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Services, strategies and scenarios are presented as the main field of application: these are complex items that demand complex processes be tackled, processes in which it is necessary to involve a variety of players who are largely interdependent and therefore who must collaborate in order to achieve any goal.

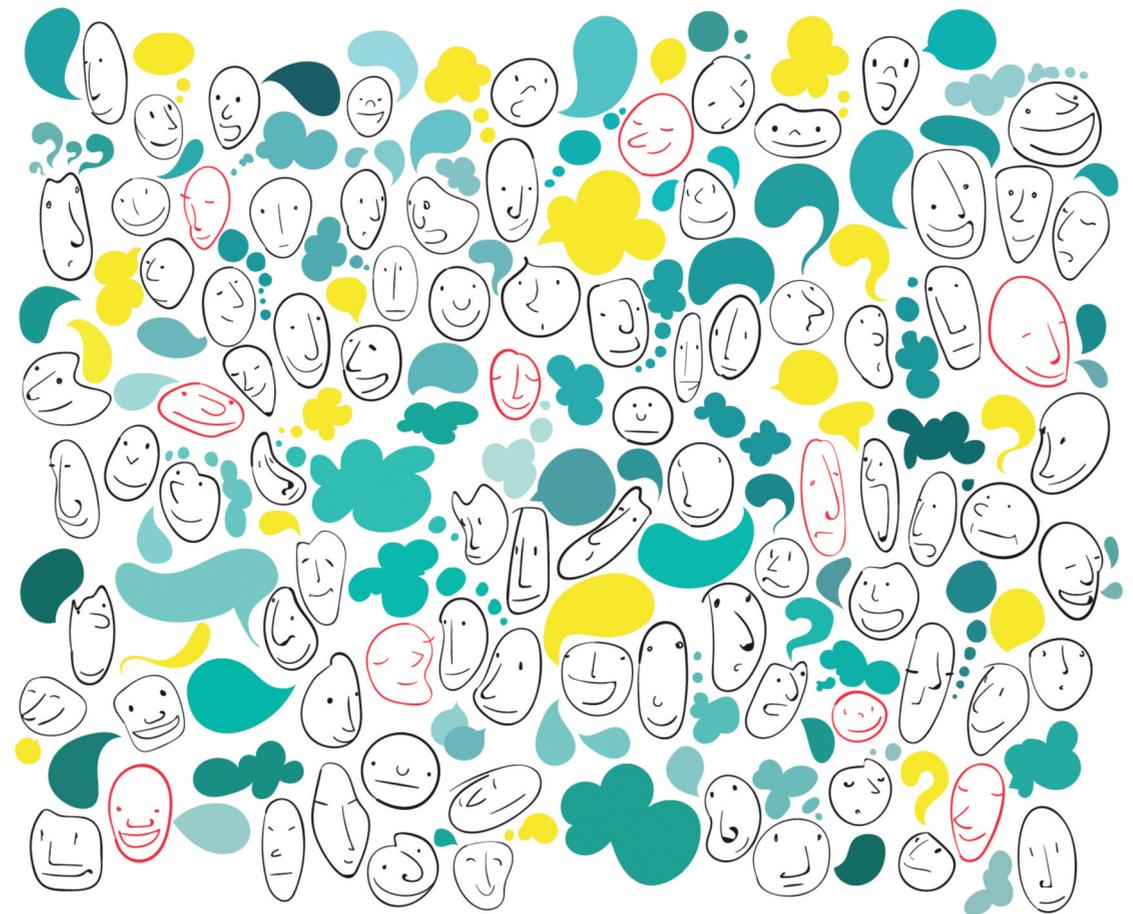
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The whole book is oriented at practice: it discusses codesign activities from the designer’s point of view, detailing issues such as process from beginning to end, activity flow, manipulability of tools, roles and rules for participants and many others. It is intended as a support for designers dealing in massive codesign processes and aims towards improved results.

MASSIVE CODESIGN

A Proposal for a Collaborative Design Framework

—
Anna Meroni, Daniela Selloni, Martina Rossi



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MASSIVE CODESIGN

A Proposal for a Collaborative Design Framework



Anna Meroni, Daniela Selloni, Martina Rossi

Essays by: Stefana Broadbent, Christophe Gouache, François Jégou



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Introduction

This book focuses on codesign, and, more specifically, on “massive codesign”: the idea that multiple and/or numerous participants having different voices collaborate in a design process broken down into different steps and formats and resulting in a relevant and diversified amount of data.

Services, strategies and scenarios are presented as the main field of application: these are complex items that demand complex processes be tackled, processes in which it is necessary to involve a variety of players who are largely interdependent and therefore who must collaborate in order to achieve any goal.

Moreover, the processes analysed in this book fall within the spheres of public participation and social innovation, two areas in which the most pressing challenges for codesign are currently arising, since they require collaboration both to practise a more extended idea of democracy and to develop solutions that correspond to collective social needs.

This book essentially makes two main contributions:

- a “Collaborative Design Framework” to identify and structure codesign activities, methods and tools within massive creative processes;
- a “set of quick lessons learnt” to provide guidance to the conception and organisation of other massive creative processes.

The whole book is oriented at practice: it discusses codesign activities from the designer’s point of view, detailing issues such as process from beginning to end, activity flow, manipulability of tools, roles and rules for participants and many others. It is intended as a support for designers dealing in massive codesign processes and aims towards improved results.

The book is divided into 3 main parts:

- “Scoping Codesign”
- “Experimenting with Codesign”
- “Designing Codesign.”

(1) The first section is devoted to outlining the notion of codesign from different perspectives. It initially provides a synthesis of the main challenges for codesign today, highlighting how the idea of codesign has extended and blurred its boundaries, focusing in particular on the areas of public participation and social innovation. We then discuss codesign, also touching on anthropology and ethnography as codesign employs a number of methods with bases in these two fields, often misinterpreting and simplifying them.

More importantly, the first part introduces the Collaborative Design Framework which provides the structure for the analysis developed in the second part of the book. This framework, building upon the well-known Double Diamond design process, combines 2 polarities of concepts: one summarises the subject matter which drives design (between “topic-driven” and “concept-driven”); the other outlines the style of guidance by designers (between “facilitating” and “steering”). The result is a compass of 4 quadrants in which the various codesign activities may be positioned and highlight the evolution thereof from the initial stage of understanding a topic to the eventual development of a concept.

Finally, in order to understand what type of approaches and resources can be employed within this evolution, a basic glossary is provided defining key-notions such as boundary objects, tools and prototypes.

(2) The second part of the book analyses 4 applied-research activities according to the Collaborative Design Framework. They are:

- “CIMULACT”: a European research project involving citizens and a wide range of stakeholders in redefining the Research and Innovation Agenda for the Horizon 2020 programme;
- “Creative Citizens”: a codesign experiment devoted to developing services to improve the daily life of a Milanese neighbourhood, working with a group of citizens and multiple stakeholders;
- “Feeding Milan”: an action-research project funded by local institutions aiming at creating a network of services to connect farmers in the suburban area with consumers in the town;
- “SPREAD”: a European research project in which various societal stakeholders from business, research, policy and civil society

backgrounds participated in the collaborative development of a vision for sustainable lifestyles in Europe by 2050.

All these projects include a number of codesign activities that are analysed by describing aims, participants, guidance style, subject matter, Double Diamond stage, environmental set-up, duration, main phases, boundary objects and final output.

This comparative analysis allows us not only to better understand how these projects worked, but above all, to focus on how the Collaborative Design Framework can be interpreted and what its possible applications and extensions may be.

(3) Building upon the projects illustrated above, the third part of the book presents a more detailed elaboration of the Collaborative Design Framework, expanding it with a set of lessons learnt and actionable recommendations. They may only serve as a few examples, however they aim to provide insight for other designers performing similar activities.

The quick lessons learnt refer mainly to 3 cluster groups: process, experience and boundary objects, and they specify each area providing several focal points such as “engagement and recruitment”, “intensity and fun”, “relationships with participants”, “visual thinking”, etc.

The Collaborative Design Framework is detailed by characterising the activities of the 4 resulting quadrants: “discovering and exploring options”, “imagining options beyond the world as it is”, “expanding and consolidating options”, “creating, envisioning and developing options”. A set of recommendations is provided for each area in order to make the framework more concrete and applicable, and thus, to provide a practical guidance for undertaking massive codesign processes.

The book concludes with a prediction: massive codesign processes should become standard, especially within public participation and social innovation spheres. They may help to improve results and, hopefully, increase the level of transparency, accountability and democracy.

PART 1: Scoping Codesign

The first part of the book looks at the notion of codesign. It opens with a reflection on the popularity that codesign has garnered in the last decade which has contributed in extending and blurring its boundaries. A brief history of codesign is then provided and the main current challenges are outlined, in particular highlighting those in the public participation and social innovation spheres.

To better complement this preparatory study, the relationship between codesign, anthropology and ethnography is clarified to avoid the recurrence of common misinterpretations and simplifications.

In particular, this first part introduces the framework used to structure our discourse on codesign throughout the whole book: it is the Collaborative Design Framework, adopted to analyse the case studies presented in the second part, to debate the various differences in terms of approaches, methods and tools and to provide suggestions and recommendations. Moreover, the outline is completed by a basic glossary that defines key-notions such as boundary objects, tools and prototypes.

1.1 Codesign Landscape Today

The last decade has seen the emergence of a great number of activities labelled as “codesign projects”, ranging over a variety of: technology, business, urban planning, community development and many others, encompassing private, public and third sectors.

There are a number of reasons behind the popularity of codesign: the most important one is that we currently live in an “era of participation” and “participatory culture” (Smith, Bossen and Kanstrup, 2017; Jenkins, 2006), in which people are able to contribute in new and unprecedented ways, sharing their interests and concerns thanks to the rise of the internet and Web 2.0 applications (Bannon and Ehn, 2012).

From public consultations, to codesign sessions, civic hackathons, and other forms of creative meetings or workshops: a great variety of participatory events and programmes are popping up all over the world, within companies, governments and organisations in general. This is also because the practice of collective creativity is considered promising in tackling the most pressing societal challenges: in order to solve complex problems it is necessary to include a multitude of diverse players.

The notion of codesign is precisely based on the idea that people having different voices should collaborate within a design process: this practice has been around for almost forty years under the label of participatory design, while the use of the expression “codesign” is a more recent conceptualisation.

In their studies, Sanders and Stappers (2008) attempted to connect codesign to the vast history of participatory practices by presenting it as the resulting convergence of 2 different approaches: the user-centred design approach, of American tradition, in which the user is considered an “object of study” and the participatory approach adopted by Scandinavian countries, characterised by a view of the user as a “partner”. In the first approach, designers use interviews as a method to observe and study users;

in the second one, users are considered “experts of their experience” and thus play a key role from idea generation to development, similar to the conceptualisation of “users as resources” suggested by Manzini (2015).

The notion of participatory design developed in Scandinavian countries mainly refers to the works by Ehn and his colleagues. In order to deal with the challenge posed by introducing new technologies in the work place during the Seventies, they assumed the simple standpoint that those affected by design should have a voice in the design process (Ehn, 1989). From the very beginning, this idea of participatory design was very political, because it was viewed not only as a way to enhance workers’ expertise but, above all, as a movement towards democratisation at work.

In a more recent article, Ehn describes how participatory design has evolved: he highlights a shift from participatory design aimed at working in companies to a participatory design devoted to enhancing processes of empowerment within communities (Ehn, 2008). He precisely defines this move as a shift from designing “things” (objects) to designing “Things” (socio-material assemblies of human and non-human elements), meaning that the object of design was changing - not only products, but more complex items, entering new environments that differ from companies in the private sector and also encompass everyday life and the public sphere.

In this book, we refer in particular to the codesign of complex items: services, strategies and scenarios. These require the participation of multiple and various actors from both the public and private spheres, and expert and non-expert domains that fall within a sort of “third” space.

According to Muller (2008), this “third space” is a fertile environment in which participants can combine diverse knowledge in new insights and action plans. Codesign was originally associated with the initial stages of a creative process, the “front end” activities of exploration and the generation of ideas (Sanders and Stappers 2008), but it is now increasingly valued as an opportunity to create a “third space” or “infrastructure” (Bjögvinsson, Ehn and Hillgren, 2012) that facilitate discourse and collaboration among diverse players involved in a creative process ranging from the initial ideas to actual implementation.

In this book we consider codesign as an activity generating services, strategies and scenarios conducted across the entire span of the creative process and, thus, not only in the moment of the exploration and generation of ideas, but also during the decision and deliberation processes. This is also related to a current stream of research into more extensive models of participation, especially in the public sector, encompassing codesign, co-

decision, co-production and co-evaluation, and, as a result, co-governing (Pollitt, Bouckaert and Löffler, 2006).

Today, therefore, the label “codesign” covers various forms of participation that, in a way, have contributed to expanding its semantic field, increasing its popularity and framing new challenges.

Bannon and Ehn (2012) attempted to outline these challenges that stress how codesign is blurring its boundaries.

They refer to them as participatory productions and they include:

- open innovation and Living Labs,
- peer-production and maker spaces;
- public participation and social innovation.

We will briefly discuss these areas, with special emphasis on the latter, as all the case studies analysed in this book fall under the sphere of public participation and social innovation.

Closed models of innovation are currently considered as having been overcome by more open models in which diverse contributions can be acquired wherever they are found (Chesbrough, 2003). This challenge of open innovation is closely linked to the establishment of more collaborative environments in which it is possible to co-create value with users and other players (Prahalad and Krishnan, 2008; Von Hippel, 2005), and, thus, to fruitfully make use of codesign methods and tools.

In this sense, the appearance of Living Labs in western countries may be seen as an attempt to create spaces for open innovation, highlighting the importance of engaging end-users and various stakeholders at all stages of development. This was the same for the emergence of what Binder (2007) calls design labs, in which the authorship of the design work is shared between the lab partners and stakeholders.

This discourse could also be applied to some Fab Labs and maker spaces: having sprung up around the world very rapidly over the past years, only a few of them, show a shift from “do-it-yourself” to “do-it-together” (Seravalli, 2011). Here, by adopting a codesign approach we can also facilitate the creation of networks that can then support peer-to-peer production and generate innovation.

Another of the main current challenges for codesign lies in public participation: in recent years, we have observed an increase in public consultations to improve the efficiency and transparency of public involvement in large-scale projects and, above all, to allow people to

participate in decision-making processes and practise a more extended idea of democracy.

The use of public consultations has increased at different levels of governance, ranging from transnational to national, regional and local levels. In particular, the European Commission has launched numerous public consultations (EC - European Commission, 2017), concerning a diverse range of issues: one of these, CIMULACT (Citizen and Multi-Actor Consultation on Horizon 2020) will be studied further in the second part of this book. More specifically, our challenge lies in integrating codesign methods and tools in public consultations, attempting to improve the actual participation of citizens and stakeholders by enabling people to contribute better to transforming their needs into proposals for the future.

This reflection on codesign and public consultation is closely linked to the more extensive notion of public participation, in which different engagement mechanisms are defined. The most well-known framework for identifying the different levels of public participation is “Arnstein's ladder” (Arnstein, 1969), which has been repeatedly re-elaborated. One of the most significant is the classification developed by the International Association for Public Participation (IAP2, 2007), in which public participation is analysed for the different goals and from the point of view of the nation state. As such, it covers a wide spectrum of activities: information, consultation, involvement, collaboration and empowerment.

Here, we see a great challenge for codesign: how to facilitate a move from simple consultations to actual collaboration, in which “those who are consulted”, become, in a way, the artificers of “contents”, ranging from simple feed-back to more articulated contributions. In particular, the main issue for codesign is to overcome yes or no answers, facilitating the emergence of complex ideas, combining not only opinions, but also visions and proposals.

We believe that a greater reflection on public participation and codesign is needed. This is relevant not only for the theories, methods and profession of design, but above all to imagine new forms of democracy, in a moment in which the crisis of democracy has reached an all-time high all over the planet (Freedomhouse, 2018).

The final challenge for codesign that we wish to highlight is connected to social innovation, which is also the main field of investigation of our research group POLIMI DESIS Lab.

Social innovation can be many different things: a product, a process or a technology, but also a principle, a piece of legislation, a social movement, or a combination of the above (Phills *et al.*, 2008).

They are new ideas that emerge for corresponding social needs (Murray *et al.*, 2010) and they often include a variety of players such as end-users, technicians and entrepreneurs, local institutions and civil society organisations.

In this scenario, as Manzini (2015) suggests, designers must use their skills to sustain promising cases of social innovation to make them more visible by designing their products, services and communication programmes, and thus supporting the upscaling thereof. Manzini defines this set of design approaches, sensibilities and tools as a design for social innovation: it is not a brand new discipline, but a combination of product, communication, service and strategic design.

In particular, when dealing with social innovation, codesign appears to be crucial as it must provide space for the perspectives and active participation of a number of different players.

Codesign is a complex, contradictory, sometimes antagonistic process, in which different stakeholders (design experts included) propose their specific skills and culture. It is a social conversation in which everybody is allowed to bring ideas and take action, even though these ideas and actions could, at times, generate problems and tensions (Manzini, 2016, p. 58).

Here, Manzini outlines a codesign space which is the same area in which social innovation can occur: an arena open to debate and proposals from other cultural worlds, where shared experimentation and comparison of experiences across diverse sectors lead participants to confront real-life situations, combining different ideas and knowledge into a new design, that, hopefully, may generate social innovation.

Within this perspective, the term codesign refers to the organizing of open and social innovation processes that may provide solutions to the most pressing societal challenges. It is no coincidence that Selloni (2017), in the conclusion of her book on codesigning services, outlines a set of emerging features for codesign in the social and public spheres. To name but a few, they illustrate codesign as a form of citizen empowerment, as a precondition to co-production, as a public service and key competence for the public sector, and as a form of citizen participation and democracy.

By analysing a number of codesign activities carried out in 4 applied research projects in the areas of public participation and social innovation we will hereby attempt to structure codesign activities, methods and tools within a Collaborative Design Framework that will act as a guide in the organisation of “massive” creative processes. That is, processes that involve multiple and/or numerous participants in different steps and

formats, and produce a relevant and diversified amount of data. Processes that, thus, reflect the increasing complexity of service design, dealing with complex service systems, value constellations and service ecosystems characterised by multi-player networks, largely interdependent but collaborating out of need (Sangiorgi *et al.*, 2017).

We define these as “massive codesign processes” which are likely to become the new standard in improving results and which will, hopefully, increase the level of transparency, accountability and democracy of today’s design projects.

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1.2 Anthropology, Ethnography and Massive Codesign for Complex Services

By Stefana Broadbent

Anthropologists have a tense relationship with rapid design-oriented ethnography. Although applied ethnography has extracted anthropology from the enclosure of a purely academic discipline and projected it at the forefront of practically all digital development and service design, anthropologists often feel there is an undue reduction of methods and theory leading to an extreme simplification of the social sphere. This tension is often discussed (Baba, 2005; Ingold, 2017) and is an undercurrent of much of the bridging work done by associations such as EPIC (the Ethnographic Praxis in Industry Conference).

1.2.1 Design Oriented Rapid Ethnography

The causes for contention are multiple, the principal one being the difference in time spent in the field, a question of days in design ethnography and months or years in anthropology. However there are also issues regarding the topics investigated, the explanatory frameworks invoked to interpret observations, and even questions of ethics in regards to the instrumental relation with informants.

Anthropologists often accuse design ethnographers of ignoring the all important topic of power for instance or lacking a critical outlook and of being focused on description rather than interpretation. All of these questions have been amply debated (Halse *et al.*, 2010; Venkatesh, 2013; Hjorth, 2016) and have led progressively to the creation of distinct disciplines such as user centred design, user research or design ethnography, each with their own conceptual framework, methodology, training and evaluation. It must be noted that design is not the only field in which ethnography has been adopted as a method of enquiry; sociology as

well is increasingly engaged in micro-sociology to enrich or substitute more standard quantitative methods. Policy making, communication and market research also engage in ethnography in an attempt to capture the insights that a contextualised investigation of people's practices can bring.

The critiques waged by anthropologists against ethnography practitioners should not be brushed aside lightly because they point to a crucial characteristic of the investigation into social groups that is relevant to the design process. Anthropologists need time in the field to be able to create a rapport with the social groups they are investigating, to be able to develop a different gaze, extracting themselves from a point of observation determined by their own worldview, but most importantly to embrace the complexity of the environments they are investigating. In order to engage with the multiplicity of viewpoints, social relations, artefacts and practices they are studying, anthropologists rightly feel that time is at issue.

Participant observation therefore is not just a methodology to become engaged in the relations and activities of the people being researched, it is a way to embrace the complexity of the situations being studied. Becoming proficient in the culture of any social group is a long process. This means understanding the legal system, overt and implicit, the economic ties and ecosystems, the spatial and geographical relations, the moral values and attitudes, mastering artefacts and processes.

This type of understanding is not just a requirement of research in traditional post-colonial field sites but also in digital environments. When Boelstorff (2008) spent 2 years in Second Life he had to learn to construct a virtual world, acquire currency to do some transactions, build relationships, learn a language, engage with the developers and players. Similarly Wallis in her study of young Chinese migrant women's use of the mobile phone (Wallis, 2013), needed a few years to master the context in which the mobile was used by rural migrants to enable the integration into new forms of modernity.

Furthermore, anthropologists rely on other anthropological studies to complete the picture of the social environments they are engaging with, building on existing bodies of knowledge. Boelstorff's analysis of the economic relations in Second Life invokes an American culture of liberalism to apprehend the viewpoint of the participants who engage in the acquisition of virtual property. Wallis also could rely on a wide body of research on rural to urban migration in China. The possibility of building on other research, other fields and other observations is a crucial element to tackle complex social systems.

1.2.2 Complexity and Ethnography

The issue of complexity is particularly relevant when thinking about massive codesign in which the effort of bringing together a large number of stakeholders and participants corresponds to an attempt to broaden the number of viewpoints taken into consideration. Here the objective is to involve a diversity of citizens and experts because the projects are more elaborate and involve a range of social publics and social actors. For instance, services that are aimed at transforming fundamental administrative processes for a whole city, region or country will inevitably need to take into account a multiplicity of voices, expectations and practices. This type of service design is particularly complex also because numerous elements are being concurrently redesigned: from artefacts, to regulations, from economic transactions, to behaviours and actions, from information to social roles and interactions.

A textbook example of such efforts has been the work done by GDS in the UK for GOV.UK to transform government services, tools and standards. The objective of the Government Digital Services is to transform how government operates, transform the services offered to citizens, modify bureaucratic processes, offer digital versions for all of the forms and procedures, involve citizens in order to be user centred. The work therefore is multifold and attempts to bridge the cultures of civil service, of specific departments, of diverse citizens, of technology developers, etc. But GOV.UK is not unique, and increasingly service design projects are addressing very broad publics, which are diverse in expertise, experience, cultural and social background. In fact service design can be characterised as a design approach that by definition has to handle complexity (Sangiorgi *et al.*, 2017).

The challenge for ethnography is therefore to be able to provide the insights and indications that can inform the design process without drowning it in information but also without reducing the complex to the trivial (Gunn *et al.*, 2013). In the Double Diamond model (Design Council, 2014) the role for ethnography in the early phases of discovery is to help designers frame the scope but also provide a first moment of dialogue in which collaboration is established.

Creating a space for collaboration means finding points of exchange in which groups that have extremely different experiences can agree and focus on issues that are relevant to all (Kleinsman *et al.*, 2008). The process of codesign with the accent put on the co-creation of artefacts, be they prototypes or any other support to discussion, makes a huge step into the

direction of creating joint spaces of attention and meaning. However the initial phases of familiarisation and discovery still rely on an exploration of the social realities and practices of the groups that will be the actors of the transformation. Delimiting the scope, setting the scene and context for collaboration still means apprehending the range of experiences and constraints under which the different actors operate. This means that we are back in the camp of ethnography, anthropology and social enquiry.

1.2.3 Producing Ethnography to Enable Discovery and Collaboration

Too often in design processes the question underlying the first phase of enquiry is to uncover the “needs” of the stakeholders and citizens. Interviews and contextual observations are organised to discover the “real needs” in order to avoid imposing on users preconceived ideas on what will be the benefits of the new services. While this systematic inclusion of citizens in the design process has been achieved with great effort after decades in which the designer/developer knew what was good for the user, framing the investigation around needs inevitably restricts our understanding of the social sphere.

Social groups and individuals are adaptive by definition and therefore even in front of highly dysfunctional situations tend to elaborate solutions and practices that work for them. This means that although potentially sub-optimal, adapted strategies exist and function. In turn this implies that the expression of needs rarely touches the core of experiences because needs have been addressed in the elaboration of the existing practices. This again is the reason why designers are so important in devising alternative scenarios which can improve significantly on existing situations.

But if “need” is not the primary object of inquiry, what is? We would argue that it is “practice”. In anthropology «social practices are bodily and mental routines» (Reckwitz, 2002) or as Postill says «sets of activities that humans perform with varying degrees of commitment, competence and flair» (Postill, 2012, p.12). Since the late 70s social sciences have increasingly put the accent on practice to study human activity in daily life.

The interest of “practice” is that it includes all those elements that are crucial for service design: the interactions with people, artefacts, norms and institutions. Practice is in fact the true object of transformation by service design. When a new service redefines how a social group has access to medical records, pays taxes or rents bicycles, what is being modified are

the set of actions and interactions with which these activities are habitually performed. Practices are by definition dynamic and in constant evolution as people adapt their actions to a multiplicity of factors: the constraints of the physical, social, regulatory and economic environment. In this sense they are open to transformations and redesigns.

To study practices means to understand those habitual activities that people perform within their cultural sphere. Describing human activities provides a powerful insight into cultural environments and social norms. Actions are constrained by contextual fields and therefore they allow us to delve into social, institutional and physical environments. Investigating practices thus requires multiple sources of data because actions are performed in these different settings and researchers need to capture them all. This means observing activities, recording places, interactions, gestures, looking at artefacts, understanding processes and rules. It is a challenging and work intensive task.

1.2.4 Building an Ethnographic Body of Knowledge for Service Design Projects

Anthropology as a discipline has built a body of knowledge over time, both in terms of theoretical systems and in terms of the accumulated research of specific populations and social groups. Similarly, large design projects should aim at progressively accumulating insights in structured formats. Too often each design project is approached as a *tabula rasa*, a new frontier to explore afresh. Time constraints then mean that the new inquiry can only scratch the surface and interviews are preferred to the analysis of practices.

The only solution for complex massive codesign projects is, in our view, to construct a body of observations and analysis on practices that can constitute a basic repository of reference. If one wanted to make the analogy it would be a “Github” or repository of ethnographic data. Github is the largest host for source code in the world with 57 million repositories of open-source software projects and 20 million users. Coders can use code they find in the repositories for their own projects and add their own code to existing projects. Just as coding is always a process of combining pieces of existing code, so design ethnography for complex systems should build on pieces of ethnographic knowledge. An example of such an approach was the Swisscom Observatory of Digital Life.

Between 2004 and 2008 the Social Science research group at Swisscom Innovation, the R&D department of Swisscom the Swiss national Telecom operator built an Observatory of Digital Life (Broadbent *et al.*, 2008). With a group of 12 social scientists we systematically researched the daily practices of Swiss citizens with all digital media: communication channels, internet services, television and video, radio and music, gaming and photography. The User Observatory also started collecting data on digital practices at work. The research was done either diachronically with regular studies being repeated identically across different populations every so many months, or longitudinally in which 50 households for a total of 160 people were followed for 4 years. In all cases, the methodology, tools and data format collected was as similar to make it possible to build up a coherent and consistent body of knowledge. These tools included communication diaries in which participants wrote down their exchanges, maps of homes with indications of where and how devices were being used, timelines of the day of each member of a household, transcripts of interviews, detailed descriptions of online activities, photos, etc. Combined together these elements provided a complete overview of the daily digital practices of the participants. Occasionally, certain studies focused on additional topics such as gaming, music, video viewing or information gathering. Regardless of the topic, however, there was always a baseline of data that was being collected on the patterns of daily life, communication and internet usage.

Over a period of a few years the Observatory managed to collect hundreds of descriptions, interviews and observations of Swiss daily life at home and how it was being enacted in the digital sphere.

The data was coded, tagged and collected in a centralised open system that was easily searchable. Researchers could easily find all the households in which certain activities were being performed, or compare behaviours over time. This wealth of information and data allowed the group to be always up to date with insights on the more fundamental aspects of Swiss digital culture and capable of complementing this understanding with rapid on demand studies on specific issues that arose from the service and product departments of the organisation. Complementing this research there was also the comparison of ethnographic data with massive quantitative data coming from the data mining of the telecom network. Observations could be substantiated by statistically significant results.

In terms of the design process, the insights that could be provided by the Observatory were wide ranging and attempted to explain why certain

practices were emerging or disappearing in Swiss society. We were particularly attentive to understand what were the obstacles and triggers to adoption. We could give indications to why some practices were more likely to change and other not. For instance concerning communication practices, by studying hundreds of communication diaries, we identified the role of mutual attention in the choice of communication channel. It emerged that people preferred asynchronous channels such as texting or email over synchronous ones like voice calls. This was to avoid asking for immediate attention from people that were not part of a very close set of relations. We found out that asking for attention is a social process that involves issues of status that people find difficult to negotiate (e.g. it is awkward to interrupt and ask for immediate attention from someone with a higher status so most people tend to anticipate a voice call with an email or text). The implications of this finding for the specification of text-based communication services was very significant and oriented a number of design choices.

1.2.5 Discovery, Ethnography and Codesign

Building a repository of ethnographic research on the daily practices of citizens is not an impossible task. As we saw above, it requires consistency in the data collection process in order to progressively accumulate comparable results. There are many data formats that can be used in a systematic way across different studies: daily diaries, journey maps, relationship graphs, timelines and spatial maps, recordings and semi-structured interviews. The real issue, however, is to make methodological choices that can last over time and that are not project specific but that on the contrary can be generalised and repeated. What we are aiming for is a level of description and understanding that can be transferred between different domains.

For instance, when we study the experiences of patients with hospitals and medical institutions and track their journeys across the spectrum of medical services, we are learning about a wide range of activities and interactions. An ethnography can convey the role of the family and of support systems during an illness; how information is acquired and circulated, the numerous touchpoints with the medical profession etc. etc. This type of understanding can be generalised to think about the redesign of medical records just as easily as the redesign of a system of hospices for terminally ill patients.

