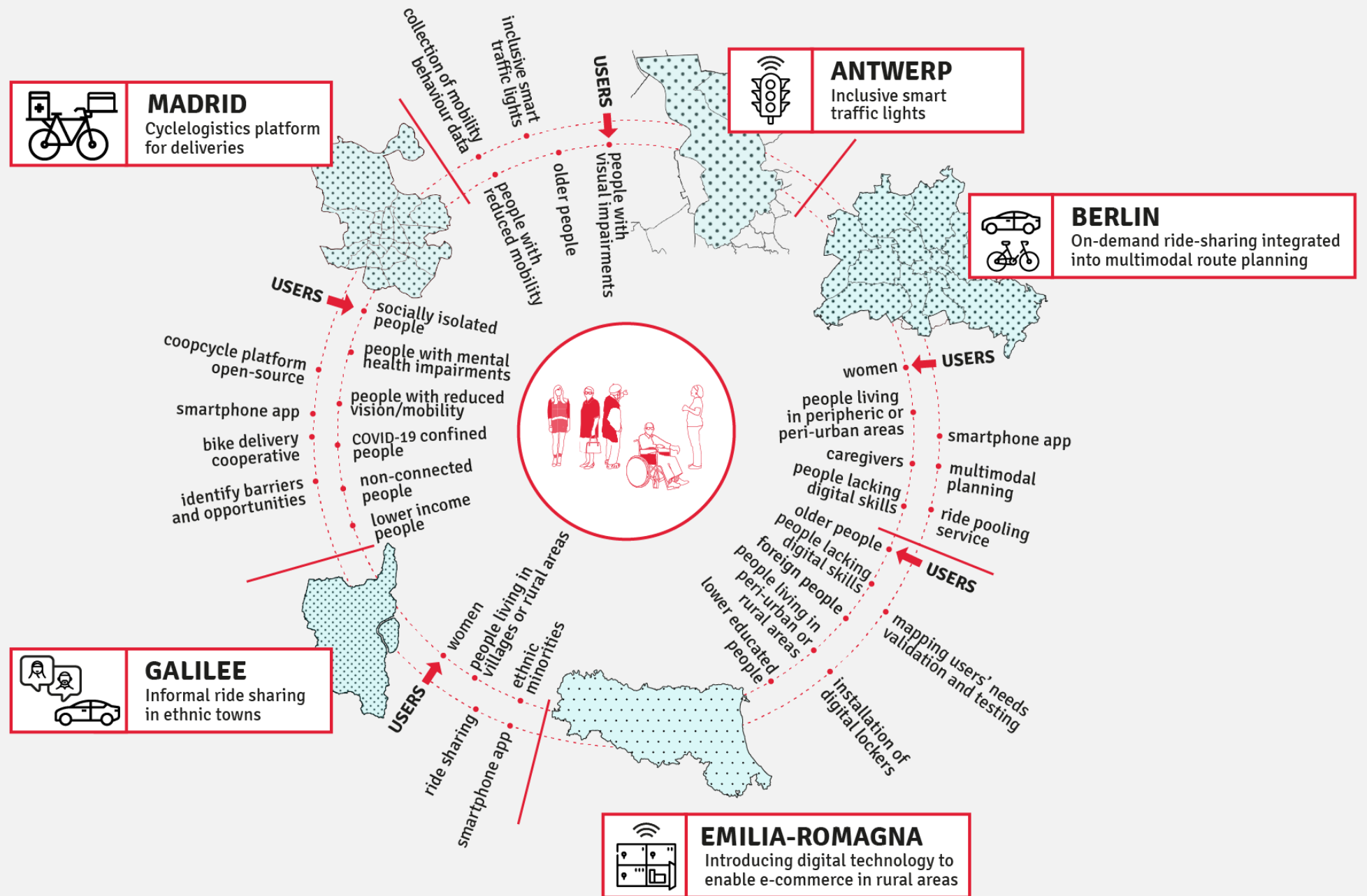
**Digital User Interface – Be aware of colour relationship with cultural backgrounds** +

