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# From System to Local to System: Design principles to scale for a system in transition

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Societal transitions require activities of multiple stakeholders on different systemic levels. Designers and design researchers are often involved in supporting specific interventions and sometimes in enabling and facilitating entire processes. Practices and literature in 'co-creation ecosystems' are a developing field for them to discuss differences and relatedness of micro-, meso- and macro perspectives. Using the case of a three-year multi-stakeholder co-creation project in the retail industry, the paper analyses processes and principles for making impact in design-led transition projects. A transition process with three phases is constructed and four principles for making impact at the various levels were found. Comparing findings with the UK Design Council's 'Systemic Design Framework', the paper suggests process adaptations to scale between the local and the sector/national level. It also contributes to a better understanding of systemic design principles like Leadership, Storytelling and Systems Thinking.

Keywords: living lab, systemic design framework, design principles, co-creation ecosystem, transitions

## Introduction –  Setting the scene

Transitions in society like the one towards energy-neutrality, to a more regenerative economy or to waste-free production-consumption systems all require activities of multiple stakeholders and on different systemic levels. Designers and design researchers are often involved in supporting specific interventions and sometimes in enabling and facilitating entire processes, from the reframing of an opportunity to the embedding of solutions in existing structures. Thereby innovating and transitioning these very structures. Mostly, local interventions take place in living labs, whereas more systemic interventions target new networks at the policy level (Deserti, Rizzo, and Smallman, 2020). Practices and literature in 'co-creation ecosystems' are a developing field for discussing differences and relatedness of micro-, meso- and macro perspectives (Eckhardt et al., 2021) and identifying stage-related (Kalinauskaite et al., 2021) or overarching (Van der Bijl-Brouwer and Malcolm, 2020) design principles. The challenge of scaling local experiments to the systemic level and connecting microscopic and macroscopic perspectives of stakeholders and users is huge, but also creates tensions which can be productive for finding new design principles to scale for systems in transition.

To propose and discuss design principles for scaling between the local and the systemic level, and hereby add particularly to the understanding of meso level activities in transitions, is the goal of this paper. This paper is a follow up on previous work on systemic design-led interventions in multiple industries such as manufacturing (with servitising transitions), aviation industry (with a disrupting innovation focus and sustainability) and textile industry (new production and digitization). This case brings the learning lessons of previous work towards a three-year design-led research project in the retail industry with a focus on digital and circular transitions. The project aimed at activating small independent retailers to develop capacities for a transition to smarter, more sustainable business models and to collective modes of learning and co-developing regenerative city centres. As designers and design researchers, we facilitated and strengthened emergent properties of these innovation networks, locally and on the national level. To understand how we scaled between the local and the systemic, we used our own research reports, the documentation of stakeholder meetings, the archive with physical artefacts (house style, banners, scenario's, presentations) and media publications about the project as data. We analysed by plotting themes emerging from this data on the project's timeline, revealing principles and their situatedness in the process.

To generalize the findings of this single and contextual case, we relate results to the 'Systemic Design Framework' of the UK Design Council (2021). This framework is the first evidence-based publication to distinguish and visualize comprehensive phases related to design principles for systemic transition processes. In comparison, we identify a key overlooked phase: that of scaling in a system in transition. We are currently in the process of applying the findings of this study in the context of four living labs in circular economy, to further investigate the potential of our model for other contexts.

## Case description

Future-Proof Retail (FPR) was a national design-led research program in The Netherlands with more than 50 partners, conducted between May 2018 and December 2020. The consortium for this project started to form in 2017 as part of an initiative facilitated by the Dutch Ministry of Economic Affairs and Climate Policy, called Retail Agenda. Due to digitalization, changed consumer behaviour and unsustainable business models the retail industry is in trouble. Multiple stakeholders from retail branch organizations, municipalities, knowledge institutions, real estate providers and big and small retailers realized that industry changes constitute a complex problem as their ramifications like the decline in small retailing also affect the social fabric of city centres. However, branch organizations which were fragmented, representing different system stakeholders (big supermarkets, small independent retailers, food or fashion retail) and big real estate providers competed for solutions to the problem. At the same time, branch organizations particularly geared to small retailers in trouble reported that they could not reach their constituents with their learning and innovation initiatives. Some innovative municipalities like those of The Hague and Roermond had already experimented with local living labs in shopping streets to overcome this hurdle and try to involve the users of the proposed solutions, small independent retailers and their employees.

