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Service Journeys as Boundary Objects in Participatory Processes for Multi-stakeholder Engagement

the Case of the easyRights Journeys

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Abstract: Design disciplines are increasingly using journeys as a tool that addresses multiple purposes. Also known as Journey Maps, User Journey, Customer Journey, Experience Journey, or Service Journey, they represent the interaction of a person with a product or service step-by-step. This compilation of data reveals valuable insights for companies, organizations, decision-makers, managers, and service-owners to empathize with their users, triangulate their pain points and identify opportunities for improvement and innovation. Consequently, it is easy to understand the popularity of this method. This paper describes the case of the use of journeys in the easyRights project1[1] and presents their value as boundary objects; as a common artifact that facilitated the interaction of members of various groups of stakeholders, affording collaborative knowledge collection, generation, and distribution –traditionally attributed to boundary objects–, but also complementary strategies –like the identification of knowledge opportunities, the management of knowledge generation and the concurrence around such knowledge.

Keywords: service journeys; boundary objects; multi-stakeholder engagement; participatory design

1. Introduction

Service journeys are considered the essential tool for service designers. Defined as "a visualization of the experience of a person over time" (Stickdorn & Schneider, 2010); or as a documentation of a "walk in the customer's shoes" (Holmlid and Evenson, 2008), they have been deeply explored in literature in the last decades due to their potential to reveal significant insights on users for companies, organizations, managers or service-owners. In words of Schneider et al. (2018), "journey maps make intangible experiences visible and facilitate a common understanding between team members", making their popularity rise among the

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[1] easyRights is a EU-Funded project, funded within the H2020-ICT-2015 - RIA call (*Societal Challenges - Europe in a Changing World - Inclusive, Innovative and Reflective Societies*)

fields of Experience Design, Management, Marketing, or Public Service Design (Zomerdijk & Voss, 2010; Parker and Heapy, 2006; Edelman and Singer, 2015). In the case of Service Design, it has even become the epitome of the field; the quintessential tool of every service designer or project.

Such belief is not accidental. By looking at the portfolios of service design studios (Kimbell, 2011) or the reports of service design projects, we can almost always find the representation of the user journey. As service design is, both theoretically and practically, a co-creative field, the development of journeys is also, in some form, a collaborative process (Schneider et al., 2018; Väinämö, 2019). In most cases, these models are created following similar methods: after some initial research the designer - or group of designers - collects the data obtained in the field representing the archetypical experience of the state-of-the-art steps and interaction of a user in regards to a service (Segelström and Holmlid, 2009). In this case, a journey may provide meaningful insights to the service owners or managers on how the users respond to specific tasks or inputs along the journey (Marquez et al. 2015; Mucz and Gareau-Brennan, 2019), triggering the action for change and inspiring innovative concepts or ideas to improve the service. In some other cases, the journeys are used to represent the ideal pathway of the service interaction, working also as a backbone in the ideation stages of the design process (Pomeroy-Stevens et al., 2020).

Considering the Design Council's Double Diamond model for the design process representation (Design Council, 2005), most journeys are generated in the *Define* phase of a design process, as a converging point summarizing the findings of the *Discover* phase and inspiring the upcoming *Develop* phase. Afterall, journeys have proven to be relevant in the definition of service requirements or the network of actors interacting in the service.

The practice of service design, however, still reveals novel aspects of the use of this tool. Our paper is an example of potential applications of journeys throughout several key moments of a collaborative design process beyond the more traditional uses of research collection and exploration of opportunities for innovation. In this case study, journeys became an essential facilitator for discussions, planning conversations and agreements among an heterogeneous group of stakeholders.

Service journeys in easyRights took multiple roles. They were involved in the collection of data, generation of ideas, management of essential documents, coordination of stakeholders, and decision-making. In such functional diversity, knowledge was the common ground. Journeys worked as the tangible interface between knowledge and actors coming from different cultural and professional backgrounds, acting as a support for interpretations, a mechanism for integration of expertise, and a mediation tool between groups of stakeholders. By contributing to the collection, distribution, coordination and generation of knowledge, they demonstrated their value as boundary objects (Trompette and Vinck, 2019; Star and Griesemer, 1989; Star, 2010).

The term 'boundary object' was originally introduced by Star and Griesemer (1989) referring to artifacts that, shared across heterogeneous groups, contribute to problem solving among them. The term 'boundary', far from the traditional indication of an edge or peripheric space, designates in this case the shared area between two or more fields of expertise (Star, 2010). Similarly, the materialization of these objects does not come from the sense of fabrication or tangibilization, but from the actors' interaction with and towards such objects (Star, 2010).

Boundary objects are malleable; they differ on the use and interpretation each actor puts on them. This quality of plasticity and flexibility in terms of interpretation provides the boundary objects with the affordances for facilitation and mediation in cross-disciplinary collaborations (Sapsed and Salter, 2004).

