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# Working with complexity: A contemporary skill framework for service designers

*Tamami Komatsu Cipriani, Martina Rossi*  
[tamami.komatsu@polimi.it](mailto:tamami.komatsu@polimi.it); [martina.rossi@polimi.it](mailto:martina.rossi@polimi.it)  
*Department of Design, Politecnico di Milano, Milan, Italy.*

## Abstract

Designers today live in interesting times, riddled with complex, ‘wicked’ problems amidst advancing technological landscapes that are transforming: the object of design, the spaces in which it is conducted, the actors involved, the stages in which it operates and the value it delivers. The paper explores each of these aspects, presenting the main arguments of current academic debate and extracting skills that service designers should acquire when moving forward. Understanding the role of service designers and the skills needed is a useful pursuit for the discipline as a whole, which finds itself in a moment of reflection and self-assessment. Remaining relevant as professionals is a key issue for many service designers as they face problems whose solutions are often open-ended, systemic and done with the engagement of non-designers. The paper concludes by proposing a skills framework for the contemporary designer to serve as a prototype for future reflection and debate.

**KEYWORDS:** service design, complexity, skill framework

## Introduction

### Designing in and for complexity: problems, systems and spaces

The issue of complexity is a relevant dynamic characterizing today’s political, economic, social and cultural challenges and one that designers are beginning to face, operating in work domains and challenges – healthcare systems, migration processes or food systems – that differ from the traditional challenges that have characterized design. While designers have been accustomed to working with complicated problems through the use of refined problem-solving skills, the challenges and work domains that designers are now working in require new skills. Whether today’s problems are more complex than before in relation to the tools needed to face them is not the objective of the paper, but rather to understand how designers – service designers in particular – must evolve in order to remain relevant in today’s *complex* world.

Service designers stand to play an important role in this new paradigm as services are per se complex social systems whose interactions occur within wider systems of action and actors,

where individual behavior can't be predicted and whose interactions create emergent properties, qualities and patterns of behavior (Junginger and Sangiorgi, 2009; Mitleton-Kelly, 2003). While service design is a rather recent field, it is no longer emergent. The expertise and skills acquired thus far have proven themselves useful to the challenges of the 21<sup>st</sup> century; however, new skills and roles of design will also be needed to maintain professional relevancy in going forward. Lucy Kimbell (2009), in fact touches upon this need of going beyond design thinking towards an approach that moves the unit of analysis away from the individual designer to a wider frame that grounds the practices and competences of the designers with the materials used and the practices of the stakeholders involved (ibidem, p. 11). She proposes pairing the concepts of *design-as-practice*, which acknowledges the role of the designer but also of non-designers taking part in the design process – stakeholders, users, managers and employees; and *design-in-practice*, which “acknowledges the emergent nature of design outcomes as they are enacted in practice” (ibidem, p. 11). In other words, she promotes a more systemic vision to designing, whose outcomes remain incomplete as their meaning and use are constantly being redefined. The inclusion of non-designers (Manzini, 2015) in design processes and activities and how these interactions can serve as material for creating organizational change within the organization (Junginger and Sangiorgi, 2009) is a relevant issue as service design seeks to touch the deeper, fundamental assumptions of the organization (Rousseau, 1995).

In the same vein, Norman and Stappers (2015) promote a modular approach when designing for complexity, advocating that designers invoke tolerance for existing constraints and trade-offs. In their work on design in sociotechnical systems (ibidem, 2015), they encourage designers to continue on into the implementation phase, where most of the problems hindering the final design occur. The authors, also, celebrate what designers can bring to the table – i.e. understanding the human elements of these systems and designing for them. They, along with others (Lindblom, 1959; Flach, 2012), promote an incremental approach rather than immediately aiming for the ideal solution in an unknown future. The authors instead advocate designing in a manner that ‘muddles through’ complexity, based on small steps as part of an overall design strategy that engages stakeholders in a co-design process that fosters ownership.

