

Re-imagining client learning and knowledge sharing of architectural services through a multi-layered journey map tool

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Abstract

Purpose – In this paper, we investigate the current conditions as well as possibilities of a better interaction between architects and user-clients in the Belgian single-family housing context. We specifically focus on issues around client learning and knowledge sharing of architectural services.

Design/methodology/approach – Following the research through design methodology, we report on a co-design process converging towards a multi-layered journey map tool. We analyze the discussions held between architects and user-clients during “Ideation & Design” workshops that led to this specific tool idea, within a broader co-design process context.

Findings – In terms of client learning and knowledge sharing, there is a need for (1) sharing the process knowledge, (2) clarifying responsibilities and missions of both parties and (3) considering different levels of engagement of user-clients. Current ways of interaction around these issues are mostly based on verbal exchanges during meetings and written explanations in contracts. In terms of future expectations, it has been revealed that both parties are in favor of (1) keeping the relationship trustworthy but informal, (2) using visual ways of representing the architectural journey and (3) providing additional “pedagogical” support when needed.

Originality/value – Our work not only discusses current practices regarding client learning and knowledge sharing of architectural services but also highlights the future-oriented aspirations of architects and user-clients. It proposes actionable design criteria and a multi-layered journey map tool to support the relationship between architects and user-clients, both transferable to architectural education.

Keywords Co-design, Design tools, Research through design, Knowledge sharing, Client learning, Architect–client relationship

Paper type Research paper

1. Introduction

Design and construction of private housing constitutes an important part of the architects' every-day tasks in Europe: “89% of architectural practices are involved in designing private housing” (European Council of Architects, 2022, p. 4). Belgium is at the top of the European ranking, with individual houses, extensions and loft conversions covering 62% of the market (European Council of Architects, 2022, p. 28). Belgian architects (94%) rank their relationship with the client(s) during single-family housing projects as among the most pressing issues of their day-to-day professional practice (Defays and Elsen, 2018). Still, architects struggle to adopt a service-oriented; client/user-oriented approach and there is a pressing need to support such practices to redefine the profession's relevance and credibility (Angral, 2019; Mertens *et al.*, 2023).

In single-family housing, the architect and user-client relationship constitutes a unique collaborative context. The “user-client” refers to both the future inhabitant (user) and the investor/owner (client), each bringing distinct perspectives on the building, construction process and architectural service. The user role involves considerations of the functional, perceptual, phenomenological and symbolic dimensions of the building (Luck and



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McDonnell, 2006); notably, their experiential knowledge about existing spaces and their future-oriented aspirations are most prominent (McDonnell, 2009). The client role, on the other hand, includes dimensions such as feasibility, budget, project management, etc.

The interaction between the architect and the double-hatted “user-client” begins with the initial meetings and often extends until project completion. However, this interaction might become problematic due to the user-client’s limited understanding of the architect’s profession, roles and services. This not only undermines the value of the architects but also obscures the procedural and managerial work they perform (Nobre and Faria, 2017; Samuel, 2018; YouGov, 2012). Additionally, user-clients’ limited knowledge of architecture and unfamiliarity with its terms and language can hinder communication throughout the process (Norouzi *et al.*, 2015a). Initially, the scope of architectural services may indeed be unclear to user-clients and is often gradually understood as the process unfolds (Nobre and Faria, 2017). This phenomenon, referred to as “client learning,” is crucial for building a successful relationship and achieving positive project outcomes (Siva and London, 2011).

Client learning should begin early, as late learning can lead to design flaws, mismanaged expectations, and budget or schedule overruns (Boehm, 1989; Curtis *et al.*, 1988; cited in Majchrzak *et al.*, 2005). Although client learning naturally occurs, architects can either hinder or support it. Some may use technical aspects of the project to obscure information and assert control, leaving user-clients feeling helpless and inferior (Dansoh and Frimpong, 2016). To avoid this, user-clients stress the need for knowledge sharing and effective communication throughout the project (Dansoh and Frimpong, 2016).

Knowledge sharing is influenced by both personal/interpersonal and environmental factors. According to Cummings, there are five contexts that can affect knowledge sharing: “the relationship between the source and the recipient, the form and location of the knowledge, the recipient’s learning predisposition, the source’s knowledge-sharing capability, and the broader environment in which the sharing occurs” (2003, p. 1). While knowledge sharing and client learning in architectural services cannot be entirely controlled, they can be improved. One approach is to use tools, such as mediating artifacts or boundary objects (Macpherson, 2006).

In this paper, we investigate the current needs, methods and tools for knowledge sharing useful for architectural services and client learning, as well as future aspirations of architects and user-clients. We focus on residential architectural practices in Brussels and Wallonia, French-speaking regions of Belgium. While previous studies on the architect–client relationship focus on past and present experiences (Dansoh and Frimpong, 2016; Defays and Elsen, 2018; Siva and London, 2011), our research also addresses the gap in the current literature on desired future interactions and aims to provide practical tools. Using a research through design approach, we analyze testimonies from architects and user-clients collected during four “Ideation & Design” workshops aimed at co-designing a tool.

The following subsections explore client learning and knowledge sharing of architectural services from three perspectives: communication, tools and co-design. They also review the use and potential of journey maps, as documented in the literature, to contextualize the tool that participants eventually decided to co-design during the four workshops. Section 2 details the research questions and methods used in the workshops. Section 3 presents findings about current knowledge sharing needs and future aspirations of architects and user-clients. Section 4 introduces the multi-layered journey map tool developed from the workshops and refined by the research team.

1.1 Communication perspective

Effective communication is key to achieving satisfactory design solutions and client satisfaction in architecture. Both architects and clients should prioritize clear and explicit communication, using appropriate tools and methods to avoid confusion and frustration (Dzurilla *et al.*, 2023; Nourouzi, 2015b).

Architectural design is seen as: (1) the spatial and temporal ordering of the built environment; (2) a decision-making process involving communication and negotiation to define shared goals and (3) a scheme of activities to achieve those goals (Lawrence, 1993). Current literature mainly explores the first two aspects through “design communication,” focusing on how architects and clients share needs, expectations and design proposals related to the building (for example: Chiu, 2002; Chuang and Chien, 2021; Dzurilla *et al.*, 2023; Norouzi *et al.*, 2015b; Raposo *et al.*, 2024; Russell *et al.*, 2017; Segers *et al.*, 2000; Smulders *et al.*, 2008).

In particular, the third aspect of the architectural design process (Lawrence, 1993) highlights the need for effective knowledge sharing and communication about the architectural service experience to help clients navigate the process. Although less discussed in the literature, prior research indicates that clients rely on architects to guide and support them as “tutors,” while architects stress the importance of helping the clients feel comfortable and understand the design and process (Siva and London, 2011, p. 187). Therefore, efforts at improving architects’ communication skills should also address active listening, managing expectations, persuading clients to take necessary actions and effectively communicating the project process (Taleb *et al.*, 2017).

The role of artifacts in facilitating such communication cannot be overstated (Norouzi *et al.*, 2015b). To our knowledge, no studies focus on how the sharing of architectural “process” knowledge is communicated and facilitated from a tool’s perspective. In the following section, we present a selection of tools identified as addressing this specific issue, based on the findings of our previous gray literature review (Yönder *et al.*, 2025b).

1.2 Tool perspective

From an activity theory perspective, tools, as mediating artifacts, organize and modify human activity, facilitating both thinking and action while supporting communication and knowledge exchange. They can be external (e.g. books, computers) or internal (e.g. language, concepts) (Katić *et al.*, 2009; McAvinia, 2016; Russell, 2002). Activity theory “prompts us to ask how we can ‘re-mediate’ our interactions by changing our tools or the ways we share them with others” (Russell, 2002, p. 66).

Some tools act as boundary objects, connecting different social worlds (Macpherson, 2006; Star, 1989), such as architects and user-clients who share a common goal like designing and constructing a house. Examples of boundary objects include libraries, standardized forms, sketches, prototypes and process maps (Carlile, 2002; Star, 1989). These objects enable people from different social worlds to share representations without necessarily changing their positions within their own social worlds, so that they need to have a certain flexibility for addressing multiple worlds (Winter and Butler, 2011). Effective boundary objects: (1) create a shared language for representing knowledge; (2) help individuals understand their differences and dependencies and (3) enable collaborative knowledge transformation (Carlile, 2002, p. 451).