Due to this characteristic, since the concept's inception, boundary objects have been associated with knowledge creation and sharing environments that require collaboration between groups of professionals from distant domains (Star and Griesemer, 1989). In these cases, the differences in status, knowledge embeddedness, and structure among actors may obstruct teamwork (Levina and Vaast, 2008; Majchrzak et al., 2012). Knowledge sharing has proven to be essential in the coordination of diverse expertises (Faraj and Sproull, 2000).

The exploration of boundary objects for this particular purpose has taken place in a variety of contexts, including museums (Star and Griesemer, 1989), healthcare (Jamin Hegeman in Schneider et al. 2018, pp.146-148) software development (Oborn, 2010), or project management (Yakura, 2002). In the design field, sketches, maps, prototypes, timelines, personas or diagrams have been included in the research on boundary objects. This is also the case of user journeys. User journeys have been referred to as boundary objects in the literature due to their potential in this regard (Välk et al., 2019; Sperano, 2018; Schneider et al., 2018). In the book This is Service Design Doing (2018), Mike Press stresses this value of journey maps as "powerful boundary objects that enable conversations about services" to facilitate a common understanding between disciplines, in particular in fields where communication is intricate, such as healthcare. Journey's goals when applied as collaborative design tools (understanding situations; uncovering opportunities, key moments, actors or pain points; and using them as a starting point for action) resonate with the knowledge generation and transferring of boundary objects. For such reasons, Välk et al. (2019), define them as incidental situated learning affordances.

This paper aims to specify and describe the perceived contribution of using user journeys in multi-stakeholder collaborative design processes. In other words, its intention is to dig into the great variety of applications that this well-known tool may unfold when introduced as a boundary object into a project with actors from a variety of fields unrelated to design.

2. Service journeys as boundary objects in easyRights

In their original study on boundary objects, Star and Griesemer (1989) present the case of the Natural History Museum in Berkeley, where a varied group of naturalists, biologists, amateurs, and university administrators, succeed in cooperatively shaping a zoology museum despite their diverging points of view (Trompette and Vinck, 2009). Like originally occurred among the actors of the Museum in Berkeley, easyRights consortium members and other participants succeeded in cooperating in the improvement of services for migrants.

The H2020 easyRights project is working on existing public services in four pilot cities (Birmingham, Larissa, Malaga and Palermo), with the aim of easing the linguistic and bureaucratic barriers that hinder migrants' access to public services they are entitled to. The services considered include, among others, asylum application, residence and birth registration, job finding and access to language courses. Those services are improved throughout a participatory process, aiming at *hacking* the existing services. For this reason the hackathon concept was used to qualify such process, even though the main participatory event (the hackathon) has been preceded by a long preparation (pre-hackathon) and followed by a development phase (post-hackathon) (see Table 1).

Table 1. The cycle of the easyRights hackathons, according to its goals and needs of each stage

	Pre-Hackathon	Hackathon	Post-Hackathon
Goal	To define and prepare the hackathon event	To generate technological solutions to ease migrants' access to the chosen services	To integrate the awarded solutions into the existing public services
Activities	Fully understand the targeted services	Immerse the participants into the targeted services and the identified needs of migrants	Continue the development of the initial prototypes into fully working solutions
	Identify the actors, datasets and documents involved in the service procedures	Facilitate the development of working prototypes that respond to such needs and the project demands	Test the impact and adoption of the solutions by the relevant stakeholders
	Prepare the infrastructure of the hackathon events (challenge, agenda, dissemination…)	Evaluate and award the proposed solution	Incorporate the technological solutions developed in the hackathons into the public service procedures

Each of the four pilot cities works with one local service per project cycle – there are two cycles, adding to a total of eight services intervened. As shown in Table 1, during each cycle the

services are examined (pre-hackathon), hacked (hackathon) and revamped (post-hackathon) to improve migrants' experience when navigating them. Looking at the activities of each stage in the cycle, the pre-hackathon focuses on the understanding of the service functioning and application scenario. Then, the hackathon is the event where ideas and solutions for improving that scenario are developed. Lastly, the post-hackathon phase enables the further testing, development and integration of the proposed improvement in the real scenario. This process that facilitates research, ideation and testing around the services resembles a traditional participatory design process, and has been considered as such for the purpose of this study. However, due to the overall aim of the project of 'hacking services', the working framework was titled as 'hackathon process', becoming interchangeable terms in this paper.

Although using the suggestions of the hackathons' creative atmosphere, the easyRights participatory process differed from the most known hackathons in relation to scope, participants, and format. Similar to civic hackathons (Robinson and Jonhson, 2016), these hackathons advocated for the co-creation of digital-based solutions by a heterogeneous network of actors during time-constrained design sprints. The heterogeneity of the easyRights hackathon participants includes both people with the experiential knowledge related to the targeted service, like migrants or professionals of organizations working with migrants (problem-owners), and people with the skills and expertise to generate a solution, such as coders, developers, designers, lawyers, social workers, etc. (solution-owners). The particularity of the easyRights hackathon format (pre-hackathon, hackathon and post-hackathon) facilitates the collaboration among this group of people.

