



## H2020-SC6-GOVERNANCE-2018-2019-2020

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# D2.2 User Journey Methodology definition - Final

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<b>Document description</b>	This deliverable includes the final version of the ACROSS User Journey Methodology that has been applied in the project. The User Journey Methodology has been updated considering the experiences, lessons learned and feedback from its application into the specific ACROSS pilots. Moreover, this deliverable presents additional reflections on the value-driven methodology for the design of digital public services.



## About

The project is co-funded by the European Commission's Horizon 2020 research and innovation framework programme. Spanning through three years, ACROSS consists of a consortium of 10 partners from 7 countries: Athens Technology Center (coordinator), Tecnalia, Dataport, Engineering, Fraunhofer, GRNET, TimeLex, The Lisbon Council, Waag and VARAM.

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## Document Revision History

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## Executive Summary

This document (“D2.2 User Journey Methodology definition – Final”) addresses gaps in user journey methodologies related to European technical development around digital identity, particularly in the context of eIDAS (regulation on electronic identification and trust services [1]) and SDG (single digital gateway [2]). Previous deliverables identified that closed design processes in cross-border services risk perpetuating inequalities; a lack of an administrative identity anchor hinders inclusive access to services; and user journeys often exclude certain individuals. This deliverable provides insights and recommendations for bridging such gaps to create inclusive and accessible user journeys.

The Introduction introduces the scope and context of the deliverable. This includes a reflection on user journey *methodologies* and their general attributes. A summary of the ACROSS user journey methodology is then presented, which is uniquely aligned with the public stack governance and service design approach (described in D2.6 “ACROSS Governance Framework Including Service Design Approach – Final”) and emphasises openness and participation to prioritise citizen (user) centrality. The Introduction concludes with a discussion on the limitations of iterative user journey methodologies; this discussion contextualises the subsequent chapters in this report, noting the challenges that iterative user journey methodologies pose for highly complex user journeys.

The document focuses on two of the main gaps presented in D2.4 “Cross-border Service Gap Analysis – Final” as related to complex user journeys. The first relates to the concept of administrative anchor identity and its impact on access to services. It explores the link between digital identity and access, emphasising the challenges faced by undocumented individuals or those lacking government-issued documentation. The centralisation of trust and reliance on government-issued IDs creates barriers for marginalised groups. To overcome this, we propose decentralizing the issuing of credentials to allow trusted individuals, groups, or institutions within a community to issue credentials as temporary and less formal anchors. Non-digital user journeys are considered to understand the dynamics of trust, vouching, and credential sharing. The story of Cornelius the Capybara illustrates the importance of trusted community members vouching for individuals to establish trust with service providers. This approach helps bridge the gaps faced by individuals without an administrative identity anchor to continue onward in their respective user journeys.

We identify ways to apply the lessons learned to digital systems using digital wallets. These wallets can facilitate the sharing of credentials, allowing trusted community members or organizations to issue credentials that can be shared with service providers. The GebiedOnline pilot of the previous EU project ‘DECODE’ demonstrated how peer-to-peer credential issuing can be achieved, enabling individuals to join community groups based on trusted recommendations.



The second gap discussed in this document regards a relative lack of inclusion and equity for complex user journeys in the design of digital public services. We consider the persona-based design method which is often used in e-governance design and delivery. We argue that while this design method does have the potential to bring about equitable digital public services, designing for equity with personas necessitates three criteria regarding its implementation. First, the empirical research on which the personas are based needs to be extensive and thorough. Second, the end-users must be given a voice in the design and decision-making processes. Lastly, developers must be transparent about the choices made in the research, persona creation, and design processes, as these significantly affect the final service.

The document concludes with a summary of outputs, impact, and uptake of the user journey methodology. The recommendations and lessons learned include:

- European digital identity systems should allow for peer-to-peer / community-to-peer credential sharing.
- First develop user journeys that are free from technology, and instead focus on human-to-human and human-to-institution interactions around trust. Later, develop technical user journeys that facilitate the (non-technical) journey of sharing trust.
- Develop for users' journeys – that is, develop for user journeys against 'isolation'.
- Develop user journeys based on real people rather than personas.

By incorporating these approaches, digital systems can become more inclusive and accessible for individuals with complex cross-border journeys.



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## 1. Introduction

This document, D2.2 “User Journey Methodology definition – Final” builds upon previous work in WP2, most directly D2.1 “User Journey Methodology definition - Initial” and D2.4 “Report for cross border service gap analysis – Final” to provide insight and recommendations into the user journey methodologies of European technical development around digital identity. This research is particularly relevant for the development of user journeys involving eIDAS and SDG.

D2.4 “Cross-border Service Gap Analysis – Final” identified pressing gaps facing both cross-border services specifically, and development around digital identity more broadly. Such findings which are particularly relevant for the development of user journeys include:

- Cross-border services risk perpetuating and exacerbating inequalities.
- Certain gaps threaten to stop a cross-border moving process altogether, such as not having an anchor for verified identity.<sup>1</sup>
- A user journey that defines one potential user inherently excludes another.