Taking a more specific look into the public sector, service design faces a myriad of complex problems; the highly bureaucratic and top-down procedures governing their work, which grant little room for flexibility or improvisation (Weick, 1998); a highly-siloed organizational structure; and finally, an organizational culture averse to risk taking and innovation. Likewise, the private sector organizations are similarly complex, highly siloed and fail to interact smoothly. They often experience strong conflicts of interests between business units which have opposite targets; are eager to innovate but their rigid configuration doesn't match the velocity of the market; and finally, there is a need of a cultural change of the staff in order to embrace a new way of working (Martin, 2005; Staes, 2009). In response, service designers are increasingly being called to solve innovation challenges in both sectors, and therefore, their role is being extended to other areas of application which are far from the traditional object of design. In this sense, service designers need to revise their skillset integrating it with other competences.

In this paper, we seek to explore the new skills that service designers need to work with organizations facing complexity in both the public and private sector, while bringing to the forefront the work done so far and posing new questions to the ongoing research agenda. While mostly an exploratory paper, we conclude by providing an initial prototype of a skill framework to guide service designers in preparing themselves for the complex challenges of the 21<sup>st</sup> century.

## Methodology

This article aims at proposing a skill framework for the contemporary service designer facing complex organizations. The contribution is the result of an exploratory research aimed at organizing available knowledge around the topic. The framework thereby obtained is intended to provide organized stimuli for further reflections on how to improve service design education and practice.

The information has been gathered through an extensive literature review that considered public records and sources, such as scientific articles and books, interviews, blogs and other online sources.

The literature review took into consideration contributions coming from the disciplines of service design and co-design, organizational studies and innovation.

## How service design is being introduced in organizations

In recent years, private organizations have gained a new understanding of the value of design and have begun to change their internal culture and attitude. Companies are looking to design as a way to innovate the product/services they are delivering and are adopting different strategies to do so (Muratovski, 2015). Some are trying to build design capacity inside their organizations, structuring dedicated in-house design teams; others have decided to hire external design professionals, while in other cases yet, the companies have chosen to train internal staff.

Hiring design professionals from the outside can attract experts to boost design expertise in the company, free from being influenced by deeply-rooted constraints. Moreover, experts coming from the outside-in have the potential of carrying more influence as they establish themselves in the company as experts in a specific field from the onset. This is more difficult when internal resources are trained to become design ambassadors. In the latter case, employees that used to work in diverse roles are gathered in one core team and are entrusted with the position of spreading design culture throughout the organization.

For this reason, many business consultancy firms are now expanding their offer to include design so as to remain competitive, even if they have never been associated with design before (Muratovski, 2015). Therefore, in recent years we have seen many design studios being acquired by more established business consultancies, like PricewaterhouseCoopers, Accenture, Deloitte and McKinsey & Company (Muratovski, 2015). This phenomenon reflects the “ongoing transformation of the business landscape as a whole” (Gianatasio, 2017) which reveals the growing interest in service design by different private organizations.

Interest in service design is also growing in the public sector with a similar expansion in supporting infrastructure with the rise of specific policy and innovation labs, like Mindlab, la 27eme Région and Policy Lab (UK), along with living labs and new service offerings for the public in private design firms, e.g. IDEO and Fjord/Accenture. As in the private sector, different levels of experimentation can be observed, from outside-in consultancy focused on improving already existing services – not touching upon the internal processes or values of the organization – (Fjord’s work with the German Federal Employment Office<sup>1</sup>) to the

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<sup>1</sup> Fjord worked with the German Federal Employment Office ([Bundesagentur für Arbeit](#)) to create a new, online platform with integrated digital services, better suited to meet their user’s needs.

training of internal team capacity (la 27eme Région’s “La Transfo” project<sup>2</sup>) to programs focusing directly on more lasting change in the organizational culture by embedding a design mindset and culture in public servants (Mindlab’s “LabRats” project<sup>3</sup>). The ultimate level of integration of design culture into public organizations can be found in municipalities which have recently institutionalized design within their structures creating new roles– e.g. Helsinki’s Chief Design Officer, Anne Stenros. Service design thus finds itself at an important crossroads at which understanding its effective role is pivotal towards preventing it from becoming a passing fad (Ansell & Torfing, 2015).