Scientific literature lacks a comprehensive set of tools for client learning and knowledge sharing of architectural services, in contrast to studies on “design communication” tools. However, an ongoing study of the gray literature (Yönder *et al.*, 2025b) highlights some tools that provide knowledge for engaging with architects and the construction process. These tools are developed by diverse stakeholders such as academic, cultural and professional institutions and their practitioners; other construction industry service providers; architects and even user-clients. They include: (1) architectural service explanations, (2) practical guides, (3) lexicons and (4) digital communities.

These tools generally use everyday language to make explanations accessible, although some tools from professional chambers and associations may have a more legal tone. They often use traditional textual methods but also include engaging formats like visualizations, interactive websites, videos and humor (Yönder *et al.*, 2025b).

1.3 Co-design perspective

The interaction between architect and user-client in private housing usually refers (even in nonparticipatory, traditional architectural design processes) to a spontaneous involvement of the user-client in the design process. This occurs mainly through dialogue (McDonnell, 2009), where the authorship is shared through the interaction of parties (Nobre and Faria, 2017). While this remains an unstructured process, it may still be conceptualized as a co-design process.

Co-design is particularly relevant for facilitating knowledge sharing of architectural processes and client learning, for two main reasons. First, it often requires experts to share their domain, scientific and procedural knowledge to support non-designers' involvement (Khaled and Vasalou, 2014; Tobar-Munoz *et al.*, 2016; Winschiers-Theophilus *et al.*, 2012). Second, it emphasizes creating a common language and shared representations through strategies that go beyond verbal exchanges. Non-designers frequently lack familiarity with design processes and concepts, making procedural knowledge sharing essential. Effective strategies for enhancing comprehension vary, based on participants' characteristics; for instance, gamification may work well with children and youth (Brondino *et al.*, 2015), while using popular culture references can help clarify terms like "personas" and "crit" (Bowen *et al.*, 2013). These strategies aim to establish a common language between parties.

We have classified the existing strategies for creating a common language through co-design tools into five categories: (1) visualization (e.g. mapping, drawing); (2) materialization (e.g. prototyping, generative tools); (3) familiarization (e.g. cards, games, analogies) (4) fiction (e.g. gamification, role play) and (5) narrativity (e.g. storytelling) (Yönder *et al.*, 2025a). Tools can utilize one strategy or combine multiple approaches.

1.4 Journey maps: uses and potentials

Journey maps are visual representations used to communicate how users experience and interact with a system, service, product, etc. through various touchpoints (Diana *et al.*, 2012; Gibbons, 2018; Howard, 2014). They are typically used to gain a holistic understanding of these experiences, as to improve and renew them (Parker and Heapy, 2006). Journey maps comprise different layers, which overlay various aspects of an experience, including what users do, think, say or feel at specific touchpoints within a chronological order that articulates different stages of the overall experience (Rosenbaum *et al.*, 2017; Thompson, 2016).

Journey maps are among the most frequently used tools by service designers for visualizing user research (Segelström and Holmlid, 2009). These visualizations allow to transform the data into knowledge, facilitating knowledge sharing and building empathy (Segelström and Holmlid, 2009; Segelström, 2009). While journey maps can serve as effective tools for conveying user experiences to experts (for example see: He *et al.*, 2021; Lallemand *et al.*, 2022; Sperano *et al.*, 2019), users themselves can also benefit from understanding their own experiences or those of their communities (Pomeroy-Stevens *et al.*, 2020). Thus, journey maps offer a means of sharing such information with the general public (Moretti *et al.*, 2022), serving as a tool for communication and acting as a boundary object. They also encourage discussion in collaborative settings (Frangiere, 2021), aiding in the development of a common understanding and the collaborative exploration of problem space (Moretti *et al.*, 2022).

Following these insights, we consider journey maps among the possible tools supporting knowledge sharing and client learning. Therefore, we injected journey maps as probes into our "Ideation & Design" workshops, acting as inspirational tools.

2. Methodology

Our research focuses on investigating and improving interaction between architects and user-clients in the Belgian single-family housing context, focusing on client learning and knowledge sharing of architectural services. Our aim is not only to "describe" how something

is” but also to focus on “how it will be” as well as “what this future preferred state should be” (Godin and Zahedi, 2014). Using research through design (RtD) approach (Frayling, 1993; Godin and Zahedi, 2014), we focus on “what is being achieved and communicated *through* activities of (. .) design” (Frayling, 1993, p. 5) and we analyze testimonies from architects and user-clients collected during four “Ideation & Design” workshops, which are part of a broader co-design process.

Following this framework, we consider two research questions:

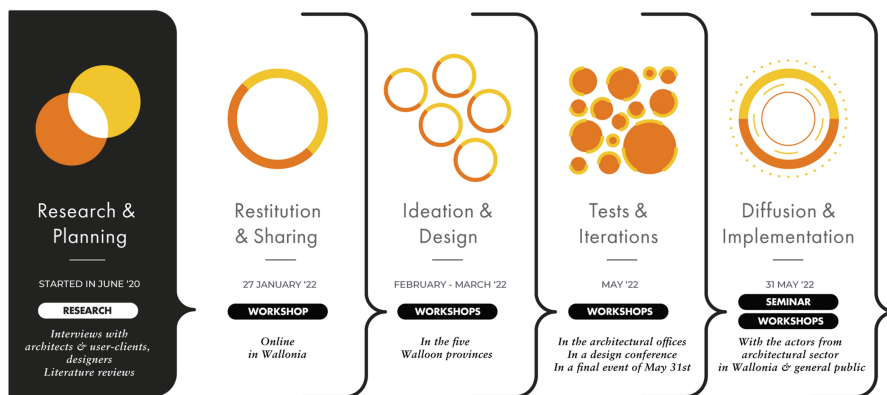
- RQ1. What are the current needs and practices of both parties (architects and client-users) regarding client learning and knowledge sharing of architectural services?
- RQ2. What are the future-oriented aspirations of both parties regarding client learning and knowledge sharing of architectural services?

These questions are intrinsically linked to the following design question, as our research is based on a process that aim to co-design tools enhancing the relationship between architects and user-clients:

Design Question: What kind of tool can improve client learning and knowledge sharing of architectural services?

2.1 The protocol of the “Ideation & Design” workshops

The “Ideation & Design” workshops aimed to co-design tools addressing five key challenges identified from prior research on architect and user-client interactions and refined through the broader co-design process depicted in Figure 1. At first, eleven challenges were identified through interviews in the “Research & Planning” stage, which covered broader interaction issues. These challenges were then introduced during the “Restitution & Sharing” workshop, where participants prioritized and voted on them. We conducted additional analysis between project steps and eleven challenges were eventually refined into five, to be introduced during the “Ideation & Design” workshops. These five challenges were: (A) clarifying responsibilities and missions, (B) preparing for project progress and maintaining mutual understanding, (C) clarifying the budget and its challenges, (D) listening to and articulating each other’s desires and expertise and (E) determining the level of investment and support frequency. During the “Ideation & Design” workshops, specific concerns about knowledge sharing, client learning and “journey maps” were identified.



Source(s): Authors’ own work

Figure 1. The overview of the broader co-design process

A total of five “Ideation & Design” workshops were conducted, with eight groups participating. Each workshop lasted two hours and involved architects and user-clients with housing design and construction experience. Participants were recruited through digital and physical announcements, inviting them to co-design tools for improving architect and user-client interactions. During the workshops, participants formed small groups of 2–4 people. Despite efforts to mix profiles, some groups consisted of only one profile due to recruitment challenges. Each group engaged in four activities (Figure 2).