This document (D2.2) addresses these gaps by exploring user journeys in the context of **accessibility and inclusion**. This exploration begins with a consideration iterative user journey methodologies and presents a summary of the ACROSS user journey methodology. We then consider administrative anchor identities and propose decentralising the issuing of credentials (peer-to-peer credential issuing and community-to-peer credential issuing) as a temporary means for helping people bridge gaps in their user journeys that would otherwise leave them stuck and unable to proceed. Chapter 3 reflects upon ways to better ensure inclusion and equity when designing persona-based user journeys for digital identity services.

Following from these explorations into accessibility and inclusion, the document concludes with a set of recommendations for developing user journeys in a cross-border context that are accessible and inclusive for people who face highly difficult challenges moving across borders.

### 1.1 Contextualisation of the ACROSS User Journey Methodology

#### 1.1.1 User Journey Methodologies

There are various established approaches to the development of user journey methodologies, which arrive from both industry [3, 4] and academia [5, 6, 7]. These methodologies emphasise different aspects, such as quality of user experience or protection of personal privacy, which are generally dependent on the authors’ context (e.g., methodologies from the private sector tend to emphasise a customer’s

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<sup>1</sup> referred to in this piece as an ‘administrative identity anchor’



perceived experience, while those from academia tend to more critically scrutinise the agency which users have in the process). Nonetheless, **user journeys** from various sources tend to map out the various stages in a user's interaction with a piece of technology, from beginning to end. User journey **methodologies** can thus be considered as the processes around creating user journeys. User journey methodologies may include:

- Research, framing, and community mapping – A development team begins to formulate their research questions and understand who their users may be. The developers conduct initial research into that user community.
- Interviews and co-creation – Developers communicate directly with potential end-users to get to know their needs. In participatory development, co-creation strategies may be used whereby potential end-users take part in developing user journeys.
- User journey drafting – User journeys are developed and agreed upon by project developers. These user journeys identify key points in the users' interaction with the technology.
- Development and iteration – Development of technology answers the needs identified in the user journey. Prototypes are tested; both the user journey itself and the technology are iteratively returned to and improved based on testing and user feedback.
- Finalisation and implementation – The technology is tested with users to ensure that the full user journey is supported and runs smoothly, confirming the technology is ready to be launched.
- Monitoring, maintenance, and iteration – Technological outputs around digital identity are often more akin to services than products; that is to say, even after deployment, they often require upkeep, maintenance, and additional iteration to address findings and areas for improvement that are identified after launch.

### 1.1.2 ACROSS User Journey Methodology

The ACROSS user journey methodology generally included the steps listed above. It was further specialised in a number of ways including its emphasis on co-creation, openness, and values-based design; its development of user journeys and a user journey modelling tool specific to the ACROSS context and experience; and its reflection on gaps facing user journey methodologies in European digital identity development, and provision on recommendations for overcoming those gaps.

The user journey methodology in ACROSS can thus be described as follows:

- **Laying the foundation** – Project partners internally identified shared values to drive the development of ACROSS technology. These shared values emphasised “Interoperability,





functionality, and technical completeness; citizen control and privacy; trust and openness; European values, laws, and ethical guidelines as expressed through the ECHR and relevant legislation such as GDPR” (D2.6 “ACROSS Governance including Service Design Approach - Final”). ACROSS D2.6 describes this process in further detail.

- **Community scoping** – ACROSS partners balanced shared values, the project’s scope, resources, and feasibility to identify use cases for the ACROSS platform. These broadly included supporting journeys around work and study for people moving between Greece, Germany, and Latvia.
- **Community participation** – Interviews and surveys with potential end users affirmed the relevance of user journeys to support work and study between pilot countries, and identified key points in the journeys of people who move across EU borders for these reasons (work and university education).
- **Persona and user journey drafting** – Based on the first three steps (laying the foundation, community scoping, and community participation), ACROSS team members developed personas around which to develop (see ACROSS D2.1 User Journey Methodology – Initial). Following a survey of existing tools and services in each pilot country, ACROSS pilot partners developed workflows for each of the supported user journeys. These workflows detailed the steps needed to be taken for each user journey and identified relevant service providers for the user to connect with at each stage.
- **Development and iteration** – Various instances of contact with external stakeholders (users, service providers, developers, public authorities) informed development of the ACROSS platform after the first user journeys were drafted. Testing and feedback refined and added specificity to the user journeys supported by ACROSS.
- **Finalisation and technical implementation** – User journeys have been validated through user testing and are technically implemented into the ACROSS technology. This involves the following steps:
  - Service catalogue registration – Pilots or country authorities must first register the services intended for the specific journey in the Service Catalogue.
  - User Journey Modelling – User Journey Creation: Experts (e.g., pilot partners) in user journeys utilise the User Journey Modelling Tool (UJMT) to craft the User Journey. This involves specifying: the country of origin; the country of destination; the purpose of the journey (e.g., work or studies); a description of the journey; the phases required to complete the journey; the actions within each phase; and the services associated with each action (pulled from the service catalogue).