## The service designer in a complex world

The following section presents the skill framework proposed by the authors for contemporary service designers and duly describes the different aspects concerning its changing role. These aspects have been organized in a discussion that follows the logical categories of what and where, who, how, when and why. The framework served as a tool for the authors and is meant to facilitate an overall understanding for the reader of the parameters of the research, allowing for deeper analysis of all the qualifying aspects. For each category, a description is provided of the changes taking place and the qualifying skills the service designer should acquire as a result. A visualization of the framework is provided at the end of the chapter (Figure 1).

### What and Where: the object of design and its context

Design and designers are shifty, malleable creatures in constant re-formulation based on the needs of the day or the historical moment in which they find themselves. Today, designers are working, as stated above, with new levels of complexity, not only in the problem type but also in terms of the work domains in which they operate that are constantly more varied and extensive, with more actors and spaces to manage. As already well documented by many design scholars – Kimbell (2009) and Julier (2012) to name just a couple – the field of design has been experiencing a shift, or an expansion, from craftsmanship and industrial production towards design thinking, experience and interaction design and design for social and environmental challenges (Manzini, 1998); thus a shift from a focus on well-structured problems that are solved through a rational set of procedures (Simon, 1996) to ill-structured, wicked problems (Buchanan, 1992; Rittel & Webber, 1973) that are indeterminate, fluid, open-ended and which cannot be definitively solved. Further in this direction, design has moved away from the viewpoint of the designer as being omnipotent towards one that views design as being a distributed social accomplishment dependent on its material and social circumstances (Suchman, 1987; Kimbell, 2009; Manzini, 2015).

Guy Julier (2008), took this further, including theories of consumption in his formulation of design culture, which views design as more than “just the fashioning of discrete objects but entangled in the creation of relationships and networks that work through different systems of production and consumption” (Julier, 2012, p. 115). Design culture can thus take form on various scales, from the single organization to the city, “where urban form, cultural infrastructure, political support, consumer behaviours, notions of tradition, educational

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<sup>2</sup> La 27eme Région’s project, “La Transfo”, is a 1-2 year project, aiming to create an innovation lab/unit within public organizations through an embedding process that brings together a multi-disciplinary team which works on three separate design challenges in time intervals of 7-10 weeks. This process allows them to gain skills and competences while also preparing and testing their surrounding ecosystem.

<sup>3</sup> Mindlab’s “Lab Rats” project aims to connect innovative public servants from different departments with one another, and use them as ambassadors from which to propagate design culture within their institutions.

resources and so on add up to produce particular relationships and ways of working and being.” Designers are thus working in new and more vast spaces and networks as the economy shifts towards being more service-oriented and collaborative, with new actors, and new forms and sources of resources being supported by a renewed creativity in times of scarcity. Thus, each economic, political, social and cultural scenario provides new drivers that require new skills from designers. Where designers were once form-givers, they are now also likened to other roles – facilitator, project manager or intermediary – as the division between ‘above’ and ‘below the line’ design get blurred and the actors engaged in the design process increase and become more varied (Julier, 2012). New skills in people management, cognitive studies, and human behavior are becoming more relevant.

Norman and Klemmer (2014) propose that designers continue their training in the “art and craft of beautiful and pleasurable well-crafted design, [but also integrate this] with substantive courses in the social and biological sciences, in technology, mathematics and statistics, and in the understanding of experimental methods and rigorous reasoning. Myerson (2015) instead points out that the “deep expertise entailed in the practice of most design principles – from industrial and automotive to environmental and communication design – lends itself to narrow focus, [often on] different touchpoints through which the users of complex systems experience the system, rather than broader, big picture thinking” (ibidem, p. 99-100). Complex problems, however, require such systemic thinking, rooted in the bigger picture instead of unique touchpoints. Service design is already moving in this direction but more attention should be given to developing skills in systems innovation and integrating them in the design process –e.g. introducing constraints earlier on and allowing for trade-offs in a more modular approach. The question then surfaces of how service designers can be more multi-disciplinary, adaptable, modular and systemic in the design process.

