NEW CIRCLES KEEP POPPING UP

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Prototyping for PSSs brings new challenges: many different elements are connected and influence each other, offering endless opportunities for improvement. **It is simply not possible to prototype an entire product–service system and be complete. PSS prototyping never ends…**

As a designer and design research consultant, I have used various forms of prototyping in nearly every design project. For me, prototyping occurs together with user involvement; exploring and evaluating ideas with users, preferably in their everyday context and over time.

Prototyping can focus on the object (first sphere), its use (second sphere) and the context (third sphere). The second and third spheres in particular have received a great deal more attention in the last 20 years; user-centred design has brought a greater involvement of users to the product development process, through methods such as user research, prototyping, and co-creation. My prototyping activities mostly take place in the second and third sphere of prototyping.

Implications for product service systems prototyping

Prototyping is no longer limited to traditional product design. Design solutions often contain a combination of product and service elements, making them more complex. Solutions are systems of many elements, are less tangible, usually contain digital technologies, and consist of sequences of interactions over larger time spans. Where a product is static, a service is more dynamic. This is why services, from the user's point of view, are often described as journeys with multiple (online/offline) touchpoints. These differences require us to consider prototypes and their usage in new ways. The broader application of prototyping poses a number of challenges, though. The division between instantiation of a product and the final product is less exact

(think of infinite beta versions). At the same time, more diverse disciplines are involved in prototyping activities: disciplines that may not always understand the aim of prototyping and are confused by the unstable jargon.

Let me use an example from practice. A while back, we presented our customer experience insights to the board of a car rental company. The insights focused on a few important stages of the customer journey that needed attention.

To improve these stages, the company would need to change parts of their CRM IT system and take steps to become a more customer-centric organisation. As changing the IT system wasn't a short term option, we suggested to start with a customer-centric employee programme. We would provide employees with customer research content, and the tools and training required to increase their customer centricity. Simultaneously, we would choose a few regions to locally prototype several small interventions with frontline staff. The interventions that proved successful would then be scaled up and implemented in other regions.

The board liked our proposal, but one of the managers said: *'But I don't want the prototyping part.* I don't see the value of giving iPads to all frontline staff.' We looked at each other with raised eyebrows: who was talking about iPads? We didn't mention iPads in our presentation. When we talked about prototyping, we meant role playing with frontline staff and staging staff-client interactions to define new and more empathic staff behaviour towards customers. The manifestations of our proto-

typing could lead to a different behavioural protocol for the staff that come into contact with clients. It could, however, also be the introduction of an additional touch point (e.g., sending an extra text message to give extra confirmation) or a different organisation around one of the touch points.

We hadn't talked about physical designs, new technologies or 'iPads'. When the manager heard 'prototyping,' though, all he could think about was technical stuff, in this case: iPads with new applications.

This example illustrates that many people still have a rather traditional understanding of prototyping, an understanding which only addresses the first 'object' sphere. I would recommend everyone who is involved in prototyping activities to make explicit what exactly you want to prototype and with what aim.

Where a traditional product design consists of one object, a product-service system can consist of several objects, each again surrounded by 'use' and 'context' spheres. It is a complex total entity. Many elements are connected to PSSs, each creating another issue that can be explored/evaluated through prototyping activities, addressing different spheres around the objects or combination of objects. In the car rental case, for example, the prototyping activity could be to try out different behaviour towards customers and measure its effects over two weeks. The prototyping activity would then be an evaluation of a new protocol for staff to communicate to customers, and its use would be evaluated based on customer satisfaction rates (the use and con-

text sphere around the desk counter object). In conclusion, prototyping in the process of designing PSSs creates interesting challenges:

1   Combinations of elements

PSSs address many different elements: elements in the front-end, back-end, individual touchpoints, or even combinations of touchpoints, all of them surrounded by use and context spheres.

2   Visualisations

The majority of PSSs prototyping activities seem to take place in the 'use' and 'context' sphere to get to grip on how people will use and experience the different touchpoints of the complex PSSs we design. This is quite different from the traditional prototyping in the 'object' sphere and requires different type of visualisations and mock-up types.

3   Shared understanding

Complex systems are often designed by multidisciplinary teams using different jargon and methodologies. People often underestimate the importance of being able to determine and find consensus on what exactly will be prototyped and for what purpose.

4   Always evolving

Prototyping for PSSs never ends. It is simply not possible to prototype the entire system in all spheres, while you're also attempting to prototype how it is experienced at the same time.

A little lesson about prototyping

In traditional product design, prototyping is used for two goals: either to explore or evaluate (part of) a concept. Prototyping always consists of simulations leading to an intended end result, as explained by Pieter Jan Stappers and John M. Flach. The prototyping activity can focus on the technical feasibility (is the material/construction strong enough?), the aesthetics (does it look or feel nice?), the usability and interface (is it easy or even pleasurable to interact with and use the product?), the experience (would this product evoke intended experiences?) or a combination of these aspects.

Prototyping a car as a product addresses, for example: (1) the technical feasibility (e.g., the construction of the motor), (2) the aesthetics (e.g., the looks of the car), (3) usability (e.g., the dashboard) and (4) the experience of using it (e.g., feeling of freedom when driving).

Generally, these aspects fit in three prototyping domains. Prototyping activities can focus on the object (technology, aesthetics), its use (interactions and interface), and the context in which it is used (what role does it play in people's everyday lives).

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