- Journey parameter processing – The Journey parameters (outputs of the UJMT) are transmitted to the User Journey Service Engine. This engine processes all the data provided by the UJMT, as well as the metadata from the Service Catalogue for each service connected to the journey. The User Journey Service Engine subsequently transmits the necessary data to the Citizen Front End for rendering the journey in a user-friendly manner.
- **Critical analysis and provision of recommendations** – As a research and innovation project, ACROSS’s user journey methodology has a responsibility to inform development around digital identity in Europe. A fundamental aspect of our methodology is not only to create a user journey, but also to understand the limits of user journeys and their potential impact on people in Europe. This report thus provides a critical analysis of e-ID and persona-based design and identifies four concrete recommendations for developers of other digital identity services (and in particular public digital identity services). **This critical analysis is presented in this report in chapters 2 and 3, while recommendations are elaborated in chapter 4.**
- **Continued research and application of ACROSS technology, methodologies, and service design approach** – ACROSS partners consider further potential applications of ACROSS and means of sustaining its process of research and innovation through the development of a *value proposition* (described further in D7.8 *ACROSS IPR Management, Business Models, Business Plan – Final*). This includes considerations of how future iterations or adaptations of ACROSS might include additional user journeys.

### 1.1.3 A note on iterative design and the complexity of user journeys

A staple tenant of iterative design is to start with something simple and incrementally work towards something more complex. This notion is present in concepts like minimum viable product (making the most basic functional outcome); proof of concept (demonstrating that a concept can be applied in practice); and incremental, progressive, and agile development (all of which iteratively develop technology from the basis of simplicity). These notions apply to technical development in a general sense but can also be applied to user journeys and user journey methodologies.

An iterative user journey methodology begins by creating a simple user journey – one which allows for initial technical development to begin and serves as a prototype from which to develop further. Simple user journeys in this regard limit the scope of development (at first) to what is most immediately necessary to address the core problem at hand. Once an initial, low-complexity user journey has been accounted for by technical development, then it may be further iterated into additional and more complex user journeys.



This approach was generally taken in the ACROSS user journey methodology and its development of personas and user journeys. In this case, the personas presented in D2.1 represent the simplest form of a user story – a student or employee who needs to move from one European country to another, presumably with no unique difficulties in doing so (i.e., it is assumed that they meet basic requirements for identification, funding, eligibility for the job or education, and so on). As participatory design with end users continues, more complex user journeys begin to emerge, as demonstrated for example by the workflows (lists of steps to be taken in a specific user journey accompanied by links to relevant service providers, presented in D6.1 “Use case scenarios & roadmap”). In the later stages of development, user journeys may be modelled to a high level of completion for specific use cases (as is facilitated by the user journey modelling tool).

This iterative approach can be very practical for technical development, as evidenced by its widespread uptake as an industry best practice. In terms of users journeys around digital identity – particularly for those around largescale efforts like eIDAS and SDG which have a continental impact – an iterative approach that begins with simple user journeys threatens to exclude people with highly complex user journeys from being able to access necessary services. Due to the limited scope of ACROSS, we have not technically incorporated the most highly *complex* user journeys – such as the journeys of users with functional limitations, low digital literacy, or a lack of official documentation – into the ACROSS technology. Nonetheless, we view such ‘at the margins’ cases as being highly relevant for consideration by other developers, see D2.4 “Cross-border service gap analysis – final” for more in depth discussion about the user journeys at the margins. As is described in the forthcoming chapters, we consider the most complex user journeys to better understand how digital identity services in Europe can be as inclusive as possible. Designing digital public services for the margins benefits the people at the centre – the simpler user journeys – too, as anyone might require additional support and inclusive services at a point in their lives. Our analysis concludes that the facilitation of complex user journeys is likely technically feasible and could be the subject of further research and development of ACROSS or other digital identity systems.

#### **1.1.4 Additional impacts of user journey methodology on ACROSS user journeys and technology**

The user journey methodology’s most core contribution to ACROSS user journeys and technology regards the way in which it identified, informed, and encouraged the notion of ‘citizen centricity’. This contribution is further elaborated in the publication “Enhancing cross-border mobility by adopting a user journey approach for digital public services” [8]. This study examined the current state of cross-border mobility



regarding the challenges individuals face when working or studying abroad and the role of technology in facilitating mobility. The user journey approach was used to identify and prioritise citizens' essential needs and pain points in the cross-border mobility process and to design and test digital services that address these needs in an integrated and user-centred way. The research involved qualitative and quantitative methods to gather data from experts and citizens in different cross-border mobility scenarios, including interviews, surveys, and usability testing. The research results provide insights into the potential of the user journey approach for enhancing cross-border mobility and inform the development of digital services that support seamless and efficient cross-border mobility.

Following the previous research article and "D6.2 Use case evaluation and impact assessment – Initial", pilot partners (GRNET, DATAPORT, VARAM) conducted more extensive research for the evaluation of the ACROSS solution and an assessment of its potential impact. The process of the assessment activities and the findings of that research are depicted in "D6.3 Use case evaluation and impact assessment – Final". The ACROSS platform was populated with five demo user journeys and the assessment material was prepared in collaboration with Lisbon Council and Timelex (surveys, presentations, consent forms etc). The assessment activities included surveys both for citizens and for experts (on citizen mobility, service delivery, policy making, etc.) from the public and from the private sector. In the anonymous surveys the participants could have a guided tour or freely explore the platform before answering a series of open and closed type questions. In total, 124 citizens and 35 experts participated in the three pilot countries and their feedback was mostly positive, allowing the project team to reach the goals that had set initially. The findings of this research contributed also to the final updates of the platform as well as to forming a Toolbox for stakeholders for future implementations of the ACROSS solution.