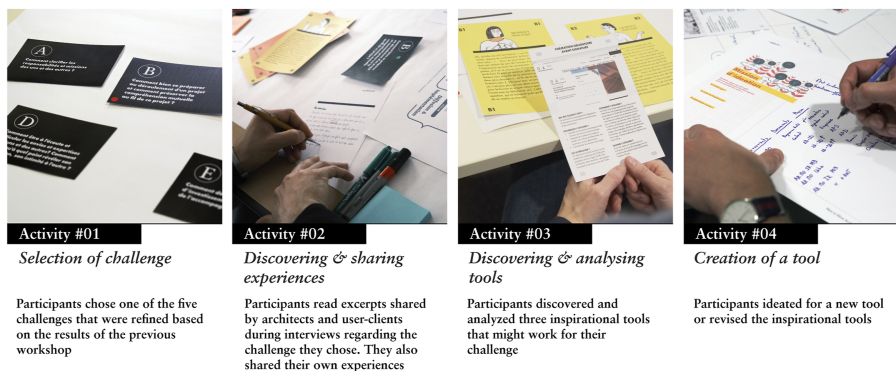
First, each group selected a challenge they found significant. They then read previous interview excerpts from architects and user-clients to contextualize the challenge. Following this, participants shared one negative and one positive personal experience related to the chosen challenge, to enrich the narratives and provide insights into current practices and concerns. Third, participants were presented with “inspirational tools” and collaboratively discussed and co-analyzed their relevance for architect and user-client interactions. This co-analysis was supported by the facilitator and a set of question cards.

Each “inspirational toolkit” (see Figure 3 for challenges A and B) included three tools: one from user-centered or participatory design practice; one from architectural practice and one “provotype” (Boer *et al.*, 2013) developed internally by researchers to stimulate discussion through “provocative suggestions”. The “inspirational toolkit” was prepared by researchers on the basis of a literature review of existing tools (Yönder *et al.*, 2023, 2025a, b).

The co-analysis phase prepared the participants for the last activity, namely tool ideation, by broadening their understanding of potential tools. While they could propose entirely new tools, most final solutions were improved or combined versions of existing ones, adapted to the architectural context. Four out of eight groups chose to develop a multi-layered journey map tool to share knowledge about architectural practices (Table 1), highlighting (1) the importance of addressing this issue and (2) the journey map’s relevance as a boundary object in this context.

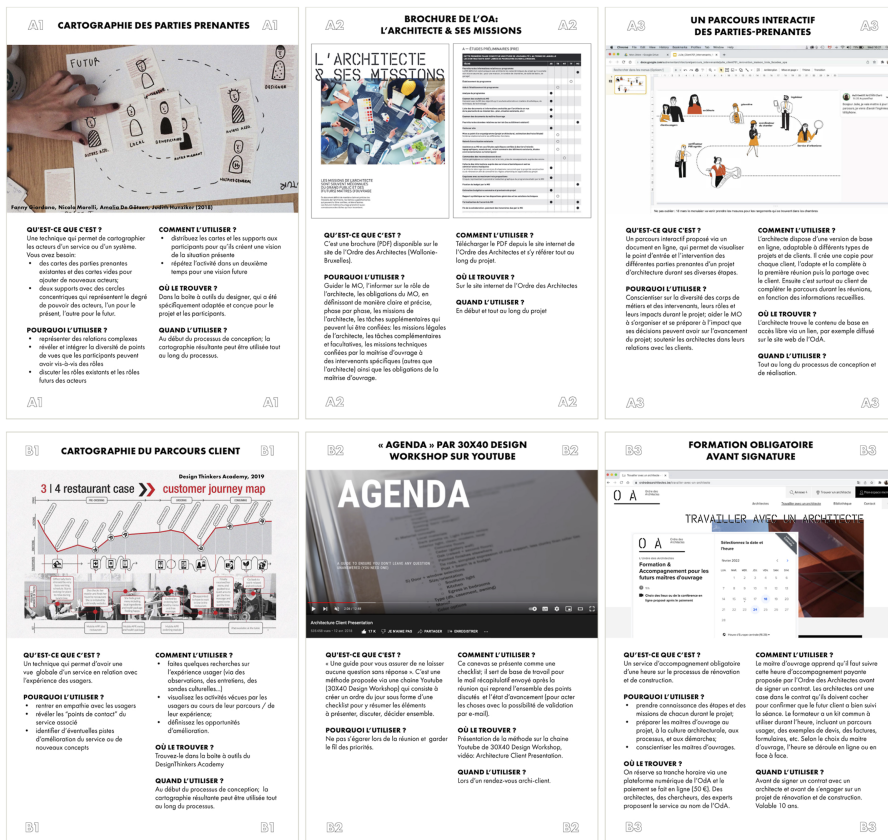
2.2 Data collection and analysis

We focus on four of the eight groups (comprising three user-clients, six architects and one architect’s representative; see Table 2) that chose to develop a multi-layered “journey map” tool (Table 1). We limit our dataset to workshops’ transcriptions, using visual data from videos or documents only as needed to clarify verbal explanations. All authors contributed to the organization of the workshops and to data collection.



Source(s): Authors’ own work

Figure 2. The overview of the activities of “Ideation & Design” workshops



Source(s): Authors' own work

Figure 3. Inspirational toolkit for challenge A and B

Table 1. Co-designed tool propositions of all groups participating to the “Ideation & Design” workshops

Liège 1	Arlon	Brussels	Namur	Liège 2
* Multi-layered journey map tool	Structured notebook for user-clients	*Multi-layered journey map tool	*Multi-layered journey map tool	*Multi-layered journey map tool (digital)
	Consultancy service during first steps of a project			IT-based budgeting tool

Source(s): Authors' own work

While data collection through workshops presents certain limitations in terms of sample size from the perspective of data saturation, in this study we position ourselves closer to the concept of “information power” which argues that saturation cannot be the sole criteria for sample size. In some cases, “the larger information power the sample holds, the lower N [number of participants] is needed, and vice versa.” (Malterud *et al.*, 2016, p. 1754). This concept is also more closely aligned with our data analysis method, reflexive thematic analysis

Table 2. Summary of groups that came up with an idea of an informative tool based on journey maps

	Summary of the group	Participants
Liège 1	<p><i>Challenge A:</i> How to clarify the responsibilities and missions of each other?</p> <p><i>Inspirational Tools:</i> A1) Stakeholder Mapping, A2) Brochure of Chamber of Architects on Architects' and Clients' Missions, A3) An Interactive Journey Map of Stakeholders</p> <p><i>Final tool proposition:</i> an architectural project process visualization with several explanatory layers</p>	<p>Richard: architect/scholar</p> <p>Ronald: architect</p> <p>Jeremy: architect/specialized in participatory architecture</p> <p>Emma: user-client/future</p>
Brussels	<p><i>Challenge B:</i> How to prepare well for the progress of a project and how to preserve mutual understanding throughout the project?</p> <p><i>Inspirational Tools:</i> B1) Client Journey Map, B2) An Agenda for Meeting, B3) Mandatory Training for User-Clients</p> <p><i>Final tool proposition:</i> an architectural project process visualization with sections of checklists and risks at each stage</p>	<p>Maxime: user-client/past</p> <p>François: Belgian Chamber of Architects (BCA) representative/lawyer</p>
Namur	<p><i>Challenge B:</i> How to prepare well for the progress of a project and how to preserve mutual understanding throughout the project?</p> <p><i>Inspirational Tools:</i> B1) Client Journey Map, B2) An Agenda for Meeting, B3) Mandatory Training for User-Clients</p> <p><i>Final tool proposition:</i> an architectural project process visualization covering the stages, missions, difficulties, deadlines, payment steps, emotions . . .</p>	<p>David: architect</p> <p>Mathilde: architect (private practice) + Belgian Chamber of Architects (BCA) representative</p>
Liège 2	<p><i>Challenge B:</i> How to prepare well for the progress of a project and how to preserve mutual understanding throughout the project?</p> <p><i>Inspirational Tools:</i> B1) Client Journey Map, B2) An Agenda for Meeting, B3) Mandatory Training for User-Clients</p> <p><i>Final tool proposition:</i> a complete mobile application that contains an architectural project process visualization, a shared agenda, important documents, customer training, useful links, etc.</p>	<p>Alex: architect</p> <p>Paul: architect</p> <p>Prisca: user-client/current</p>

Source(s): Authors' own work

(Braun and Clarke, 2021), chosen here in a context where qualitative research is seen as “creative, reflexive and subjective” (Braun and Clarke, 2019, p. 591), where subjectivity becomes a resource rather than a threat as seen in some positivist positions. We followed a six-step process proposed by Braun and Clarke: (1) data familiarization, (2) coding, (3) theme generation, (4) reviewing themes, (5) refining themes and (6) writing the report (2006; 2019).