But to conclude, how does such a background knowledge enable and facilitate the process of codesign? Starting from a vantage point in which there is extensive understanding of the basic processes and experiences citizens live on a daily basis, means that the dialogue can be engaged any of the specific topics, which pertain to the project. With a shared context it is possible to elevate the discussion to a level that can address the fundamentals of practices and services. Rather than recording complaints or details of all that is not functioning, as is often the case when people are asked to express their needs, designers can engage on motivations, flows, relational dynamics and make proposals at the level of complexity they are hoping to intervene. This level of discourse has the advantage of being much more effective to enable strategic decisions and it can be confronted with quantitative data coming from other sources. It also enables stakeholders to engage on high level issues. Finally, the codesign process can become iterative and more frequent as the discovery phase is permanently ongoing and a dialogue is always open with citizens and stakeholders.

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1.3 A Collaborative Design Framework

Today, collaborative practices influence all phases and circumstances of design activity and process (Sanders and Stappers, 2008; Steen, 2013), from opportunity finding to prototyping, from creation to assessment, and from laboratories to the streets (Ehn, in DiSalvo, 2017). This is particularly true when it comes to service design, because its very approach implies a continuous involvement of subjects other than the designer (users, experts, stakeholders) and because its methods and tools are useful in framing interactive design processes between multiple entities (Meroni and Sangiorgi, 2011).

1.3.1 Collaboration Within a Creative Process: the Design Subject Matter

If we take the example of one of the most common and acknowledged design creative processes, the Double Diamond conceptualised by the Design Council (2014), we can argue that all the steps of the divergent and convergent phases could be developed (and are actually, more and more so) in a collaborative way:

- The “discovery” phase: aimed at scoping the work, it often requires a rapid ethnographic field survey that, together with other research activities, contributes to the emergence of insights into the problem (Broadbent, chapter 1.2 of this book). The way in which this rapid ethnography is “designerly” conducted implies an interaction with the target user or the stakeholders that, while drawing and adapting tools from ethnography, establishes a dialogical exchange according to Sennett’s interpretation. That is, a dialogic conversation that «prosper through empathy», driven by «the sentiment of curiosity about who other people are in themselves» (Sennett, 2012, p. 15). Thus rapid-

ethnography becomes a collaborative way to explore the world and visions of others, and to find design opportunities, in so doing opening the way to subsequent codesign activities. This exploratory phase can involve huge numbers of people and garner just as much input.

- The “definition” phase: aimed at interpreting all the possibilities identified during the discovery phase, it often requires interaction with experts or with other relevant project stakeholders in order to define the actual “project brief” that is the description of the design challenge and its fundamental specifications. To come to this result, a rather dialectic approach is taken (Sennett, 2012), in which diverging positions have to progressively converge and reach a synthesis. For this to happen within complex or complicated problems, the input generated in the discovery phase need to be considered from the viewpoint of innovation and of the project’s strategy. In order to involve knowledge on these aspects in the design process, experts and project decision-makers are therefore engaged in the selection and consequent definition of the design brief. Frequently, this phase is likely to deal with a large amount of data and options, so that it is becoming increasingly important to consider assistance from digital technology (data mining, pattern recognition and other techniques under the umbrella of machine learning...) in supporting human interpretation and decision-making.
- The “develop” phase: aimed at creating, (pre)prototyping and iterating solutions or concepts, it refers to the most conventional activities of a design process and it is almost collaborative and multi-actor in nature. This creative work can be done through several approaches and methods, it starts with orientation, an initial concept, pre-determined by the brief and has an exploratory purpose that facilitates the participants in building up their visions. Once again, this approach refers back to a “dialogue” according Sennett (Sennett, 2012), in which different positions are desirable, without closure or resolution, and in which the situation is less competitive and more cooperative. Indeed, the more alternative options are explored, the better.
- The “deliver” phase: aimed at finalising and producing the resulting project, it implies the agreed participation of all stakeholders in order to make things happen. At this stage, collaboration is necessary in deciding what to do and must turn into co-production, the implementation of an agreement on what to do together and on the capabilities to be put into the solution. Therefore, it implies the active involvement of the project decision-makers and the importance of

collaborative testing and prototyping solutions cannot be underestimated.

Considering this sequence of phases as a linear (yet iterative, because of the continuous back-and-forth between framing the problem and finding a solution) process we can create a two-pole axis that summarises the subject matter behind the design:

- on one side, there are “**topic-driven**” activities that refer to the problem/situation that has to be investigated through the project,
- on the other side there are “**concept-driven**” activities that refer to an orientation defined through the problem-solving brief.

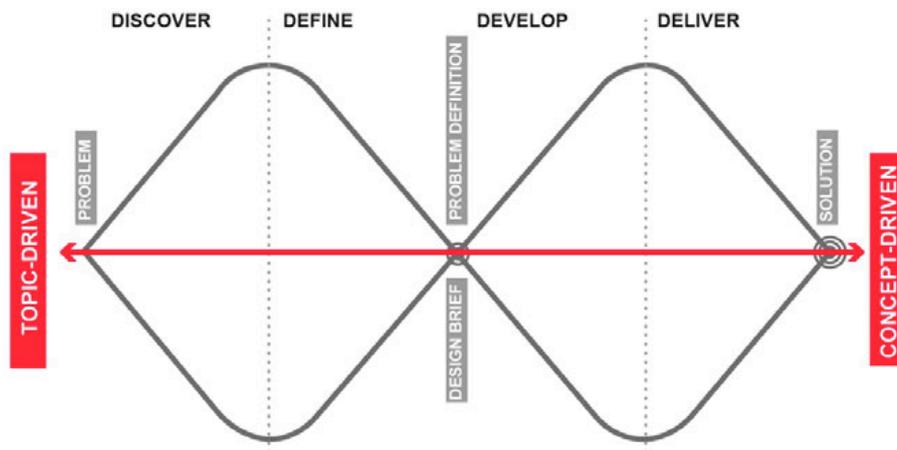


Fig. 1.1 – The Double Diamond scheme elaborated with two polarities about the subject matter of design

1.3.2 Collaboration within a Creative Process: the Style of Guidance

The way collaboration takes place in design is not only dependent on the phase of the process. A crucial issue is also how the practice of «joint inquiry and imagination» of codesign is conducted, a process «in which diverse people jointly explore and define a problem and jointly develop and evaluate solutions. It is a process in which participants are able to express and share their experiences, to discuss and negotiate their roles and

interests, and to jointly bring about positive change» (Steen, 2013, pp. 27-28). How the designer interacts with the other participants influences their awareness of the process, their contribution and their relationship with the others, their critical thinking and self-criticism, their capacity to think beyond what is already known and their own “comfort zone”.

In fact, building on the considerations of the philosopher Dewey (1938), during codesign both “perceptive” (the capacity to see, hear, touch, smell and taste *what is*) and “conceptive” (the capacity to imagine and envision *what could be*) capacities of all participants need to be adequately challenged and therefore applied, in order to effectively and “ethically” interact with one another. When a challenge is too big, ill-defined or ineffectively framed by those guiding the activity, it may cause not only technical issues but also ethical ones (Steen, 2013), since the participants are not adequately enabled to contribute. Consequently, the style of guidance is crucial for the success of a codesign initiative and must be sensitive to the circumstances. As such, we can argue that the guidance approach can range between two stances: “active listening” and being “thought-provoking”, reflecting a difference in purpose and situation.

The “**active listening**” style encourages the free flow of thoughts and flourishing of empathy and sympathy between participants. Active listening, in the words of Marianella Scavi, is:

an art for the transformation of pains and anxieties into opportunities for knowledge and awareness. «In order to understand what another person is saying, you must assume that he/she is right and ask him/her to help you to understand what makes them right». You have to assume that this person who does not understand you (and who thereby irritates you!) is in fact an intelligent person, and you must therefore ask that person, as well as yourself, for a description of the vision of the world that allows their point of view to appear to be true. Active Listening has the most to offer in situations that are charged with tensions and in environments that are rife with conflicts, or, in general, where argumentation is destined to failure, and where a neutral attitude is senseless. Active Listening is not obligatory (...), but once one has decided to practice it, it demands that all positions – and especially those that most seem incompatible – be accepted and appreciated as contributions to the drafting of shared solutions and options that differ from those which initially presented themselves. Active Listening doesn't reduce to an exercise in empathy and sympathy, and indeed begins to function at the point at which it proves fruitless to try step into the other's shoes: the point at which we have to assume our interlocutor's intelligence not because we have understood what she/he is saying, but in order to be able to understand it (Scavi, 2008, p. 3).

The way a designer adopts this position implies an adaptation to a role and an attitude that, in any codesign activity, is (at least) as concerned with the forms and quality of the outputs in terms of ideas, as with the effects of the act of designing in the relationships within the community. Therefore, an approach is generated that differs from the one of a facilitator with a background in social sciences, introducing greater attention toward creative problem-framing and -solving.

With particular reference to scenarios, according to Ogilvy (2002) the way a designer may conduct a workshop is similar to that of an existential psychoanalyst with a community or an institution: it is a Socratic-based practice and works as a testing ground for the aspirations of a community. Therefore, a scenario workshop facilitator does not tell people what to do or think, but «draw out (*e-ducare*) the concerns of others» (p. 183) through leading questions. Like Socrates himself, the facilitator then needs to know quite a lot about the subject under discussion «in order to ask those questions that lead in the most productive direction» (ibidem).

A “**thought-provoking**” style, on the other hand, leads the participants’ thoughts toward some critical aspects or opportunities of a given topic or concept. This guidance is likely to lead the participants on paths of thought and speculative journeys that aim to generate reactions and, in general, responsiveness to a given status.

This position is, normally, congenial and familiar for a designer, whose role in a debate or creative session is generally considered to be a contribution of ideas and input to be shared with the participants. This is also, in the words of Ezio Manzini, where the capacities of a “design expert” come into their own:

design is a capacity for critical analysis and reflection, with which design experts produce knowledge, visions and quality criteria that can be made concrete in feasible proposals. (...) ...a design expert must also be a carrier of this specific culture: the design culture. Design culture encompasses the knowledge, values, visions, and quality criteria that emerge from the tangle of conversations occurring during design activities (...) and the conversations that take place in various design arenas (Manzini, 2016, p. 54).

Aware that this may risk leading to forms of persuasion that omit critical thinking through imagination, this style of guidance is a way of focussing on the meaning of the subject -manner and of trying to skip the “participation-ism” defined by Manzini (2016) as a way to reduce the role of design experts to “process facilitators” of over-simplified systems. In a thought-provoking approach, we can recognise the basis of what

psychologists call “strategic conversations” (Nardone and Salvini, 2004): a technique that works to change the perception of things in order to change emotional and behavioural reactions, ultimately in order to change the understanding of a problem (Meroni, 2008).

1.3.3 A Framework

By polarising these two styles of guidance, we can create an axis that visualises the different ways to rule and run codesign activities:

- on one side, there is “(designerly) **facilitation**”, which mainly draws and builds on the techniques of “active listening” and theories relating thereto;
- on the other side, there is “(designerly) **steering**”, which mainly adopts the “thought-provoking” posture of designers as experts in envisioning the future.

The two so created axes can be inter-crossed to generate a framework of four alternative intentions with which collaboration can be used within a comprehensive design process: the Collaborative Design Framework.

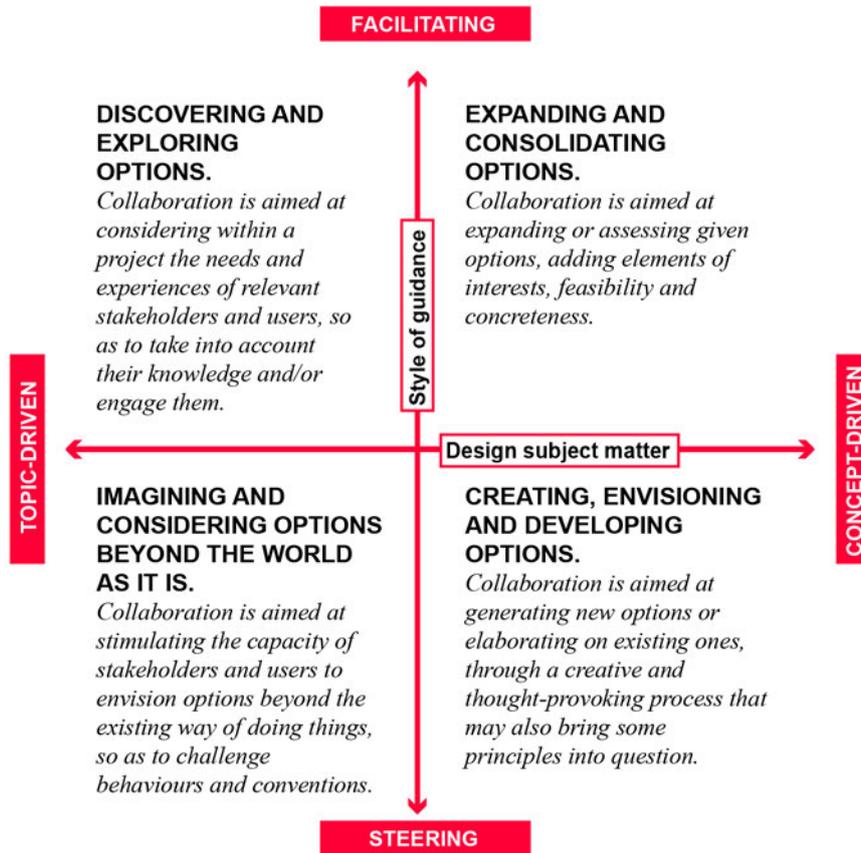


Fig. 1.2 – The Collaborative Design Framework

- In the “Topic-Driven” and “Facilitating” quadrant, we can classify the codesign initiatives that aim towards **Discovering and Exploring Options**. Here, collaboration is aimed at considering within a project the needs and experiences of relevant stakeholders and users, so as to take into account their knowledge and/or engage them.
- In the “Topic-Driven” and “Steering” quadrant, we can classify the codesign initiatives that aim towards **Imagining and Considering Options Beyond the World as It Is**. Here collaboration is aimed at stimulating the capacity of stakeholders and users to envision options beyond the existing way of doing things, so as to challenge behaviours and conventions.

- In the “Concept-Driven” and “Facilitating” quadrant, we can classify the codesign initiatives that aim towards **Expanding and Consolidating Options**. Here collaboration is aimed at expanding or assessing given options, adding elements of interests, feasibility and concreteness.
- In the “Concept-Driven” and “Steering” quadrant, we can finally classify the codesign initiatives that aim towards **Creating, Envisioning and Developing Options**. Here, collaboration is aimed at generating new options or elaborating on existing ones, through a creative and thought-provoking process that may also bring some principles into question.

1.3.4 Infrastructuring Community Centred Design

This Framework will therefore be used in this book to: 1) contextualise and analyse a number of case studies and examples from our direct research experience; 2) discuss the differences in approach, aim, technique and result that each quadrant implies; and 3) suggest tools and processes for each one.

As such, it aims to assist in providing a guidance to define, design and set-up collaborative processes that engage multiple and/or numerous participants and that may take place through different stages and with different purposes and formats along articulated paths. Processes that we can therefore define “massive”.

In other words, it aims at providing a framework for “infrastructuring” (Hillgren *et al.*, 2011; Seravalli and Eriksen, 2017) collaboration within articulated ecosystems that may share a common interest in a challenge, an opportunity or a problem to solve together. Thus, the Collaborative Design Framework, on the base of experience partially reported here, aims to provide actionable knowledge for supporting designers in aligning processes that, by definition, are never completed and are ill-defined, systemic and conflictual. Circumstances that require designers to have a deep understanding of the specific local conditions and the object in question, together with the ability to communicate service design skills to others so that they can continue once the designer has left the project.

We refer to this collaborative design approach as Community Centred Design (Manzini and Meroni, 2014), which can prompt or feed that “service design mind-set” (Meroni and Selloni, 2018) that is increasingly characteristic of today’s creative communities (Meroni, 2007). In this, the creation of a collaborative environment aimed at “making things happen”

depends on the understanding of the values, needs and behaviours of such diversified players. In fact, Community Centred Design requires that designers develop two areas of competence: the ability to gain knowledge about the community and its “habitat” and the ability of creatively collaborating with non-designers. The former results in onsite immersion, so as to pursue a direct experience of the contexts and develop empathy with the community. The latter requires applying designer skills and creativity in order to design *for* or *with* the community (Manzini and Meroni, 2014). In a glance, this resonates with the Socratic approach of the designer, in which a deep understanding of the circumstances and of the subject under discussion must precede the action. And this is why the ethnographic exploration of the field - even with a fast and simplified approach - (Broadbent, in this book) runs seamlessly in line with codesigning.

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1.4 Setting the Stage

It is assumed (Ehn, 2008; Bannon and Ehn, 2012; Sanders and Stappers, 2014; Dalsgaard, 2017) that, throughout its progress, a design project requires the alignment of diverse resources (people and technology) through interactions with users/stakeholders in order to share objectives, timelines, deliverables... We define codesign by these interactions and the Collaborative Design Framework (cf. Chapter 1.3) illustrates their progression from an initial stage of understanding the topic to the final concept production and development phase. The question is what kind of operative approaches, tools, and resources can be practically used in this progression.

1.4.1 Boundary Objects in Codesign: a Proposal for a Basic Glossary

Thinking and doing in design are intertwined through the use of tools and resources (Dalsgaard, 2014): the different subject matters of design, styles of guidance and purposes clearly influence the kind of artefacts, tools and rules that are used in codesign sessions. These can be, therefore, set in very different ways and are an indispensable mix of “making, telling and enacting” in iterative cycles that must be very sensitive to the circumstances (Brandt, Binder and Sanders, 2012).

The apparatus used in codesign sessions can be referred to as “boundary object”: drawing from sociology, boundary objects are entities shared by several different communities but which are viewed or used differently by each of them (Star, 1988) «allow(ing) for the coordination of different groups seeking consensus on aims and interests» (Baggio *et al.*, 2015). They are characterised by “interpretive flexibility”, which allows diverse communities of practice to transcend core differences in interpretation and meaning for the purpose of cooperating in a particular work. In doing so,

they enable different groups of stakeholders to collaborate (Baggio *et al.*, 2015) by aligning their interests.

Considering the purpose of this book, for the sake of clarity and for an appropriate positioning within the vast panorama of interpretations and definitions regarding artefacts, tools and resources used in codesign, we propose the following definitions as a basic glossary of the work:

- **Boundary objects:** “representatives” of the subject matter of design in the material form of design artefacts (images, sketches, maps, diagrams, representations, storyboards, models and prototypes), whose function is to align designers and users in synchronous design processes (Star, 1989; Ehn, 2008; Johnson *et al.*, 2017). Boundary objects facilitate the engagement and interaction with the design subject matter and the discussion of its different features.
- **Concepts:** ideas about the object (or opportunity) to be designed as the output of a design process. They can be scenarios, products, services, among others.
- **Prototypes:** representations and (physical) manifestations of design concepts. They may be rough outlines so to provide an overall idea, or finished to more resemble the end result. Prototypes aim to test the concept and develop it further into mature outputs, be they product or services or something else. They need to be made meaningful or «revealed through the stories told (thereof) ... and the scenes in which it plays a role» (Sanders and Stappers, 2014, p.7).
- **Tools:** specific design artefacts (singular or organised in “toolkits”) that define a design language for codesigners to: 1) Explore, imagine and express their own ideas about a topic, how they want to live, work and play in the future (Sanders and Stappers, 2014). Therefore they can be used for inspiring and evoking; 2) Generate concepts to be further designed. Therefore they can be used for framing and creating; 3) Interact with a prototype in order to transform and evolve it. Therefore they can be used for developing and enriching (Selloni, 2017).

1.4.2 The Case of Service Design and Strategic Design

In broader terms, we share Sanders and Stappers’ view (2014) that in the early stages of a design process, when the purpose is discovering, imagining or exploring the options to be considered for the following phases, interviews and probes (that help people to think of and organise

their experiences and observe and express their feelings), case study discussion and storytelling (that feed people imagination and enlarge their vision) and some kinds of “generative toolkits” (that help people to imagine opportunities, such as issue cards, experience journeys, words/thoughts sequences, and more) are key artefacts to interacting with people in codesign encounters.

In more advanced design phases, when the purpose is creating, expanding, developing and consolidating options, the use of “generative toolkits” and “prototypes” is key, because they allow the generating and/or testing of concepts. Yet, the very nature of “what” is designed introduces some notable evolution and transformation of these conceptual foundations. In fact, here we are reflecting about services and scenarios that may envision future ways of living. That is, concepts hardly representable through self-explanatory and “finished” artefacts, because they embrace the dimension of the time, the reactivity of the interactions and the openness to multiple external and internal factors.

Therefore, when it comes to services, codesign prototypes are particular kinds of “physical manifestations” of a concept (Sanders and Stappers, 2014) where a physical artefact is complemented with other components that facilitate the simulation of interactions and behaviours. As such, roleplaying settings, experience exercises, blueprints, storyboards and other conceptual tools that, in product design, can be used to “collaboratively make” the concept to be developed and prototyped (Sanders and Stappers, 2014) are instead ways of manifesting the idea of a service in order to explore it with the participants or to provoke reflections around it. In other words, these kinds of artefacts are ways to represent future services, with differing degrees of closeness to the final one, and not just tools to work on them.

When it comes to strategies, codesign prototypes are representations of scenarios and trajectories. Scenarios are stories about the future (Ogilvy, 2002), plots characterised by distinctive factors, forces and values that shape a set of narratives. Manzini and Jégou (2004) introduce the concept of “DOS – Design Orienting Scenarios” as «tools to be used in design processes» that provide a frame for the design and realisation of new products and services. Scenarios prefigure possible worlds, as contexts of use, relations, meanings, ecosystems, and are largely used in strategic design and design management (Cautela, 2007) to steer “strategic conversations” about the future (Manzini and Jégou, 2004). As such, they are never meant to be “finished” and can be “prototyped” only through

artefacts (images, videos, charts, diagrams, sets of interconnected elements, and more) that stimulate conversations engaging multiple stakeholders and supporting them to take decisions. By definition, therefore, a scenario must be visualised and presented in a way that fosters collaboration and, as for a service, a scenario prototype may entail the realisation of a physical artefact complemented by components that facilitate its transformation and evolution by the codesigners.

1.4.3 Tools and Prototypes

In conclusion, we propose a way to set the stage for service and scenario codesign activities that use a combination - in complex boundary objects - of tools and prototypes with specific rules that, according to the experiences documented in this book, better fit with the very nature of these kinds of artefacts. In particular:

- “**prototypes**” are used to represent service or scenario concepts through physical manifestations and/or other conceptual devices that visualise the core evidence and the interactions occurring within a system. They are primarily used in the “concept-driven” part of the Collaborative Design Framework;
- “**tools**” are used to help codesign participants explore or imagine design options (defining a topic, generating or orienting the generation of a concept), or to take action on a proposed concept (manifested through a prototype). As such, they are used in all quadrants of the Collaborative Design Framework.

In practice, sometimes the two happen to be **combined in artefacts** for codesigning that, while representing concepts, also provide participants with the possibility of operating on and transforming them. This may be the case in a user-journey that entails alternative choices or open-ended options, or of issue cards that offer alternative combination choices and possibilities.

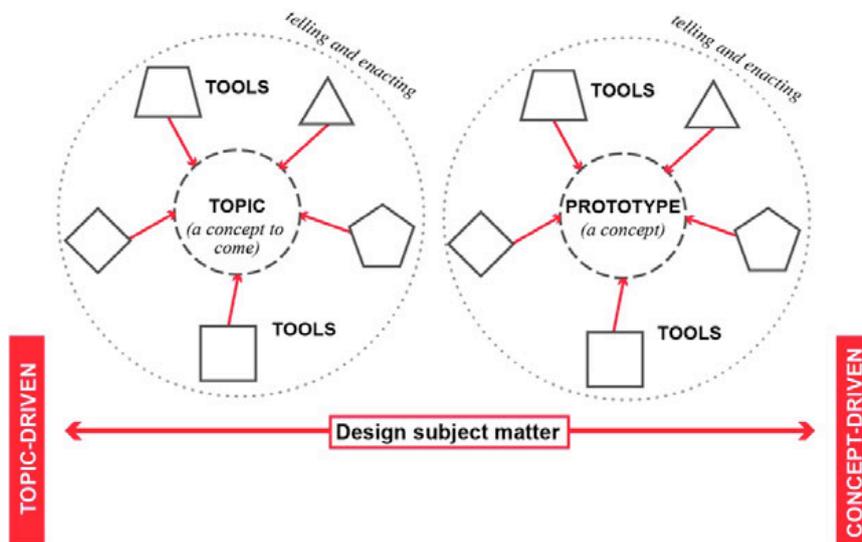


Fig. 1.3 – The relationship between tools, topic, concepts and prototypes in codesign actions along a design process

These complex boundary objects, which imply interplay between tools and prototypes and which are complemented by diverse forms of verbal and body telling/enacting, have to be considered individually as they arise in order to actually meet the diverse communities that are gathered around “the table”. Brandt *et al.* (2012) define this combination of tools and techniques in a participatory “mind-set” as “design games”. As boundary objects, they have to incorporate the different interest groups, create a common language and a common ground that could enable all them to contribute in the design process within the given “boundaries” of the project.

As we will see in the following chapters, all these elements have to be carefully and sensitively designed bearing in mind the participants’ backgrounds, the characteristics of the location (position and importance of the place) and the circumstances of the interaction (space- including digital-, time of year/day, duration...).

Building on Dalsgaard (2017) and Mark *et al.* (2017), carefully-conceived boundary objects are necessary conceptual devices for integrating heterogeneous domain knowledge across social worlds and

stakeholders in massive codesign processes. As we will argue through examples and cases, they can contribute to:

- **Supporting discovery and perception:** by enabling different groups to realise and then share a representation of a topic, a challenge or an opportunity;
- **Imagining, conceiving and creating:** by helping to articulate problems and opportunities, iteratively developing hypotheses about how they might be addressed;
- **Expanding and transforming design concepts:** by allowing knowing-through-action and therefore the evaluation, manipulation and development of them in more detail and complexity;
- **Mobilizing for action and legitimating (design) knowledge:** by engaging all parties in dialogical exchanges through thought-provoking interactions.

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PART 2: Experimenting with Codesign

This part of the book illustrates a series of action research projects in which the POLIMI DESIS Lab was involved as partner or coordinator.

We see them as case studies of “massive codesign” for different reasons: the adoption of multiple formats, the involvement of multiple and/or numerous stakeholders and the quantity of data produced.

Each project is very different and aims at achieving distinct results:

CIMULACT is a European funded project that had the goal to co-create with citizens, experts and policy-makers a set of research topics as recommendations for the future Research and Innovation Agenda.

Creative Citizens is a project carried out as a doctoral project by a researcher of the POLIMI DESIS Lab. The objective of the project was to codesign, with citizens and other relevant stakeholders, a set of solutions to improve the daily life of a neighbourhood in Milan.

Feeding Milan is an action research funded by local institutions and administrations to develop a platform of collaboration to design, prototype and implement a set of interconnected services for short food-chains.

SREAD is a European funded project that led to the development of a vision for sustainable lifestyles in Europe by 2050 through codesign with multiple stakeholders.

Each project will be explained with a “codesign identity card” which includes the following information: Title of the codesign activity; Participants; Aim; Style of guidance; Design subject matter; Double diamond stage type; Environmental set up; Duration; Description of the process; Boundary objects - prototypes and tools; Final output.

The same information is also visualised with graphics and pictures at the end of each project description.

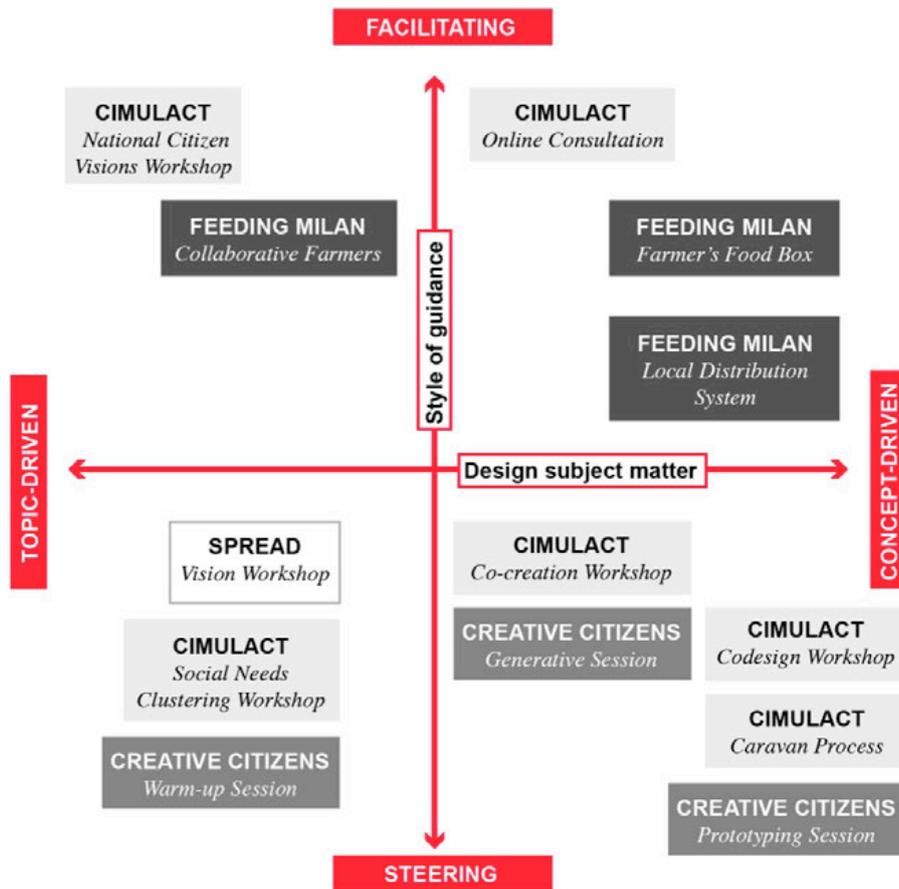


Fig. 2.1 – The Collaborative Design Framework with case studies

2.1 CIMULACT

This chapter presents “CIMULACT”, a European research project funded under the Horizon 2020 Framework Programme, running from June 2015 to March 2018¹. CIMULACT engaged citizens and a wide range of stakeholders in jointly redefining the Research and Innovation Agenda for the Horizon 2020 programme, with the goal of making it more relevant and accountable to society.