## 2. Administrative anchor identity as an exclusionary factor for access to service provision

Task T2.1 “User Journey Methodology Definition” facilitated research to bridge gaps in overarching user journeys focused on cross-border mobility life events. D2.4 “Cross-border service gap analysis – final” identified that a lack of an administrative identity anchor (such as a passport or social security number) is a disabling factor in such user journeys. Without such an anchor, people attempting to access services in a cross-border user journey often find themselves stuck. This can have dire consequences, especially for people from marginalised groups including undocumented people, people in a refugee situation, people moving due to push factors, and people whose status or journeys are not accounted for by standard processes.

### 2.1 Digital Identity and Access

Digital identity and access are inherently linked. This link is also relevant for service providers, who need to confirm that someone is who they claim to be, and to identify whether someone makes enough money to pay rent, meets residency requirements for work, or is formally documented locally for use of public services like the library and public transportation.

This link between identity and access is particularly problematic for people who find themselves in situations unaccounted for, or who otherwise lack certain documentation. This link often means that 'undocumented people' are particularly disadvantaged. Without an anchor (like a passport or national ID) from which to build up the various aspects of their digital identity, they do not have access to fundamental services for establishing oneself – healthcare, banking, and employment to name a few.

People in these circumstances may become trapped by contradictory rules or conditions (e.g., they need an address to start a bank account but need a bank account to rent an apartment), or otherwise be caught up in bureaucratic backlog that prevents them from furthering their journey at all. In other words, waiting for the government or having fallen outside of the established process, they are totally stuck.

The bottleneck occurs in part from the centralisation of trust. We are used to trusting centralised sources, like large tech companies or government issued IDs to confirm access and digital identity, for example when a website suggests to “log in with Facebook or Google”, or “upload a photo of your ID”. But it is possible for us to place trust in other sources – it is something that human beings do, and have been doing for a long time, but is relatively lacking in the digital sphere.



As this chapter demonstrates, it is possible to bridge the gap faced by those who lack an administrative identity anchor. This involves opening up the capacity to issue credentials. Currently, this capacity tends to only lie with governments (and at times large [tech] companies). **A more accessible schema would allow trusted members of a community – whether individuals, groups of individuals, or other trusted institutions who have their own established anchor – to issue credentials.** In this way, a person who lacks a formal administrative identity anchor can temporarily latch onto someone else (who *does* have an existing administrative identity anchor) as a meaningful yet temporary and less formal anchor, in order to bridge gaps faced on their journey towards formally establishing themselves in a new country.

## 2.2 (non-digital) User Journeys for Access and Trust

Developers – in particular developers of eIDAS and the SDG – face the question of how digital wallets might facilitate the sharing of trust. The question is not primarily digital in nature (how to build a technical system) but is rather a question of how phenomena like trust, vouching, and the sharing of credentials work between people and institutions. To consider this question, it is helpful to create user journeys that strip away technology and consider how sharing bits of one’s identity work on the level of human interactions around power, access, and trust.

Basic questions that non-technical user journeys should answer include: Who needs to establish trust, and why? What would they be willing to accept as sufficient evidence of that trust? In the following section, we consider these questions through the fictional non-technical user journey of Cornelius the Capybara.<sup>2</sup>

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<sup>2</sup> This story and reflection were also published as a blog on the Waag website:  
<https://waag.org/en/article/decentralising-trust-digital-wallets/>