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source  
UIL

**Digital User Interface – Develop for all degrees of visual impairments and be careful with multimodal interaction** +

# Pilot projects



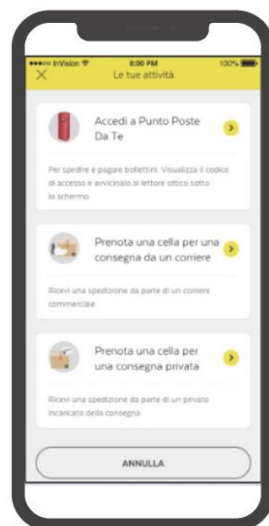
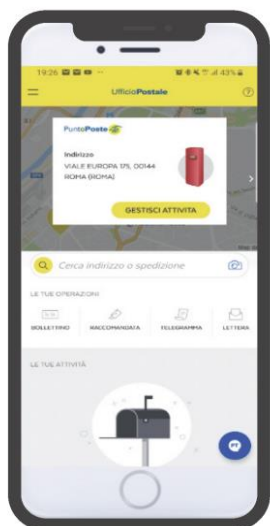
# Pilot | Monghidoro (Emilia-Romagna)



**Main requirements** for digital lockers: understandable language, including other foreign languages, security, and accessible location of the locker

## INDIMO co-created recommendations

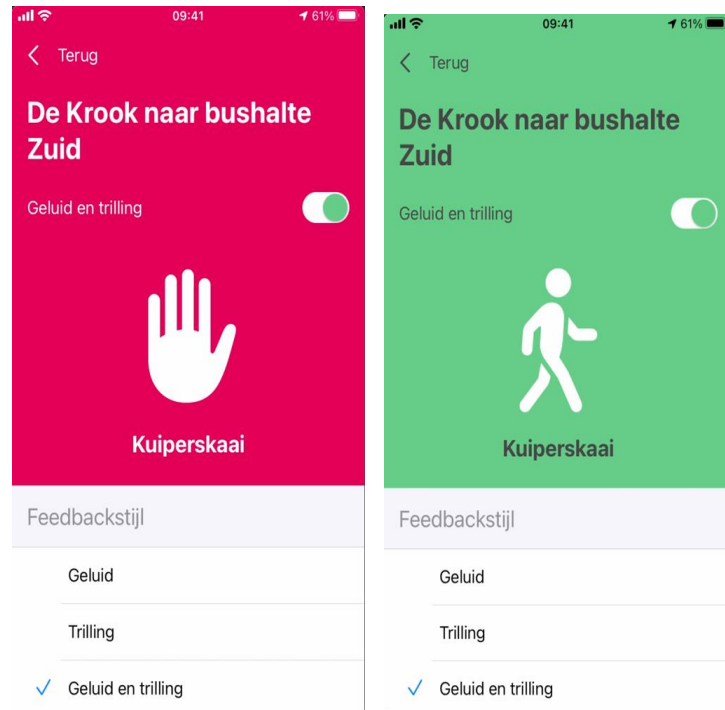
source UDM	<u>Ensure internal consistency of visual icons</u>	35
source UDM	<u>Increase the quality and accessibility of on-site and in-person interaction with your service</u>	130
source UDM	<u>Learn and apply a design-for-all approach</u>	58
source UDM	<u>Offer an inclusive customer care</u>	162
source UDM	<u>Provide first-use tutorials on multiple channels to register for the service</u>	79
source UDM	<u>Use an understandable language</u>	97





**The main requirements** for Inclusive **traffic lights**: easy-to-use interface and understandable language

## INDIMO co-created recommendations



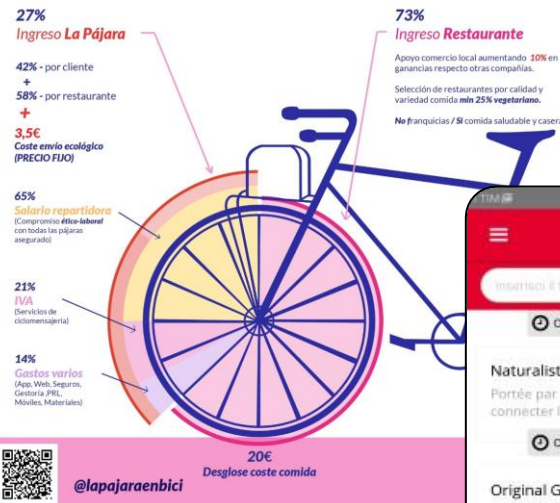
source CS	<u>Adopt shield protection against intrusive cyber-attacks on impaired users' devices</u>	175
source UDM	<u>Increase the quality and accessibility of on-site and in-person interaction with your service</u>	130
source UDM	<u>Use an understandable language</u>	97
source UIL	<u>Assess diverse contexts of use</u>	56