Living Labs are defined as "physical regions or virtual realities where stakeholders form public-private-people partnerships (4Ps) of firms, public agencies, universities, institutes, and users all collaborating for creation, prototyping, validating, and testing of new technologies, services, products and systems in real-life contexts" (Westerlund and Leminen 2011: 20; see also Hossain, Leminen and Westerlund. 2019). Our local retail labs focused on the real-life environment, the involvement of multiple stakeholders and co-creation with users, in this case SME retailer and their employees. A design research group from The Hague University of Applied Sciences, in collaboration with two municipalities and divers retail branch organizations, took the initiative and rallied seven other regional Universities of Applied Sciences to head up a design-led research across what became 22 local living labs. The labs co-created and tested activities to initiate and sustain transitions in shopping streets. One lab for example selected and brought affordable technology to the shops and organized experiments together with citizens. Another lab declared a shopping street as a 'circular district' and developed and tested more sustainable business operations. The overall FPR project was set up as a national program of a network of these local living labs with a decentralized governance structure working directly with small retailers to engage them as users and co-create solutions like learning tools and business model innovations, helped by new technologies. 'How can we successfully engage small retailers in living labs?', and 'How can we enable the labs, as well as co-creation and learning in the labs with materials and tools?' were the initial research questions. In May 2018 the project received a two-year funding by the industry's foundation, Stichting Detailhandelsfonds.