### 2.3 Cornelius the Capybara: a non-technical user journey

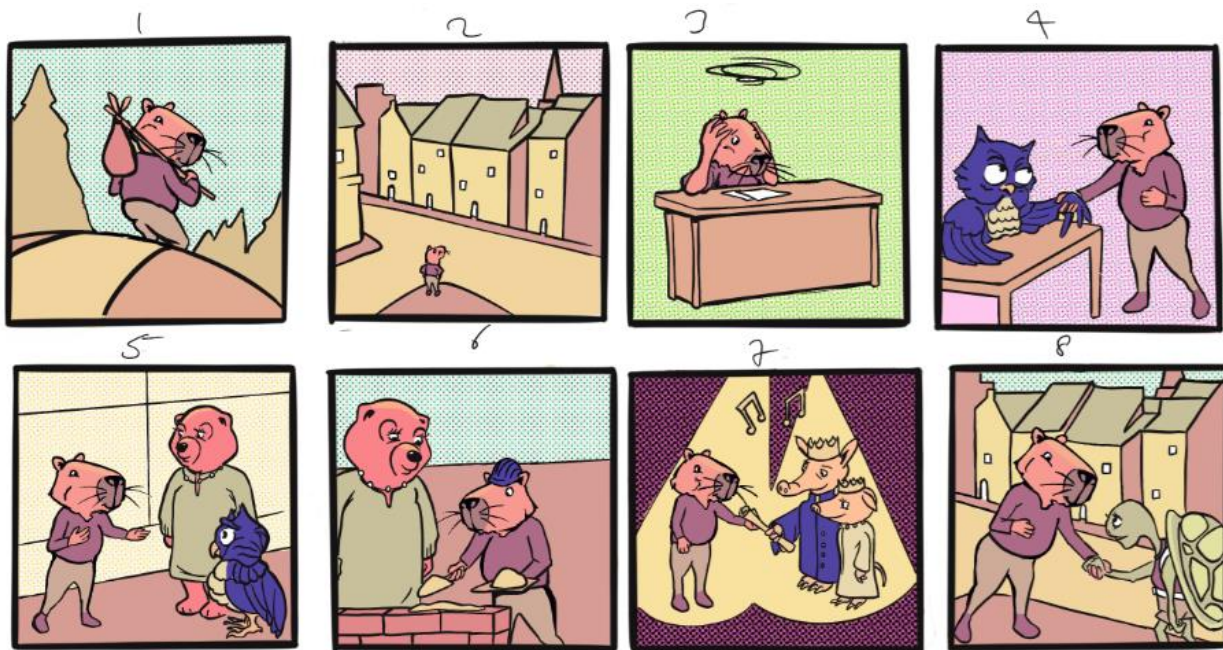


Figure 1: The story of Cornelius the Capybara

- 1 Cornelius the capybara was beloved in his hometown. Everybody knew Cornelius's reputation: he was a great guy – they could trust him to be honest, reliable and dependable.
- 2 One day, Cornelius set out on a journey to a new kingdom, where was eager to become a contributing member of the community.
- 3 But in this new kingdom, nobody knew Cornelius or his reputation. They didn't know if they could trust him to be honest, reliable, and dependable.  
"I'm stuck," he said.
- 4 That was until Cornelius became friends with a wise owl. The owl was an anchor in the community, who everybody knew and trusted. In getting to know Cornelius, she gained trust in him as well.  
"I want to contribute to the community, but nobody will trust me," Cornelius told her.  
"I'll vouch for you," she said.
- 5 The owl introduced Cornelius to her friend, the bear, who was looking for new employees. "If you're cool with the owl, then you're cool with me," the bear said.
- 6 So, Cornelius got to work. He quickly proved himself trustworthy: honest, reliable, and dependable. His good reputation started to spread through the kingdom.
- 7 Cornelius was able to build upon the trust he'd established – now that the bear and owl trust him, who wouldn't?! He was welcomed as part of the new kingdom, and the King and Queen gave him documents to prove it. Cornelius had his own administrative identity anchor.



- 8 One day, a tortoise moved to town. She was so slow that, by the time she arrived, all her documents had expired.
- “Don’t worry,” Cornelius told her. “I can vouch for you.”

## 2.4 Reflection on Cornelius’s User Journey

What does Cornelius’s user journey tell us about digital identity? There are two main takeaways:

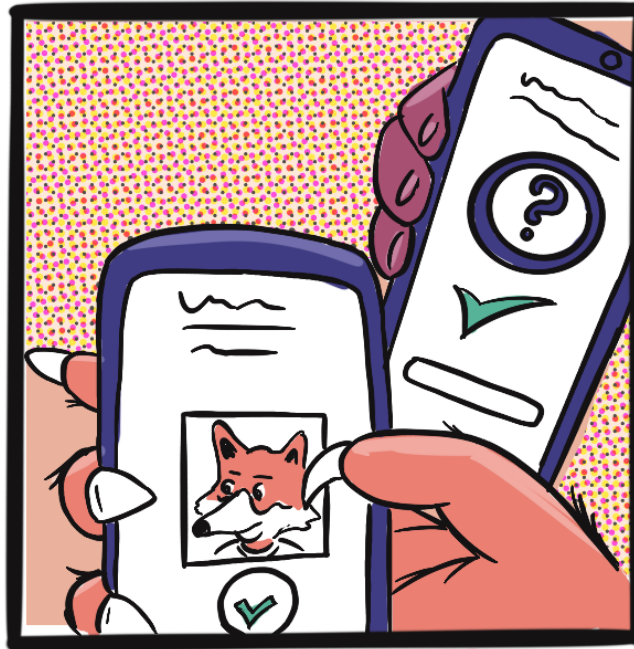
- The ‘owl’ and the ‘bear’ could represent different actors. The owl is an issuer of trust, and could stand for a trusted community organisation, or even established residents. The bear represents a service provider. In this case, he is willing to accept the owl as a source of trust.
- By decentralising sources of trust, we can help people in dire need of moving forward. If Cornelius had not had the help of the community to bridge the gaps he faced, he would have never been able to reach the requirements to become officially acknowledged as a citizen.

It is technically possible to facilitate credential-sharing as was done in the case of Cornelius by opening up trust mitigation to “authorities” beyond centralised sources like government bodies to include trusted individuals and groups.

## 2.5 Applying Lessons to Digital Systems

We can imagine a digital wallet facilitating this type of interaction: for example, the owl may issue Cornelius a credential that he could then share with employers and other service providers. Better yet, Cornelius could already have a credential from his homeland that is recognized and accepted in the new kingdom. This is similar to the interactions facilitated by ACROSS, where eID credentials issued by one European country can be digitally shared with and accepted by service providers in a new country by using the eIDAS Framework.