The project delivered 23 research topics to the European Commission, as recommendations for future research and innovation policies.

The consortium included 29 partners to represent 30 Countries across Europe. The Politecnico di Milano participated in the project through the POLIMI DESIS Lab of the Department of Design.

¹ CIMULACT - Citizen and Multi-Actor Consultation on Horizon 2020. Funded by Horizon 2020 Framework Programme, Grant Agreement 665948, 2015-2018. Project coordinator: Danish Board of Technology (DBT), Denmark; Consortium partners: Fraunhofer Institute for Systems and Innovation Research (ISI), Germany; Austrian Academy of Sciences (ITA), Austria; Missions Publiques (MP), France; Strategic Design Scenarios Sprl (SDS), Belgium; Technology Centre Of The Czech Academy Of Sciences (TC CAS), Czech Republic; Asociatia Institutul De Prospectiva (Prospectiva), Romania; Applied Research And Communications Fund (ARC Fund), Bulgaria; GreenDependent Institute (GDI), Hungary; Politecnico Di Milano (POLIMI), Italy; The Association for Science and Discovery Centres (Science), UK; Fundacio Catalana Per A La Recerca I La Innovacio (FCRi), Spain; Swiss Academies of Arts and Sciences (TA Swiss), Switzerland; University of Helsinki (UH), Finland; The Norwegian Board Of Technology (NBT), Norway; Institute for Sustainable Technologies (ITeE-PIB), Poland; Knowledge Economy Forum (KEF), Lithuania; Baltic Consulting (BC), Latvia; University College Cork, National University Of Ireland, Cork (UCC), Ireland; Wageningen Economic Research (DLO – LEI), Netherlands; Mediatedomain Lda (Mediatedomain), Portugal; University of Malta (UoM), Malta; Slovak Academy Of Sciences (SAS), Slovakia; Slovenian Business & Research Association (SBRA), Belgium; RTD Talos Limited (RTD Talos), Cyprus; 4MOTION ASBL (4motion), Luxembourg; ODRAZ - Sustainable Community Development (ODRAZ), Croatia; Swedish Geotechnical Institute (SGI), Sweden; Atlantis Consulting (SA ATL), Greece.

In accordance with the general aim of the book, we will concentrate on the 5 main codesign sessions that led to the final version of the research topics delivered to the European Commission. Starting from a general overview of the project and we will then provide an extensive description and analysis of the codesign activities.

2.1.1 CIMULACT at a Glance

CIMULACT stands for “Citizen and Multi-Actor Consultation on Horizon 2020” and is aimed at inspiring the future EU research agenda and shaping it around the concerns, hopes, and the visions of desirable and sustainable futures of citizens from 30 countries in Europe.

The core of the project lies in the involvement of the citizens. The main driver of CIMULACT was to make the future more accessible, widely shared and extensively discussed among citizens. The challenge was to transform a research agenda from a topic for experts to a public conversation for a greater democracy.

The research consortium involved research organisations, universities and private agencies, each representing a country in Europe. This chapter builds upon our experience as members of the research team of POLIMI DESIS Lab. Together with SDS – Strategic Design Scenarios from Belgium, the DESIS Lab brought design expertise into the research consortium, and contributed specifically in developing methods and tools for codesign. We were particularly active in the design of the participatory process, and were responsible for the “co-creation workshop”, the largest in-presence session of the project.

For each step of CIMULACT, we developed a series of tailored codesign activities with different formats, stakeholders and goals. Each one was meant to add a distinctive perspective and was intended as to bring the project a step forward towards defining the final contents of the research topics. The most pressing objective of CIMULACT, however, was to ensure that citizens’ viewpoints were brought into the research programmes of the European Commission. Therefore researchers were constantly vigilant to preserve citizens’ voices throughout the process.

CIMULACT can be considered an exemplary experiment of “massive codesign” for 3 main reasons:

- *multi-stakeholder process*: the project involved a wide cross-section of stakeholders. The participants were heterogeneous in many

senses: in age, location, expertise and role within the project. They often participated in sessions dedicated to specific targets, therefore they were selected and grouped according to similar characteristics. In some sessions, very diverse groups were instead brought together, mixed and pushed to work together.

- *Significant number of participants*: the whole process engaged around 5000 people. Even though they were involved at different stages, the process finally resulted in a “massive” codesign activity. The most extensive in-presence codesign session was the “co-creation workshop” that counted more than 100 participants simultaneously. That session represents a “massive codesign” case in itself.
- *multi-formats*: the project experimented with very different formats of consultations. They were developed by the partners with several purposes, leveraging their diverse expertise.

Below we provide an overview of the whole process and of the most relevant codesign activities. The specific sessions are then explained in detail in the following paragraphs.

1. National Citizen Vision Workshop

In the first stage of the project, more than 1000 citizens from the participant countries were involved in workshops to co-create visions of desirable futures, starting from their wishes and concerns. All the partners involved carried out national workshops with around 40 of their own citizens. In the selection process, we strived for a good level of diversity among participants in order to attempt to recruit a representative sample of the entire nation.

This was a first face-to-face consultation and it was aimed at collecting the main desires and concerns of European citizens about the future. The results of this session was the foundational content on which all the subsequent stages built upon.

In order to avoid influencing participants and make the exercise totally exploratory, the consortium created a process which was extremely open to the free contribution of participants. The goal was to inspire them, without suggesting preconceived ideas. The same format, drawn from humanistic disciplines such as psychology and sociology, was adopted by all countries.

The outputs of this workshop were collective visions of possible futures, that the citizens elaborated in groups. The visions included a very broad range of perspectives on the future. To mention but a few, there were visions dealing with new educational models, others exploring the potential

of technologies truly at the service of human beings, others foreseeing self-sustainable local communities.

2. Social Needs Clustering Workshop

The main goal of this workshop was to identify the needs underlying citizens' visions of the future.

To accomplish this task, the core partners of the consortium met in Paris with 10 invited experts that played the role of "challengers". These "challengers" brought an external perspective on the topics that were emerging, attempting to mitigate some of the biases generated by the consortium.

The citizens' needs that emerged from this analysis were eventually clustered into 12 so called "social needs" that ultimately determined the directions to be investigated during the following consultations.

3. Co-creation Workshop

This session had the objective of producing a first draft of the research programmes in the form of scenarios; starting from the social needs identified in previous stages.

Several stakeholders were gathered together in a workshop to contribute to this task: representatives of the citizens who had contributed to the original visions, alongside experts and the partners of the project.

Citizens had the role of witnesses and guarantors of the wishes and concerns expressed in their visions. Experts were crucial to bring their vertical knowledge on the different topics and give scientific accuracy to the scenarios.

Finally, consortium partners were essential for several reasons: to ensure the continuity of the project, to bring their specific knowledge and experience and to connect experts with citizens.

The process was outlined by the POLIMI DESIS Lab team in collaboration with the consortium partners. Based on a scenario-building and future studies approach, it was conceived as a journey to guide the participants along a challenging set of steps leading towards the design research scenarios.

4. Codesign Workshop

This session was held in-presence, in each country of the project, and was tailored to different target groups. The whole consortium involved citizens, policy makers, and many other specialised stakeholders, in order to enrich and validate the research scenarios produced in the previous phases. Different countries adopted different consultation approaches

according to their specific targets. Partners from different countries also defined their own methods for the consultations. POLIMI DESIS Lab, conceived and developed an ad hoc process to codesign with designers. Strategic Design Scenarios instead developed a new codesign process named “the Caravan method”, which is presented later in the book.

In every case, regardless of the approach taken, the outputs of this round of consultation were some enriched scenarios and a ranking of the scenarios in term of priority.

5. Online Consultation

In order to reach a larger audience and a quantitative relevance, the research scenarios have been collected in an online platform and spread to almost 3500 people all over Europe, to ask their opinion on the contents. In this way, scenarios were enriched with inputs coming from citizens and experts from all over Europe. Furthermore, respondents were asked to assign a priority score to each scenario. This score added quantitative consistency to the ranking already defined in the previous session.

6. Pan-European Conference (not presented in this book)

The last consultation was held 18 months after the beginning of the project. The aim was to transform the research scenarios built so far into research topics for the next round of calls of Horizon 2020 (Missions Publiques *et al.*, 2017). During this very last stage, the European Commission’s project officers, some invited experts, and CIMULACT partners joined in an interactive creative dialogue aimed at reflecting the needs, concerns, and visions of European citizens into the research programme calls.

The crucial participants of this session were the project officers. Their role was to bring to the project the perspective of the European Commission, taking the responsibility to assess the innovative potential and consistency of the topics within the H2020 programme.

2.1.2 CIMULACT National Citizen Vision Workshop

Title of the codesign activity: *National Citizen Vision Workshop* - First consultation of the project – In-presence - National scope.

Aim: This session was aimed at *collecting visions of a desirable future* by the citizens of each country. It was an exploratory activity to collect

initial wishes and concerns, in order to define the topics to be investigated during the next stages of the project.

This was one of the most important activities of CIMULACT because it framed the original contents on which all the following project assumptions and developments would be built upon. This workshop was held in the national language of each country.

Participants: *Citizens. In Italy 31 participants (around 36 per country = 1088 overall).* This consultation was specifically addressed to citizens. Since the aim was to produce visions representing the wishes and concerns of an entire country, very precise guidelines for the recruitment of participants were defined.

A cross-section of participants were selected attempting to include people with different ages, gender, educational level, occupation and geographical origin. The participants worked in groups of 5 people, which were chosen beforehand by the POLIMI DESIS Lab in order to have a variety of people in a same team.

In Italy, the group was reasonably heterogeneous, with the exception of their geographical origin, as most of the participants were from Milan, where the workshop was held. A bias may have been generated in the recruitment by the fact that many of them were already part of the established network of the DESIS Lab, even though the recruitment campaign was organised through different channels. The fact of leveraging existing networks and contacts might have excluded people from very different environments and interests.

Style of guidance: *Facilitating.* Each group of citizens was guided by a table moderator whose function was to facilitate discussions and deliberations at the table, while maintaining a neutral attitude. His/her main function was to make sure that the citizens focused on the assigned tasks and that all citizens at the table had the possibility to express their views. It was explicitly stated in the guidelines of this workshop that the table moderators should not express their own opinions, but were there solely to help citizens state theirs.

A chief facilitator was in charge of coordinating the whole process and organising the table moderators, keeping check of the time and providing instructions on the tasks.

In Italy, the table moderators were design researchers of the POLIMI DESIS Lab.

Design subject matter: *Topic-driven*. The workshop had an exploratory ambition. Being the first of the entire project, there were no pre-worked contents from which to start from. The purpose was to make concerns and wishes arise spontaneously from the citizens, with the minimum influence from the consortium.

Starting from individual ideas and thoughts, the participants were accompanied through a process of collective co-creation of stories which narrated a desired future.

The collective stories, called “visions”, were addressing very diverse aspects of life. Nevertheless, we could clearly identify a recurrent topic, which usually dealt with “education and a working system”. This refers to all those visions expressing a desire to change the current model into something more flexible, and more importantly, closer to people’s current needs and to contemporary challenges.

Double Diamond stage: *Divergent - discover*. This fully exploratory phase is aimed at investigating and considering as many opinions as possible. It can be associated to the “discover” stage of the Double Diamond process, intended to engage people, and stimulate them to discuss and expand their options.

Environmental set-up: The workshop was held in Avanzi/Barra A, a co-working space that fosters participation and collaboration among people. Next to the co-working area there is a café which worked as a friendly place for breaks.

The room was organised with big tables where people could work in groups. Each table had a standing board where participants pinned the ideas generated in the brainstorming and the final “visions” they produced, in order to share them with the others.

Even if the room was quite crowded there was still enough space to set the final showcase of the visions in a plenary, moving all the boards to the entrance of the room. The movable boards were a smart and flexible solution that proved to be effective for various moments of the session.

Duration: *1 full day*. 21 November 2015. The session was held on a Saturday, and lasted the whole day. The decision to carry out the workshop during the weekend was made to facilitate the participation of citizens in employment: however there was still a 30% of dropout rate. We assume that not all participants took the commitment seriously, possibly because no compensation had been promised, apart from a gift at the end of the workshop. Commitment was implicit and based on personal sense of

obligation. We learnt that building upon existing networks of contacts could be a double-edged sword: if on one side people feel more engaged because of mutual trust and sense of duty, on the other side they do not feel the obligation as when they are recruited by a recruitment agency that gives them incentives.

Description of the process: The design of the workshop was coordinated by the project partner Austrian Academy of Sciences.

The process led the participants through the collective development of a narrative, which started from individual wishes and concerns and ended up in a group vision of a desirable future, through a progressive storytelling. Each person started by conceiving his/her personal mini-story of the future and then discussed it with the group, in order to find a common ground to develop the collective vision.

The collective visions emerged by taking into consideration the different views, through a process of joining various contributions and selecting the most promising ones. This was achieved in discussions and by taking group decisions (Jørgensen and Schøning, 2016).

Some days before the workshop, all participants received an inspirational magazine. Citizens were encouraged to familiarize themselves with the content of the magazine prior to attending the workshop. Its aim was to introduce the citizens to the concept of the workshop and stimulate some questions to keep in the back of their mind before the event.

After the general presentation of the project and of the workshop in a plenary by the head facilitator, the groups started to work separately, following this schedule:

- thinking about fears, wishes and concerns of the past (1);
- thinking about the future (2);
- collecting stimuli from other groups (3);
- conceiving individual “mini-stroylines” (4);
- elaboration of the collective visions (5).

(1) The first task was to think about the past and in particular to focus on challenges, fears, wishes and hopes that people could think about 40 years earlier. Each group member reflected individually and then shared his/her thoughts with the others at the table to start a common reflection. This activity was mainly intended as a warming up exercise and let participants familiarize with the topic. In order to keep track and support the discussion, the board was used to collect thoughts written on post-its.

(2) The second step was thinking about the future. This moved the process forward from simply warming up to producing a first valuable content for the project. To support this activity, it was used a set of 96 inspirational pictures. Citizens were asked to imagine the future in 40 years, pick up a picture that inspired them and share their thoughts with the others. The groups were invited to think about the future both at an individual and societal level.

Pictures, had different degree of influence in the cognitive work of the participants and helped to stimulate their imagination and come up with ideas. The contributions were pinned on the board, in order to make it easy to follow the discussion and start to detect common patterns. At this stage, ideas were quite generic, ranging from concerns about children's education, to air pollution, from solidarity networks to green areas in the cities.

(3) After that, the table moderators created thematic clusters for each group and all the participants were invited to nurture their thoughts taking inspiration by the observation of the results produced by other groups.

(4) The fourth step led the participants to write the first draft of the "visions". During this step, the moderator played a crucial role in explaining the meaning of "vision of a desirable future". They were defined as imaginative stories of a desirable future that are not just positive, but also build upon threats, fears and concerns. These stories were initially presented individually in a format that was called "mini-storyline" were each participant narrated the world as he/she imagines it in 40 year time. The stories were often very rich in imagination and originality, surprising the researchers for the unexpected details and original anecdotes.

(5) The last step was the elaboration of the collective visions. They were firstly developed in a raw version through a discussion within each group. Group members went through a process of collecting the different inputs and then selecting more urgent ones, in order to finally achieve a common agreement on the collective vision. The refined and final version of the visions incorporated the feedbacks and the additions by citizens of the other groups.

Boundary objects - tools and prototypes: Within this session, boundary objects were fundamental mediators between facilitators and citizens. Conceived as interlinked toolkits, they were either stimulus for imagination, as were the pictures used to draw out wishes and concerns about the future, or enablers of thoughts and reflections.

A set of 96 pictures (playing card size) had the aim to inspire and stimulate the citizens' visioning process, but were there also to support the communication of the visions making them more accessible, explicit and

shareable with others. The same cards were also used to visualize the visions, so that a broad variety of graphic and individual expression could be found in the outputs.

Narration tools: a set of templates providing a format to present the stories generated by the participants. The format was composed of two parts: one for a verbal description and the other for a simple visualisation that participants could decide to complete with parts of the available pictures or with their own sketches.

Overall, the tools had an explicit background in humanities and narrative and were inspired by a sociological and psychological approach.

Final output: Final outputs of this workshop were 6 collective visions of a desirable future produced by the citizens of each country.

This resulted in a total of 179 visions that constituted the basis of the issues deployed as research topics for the European Research Agenda (Jørgensen and Schøning, 2016). Each vision was presented with a description, a rationale (how and way it is different from the present time, and why it is desirable or not) and an image.

At this stage, the visions pointed to very broad directions, but some clear patterns had already emerged. In Italy for example, the topic of education was recurrent: visions proposed flexible models in which education could be intergenerational and focused on the development of personal inclinations.

Two other clusters of desirable futures emerged in Italy: “cities becoming sustainable thanks to collaborative behaviours”, suggesting a society where sharing and recycling resources is the basis for a sustainable and desirable place to live; and a society where “technologies are at the service of mankind” enabling and empowering human capabilities.

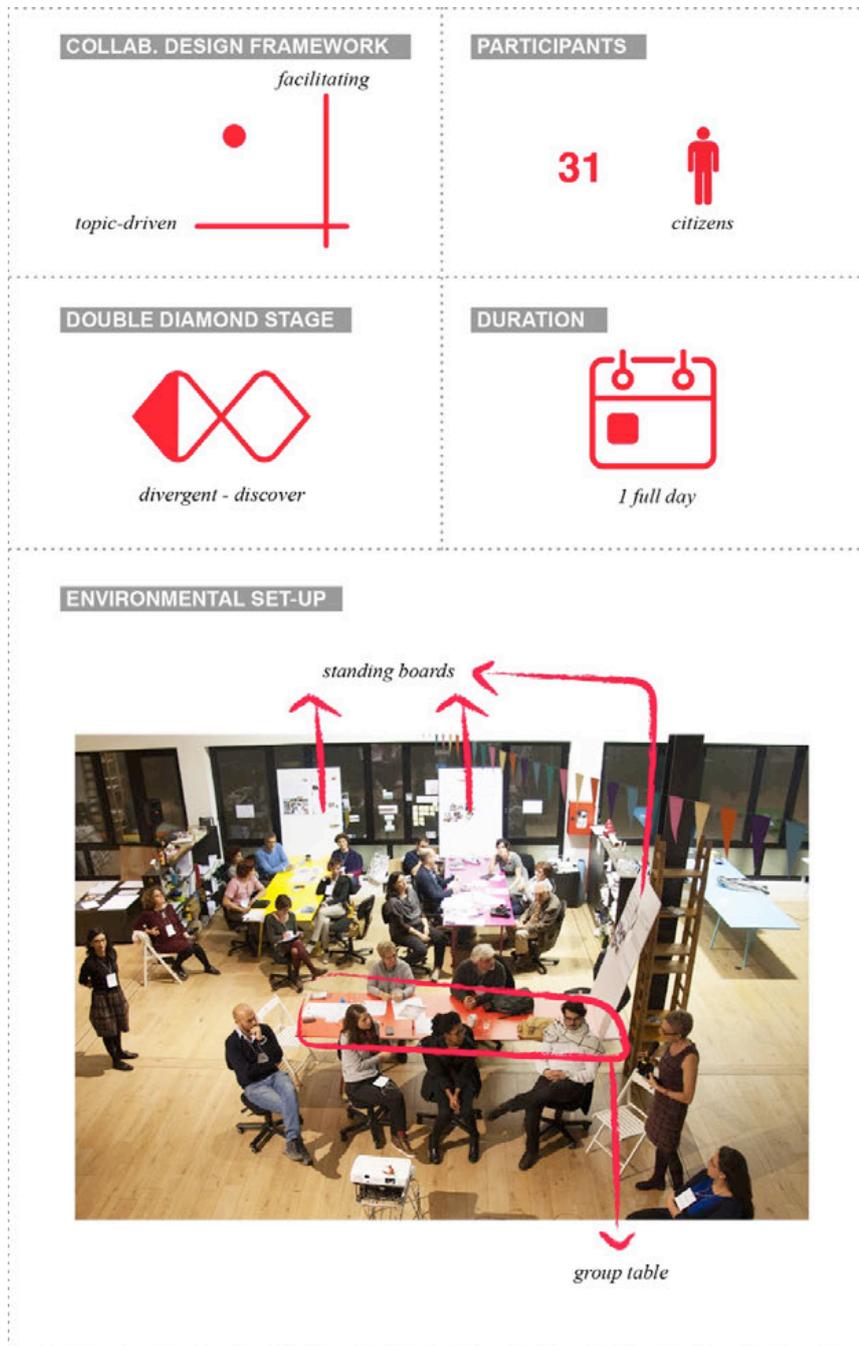
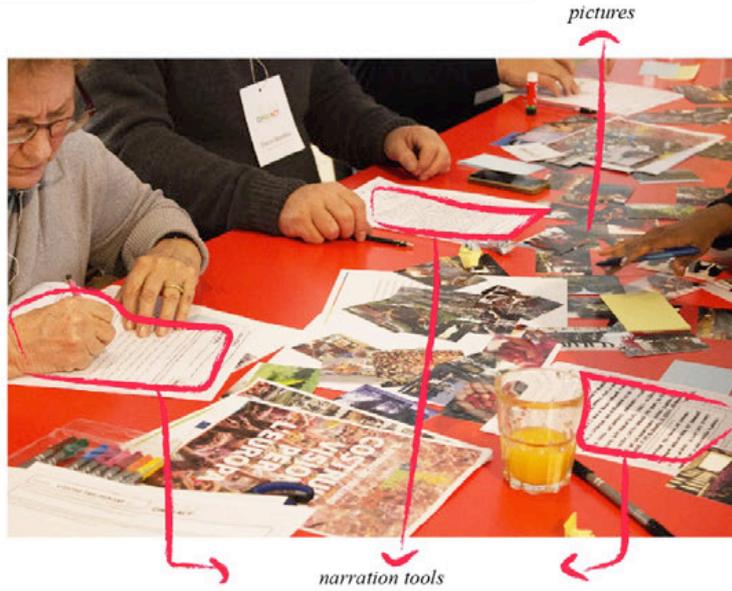


Fig. 2.2 – CIMULACT National Citizen Vision Workshop / POLIMI DESIS Lab

BOUNDARY OBJECTS: TOOLS AND PROTOTYPES



FINAL OUTPUT

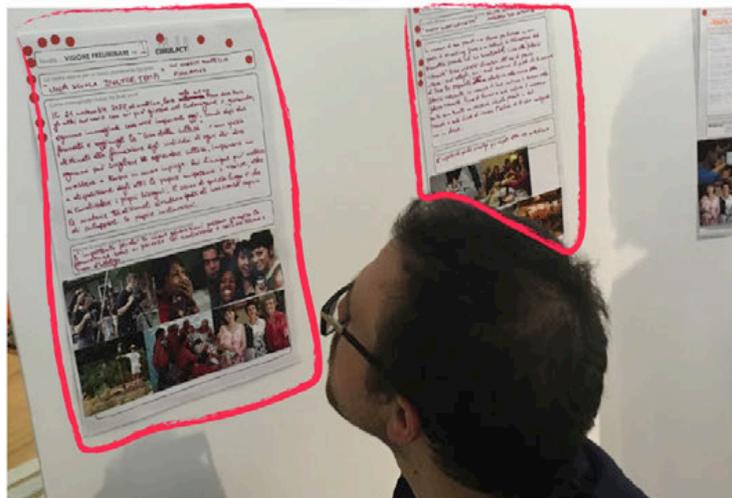


Fig. 2.3 – CIMULACT National Citizen Vision Workshop / POLIMI DESIS Lab

2.1.3 CIMULACT Social Needs Clustering Workshop

Title of the codesign activity: *Social Needs Clustering Workshop* – Second consultation of the project – In-presence – International scope.

Aim: This activity was aimed at *extracting underlying needs from the citizens' visions* produced in the previous workshop. These needs would have been addressed by the future research programme scenarios.

Participants: *Project partners + 10 experts (“challengers”)* for around 30 participants in total. The participants were the core partners of CIMULACT, joined by 10 international experts from various fields, invited as external “challengers”. Their role was to bring their specific expertise into the definition of the need-related topics and to ensure that there were no biases in the analysis.

Challengers were assigned the same tasks as the other participants, with the exception of a final comment that they were asked to give at the end of the session. Looking back, we feel that their contribution was not exploited to the fullest.

Style of guidance: *Steering*. The participants worked in groups without moderators. Two coordinators provided general instructions. Therefore each group decided autonomously how to organise their work, but without moderation often the stronger personalities in the group contributed the most to the discussion.

All the participants played the role of experts in their particular field and in relation to the citizens' visions. Each participant, at different moments, had the opportunity to isolate a need from the visions and to push for a particular topic...

Design subject matter: *Topic-driven*. The work was based on the visions built by the citizens and required participants to interpret them and put them in relation to the social needs. The inputs for the analysis and interpretation were many since each of the 178 visions carried a rich palette of information and contents.

Double Diamond stage: *Convergent - define*. The workshop had the goal to make a synthesis of the needs emerging from the visions. After a phase of analysis, the main task was to find crosscutting patterns and cluster them in order to find the areas to focus on.

Environmental set-up: The activities were held in Paris in a beautiful historic location: a former abbey turned into a cultural centre called L'Archipel. Most of the work was carried out in small groups that were conveniently separated with the layout of the room. The furniture created enclosed spaces that isolated groups from each other.

Tables as usual had standing billboards that were used to pin and share the clusters of needs.

Duration: *1 full day.* 29 February 2016. There was a huge amount of information to analyse: this generated some frustration as participants felt they were losing important details or abstracting too much from the data. The processes of selecting and clustering was carried out manually by cutting pieces of text from the paper sheets on which were written the visions.

Looking back, in order to carry out this task more accurately much more time should have been allocated to this workshop. The activity would have benefited from the support of a software tool to organize, analyse and find insights in unstructured qualitative data.

Description of the process: This codesign activity was led by the project partner Fraunhofer Institute for Systems and Innovation Research, with contributions by other core partners, in particular Missions Publiques. The POLIMI DESIS Lab participated as a contributor.

The process to identify clusters of social needs from the 179 citizens' vision was articulated in 4 main moments:

- Each participant reviewed 30 visions (1);
- The identified needs were shared with the whole group and clustered (2);
- Visions were associated with needs (3);
- Describing the final social needs (4).

(1) Participants were split into small groups from the start. The first task was individual: every participant read and analysed 30 visions, looking for the needs that were implicit in the visions. To help participants with this rather demanding task, the visions were assigned to participants and sent to them before the workshop. During the session, each participant shared the result of his/her analysis and the group agreed on 5 common areas.

(2) The same process of sharing and converging was repeated with each person in the group, so as to define a common pool of needs. The discussion was long, challenging and moderated by the coordinators. Finally the group agreed on 26 clusters of social needs.

(3) Subsequently new groups were formed, and every one went through the full set of visions in order to find which ones could have been associated with the needs. This step was important to keep track of the origin of the needs and therefore to create references for any content generated from them. To do that, participants were asked to cut the paper sheets in small pieces with the sections of the visions related the need. These pieces were then pasted on the final posters of the needs.

(4) To conclude the workshop, the participants were put in pairs to write a detailed description of each social need. Finally, the social needs and their descriptions were displayed as posters so everyone could have a look at them, contributing or editing.

While looking at the social needs, people were asked to indicate to which European Grand Challenge the need was connected with. The Grand Challenges are macro themes that define the priorities of the European research and frame the research programmes.

During the whole process, the challengers did the same activities as the CIMULACT researchers. At the end of the day, they were asked to share their feedback on both methodology and content.

The agenda of this codesign session was open to adjustments as a function of the flow of the activities, despite the whole process was compressed in a single day. This flexibility was useful to adapt the work to the complexity of the tasks.

Boundary objects - tools and prototypes: The boundary objects used during this activity were the printed copy of the citizens' visions and some empty posters to be filled in with the social needs.

Citizens' visions: Printed copies of the material produced during the first consultation. They were intended as working material and not just information. Indeed, they were used to highlighting specific sentences and to take notes during the first phases. Then, they were cut and pasted to populate the posters of the social needs.

Posters: Posters were blank templates to combine all the inputs which referred to same social needs. They were designed for holding a brief description of the need, the citations from the original visions and the associated Grand Challenges. This format worked well for the purpose of the workshop.

Posters were placed over bigger brown sheets of paper and hanged on billboards so to display the work-in-progress to everybody in the room.

Final output: Final outputs of this session were 26 social needs, showcased as big posters. They were different for each topic but were transversal to many countries in Europe. For instance, from several visions across multiple countries emerged the same desire to have a strengths-based education system with a more experiential approach, more equality in society, and a more holistic healthcare system.

The 26 social needs were then reviewed by the leader of this research task, the Fraunhofer Institute for Systems and Innovation Research, together with POLIMI DESIS Lab (who was in charge of the following step of the project). To ensure that all relevant topics had been captured in a complete and extensive way the social needs were re-clustered and cut down to 12.