Using an inductive approach, the first and second authors conducted an initial reading and coding of data from all eight groups for familiarization, which were then discussed with the other two authors. During this phase, we also grouped “proposed tools” into categories shown in Table 1. The first author then coded data from four groups that proposed a “multi-layer journey map tool,” focusing on this study’s specific questions. The process involved repeated cycles of reading, coding and theme identification, moving back and forth recursively (Braun and Clarke, 2021). Themes and domain summaries were organized and narrated by the first author, then refined and reorganized based on feedback from the other authors.

3. Results

3.1 *The need for sharing the process knowledge*

They [user-clients] are already projecting, perhaps a lot in their house. But they probably do not realize all the steps they will have to go through to transform their dream into something concrete. Maxime (user-client)

They [user-clients] don't really know the [professional] environment, . . . and they work with an architect for a year, 2 years or 3 years . . . The person who comes also hopes to find a partner and a vulgarization of the field, since the goal is to make the transition and to explain what is happening to the client who is not in the business. Ronald (architect)

User-clients often lack awareness of the inherently problematic nature of the architectural process. As Ronald (architect) notes, "*Our job . . . is difficult, and if they want to find problems, . . . because there will always be some . . . What matters is to have someone on their side to move forward.*" User-clients do not fully grasp the risks involved, such as budget challenges tied to market fluctuations, or delays due to regulatory requirements like planning permits. These risks can lead to misunderstandings, frustrations and tensions between both parties. As a result, architects emphasize the importance of guiding clients through the process and sharing knowledge about the architectural journey.

Besides the risky nature of the process, user-clients don't always realize its exhaustiveness and don't prepare themselves for it. Maxime (user-client) highlights that: "*The problem between the architect and the [user-]client is to understand from the beginning what are all the stages through which we will have to go . . . when we are going to build.*"

3.2 *Current ways of client learning and sharing knowledge about the architectural process*

Architects primarily share knowledge about architectural processes through informal discussions, starting from the initial meetings. They aim to clarify the process before formalizing contracts. They often emphasize potential risks, such as urban planning permits, construction phases, budget concerns and reception procedures, hoping to prepare the clients for possible challenges. Often, after initial discussions, architects use price offers and contracts to outline the specifics of the process in written form. User-clients may expect these documents to clearly detail services (Prisca, user-client), although as Emma (user-client) noted, legal documents can still be difficult for outsiders to understand.

François (lawyer, representing BCA) views contracts as tools for fostering "*lively exchanges*" and detailing process-related risks. However, he notes that contracts are sometimes introduced late or omitted, reflecting a broader systemic issue which contrasts with other architects' narratives. When asked, "*Why didn't you make a contract?*" architects often reply, "*We worked in confidence.*" François suggests architects may fear overwhelming clients with too much information. While his legal perspective may introduce some bias, it raises the question of whether trust-based relationships sometimes allow architects to obscure parts of the process to maintain control, as noted by [Dansoh and Frimpong \(2016\)](#).

Architects often emphasize communication and knowledge sharing as key to their relationships with clients, but their methods have limitations. As David (architect) notes, "*It's very hard to educate people about architecture in 1 h*" Paul (architect) adds that meetings and price offers often aren't enough, user-clients need explanations during the process, which he finds "*exhausting.*" While verbal exchanges and contracts are common strategies, the effort architects invest in knowledge sharing varies. Some, like Ronald (architect), embrace it as part of their role, while others, like Paul (architect), see it as a burden.

3.3 *The issues around the architects' missions*

Two main issues complicate the understanding of responsibilities between architects and user-clients: (1) misconceptions about architects' work by clients and (2) architects' divergent practices. User-clients often find the role of the architects unclear and struggle to grasp the costs involved. Emma, a user-client, states, "*Many people have a hard time understanding*

what constitutes the architect's costs . . . [they] don't know that an architect takes care of the administrative part, which makes the link with the municipality, the permits, and all that." Architects agree noting that user-clients frequently underestimate their scope, with some believing they only "*do a little drawing, a signature*" (Richard, architect).

Conversely, some clients overestimate architects' roles, mistakenly believing they handle tasks meant for other professionals. David (architect) notes that many think architects are responsible for structural dimensions without realizing the involvement of stability engineers as well as other experts such as energy performance experts. This misunderstanding also leads to confusions and frustrations regarding its impacts on budget, as François (BCA representative) observes, with user-clients expressing, "*I don't understand why you need so many contributors. All of a sudden, we have to grant their health security, we need experts, we need this, it costs more, and so on.*"

Architects indeed often coordinate services from other professionals, but practices of coordination vary, further complicating the understanding around roles. Some architects, like Jeremy, leave contractor sourcing to clients, whereas Ronald believes in guiding them through the process. Paul (architect) sees tasks like requesting price offers from engineers as "*secretarial*" work and outside of his professional duties, while Alex (architect) subcontracts these services, providing clients a single point of contact, which affects his fees. This difference can confuse clients comparing costs. These examples highlight the lack of consensus among architects regarding their roles and responsibilities.

Some user-clients, like Maxime, expect architects not only to provide design but also to offer guidance and management throughout the process, viewing the architect as a "*conductor*" who leads the journey. As mentioned by [Dansoh and Frimpong \(2016\)](#), when architects fail to meet clients' expectations for guidance, clients often turn to other construction professionals where "*they could get value for their money*" ([Dansoh and Frimpong, 2016](#), p. 19). Architects' differing approaches regarding their responsibilities not only create confusion but also undermine the professionalism of the field.

3.4 User-clients' levels of engagement and attitudes about learning

User-clients have diverse views on their responsibilities during the architectural process. Some, like Maxime, influenced by his engineering background and a shared inclination to learn, actively seek information online. In contrast, other clients prefer to rely on their architects for full guidance without delving into details themselves. Emma expresses a desire to trust her architect completely, stating, "*I want to find an architect that I can trust . . . I trust you, but it's your job and I'll never start to quibble with stuff . . . But on the other hand, I'm not at all into participatory construction, stuff like that, for example, it's not me at all . . .*" (Emma, user-client). Profiles like Emma align with the work of [Siva and London \(2011\)](#), who argue that when a good relationship exists, user-clients trust their architects and refrain from further learning efforts. However, our results also showed that some other user-clients prefer to engage more in learning both before and during the project.

On the other hand, user-clients, whether they want to engage or not, still hold certain responsibilities in the project that they have to assume. Prisca (user-client) underlines how important it is for architects to explain such responsibilities: "*Architect can say: 'Mr. client, . . . I'm going to do your project, but . . . you'll be able to be an actor in the project at this place [moment], at this place, at this place . . .*".

Alex (architect) also mentions the different profiles of (user-)clients: some don't even read construction site reports while others carefully read and comment before signature. Therefore, the degree of user-client engagement in the project, its effects on learning, and the nature of the relationship with architects depend on the compatibility of profiles between architects and user-clients. This again echoes Siva and London's concept of compatibility of habituses (2011). We argue that such compatibility and alignment of expectations regarding both parties' roles and responsibilities need to be addressed before engaging with an architect to avoid an unsatisfactory experience for both parties.

3.5 Future-oriented aspirations around client learning and knowledge sharing through a multi-layered journey map tool

In this section, we focus on the future-oriented aspirations around client learning and knowledge sharing, as revealed during the “Ideation & Design” workshops.