**Figure 2: Excerpt of the story of Cornelius the Capybara**

A schema for peer-to-peer credential issuing was illustrated by the GebiedOnline pilot in the DECODE project. GebiedOnline (<https://gebiedonline.nl/>) is an open-source social network based around neighbourhoods and communities of interest. In this pilot, the challenge was to establish that a person was a local resident of a particular neighbourhood without relying on a centralised issuer of trust (like a government-issued ID). To facilitate this, the proof of concept designed a peer-to-peer credential issuance system, in which a user was able to join a community group if three established members vouched that user was indeed a member of the neighbourhood.

We can imagine this same mechanism being applied to various use cases and facilitated by the issuing of credentials by established citizens, a group of citizens, or a trusted organisation (like a local NGO) mediated through a digital wallet. If service providers are willing to trust decentralised sources, then this can be designed for and facilitated technically.



## 3. Equitable Digital Public Services

### 3.1 Using Personas to Design for Equity

Inclusion and equality are vital design values, especially in a field like digital identity where access and freedom are at stake. The online availability of e-governance services is expected to enhance the efficiency, transparency, accessibility and accountability of the government and to enforce values of equality and impartiality. As these services become ubiquitous, the question of the access to and distribution of the benefits of the services becomes more important. E-governance services must be accessible, useable, and beneficial to all citizens who want or need to make use of the service, including those who belong to historically disadvantaged groups, have access needs and/or are underprivileged. The question is whether and to what extent these digital public services are designed with the diverse needs of citizens in mind.

Digital public services ought to be specifically designed to consider the needs and capabilities of historically disadvantaged social groups, to lift them up and support them in their endeavours. As we argue in D2.4 “Cross-border Service Gap Analysis – Final”, e-governance services that are designed for the people in the margins better serve everyone using them, including the elderly and digitally literate. Conversely, e-governance services that are developed without explicitly designing for inclusion and equity merely strengthen the dominant social hierarchies. Actively including and explicitly addressing the needs of marginalised people in design processes is the only way to ensure all citizens can adequately make use of the service. This is what we describe as designing for equity: an approach in which the value equity is taken as a central design principle.<sup>3</sup>

The concept of equity is multi-faceted. This is reflected in Ruijer et al.’s four complementary definitions of equity:

- The first concept is *distributional equity* and is most prevalent in the literature on e-governance; it refers to *fair access* to government services or benefits [9, 10, 11, 12]. For example, to ensure distributional equity, digital public services must be available in various languages and be accessible regardless of abilities [9, 12]; people without internet connection need physical access

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<sup>3</sup> These findings, along with our reflections and further academic literature research, led to the writing of an academic paper entitled “Equitable Digital Public Services: Using Personas to Design for Equity” (Hoefsloot & Van der Burg, forthcoming). This paper was submitted to the [DGO EGOV2024 conference](#), as part of the *Emerging Issues and Innovations* track. We will also present our findings at the [PublicSpaces Conference 2024](#), hosted in Amsterdam on the 6th and 7th of June. As the paper is currently under review, we have chosen to present our research here through excerpts from the article.



points, people with low digital literacy need support to develop the necessary digital skills to acquire access [9, 11].

- The second concept of equity is *procedural fairness* [10, 11]. Procedural fairness means that people (as well as their data) must face the same tasks, actions, rules, and regulations, regardless of differences such as race, gender, socio-economic status, ethnicity. It would not be equitable, according to this definition, if some social groups have to deal with a higher administrative burden than others, merely because aspects such as their gender or ethnic background. This concept of equity demands transparency of the technology behind the digital public service, in order to be able to control whether it demands different people to follow the same procedure or not [11].
- Thirdly, *process equity* imposes demands on the consistency in the quality of public services delivered to the citizens [10, 11]. It requires that different social groups have the same experience when they use public services, regardless of their characteristics or capabilities.
- Fourth, *outcome equity* prescribes that public services must have the same outcome for all users [10, 11]. According to this definition, equity requires not only that everyone is entitled to identical opportunities, treatment and resources, but to the realization of equal benefits as outcome [12]. Citizens who start with different (digital) abilities, genders, and socio-economic and ethnic backgrounds, may experience a digital public service differently, but may also realize a different result because they encounter different hurdles on the way. Outcome equity states that no matter one's starting point, the outcome should be the same.

These concepts of equity point out that different kinds of users may not only have different access to a digital public service but may also have an entirely different user journey and eventually end up with a different outcome. Striving for equity in the design of these digital public services, requires therefore that designers pay attention to the user journeys of different types of users. Ruijter et al. add that these four definitions of equity are not separate; they are complementary and must be seen as parts of a whole [11]. To guarantee equity for all citizens, all four of these conceptions need to be taken into account. Additionally, the authors argue that the voices of different social groups must be included and represented in policymaking and every stage of the development of public services [10, 11]. Inclusive co-creation and participatory design lead to more inclusive and equitable digital public services [11, 13]. However, including representatives of all the social groups of target users of a nationwide e-governance solution is a massive undertaking. The question is therefore: how can large-scale digital public services be designed feasibly and equitably, i.e., with consideration for these four principles of equity?