The interaction within this heterogeneous group of actors started long before the hackathon event. Prior to the events, a multitude of the project collaborators with different expertise in relation to the chosen services (such as municipality officers, migrants, consultants, lawyers, organization representatives, service providers, migrants) already co-designed the service journeys, identified challenges and opportunities, and used them to prepare the hackathon calls. The value of using the journeys during such pre-hack activities are also collected in this study.

It is important to mention that, contrary to the original case of the Natural History Museum in Berkeley, the easyRights case presents the possibilities afforded by one common boundary object, used transversely across the process for different purposes, depending on the goals and, consequently, the groups of stakeholders involved. We refer as our boundary objects to the eight journeys representing the services chosen in four different project pilots. Even if each journey describes different experiences between the migrants and the corresponding service, they collect the same kind of information, in the same format, and therefore have been considered as the same structure for the purpose of this research.

2.1 The evolution of uses of service journeys as boundary objects in easyRights

In order to illustrate the values that service journeys as boundary objects provided to the easyRights project, this section displays a detailed description of the steps of the process at which journeys were used. For each step, we consider the roles of the journeys, the needs they resolved, the stakeholders that interacted with them, and the perceived generated values. All of these elements, necessary to understand the categorization of the value of service journeys as boundary objects, which constitutes the main contribution of this paper (unfolded in the next section), have been summarized in Figure 1.

	PRE-HACKATHON				**HACKATHON**			
Goal of the phase	To define and prepare the hackathon event				To generate technological solutions to ease migrants' access to the chosen services			
Needs of the phase	• Fully understand the targeted services • Identify the actors, datasets and documents involved in the service procedures • Prepare the infrastructure of the hackathon events (challenge, agenda, dissemination...)				• Immerse the participants into the targeted services and the identified needs of migrants • Facilitate the development of working prototypes that respond to such needs and the project demands • Evaluate and award the proposed solution			
Steps in the phase	Service depiction ("as should be")	Pilots research (unveiling the "as is")	Pathway iteration	Challenge generation	Hackathon communication	Hackathon event (ideation)	Hackathon event (mentoring)	Hackathon event (awarding)
Actions — Through what concrete actions of the step were the journeys involved?	Initial step-by-step pathway mapping [PT SF]	Interviews with stakeholders [TE SE PT M SO]; Participant observations [PT SF]	Reformulation of initial pathway [PT SF TP]	Individual pilot meetings [PT SF TP]; Rehearsal hackathon [PT SF TP SE M]	Dissemination of hackathon calls, including journeys [PT SF]; Introduction of the hackathon topic using journeys [HF M SE HP]	Idea generation and development (by the teams) [HP HM TE]	Mentoring of teams [SE SF HP]	Idea evaluation and winner selection [JM SF TE SE SO]
Role — What was the role of the journeys in such actions?	Canvas to reconstruct the migrant experience "as should be"	Support tool for interviews and observations	Template to collect, contrast and discuss findings	Physical support to facilitate challenge discussion	Visual narrative support of the collected knowledge	Physical support for solution-ideation	Physical support for shared discussion on the solutions	Support for discussion and decision on awarded solution
Value — What was the benefit or impact of applying the journeys as boundary objects in each step?	Identification of areas of interest for the research; Mapping of actors to involve during the research; Understanding of official procedures and documentation; Identification of service's actors, locations, solutions and devices	Collection of factual and experiential knowledge on the service; Map for planning research and observation activities; Trigger for actors' storytelling to validate the initial pathway	Information archive on the level of understanding of service procedures; Identification of key documentation and technical tools for the stakeholders; Testimony emergence of nuances in the service experience process "as is"; Emergence of new questions, interest and clarifications to research	Identification of pain-point, threads and opportunities for hackathon challenges	Empathy building for the engagement of potential hackathon participants	Empathy building among hackathon participants; Inspiration for ideas and solutions; Reference for group discussion during idea generation; Criteria for validation of ideas in the groups	Trigger for idea discussion and feedback provision by experts; Criteria for idea validation with experts	Trigger for idea discussion and feedback provision by the jury; Criteria for choosing awarded solution

Value
1. Recording knowledge
2. Generating knowledge (or ideas)
3. Explaining and externalising knowledge to others
4. Identifying knowledge opportunities or needs
5. Coordinating knowledge generation and distribution
6. Decision-making and knowledge convergence