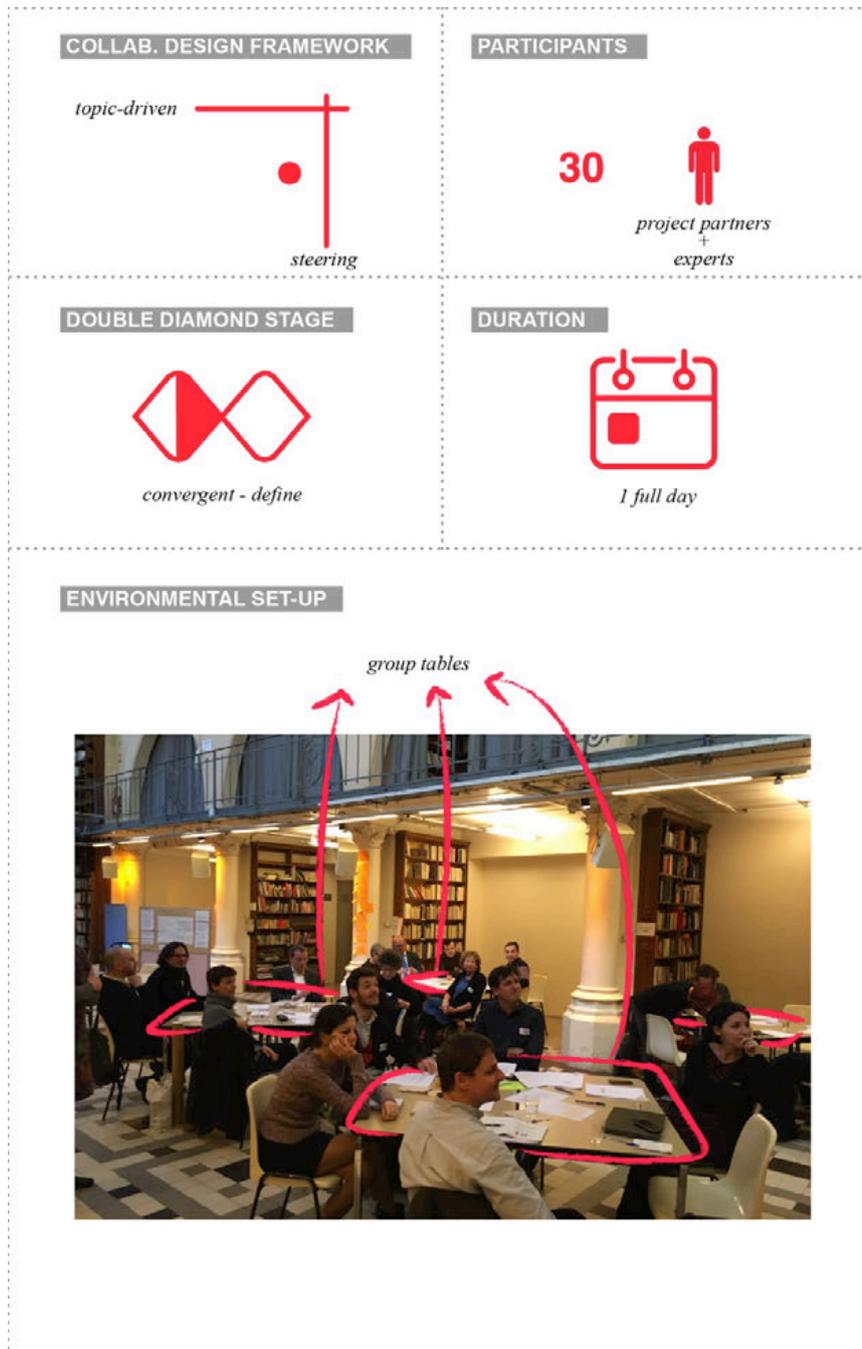
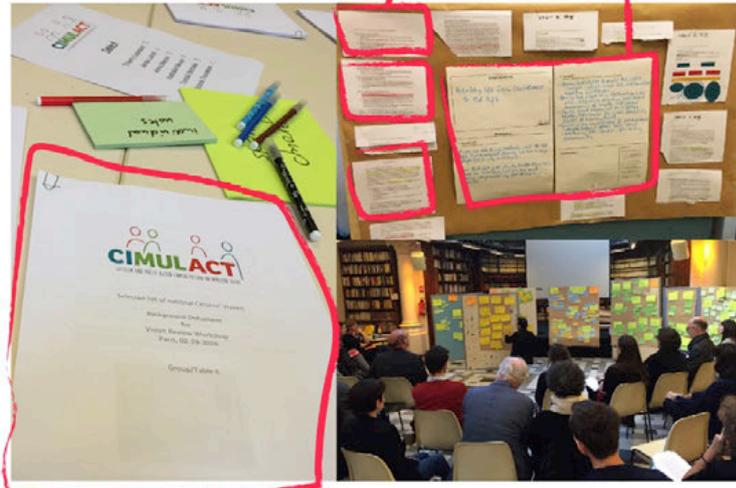


Fig 2.4 – Social Need Clustering Workshop / POLIMI DESIS Lab

BOUNDARY OBJECTS: TOOLS AND PROTOTYPES

excerpt of citizens' visions

posters



citizens' visions

FINAL OUTPUT

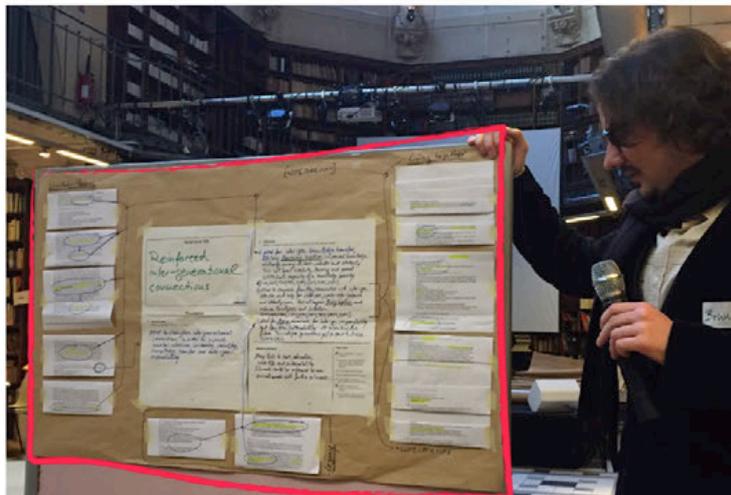


Fig 2.5 – Social Need Clustering Workshop / POLIMI DESIS Lab

2.1.4 CIMULACT Co-creation Workshop

Title of the codesign activity: *Co-creation Workshop* – Third consultation of the project – In-presence – International scope.

Aim: This session had the objective of generating *research programme scenarios, starting from the social needs identified during the previous activity*. A research programme scenario is a set of recommendations for the topics to be included in the European Research Agenda.

Participants: *Citizens + experts + project partners. 100 participants.* This is one of the most representative in-presence massive codesign session of the project, because of the sheer number of participants and the variety of stakeholders involved. For this reason, it was also one of the most challenging sessions.

The group of participants was equally distributed between citizens, experts and project partners. The citizens were there as representatives of the participants of the national vision workshop (cfr. 2.1.2). Their role was to guarantee that the messages coming from the original visions were respected and were invited to bring their own everyday experience and insights.

The group of experts were specialists drawn from academia and the professional world specialised in different fields. They were selected to cover the different areas of knowledge related to the social needs: from neurosciences to city planning, from education to biology, and more.

Finally, the project partners were representatives of all the 20 consortium members.

In order to make everyone work together, it was decided to create mixed working groups of 8 people each, assigning each person a very precise role: citizens were witnesses and defenders of the content of the original visions; experts would bring a scientific contribution to the scenarios; and the project partners would act as connectors between the two communities. The roles turned out to be useful to organise and manage the collaboration within each group and the teamwork ran smoothly, without any critical issue emerging unexpectedly.

Style of guidance: *Steering*. The participants worked in groups and each group had a guide called table coordinator. Coordinators were project partners, therefore acquainted with the contents of the project; for this task they were specifically asked to contribute to the discussion, by providing suggestions. Hence, their role was not limited to supervising the process,

organising the group and filling in templates, but to steering the debate, by suggesting directions. This was a very demanding activity, because they were performing multiple roles simultaneously, and it was challenging to concentrate on all the tasks.

Design subject matter: *Concept-driven*. Starting points for this workshop were the social needs defined in the previous activity (cfr. 2.1.3). They acted as orientation concepts and subjects of the discussion.

Double Diamond stage: *Divergent – develop*. From the initial 12 social needs the work led to the development of 48 research scenarios: for each social need, 4 possible directions were generated in form of scenarios. The purpose of the codesign activity was to elaborate and generate diverse solutions to satisfy the needs, in a creative way by combining analysis and abduction. The workshop, therefore, was in the “develop” phase of the double-diamond process, where the objective is of exploring possible solutions (scenarios) to a given problem (social needs).

Environmental set-up: The huge number of participants was challenging for the organisation of the space.

A big classroom for 150 students in the Bovisa Campus of Politecnico di Milano was set up for the event. 12 big tables were put together, distributed around the room and for each table a self-standing board was provided to hang posters, notes or other materials to share. The final configuration of the space was functional, but the noise of the people talking affected the concentration. The discomfort was increased by the fact that the common language for the participants of so many different countries was English and many people for whom it is not a mother tongue had to put extra effort in speaking and understanding.

Duration: *2 consequent full days*. 21 - 22 April 2016. The working rhythm was intense and many tasks were complex which resulted in a tiring and challenging process for everyone involved. Looking back, it would have been useful to have more time to go more in depth into the contents,. However this was not compatible with the time availability requested to the participants. The overall process, therefore, would have benefited from streamlining some steps and avoiding repetitions.

Description of the process: The POLIMI DESIS Lab was in charge of designing and coordinating the codesign activity.

The process was created adapting scenario-building techniques to the specific circumstance, with the aim to foster the envisioning ability of the participants. Since the activity was complex and the schedule strict, a general coordinator of the workshop was in charge to explain each step to the whole group of participants and to keep time.

Day 1: The workshop started with an exhibition of posters displaying each social need with an evocative visualisation, a brief description and some citations of the citizens' visions from where that need was extrapolated. Visualizations were produced by Strategic Design Scenario, the Belgian partner.

The exhibition was thought to let participants familiarise with the contents of the project and citizens choose the topic they preferred to work on. Indeed, after the exhibition, each group received a social need: while experts were allocated to the needs according to their expertise, citizens joined the topic they felt more comfortable with. This choice was meant to put them at ease in a stressful environment where they were asked to debate with experts.

(1) After a brief discussion at each table to familiarize with the topic, each group started working at the first task, which was the identification of the relevant "influencing factors", namely the cultural, social, economic and technological elements that could affect how the need could be satisfied in the future. Each factor might have different "options" depending on the ways it could occur. For example, for the need "strength-based education and experiential learning" one influencing factor was the "multi-scale interaction", intended as the possibility to offer education on different scales. From this factor, two alternative options emerged: "big schools" like centralised education systems and infrastructures joining diverse cultures, disciplines, and generations; and "networked local hubs", like connected systems of local education providers very diverse one from the other.

This was a crucial part of the workshop: identifying relevant and interesting influencing factors was a pre-condition for a rich and innovative debate around the future research directions. During this task, experts had the crucial role of bringing the table up to date information and research on the topic. They were also asked to move around and give inputs to other tables: this turned out to be a very successful strategy when groups were stuck in ineffectual discussions.

(2) The second task was describing the possible "future directions" originated by the most relevant influencing factors and their options: the future directions were descriptions of possible future lives with the

characteristics determined by the factor. They were often formulated in a provocative way, so to stimulate the debate in the group.

(3) The last phase of the first day was thought to describe the “state of the art” in the different spheres of needs. This is a well-known concept in science: it defines the highest level of general development achieved at a particular time. In everyday life, it is what people actually experience as available solutions in a given field. This phase of the work defined the state of the art in both research and everyday life, according to the experience of the experts on one side, and the citizens on the other. The exercise was done referring to the future directions just identified. In particular, the question the participants had to answer was: «Where are we now with respect to the directions that have been identified?»

Day 2: (4) The second day started with a comparison between the present state of the art (research and everyday life) and future directions: this was done to identify “gaps” and “concerns” in knowledge and practices. Gaps were “what we need to know in order to go in the direction identified for the future” and arose from the comparison of the state of the art in both the scientific research and in the everyday life. Participants were requested to think also about “concerns”, defined as side-effects and unexpected consequences that could emerge from the future directions.

(5) The gaps gave rise to the “research questions” that need to be answered in order to move toward the identified directions.

(6) From these questions, research directions were finally created, i.e. what to research in order to go towards the defined direction. Each one of these was formulated as a statement, which included supplementary research questions which were clustered together and connected. For example, a research direction connected with the topics mentioned previously was: «Finding ways to take advantage of the education network in order to equalize education throughout Europe, giving open access to data, physical places and competences, with a specific focus on developing a critical awareness on their use».

Boundary objects - tools and prototypes: This codesign activity required a complex apparatus of prototypes and tools.

Posters of the social need: at the beginning of the workshop, an exhibition showcasing the social needs was set up. Displayed in the room designated for the workshop, it was a way to bring everyone on the same page, sharing the topics emerged from the citizen consultation. It was presented as a series of posters illustrating the social needs through an image (an assemblage of pictures and drawings), a description and

quotations from the original citizens' visions. These posters were visual prototypes of the concepts extracted from the citizens' visions.

A toolkit: a set of templates, to fill with text or schemas, was designed specifically for each task. They were also thought to provide guidance with detailed instructions. The layout of the templates was purposely conceived as diverse as possible, so to help differentiating the tasks. In this circumstance, the visual part of the work was marginal. Despite having pushed the participants to visualize the scenarios by finding pictures online with the help of designers, the images produced were not useful to enrich the verbal descriptions.

Final output: Final outputs of the session were 48 co-created research programme scenarios (Warnke *et al.*, 2017). The content produced could be considered of a good level and relevance for the whole CIMULACT project. Each programme scenario was summarised in a few sheets and articulated in sections summarising the work done in the workshop:

- *Scenario title and future direction*: brief description of a desirable situation to be pursued;
- *State of the art in everyday life*: situation in the present time from the perspective of the citizens;
- *State of the art in scientific research*: situation in the present time from the perspective of the experts;
- *Gaps*: gaps between the present and the situation to pursue;
- *Concerns*: fears arising from the future direction;
- *Research questions*: queries that summarize the lack of knowledge identified with the gaps;
- *Research directions*: directions that future research should follow in order to move toward a future direction;
- *Expected impact* of the research with regards to the needs.

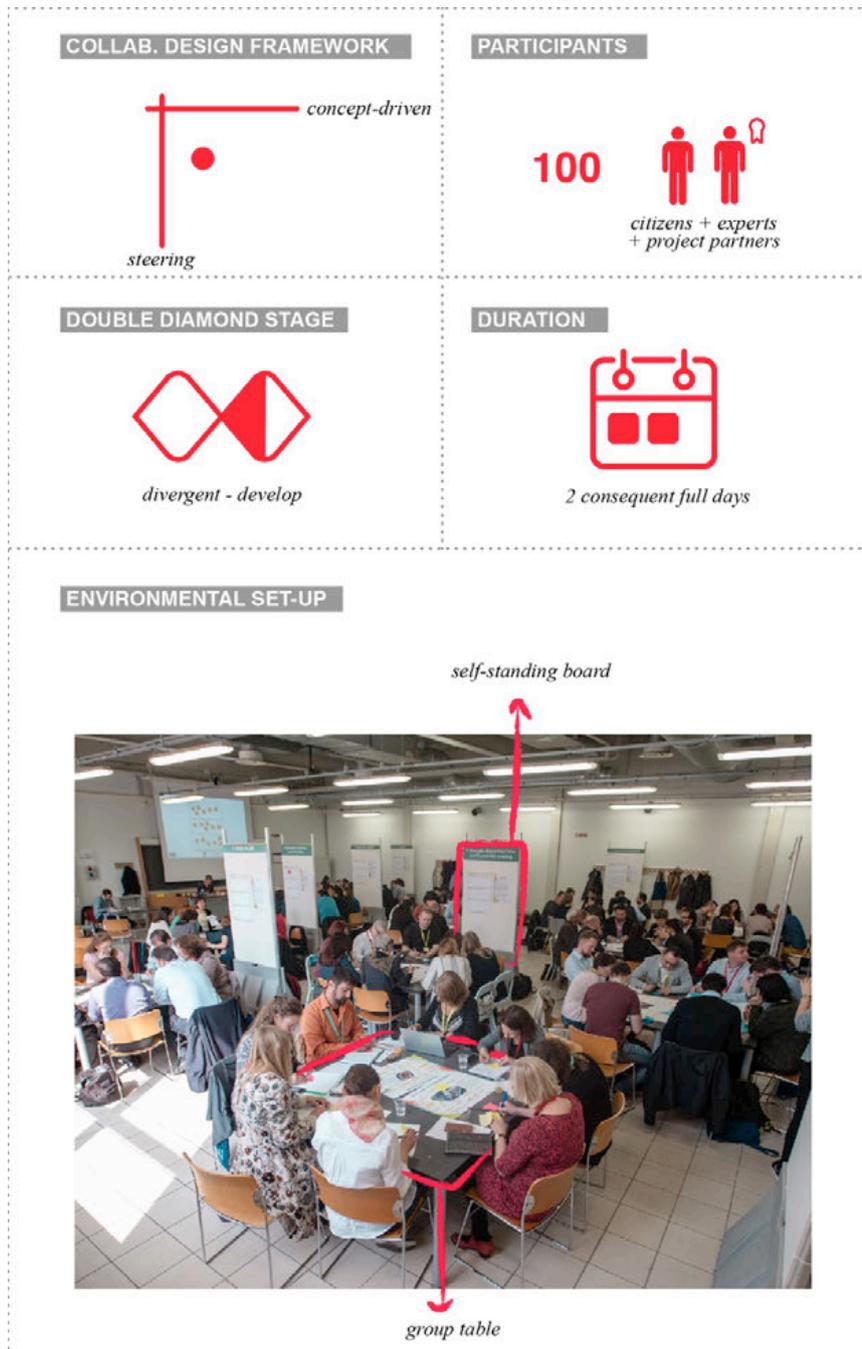


Fig. 2.6 – CIMULACT Co-creation Workshop / Lab Immagine POLIMI

2.1.5 CIMULACT Codesign Workshop

Title of the codesign activity: *CIMULACT codesign workshop* - Fourth consultation of the project – In-presence - National scope.

Aim: This session was aimed at *enriching, validating and prioritizing* the research programme scenarios co-created during the previous sessions.

Participants: *Experts. 38 designers in Italy.* For this consultation, a group of experts in design was co-opted: a mix of students, professionals and researchers from different areas of design (service design, interior design, interaction design, policy design) were recruited with the task to challenge the work done from a “design thinking” perspective applied to research scenarios. The assumption was that the designers’ ability of envision ideas and find creative solutions could have been beneficial to the project, adding concreteness to the scenarios.

Participants were organised into 5 groups with one designer part of the project team acting as a facilitator. The groups were formed beforehand taking into consideration the preferences expressed by the participant for certain scenarios, and attempting to keep them heterogeneous in terms of expertise, gender and age.

Style of guidance: *Steering.* Facilitators were expert designers with knowledge of the project and the specific contents. Most of them were part of the POLIMI DESIS Lab team working on CIMULACT, the others were trained on the content and process of the project. They actively contributed to the debate in the groups and brought contents to the discussion.

Design subject matter: *Concept-driven.* Input of the workshop were the research programme scenarios produced during the previous sessions.

Prior to the workshop, each CIMULACT partner selected a number of scenarios out of the 48 to work on. The POLIMI DESIS Lab selected the following:

- “Balanced work-life model”: work and personal life balanced in a satisfying way.
- “Empowered citizens”: a society that enables citizens to participate in the public life.
- “Design literacy and life skills for all”: hands-on education for all ages.

- “The bigger (cities) the better”: big cities to become more liveable for humans including less streets and cars, more collective spaces, urban agriculture and connected communities.
- “Learning for society”: a balance between the common good and the individual.

The goal for each group was to enrich or modify the scenarios according to the perspective of the participants and finally to rank them for priority and urgency.

Double Diamond stage: *Convergent – deliver.* This codesign activity had the aim of going deeper in the scenarios. For this reason, the process strived to converge and focus on specific directions instead of expanding possibilities. It corresponds to the “deliver” phase of the Double Diamond process, where the focus is on finding and defining solutions that work.

Environmental set-up: The workshop was held in a room of the Bovisa Campus of Politecnico di Milano. The tables for the groups were arranged near the walls, while a big common table was put in the centre, with all the materials for a prototyping phase.

Each group worked on a single scenario that was presented on a poster which displayed a visualisation with a brief description and a 3D representation. Each set was located next to the table of the group.

Duration: *Half a day.* From 2 am to 7 pm, 28 September 2016.

Description of the process: The workshop was conceived as a problem solving process, so to indulge the designer mindset. As such, the process took the participants through a concept generation up to the construction of physical prototypes, and then asks them to articulate the research directions emerging from the solutions.

2 subgroups were created inside each group: they worked the whole time on the same topic and with the same process, but with different information. The reason for this, was to observe how the two groups would interpret a same scenario, depending on the information provided. In reality, one subgroup got the complete description of the scenario information, while the other just a short description of it.

The process was organised into 5 steps:

- Framing the challenge (1);
- Focusing on the person affected by the challenge (2);
- Generating ideas on possible solutions to the challenge and prototyping them (3);

- Focusing on stakeholders (4);
- Defining research directions (5);

(1) The first step was familiarising with the contents. The participants were asked to think about the obstacles society would need to face today to achieve the situation presented by the scenario. For example, regarding the “Balanced work-life model” scenario, the designers formulated the challenge as follows: «How to transform the corporate culture so to promote work-life balance, personal development and caregiving to the family?» This was the design challenge for the subsequent phases of the workshop.

(2) During the second activity, participants were encouraged to focus on the people in society affected by the challenge and their specific needs, considering the context in which they live. In order to be as concrete as possible, they were asked to think about a person they knew personally and try to answer from their perspective.

(3) For the generative step, the designers had to collectively define an idea to address the challenge and build a solution around it. To complete this step, they were asked to build a rough prototype with materials such as papers and elements of woods, straws and beads. They could also use and transform the 3D models provided to visualise the scenario. This represented a crucial activity to give a “materialise” the ideas came out from the brainstorming and share them within the group. For example, the idea conceived by the group “Balanced work-life model” was a “Bank of Goals” consisting in a device allowing the employee to split activities into goals, setting a minimum time and quality to accomplish them, and a dedicated budget.

(4) Once the ideas were framed, each group was asked to clarify the main stakeholders involved, using an “Actors map”.

(5) The last stage required designers a to think backward and understand the research to be carried out to make their ideas become true. This step was tricky for the practitioners among the group, because it required a reverse thinking from solution to problems. For example, to achieve the scenario of a balanced work-life model the needed research was: exploring work organisation models impacting on wellbeing; researching on “changing behaviours” in companies; researching “best practices” of alternative working models.

Boundary objects - tools and prototypes: Prototypes of the scenarios were created with posters and 3D mock-ups.

3D mock-ups were the physical interpretations of the research scenarios. They had the crucial function of being the starting point for the generation and prototyping phase. In this sense, they represented a stimulus for the discussion and a physical object on which to intervene and interact with. Most of the groups, indeed, ended up with modifying the 3D models to build up their prototype instead of starting from zero. This suggests that they actually worked as enablers.

Toolkit: Specific tools were designed for the codesign session, reinterpreting conventional service design tools. For supporting the investigation of the people potentially affected by the challenge an adapted version of the “personas” was created: a profile characterised by the city where she lives, the community around, her job, the composition of the family and more. The tool was thought to direct the attention on the context around that person, which is essential when working on scenarios.

Brainwriting. This was a special kind of brainstorming, more focused and reflective than usual. A booklet was designed for being passed from hand to hand in the group. Each designer had to write – or draw - an idea, or a detail of it, getting inspired by the ideas already written by the others.

In this way, each idea was empowered and enriched several times, pushing people to consider the ideas of the others and build upon them.

Actors Map: a tool to understand the stakeholders involved in a scenario and their level of involvement. It helps codifying the level of involvement with concentric circles, where the closeness to the centre corresponds to higher levels of involvement. The final configuration of the map gave the general overview of the system of relations and displayed the level of complexity.

Final output: The final output of this session was a set of research questions and directions that were added to the initial research scenarios. They were put on a paper ladder to prioritise them.

Within each group, the results of the work of the 2 subgroups were not very different, despite the different amount of information they got in the beginning. Yet, in most of the cases, the 2 outputs were complementary answers to a same question.



Fig. 2.8 - CIMULACT Codesign Workshop / Lab Immagine POLIMI

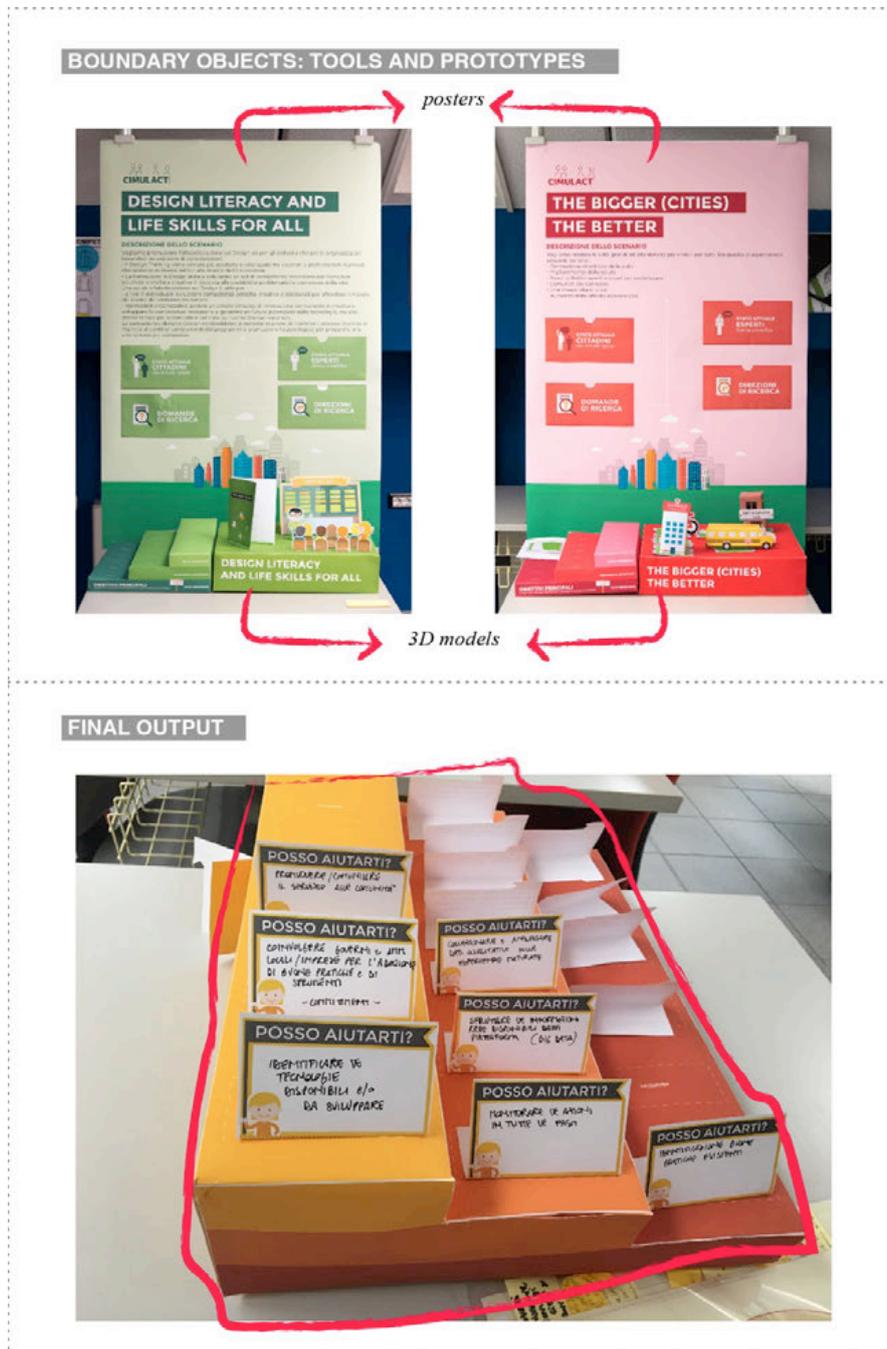


Fig. 2.9 - CIMULACT Codesign Workshop / POLIMI DESIS Lab

2.1.6 CIMULACT Caravan Process

By François Jégou and Christophe Gouache

Title of the codesign activity: *Caravan process*, an alternative workshop methodology piloted during CIMULACT in-presence enrichment phase. National scope.

Aim: The purpose of the Caravan process was to *contribute making stakeholders consultation more accessible* (and therefore used more often) and *more efficient* (tackling some of the critics of “big workshops” listed here below).

Large workshops are seen as the advanced way to do collaborative work mixing stakeholders, sectors and levels. The greater the number of participants, the more diverse and rich interactions are expected to be. The curve is more or less linear until it clashes with logistic issues: ensuring a balanced participation, avoiding the same “usual suspects” (Lee, 2003); frenetic rhythms limiting in-depth reflexion; workshop freaks, accustomed to participatory processes, who voice and push their own ideas by firing post-its (Gilman, 2016); maintaining a qualitative and informed moderation of each subgroups, betting that all efforts, energies and expertise will interact well during a short couple of hours; keeping energy and momentum for the whole workshop duration; illusion of diverse perspectives because mixed groups signed on the list of attendees; etc.

Furthermore, those big workshops are heavy “events” to organise as they require the design of a tight choreography to fit into the schedule and the recruitment of key and strategic stakeholders that are already booked for other workshops or meetings the same day.

Participants: *40 participants in total (including civil servants, researchers, civil society) in groups of 5-8 people.* The participants were different stakeholders involved either because the topics of the scenarios are the focus of their daily job (DG 06 Direction Générale Opérationnelle de l'Économie, de l'Emploi et de la Recherche, local administration in charge of research policies at regional level; ULB Université Libre de Bruxelles Category, department focussing sustainable ways of living; MAD Mode and Design Centre - Mad in Situ Category: business incubator) or because they face them in the management of their institutions (BRULOCALIS Association of the cities and communes of the Brussels Capital Region; STAD GENT Ghent city administration, department of Policy participation; WBDM Wallonie-Bruxelles Design Mode trading

support services; WALLONIE DESIGN Promotion design centre of the Wallonia region).

Style of guidance: *Steering, designing an infrastructure-based guidance beyond a delocalized World Café.* At first sight the Caravan process could be classified as a “facilitation process”. Compared to well-known facilitation processes like the World Café, the Caravan could be seen as a “delocalized and itinerant World Café”, since at each step there is an active listening process of another group of stakeholders enriching what was done by the previous group.

The style of guidance is not only the way the interaction between the participants is organised, but also how the infrastructure, the setting of the interaction, is designed. The purpose of the Caravan was organising a large stakeholder consultation process avoiding the disadvantages of large unique workshops described above. The Caravan style of guidance taps into more structural aspects of the interaction: who is effectively taking part to the interaction beyond the workshop usual suspects (Gilman, 2016); how can we take into account the participating stakeholders' corporate spirit beyond single representatives; how can we get a real mutual exchange process and not a one-way contribution; etc.

This particular setting should therefore be understood as thought-provoking posture designed on purpose to provide a more appropriate stakeholders' interaction to envision the future. For these reasons the Caravan should be placed on the side of the “steering” polarity.