3.5.1 Using visual ways of representing the architectural journey.

[The Architect] explain[s] the big picture and say[s]: . . . I will accompany you; we have a long way to go but this path is marked . . . We are not the first to take it. Maxime (user-client)

In all four groups, the journey map tool proved useful for visualizing architectural processes. In Liège 1, the group refined the A2 inspirational tool (Brochure of Chamber of Architects on Architects’ and Clients’ Missions) by integrating the journey map (inspirational tool A3) concept into their final tool. The other three groups chose the journey map (inspirational tool B1) as their main tool to develop (Table 2).

The visual quality of the journey map tool was appreciated and found comprehensible. The timeline is seen as an effective way of representing the temporality of the architectural project through its main phases and providing a general overview. Both parties found it useful for understanding the time limits represented as estimations, both to give to the user-clients a rough idea of the process and to give a chance for architects to point out possible delays and risks. Besides, some other subjects that are not always evident for user-client to understand manifested efficiently through the visualization: milestones; “dead” times; implication of other stakeholders; budget, payments and evolving emotions.

Such visualization was also found suitable in terms of current ways of sharing knowledge, as a visual support that can accompany verbal explanations. Three groups agreed on creating a paper-based tool, as architects noted it creates a shared canvas for annotation (Richard, architect) and can be easily moved during meetings (David, architect). The paper form also corresponds to their current methods of explaining things, which include drawing and developing schemas. According to Richard (architect), this may also aid user-client’s learning because “*the person can take the pencil too, so suddenly start to appropriate.*” A user-client’s reflection confirmed this:

In fact, I can see myself well . . . having it on paper, writing the stuff on it, making circles around things, taking notes . . . And then I go home and then I talk to a friend about it and I take out my paper, and I say: ‘Well he explained that to me. I wrote that, but in fact, it is not clear.’ And then, next meeting, I resume my paper. I tell him especially that we actually wrote, but I realize that I no longer remember what we talked about. For me, that kind of stuff doesn’t exist in digital . . . Emma (user-client).

3.5.2 Keeping the relationship trustworthy but informal. The journey map tool is envisioned as a conversation aid. It aligns with the preferred informal and nuanced relationship between architects and user-clients, contrasting with the formal and legal tone of other tools, such as the Chamber of Architects’ tool (A2), criticized by architects for its legally binding tone and checkbox format. They emphasized the need for a more nuanced communication method to support better discussions and relationship-building with clients.

To effectively share knowledge, tools are expected to convey an informal, familiar and reassuring tone that fosters trust and encourages interaction between architects and user-clients or, in jargon-free language, the tone should “*speak more to [user-]clients with more familiar words*” (Emma, user-client). Emma states that while stakeholders’ mapping may appear “*childish*”, its visual language will be more understandable and approachable. Similarly, Paul (architect) found the idea of the journey map “*playful,*” and also “*more clear and easy to understand when compared with price offers.*” These results align with the strategies for creating a common language that we identified in the literature.

3.5.3 Providing additional “pedagogical” support when needed.

Having small capsules could be nice. A priori, I find that quite reassuring for the client. François (representative of BCA)

On the other hand, visualization with multiple layers may risk flooding the user-client with too much information. Thus, all groups insisted that the tool should remain simple and easily readable. The danger of overfilling the visualization with information has led to the idea of “*additional pedagogical elements*” (Maxime, user-client). In Brussels, it manifested as a combination of two inspirational tools: a journey map which can provide a global view, and “*a checklist*” (following the B2 inspirational tool – “An Agenda for Meeting”) that could provide a more detailed view of each step of the project. Similarly, in Liège 1, some additional information was found useful to support user-clients further in their understanding. For example, Emma (user-client) expressed her need for a “*report*” behind the visualization that can further explain what is discussed during the meeting. Thus, the idea of additional explanatory folders emerged, which can be opened gradually during the process or at any desired time by the user-client when there is a need for a more detailed view. In Liège 2, the participants came up with an idea of an app that centralizes multiple channels on the visualization. Doing so, they integrate the ideas of “*mandatory client training*” and “*a checklist*” as opening sections when you click a specific stage. All these ideas refer to the need for providing additional pedagogical support for reassuring the user-client.

3.5.4 *Going beyond sharing knowledge.* While the tools are naturally assumed to be more useful for user-clients, it is also mentioned that they can also be useful for architects to understand their user-clients. According to Emma (user-client), architects can also see “*what is the knowledge [of the user-client], what is an ‘architect’ for them.*” Similarly, Maxime (user-client) suggested that: “*He [the architect] will be able, through the questions that the client will ask . . . will be able to capture their points of attention. [The architect] will be able to capture their fears, [the architect] will already be able to answer questions, he will be able to frame them . . . [The architect] will be able to prepare for his future communication . . .*” This comment highlights the potential of the tool to act as a boundary object, which can help both parties to communicate their visions, create a common understanding and establish the limits of the architectural mission.

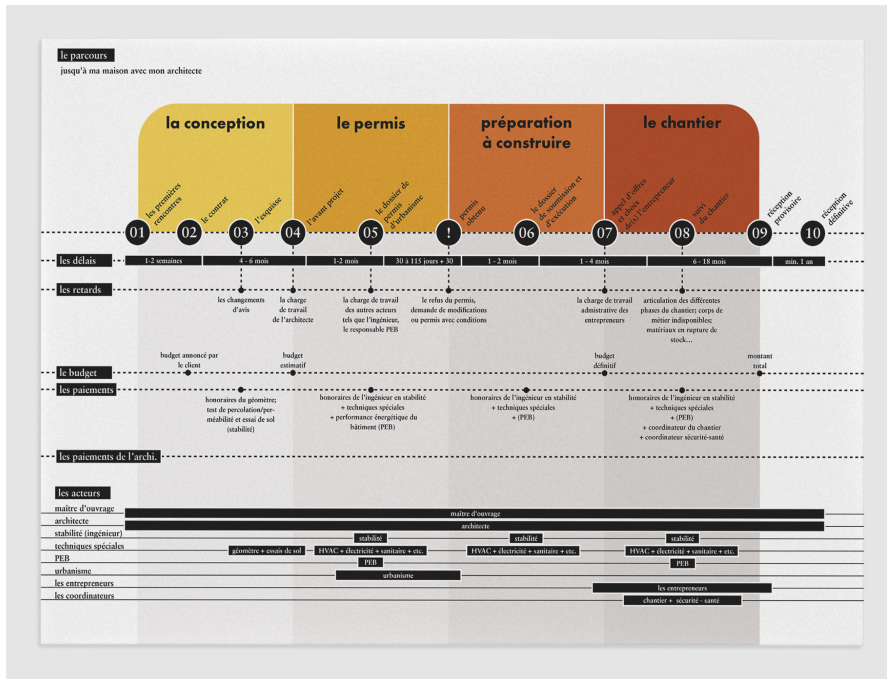
In Brussels, participants combined the idea of a journey map and a checklist to give a more detailed view for each stage. By doing so, it is also suggested going beyond informing and involving the (user-)client: “*Because with this document there [checklist or agenda] . . . he [user-client] has a card in his hand and he is given a responsibility . . . we push him to take responsibility*” (François, representative BCA). However, knowledge sharing is still considered a “*preponderance*” and a “*minimum*” for the user-client involvement by providing a base for building a good relationship (Maxime, user-client). As expressed by Maxime: “*The client will say to himself: ‘My architect is competent because he told me so. It’s written. I knew it’. If the architect knows it but does not communicate it, did not say it . . . [The client will say]: ‘But my architect is useless. It’s the 3rd time there’s been a what!’. It’s normal. And so, for me, this can also contribute to calming relations between the [user-]client and the architects.*”

4. Knowledge sharing and client learning re-imagined: a multi-layered journey map tool

Based on the “Ideation & Design” workshops, a final prototype was developed by the first author. This prototype contains a journey map-inspired visualization of the architectural process and accompanying booklets that go into further details about each stage and some major concerns such as budget, and other actors (Figure 4). The tool is titled “A Guide for Your Architectural Adventure,” following the “adventure” metaphor architects often refer to.

The journey map-inspired visualization superimposes the process stages, highlighting key concerns mentioned by the participants like time limits, delays, budget, payment moments and involved actors. This visualization is expected to act as a “map of boundary” (Carlile, 2002) to help user-clients grasp the overall process.