Actors
- PT — Pilot teams
- JM — Jury Members
- SF — Support Force (POLIMI+AAU+BIC+partners)
- SE — Topic/Service Experts (Organizations, NGOs)
- HM — Hackathon Mentors
- HP — Hackathon Participants
- M — Migrants
- TP — Technical Partners (from easyRights)
- TE — Technical experts (from service provision)
- SO — Service Owners / Decision-makers
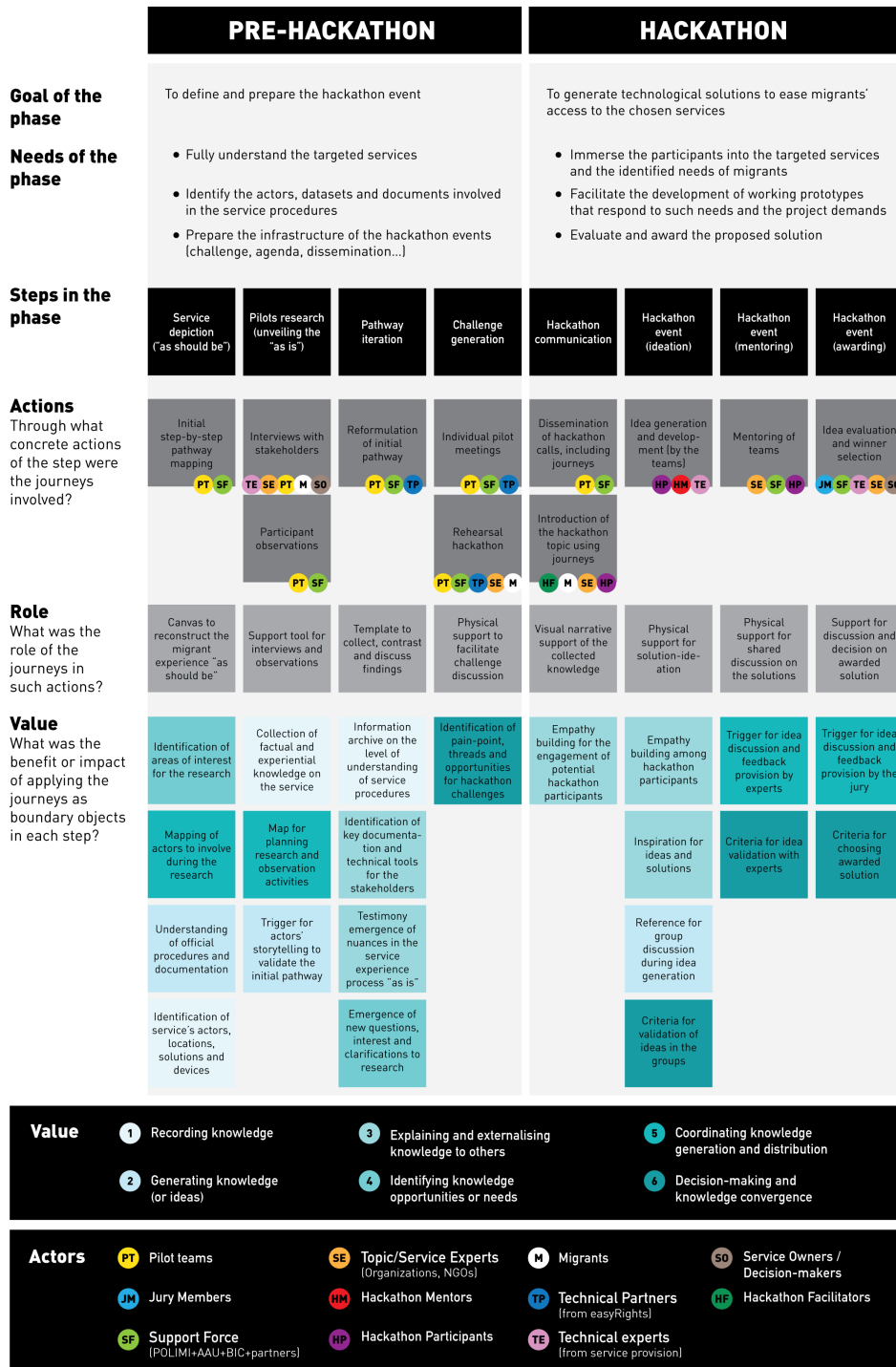- HF — Hackathon Facilitators

Figure 1. Visualization of the evolution of the actions taken, roles played and values generated by the easyRights journeys along the process in relation to the different project stakeholders