## LA PÁJARA

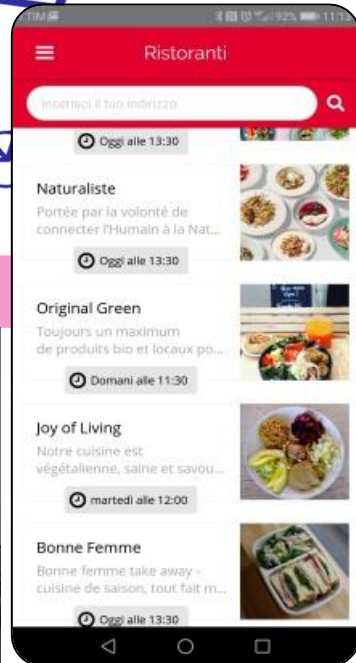
Nuestra Tarifa esta muy clara

Con nosotras el restaurante gana un 10% más que con la competencia

(Un pedido de 20€ + precio fijo de 3,5€ (envío ecológico) = total 23,5€)



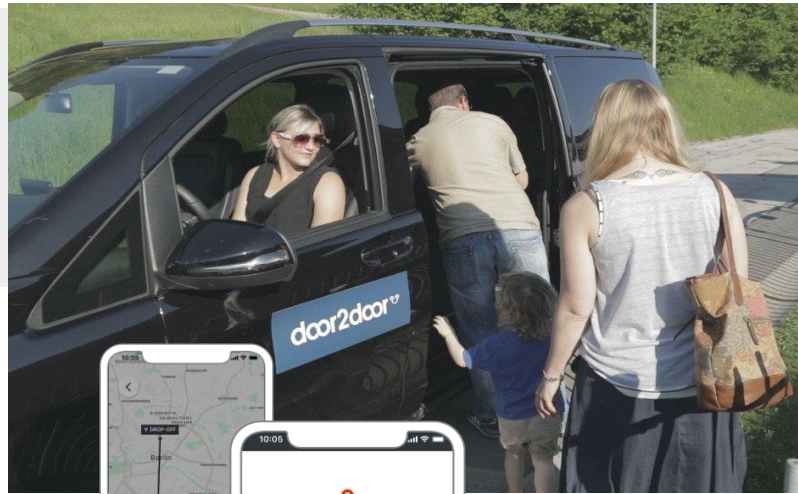
It has been a very smooth and creative context



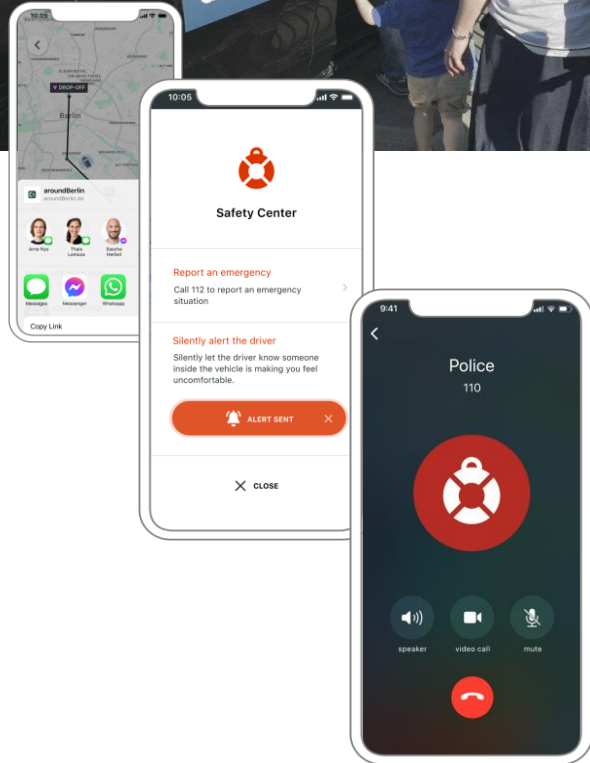
The main requirements for Cycle logistics platforms: simplifying language and the registration process and take care of the human contact.

### INDIMO co-created recommendations

source UDM	<u>Create a positive attitude towards the service through communication</u>	115
source UDM	<u>Include auto-filling suggestions when requiring users' input</u>	71
source UDM	<u>Provide customisation, personalisation and adaptation options</u>	7
source UDM	<u>Simplify the registration process</u>	74
source UDM	<u>Use an understandable language</u>	97
source UIL	<u>Support the launch of a EU level task-force dedicated to inclusion and accessibility</u>	45
source CS	<u>Adopt shield protection against intrusive cyber-attacks on impaired users' devices</u>	175
source CS	<u>Summarize and simplify personal data treatment procedures</u>	108