Design subject matter: *Concept-driven.* The Caravan process belongs to the polarity concept-driven, as it is part of the CIMULACT enrichment process. Research programme scenarios have been elaborated during the previous step of Co-creation workshop in Milano and the aim of the various enrichment processes throughout Europe was to deepen, enrich and test the robustness of the scenarios. The Caravan should therefore be placed on the side of the “concept-driven” polarity. In the CIMULACT research project, the Caravan results in creating, envisioning and developing of options.

It is to be noted that the same Caravan process has been used also in other projects such as the initial stakeholder consultation step for the codesign of a policy innovation lab in the Wallonia Region (Jégou, 2018). The process was meant to be a round of consultations of potential interlocutors of the future lab in order to infer from their respective experiences and expectations.

Double Diamond stage: *Convergent - deliver.* Within the CIMULACT enrichment process, the Caravan was clearly aiming at encouraging convergence on the research programme scenarios discussed. The sedimentation of contributions from the stakeholders visited by the Caravan has a character of “additive convergence”: the convergence was not understood as simple synthesis, but as an “enriched” or additive synthesis where contributors are bouncing on each other, adding elements and not only keeping what is common to all of them.

Environmental set up: In the specific case of the Caravan, the environment hosting the workshops was different at each step. In general institutions receiving the Caravan proposed to use a meeting room for the 2 hours of interaction. The workshop material deploying in the different rooms and on the table was intended both to transfigure the place (disruption for the participants accustomed to their meeting room) and to unify the process (all different stops had a similar environmental set up). See more on set up in “Boundary objects”.

Duration: The Caravan travelled for one entire week across Belgium, with an average of 2 stops per day. In each of these stops the workshop session duration was 2 hours with about 20 minutes of installation and packing of the workshop. It is to be noted that these 2 moments before and after the real interaction session were important to set the scene between participants and as a checkout process.

Description of the process: The “caravan” is a mobile and itinerant codesign tool which travels for a certain period of time (for example over a period of one week) and stops between 2 to 4 hours in different places to meet stakeholders (practitioners, civil servants, researchers, policy makers, etc). In each stop participants enrich the ideas and deepen content already created in the previous stops. It enables, for example, cumulative mapping of ideas, arguments, knowledge and/or opinions.

Meeting stakeholders at their place...

Rather than struggling with inviting stakeholders all in the same place at the same time, the principle of the Caravan was to pay them a visit, to interact with them directly at their place, in their own context and to link stakeholders groups that hardly interact with each other. By settling at people’s place the caravan reduces the participation burden for the stakeholders as they do not have to spend time and efforts to travel to the workshop.

Involving stakeholders in the recruitment...

The CIMULACT caravan programme aimed at visiting a diversity of places at stake with the research programmes financed by the European Commission. In each place, the local organiser of the meeting had the task of inviting colleagues, partners that would be relevant to the European research programme scenarios. The CIMULACT caravan team controlled the panel of visited institutions and the balance of invited participants to ensure relevance. In parallel a degree of freedom was left to local hosts to invite the participants they think would best contribute to the process and comply with the project's selection criteria.

Communication material (CIMULACT brochure; sample of scenarios to be enriched; etc.) was distributed to each local organiser to involve colleagues and external collaborators. In particular, a presentation of the Caravan approach was made to show advantages of hosting it from the users point of view and how participating could benefit them (i.e. hosting a creative workshop and experiencing new interaction tools; engaging colleagues and partners into a European participative process; involving hosts' stakeholders reluctant to bottom-up policy making, etc.).

Organise a multi-points sedimentation process...

The arrival of the caravan (in this case a workshop-trolley that circulates within the building through elevators and corridors to deliver the workshop material) worked as an ice-breaker. Once in the room, participants were asked to help with unpacking and installing the workshop material.

Different workshop "booths" were created with unfolding panels to display the scenarios and support the enrichment process. Each "enrichment booth" was made of 6 different vertical panels: a central one explaining the research programme to be discussed and five others introducing each one a question that participants needed to answer: what challenge does this research scenario address? Do you think it is an important challenge to address? What are the different ways this challenge could be approached? Who do you think should be involved in tackling this issue? What should it reach in terms of impact?

Participants received "enrichment cards" tagged with the logo of their own institution. They answer the questions on those cards and place them on the panels. They may answer the questions freely in no strict order. All questions need to be covered.

Thanks to the caravan process, the answers to the questions were developed building on the previous ones, one stop after the other, and therefore got enriched, rather than being the repetition of what already said.

The cards were printed with the logos of the hosting institutions to clearly track who said what and remained pinned on the panels along the whole caravan process so that, at each new stop, participants could see what was done before (except for the first stop where there is no enrichment yet).

Participants started with a research scenario at their choice. Then they rotated twice and enriched the 2 other research scenarios. This sequence of collective conversations led to the enrichment of the research scenarios by the group. They have been, in the end, reviewed several times and traces of the enrichments were kept visible all along the process.

Boundary objects - tools and prototypes

A workshop delivery scenography. The Caravan was named as such because it was initially planned to be a real caravan stopping in front of each visited institution. This option seemed at first sight an engaging proposal, but a real caravan was not without making problems within the CIMULACT enrichment process: participants sited; confined environment; no possibilities to expand outside in the winter time; etc.).

The concept of a “workshop delivery service”, which is to say an hypothetical service that would deliver all the conditions and material to transform a traditional meeting room into a proper co-creation place, served the aim for which the Caravan was invented: an immersion and a transfiguration of the hosting institutions routines.

The “workshop delivery service” concept has been materialised into a “workshop trolley” equipped with a sign to brand the whole process as a CIMULACT service with material and staff; a screen to display an introduction and briefing video about CIMULACT; a storage for all the workshop material to be deployed in the room; etc.

Final output: At the end of the process, a summary of the 6 enriched research scenarios was provided. The inputs from the visited stakeholders were combined with the help of the 3 moderators, focussing the 5 common questions to all CIMULACT enrichment processes conducted in parallel across Europe. Beyond the final outputs of the Caravan within the CIMULACT process the benefit of this original approach can be discussed.

Immersion in stakeholders' contexts...

The advantage of meeting participants at their own working place is that they are more ready to take part in codesign activities. They maximise the time for the participation with no extra time or hassle with commuting to a particular meeting place.

Being “in context” is, also, a good way to connect the interaction with the stakeholders' habits and motivations. This takes better into account the stakeholders' corporate spirit and their diversities, rather than flattening differences by putting everybody in the same room. It results in an interaction with the institution as a whole rather than with one person that is supposed to represent it.

The disadvantage and risk are that people may be interrupted by other work matters, colleagues passing by, phone ringing in the office, etc. Particular attention should be paid to secure the dedication of the hosting participants to the full session in order to avoid this kind of disruptions.

Getting a real mutual exchange process and not a one-way contribution

Beyond usual motivations to participate to a large workshop (a networking opportunity; a break in the business as usual; an intellectually nourishing activity, a promise of a feedback; etc.) the Caravan allows to experiment with a new methodology delivered at participants' premises with an increased opportunity for a debate.

For the hosts it is also an opportunity for a face to face interaction between different groups of stakeholders (policymakers, researchers, civil society, etc.) of a same country that rarely have the opportunity to meet. The caravan helps to connect places that are not usually in direct contact with each other.

An inclusive process

The Caravan method “touched” diverse groups of participants ranging from policymakers (city or regional levels) to researchers (universities) to wider stakeholders (public institutions like Art & Design schools, NGOs, etc.). The Caravan visited each group once in order to provide everyone with the same opportunity to contribute. It stopped in 8 places visiting the 3 regions: Flanders with the City of Ghent, Wallonia with the City of Liege, and finally the Brussels Capital Region.

During each visit, the criteria on who to include in the sessions were discussed with the host to ensure that the research requirement of diversity would be met, although some freedom was also left to the host organisations. Alongside the official spokespeople, they were encouraged to invite “unusual suspects”, not often heard (different hierarchical levels, different departments, internal staff and external interlocutors, etc.). This ensures a more robust representativeness of the sample.

Seeking for more equity in the deliberation

Institutions were visited once by the Caravan and the exact same process was followed in all cases. At each stop, a presentation of the whole CIMULACT process and of the specific Caravan process was given in to all participants to ensure everyone had an equivalent understanding. Facilitators also outlined some of the contributions from previous stops to guarantee a certain level of familiarisation of the information.

Stopping the caravan at the premises of an organisation was a way to counter the risk that in large workshops a few participants take over the conversation. In local stops everyone has their own turn to enrich the research scenarios, and it avoids someone confiscating the conversation.

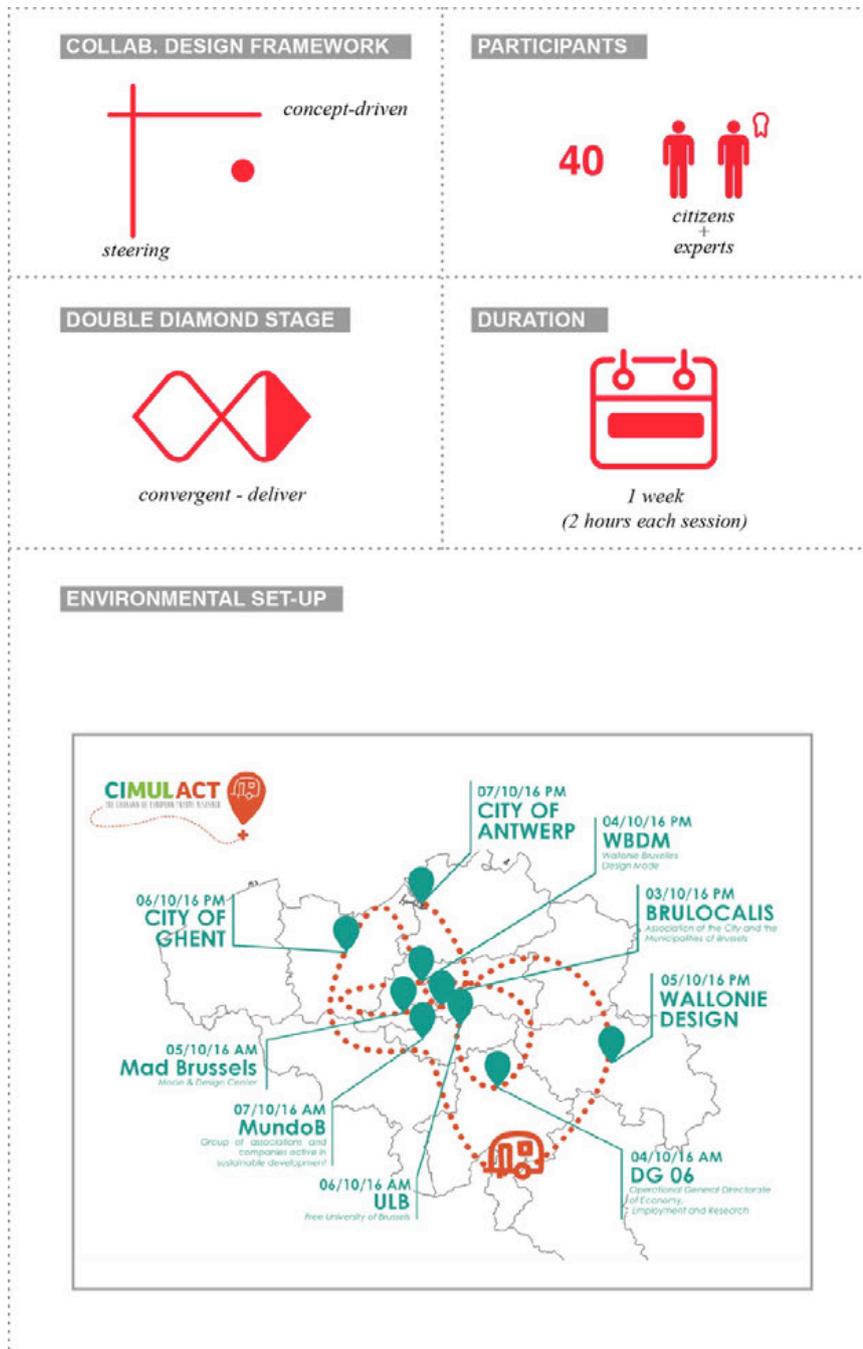
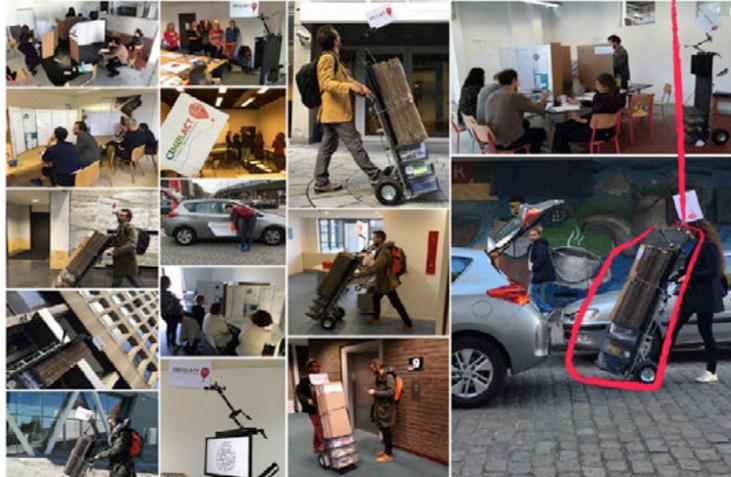


Fig. 2.10 - CIMULACT Caravan Process / SDS

BOUNDARY OBJECTS: TOOLS AND PROTOTYPES

workshop delivery scenography



FINAL OUTPUT

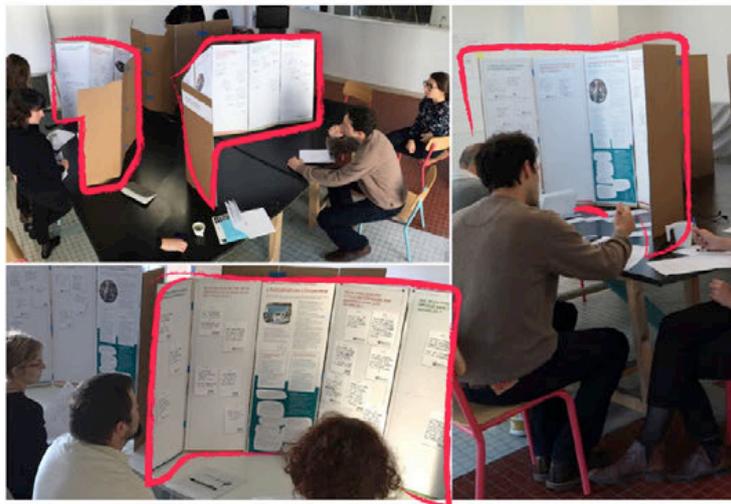


Fig. 2.11 – CIMULACT Caravan Process / SDS

2.1.7 CIMULACT Online Consultation

Title of the codesign activity: *CIMULACT online consultation* – Fifth consultation of the project – Online - International scope.

Aim: The goal of this session was *to obtain feedback on the scenarios in terms of criticisms, validation and prioritization* by as many people as possible around Europe.

Participants: *General public. Not addressed to a specific target. 3458 participants in total.* This consultation addressed the general public and intended to reach as many people as possible, in order to gain a statistical significance of the feedbacks collected.

Every country was supposed to reach a target of 300 respondents, but not all countries managed to do so, including Italy, that obtained only 109 responses.

In order to attract participants to the survey, POLIMI DESIS Lab used social media channels, sent invitation via emails or private messages, and distributed the survey via the academic network (newsletter of the research department of the University, call to action during lectures and more).

The level of expertise in a topic was established with the opening question of the online survey by asking respondents whether they felt they were experts or not in the field being evaluated. This simple method allowed to identify the contributions of experts, while preserving anonymity.

Style of guidance: *Facilitating.* As this was an online consultation it was not mediated by a facilitator and all the explanatory work was done by the platform itself. Therefore, there was no guidance or bias towards one or another direction. The contents were presented in the most neutral way possible, with equal visibility of all options.

Design subject matter: *Concept-driven.* The subject matter of the workshop were the research programme scenarios as developed so far.

The research programme scenarios were presented as “proposed research programmes”, to avoid potential confusions concerning the term “scenario”, which might have misled the respondents.

The whole contents were revisited and adapted by the project partners to make them more accessible and appropriate for an online consultation.

However, the input for the workshop were already defined and detailed concepts, about which participants were asked to agree or not and give a relevance ranking.

Double Diamond stage: *Divergent – develop*. Even if the content was already detailed and rich, the purpose wasn't to select or converge towards a direction, but instead, to collect feedbacks and possible integrations to the research programmes.

Environmental set-up: The environment was digital. To access the survey, the participants visited the website of the project and were directed to the survey: here they could access the questions by choosing their country and language and, therefore, contributing to the number of respondents of that country.

Before launching the platform, the project partners translated all the contents, in order to make them accessible and understandable by a wider public. Furthermore, the language used for the research programmes was simplified as much as possible.

Duration: *Approximately 2 months*. Between August 23rd and October 20th, 2016. The survey was spread throughout the 2 months, with different intensity in every country due to summer vacations. The time required to respond to the survey was around 20 minutes, which resulted to be too long for the users.

Description of the process: The consultation format was a modified online Delphi template (Dubbed Dynamic Argumentative Delphi, DAD) and was designed and implemented by the project partner Institutul de Prospectiva. The main idea behind DAD is to enable online Delphi consultations with *a large number of participants* (in the hundreds or even thousands), while retaining the interactive argumentative (justification-based) nature of the traditional Delphi (Gheorghiu, Andreescu, and Curaj, 2014).

Before starting the questionnaire, users needed to register. The registration process requested an email address which was then verified and finally users could access the survey from a link received by email. This process represented the first hurdle for the survey, because some users gave up even before accessing the questionnaire.

- (1) Once entered, participants were asked to choose the 2 social needs they found most relevant among the 12 proposed.

- (2) For each social need, the platform displayed 8 related research programmes and their respective research questions. Respondents were asked to read the research programmes and then to choose up to 2 most relevant research questions for the research programme. Respondents could choose among the questions proposed or add new ones if they preferred.
- (3) Then, users were asked to rate the research programmes on a scale from 1 to 5, according to how relevant they considered them for society. Combined all the evaluations produced the final ranking of the research programmes. The research questions that were added by respondents represented the final enrichment of the contents.

Despite the attempt to make the process and the content as simple as possible, the result was perceived as too complex, long and challenging for an online survey, especially when addressed to the general public. In fact, the academic community had the most positive reaction to the questionnaire.

Boundary objects - tools and prototypes: The boundary object used for the consultation was the online platform.

The platform presented various types of contents. The first page guided the user in the choice of the needs. The following pages showed the research programmes represented as a picture and a descriptive text. Next to the programmes were displayed the research questions.

Final output: The final results were elaborated by Institutul de Prospectiva and the Technology Centre Of The Czech Academy Of Sciences (Hebakova *et al.*, 2017), which processed the data through different variables and focuses. The most significant finding was the ranking of the research programmes in terms of priority. The most voted topics all related to sustainability in a broad sense. The research programme that was ranked first concerned a society where humankind and nature coexist in a relationship of mutual enrichment, the second one encouraged education focused on an ecological future and the third one advocated research on quality and sustainable food.

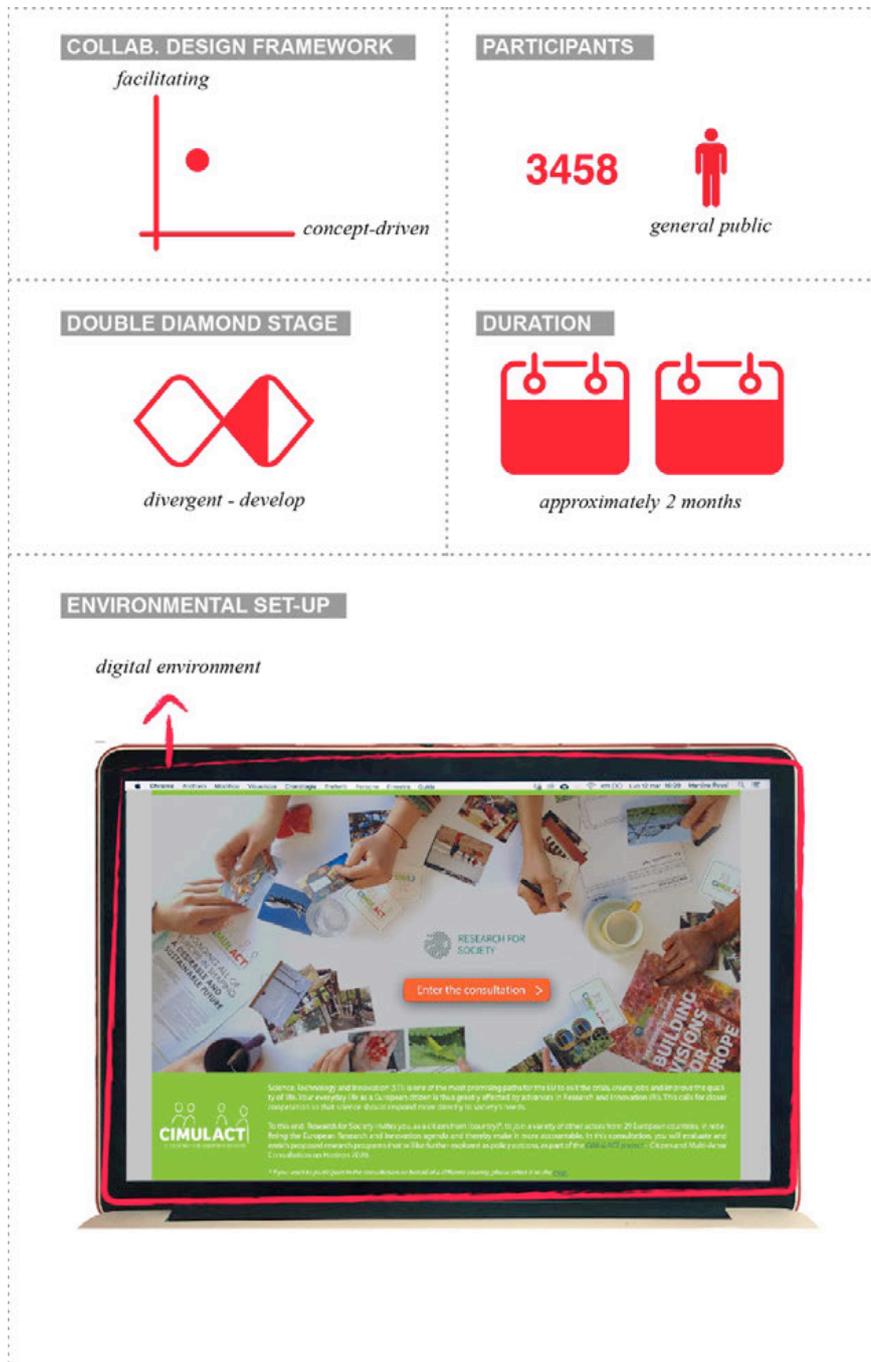
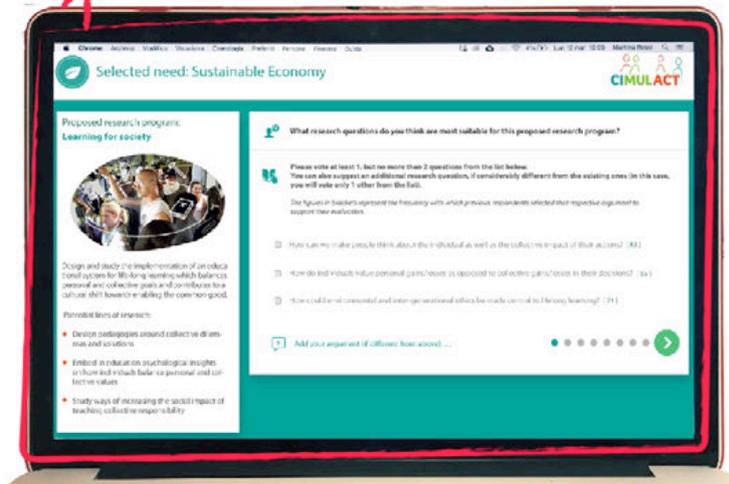


Fig. 2.12 – CIMULACT Online Consultation

BOUNDARY OBJECTS: TOOLS AND PROTOTYPES

research programmes



FINAL OUTPUT

Rank	Need	Programme Title	Nr. of resp.	Avg. imp.	Dispersion
1	Harmony with Nature	Top trending: at one with nature	590	4.28	0.76
2	Harmony with Nature	Ecological future education	590	4.20	0.83
3	Sustainable Food	Good food research	439	4.18	0.79
4	Sustainable Energy	Beyond energy efficiency: reduce consumption through structural	491	4.16	0.84
5	Holistic Health	Access to equal and holistic health services and resources for all	570	4.11	0.95
6	Sustainable Energy	Enabling a market for energy prosumers	491	4.11	0.88
7	Holistic Health	Quantitative person-centred health	570	4.10	0.92
8	Holistic Health	Finding a balance in a fast-paced life	570	4.05	0.91
9	Sustainable Food	Responsible use of land	439	4.05	0.82
10	Strengths-Based	Rethinking (the new) "job market needs"	679	4.08	0.91
11	Strengths-Based	Educational ecosystem as a driver of social innovation and local	679	4.08	0.79
12	Life Long Processes	Deconstruction of age	262	4.05	0.82
13	Sustainable Economy	Consume less, enjoy more	1073	4.05	0.97
14	Sustainable Energy	Smart energy governance	491	4.05	0.93
15	Equality	Balanced work life model	870	4.04	0.90
16	Sustainable Food	Good quality food for all	439	4.03	0.96
17	Sustainable Economy	Production awareness	1073	4.03	0.92
18	Citizenship	Empowered citizens	660	4.00	0.90
19	Unity and Cohesion	Alternative economic model	461	3.99	1.12
20	Strengths-Based	Design literacy and life skills for all	679	3.99	0.90
21	Personal Development	(Business) Models for balancing time	644	3.99	0.97
22	Sustainable Economy	From Wall Street to Main Street	1073	3.99	1.02
23	Life Long Processes	Health empowerment through "Everyone's science"	262	3.98	1.09
24	Green Habitats	Moving together (more collective transports)	293	3.96	0.95
25	Citizenship	The grass is greener below	644	3.84	0.84

Fig. 2.13 – CIMULACT Online Consultation

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2.2 Creative Citizens

This chapter discusses “Creative Citizens”¹, a project originated within the doctoral programme of Daniela Selloni at the Department of Design of Politecnico di Milano, in the POLIMI DESIS Lab.

Creative Citizens was an intensive codesign experimentation to develop a set of solutions for improving the daily life of a Milanese neighbourhood, together with a group of citizens and stakeholders from the public and third sector. It delivered 6 public-interest services and a set of approaches, methods and tools for replicating the experimentation.

This chapter starts describing the context and the main features of the project and then it focuses on the 3 main types of codesign sessions carried out: warm-up, generative and prototyping, which were repeated several times to tackle the different issues emerged from the neighbourhood.

¹“Creative Citizens” was part of the participatory action research conducted by the author Daniela Selloni in the XXVII Cycle of the Doctoral Programme in Design within the Department of Design of Politecnico di Milano. The research was funded by “Borsa Fondo Giovani” of the Lombardy region.

Many of the notions presented in this chapter build upon her PhD research and, above all, on her more recent book “Codesign For Public-Interest Services” published by Springer International in 2017 within the Research for Development Series.

2.2.1 Creative Citizens at a Glance

The research project Creative Citizens consisted of a set of codesign experiments conducted within a community of residents located around Porta Romana, a Milanese neighbourhood in the area of Municipio 4.

A programme of 2-hour weekly meetings was implemented for about 5 months in the spring of 2013: it took place in a former farmhouse, Cascina Cuccagna, which represents a symbol of Milanese activism, since it was recovered from abandon and decay by a group of engaged residents.

The main idea of Creative Citizens was to bring the expertise of service design researchers to the citizens, creating a laboratory of solutions for daily life, improving existing services and codesigning new ones, acting as a “semi-public office for service design” (Selloni, 2017). Additionally, the project was endorsed by the Local Government of the Municipio 4, in connection with the Municipality of Milan.

Creative Citizens may be considered a “massive codesign project” because, despite not consulting a big number of people, it produced a large and varied amount of data that was crucial to feed an extensive reflection on codesign methods and tools.

Prior to the intensive programme of weekly meetings, a preliminary year-long phase of connection with the neighbourhood prepared the ground for the experimentation. In fact, from 2010, another POLIMI DESIS Lab’s research project had a focus on that area: it was “Feeding Milan – Energy for change” (cfr. 2.3) that was experimenting with short food chain solutions connecting the Agricultural Park South of Milan (bordering Municipio 4) to the “Earth Market”, the first farmers’ market on public land in the city of Milan, situated in the heart of the neighbourhood.

As a consequence, the first exploratory activities of Creative Citizens were focussed around the theme of food, a subject with a strong social and convivial appeal, able to bring people together. As such, it worked as a “boundary topic”, building upon the notion of “boundary object” elaborated by Star (1989): a specific and identifiable topic that can bind a community, arouse interest and spark a conversation. Practical things and everyday issues are good examples of “boundary topics”, and food is perceived as one of the crucial subjects in people’s life, dealing with shopping, cooking and also health and wellbeing.

This first phase was crucial in preparing the ground for the Creative Citizens experimentation. Researchers spent a considerable amount of time immersed in the context, not only doing participant observation but also actually taking part in the activities of the neighbourhood and adopting a

community centred design approach (Meroni, 2008). The result was the creation of a small community of people ready to participate in a more intensive programme: a series of creative sessions in which everyone was able to become a designer, at least for a few months, while having fun.

In addition to food, which was the first emerging topic, other 3 themes appeared as relevant: sharing networks, administrative advice and cultural activities, all of which were connected to simple daily tasks and to existing services and places, such as time banks, purchasing groups, local shops, markets and fairs.

For instance, the topic connected to the sharing of skills and objects emerged thanks to the involvement of the Cuccagna Time Bank, which had already tried to develop a “task-sharing system” within the neighbourhood.