*Skills: Be competent in diverse disciplines, Adapt to different contexts and scales of design, Design in modules for incremental innovation, Maintain a systemic vision.*

## Who: design stakeholder network

Design processes today are characterized by a collaboration between different actors, opening up the opportunity of designing to a wider range of people (Manzini, 2015). This at times alleviates designers from the burden of coming up with brilliant ideas alone, but limits their role to facilitating co-design sessions and organizing the ideas of others. As stated by Muratovski (2015): “the role of the design leader will change from that of developing unique creative solutions to one that revolves around facilitating ideas” (p. 29).

Several co-design experiments however provide evidence of the contrary, in which the role of the designer has proven to be essential as a guide rather than a bearer of methodology. One such experiment is the project Cittadini Creativi carried out by Daniela Selloni, who experienced: “the need for a shift from ‘visualizations’ to ‘visions’ [during co-design sessions], [which] represented a crucial point for the evolution of [her] role from ‘facilitator with tools’ to that of [a] ‘proponent with contents’” (Selloni, p. 171). Therefore, within these new forms of co-design, can the service designer play the role of an expert contributor of content steering toward a vision (Meroni et al., 2018)?

*Skill: Lead collaborative processes*

When approaching complex organizations or environments, service designers come in contact with many different stakeholders. They can vary by sector, background, age and seniority and play different roles within a project: the final user of a service, a provider, sponsor or simply someone who will be impacted by the solution. In order for the project to

be successful, it is essential to understand the interactions among all the actors and engage every stakeholder in the right way, aligning interests and fostering alliances around a common scope (Selloni, 2017). In the era of collaboration, this is becoming an increasingly relevant capability for the service designer.

While designers may not be the most adept at building networks and engaging with stakeholders, they need at least to be capable of understanding who needs to be involved and with which role. Available literature exploring the concept of stakeholder engagement usually comes from project management studies, identifying the project manager as the figure in charge of understanding relationships with stakeholders (Hansen & Spitzbeck, 2010). However, many service designers today are taking on the role of project manager, and hence need to acquire this ability. Historically, service design has been conceived as a user-centered discipline, therefore having a strong focus on the study of the user and his/her behaviour. Less attention has been paid to stakeholder relations, but we think that there are specific skills and tools that the service designer could apply for this aim. For example, designers could improve the way 'traditional' project managers have approached project management until now by making use of design probes, visualizations or ethnographic tools (Segelström, 2013). This leads to the question of whether service designers can foster stakeholder engagement within a project by exploiting their design-specific skills and empowering them with more business-specific goals.

*Skill: Know how to engage the right stakeholders*

## How: design process

In recent years, besides changing the object of the design activity, we have witnessed also a relevant change in the 'how'. We are here referring to the collaborative connotation that design is increasingly embracing and which consequentially changes the role of the service designer. Service designers are no longer consultants that bring the solution to the client, but are leaders who co-design the solution with the client staff and other stakeholders. This implies that service designers are equipped with interpersonal skills and psychological knowledge that allow them to successfully lead an activity and manage group dynamics. This, however, is not the case. Besides personal inclination or knowledge gained with direct experiences, designers are being tasked to coordinate groups without a specific expertise. Furthermore, while homogenous groups can be easier to conduct, groups with higher levels of heterogeneity introduce higher levels of complexity, thus increasing the need of an expert for the success of the activity and the project (Meroni et al., 2018).

An expert of group dynamics is one that resolves conflicts in 'agonism' (struggle with adversaries) instead of 'antagonism' (struggle with enemies), thereby enabling people with different interests to collaborate for a common goal (Hillgren et al., 2016). Considering that these competences are essential at least at a basic level, we question if it is the service designer who should become an expert in this area, turning into a hybrid professional, or if they instead should be accompanied by another professional, like a psychologist or a coach? While service designers may not be trained to manage group dynamics, they are often able to align stakeholders around a common vision through the material artifacts or prototypes with which the designer renders the solution or even the challenge itself tangible at different stages of the design process. These design artifacts in fact act as 'boundary objects' (Star and Griesemer, 1989), allowing for prospective sensemaking (Stigliani and Ravasi, 2012) and the creation of a shared vision between diverse actors. This important design practice is growing in relevance as more diverse stakeholders are involved and included in design processes and activities.