After two years, 14 municipalities and 500 retailers had participated in the program. Involved branch organizations and municipalities were enthusiast about the activation for transition the program had achieved and funded it for another year, in order to reflect on and embed transitions with national system players. In the meantime, the 'problem' framing and subsequent research question had evolved to: how can we embed the new co-creation ecosystem in the existing structures? Participating researchers, technology providers, municipalities and students all worked design-led. This means that research was organized around collectively found opportunities for change. Possible solutions were prototyped and tested during subsequent lab activity periods and then shared with other labs. Six living lab 'formats' were co-designed by researchers and system stakeholders to address specific business, social and skills challenges small retailers and employees in retail are facing. Local stakeholders followed the basic principles of these designs, for example introducing affordable technology and experimenting together with employees, but further contextualized activities to local needs and wishes. Eight more labs joined the network in 2019/2020 to test the developed lab formats in other municipalities. In order to combine the various domains of knowledge and methodology, design researchers collaborated with colleagues from the field of social sciences (sociology, education, business). All in all, sixteen researchers were involved and an insights report was released as a trade publication (Overdiek and Geerts, 2020).
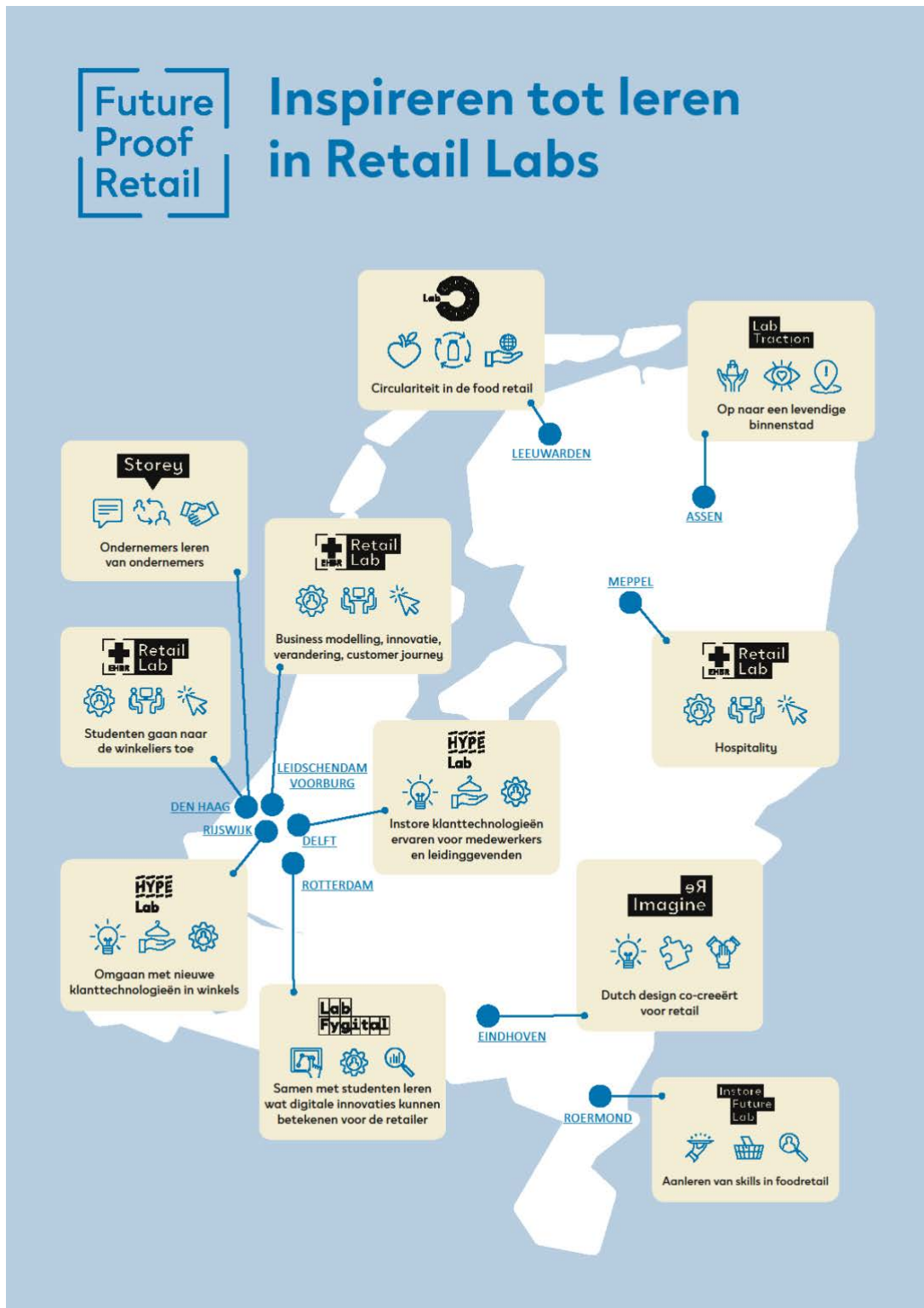
Figure 1. Distribution of the first 11 local Future-Proof Retail labs across the Netherlands

After the conclusion of the FPR program in January 2021, another four local labs have already been organized on regional initiative, 10 more are in planning. Instead of the research groups, local retail advisors together with municipalities and retailers' collaborations are in the lead now. Branch organizations, the national platform of retail researchers and the national council of retail educational programs in higher education are all disseminating knowledge and tools from FPR and supporting the local labs.