The topic of culture was felt to be essential in an area that suffered from a lack of cultural offering (the renovation of Cascina Cuccagna was one attempt to revitalise local cultural life). Besides this, Municipio 4 is outside the traditional tourist routes in Milan, therefore, the residents wanted to work on innovative tourism proposals. In this perspective, within the Creative Citizens, the topic of culture was intended as a trigger for zero-mile tourism.

Moreover, the inclusion of administrative advice to deal with bureaucracy as one of the main topics was due to the fact that, in Italy, it is perceived as one of the most pressing issues in people’s daily lives. The possibility of using codesign to provide improvements in this field was therefore viewed as very promising.

The 4 service areas were organized into 4 thematic cycles, each of them consisting of 3 meetings, which can be seen as the 3 stages of a progressive path. Summarising, we can identify 3 types of codesign sessions:

- *A warm-up session*: an initial meeting to familiarise participants with the selected topic by presenting good practices from all over the world. It aimed at inspiring people and stimulating visions of a possible daily life.
- *A generative session*: in which participants combined the most promising elements of the case studies with new ideas emerging from a collective brainstorming, bringing together citizens’ desires and good practice insights. Aim of this activity was to create advanced service concepts.

- A *prototyping session*: with the objective to move from an ideal service to a real one, identifying the resources to involve in its development and inviting strategic players already active in the neighbourhood. This prototyping session made use of physical mock-ups to represent services suitable for the area.

The following table offers a comprehensive overview of the different activities within the 4 thematic cycles and briefly presents the resulting services.

Tab.2.1 – An overview of the different codesign sessions within the 4 thematic cycles in the Creative Citizens project

Thematic Cycle 1	Services for exchanging goods and skills
<i>1.Warm-up session</i>	Exploration of existing micro-economies created by local communities in the field of exchange, rental and sale of goods, tasks and skills.
<i>2.Generative session</i>	Combination of previous insights and concept definitions, setting up service elements: services offered, technologies and tools, interactions, transaction typologies.
<i>3.Prototyping session</i>	2 different services defined by using 2 types of prototype: a “fake” bookcase to exchange objects and a of “bulletin board” to exchange tasks and skills.
<i>Results:</i>	“Augmented Time Bank”: a system to exchange skills and small tasks, within both condominium blocks and the neighbourhood, starting from Cuccagna Time Bank. “Objects Library”: a physical and digital space for bartering, borrowing, gifting, and renting goods in the neighbourhood.
Thematic Cycle 2	Legal and administrative services
<i>1.Warm-up session</i>	Conversation with Rossella, a lawyer founder of a Milanese Legal Desk. Investigation of existing services of administrative advice, both digital and face-to-face.
<i>2.Generative session</i>	Combination of previous insights and concept definitions, setting up service elements: services offered, technologies and tools, interactions, transaction typologies.
<i>3.Prototyping session</i>	A multi-service advice desk is defined by using 2 main prototypes: a “fake” front office showing the offering; a scale model of the physical office and its service areas.

<i>Results:</i>	“Citizens Help Desk”: a service for orientation and assistance with bureaucracy, in various domains: legal, fiscal and architectural/building advice.
Thematic cycle 3	Food services
<i>1. Warm-up session</i>	Overview on food-related services and events, presentation of the case studies in 2 main clusters: shopping and eating.
<i>2. Generative session</i>	Combination of previous insights and concept definitions, setting up service elements: services offered, technologies and tools, interactions, transaction typologies.
<i>3. Prototyping session</i>	2 different food networks are defined by using these prototypes: a paper-cut laptop for testing a digital platform and a map of Milan to discuss possible logistic paths.
<i>Results:</i>	“Facecook”: a neighbourhood food network connecting restaurants, markets, shops and local residents. “Local Distribution System”: an alternative distribution network to connect Municipio 4 with the Agricultural Park South, based on the principles of disintermediation and participated logistics.
Thematic cycle 4	Cultural services
<i>1. Warm-up session</i>	Investigation of good practices from the cultural field, divided into 3 main clusters: zero mile tourism, public art, local initiatives.
<i>2. Generative session</i>	Combination of previous insights and concept definitions, setting up service elements: services offered, technologies and tools, interactions, transaction typologies.
<i>3. Prototyping session</i>	A service of zero-mile tourism defined by using 2 prototypes: a travel agency board mock up, offering unconventional urban tours, and an interactive map of Municipio 4.
<i>Results:</i>	“Municipio 4 Ciceros”: places in Municipio 4 explained by a citizen-guide, organizing tours to discover forgotten places.

In this book, we present and discuss clusters of activities, created according to a likeness of aim, approach and tools. Hence, in 3 separate paragraphs, we illustrate the 3 main kinds of codesign sessions, highlighting common elements and bringing specific examples where necessary.

The final result of Creative Citizens was a collection of 6 everyday services codesigned with the active participation of local people. Each service is now at a different stage of development, depending on the opportunities found in the neighbourhood and in the network of institutions and stakeholders. Besides these results and after 5 years, it is important to highlight that Creative Citizens was a pioneer codesign activity that left to the city a legacy in terms of process and experience, which inspired subsequent experimentations and policies.

2.2.2 Creative Citizens Warm-up Session

Title of the codesign activity: *Warm-up session* (4 sessions for the 4 areas of Creative Citizens: exchanging goods and skills, legal and administrative advice, food and culture). National scope.

Aim: To *familiarise* people with a set of topics by presenting good practices from all over the world. It aimed to *inspire* and offer visions of possible new ways of living, challenging behaviours and conventions.

Participants: *Citizens. Around 20 participants each session.*

Participants of the warm-up sessions, as for the whole Creative Citizens project, were a small group of active citizens, engaged during the previous period of immersion in the context. They regularly attended almost all the activities.

Within this group of residents, some very committed people represented the “hard-core” of the 30 Creative Citizens taking part in the experimentation: to mention a few, Daniela, Massimo, Stefano, Elisa and Inge believed in the importance of changing things, starting from their own daily life. Very different in terms of nationality, age, income, political views and type of employment, they shared a vision about a collaborative neighbourhood and a new way of considering public goods and services.

Furthermore, another group of citizens who could be described as “interested” in some of the themes without showing high commitment participated in the sessions with a constructive and positive attitude towards the activities.

Finally, another group of about 10 citizens, we defined “passersby”, only attended a few sessions. These participants, visiting Cascina Cuccagna to enjoy the garden or the bar and, chanced upon a Creative Citizens meeting and decided to join the session (or more than one). Hence, some

people were “thematic participants”, interested in specific issues and not in the whole experience.

Style of guidance: *Steering*. Each session of Creative Citizens was guided by the principal investigator of the project, who adopted a thought-provoking posture. The designer guided participants by envisioning promising ways of doing things and focusing on some original aspects or the opportunities opened by the 4 selected topics. The main purpose was to stimulate the citizens’ capability to shift from the status-quo of some services to what their future could be, by sharing inputs from good practices from all over the world and using them to feed the conversation.

Design subject matter: *Topic-driven*. The warm-up sessions were “topic-driven” and referred to a set of specific thematic areas to be tackled through the project. As mentioned, these topics originated directly from the context after a long relationship with Municipio 4.

In particular, a specificity of the Creative Citizens experimentation was presenting the topics as service opportunities for innovation: services to provide cultural facilities; to guarantee access to fresh and local food; to solve bureaucratic problems. This “escamotage” was important because it helped to identify areas to work on and the emergence of topics to tackle.

Double Diamond stage: *Divergent - discover*. The warm-up sessions were thought to inspire people, by presenting a variety of good practices from all over the world. These meetings were aimed at diverging thinking and expanding possibilities: it is in the “discover” phase of the Double Diamond process, an exploratory phase to engage people and to build a “public imagination”, amplifying individual interests into public interests (Selloni, 2017).

Environmental set up: A large enough room to accommodate 30 people, i.e. a room in Cascina Cuccagna equipped with a big central table (generally composed of a set of smaller tables), chairs, a paper blackboard, empty walls to pin posters and to project videos and images.

Duration: Each codesign session in the Creative Citizens programme took 2 hours, from 7 pm to 9 pm. The warm-up meetings took place on the Thursdays in March 2013.

Description of the process: The process of this codesign activity had 3 main phases:

- presentation of case studies (1);
- voting session to highlight strengths and weaknesses (2);
- selection and clustering of the most interesting characteristics emerged from the cases (3).

All warm-up sessions started with a showcase of good practices from across the world, with the aim of identifying the key features of future services that could have replicated in Municipio 4 and in the city of Milan.

For example, the warm-up session for the topic “services for sharing goods and skills” started with an overview of the sharing economy, and explored existing services ranging from start-ups producing revenues (such as AirBnb and Task Rabbit) to micro-economies created by local communities, based on barter and gifting (such as the Street Bank).

A showcase of good practices of food shopping and eating was, instead, organised in the warm-up session for the food systems. Specific relevance was given to bottom-up practices.

The same happened for the warm-up session about cultural services, in which case studies were organised into 3 macro-clusters: “zero-mile tourism”, “public art projects”, and “local and diffused initiatives”.

It is important to highlight that a specific “design intention” informed the way in which case studies were selected and clustered: it was the driving vision of Municipio 4 as a fertile place for social innovations. That is why the style of guidance was “steering” rather than “facilitating”.

The initial showcase was followed by a voting session that stimulated a discussion about strengths and weaknesses of the services proposed, focusing in particular on the different levels of citizens’ collaboration within each activity.

After this evaluation stage, during a short codesign session, the most promising characteristics of the selected cases were identified and listed: this activity aimed at connecting the lessons learned from the good practices to the daily life in the neighbourhood. Concurrently, problems were turned into opportunities and the group was encouraged to think not only to needs, but also to wishes to address with the projects.

It must be pointed out the importance that this kind of codesign session ends up with an identification of positive elements from the practices, and their link with people’s dreams and desires: in fact this is a “designerly” way to inspire people, turning complaints and comments into constructive proposals and actual “design concepts”.

Boundary objects - tools and prototypes: The most important boundary object used in the warm-up sessions was a collection of “good practices boards”: when entering the room people were impressed by the massive presence of these coloured boards populating the walls.

The effect was like entering a “room of new possibilities”, an experimental space in which new things were imaginable. They helped to begin the conversation between participants, by triggering and revealing unexpected ways of doing things.

The “good practices boards” were used to show and explain a selection of national and international case studies by adopting the same template, that is a poster - identity card. Each board provided a brief description of the case with: title, short definition, key-question (the reason-why for using the service), offering (what is the proposition), how it works (how to use the service), strength (what is the most interesting and promising feature), technology, benefits (what are the advantages for the user), promoter (who is promoting and managing the service).

“Evaluation notes” were provided to the participants to facilitate the conversation: a set of stickers for like/ dislike, to be stuck on the case studies boards in order to rate their interest.

The “polarity map” served to support the discussion on the good practices: a graphs showing the intersection of two axes (one about problems – opportunities, the other about needs – wishes) generating 4 different areas to be commented by the citizens. This tool was useful to support the final part of the session and to prepare the following meeting.

Final output: All the warm-up sessions generated a number of desirable “service features” organised into different clusters.

The polarity map and a set of post-it were used to sum-up and visualise the clusters: this map worked as the final “deliverable” of the codesign session, a basis to start the subsequent generative activities. Here, the role of the designer was crucial to support people in “imagining and considering options beyond the world as it is” and in transforming their desires into a set of possible services for the neighbourhood.

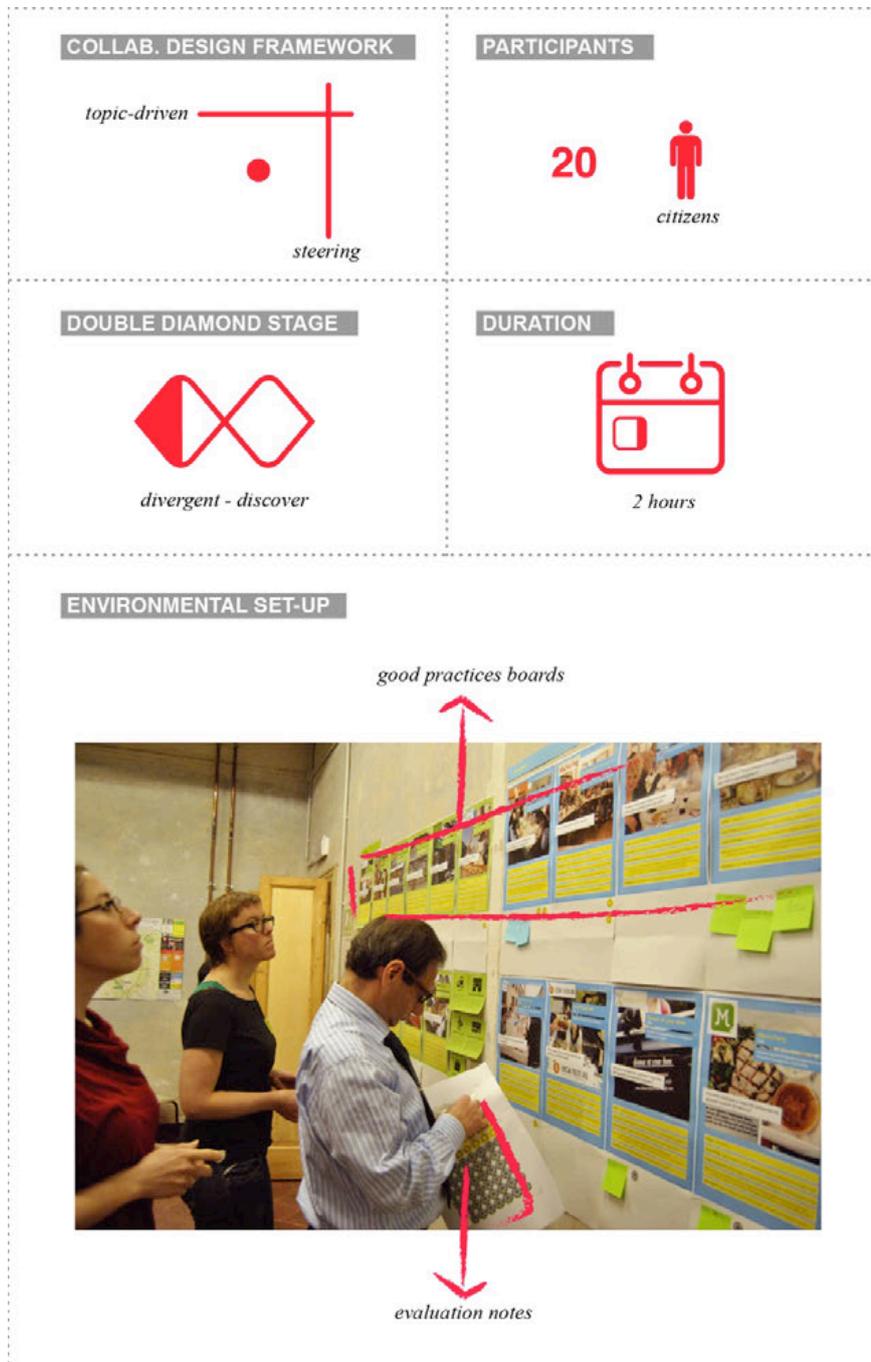


Fig 2.14 – Creative Citizens Warm-up Session / POLIMI DESIS Lab

BOUNDARY OBJECTS: TOOLS AND PROTOTYPES



FINAL OUTPUT



Fig. 2.15 – Creative Citizens Warm-up Session / POLIMI DESIS Lab

2.2.3 Creative Citizens Generative Session

Title of the codesign activity: *Generative session* (4 sessions of the 4 thematic areas of Creative Citizens: exchanging goods and skills, legal and administrative advice, food and culture). National scope.

Aim: To *generate* a service concept as advanced as possible, building upon the results of the previous warm-up sessions. This codesign activity was aimed at defining a service idea and developing it, going in-depth into its specific activities and their possible application within Municipio 4.

Participants: *A group of citizens + some local stakeholders. Around 18 participants each session.* People attending the generative sessions were almost the same of those participating in the previous activities: a group of citizens very different in terms of nationality, age, income, political views and type of employment. Together with the “hardcore” group, another small group of less committed citizens participated to the work. The main difference with the warm-up meetings was the inclusion of new stakeholders: the representatives of local associations and small entrepreneurs, with activities similar to those addressed in the sessions. The purpose was to make synergy with existing initiatives.

For example, the Cuccagna Time Bank association was a stakeholder for new projects and, at the same time, an activity in need of improvement. After some informal meetings with the members, a specific generative session was organised to re-design their service; Stefano, one of its founders, became one of the most active participants in the whole experimentation. Instead, in the generative session dedicated to food, the designers invited a group of stakeholders connected to the project Feeding Milan; for instance, Davide, one of the bakers participating in the farmers’ market, who was about to open an innovative shop in the neighbourhood. As a final example, there is Rossella, a lawyer and representative of a Legal Help Desk at Cascina Cuccagna: from the very beginning, she understood how Creative Citizens could have transformed her activity into a more wide-ranging service and therefore she decided to attend several meetings.

Style of guidance: *Steering.* The aim of the generative sessions was making emerge original ideas and then selecting the best ones for further development. The guidance of the designer was marked, since the objective was to produce in a relative short time quality outputs in terms of ideas. To ensure this achievement, the designer contributed a lot to the concept

generation, bringing field-related knowledge and service design expertise, as distinctive elements of the “design culture” (Manzini, 2016).

Design subject matter: *Concept-driven.* The aim of the generative sessions was to create service concepts. The most interesting idea was then developed to design its identity, distinctive activities and, possibly, service front-stage and back-stage. Hence, codesign generative sessions were alike conventional service design workshops and adopted the standard tools of the discipline: for example, user journeys or offering maps.

Double Diamond stage: *Convergent - define.* The generative sessions are in the “define phase” of the Double Diamond process, where the aim is making sense of the possibilities emerged in the previous divergent stage. This included the definition of a synthesis and the work to help positions and interests of the participants (a multiplicity of stakeholders and citizens) to converge, with the objective of solving a problem and creating an effective service for the neighbourhood.

Environmental set-up: As for the previous codesign activity, a large enough room to accommodate 30 people, i.e. a room in Cascina Cuccagna equipped with a big central table (generally composed of a set of smaller tables), chairs, a paper blackboard, empty walls to pin posters and to project videos and images.

Duration: Each codesign session in the Creative Citizens programme took *2 hours, from 7 pm to 9 pm.* The meetings took place on the Thursdays of April and May 2013.

Description of the process: The process of this codesign activity had 3 main phases:

- presentation of a provocative rough service concept and following redefinition through participants’ feed-backs (1);
- development of the service with a user journey map (2);
- evaluation of the concept under different perspectives (3).

The preparation of the generative sessions required a preliminary work by the designers: the inputs from the warm-up meetings were elaborated to create a series of service concepts to discuss with the participants. These initial prototypes, titled with “suggestive” names (the “Objects Library”, “Facecook”, the “Municipio 4 Ciceros” and more) were the starting points for provoking the debate in the sessions.

For example, in the session dedicated to the re-design of the Cuccagna Time Bank, the designers proposed the concept of the “Augmented Time Bank”. The steps of the service were defined through a user journey map; a specific focus was put on the technologies and digital tools that could have facilitated the exchange between the user and the creation of a reputation system. After having focused on the exchange of intangible assets, the group looked at the exchange of the tangible ones, shifting from sharing skills to sharing products. Therefore the concept of a “Object Library” was created: a physical and digital space for the exchange of goods in the neighbourhood. A map visualising the “shelves” of a library, showing different types of transactions (borrowing, gifting, lending, selling, etc.) and the frequency of usage of products, helped to design the service in the details. The shelves were in fact filled with coloured stickers representing the different categories of products that participants were free to move. This map was a conceptual prototype of the service.

Another generative session was dedicated to the legal and administrative services: it was different from the others because it did not start by proposing an initial concept, but with the story of Rossella, the lawyer running a legal help-desk in the Cascina Cuccagna. She presented the existing service, with an analysis of the problems encountered in the activity. Then, through a user journey map, participants started to propose transformations of the service. Finally, the service of the help-desk was turned into the idea of a “services centre” for administrative orientation and bureaucracy “first-aid”, covering legal, fiscal and technical advice in many fields: the “Citizens Help Desk.”

To sum up: all generative sessions started with the introduction of a concept through a draft prototype (being this conceived by designers or proposed by a stakeholder) and then went through the discussion of this concept and its transformation/enrichment by the participants.

Boundary objects - tools and prototypes: The most important boundary object of the generative sessions was a “fake” advertising poster to introduce the rough service concept, together with the naming used to stimulate people imagination. This poster, with evocative images and words, worked as a prototype to start the creative conversation. Often perceived as something new, in reality it was the combination of the most promising insights originated in the warm-up session, then elaborated by expert designers.

In some cases, other kinds of prototypes were used: for example, a mock-up of a laptop was used to introduce Facecook (a local network of

restaurants, shops, farmers markets and bars). This paper-cut prototype, with fake screen-shots, helped to codesign the pages of the imaginary website (the landing page, the main menu, the specific pages of each content area). Every screenshot was discussed using a set of question-cards to stimulate the critical thinking of the citizens.

User journey maps and other types of maps were instead used to design the service activities and identify related touchpoints. For example, a user journey map allowed re-designing the local time-bank, representing all stages of the interaction, from registration to final transaction. This map was presented as an “empty layout” to be filled in during the codesign session.

Another tool often used in the sessions was the set of service resources, a collection of elements/modules to be used to build a new service. This is the case of the stickers used for the Object Library, representing the most frequently used objects.

Finally, help cards were sometimes adopted to facilitate the knowledge sharing and debate about difficult topics.

Final output: the generative codesign sessions produced a service concept as final output. It was normally visualised with a user journey map filled with notes and comments. The collection of service concepts resulted from the sessions was part of a larger scenario for the neighbourhood. Each one was detailed enough to be prototyped in the following session.

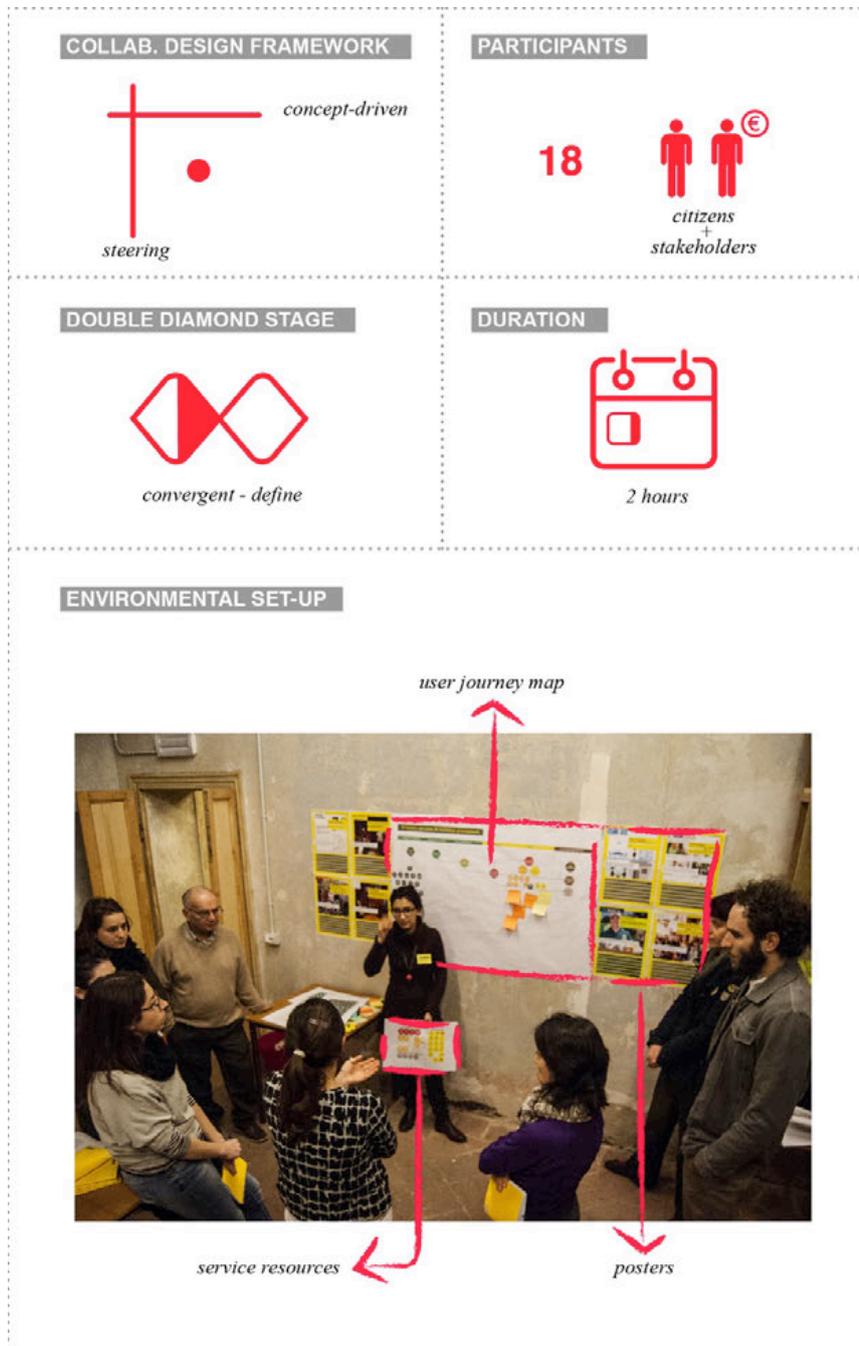


Fig. 2.16 – Creative Citizens Generative Session / POLIMI DESIS Lab

BOUNDARY OBJECTS: TOOLS AND PROTOTYPES



FINAL OUTPUT

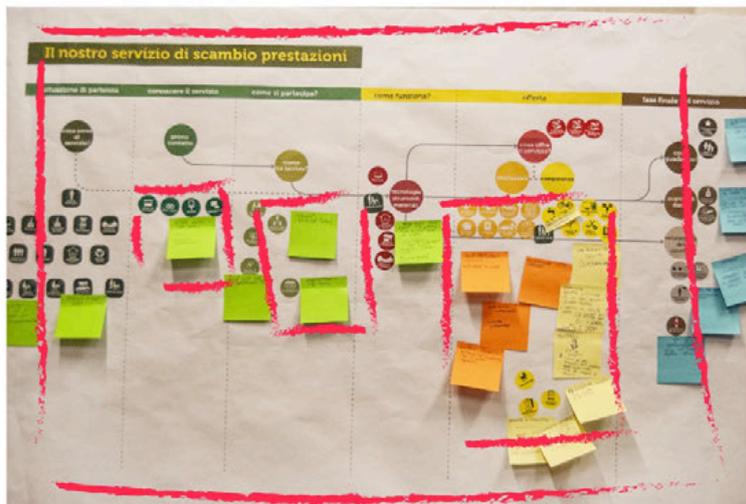


Fig. 2.17 – Creative Citizens Generative Session / POLIMI DESIS Lab

2.2.4 Creative Citizens Prototyping Session

Title of the codesign activity: *Prototyping session* (4 sessions for the 4 thematic areas of Creative Citizens: exchanging goods and skills, legal and administrative advice, food and culture). National scope.

Aim: To *transform* an ideal service into a real one, designing a prototype ready to be tested on the field. Main aim was developing set of realistic services for the area of Municipio 4, identifying actors and assets that could have been involved in their implementation.

Participants: *Citizens + Local Stakeholders + Representatives of the Municipality of Milan. Around 18 participants each session.* In the prototyping sessions, participants were different from the previous activities: the group was less homogeneous compared to the other meetings because also strategic players were invited, in order to engage them in the implementation.

Some of these strategic players were from the public administration of the city: for example, the Municipio 4 - Board of Local Government officially endorsed the project and one member (the Council Delegate for Culture) attended several sessions and became a passionate advocate of the services generated within the Creative Citizens project.

The Councillor for Social Policies at the City of Milan and other public officials attended the final public presentation of the results: Creative Citizens was recognised as an experimentation with high potential of replicability.

Other strategic players were organisations of the third sector: for example, some members of the Cascina Cuccagna Association decided to participate to the prototyping sessions to understand if some of the services could become part of the offering of Cascina Cuccagna.

Finally, in the prototyping session for the legal help desk managed by Rossella, other possible stakeholders were invited to represent the interest and experience of other ambits (administrative, fiscal and technical).

Style of guidance: *Steering.* In the prototyping sessions, the focus was on the development of the service concepts generated in the previous meetings, by leveraging the participation of local stakeholders. Here, the role of designers was to guide people into this path toward field prototyping, highlighting the opportunities offered by the neighbourhood. In this process, the designers gave a significant contribution, not only

supervising the activities but also providing insights, opinions and connections among the actors involved.

Design subject matter: *Concept-driven*. Prototyping sessions were aimed at developing a service in all its aspects: front and back-stage, user experience and touchpoints. The work was based on the concepts previously produced.

Double Diamond stage: *Convergent - deliver*. The prototyping sessions were in the “deliver” phase of the Double Diamond, since their objective was to produce effective results, namely a collection of services ready to be tested. Participants were guided to converge into a number of decisions to make things happen and move from codesign to co-production and to co-management of the services (Selloni, 2017). This implied the participants, stakeholders included, to take very seriously the activities of testing and prototyping.

Environmental set-up: As for the previous codesign activities, a large enough room to accommodate 30 people, i.e. a room in Cascina Cuccagna equipped with a big central table (generally composed of a set of smaller tables), chairs, a paper blackboard, empty walls to pin posters and to project videos and images.

Duration: Each codesign session in the Creative Citizens programme took *2 hours, from 7 pm to 9 pm*. The meetings took place on the Thursdays of May and June 2013. The last prototyping session was performed out of the traditional scheduling to assure the presence of additional stakeholders.

Description of the process: Despite some diversity, prototyping sessions were organised as follows:

- refresh of the service concepts (1);
- identification of actors, roles and rules (2),
- development of touchpoints (3);
- evolution and enrichment of the original concept if needed (4).

Starting points of the prototyping sessions were the service concepts developed during the generative sessions and visualised through rough codesign prototypes. By doing so, the concepts were discussed in terms of potential stakeholders able to contribute to their implementation with financial resources, assets, knowledge and skills.

The second step was using an actor map to identify potential contributors and to envision possible forms of “service governance”, assigning roles and rules to the actors. This map was complemented with a map of the neighbourhood with highlighted local assets to exploit, such as vacant spaces, local shops, receptions of condominium, etc. This simple exercise facilitated thinking how services could have been implemented in the neighbourhood, outlining a network of resources available for the activities, in a logic of economies of scope (Panzar and Willing, 1981).