*Skill: Be familiar with group dynamics, Visualize design solutions for a shared vision*

In recent years, service design has increased in popularity both in public and private organizations, viewed as a promising way to tackle all sorts of problems and bring about innovation. It has in fact been misinterpreted as a magical formula that can solve any challenge, leading to an excessive attention to methodology over output, intended here as the final product/service to be implemented. This has led too often to the perception of service design as a collection of tools that are improperly seen as outputs. Meroni and Sangiorgi (2011) outlined the need to move from ‘tools’ to ‘contents’ in the discussion about design for services.

For example, service designers are witnessing requests from companies who ask specifically for co-design sessions, personas or customer journeys. This is probably caused by the market itself, which requires service design agencies to itemize their tools to show their methodology, but can also be misleading for clients and for the general perception of service design itself (Drummond, 2017).

Furthermore, the proliferation of service design toolkits (IDEO, 2011; NYC, 2017; Stickdorn & Schneider, 2012; Kimbell, 2015) is also an index of the general focus on the process, while service designers should shift their attention to the system for which they are designing, the results (to be assessed) and implementation.

Hence, how can service designers focus more on the quality of the output – actual product/service - they are delivering than the tools they are using and communicate better the value they are providing to the final users?

*Skill: Focus on the output rather than the process*

## When: design phases

As service designers begin to work more and more with ‘wicked’ problems, questions of when design skills should be used becomes more critical, as does determining the value of design in each phase. If we return to the idea that designs never end but are rather constantly being enacted in practice (Kimbell, 2009), it follows that the work of designing never ends, whether the designing is being done by the professional designer or not. While traditionally, designers worked by client commission, from design brief to design delivery, designers are now charged with more responsibility for a longer time span reaching beyond the delivery of the “final” design and continuing on into the implementation (Norman & Stappers, 2015) and assessment phase. Here the issues of ownership and stewardship become relevant as a quality that designers must gain but also transfer to other actors involved in the design process. As solutions to complex problems are rarely finite but rather open-ended and in constant evolution, it is critical that the designer take responsibility for ensuring that the implementation of the design is successful and take charge of the inevitable re-designs that this process entails (Julier, 2012).

Furthermore, if designers fail to assess and criticize their designs, the ultimate value, quality and impact of their work will continuously be overlooked and likewise undervalue and overlook the role of design in wider organizational processes. In going forward, designers should develop a more critical attitude and find tools with which to assess and monitor their work. Understanding the value of design through criticism and assessment will also help designers convince clients of their strategic value, not only in the final stages of the planning process (the design brief to implementation) but also in the initial stages. If we look at the public sector, designers are often commissioned to design services that implement policies without reflecting if the upstream policy is well-designed (Junginger & Sangiorgi, 2011). Junginger and Sangiorgi (2011) sustain that designers must develop a reflexive attitude that pushes them to go from action (implementing services) to thought (asking why and what particular services are meant to achieve). Likewise, in private sector organizations, as products become more about experiences and connecting services, corporate strategy is

becoming more emergent, potentially giving design a larger role in corporate strategy (Seidel, 2000). Designers in both sectors will need to develop envisioning skills that are reflexive, strategic and comprehensive of system-wide requirements. In conclusion, in going forward, the intervention of designers should come earlier in the process and last for longer time periods, continuing along until the assessment phase.

*Skill: Be responsible for upstream and downstream processes, Use design as a tool for emergent strategy, Measure the value of design, Think reflexively at every stage*

## Why: design value

Service design (and here we couple design thinking) is currently identified and requested by organizations as a process that helps generate a lot of bright ideas that foster innovation. While it is true that service design plays a prominent role in idea generation, it is not its only role and becomes useless if it is done for its own sake. What service design as a field needs to better communicate is that, if it aims at having an impact, it needs to put more attention on identifying the real challenge and the inner meaning behind their designing. The importance of the ‘why’ against the ‘how’ has been extensively advocated by Verganti in his recent book (2017), in which, he depicts our society as a scenario “awash with ideas, where technologies and solutions are increasingly accessible, but problems and meaning keep changing” (Verganti, 2017, p. 20). Verganti thus invites designers to take a step back and give importance to making sense of this plurality and concentrate their effort on something really meaningful for people. He consequently describes the ‘innovation of meaning’ as a novel vision that redefines the problems worth addressing (Verganti, 2017). In such a context, we believe that the designer has a specific ability and the tools to both investigate which is the right problem to solve and envision the right direction to pursue and thereby play a fundamental role. Hence, in a ‘world awash with ideas’ can the service designer become a professional who is able to drive organizations toward meaningful directions?