## From system, to local to system: a model

The approach undertaken in this case was not new. In designing the program approach, experiences were used from earlier work in the manufacturing (De Lille, Stappers and van der Lugt, 2009), textile (Ten Bhömer et al., 2013) and aviation industry (Price, De Lille and Bergema, 2019). The last one resulted in a preliminary model supporting designers to scale within a system. Using the FPR case, this model was further detailed as this program had been able to gain even more impact on the system.
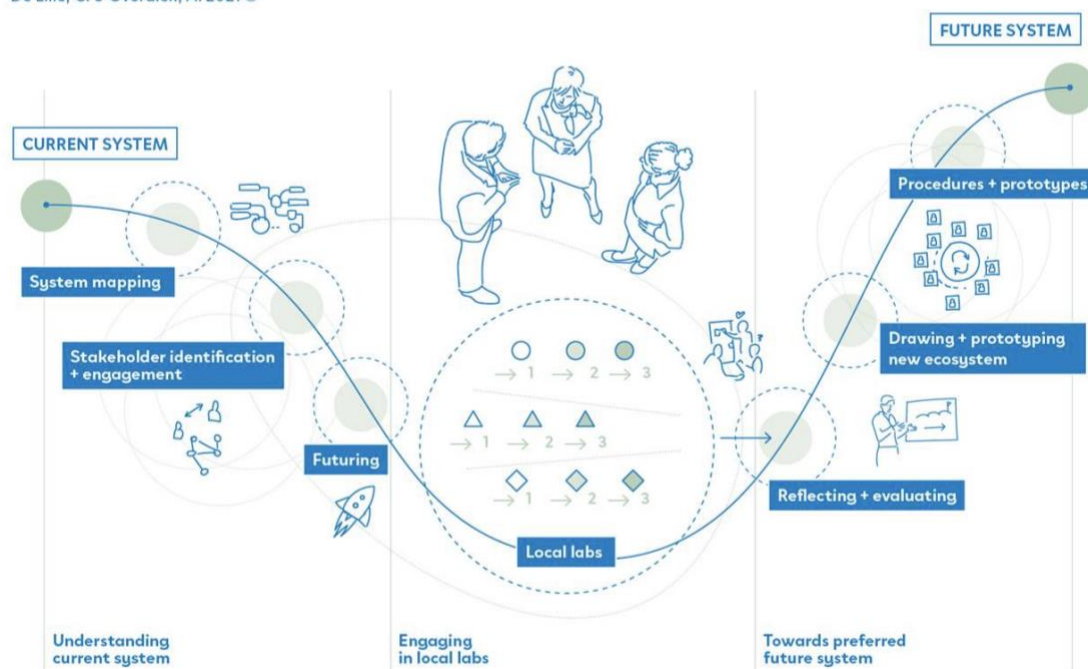


Figure 2. Impacting systems model based on Future-Proof Retail, De Lille and Overdiek, 2021.

This model (figure 2) was developed using the learning lessons from Future-Proof Retail. We found that we had been co-creating in three distinct phases (time on x-axes) between the local and the national systemic level (y-axes): mapping and understanding the current system, engaging and experimenting in local labs where knowledge was made actionable, which led to prototyping, testing and embedding a preferred future system. These phases enable and support to work towards a preferred future, as opposed to a potential of probable future (Dator, 2019) for in our case the retailers, their employees and customers, and the concerned municipalities.

The first phase 'understanding current system' allowed for identifying key stakeholders in the system. Who needs to be on board to make change happen? In this case the branch associations, key municipalities, as well as members of the National Retail Agenda (from the Ministry of Economic Affairs and Climate Policy) were involved and took place in an advisory board where a shared understanding was co-created and strategic decisions were jointly taken. With these stakeholders the main leverage points (Meadows, 1999) were explored and became actionable in the second phase with the local labs.

The second phase 'engaging in local labs' focused on working on primary leverage points in local settings with local stakeholders. These labs enabled us and many small retailers to experience and test new ways of collaborating with each other and technology to help the retail industry to deal with various transitions (such as a more sustainable business model or dealing with technology). In the first phase six potential lab formats (themes, co-creation activities) were identified, each addressing another transition. Out of these six, three proved relevant

and impactful, as evaluated by all local partners involved. These three local lab formats were further scaled in the retail industry in the third phase. The third phase 'towards preferred future system' focused on scaling the learning lessons of the previous phases wider in the industry. What started initially with six local labs, ended in 22 lab iterations nation-wide. The project has currently ended, but in this last phase, we were able to make ourselves obsolete. The various stakeholders were supported to take over activities and continue by themselves. The learning lessons have been embedded within the practice of branch associations, municipalities and policy of regional and national governments.