Service journeys were initially introduced in the easyRights process during the pre-hackathon stage as a systematic way to elicit the official documents needed for generating a service pathway that could be readable and workable through artificial intelligence (Figure 2). These initial versions were originally conceived by the pilot teams, as they were the providers or access supporters of the services and, therefore, the most knowledgeable among the

consortium. At this stage, "high level" journeys (very simplified) were used, that could simply help the pilot team explaining the main stages of the migrants' journey and the documents required for each stage.
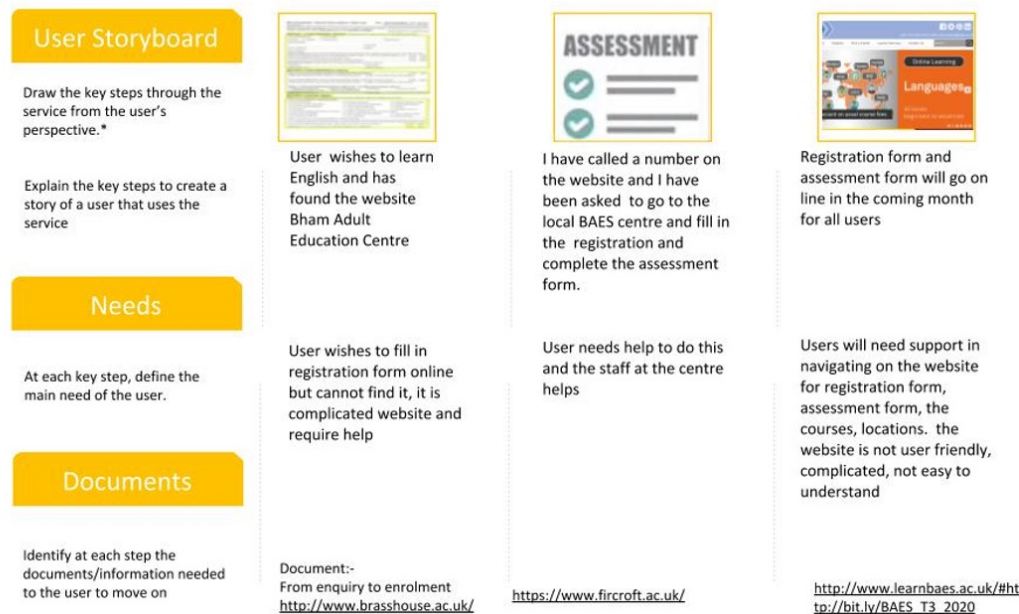

Figure 2. Birmingham Initial Service Journey on registration for English courses, their chosen service for the second cycle

This tool, however, soon became a common ground for mutual understanding between the office workers in municipalities –those collecting the official documents– and AI experts – those training the algorithm to transform the information of such documents into a comprehensive pathway for migrants. As journeys started to collect essential aspects of the service that manifested the experience of the users, they also became a storytelling support between migrants –those explaining their experience with the service– and researchers– those aiming to understand the service. Gradually, the service journeys became more abundant in information and evolved into a tangible interface that allowed knowledge sharing and interpretation among the actors of the project, fitting into the definition of boundary objects. In Figure 3, such evolution in terms of content and complexity representation is clearly perceived.

Figure 3. Birmingham Initial Service Journey on registration for English courses, their chosen service for the second cycle. The information of each step responds to: 'what really happens', problems associated, person affected, and technology

The initial patway (Figure 2) mapped the steps and documents involved in the process from the perspective of the administration Figure 2 is in fact synthesizing "conceptual knowledge" (Krathwohl, 2002) about the service: the way the service should ideally work for migrants (step 1, Figure 1). However, the ideal journey is not always the common journey regarding administrative procedures. In addition, most of the targeted services were accessed by any citizen, not only migrants. The service may present complications for citizens already familiar with the local language and bureaucracy, but for migrants who do not speak the language nor share the tacit knowledge to navigate official processes, their journey was far from such ideal representation. For this reason, a more detailed version of the journeys was needed to understand 'What really happens'. Figure 4 represents what could be defined as "procedural knowledge" (Krathwohl, 2002)

Figure 4. Close up of the Birmingham Second Cycle service journey: the section 'What really happens' became an essential section to complement the information of each step

The initially sketched service pathways were used to obtain the necessary layer of experiential knowledge on the service through interviews, focus groups and participant observations (steps 2-3, Figure 1). First, the already constructed "ideal" journeys served to identify the actors that had to be interviewed, and where to find them. In the case of the observations, the pathways helped the pilots to identify the moments where migrants encountered most difficulties, tried to find a short-cut, or needed external support to understand what was expected from them. Additionally, by contrasting the ideal represented journey to their own experiences, this tool facilitated the conversations with migrants (both through interviews

and focus groups) about the barriers, frustrations, challenges, and difficulties they experienced while navigating the service.