The accompanying booklets give further details on each stage as well as two main concerns (budget and actors) under six main titles: (1) What to expect as a user-client? (2) What does



Source(s): Authors' own work

Figure 4. The final prototype that is developed by researchers based on “Ideation & Design” and “Tests and Iteration” workshops, to access the complete tool consult our website (<https://www.interact.uliege.be/index.php/publications-tools/#tools>)

your architect expect from you? (3) The quotations of user-clients and architects about this stage (or concerns); (4) The risks; (5) A list of questions to cover; (6) Notes. The booklets are expected to act similarly to “practical guides” found in gray literature by sharing necessary

knowledge through explanations. They also underline some important questions to ask and risks to consider. Added quotations of user-clients and architects (coming from our prior interviews) also aim to enrich the whole with an empathic understanding of the process.

We suggest that architects can share this tool through their websites and that clients can examine it before the first meeting. This can help both parties save time, clarify each other's responsibilities, reflect on the planning of the process and understand each other's profiles before engaging contractually. This tool is also expected to be used throughout the process as a reminder of the next steps, to help navigate and take the necessary actions in the design process, and to possibly avoid risky misunderstandings.

5. Discussion and conclusion

This study focuses on the often overlooked relationship between architects and user-clients, specifically client learning and knowledge sharing of architectural services. Using data from four "Ideation & Design" workshops and following the research through design approach, we explored current needs and practices in the housing context, as well as future aspirations for improving client learning and knowledge sharing.

Our findings add to the knowledge on architect–client relationships, particularly in single-family housing. As noted by previous studies ([Dansoh and Frimpong, 2016](#); [Defays and Elsen, 2018](#); [Siva and London, 2011](#)), user-clients' lack of understanding of architectural processes and the profession's scope often leads to friction. We identified key causes of misunderstandings, such as the inherent risks of the architectural process, involvement of other actors, and differing definitions of roles and responsibilities among architects.

We found that while some user-clients prefer to give full authority to their architect, others seek to engage more in learning before and during their project. This highlights the need for adaptable tools, emphasizing flexible use of boundary objects ([Winter and Butler, 2011](#)). These tools should accommodate varying levels of engagement and expectations from both user-clients and architects.

Architects typically share process-related knowledge during initial meetings through verbal explanations and written contracts. However, contracts, while important boundary objects, are often difficult for user-clients to understand due to their legal and technical language, which can be obscuring ([Dansoh and Frimpong, 2016](#)); not all user-clients may easily process this information.

Both architects and user-clients favored a visual tool inspired by journey maps for future use. Journey maps are found effective in fostering a relationship that is both trustworthy and informal, which resonates with the desire to build such relationships ([Siva and London, 2011](#)). Journey maps' ability to provide an overview and to integrate various concerns across project phases is highly valued, making them effective discussion aids. Our findings support their use for facilitating knowledge sharing ([Segelström, 2009](#); [Segelström and Holmlid, 2009](#)), promoting discussion ([Frangiere, 2021](#)) and fostering a common understanding ([Moretti et al., 2022](#)).

Our study culminated in the development of a multi-layered journey map tool designed to enhance the relationship and satisfaction between architects and user-clients by facilitating client learning and knowledge sharing on architectural practice. Such a tool also addresses the pressing need for service and client-oriented strategies in private housing contexts ([Angral, 2019](#); [Mertens et al., 2023](#)). The tool is publicly available on our research lab's website. It addresses Cummings' two contexts for knowledge sharing, namely "the form and location of knowledge" and "the source's knowledge-sharing capability" (2003, p.1) by translating implicit architectural knowledge into explicit, visual, reflective and empathic formats. Following the principles of effective boundary objects, the journey map tool aims to create a common language through concrete representations of processes, allowing parties to "specify and learn about their differences and dependencies across a given boundary," and "facilitate a process where individuals can jointly transform their knowledge" ([Carlile, 2002](#), p. 451).

Our study was limited to the Belgian French-speaking community and has a small sample size due to the workshop context. The “Ideation & Design” workshops were informed by prior research, including interviews with architects and user-clients, which helped us address key challenges collaboratively. We believe our approach can help to overcome current lack of understanding of client needs and feedback on tools (Mahdavi, 2003; cited in Weytjens *et al.*, 2009; Norouzi *et al.*, 2015b). Additionally, it allowed us to identify actionable solutions for architectural practice and validate our assumptions about the effectiveness of journey maps for architects and user-clients.

The next phase of this research will involve conducting observations and interviews to test the tool in real-life architectural settings and evaluate its effectiveness in improving the architect and user-client relationship. We also plan to initiate an extended co-design process for a digital version of the tool that integrates additional communication aspects, such as document management, design communication and daily interactions (e-mails, meetings, phone calls).

We suggest that this tool can also enhance students’ understanding of architectural processes in educational settings and to emphasize the relational aspects of their future practice by focusing on knowledge sharing and client-learning components. Preliminary tests have been conducted in both educational and real-life architectural contexts in that regard.

We believe further research is essential to better understand and support client learning and knowledge sharing on architectural services. We propose the following questions for exploration:

- (1) How do existing tools—such as contracts, service explanations, practical guides, lexicons and digital communities—function as boundary objects between architects and user-clients? What are their characteristics, and which tools facilitate or hinder communication?
- (2) How does client learning and knowledge sharing of architectural services impact user-client involvement in “house design” and “design communication”? Does improved understanding lead to greater confidence for participation and collaboration?
- (3) What frameworks, methods and methodologies can assess the relevance of these tools? How can we enhance the assessment process by involving architects and user-clients as end-users of these tools?

References

- Angral, A. (2019), “Architect–client relationship and value addition in private residential projects”, *Archnet-IJAR*, Vol. 13 No. 1, pp. 58-71, doi: [10.1108/ARCH-12-2018-0026](https://doi.org/10.1108/ARCH-12-2018-0026).
- Boehm, B. (1989), *Software Risk Management*, IEEE Computer Society Press, Los Alamitos, CA.
- Boer, L., Donovan, J. and Buur, J. (2013), “Challenging industry conceptions with provotypes”, *CoDesign*, Vol. 9 No. 2, pp. 73-89, doi: [10.1080/15710882.2013.788193](https://doi.org/10.1080/15710882.2013.788193).
- Bowen, S., Sustar, H., Wolstenholme, D. and Dearden, A. (2013), “Engaging teenagers productively in service design”, *International Journal of Child-Computer Interaction*, Vol. 1 Nos 3-4, pp. 71-81, doi: [10.1016/j.ijcci.2014.02.001](https://doi.org/10.1016/j.ijcci.2014.02.001).
- Braun, V. and Clarke, V. (2006), “Using thematic analysis in psychology”, *Qualitative Research in Psychology*, Vol. 3 No. 2, pp. 77-10, doi: [10.1191/1478088706qp0630a](https://doi.org/10.1191/1478088706qp0630a).
- Braun, V. and Clarke, V. (2019), “Reflecting on reflexive thematic analysis”, *Qualitative Research in Sport, Exercise and Health*, Vol. 11 No. 4, pp. 589-597, doi: [10.1080/2159676X.2019.1628806](https://doi.org/10.1080/2159676X.2019.1628806).
- Braun, V. and Clarke, V. (2021), “To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales”, *Qualitative Research in Sport, Exercise and Health*, Vol. 13 No. 2, pp. 201-216, doi: [10.1080/2159676X.2019.1704846](https://doi.org/10.1080/2159676X.2019.1704846).
- Brondino, M., Dodero, G., Gennari, R., Melonio, A., Pasini, M., Raccanello, D. and Torello, S. (2015), “Emotions and inclusion in co-design at school: let’s measure them!”, in Mascio, T., Gennari, R., Vittorini, P. and De la Prieta, F. (Eds), *Advances in Intelligent Systems and Computing*:

- Carlile, P.R. (2002), "A pragmatic view of knowledge and boundaries: boundary objects in new product development", *Organization Science*, Vol. 13 No. 4, pp. 442-455, doi: [10.1287/orsc.13.4.442.2953](https://doi.org/10.1287/orsc.13.4.442.2953).
- Chiu, M.-L. (2002), "An organizational view of design communication in design collaboration", *Design Studies*, Vol. 23 No. 2, pp. 187-210, doi: [10.1016/S0142-694X\(01\)00019-9](https://doi.org/10.1016/S0142-694X(01)00019-9).
- Chuang, C.-L. and Chien, S.-F. (2021), "Facilitating architect-client communication in the pre-design phase", *PROJECTIONS, Proceedings of the 26th International Conference of the Association for Computer-Aided Architectural Design Research in Asia (CAADRIA)*, Hong Kong, Vol. 2, pp. 71-80, doi: [10.52842/conf.caadria.2021.2.071](https://doi.org/10.52842/conf.caadria.2021.2.071).
- Cummings, J. (2003), "Knowledge sharing: A review of the literature", The World Bank Operations Evaluation Department, Washington, DC, Working Paper [82089].
- Curtis, B., Krasner, H. and Iscoe, N. (1988), "A field study of the software design process for large systems", *Communications of the ACM*, Vol. 31 No. 11, pp. 1268-1287.
- Dansoh, A. and Frimpong, S. (2016), "Client perspectives on relationships with architects on private house projects", *International Journal of Qualitative Research in Services*, Vol. 2 No. 3, pp. 155-179, doi: [10.1504/IJQRS.2016.082643](https://doi.org/10.1504/IJQRS.2016.082643).
- Defays, A. and Elsen, C. (2018), "Architecte et maître d'ouvrage: main dans la main, ou dos à dos", *Archinews*, Vol. 18, pp. 15-21.
- Diana, C., Pacenti, E. and Tassi, R. (2012), "Visual Communication tools for (service) design", *Conference Proceedings ServDes. 2009, DeThinking Service ReThinking Design*, Oslo Norway, 24-26 November 2009, Vol. 59, Linköping University Electronic Press, pp. 65-76.
- Dzurilla, D., Sopher, H. and Dorta, T. (2023), "Architect-client communication during Co-ideation with 2D digital and 3D immersive sketches", in *eCAADe 2023: Digital Design Reconsidered*, Graz, Austria, pp. 221-230.
- European Council of Architects (2022), *The Architectural Profession in Europe: 2022 Sector Study*, Mirza & Nacey Research Ltd, West Sussex, available at: https://www.ace-cae.eu/fileadmin/user_upload/2022_Sector_Study_EN.pdf
- Fraginière, E., Pellaton, C., Ramseyer, R., Sokhn, M. and Unternährer, C. (2021), "The Student Journey Map (SJM): a scenario-based approach to professionalizing digital education", *IEEE 8th International Conference on e-Learning in Industrial Electronics (ICELIE)*, Toronto, ON, Canada, pp. 1-6, doi: [10.1109/ICELIE53900.2021.9765549](https://doi.org/10.1109/ICELIE53900.2021.9765549).
- Frayling, C. (1993), "Research in art and design", *Royal College of Art research papers*, Vol. 1 No. 1, pp. 1-5.
- Gibbons, S. (2018), *Journey Mapping 101*, Nielsen Norman Group, available at: <https://www.nngroup.com/articles/journey-mapping-101/> (accessed 12 January 2023).
- Godin, D. and Zahedi, M. (2014), "Aspects of research through design: a literature review", in Lim, Y., Niedderer, K., Redström, J., Stolterman, E. and Valtonen, A. (Eds), *Design's Big Debates - DRS International Conference 2014*, pp. 16-19, June, Umeå, Sweden, available at: <https://dl.designresearchsociety.org/drs-conference-papers/drs2014/researchpapers/85>
- He, Q., Lianne, F.D. and Simonse, W.L. (2021), "A patient journey map to improve the home isolation experience of persons with mild COVID-19: design research for service touchpoints of artificial intelligence", *eHealth JMIR Med Inform*, Vol. 9 No. 4, e23238, doi: [10.2196/29794](https://doi.org/10.2196/29794).
- Howard, T. (2014), "Journey mapping: a brief overview", *Communication Design Quarterly*, Vol. 2 No. 3, pp. 10-13, doi: [10.1145/2644448.2644451](https://doi.org/10.1145/2644448.2644451).
- Katić, E.K., Hmelo-Silver, C.E. and Weber, K.H. (2009), "Material mediation: tools and representations supporting collaborative problem-solving discourse", *International Journal of Teaching and Learning in Higher Education*, Vol. 21 No. 1, pp. 13-24.

-
- Khaled, R. and Vasalou, A. (2014), "Bridging serious games and participatory design", *International Journal of Child-Computer Interaction*, Vol. 2 No. 2, pp. 93-100, doi: [10.1016/j.ijcci.2014.03.001](https://doi.org/10.1016/j.ijcci.2014.03.001).
- Lallemand, C., Lauret, J. and Drouet, L. (2022), "Physical journey maps: staging users' experiences to increase stakeholders' empathy towards users", *Extended Abstracts of the 2022 CHI Conference on Human Factors in Computing Systems (CHI EA '22)*, New York, NY, USA, Association for Computing Machinery, pp. 1-7, Article 344.
- Lawrence, R.J. (1993), "Architectural design tools: simulation, communication and negotiation", *Design Studies*, Vol. 14 No. 3, pp. 299-313, doi: [10.1016/0142-694X\(93\)80026-9](https://doi.org/10.1016/0142-694X(93)80026-9).
- Luck, R. and McDonnell, J. (2006), "Architect and user interaction: the spoken representation of form and functional meaning in early design conversations", *Design Studies*, Vol. 27 No. 2, pp. 141-166, doi: [10.1016/j.destud.2005.09.001](https://doi.org/10.1016/j.destud.2005.09.001).
- Macpherson, A., Jones, O. and Oakes, H. (2006), "Mediating artefacts, boundary objects and the social construction of knowledge", *The first international conference on organizational learning, knowledge and capabilities*, OLKC. 2006, pp. 20-22.
- Mahdavi, A., Feurer, S., Redlein, A. and Suter, G. (2003), "An inquiry into the building performance simulation tools usage by architects in Austria", in Augenbroe, G. and Hensen, J. (Eds), *Proceedings of the Building Simulation 2003: 8th Conference of IBPSA*, Vol. 2, Eindhoven, pp. 777-784, doi: [10.26868/25222708.2007.0777-784](https://doi.org/10.26868/25222708.2007.0777-784).
- Majchrzak, A., Beath, C.M., Lim, R.A. and Chin, W.W. (2005), "Managing client dialogues during information systems design to facilitate client learning", *MIS Quarterly*, Vol. 29 No. 4, pp. 653-672, doi: [10.2307/25148704](https://doi.org/10.2307/25148704).
- Malterud, K., Siersma, V.D. and Guassora, A.D. (2016), "Sample size in qualitative interview studies: guided by information power", *Qualitative Health Research*, Vol. 26 No. 13, pp. 1753-1760, doi: [10.1177/1049732315617444](https://doi.org/10.1177/1049732315617444).
- McAvinia, C. (2016), 'Activity Theory', *Online Learning and its Users: Lessons for Higher Education*, Chandos Publishing, Kidlington, pp. 59-100.
- McDonnell, J. (2009), "Collaborative negotiation in design: a study of design conversations between architect and building users", *CoDesign*, Vol. 5 No. 1, pp. 35-50, doi: [10.1080/15710880802492862](https://doi.org/10.1080/15710880802492862).
- Mertens, A., Hamarat, Y. and Elsen, C. (2023), "Interactions between architects and end-users during housing design processes: a systematic literature review", *Archnet-IJAR*, Vol. 17 No. 4, pp. 703-724, doi: [10.1108/ARCH-03-2022-0079](https://doi.org/10.1108/ARCH-03-2022-0079).
- Moretti, D.M., Baum, C.M., Wustmans, M. and Bröring, S. (2022), "Application of journey maps to the development of emergent sustainability-oriented technologies: lessons for user involvement in agriculture", *Business Strategy and Development*, Vol. 5 No. 3, pp. 209-221, doi: [10.1002/bsd2.192](https://doi.org/10.1002/bsd2.192).
- Nobre, H. and Faria, J. (2017), "Exploring marketing strategies in architectural services: the case of the architecture firms in Portugal", *International Journal of Business Excellence*, Vol. 12 No. 3, pp. 275-293, doi: [10.1504/IJBEX.2017.084438](https://doi.org/10.1504/IJBEX.2017.084438).
- Norouzi, N., Shabak, M., Embi, M.R.B. and Khan, T.H. (2015a), "The architect, the client and effective communication in architectural design practice", *Procedia-Social and Behavioral Sciences*, Vol. 172, pp. 635-642, doi: [10.1016/j.sbspro.2015.01.413](https://doi.org/10.1016/j.sbspro.2015.01.413).
- Norouzi, N., Shabak, M., Embi, M.R.B. and Khan, T.H. (2015b), "A new insight into design approach with focus to architect-client relationship", *Asian Social Science*, Vol. 11 No. 5, pp. 108-120, doi: [10.5539/ass.v11n5p108](https://doi.org/10.5539/ass.v11n5p108).
- Parker, S. and Heapy, J. (2006), *The Journey to the Interface: How Public Service Design Can Connect Users to Reform*, Demos, London.
- Pomeroy-Stevens, A., Afdhal, M., Mishra, N., Farnham Egan, K., Christianson, K. and Bachani, D. (2020), "Engaging citizens via journey maps to address urban health issues", *Environmental Health Insight*, Vol. 14, pp. 1-9, doi: [10.1177/117863022096312](https://doi.org/10.1177/117863022096312).