Part of the sessions was dedicated to the development of the service touchpoints and select those to prototype. For example, to prototype Facecook, a simple website was designed using existing components, such as Google docs, Google Maps and Facebook groups. Tangible elements were also considered, like info-boards for sharing food, advice, recipes and news of local events.

In some cases, the service concept evolved also in the prototyping sessions: for example, Facecook was finally elaborated as a “quality mark” for the neighbourhood’s retailers and restaurants created by the inhabitants.

At the end of each prototyping sessions, the ideas of the possible contribution of each actor and of the resources available in the neighbourhood were much clearer.

Boundary objects - tools and prototypes: Physical prototypes of the services were used as boundary objects in the prototyping sessions.

Paper-cut mock-ups: for each of the 6 generated services, physical 3D models facilitated the conversation and helped to explain the ideas to the newcomers. For example, the boundary object used to introduce Municipio 4 Ciceros was a table game mock-up consisting in a map of the neighbourhood, a set of pins to be used as indicators for the possible stops of the tours, a list of monuments, points of interest and anecdotes about the history of Municipio 4, and a set of picture cards representing the citizens-guides. A mock-up representing a possible physical space for the library was instead created for the Object Library, showing its similarity with an “exchange” corner in a bar rather than a storage room. For representing the Augmented Time Bank, a bulletin board, placed in the concierges of the building and presenting a list of offer/demand, was thought.

All mock-ups were nicely designed and coloured so to attract the attention of participants and visitors. A “service promotion kit” complemented each mock-up: a set of communication materials to promote and start the service, such as flyers, posters, leaflets, booking forms and more.

Finally, the Actors map was used to identify possible players and their specific contribution: printed on a big-size format, they were hanged on the walls, with blank areas to be completed by the participants.

Final output: The output of the prototyping sessions was a set of *prototypes*, i.e. a collection of services ready to be tested on the field. After a few years, they are currently at different stages of evolution. The most successful ones are those with strong promoters such as the Augmented Time Bank and the Citizens Help Desk, which are both endorsed by the Municipality of Milan and supported by Cascina Cuccagna.

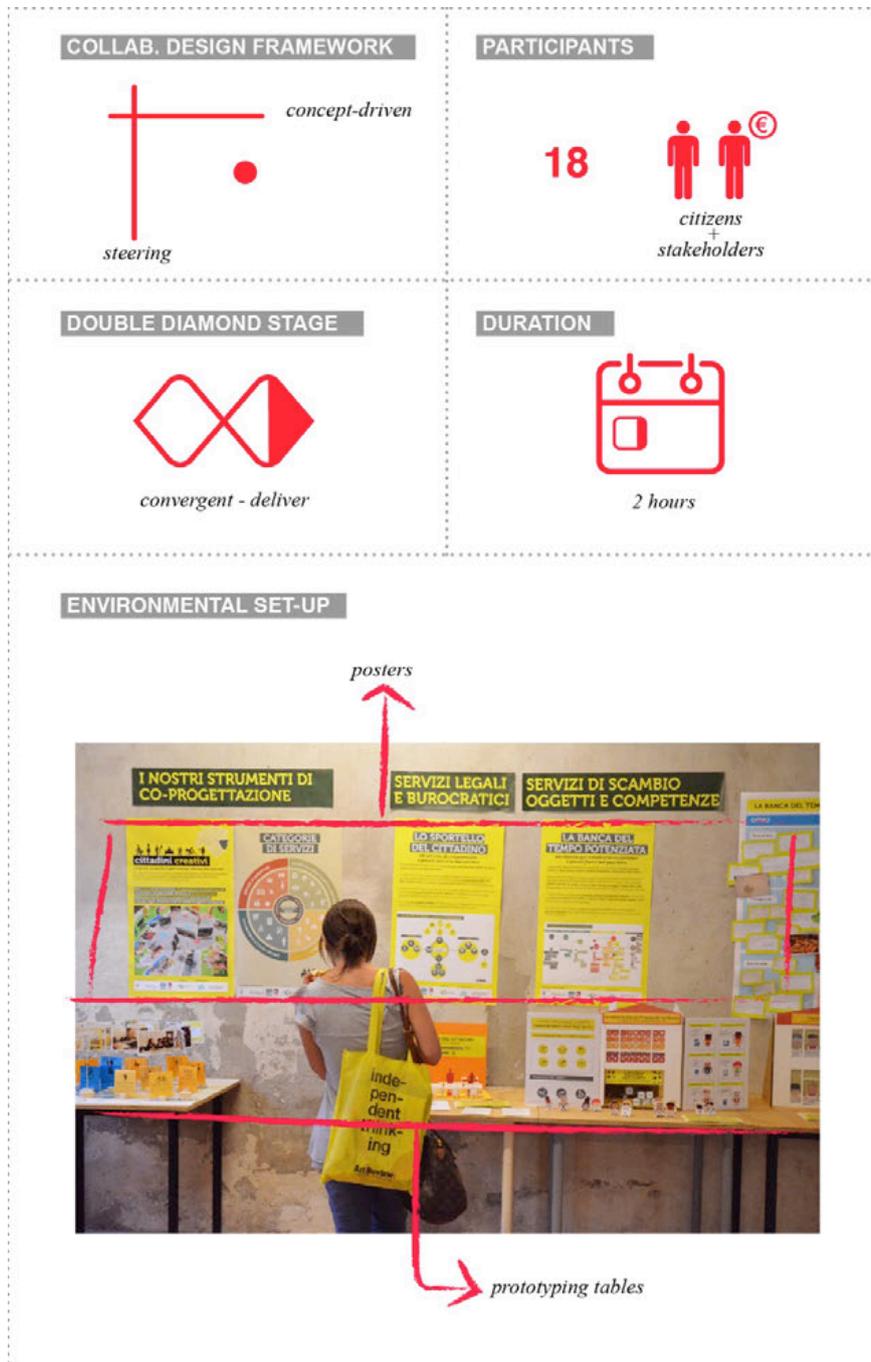


Fig. 2.18 – Creative Citizens Prototyping Session / POLIMI DESIS Lab

BOUNDARY OBJECTS: TOOLS AND PROTOTYPES



FINAL OUTPUT



Fig. 2.19 – Creative Citizens Prototyping Session / POLIMI DESIS Lab

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2.3 Feeding Milan – Nutrire Milano

This chapter discusses some of the codesign activities of the project “Feeding Milan - Energies for Change” (“Nutrire Milano - Energie per il cambiamento”), an action research funded by local institutions (Fondazione Cariplo, a bank foundation, with the Comune di Milano and Provincia di Milano) and developed by a partnership between Slow Food Italia, the Department of Design of Politecnico di Milano with the POLIMI DESIS Lab, and the Università di Scienze Gastronomiche.

The project, running from 2010 to 2013, created a platform of collaboration to design, prototype and implement a set of interconnected services, based on the principles of short food-chain, multifunctionality and cooperation between stakeholders (Meroni and Selloni, 2018). Since in the initial intentions, the project was conceived as systemic and territorial: a continuum, collaborative process, combining very diverse stakeholders (from farmers to public administrations), enterprises, citizens and researchers/experts from many fields. As such, in its timespan, a countless number of people were engaged in the work through different tactics and project encounters.

In this chapter, we present the codesign activities organised to collect inputs from the farmers in order design the platform of the project and a couple of codesign activities conducted at the so-called “idea sharing stall”, a co-creation corner set in the monthly farmers’ market to engage visitors, farmers and stakeholders in design conversations. In particular, we examine the process and the outputs of 2 codesign sessions dedicated to the design and pre-prototype of a “farmer’s food box” and the design of a local distribution system.

2.3.1 Feeding Milan at a Glance

The project Feeding Milan was conceived as an opportunity not only to envision a scenario of local foodshed, connecting the local food production in peri-urban areas (particularly in the huge agricultural park bordering the south of the town, the Agricultural Park South) with its consumers in the town, but also to create the conditions for this to become real and for prototyping some services.

It was, therefore, an action research aimed at making things happen in the view of the universal exposition “Expo Milano 2015” titled “Feeding the Planet, Energy for Life”, programmed in 2015. For this very reason, an actual engagement of a huge number of stakeholders (farmers, local organisations, citizens, policy makers) and the creation of a shared vision were not “nice-to-have” options, but “must-have” conditions to work.

The challenge was using design to steer social innovation in the field of food and agriculture by: leading producers towards more sustainable production systems, offering them a greater guarantee of profitability due to a wider and more organized demand, and encouraging new purchasing habits, more advantageous from a quality/price point of view, attentive towards health and the environment, richer on a relational level (Manzini and Meroni, 2013). Therefore, main actions of the project were:

- supporting existing best practices and resources in the agricultural field;
- activating resources not yet / no longer valorised;
- creating new services.

After having created and shared with key stakeholders an initial scenario, intended as a common set of intentions, aspirations and beliefs, and having engaged the first group of farmers, the project quickly moved into the design of specific services to make the scenario become reality. In parallel, the project team, through multiple channels, started an extensive work of dissemination and creation of a different food culture in the population.

Through diverse sub-projects, along its 4 years of operation, Feeding Milan produced several hypotheses for new services and started to activate a number of pilots. Here below, we provide a summary of the main ones (Meroni and Selloni, 2018), in order to depict the scope of the project and the complexity of its overall architecture:

- *The Earth Market*. A farmers’ market for local producers, organized according to the principles of Slow Food. Still working, it takes place

twice a month and includes didactic workshops, taste laboratories, street kitchens and convivial tables enabling visitors to stay and eat.

- *The Farmer's Food Box*. A weekly delivery of local vegetables and fruit. The service was thought to deliver an assortment of vegetables, fruit and other products to the users at convenient collection points (neighbourhood shops, bars, cultural centres, schools, offices and other transit points for users). The project stopped after the field prototype, mainly because of difficulties with the logistics and this pointed out the importance of creating a local logistic system to support this one and many other activities.
- *The Local Bread Chain*. A fully local production of bread, from the grain to the final product. Commercialised at a fixed price, it is still produced and distributed by different bread-makers across the Milanese area.
- *The Collaborative Supermarket*: A supermarket based on a co-operative principle to distribute high quality, fresh, local produce at good prices, thanks to the work carried out by customers/members. It was developed as a feasibility study.
- *The Local Distribution System*. A platform aiming to answer the urgent and unmet demand for an alternative local food logistics, connecting producers with restaurants and groceries. After several scenarios and micro-experimentations involving also citizens and users, the study has generated a start-up company that integrates the assets of different stakeholders and creates synergies with the market.
- *Zero-mile tourism*. A set of farms' services offering hospitality and accommodation to urban tourists. A series of concepts has been designed and prototyped with the support of the students of the School of Design of Politecnico di Milano, which have inspired autonomous initiatives of the farmers. Additionally, in the following years, the Agricultural Park South have been more and more perceived as a leisure place and, consequently, other initiatives were started in this direction.

All the abovementioned services have been codesigned through a “tool” that allowed the designers to get in touch with people and stakeholders: it was the “idea sharing stall”, which can be described as a boundary object in itself, having the evidence and the substance of a stall of the Earth Market, just like all the others. There, designers used to discuss (and still do it from time-to-time) emerging ideas for new services with visitors, asking for comments and inviting creative contributions.

Feeding Milan left a valuable legacy both in terms of experience and of actual outcomes. In fact, beyond the direct outputs of the project, it can be reported that, after it, a number of likewise initiatives started across the city and the sensitivity of the population for local and sustainable food seemed to be increased. Surely, this went together with the effect of Expo 2015, but we deem it was amplified by the project, especially for the progressive shift of some farmers towards more sustainable ways of producing and delivering, which are now at the basis of a new territorial ecology. Because of the very nature of the project, a formal conclusion it is difficult to define since it can be seen as «the start-up of a systemic process, rather than the designing of a desirable state. (...). It, therefore, conforms to the characteristic of working on a process rather than a product and consequently opens the difficult question of planning an exit strategy for the initiative» (Manzini and Meroni, 2013, p. 243).

Feeding Milano adopted, in fact, a totally immersive and participatory approach with a full and continuous presence of designers in the large community of producers, associations, institutions and citizens. The designer role, according to what we define community centred design, consisted in steering and stimulating this community by organising multiple opportunities of conversation around the scenario of a local foodshed, activating initiatives and providing methodological support to prototype them.

2.3.2 Collaborative Farmers: Understanding Farmers' Behaviours and Relations

Title of the codesign activity: *Collaborative Farmers* – Survey and interviews to understand farmers' behaviours and relations. Online and in-presence. National scope.

Aim: To *understand the relations* already in place between the farmers, the competences and the resources available to be shared or needed, the interest in doing initiative together and the value of participating in the farmers' market. This initial knowledge would have allowed to design the service platform (organisational and digital) backing up the project.

Participants: *Farmers. 110 participants.* The target of the activity was the first pool of around 110 farmers (mainly located within 40km from the city in the Agricultural Park South) selected to participate into the Earth

Market, the farmers' market organised within the framework of the project. At the time of the activity, the pilot of the market was running since a few months, taking place once a month.

The activity was conducted in 2 sessions: *41 farmers* participated in the first session consisting in an online survey, while around *40 farmers* participated in the interviews that were conducted at the Farmers' Market in October 2010.

The participation to the online survey that was facilitated by person-to-person interaction, since the farmers were personally invited to participate into the survey via personal contact at the market, via email and even via postal mail, being the same template be sent also in paper. The response rate was 39%.

The second session, in presence, involved almost all the producers participating in the market of October.

Style of guidance: *Facilitating*. The first activity was organised without the presence of the facilitator, except for the initial role of inviting the farmers and encouraging them to take the survey.

The second activity, instead, foreseen the presence of the facilitator as interviewer: using a paper interview guide, one per participant, the designers went around the market to talk with the farmers and taking note of the answers.

Design subject matter: *Topic-driven*. The 2 codesign sessions were interconnected and subsequent, yet very different in the object of investigation. Both of them regarded the specific nature of the activities of the farmers.

The first was focussed on the present time situation and the interest for the future. Respondents were asked to provide: 1) the basic profile; 2) the structure, quality, and content of social networks; and 3) a demand for new services. «The profile included the producer's name, address, age, gender, income level, education level, offered products and services, number of visits to the market, and use of information communication technologies in daily life. Related to the social networks, we asked for details of their collaborative activities, including: the size, involved actors, duration, frequency of interaction, type of collaboration, and finally technologies supporting collaboration» (Baek *et al.*, 2015, p. 66).

The second was focussed on the discussion of three very initial proposals about: 1) how they would have profiled themselves in the platform with regard to the availability to share resources and competencies; 2) what kind of topics they would have been interested in

discussing during informal peer-to-peer meetings; 3) what specific initiatives they would have been keen to activate through a collaboration with other producers.

Double Diamond stage: *Divergent/convergent – discover/define*. The two activities were built one on the results of the other and were respectively divergent and convergent. The first one allowed to understand the features of the group of producers, the second to discuss some hypotheses of collaboration.

Environmental set up: The first survey was delivered online, while the interviews were conducted in the farmers' market of Milan.

Duration: The online survey was available for *a month*, from end of August to end of September 2010. The interviews took 10-15 minutes each and were done during a Saturday morning, when around 45 farmers were together in the market.

Description of the process: The 2 sessions were organised in a sequence but in very different ways: online and in presence.

For the online work, it has to be noticed that the researchers had to play an essential role in engaging the farmers one-by-one: yet the percentage of participation was the 39%.

For the work in presence, the activities were organised as structured interviews: to guide the encounter the designers used simple templates, illustrating the topic and allowing to both answer questions by choosing options or adding comment/notes/inputs. In some case, since the templates were self-explanatory, the farmers managed the work by themselves.

Boundary objects - prototypes and tools: Both inquiries were conducted using structured methods so to ensure that each interview had the same questions in the same order and therefore the results to be comparable. Nevertheless, the work in presence was conducted with a degree of freedom to organise the contact as a conversation.

Survey Google form: customised forms were created for the online survey.

Visual questionnaire: some paper notes, one copy per respondent, were prepared to guide the interview. They were designed with a visual distribution of the questions, so to facilitate the understanding of the alternatives, a brief text and image (when appropriate) to provide a glimpse

of the topic, and blank fields for free comments or inputs from the participants.

Final output: The sessions generated in total around 80 interactions with the farmers. The answers of the survey showed that the majority of producers were currently engaged in some types of interactions and social relations: these were considered pre-conditions for initiating new collaborative services in connection with the market. They also expressed the interest in developing new business ideas for a local and sustainable food system, and in sharing and exchanging resources besides the direct sales (via the market or other channels to consumers). (Baek *et al.*, 2015). This output led to 3 very initial proposals for possible forms of collaboration (all of them based on in presence encounters, but facilitated through a digital platform) that were discussed with the farmers in the following codesign session. These were: the “Convivia for professional training”, meeting moments to eat and share knowledge about diverse subjects; the “Resource and competence centre”, a digital window to showcase the producers; and the “Wall of proposals”, presenting the ideas for initiatives to be activated together.

From the analysis of the results of the consultations, the need that emerged with more clarity was about a local logistic system, a platform (also based on collaboration) able to facilitate the delivery of the produce at the local scale, for both B2B and B2C clients. Indeed, farmers and stakeholders (restaurants, shops, consumers), over the timespan of the project, claimed several times for a solution to the small-scale logistics, as a key enabler for the creation of an effective foodshed. After a series of initial experiments and having consolidated the network and the connections with the consumers, a startup was born to provide this service (Altuna *et al.*, 2015).

Finally, in terms of effectiveness of the interaction with the farmers, we can say that the digital channel was not fully successful in an environment where the person-to-person contacts (in-presence or via telephone) were prevailing and preferred.

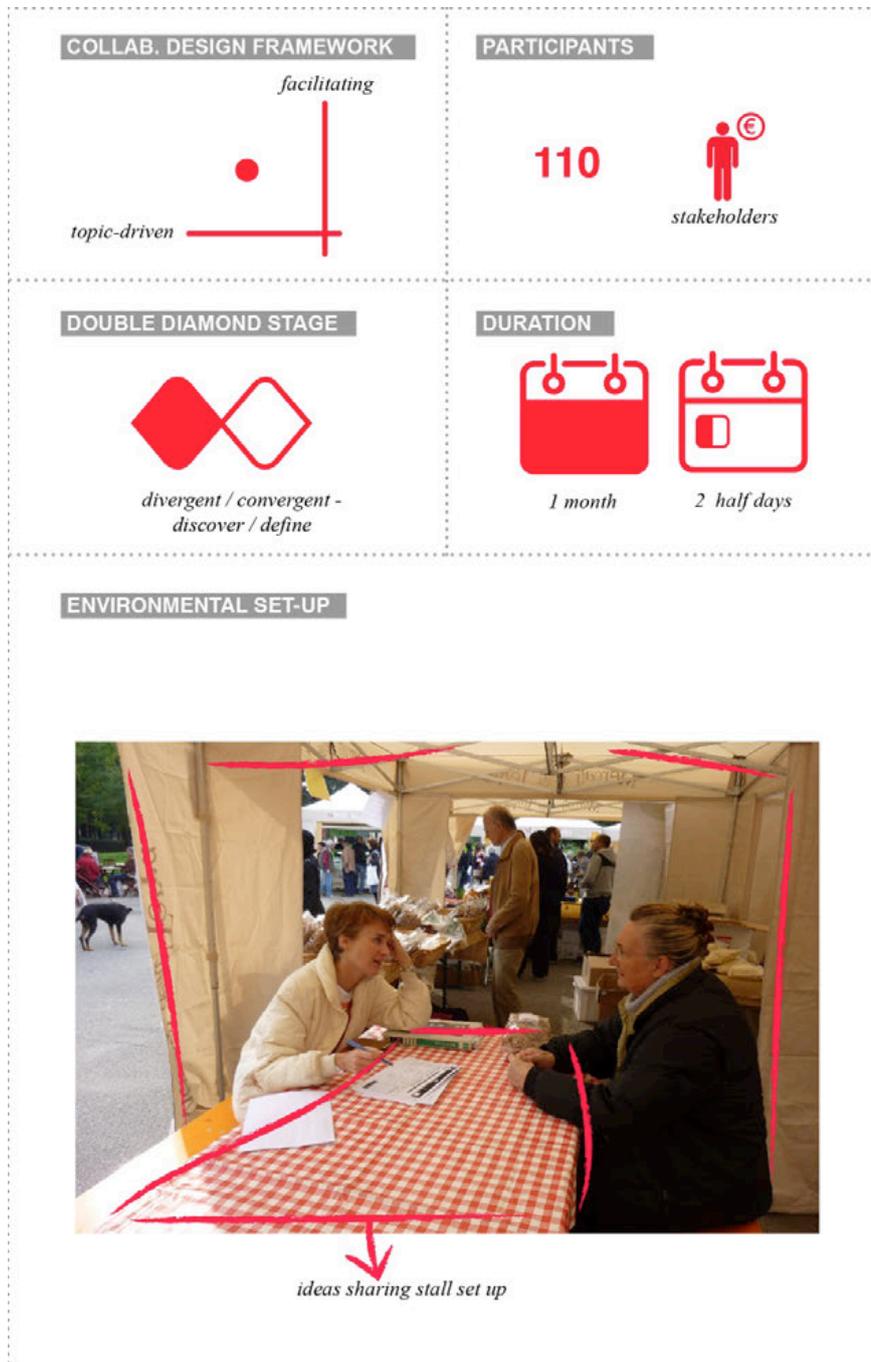


Fig 2.20 – Collaborative Farmers / POLIMI DESIS Lab

BOUNDARY OBJECTS: TOOLS AND PROTOTYPES



visual questionnaire

FINAL OUTPUT



Fig. 2.21 – Collaborative Farmers / POLIMI DESIS Lab

2.3.3 Codesigning the Farmer's Food Box

Title of the codesign activity: *Codesign of the Farmer's Food Box at the Idea Sharing Stall.* In-presence. National scope.

Aim: To *assess, expand and integrate* given options about the characteristics (contents, size, costs and logistics) of a food box containing seasonal and local vegetables, fruits and other produce. In the codesign activity, given a very broad concept, the participant was taken through a simple chain of questions resembling a user journey, in order to understand his/her preferences. The overall purpose, thus, was to understand interests, feasibility, and concreteness of the idea.

Participants: *People passing by the stall at the Farmers' Market during the two days of the activity, of September and October 2010.* In total, around 140 people participated in the codesign sessions, interacting with designers and representatives of Slow Food, who were in charge of conducting the activity. The activities were thought to address a general public, yet people potentially interested in the service since clients of the market. It was organised as a fast interaction, allowing people to either provide feedback in a few minutes or indulging in long conversations with the organisers.

Style of guidance: *Facilitating.* The codesign activities were organised with a very light presence and role of the facilitator, even leaving the participant completely alone in filling in a sort of visual questionnaire representing the user journey. In fact, the context of the interaction was supposed to be crowded, as it actually was, so that the activity was conceived as a reflection that the participant could have done after a short explanation provided by the facilitator. Participants were requested to answer some questions choosing among options, on the base of the own preferences and habits.

Design subject matter: *Concept-driven.* The overall frame of the codesign activities was very structured and focussed around a given and simple concept, hypothesised by the designers of the POLIMI DESIS Lab with the Slow Food team. The farmer's food box, in fact, was proposed as a weekly delivery service of an assortment of local products. Some features were left open, by letting the participant free to choose among options regarding the delivery, the product mix, the complementary services, the price and the payment system. In the reality, for many of these issues the

actual constraints were several so that options were more thought to investigate the reaction of the possible users than to suggest real alternatives.

Double Diamond stage type: *Convergent - deliver*. This codesign activity was nearly a form of pre-prototype of the service, which means a first test on the field with possible users, conceived to verify or confute some project hypotheses.

Environmental set up: Both the codesign activities took place at the “idea sharing stall”, the farmers’ market open-air stall, dedicated to codesigning with the visitors. The market was located in a public park named largo Marinai d’Italia, in the Municipio 4 of Milan. The environmental set up was a gazebo and a table equipped with boundary objects and communication materials related the project Feeding Milan. The stall was like all the other market’s stalls, where farmers sell food. Yet, it was set in a dedicated corner in the centre of the market and signposted with a “warning” sign designed to attract people (this sign was similar to a stop road sign, displaying the icon of two people talking, and thus, it conveyed the message “please stop and share ideas with us”). Both participants and researchers were supposed to stay standing.

Being close to the “convivial tables” where visitors could settle down and just chat or eat the food of the market, it was in a good position to attract and facilitate the involvement of the people.

Duration: *Around 4 hours, from 9 am to 1 pm, throughout two Saturday mornings*. Each interaction with the participants took in average a few minutes, with exceptions of those with people willing to talk and ask questions about the general project. This happened on purpose since the specific circumstances of the place suggested the researchers to opt for a quick contact, not too disturbing or time consuming for the clients of the market.

Description of the process: The activity was conceived by the team of the Politecnico di Milano and implemented with the collaboration of the Slow Food team.

The process was very simple and guided by the boundary objects designed for the circumstance. People were first involved with a verbal gentle invitation to come closer to the stall or were attracted by the signs and the boundary objects arranged on the table. In the pick moments of the

morning, when the stall started to be crowded, the “line-waiter” effect helped to attract people by curiosity.

Participants, then, were told the concept of the food box and requested to fill in the questionnaire with the support of the facilitator or alone. At the end of the interaction, the facilitator recapped on the paper the choices expressed by the user, summing up the full service journey. The use of one paper per participant simplified the collection of the answers.

For the second codesign session, small changes have been introduced in the paper questionnaire, to better support the flow of the explanation and the interaction with the participants.

The output of the two days was an organised set of feedbacks to the concept of the farmer’s food box.

Boundary objects - prototypes and tools: The boundary objects created for this activity were a combination of a concept prototype and a tool. The facilitator had the role of explaining the concept and supporting the participant in providing feedback.

Farmer’s food box prototype: a physical mock-up of the main service evidence, the box with the vegetables, was created and placed on the table, in order to attract people and provide an idea of the subject matter. Nicely designed and visually amplified with colourful signs with short sentences or questions about the box (such as: «get to know who grew this for you!» or «where and when do you prefer this to be delivered to you?»), the prototype was conceived not to be realistic but instead to clearly emphasize the product delivered by the service.

User journey questionnaire: a paper note, one per respondent, complemented the prototype to guide participants along a simplified user journey, so to answer some relevant questions about the service. Each question had different pre-conceived options to choose among, on the base of the own preferences and habits. This was decided to properly take in consideration the service constraints, to simplify the reflection of the participant, and to make sure to have comparable results.

Final output: The sessions generated in total around 140 interactions with possible service users. Feedbacks were analysed and shared with the full project team in order to set the conditions for a real field prototype. The final service was an assorted farmer food box, with mainly vegetables and fruits, despite the interest of the people also for eggs and dairy products. The delivery system was based on neighbourhood points (schools, offices, bars, or habitual transit points) convenient to the user; these acted as local order collection platforms; would have reduced the price of the service; and

allowed the user to withdraw the food box all day long, till evening. These design decisions informing the field-prototype were partially in contrast with the feedbacks of the codesign participants: the reason was the need of interpreting their desires while coping with cost and time constraints. The prototype, in the end, did not go smoothly in all aspects: for instance, some testers complained about the fact that the fresh vegetables were not adequately preserved by the neighbourhood points; or about the relative few product diversification, due to the local scale; or about the few flexibility to change/delete the order last minute. This denotes that, in the questionnaire, not all issues were properly explored with the possible users, since it was underestimated the “behavioural cost” of introducing a new routine, despite the interest for the “product”.

The service was then prototyped in real scale from June to October 2011, involving 3 farmers, 5 points of delivery in the city of Milan and about 100 consumers. A second test was then run with improvements in spring 2012.



Fig. 2.22 - Farmer's Food Box / POLIMI DESIS Lab

BOUNDARY OBJECTS: TOOLS AND PROTOTYPES



farmer's box prototype

user journey questionnaire

FINAL OUTPUT



Fig. 2.23 - Codesigning the Farmer's Food Box / POLIMI DESIS Lab

2.3.4 Codesigning a Local Distribution System

Title of the codesign activity: *Local Distribution System* codesign session. In-presence. National scope.

Aim: The first aim was to *familiarise* with the idea of Local Distribution System, an experimental system of food distribution based on original combinations of professional activities and citizen collaboration at a local scale. The second aim was to *choose* among a range of service concepts within this experimental system and to *enrich* them by adding details and preferences from potential users.

Participants: *People passing by the Ideas Sharing Stall at the Earth Market. Around 50 participants.* Participants were a combination of residents of the city of Milan and tourists since this codesign activity was carried out during the Milan Design Week 2012.

Style of guidance: *Facilitating.* In this activity, designers mainly supported people in understanding the idea of Local Distribution System and its related solutions. Hence, it was a public presentation followed by a moment of active listening. The role of the designer was to explain the main concepts and ask key-questions to participants, then accounting answers within a dedicated template.

Design subject matter: *Concept-driven.* The material provided as input to this codesign activity was a main “umbrella-concept” together with a number of sub-concepts which were explained and represented through a specific set of boundary objects and prototypes. Therefore, concepts were both the input and the output of the process: the codesign activity was dedicated to evaluating and deepening those ideas.

Double Diamond stage: *Convergent - deliver.* The concept of Local Distribution System was originally elaborated by the designers of the POLIMI DESIS Lab group: hence the divergent and creative phase of the Double Diamond was carried out without asking people contribution. The codesign activity here presented was thought to converge towards a selection of services concepts, to assess given items and bring about a decision on what deserved to be implemented or not. Then, some concepts were expanded, adding elements of interests, feasibility and concreteness, leaving on the hands of designers a set of in-depth solutions.

Environmental set-up: This codesign activity took place at the “idea sharing stall”, the Farmers’ Market open-air stall dedicated to codesigning with the visitors. The market was located in a public park named largo Marinai di Italia, in the Municipio 4 of Milan. As for the previous example (cfr. 2.3.3) the environmental set up was a gazebo and a table equipped with boundary objects and communication materials related the project Feeding Milan.

Duration: The activities were held on a Saturday morning, including also lunch-time. *From 9 am to 2 pm, the 21st of April 2012.* It was during the Milan Design Week and thus attracted also tourists keen of visiting unusual places in the city.