The primary purpose of this model is to offer structure and support for those involved. While at the same time it allows room for adaption to the context of the system, especially when it comes to the second phase where creating and experiencing change in a real-life environment is key. The formats of the local labs are highly depending on prior experiences and existing habits of stakeholders in the context. In this case, shops and shopping centres were the place for local experiments in the form of temporary labs. In other cases (such as in the aviation industry, prior to this case), the local labs had a more permanent nature. Regarding lab co-creation activities, design practices (Calabretta et al., 2016) were central in this approach, such as envisioning, structuring, visualising, aligning, etc.. In the next paragraph we will further expand on the design principles used throughout the case.

## Preliminary design principles for impact

Design practices have a central role in the activities undertaken in the above-described approach. Kimbell (2009) describes the nature of design practices, leading towards the distinction between design-as-practice and designs-in-practice. Kimbell endeavours in moving away from the individual's design expertise towards the use of design practices which are *in situ* and in their nature include multiple stakeholders. In designing the approach for the above-described project, several decisions provided the basis for all activities within the project. These decisions have greatly paid off in the achieved impact of the project. Therefore, these decisions might serve as preliminary design principles for future projects. They will be continued in research, such as the project: 'Future-Proof Labs' (2021/2022) which aims to further generalize the findings. In the Future-Proof Retail case, we identified four key design principles which were used in creating its approach. The goal of using these principles was to link the macro and micro level, to make knowledge actionable and to increase the impact of the project. These four design principles are: Distributed Leadership, Storytelling, Labs as Catalysts of Change and Room for Intuition.

### Distributed Leadership

FPR is a case of taking and granting leadership. The research groups took leadership in working programmatically. Building the consortium, it became clear that many stakeholders from the retail industry had conflicting agendas and a history of competition. The involved Universities of Applied Sciences emerged as a partner that was perceived as 'sympathetic but neutral' to the cause. For this reason, a research group was asked to take the lead and develop a program, as opposed to merely researching a part of the transition process (i.e. creating a shared vision or testing technology). A decentralised governance structure (Leminen, 2016) was set up, in which the involved local bottom-up initiatives could use their resources to shape the local labs in their preferred way and take leadership on the local level. The lab formats (co-created by stakeholders on the national level) merely determined the theme (digitalisation, circularity) and the specific group of user/retailers (food, fashion, employees etc.) the lab would engage with its real-life co-creation activities. In this way, top-down principles were aligned with bottom-up values, needs and resources. The local lab coordinators (familiar with the involved retailer collaborations and their culture) emerged as important leaders to orchestrate local activities and feedback learnings on the meso level. To ensure learning between the labs, these coordinators formed a national community of practice. Moreover, FPR recognized and granted leadership to influential branch organizations and individuals from the existing system. Representatives of the branch organizations committed themselves to the program by taking seat in the advisory board. Influential individuals were informally consulted. This set-up enabled multiple translations between the individual retailers, civil servants, researchers and technology providers, their organizations and the broader developing transition ecosystem.

### Storytelling

In designing the project, several decisions were taken linked to storytelling: the need to timely communicate activities and preliminary results to diverse stakeholders in the retail industry. Capacity was needed for that, so we added a program partner which is a network of designers, such as graphic designers and strategic designers.

They were a core partner with their own financial budget in the project. They helped to create and disseminate stories about the project, such as personal stories of small retailers who experienced the local labs. Moreover, they created a shared 'brand' style for all partners and labs to increase the recognisability of the project and to make visual design a core activity of the program. The designed 'visual identity' allowed local labs to adjust existing designs (logo's, banners, house style) to their local context, while at the same time being recognizable at the macro level. Local labs felt unburdened from the chore to develop visual materials themselves. The style was co-owned, professional and gave stakeholders a sense of pride in being member of the program[1]. Like t, the various stakeholders related to each other, even thought they were geographically, and topic wise dispersed across various transitions in the retail industry.