*Skill: Innovate with meaning*

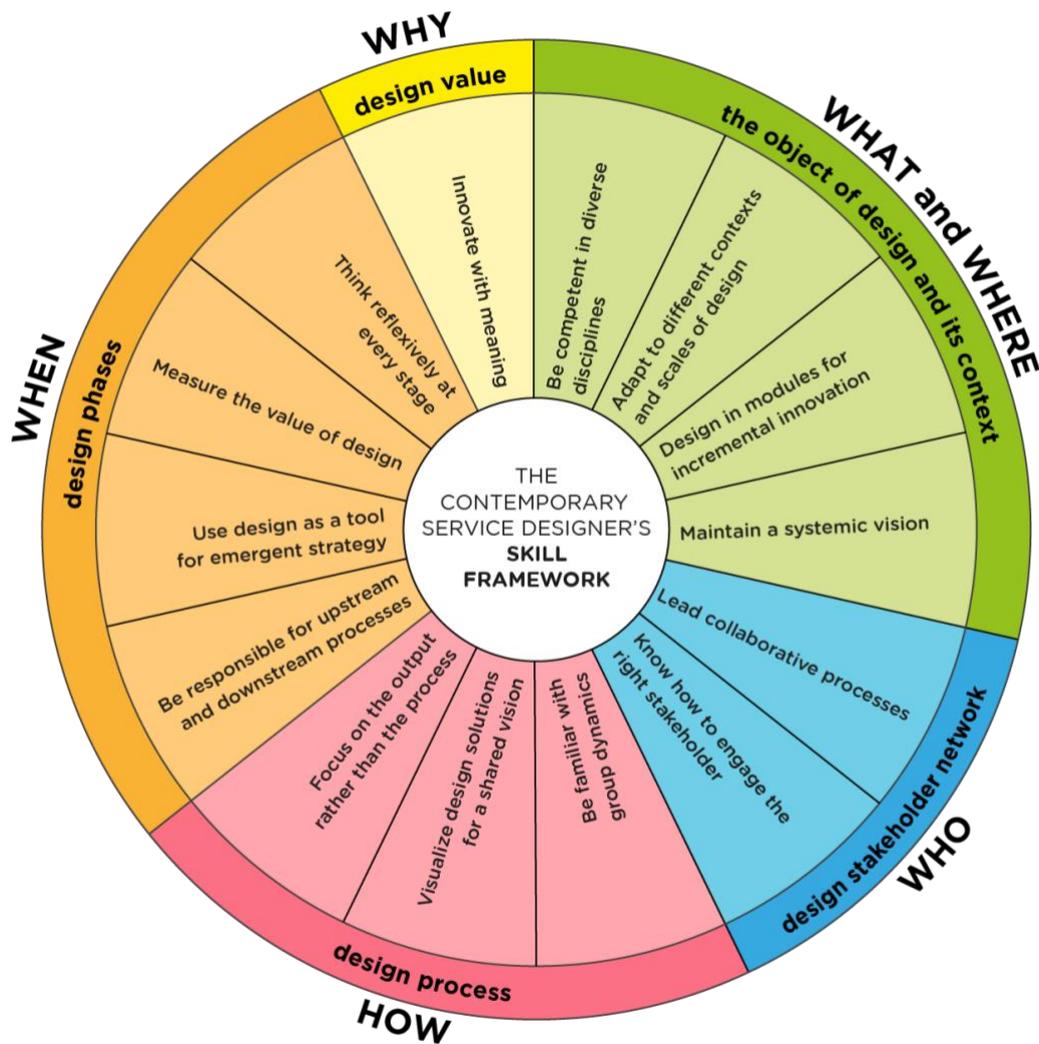


Figure 1 – The contemporary service designer’s skill framework

## Conclusions

The main conclusion that we have come to from the findings is the need for service designers to equip themselves with new skills to face the mounting levels of complexity that is characterizing and re-defining: the object of design, the spaces in which it is conducted, the actors involved, the stages in which it operates, the value it delivers and ultimately, the roles they are called to fill. We are definitely not alone in this pursuit. While many authors have for some time investigated the ever-changing role of the designer, it has recently become a hot topic for the service design community. Meroni and Sangiorgi (2011), for example, identified the diverse disciplines with which service design works and from which they deduced related job profiles. Other authors have analyzed specific roles, giving them titles and specific characteristics. Tan (2012), for instance, observed a number of case studies in which the designer acted in different capacities: a co-creator, a researcher, a facilitator, a capability builder, a social entrepreneur, a provocateur and a strategist. Similarly, Yee (2017) identified seven different roles of design to foster change in organizations, formulating how design can be used to enable technology, form communities, catalyze culture and more. Other authors still focused on skills rather than roles. Julier (2012), for example, proposed four conceptual frameworks that provide suggestions on where design skills might be directed in the future: intensification, co-articulation, temporality and territorialization.

Others reflect more broadly on the need for designers to work transversally (Krucken, 2008) by developing a t-shaped profile, where specialization in one field of design (vertical stroke) is completed with the ability to collaborate with other disciplines (horizontal stroke).

Building on what the aforementioned authors have put forth, we would like to add a few possible directions that design education might take to better prepare designers, and specifically, service designers, to work and design for complexity. As seen above, designers are now called to work in different problem spaces and to problem-solve in different ways to find the most valid solution for ill-defined, ‘wicked’ problems. Furthermore, the design process has become more inclusive, engaging with more diverse actors in all phases, taking on a systemic, co-design approach to problem-solving. This has led, as we’ve seen, to gaps in the service designer’s toolbox of competences, which has thus far been best solved by the keen awareness of the designers themselves to these gaps and their ability to adopt a holistic approach and find and engage the right collaborators to form multi-disciplinary teams. In order to better prepare