To answer this question, we explored the use of personas in design, one of the methods we used in ACROSS. We investigated different ways to create personas and evaluated the potential of the personas-



based design methods to be used to design for equity in digital public services. At the core of the persona-based design method lies the creation of a detailed, fictional, often archetypical, user model, which represents a potential end-user of a service or product. Such a persona comprises ethnographic as well as psychographic descriptors, including behaviours, goals and desires. Based on qualitative and/or quantitative research, the developers of the service acquire insight into the background, typical behaviours, goals, and motivations of end user groups which form the basis for personas [14, 15]. These personas reportedly allow the developers to better understand end users, in all their diversity, and tailor the design of their service to them [14, 15, 16, 17].

The applicability and benefits of persona methods largely depend on how thorough the user research and persona creation is, especially regarding the selection of users. However, while there is quite some literature that explains how to design personas, there is a lack of guidance on how to implement them; how to let them guide the design of a product or service; and how a persona can be used to 'simulate' the behaviour of a user. Personas are created based on quantitative and/or qualitative research results, which give insight into the ethno- and psychographic descriptors and needs of the end users. However, how to translate these empirical research results to the demographic and psychographic descriptors of a persona is poorly described in the literature. Nevertheless, this is a normative and subjective process, in which the design choices have significant consequences on the set of personas and by consequently, the final design of the service. To create equitable services, it is important that the four aspects of equity as described by Ruijter et al. are taken into account in every step of the design process; from the empirical research to the persona creation and the final design of the service.

In the context of e-governance, distributional equity describes the fairness of the access to and benefit of government services for different social groups. Similarly, process equity focuses on the equal quality of the service that is offered to all citizens, and procedural equity describes how all citizens should be faced with the same steps and user journeys, regardless of personal background. In other words, individuals from different groups should have the same access to and quality of the government's offered benefits and services. These are principles that can be designed for; they can serve as guiding values in the design and decision-making processes. However, the last definition of equity, outcome equity, is more challenging to design for. The outcomes of a service are affected by external factors such as whether the potential end-user makes use of the service and does so correctly and completely, among other factors. While this is something a design team can take into account in their user journey design, it falls outside of their scope of control. Outcome equity is more an impact measure than a design principle; it behaves slightly unpredictably.



Using personas is meant to improve the user journey design by centring it around the user's needs, goals, and behaviours. Creating a clear understanding of the users is important in this approach to design. Designers are encouraged to create multiple personas based on different types of users. This way, the personas represent the different user groups. One of the pitfalls here is that there is no guidance regarding the identification of which user groups to include or which to exclude. In fact, it is not recommended to be exhaustive in the user identification or to include representatives of all user bases in the design, as this would make the persona set unpractically large. However, different social groups have different capabilities and needs. These needs will not be answered by the design if certain groups are not represented in the user research and persona creation process. The added focus on designing for equity can help navigate this pitfall; it can help determine how to select and form personas based on complex and varied empirical information. Designing for equity forces a design team to critically look at their user base and to ensure that they are not reinforcing existing structures of power, inclusion and exclusion. Through this value-driven focus, designing for equity is complementary to the persona method, as it fills some of the gaps in the current literature regarding persona methodologies.

However, designing for equity does have implications as to how the persona method is approached and employed:

1. To ensure consistency in the quality of public services and equal criteria in the associated procedures, the personas must reflect the needs and capabilities of all target users. This way, the e-governance service can benefit all users and empower them to achieve their goals in an equally effective, meaningful, and engaging manner. Thus, it is essential to use an elaborate user research method before creating the persona, with representatives of different social groups. Special attention must be paid to people who might not be the most visible users.
2. The end-users must be given a voice in the design and decision-making processes. If the goal is to serve all citizens, designers must actively and explicitly include individuals from all communities, especially the historically marginalised ones, in their user research and design process. Lastly, designers must be transparent about the choices they make in the research, persona creation, and design processes, as they significantly affect the resulting service. They must be aware of the potential exclusion their design choices might bring about. Importantly, the people who are excluded from the design process must not be citizens from historically marginalised groups. That would undermine equity as a design principle.

In conclusion, the persona method does not guarantee equity, but it has the potential to bring about equitable processes, procedures and distributions of the e-governance services, as long as the method is employed in a thorough, extensive, and inclusive manner. Outcome equity can then be used as an impact



measure to assess whether the chosen personas and overall design approach were successful. Likewise, developers of private services, especially when using a personas-based design method, can benefit from an equity by design approach. This should be a requirement when offered in a public context like ACROSS. Nevertheless, the personas cannot replace the participation of actual end-users but merely serve as a supporting method. The end-users must still be given a voice in the design and decision-making processes.

### 3.2 Designing against isolation

The design for equity mindset can fill certain gaps in the persona design approaches, it provides a practical focus in the problem space of value-driven digital identity, while optimising the product design for equity and inclusion. It encourages the designers and developers to focus on the capabilities and desires of people from historically marginalised groups who might have additional access needs. This would result in a digital public service that is accessible, understandable and tailored to the people who can benefit from the service the most.