For instance, following the case of Birmingham, the targeted service for the second cycle was the English courses offered by the Municipality. The initial version of the journeys pointed at the need to look at the enrollment process. The pathway in Figure 2 served to outline the steps and documentation necessary, but there was no information about how the migrants experienced the initial contact and registration in the service. Understanding these issues were the main goals of the observations and focus groups carried out with migrants accessing the services. By contrasting the ideal journey with the migrants' experiences, the Birmingham team understood that the access to information about the courses and all the registration and assessment processes are in English, which constitutes a major barrier for those who have a pre-entry level of the language (Figure 3). The fear of missing out or underperforming prevents migrants from completing the procedure by themselves. Some rely on relatives to do so (Figure 4) while some others wait for years to grow the courage to make the decision for enrolling.

The journeys were applied in a similar way for the conversations held with other relevant groups of stakeholders, such as service owners, technical service providers, or professionals of organizations supporting migrants; the tool was used as a physical support for the discussion, contrasting the information already represented and triggering the inputs and knowledge of the different experts in their fields, generating a more detailed version of the journeys than the pathways (Figure 4).

Having all the above-mentioned information collected in the form of a service journey facilitated the consortium to understand the main issues presented by the service. The insights and key aspects extracted from the research facilitated the following discussions to identify the pain-points for migrants that the project should focus on solving (Figure 5). Coming from different fields, a common representation of the information regarding the service favored the constructive contribution of the involved members representing different interests of the project.

The conversations around the research insights collected in the journeys converged into one of the decision-making stages of the process. This time, the mapped pain-points of the service (Figure 5), served pilots, consortium members and external partners to decide the focus of the coming hackathon events (step 4, Figure 1). The challenge for the participants was to find solutions to the most critical obstacles highlighted in the journeys.
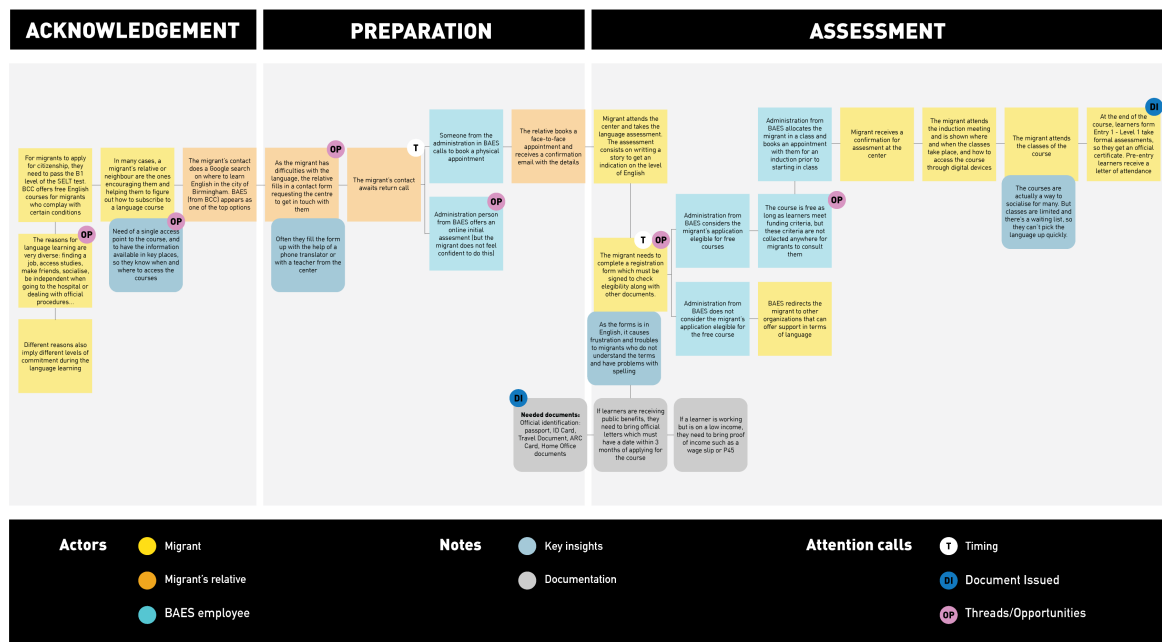
Figure 5. Birmingham Second Cycle journey map: the collected insights from interviews, focus groups and observations with stakeholders point at several opportunities about the registration process for pre-entry English level migrants

The service journey (Figure 4) was also the starting point in the hackathon events. Initially, as an empathy-building tool that facilitated participants to understand the problems experienced by migrants (step 5, Figure 1). It also served them to get an overview of the existing service and became a mediation tool for discussion in the group that inspired the ideas they developed during the event (step 6, Figure 1). Similarly, the journeys assisted the mentoring and feedback conversations by being a reference point to contrast the relevance of the suggested ideas and point at key aspects of the existing journey (such as official requirements, law, officers, etc.) that had to be considered by the teams (step 7, Figure 1).

The last day of the event, a jury awarded the winning teams with a contract to continue the development of the best solution during the post-hackathon phase. The members of the jury could use the service journeys as a common tangible interface to discuss how each of the presented solutions could benefit the identified barriers of the service that the hackathon aimed to address (step 8, Figure 1).