Storytelling used also metaphors from the retail industry to introduce element of the program. The successful lab formats for example were deliberately called 'franchise', referring to a commonly used practice in the industry, and the first program event was designed in the form of an inside shopping street with project members offering developed tools and materials in their 'shop window'. Together with local municipalities, primarily local media was targeted to reach more local retailers with the outcomes of the project. This was an important driver for the municipalities, to show their network the impact of the project. As a result, media picked up easily on the project, ultimately reaching national media. This aided again in the credibility and embedding of the project. The output of the project (not only numerous articles in media, and plenty of tools, but also books and academic publications) brought the story of the project wider into the industry. Finally, national industry players and other municipalities were invited to 'local lab tours', telling the story from the different local stakeholder perspectives.

## Labs as Catalysts of Change

To decrease the vulnerability of a local lab, labs were deliberately a collaboration amongst three types of stakeholders: a municipality, a local university (of applied sciences) and/or a vocational school and a retailer representative (often a manager of a shopping area). These stakeholders were the local team organizing the lab. The labs took place in a pre-defined timeframe, to allow coordinated impact and focus the efforts of the stakeholders involved. Sequencing the various labs also allowed to cascade learning lessons. Because of this, the initial six lab formats quickly narrowed down to the three most successful formats. These three formats were repeated multiple times to further elaborate and detail process and activities. Communication (as mentioned previously with storytelling) was centred around the labs, targeting local media. This supported the labs in their role as catalysts of change. The local lab co-creation activities followed a 'small steps' approach. Micro retailers could for example choose from a menu of technologies which one they wanted to try out in their shop. Or they could try out incremental changes to their business model, like offering sustainable products to new customer groups. Like this, retailers experienced changes in their everyday business/life as opposed to talking about possible changes. Often, it was the small successful changes which encouraged them to think bigger and experiment with more radical changes. Moreover, these retailers' powerful stories convinced critical colleagues to take part in the lab project.

## Room for Intuition

In this project, we chose to build in Room for Intuition. Luckily, the funding body of the project allowed us to do so: through reserving a large portion of the project budget for 'unknown' (about 15% of the total budget was reserved for this purpose), as well as focus on goals and results versus describing in detail our planned activities. This enabled us to act on developments as they occurred, grow organically and adjust activities to the local context. To be visible and provide 'low threshold' availability, the labs needed a physical space. When this space was not available, containers could be financed to function as a 'pop-up' location. Another example is that the moment to showcase and translate lab successes to national stakeholders came earlier than we had expected. Thanks to our flexible budgeting, we could follow our intuition, grab the opportunity in organizing a national event and thus achieve mental model changes and related policy decisions at the macro level.

The structure of the project was based on prior experience with similar projects, though they were never of such a scale, with such a complexity and number of stakeholders involved in a short time frame. The authors of this paper were the 'architects' of the project. Deciding upon the project format using their design intuition. Even though design intuition is recognized and documented (such as in Badke-Schaub and Eris, 2014) as "unconscious and mainly inaccessible processes that allow the designer to make quick and often effective decisions without

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[1] For FPR house style and storytelling examples please visit www.futureproofretail.nl .

building on explicit rationale" (ibid.: 353), using design intuition in setting up large scale projects is not familiar. Often due to funding bodies which do not leave room for intuitive decisions, especially if a project is already in progress.

## Discussion

Our model and design principles show how in a sector transition, microscopic actions in local labs were combined with macroscopic co-creation and decision-making when understanding the existing system and working towards a preferred future system. Using the local labs as Catalyst of Change, the model 'embraces' so to say microscopic actions in a local context with individual actors, to deal with large-scale issues encountered by the sector as whole. The principles of Distributed Leadership, Storytelling, and Room for Intuition were used across all phases of the model. The model and related principles thus contribute to the literature of co-creation ecosystems and systemic design by proposing a process in three distinctive phases (figure 2) and by illustrating and suggesting some overarching principles. Especially the third phase is often overlooked in literature as most cases do not reach this phase where findings can be scaled throughout the system. This is one of the key contributions of this study, to shed light on scaling in systems using local living labs.