designers for these challenges, we would suggest that design curricula adopt a more multi-disciplinary and t-shaped approach. One way would be to integrate a system similar to the US’ bachelor degree, in which design students major in a field of design but are also required or given the option to minor in a different field of application (e.g. public sector management and administration, business, agriculture, health, etc.) in order to better prepare them for the contexts (i.e. problem spaces) in which they will be applying and using their design competences. Another important aspect is providing practical, real-world application. While this already happens informally through participation in jams, hackathons, etc., more formal collaborations between design education and different service sectors would be useful to help students get accustomed to not only applying their skills to real problems, but also to work with other disciplines and non-designers.

In fact, in the education program offered by Politecnico di Milano, a double degree program between Management Engineering and Product Service System Design (PSSD) has recently been introduced. This program has been developed to match the need for service designers to acquire managerial skills and vice versa for business students to develop design skills. It represents a first attempt to meet the demand of the professional world. Indeed, the PSSD course benefits from an advisory board made of professionals that each year give their feedback to refresh the educational program and, ultimately, better meet the job market requirements.

In this paper, the authors have attempted to move the discussion forward by bringing together the insights that previous researchers have brought forward and taking a small step further by suggesting the skills that a service designer needs in order to face the different aspects of complexity (what and where, who, how, when and why) that characterize the context of the 21<sup>st</sup> century. The framework is meant to serve as ‘food for thought’, or rather as an initial prototype with the objective of bringing experts together to move concretely towards a new design curricula and education. The framework, moreover, aims to create awareness in the service design community of the attributes that are required for the profession by the contemporary context. The contribution is particularly relevant should we consider that service design today is no longer an emerging discipline, but instead has arrived at a stage of maturity in which it needs to be reflexive as a discipline to prove the value of design. While going forward, however, the discipline cannot lose its typical and distinctive, experimental *modus operandi*, which must remain and reinforce the scientific relevance that the profile of the service designer is increasingly affirming.

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