The post-hackathon stage aimed at the ulterior refinement and integration of the winning solutions in the existing services. The winning teams, together with the project technical team and the technical experts of the targeted services developed the prototypes into working solutions that could run as part of the service procedures. In this case, the service journeys were not explicitly used at a particular discussion. However, the initial knowledge collected through the service journeys by mapping the actors, documents, spaces and pain points became crucial again. Such understanding facilitated the identification of key users

for the tests and served as inspiration to prepare questions for validating the impact of the solutions (step 9, Figure 1).

3. Discussion

3.1 The value of using service journeys as boundary objects in the easyRights project

As explained in the previous section, the diverse uses of the easyRights service journeys significantly influenced the knowledge scaffolding in the project in several ways. As boundary objects, they favored the interactions among stakeholders in contributing to the project needs.

Looking at Figure 1, the "Values" perceived using the easyRights service journeys throughout the project lifecycle could be categorized according to their contribution to the knowledge stream:

1. **Recording knowledge**. Mainly at the initial steps of the process, the service journeys worked as a common repository of knowledge, collecting data from the different stakeholders. The journeys highlighted a logical structure on the basis of which it was possible to identify relevant actors and potential service improvements. The journeys were initially shaped with conceptual knowledge (Krathwohl, 2002); that is, explicit information on how the services should officially function. Then, they were enriched with procedural knowledge (Krathwohl, 2002) referring to the actual use and tacit understanding of the services by the users.

2. **Generating knowledge (or ideas).** The easyRights journeys played a key role in the emergence of insights from the stakeholders by contrasting the differences between how the service should run and how it is actually experienced by the users. Besides, the tools gathered essential inputs on the service that facilitated the teams' generation and development of solutions during the hackathons.

3. **Explaining and externalizing knowledge to others.** When dealing with complex bureaucratic processes like the ones involved in the easyRights targeted services, having the service journeys as tangible interfaces, facilitated the distribution of information among the many stakeholders involved. As Figure 1 shows, this value of the journeys was perceived in most of the activities of the project. Whether it was for the migrants to explain to the pilots when and how the service was presenting barriers for them, or for the participants to understand the nuances of the challenge, the easyRights journeys served repeatedly to align stakeholders, consortium members and other external partners on the services comprehension.

4. **Identifying knowledge opportunities or needs.** Using the journeys as boundary objects revealed the need for more answers and information. In the initial stages, the journeys were shaped through workshops and group analysis of the information collected. The discussions around such knowledge manifested specific lacks of information and new questions to solve, inspiring the interests and focus points of further research activities.

5. **Coordinating knowledge generation and distribution**. As the easyRights journeys collected data regarding the locations, actors, documentation, and timings associated with the chosen services, they also supported the coordination of the research and management activities in the project. Not only were the research needs unveiled (see above paragraph); they also showed who could provide such information and where to find it. They worked similarly for some internal coordination tasks, such as the identification and collection of the official documentation associated with the service.

6. **Decision-making and knowledge convergence.** In large multi-stakeholder projects, decision-making is complex. Discussions involve a great variety of points of view and expectations to comply with. Counting with a mediation tool like the journeys assisted the consortium in setting and keeping a common focus during discussions and, eventually, eased the process of drawing conclusions and reaching agreements to the group efforts forward. Similarly, it helped the hackathon teams to evaluate ideas and converge towards one effective solution proposal.

3.2 The value of using service journeys as boundary objects beyond the easyRights project

Far from their original intention, the easyRights service journeys significantly contributed to the knowledge stream of the process, as they constituted a minimal structure of knowledge recognized by the different groups of actors that was, at the same time, malleable depending on the goal. Depending on the eyes looking at them, the different actors could perceive different information from it, interpret it in different ways, and extract different conclusions from it, even if –coinciding with Schneider et al. (2018) – such information was not explicitly presented in the journeys.

For instance, in the case of Palermo, a public office employee could recognise opportunities to improve the common procedure for residence registration (for all citizens), while a migrant could point at the most stressful or critical moments they experienced during the service process, like the procedure to book an appointment at the office. Besides their divergent backgrounds and objectives, each of these groups was able to represent their field whilst articulating with others (Trompette and Vinck, 2009). Journeys served to bridge knowledge differences (Carlile, 2004; Tiwana and Mclean, 2005) and afforded negotiation and agreement between the parties.

The above-mentioned interactions were a game-changer in the project development. The needs of the design process (Table 1) demanded a fluid and efficient knowledge stream among the variety of stakeholders. The service journeys, working as boundary objects, supported this process, providing significant value far beyond their original intention.