Here, we would like to propose one approach for future research. Many of the methods employed to design digital public services, including the persona approach, are inherently individualistic. These methods are focussed on designing for individual users. This goes for both the user journey and persona creation methods as well as the resulting fictional story: a persona goes through their user journey by themselves. In the research phase, the end-users are asked what their needs, capabilities and desires are as an individual, and afterwards, the individual users are asked to give feedback on how they experience the service.

However, humans do not live individual lives. We live in communities, where we learn from, share with, and support each other. Think of the example of Cornelius the Capybara: Cornelius was able to find a job, settle, and start building a new life in his new hometown due to the support he received from his fellow townspeople. This is representative of how humans settle in a new neighbourhood, city, and/or country. We rely on networks and connections, on shared tips and experiences, and on infrastructures that facilitate this. There are, for example, a plethora of Facebook-pages specifically geared towards expats who moved from country X to country Y (e.g., "[Americans in the Netherlands](#)"). These pages give a platform to valuable interactions and exchanges of knowledge, goods, and even housing.

While this is only one example of a private digital platform that aids people in their journey of moving to and settling in a new country, it is indicative of a design value that we could incorporate in the design and delivery of digital public services. It would be worthwhile to investigate how the design of digital public



services – and the ACROSS platform itself – would change if they were designed not for individual citizens and their individual user journeys, but rather for networked citizens and their collective users' journey. This is an avenue for further research and development of the ACROSS platform and for digital identity services in general.



## 4. Conclusion: Summary of outputs, findings, recommendations, and lessons learned (for other developers of cross border services)

### 4.1 Summary of Outputs, Impact, and Uptake

Various aspects of the user journey methodology described in this report were presented during the following events and publications:

- Stakeholder Dialogue Symposium with and for Undocumented Residents, May 2023
- Identity Week Europe & USA, June and October 2023, respectively
- 4TU Ethics and Technology Research Day, September 2023
- Public Spaces conferences, 2021-2024
- Digital Governance Society: EGOV2024, September 2024

The non-technical user journey of Cornelius the capybara, based on peer-to-peer and community-to-peer credential sharing, was of particular interest to the City Rights coalition in Amsterdam, who works with helping undocumented residents gain access to service provision. Following a presentation of Cornelius' user journey, we further explored how the ACROSS user journey methodology could help to provide access to healthcare for undocumented immigrants.

In this use case, the coalition faces the problem that undocumented residents have a right to access healthcare, while medical tourists do not. However, in the absence of a government-issued ID, healthcare and insurance providers cannot distinguish between undocumented residents and tourists. A potential solution to this problem would be to institute a system in which local NGOs who work with undocumented migrants issue a credential that says, 'the holder of this credential lives in Amsterdam and has been working with our organisation for an established period of time.' In this way, trusted community organisations vouch that a person is indeed a resident, which can be used (in the absence of a government-issued ID) to demonstrate residency to healthcare and insurance providers.

This external application of the ACROSS user journey methodology highlights both the opportunities and challenges of implementing a peer-to-peer or community-to-peer credential sharing schema. For example, this particular case faces the difficulty that it would necessitate the endorsement and participation of various stakeholders, including people who lack a formal government-issued ID, healthcare providers, health insurers, and governments. Nonetheless, we are continuing to seek use cases to apply this sort of user journey in ways which could provide people (who lack documentation) access to necessary services.





The development of eIDAS, the Single Digital Gateway, and other digital implementations around digital identity in Europe aim to be open and accessible for all people, including those whose user journeys are not accounted for by established bureaucratic processes. These development processes using digital wallets would benefit in terms of accessibility by designing for systems that allow for decentralised credential issuing and sharing, including peer-to-peer and community-to-peer schemas.

## 4.2 Findings, recommendations, and lessons learned

The findings of the ACROSS user journey methodology, which identifies the need for robust mechanisms for accessibility and inclusion, are:

- **European digital identity systems should allow for peer-to-peer / community-to-peer credential sharing.** Decentralising the capacity to vouch for, issue, and share credentials may allow for a more nuanced and human approach to digital identity, and hold promise to help people overcome roadblocks and gaps in their user journeys.
- **First develop user journeys that are free from technology, and instead focus on human-to-human and human-to-institution interactions around trust. Later, develop technical user journeys that facilitate the (non-technical) journey of sharing trust.** This strategy helps to root user journeys in real life needs and possibilities and helps to reveal and prioritise intangible necessities around trust, access, and communication. This strategy can also help non-technical experts to more easily take part in the creation of user journeys, and to clarify design requirements and priorities for developers.
- **Develop for users' journeys – that is, develop for user journeys against 'isolation'.** In the field of cross-border movement, as in many other contexts, people tend to operate more smoothly in communities of support rather than in isolation. Digital systems which support cross-border movement and other user journeys can help users by fostering, enabling, or accounting for the role of community support, rather than developing user journeys to be undertaken by individuals in isolation.
- **Develop user journeys based on real people rather than personas.** Real people provide genuine insights and experiences that fictional personas may lack. Developers can gain a more nuanced understanding of and empathy for a user's needs by communicating directly with them. This also helps in the process of iterative development and validation, as real people can confirm which technical solutions do and do not work for them.



- **Design for equity** – Create services and user journeys to be equitable by incorporating the four complementary definitions of equity (*distributional equity, procedural fairness, process equity, and outcome equity*) into design and development processes.



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