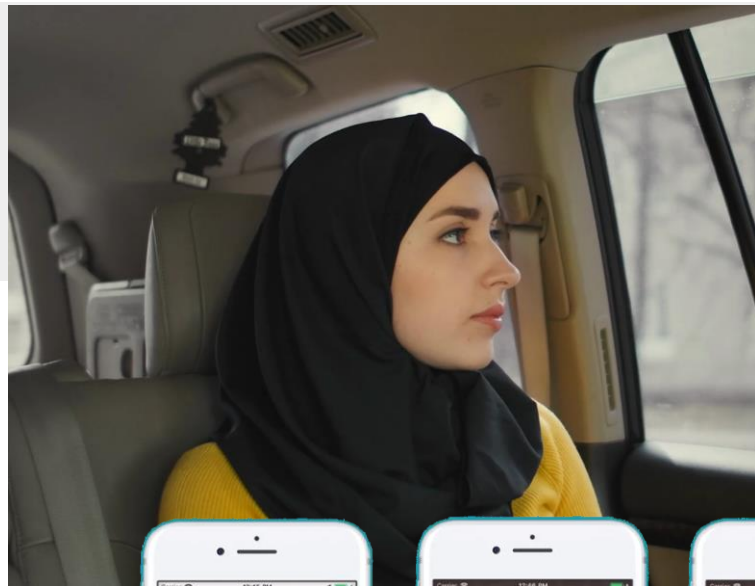
**The main requirements** for on-demand ride-sharing services integrated into multimodal route planning: increasing the safety and security perception through human contact and make the service more inclusive for people with low digital skills and women with children.



## INDIMO co-created recommendations

source UDM	<u>Develop an easy to use interface</u>	66
source UDM	<u>Include auto-filling suggestions when requiring users' input</u>	71
source UDM	<u>Increase safety and security perception through human contact</u>	160
source UDM	<u>Increase the quality and accessibility of on-site and in-person interaction with your service</u>	130
source UDM	<u>Use an understandable language</u>	97
source UIL	<u>Build trust, connect with committed communities and plan periodic and incremental improvements</u>	59





The main requirements for Informal ride-sharing focus on the use of an understandable language and on the endorsement from trusted organization






### INDIMO co-created recommendations

source UDM	<u>Create a positive attitude towards the service through communication</u>	115
source UDM	<u>Increase the quality and accessibility of on-site and in-person interaction with your service</u>	130
source UIL	<u>Invest a part of your time and money from the early phases to build a network of people who will participate in the design process</u>	46

Image: [https://dm0qx8t0i9gc9.cloudfront.net/thumbnails/video/B04Gfy1teiz3sdqe6/videoblocks-a-serious-thoughtful-arab-woman-in-a-car-in-the-passenger-seat-rides-in-the-car-and-looks-out-the-window-a-muslim-woman-in-a-hijab-rides-in-the-back-of-a-car\\_rfgwgr-yp\\_thumbnail-1080\\_01.png](https://dm0qx8t0i9gc9.cloudfront.net/thumbnails/video/B04Gfy1teiz3sdqe6/videoblocks-a-serious-thoughtful-arab-woman-in-a-car-in-the-passenger-seat-rides-in-the-car-and-looks-out-the-window-a-muslim-woman-in-a-hijab-rides-in-the-back-of-a-car_rfgwgr-yp_thumbnail-1080_01.png)

JT can be seen as a sociotechnical transition that considers the **three aspects of social justice**:

- 1** **Recognition justice**  **To recognize** the target-groups as **people in situations of vulnerability** and adapt DMS/DDS to their requirements
- 2** **Procedural justice**  The aspiration to an **equitable involvement** of **all stakeholders** in a non-discriminatory fashion
- 3** **Distribution justice**  **To identify** the **uneven allocation of benefits and burdens** when a DMS/DDS is proposed

... the “**triumvirate of tenets**”  
(McCauley et al., 2013)

7 December, 2022 Brussels

[REGISTER NOW](#)



## Next stop: Inclusive digital mobility

*3 projects. 1 shared journey.  
All on board.*

How we connected the dots between  
**digital** revolution, sustainable **transport**  
and **vulnerable** travelers.

Join our **Final Conference** for the inside story of  
three *Horizon 2020* inclusive mobility projects.  
Discover our journey to shape tomorrow's fair  
and accessible transport scene!



These projects have received funding from  
the European Union's Horizon 2020  
research and Innovation Programme.

# Visit our stand in the Main hall





# INDIMO

INCLUSIVE DIGITAL MOBILITY SOLUTIONS

## Thank you for your attention!

### Project coordinator

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### Website and Social Media:

 [www.indimoproject.eu](http://www.indimoproject.eu)

 @INDIMO-H2020

 @indimo-h2020