- Raposo, M., Eloy, S. and Dias, M.S. (2024), "Housing customization: envisioning an interface to support co-design processes", *Archnet-IJAR*, Vol. ahead-of-print No. ahead-of-print, doi: [10.1108/ARCH-04-2024-0144](https://doi.org/10.1108/ARCH-04-2024-0144).
- Rosenbaum, M.S., Otalora, M.L. and Ramírez, G.C. (2017), "How to create a realistic customer journey map", *Business Horizons*, Vol. 60 No. 1, pp. 143-150, doi: [10.1016/j.bushor.2016.09.010](https://doi.org/10.1016/j.bushor.2016.09.010).
- Russell, D. (2002), "Looking beyond the interface: activity theory and distributed learning", in Lea, M. and Nicoll, K. (Eds), *Distributed Learning: Social and Cultural Approaches to Practice*, London, Routledge Falmer, pp.64-82.
- Russell, H., Aeli, R. and Niamh, M. (2017), *Architect-client Interactions Research Project - Summary of Findings. The Bartlett School of Construction & Project Management*, UCL, London.
- Samuel, F. (2018), *Why Architects Matter: Evidencing and Communicating the Value of Architects*, Taylor & Francis, London.
- Segelström, F. (2009), "Communicating through visualizations: service designers on visualizing user research", *Conference Proceedings ServDes. 2009, DeThinking Service ReThinking Design*, Oslo Norway, 24-26 November 2009, Vol. 59, Linköping University Electronic Press, pp. 175-185.
- Segelström, F. and Holmlid, S. (2009), "Visualizations as tools for research: service Designers on visualizations", in *Nordes 2009: Engaging Artifacts*, The Oslo School of Architecture and Design, Oslo, Norway, pp. 1-9, 29 August - 01 September.
- Segers, N.M., Achten, H.H., Timmermans, H.J.P., Vries and de, B. (2000), "A comparison of computer-aided tools for architectural design", in Timmermans, H.J.P., Vries, B. and de (Eds), *Design and Decision Support Systems in Architecture; Proceeding of the 5th International Conference on Nijkerk, August 2000*, Technische Universiteit Eindhoven/EIRASS, pp. 325-340.
- Siva, J.P.S. and London, K. (2011), "Investigating the role of client learning for successful architect-client relationships on private single dwelling projects", *Architectural Engineering and Design Management*, Vol. 7 No. 3, pp. 177-189, doi: [10.1080/17452007.2011.594570](https://doi.org/10.1080/17452007.2011.594570).
- Smulders, F., Lousberg, L. and Dorst, K. (2008), "Towards different communication in collaborative design", *International Journal of Managing Projects in Business*, Vol. 1 No. 3, pp. 352-367, doi: [10.1108/17538370810883819](https://doi.org/10.1108/17538370810883819).
- Sperano, I., Roberge, J., Bénech, P., Trgalova, J. and Andruchow, R. (2019), "Exploring new usages of journey maps: introducing the pedagogical and the project planning journey maps", in Bagnara, S., Tartaglia, R., Albolino, S., Alexander, T. and Fujita, Y. (Eds) *Proceedings of the 20th Congress of the International Ergonomics Association (IEA 2018)*, IEA 2018, Advances in Intelligent Systems and Computing, Vol. 824, pp. 964-982, doi: [10.1007/978-3-319-96071-5_99](https://doi.org/10.1007/978-3-319-96071-5_99).
- Star, S.L. and Griesemer, J.R. (1989), "Institutional ecology, translations' and boundary objects: amateurs and professionals in Berkeley's Museum of Vertebrate Zoology", *Social Studies of Science*, Vol. 19 No. 3, pp. 387-420, 1907-39, doi: [10.1177/030631289019003001](https://doi.org/10.1177/030631289019003001).
- Taleb, H., Ismail, S., Wahab, M.H. and Rani, W.N.M.W.M. (2017), "Communication management between architects and clients", *The 2nd International Conference On Applied Science And Technology 2017 (ICAST'17)*, Kedah, Malaysia, Vol. 1891, 020136, doi: [10.1063/1.5005469](https://doi.org/10.1063/1.5005469).
- Thompson, M. (2016), "Common pitfalls in customer journey maps", *Interactions*, Vol. 24 No. 1, pp. 71-73, doi: [10.1145/3001753](https://doi.org/10.1145/3001753).
- Tobar-Munoz, H., Baldiris, S. and Fabregat, R. (2016), "Co design of augmented reality game-based learning games with teachers using Co-CreaARGBL method", *IEEE 16th International Conference on Advanced Learning Technologies (ICALT)*, pp. 120-122, doi: [10.1109/ICALT.2016.32](https://doi.org/10.1109/ICALT.2016.32).
- Weytjens, L., Verdonck, E. and Verbeeck, G. (2009), "Classification and use of design tools: the roles of tools in the architectural design process", *Design Principles and Practices: An International Journal - Annual Review*, Vol. 3 No. 1, pp. 289-302, doi: [10.18848/1833-1874/CGP/v03i01/37572](https://doi.org/10.18848/1833-1874/CGP/v03i01/37572).

- Winschiers-Theophilus, H., Bidwell, N.J. and Blake, E. (2012), "Altering participation through interactions and reflections in design", *CoDesign*, Vol. 8 Nos 2-3, pp. 163-182, doi: [10.1080/15710882.2012.672580](https://doi.org/10.1080/15710882.2012.672580).
- Winter, S.J. and Butler, B.S. (2011), "Creating bigger problems: grand challenges as boundary objects and the legitimacy of the information systems field", *Journal of Information Technology*, Vol. 26 No. 2, pp. 99-108, doi: [10.1057/jit.2011.6](https://doi.org/10.1057/jit.2011.6).
- Yönder, Ç., Hamarat, Y. and Elsen, C. (2023), "Les cartographies de parcours et leurs usages : revue systématique de la littérature [Journey maps and their use: a systematic review of the literature]", *ModACT 2023* [Online], doi: [10.25518/modact2023.64](https://doi.org/10.25518/modact2023.64).
- Yönder, Ç., Hamarat, Y. and Elsen, C. (2025a), "Connaissance et ses enjeux dans le co-design: implications méthodologiques [Matters of knowledge in co-design: methodological implications]", *Journal Sciences du Design*, Vol. 21, Manuscript under review.
- Yönder, Ç., Mertens, A., Castel, K., Heine, M. and Elsen, C. (2025b), "A review of tools supporting architect and user-client interactions", Manuscript in preparation.
- YouGov (2012), "An archi-what", available at: <https://yougov.co.uk/politics/articles/4265-archi-what> (accessed 18 January 2024).

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