

# Designing for Social Infrastructures in Complex Service Systems: A Human-Centered and Social Systems Perspective on Service Design

**Abstract** Service design is one of the keys to improving how we target today's complex societal problems. The predominant view of service systems is mechanistic and linear. A service infrastructure – which includes solutions like service blueprints, scripts, and protocols – is, in some ways, designed to control the behavior of service professionals at the service interface. This view undermines the intrinsic motivation, expertise, and creativity of service professionals. This article presents a different perspective on service design. Using theories of social systems and complex responsive processes, I define service organizations as ongoing iterated patterns of relationships between people, and identify them as complex social service systems. I go on to show how the human-centeredness of design practices contributes to designing for such service systems. In particular, I show how a deep understanding of the needs and aspirations of service professionals through phenomenological themes contributes to designing for social infrastructures that support continuous improvement and adaptation of the practices executed by service professionals at the service interface.

## Keywords

Service design  
Public sector innovation  
Social systems  
Complex responsive processes  
Human-centered design  
Phenomenological themes

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1 Kees Dorst, *Frame Innovation: Create New Thinking by Design* (Cambridge, MA: MIT Press, 2015), 1.

2 Fernando Secomandi and Dirk Snelders, "The Object of Service Design," *Design Issues* 27, no. 3 (2011): 29, DOI: [https://doi.org/10.1162/DESI\\_a\\_00088](https://doi.org/10.1162/DESI_a_00088).

3 Christian Bason, "Designing Co-production: Discovering New Business Models for Public Services," in *Leading Innovation through Design: Proceedings of the DMI 2012 International Research Conference*, ed. Erik Bohemia, Jeanne Liedtka, and Alison Rieple (Boston: DMI, 2012), 318.

4 Stephen L. Vargo and Robert F. Lusch, "Evolving to a New Dominant Logic for Marketing," *Journal of Marketing* 68, no. 1 (2004): 1–17, DOI: <https://doi.org/10.1509/jmkg.68.1.1.24036>.

5 The term service consumer applies to a broad range of stakeholder classifications—citizens, health care patients, and students, for example. The roles of service provider and consumer are often blurred; for example, if learning is the preferred outcome of a teacher-student interaction, then both student and teacher must actively contribute to the service interaction to achieve that outcome.

6 Sabine Junginger, "Services as Key to Effective Government," in *Transforming Public Services by Design: Re-Orienting Policies, Organizations and Services around People* (London, UK: Routledge, 2017), 38–44.

7 Secomandi and Snelders, "Object of Service Design," 29.

8 I adopt a broad definition of service professional that includes any (expert) professional or organizational staff member that contributes actively to addressing complex challenges at the interface between the organization and the service context. Teachers are an interesting example, as education has been a surprisingly neglected sector of activity in research on service design, as recently argued in Lucila Carvalho and Peter Goodyear, "Design, Learning Networks and Service Innovation," *Design Studies* (2017), forthcoming.

## Introduction

The world is increasingly confronted with complex societal challenges including poverty, crime, health issues, and an aging population. Better service design is one of the keys to improving how we address societal issues. As many of these societal issues have an open, complex, dynamic, and networked character,<sup>1</sup> the service systems we do implement to address these issues tend to have a complex character as well. In this article, I will discuss the design of such complex service systems.

If we want to understand the design of complex service systems, we first need to understand what a service is. Within the service design field there is a consensus that a service emerges in a process of co-production or co-creation between provider and client,<sup>2</sup> or between public service organizations and citizens in a public sector context.<sup>3</sup> This principle—based on one of the foundational premises of service described by Stephen Vargo and Robert Lusch<sup>4</sup>—is part of a service-dominant logic that emerged in the marketing field at the beginning of the twenty-first century. Without the consumer,<sup>5</sup> there is no service. The service comes about when the consumer interacts with the material and immaterial elements provided by the service providers—the movie rented, the cleaner hired, the website consulted, and the machine-distributed ticket bought. If the service does not come about until there is interaction between the service provider and the service consumer, it is essentially intangible. Services are also heterogeneous, because the quality of their delivery depends on the time and place as well as on the people involved.<sup>6</sup> If a service is intangible and heterogeneous, how do we design it? To answer this question, the service design literature distinguishes the interface of the service from the infrastructure of the service.<sup>7</sup>

The interface consists of those aspects of a service that are directly available to consumers, while the infrastructures are the resources that are indirectly available—the front office and back office. In this article, I focus on the parts of the interface that are available through human beings, rather than through technologies. I also focus on those parts of the infrastructure that support or guide a service professional's behavior—the physical/digital environment and the organizational structure, for example. If we look at a teacher as a service professional,<sup>8</sup> for instance, the interface is the social interaction between teacher and student, while the infrastructure consists of the classroom, teaching materials, smart board, organizational structure of the school, teacher-teacher and teacher-principal interactions, and the school's educational philosophy. Infrastructure is a fundamentally relational concept. It becomes infrastructure in relation to organized practices.<sup>9</sup> For example, for a teacher, the classroom is integral to teaching—it becomes infrastructure in teaching—but for a cleaner, that classroom is an object of their work. As Susan Leigh Star and Karen Ruhleder ask, "when—not what—is an infrastructure?"<sup>10</sup>

Many scholars contend that since the service interface is intangible, design efforts should be focused on the service infrastructure. Bo Edvardsson and Jan Olsson argue that service design is about developing the appropriate generic prerequisites for the service.<sup>11</sup> These prerequisites are the system's resources—its staff, organizational structure, and physical/technical environment, for example. The current popularity of designing touchpoints in the service design community is in line with this focus on service infrastructure. However, Fernando Secomandi and Dirk Snelders<sup>12</sup> argue that the focus on service infrastructure has neglected what is essentially the core of the service, the service interface, and claim that this should be the object of service design.

This article will contribute to this discussion in two ways. The first is by using theories of complex social systems to provide a new perspective on service systems. The second is by introducing a human-centered design and innovation approach that enables designing for such complex service systems. To achieve this, the next

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