Looking at the perceived values of the easyRights service journeys when considering their role as boundary objects in the project (described in the previous section), the first three correspond to existing literature on boundary objects. The capabilities of boundary objects in the collection, distribution, and generation of knowledge has been long discussed in the corresponding literature (Trompete and Vinck, 2019; Star and Griesemer, 1989; Star, 2010). Similarly to our list, Välk and his team (2019) discern three categories of boundary objects according to their "reason for being": (1) recording an idea or milestone in the process, (2) generating an idea, and (3) explaining and externalizing knowledge to others.

However, when considering the role of the service journeys as boundary objects in the easyRights project, such three values were insufficient to categorize all the perceived benefits of their application in connection with the project's knowledge management needs. During the process, the application of these tools played an essential role not only in the collection, generation and distribution of knowledge –traditionally attributed to boundary objects– but also in the complementary strategies around knowledge –like the identification of knowledge opportunities, the management of knowledge generation and the concurrence around such knowledge. Thus, this paper proposes to consider three more values or 'reasons for being' for service journeys as boundary objects: (4) identifying knowledge opportunities or needs, (5) coordinating knowledge generation and distribution, and (6) decision-making and knowledge convergence.

While the evidence used in this paper proceeds to one single project, the above-mentioned values were perceived across all the eight design processes that took place throughout the project's lifespan. However, as such processes were similar in their needs, the activities in which the service journeys took part were also alike, which could have contributed to the obtention of consonant results.

Nevertheless, the authors of this paper consider that the identified values of the journeys are, to a certain extent, significant to practitioners in collaborative design processes. Like the easyRights project results suggest, there is high potential in Service Journeys beyond their more traditional roles. Applied as boundary objects in multidisciplinary processes, they can take different roles and provide meaningful value to the knowledge stream:

- As a plan, the journeys worked as a common representation of the process. Initially, they facilitated the identification of key elements of the targeted services: relevant stakeholders, reciprocal interaction, documents and other requirements, constituting a course-of-action during the understanding of the migrants' needs and opportunities.

- As an eye-opener, they facilitated the discussion on the frictions between the existing codified procedures and the actual experience of the targeted services.

- As a map, journeys were instrumental in identifying a common ground of action and discussion among the actors - both internal and external to the project consortium.

- As a shared language, the journeys adapted the different languages of the involved stakeholders to the same level of discourse.

- As an anchor, they kept the focus on easing migrants dealing with the identified pain points of the service during discussions and decision-making processes at different stages of the process.

- As a trigger, inspiring the teams' idea generation from the collected opportunities.

Experimenting with uses and adaptations of familiar tools can lead to meaningful discoveries in terms of their application. As every tool, journeys offer endless possibilities beyond mere templates. We hope that the values disclosed in this paper can inspire practitioners and facilitate collaborative tasks in heterogeneous multi-stakeholder crowds. EasyRights journeys offered much more to our multi-stakeholder collaborative processes when used as boundary objects than we even imagined. Understanding and incorporating these new values to participatory projects can help designers to comply with detected needs of knowledge collection, research management or decision-making.

That being said, it is not the intention of this paper to proclaim the application of service journeys as boundary objects as the one and only mechanism to guarantee a successful collaboration in multidisciplinary processes. Literature on boundary objects is often positive on the effects of these mechanisms in favoring collaboration between knowledge fields (Swan et al., 2007; Ewestein and White, 2009). However, other authors like Levina and Vaast (2006) point at the limitations that rigid shared objects may occasion in learning environments across groups. Agreeing with Carlile (2002), the authors of this paper advocate for a cautious and pragmatic application of boundary objects, being aware of the difficulties of representing, learning and transforming knowledge. While boundary objects may facilitate discussions and understandings for some actors, they may be problematic to understand and work around for some others. Even more, as people and knowledge evolve, the same boundary object used among the same actors may be obsolete over time.

4. Conclusion

One of the main risks of cross-disciplinary collaborations lies in the gap between "reality" and how each represented field perceives and understands such reality, creating boundaries between them that obstruct mutual understanding (Bucciarelli, 2003; Välk et al., 2019). In unison with previous research on the potential of service journeys acting as boundary objects for cross-disciplinary collaboration, this paper reflects on the case of the easyRights

project to expand on the role of journeys in the knowledge stream among a diversity of actors.

Regardless of the original intention, the easyRights service journeys evolved into boundary objects throughout the project thanks to their characteristics. The case of easyRights serves as an example of how service journeys acting as boundary objects can be a great infrastructure to facilitate the knowledge stream of a cross-disciplinary project. The presented findings emphasize the significance of journeys as boundary objects in upgrading the collaboration between groups of working actors.

This paper aims to inspire design practice in transdisciplinary collaborative projects in two ways. On one hand, it proposes to consider service journeys beyond their traditional – and limited– vision as mere templates to be completed with service details. Complementary, it expands the existing research on the impact of service journeys as boundary objects in the knowledge exchange among cross-disciplinary groups of actors to facilitate collaboration.

5. References

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