Limitations to the findings derive from the method of a single case study, even though the model has been gradually built during multiple cases. This case was particular in several ways. Firstly, the systemic scope of involvement of design researchers allowed us to determine and design across the entire transition process and on different levels. The emerging new co-creation ecosystem was 'enabler-driven' (Leminen, Westerlund, and Nyström, 2012), which means organised and led by universities, as opposed to citizen- or user-driven. For differently driven ecosystems the sequencing of the three phases might for example deviate. Secondly, the cultural and societal environment of the case accounts for particular leadership and communication styles. So the principles suggested in this article must be carefully tested for other cultural contexts.

In order to discuss the findings deeper, we will compare them with the recently published 'Systemic Design Framework' of the UK Design Council (2021). This framework was introduced to guide and enable designers in impacting system transitions, particularly the transition to 'net zero' energy systems. It proposes four roles of the designer and a transition process with activities following two 'double diamonds'. What immediately stands out is that our model proposes a three 'double diamond' process. The phases explore/reframe and create/catalyse, would be followed by a third diverging and converging activity we would term 'prototype/embed' (figure 3).
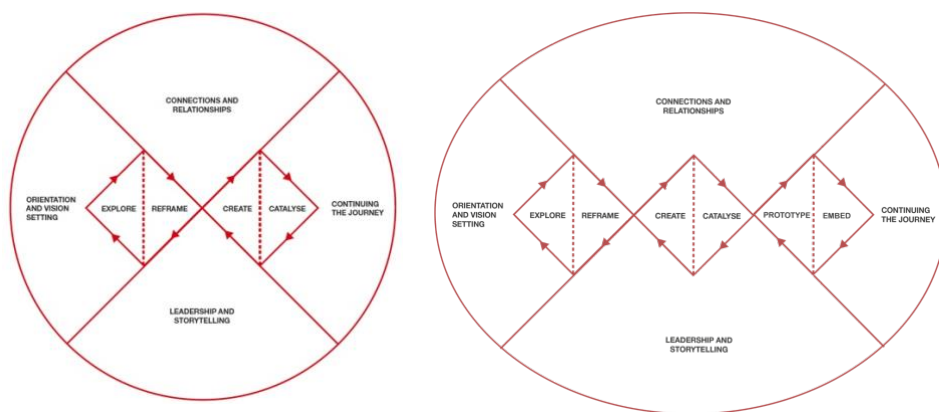


Figure 3. Left Systemic Design Framework (Design Council 2021), right our suggestions for model based on our insights.

The third phase we analysed in our project called 'towards preferred future system' (figure 4) focused on scaling the learning lessons of the previous phases wider in the industry. In this phase, system stakeholders co-created together to come to different elements of services designs which would embed the lessons learned in their activities. These designs were prototyped and tested, also in their interaction. Like that, the new ecosystem could be embedded in the 'old' system, and we were able, as designers and 'drivers' of the transition, to make ourselves obsolete.
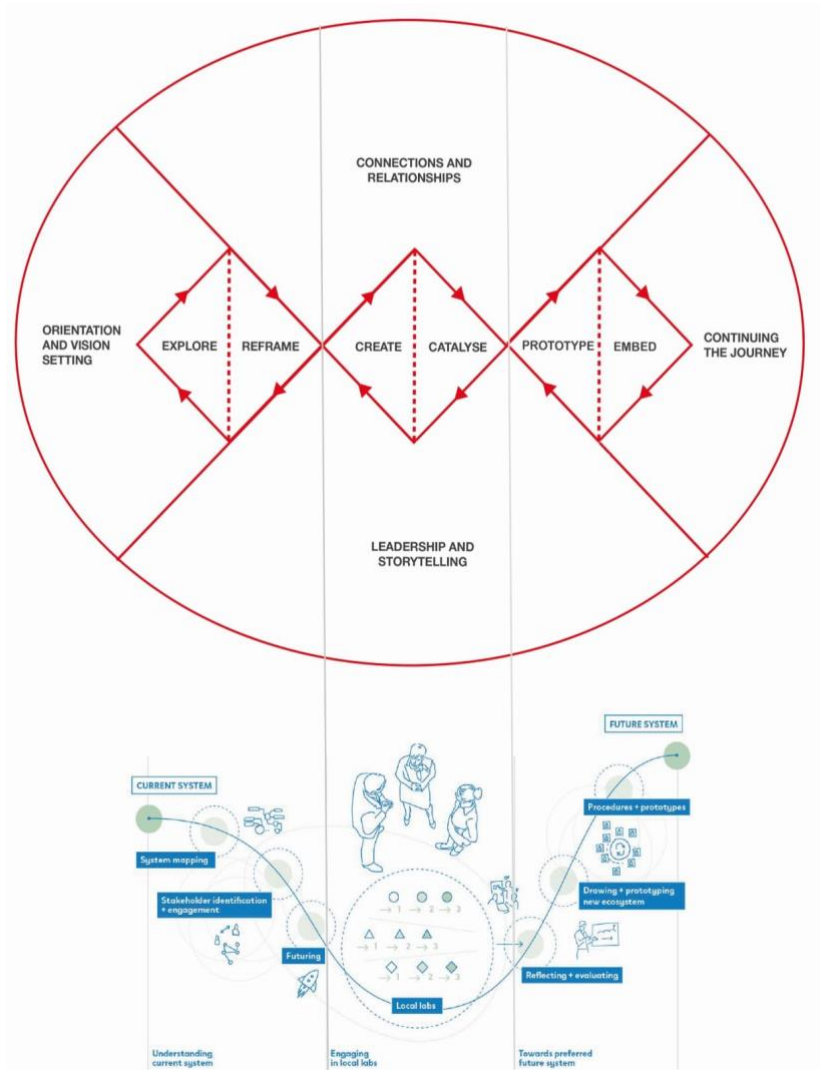
Figure 4. The three phases of the FPR framework (below) and corresponding three diamonds (above).

Moreover, the preliminary design principles we found, fit well with the designer roles the 'Systemic Design Framework' describes: systems thinker, leader/ storyteller, connector/convenor and designer/maker. With our findings, we contribute most to the first two roles. Our principle Room for Intuition, together with the proposition to continually connect the local with the national systemic level, suggests that designer's systems thinking in transitions might be organic and emerging with the new ecosystem, using intuition and close connections to stakeholders as key elements. Lastly, our principles of Distributed Leadership and Storytelling as two separate ones might indicate that leadership and storytelling are not only an individual designer's capacity, but need to be enabled with players on all levels (local, regional, systemic) of the emerging new ecosystem. The Storytelling principle also suggests particular opportunities in using visual design and metaphor for this purpose.

Finally, several questions for further research arise from our analysis. Around the role of the designer as systems thinker the method of identifying leverage points in the existing system, particularly in the first phase of the transition process, needs to be tackled in a systematic way. From a 'dynamic systems' perspective, the found principles should also be analysed in their contribution to 'feedback coordination' (Jones, 2014: 114), an important systems principle. Secondly, we indicated a role of design intuition in the transition process without special expertise in this area. It would be important to develop literature on this topic. Also, the challenge of collecting and analysing data in a project of the Future-Proof Retail scope needs further attention. Last but not least, we realize that the role of the designer, in most cases, might be more limited than our approach suggest. Particularly in regard to the different design principles in this article the question 'what are the limits of design?' might be in place. In how far are key strengths of the design approach endangered when other roles are

embraced? And: Where and when are designers better equipped to facilitate transitions in collaboration with which other experts and non-experts?

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