Description of the process: The codesign of the Local Distribution System was conceived as a quick interaction in 4 main steps with people passing by at the “ideas sharing stall”:

- introduction to the Local Distribution System using a “conversation table” as boundary object;
- explanation of 5 service ideas under the main “umbrella-concept” represented as a set of prototypes that complemented the conversation table;
- selection of the favourite ones through a visual map;
- enrichment of the chosen concepts by filling in a quick survey.

Each 4-step interaction took about 5-10 minutes with each participant: 3 designers worked in parallel using the same design artefacts, trying to carry out as more interactions as possible.

The Local Distribution System was explained as an alternative to large-scale retailing. It was based on disintermediation and short food-chain and sought to foster a direct match and meeting between demand and supply, city and countryside. In this new distribution system, ordinary people were intended to play a strategic role as mediators between end-users and peri-urban farmers. Hence, people participation was viewed as the central idea for building a system in which they were requested to be active. The 5 ideas that prompted the codesign were the following:

- *Restaurant Shop:* a shopping corner located in a restaurant, where to buy the ingredients of the meal just enjoyed in the restaurant, or other Agricultural Park South products sold exclusively on the spot.

- *Shopping Agent*: a citizen going from house to house (or store to store) with a catalogue of products from the Agricultural Park South.
- *Farmers' Food Box*: a weekly delivery service for local vegetables aiming to provide the food produced in the Agricultural Park South to the city of Milan. The box was delivered to users at a collection point. This was the same concept previously described (cfr. 2.3.3).
- *Collaborative Supermarket*: a supermarket run through the costumers' collaboration, aiming to distribute high quality, fresh, local products at good value prices, thanks to the work carried out by costumers-members.
- *Gift-box*: a package with different high-value products of the Agricultural Park South (sausage, meat, cheese, etc.) for a monthly delivery.

The Collaborative Supermarket, in particular, aroused people's enthusiasm because it was perceived as an alternative to food shopping, while the Shopping Agent was perceived as a too demanding.

The flow of interactions during the day was approximately the following: few people at the beginning of the morning and then two intense moments in the middle and just before lunch-time. Once again, the "line-waiters" effect worked well: people in line to join the codesign activity attracted other people.

Boundary objects - prototypes and tools: The main boundary object was a table tool-kit for opening the debate with participants about new ways to distribute local food in the city and contribution of people to this.

"Conversation table" was the name of this object, designed as a set of visual signs representing interconnected food solutions. It was a hybrid between a prototype and a tool-kit constituted of:

- a map of the city with the superimposition of a scheme of the system of services;
- a set of pictures of the context, of the products and the local resources to convey an idea of the origin and quality of the food;
- 5 main cards to explain the 5 services of the system and their integrated network of touch points;
- a visual survey to ask people their preferences about the services, the places, their experience, and their possible involvement.

This boundary object had multiple aims: it was used to attract people and start a conversation, but at the same time, it worked out as a table-game to simulate the interactions at the local scale and explain the system.

Final output: At the end of the morning, around 50 surveys were completed: it emerged that the Collaborative supermarket was the favourite concept, followed by the Restaurant Shop and the Farmers' Food box. The survey, produced at the end of the interaction designer-participant, served also as "report" of the whole experience.

Therefore, the main output of this codesign activity was the selection and ranking of some service ideas, integrated with suggestions about their development within the project Feeding Milan.

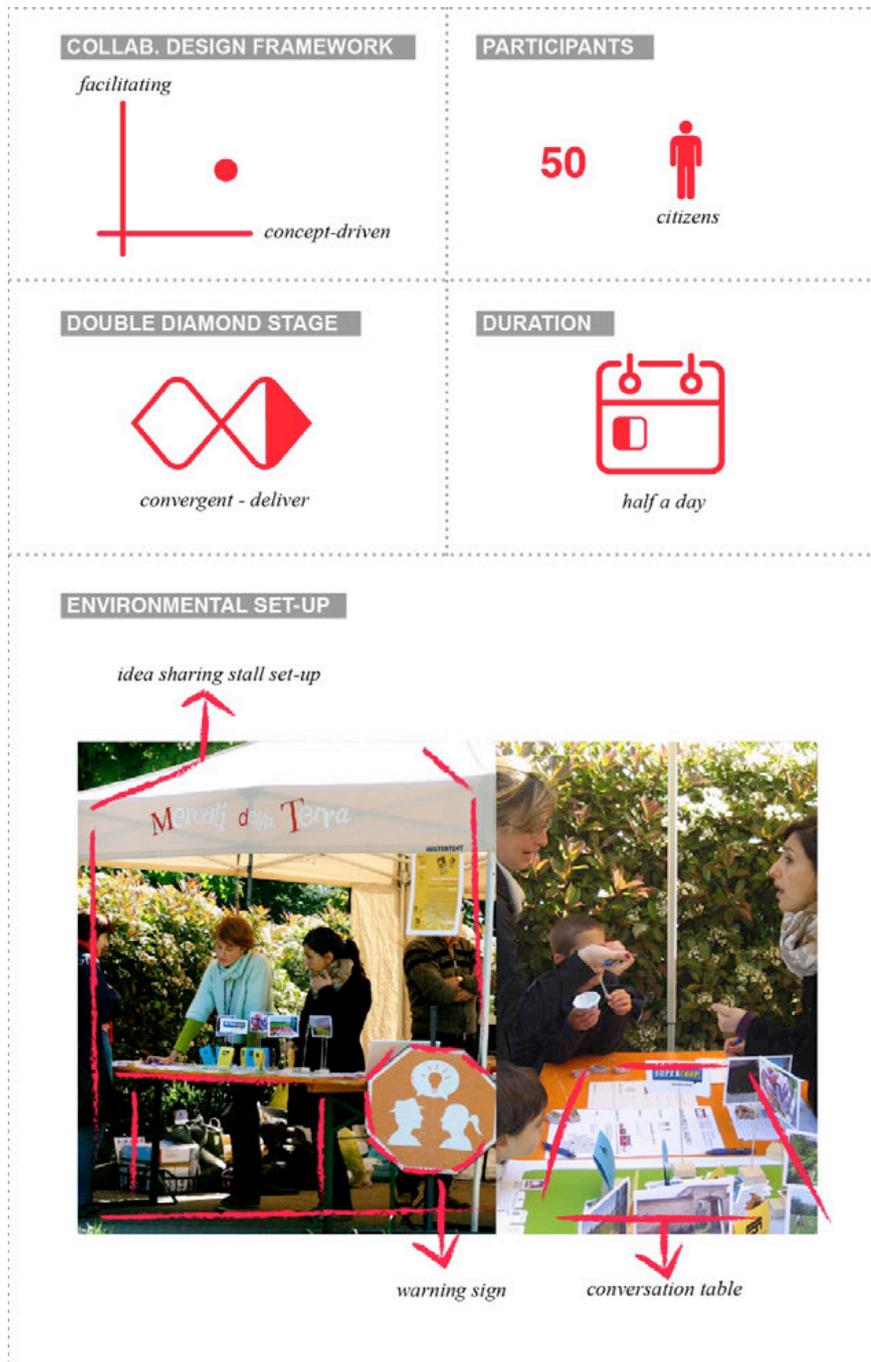


Fig. 2.24 - Local Distribution System / POLIMI DESIS Lab

BOUNDARY OBJECTS: TOOLS AND PROTOTYPES

visual surveys

concept cards

context pictures



conversation table

map of the city

FINAL OUTPUT



Fig. 2.25 - Local Distribution System / POLIMI DESIS Lab

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2.4 SPREAD – Sustainable Lifestyles 2050

This chapter presents some activities of the “SPREAD - Sustainable Lifestyles 2050” project, funded under the European Commission’s FP7 programme and running from January 2011 to December 2012¹. In SPREAD, a diversified group of societal stakeholders from business, research, policy and civil society participated in the collaborative development of a vision for sustainable lifestyles in Europe in 2050. The project delivered 4 future scenarios, a set of roadmaps and policy briefs, and a consistent research agenda. The Politecnico di Milano participated as a partner, through the POLIMI DESIS Lab of the Department of Design. Its main role was to contribute to envisioning the future scenarios and framing the codesign process.

Here we present the activities delivered for the co-creation of the visions for sustainable lifestyles in 2050, with a specific focus on a generative multi-stakeholder workshop held in Milan in September 2011.

¹ SPREAD - Social Platform Identifying Research and Policy Needs for Sustainable Lifestyles in Europe 2050. Funded by EU - FP7 Program, Grant Agreement 263962, 2011-2012. Project coordinator: Collaborating Centre on Sustainable Consumption and Production (CSCP), Germany. Consortium partners: Energy research Centre of the Netherlands (ECN), The Netherlands; Demos Helsinki (Demos), Finland; Politecnico di Milano (Polimi), Italy; EuroHealthNet, Belgium; The International Institute for Industrial Environmental Economics at Lund University (ULUND), Sweden; Regional Environmental Center for CEE countries (REC), Hungary; Ecoinstitut Barcelona (ECOI), Spain; The Northern Alliance for Sustainability (ANPED), Belgium; Ashoka, France.

2.4.1 SPREAD at a Glance

The SPREAD project was conceived as a collective effort to answer the following questions: «What is a sustainable lifestyle? What will a sustainable future mean for the way we live, move, and consume? How do we know if our lifestyles are sustainable or not? How can our aspirations for life and well-being improvements be enabled sustainably?» (SPREAD website). In doing this, the project aimed at integrating the contribution of experts and citizens in a massive process of collaboration that took 2 years. The core results of this collaboration were scenarios, intended as “tools” to open up conversations about the future with diverse groups of stakeholders, including policy-makers.

In brief, the process started with taking stock of existing knowledge on sustainable lifestyles by developing research in order to define a “baseline” providing a synthesis of the state of the art in research and of stakeholder views on potential pathways toward sustainable lifestyles.

It continued with collecting promising practices on sustainable lifestyles through case studies in order to feed an (en)visioning codesign workshop in which to move from the present to the future.

The workshop generated 4 visions that were articulated in their main elements, values and principles and in a narrative, explaining a day-in-the-life of a fictional character. Barriers and drivers for change towards them were also identified. Back-casting scenarios were then built and developed to evaluate the future evolutions of current best practices and trends.

In parallel to this, the SPREAD People’s forum, named “iFuture”, brought a “real-world” perspective to the development of questions related to visions, roadmaps and further research, by engaging citizens from different EU countries in workshops and consultations. It aimed to understand the people’s diversity and attitudes towards lifestyle change.

Finally, SPREAD resulted in a roadmap for strategic action that identified opportunity spaces for policy, business, research and civil society to enable more sustainable lifestyles across Europe (Hicks *et al.*, 2012).

The whole project approach and process may fall within the scope of this book, but considering the responsibilities and involvement of the authors, we describe in particular the “Vision Workshop”, held in September 2011 at Politecnico di Milano, with the purpose of generating the visions that would have been at the basis of the future scenarios (Corubolo *et al.*, 2011).

2.4.2 SPREAD Vision Workshop

Title of the codesign activity: *Vision Workshop* - Envisioning the potential for new sustainable lifestyles and their enabling factors. In-presence. International scope.

Aim: To *generate* a set of visions of sustainable future lifestyles in Europe in 2050, starting from a large base of diverse inputs, such as case studies of good practices, stories, solutions and technological or social innovations. Visions are intended as concise and eloquent visual images and/or narratives about the future that propose a concept with distinctive values, according to the approach “what if...” (Manzini and Jégou, 2004).

Participants: *Representatives of the project consortium, with different expertise (in the areas of sustainable consumption and production) + 20 external experts from the fields of futures planning, scenario planning, urban planning, design and sustainability.* In total, around 45 people organised in 4 mixed groups, each coordinated by a designer and in charge of creating a vision. The workshop was designed as an expert activity, in which the core group of experts was complemented by other specialists, bringing to the table their specific experience and knowledge. The idea was to create a place for an informed debate stimulated by inputs, mainly conveyed through a deck of “idea cards” about the future built on a vast collection of promising practices, made as well available to the participants. Mixed groups were created in order for each one to have all the competences to generate a comprehensive vision. After this, participants were grouped according to their expertise in the four project domains, in order to evaluate some specific aspect across the different visions.

Style of guidance: *Steering.* The workshop was organised with the idea of stimulating the participant capacity to envision possibilities beyond the existing way of doing things, so to challenge today behaviours and conventions. For doing this, the role of the designer was crucial in illustrating and discussing with them the different options pre-elaborated by the POLIMI DESIS Lab in forms of provoking “idea cards”, to stimulate the imagination and activate the critical thinking.

Design subject matter: *Topic-driven.* The material provided as input to the workshop was organised according to the 4 domains considered in the research project, each corresponding to a topic: consuming, living, moving, health & society. Therefore, the conversation started from these topics with

the aim of envisioning cross-cutting solutions for the everyday life in the future. Nevertheless, the nature of the boundary objects utilised in the workshop was slightly hybrid, in-between case studies and seeds of concepts/ideas about the future, synthesised in the so-called “idea cards”. Yet, the number of inputs provided to the participants through the cards was so high and diversified that they were intended more as inspirational icebreakers, than actual orientations.

Double Diamond stage: *Convergent - define.* Despite the creative and generative character of the workshop, its aim was converging towards 4, well contrasted, visions for the future. Therefore, it went through divergent and convergent phases, in order to scope the field of work and define few clear orientations for the scenarios.

Environmental set up: The workshop was held in a large room with natural light, organised in 4 “islands” each one with a big table, chairs and a big board to hang materials. More than one time during the workshop, participants were free to move around the islands to see and discuss the progress of the work. In the initial and final parts of the workshop, plenary moments were organised to share inputs, guidelines and results. A desk and a projector were available in the room for sharing visual material and guiding the activities to be carried out in parallel by the groups.

Duration: *2 consequent days.* From 9 am to 6 pm the first day and from 9 am to 5 pm the second day. The 22nd and 23rd of September 2011. Activities were conveniently split between the days, so to facilitate the critical reflection on the work done.

Description of the process: The workshop was conceived by the team of Politecnico di Milano and SDS-Strategic Design Scenarios, a strategic design consultancy in Brussels.

The full process went through an initial divergent phase in which participants received diverse stimuli and were invited to build on them. Then, the coordinators requested them to come out with some articulated visions. A broad assessment and consequent development of these visions was finally done during the second day. Therefore, the workshop went through moments of dialogic and dialectic exchange. The workshop moved from an initial “design artifice” thought to turn a big amount of inputs into a game: this was the deck of “idea cards” designed to provide, through solutions inspired by emerging promising practices, ideas of how current sustainable living options might evolve into the future.

Day one: participants were split into 4 groups corresponding to the 4 main European regions (Central Europe, Mediterranean Europe, Northern Europe and Eastern Europe). The work was concentrated on the “WHAT and WHY” of the visions. Their input tasks included:

- discussion and comment on the ideas cards from the perspective of the different domains of activities, and different personal expertise;
- selection of the ideas that best fit the respective regions of Europe, according to the different geo-cultural situations;
- co-creation of additional emerging practice ideas;
- combination of the cards/ideas into a consistent whole and development into vision story-lines cross-cutting the 4 domains. In doing so, the cards were pinned on the posters;
- articulation of a narrative to describe the everyday lives of the people who would inhabit the so generated visions.
- plenary sharing of the results.

Outputs of the first day were 4 cross-cutting visions described in good details and summarily visualised. Each one touched upon all the 4 domains and presented one or more specific solutions per each.

Day two: participants were gathered into 4 new groups, according to their expertise in relation to the domains of the project. The work was concentrated on the “HOW and WHO” of the visions. Group work tasks included 2 main peer-to-peer activities:

- discussing and evaluating the visions produced on the first day, by looking at the four proposals;
- discussing the factors that can potentially hinder or enable the implementation of these new ideas (i.e. the drivers, barriers and gatekeepers) and that could bring about or obstruct the visions.

The output of the second day was a realistic initial evaluation of the visions for 2050.

Boundary objects - prototypes and tools: The boundary object created for this workshop was a combination of diverse tools, that would have produced an articulated poster of each vision by the end of the second day.

Each group of participants was endowed with: a deck of 52 “idea cards”, a big poster organised in different areas, some thematic note papers for different domains of activities, and some note papers for barriers,

drivers and gatekeepers. Additionally, they were provided, for consultation, with the full booklet of the case studies of promising practices toward sustainability, from across Europe.

Idea cards: the deck of 52 ideas cards, organised in 4 different domains (consuming, living, moving, health & society), was designed to provide ideas on how current sustainable living options might evolve into the future. Contents of the cards were the projections into the future of the most original concepts of sustainable living practices identified in Europe. Envisioning what more sustainable living might look like, they acted as provocative (seed of) ideas, supporting an expert socio-technical conversation about the future. The cards were generated through a creative process: first, a number of different social and technological innovations and practices were clustered, and then their evolution into the future was hypothesised. “Blank” cards were provided in order for the experts to create them, on the basis of the own knowledge. Cards were being read, commented (a blank part was left in each card), sorted, manipulated and selected by the participants for creating an initial group vision on the future, composed by different “seeds”.

Poster: the poster was a canvas to be populated with cards, other paper notes, drawings, schemes and annotations of the participants. It was organised in 4 main areas to be used in the two days: 1) a big space for pinning the idea cards selected by the participants and elaborate them into a vision; 2) a side part to specify, through a narrative, possible solutions for the everyday life; 3) a bottom part pre-organised as a space to create two storyboards of future lifestyles; 4) a final part, for the second day, to be populated with the paper notes on barriers, drivers and gatekeepers, filled in by the participant to assess and comment the visions.

Paper notes: paper notes highlighting the different domains of activities were provided for helping the creation of the vision the first day, and with barriers, drivers and gatekeepers to assess the visions the second day. They both were intended to frame the debate whilst being a place to capture the participants’ thoughts.

At the end of the workshop, posters were complete, so providing a comprehensive picture of the visions.

As a whole, the set of codesign artefacts configured an articulated boundary object, composed of the different interlinked tools used to stimulate creativity.

Final output: The workshop produced 4 draft visions on possible futures of more sustainable ways of living. Developed as narratives of what the future could be and by considering a cross-cutting approach to

lifestyles, they were annotated with the relevant drivers, barriers and gatekeepers. The material was post-produced with the help of the coordinators of the tables. Each vision was articulated with 1) a general description highlighting its distinctive features, 2) a visualisation, 3) a specific narrative with a day-in-the-life of a persona, 4) the set of idea cards that inspired it. Finally, designers created also short animations summarising the visions, for more effective communication.

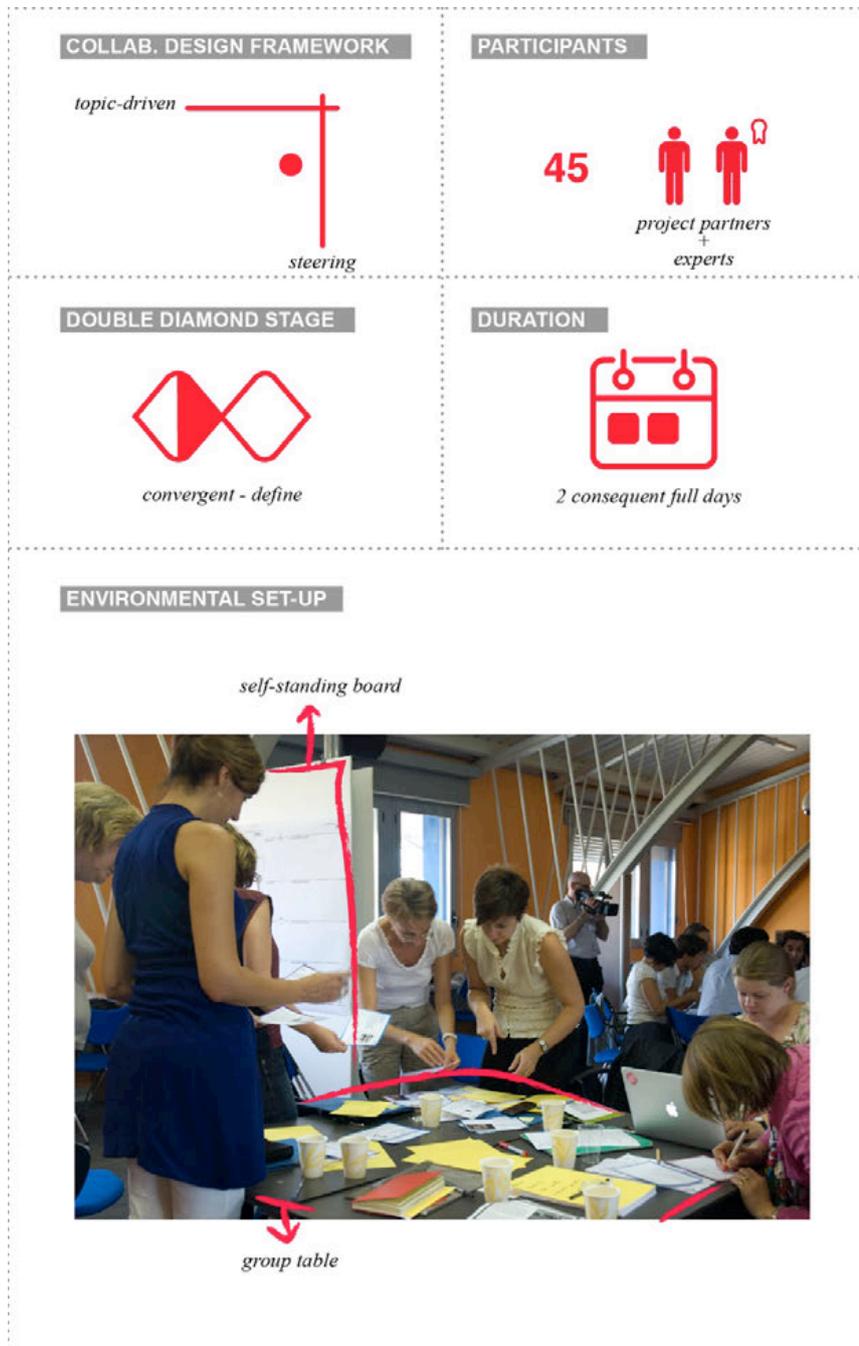


Fig. 2.26 – SPREAD Vision Workshop / POLIMI DESIS Lab

BOUNDARY OBJECTS: TOOLS AND PROTOTYPES

paper notes



idea cards

FINAL OUTPUT

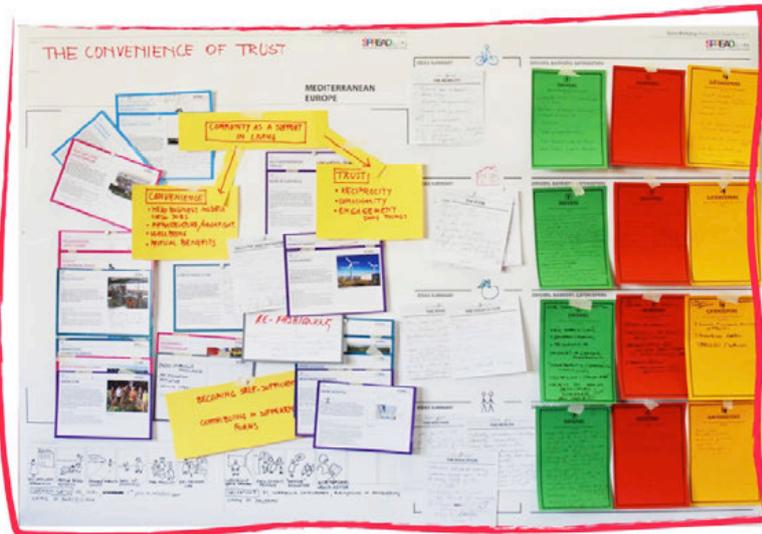


Fig. 2.27 – SPREAD Vision Workshop / POLIMI DESIS Lab

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PART 3: Designing Codesign

This third part presents the lessons learnt from the case studies and provides a more extensive reflection on the Collaborative Design Framework.

Firstly, it attempts to organise the lessons learnt in 3 main clusters: process, experience and boundary objects. For each cluster, a set of specific focuses is outlined relating to key-issues, such as “engagement and recruitment”, “intensity and fun”, “relationships with participants”, “roles and rules”, “room for improvisation” and many others. Though this list is not to be considered complete, it aims to bring valuable insights to those designers who deal with similar projects.

Secondly, the Collaborative Design Framework is detailed by characterising the activities of the 4 resulting quadrants: “discovering and exploring options”, “imagining options beyond the world as it is”, “expanding and consolidating options”, and “creating, envisioning and developing options”. Each area is complemented with a set of recommendations, transforming the framework into actionable guidelines for undertaking massive codesign processes, hoping they become a new standard especially in the areas of public participation and social innovation.

3.1 What Collaboration Teaches: Quick Lessons Learnt from Practice

This chapter presents empirical and pragmatic considerations on the codesign practices previously illustrated. It is a set of just some of the lessons learnt but nonetheless insightful for designers aiming at undertaking similar ventures. The lessons are organised in three large clusters that refer to: the process, the experience and the boundary objects.

3.1.1 The Process

Engagement and Recruitment

Despite the fact that the aim and value of some codesign activities rely on the engagement and involvement of people rather than designing solutions, the specific criteria relevant to the project should always be taken into consideration when selecting participants for the activities. Amongst the criteria, variety and differentiation are likely to be crucial. Engagement and recruitment therefore cannot be undertaken by merely tapping into the researchers' networks and relying on a consequent "snowball effect". In fact, this is likely to attract too many "usual suspects" and likeminded people. Moreover, their relationships with the researchers risk influencing their behaviour, jeopardising spontaneity and producing overly homogeneous contributions.

Examples:

CIMULACT: Especially during the first codesign activity, we relied on our established network to recruit citizens. This probably affected the results, as they were conceived by people who shared very similar interests, political visions and values. Since the group was intended to represent the wishes and concerns for the future of an entire nation, we believe that we

did not obtain the most credible picture of the thoughts of the Italian people.

Creative Citizens: the participants were highly-committed residents of Municipio 4. We may claim that this experiment involved an actual community of activists and, as a consequence, this also affected the results, which were highly collaborative services, conceived by people who considered collaboration as an essential component of their lives.

The project did not deal with the great challenge of including people who tend to be reluctant to participate: this was an intentional decision by the researchers who could not afford a long and demanding recruitment process, and, above all, because they decided to experiment their codesign methods and tools within the protected environment of an active community.

Feeding Milan: participants in the “idea sharing stall” were visitors to the farmers’ market. Despite the novelty and appeal of the place, the population was unquestionably segmented: likeminded people with a preference or at least a special attention for quality and for fair food systems. This affected the codesign results and made it difficult to understand how to attract people with different priorities.

Beginning and End

As in any effective meeting, a clear agenda of the activities and the expected results must be set and shared with all the participants. Yet, as codesign activities also represent moments of immersive practice and commitment to collaboration, it is crucial to define precise actions and even “ceremonies” of beginning and conclusion. The beginning, whatever circumstance and participant we consider, needs an equivalent of an ice-breaking practice: it is not necessarily enjoyable, but thought to increase empathy and trust between people. A “wrap up artifice” is required for the end: something that at the same time allows participants to draw the conclusions of their work and the coordinator to gather all the relevant knowledge produced.

As a general rule, since complex and/or massive codesign activities may produce copious outputs, it is useful to design tools to collect them in a manageable way. Therefore, a good codesign process is likely not only to facilitate a natural flow of created knowledge but to capture it too.

Examples:

CIMULACT: Almost every codesign activity within the project started with a warm-up stage. During the initial consultation with the citizens we asked them to think about the past and try to figure out what their parents’

or grandparents' concerns for the future could have been. This was an essential step for them to break the ice within the group and "train" their minds to shift the focus from the present in preparation for the following activity. Another warm-up example occurred during the "Co-creation workshop". On that occasion, we organised an exhibition showing posters on social needs and asked participants to visit the exhibition before the group work activities.

That proved successful not only in familiarising them with the contents of the workshop, but also allowed the citizens to choose the group they wanted to join.

Creative Citizens: the codesign activities carried out during the project resulted in 6 boundary objects representing the 6 final services, together with 6 posters summarising the main related features. Posters and boundary objects were both used during a sort of "closing ceremony" for the entire experiment: a special moment to exhibit the results of the project both to the Municipality of Milan and to an extended group of local residents. This final event was a combination of a public presentation and an exhibition, and for the participants it represented a "golden moment" as they were given the opportunity to show off and share their work to their "natural recipients" i.e., a group of representatives from the local government.

Feeding Milan: in this project we did not actually plan the end. Gradually, visitors to the farmers' market became familiar with the "idea sharing stall" and expected to interact, and this occurred above all during the first part of the project. Then we started to reduce our presence at the Earth Market, which became very sporadic, without properly communicating our "disappearance" to the visitors. The main reason was that the project was nearing the end, and we did not need to experiment anymore, but in hindsight while we knew this others were not who were expecting to interact with the "idea sharing stall". We neglected to organise an actual "closing event" in which to invite visitors and stakeholders and communicate the results.

SPREAD: the work done during the "vision workshop" was supported by tools and evidence that was eventually advertised on an all-inclusive poster. This helped not only to collect the relevant material, but also to inform participants about the progress of the work and the fact that a result was achieved at the end.

Flow of Activities

Some codesign processes are not limited to a divergent or convergent phase of thinking, but actually combine them. This may result in a loss of knowledge and inputs, not only due to the difficulty in gathering them, but

also to the method of selection. In our experience, for instance, converging toward consensus through negotiation in a dialectic approach is not always the best way to proceed and may lead to oversimplification and abstraction. We claim that, in order to not lose ideas with distinctive features and unique meaning, asking participants to vote rather than converge could be beneficiary for the quality of the outputs.

Moreover, in the divergent phases, challenging and provoking the participants with unusual viewpoints, thoughts-associations or creative practices may result in a “wow effect” that is extremely positive for creativity.

Examples:

CIMULACT: this process continuously alternated the collection of information and the clustering of common partners, through a process of abstraction. This implied a natural loss of details that, somehow, reduced the breadth of the results.

In the same way, when working in groups towards a common result, the members always needed to reach consensus. Hence it was always a matter of choosing one of the options proposed by the members or trying to match them in a unique vision. In this latter case, we often experienced a loss of originality.

One example above all is represented by the difference between the individual stories and the collective visions of the future proposed during the first CIMULACT consultation. All project partners agreed that the individual stories were much more interesting and detailed than the visions which often resulted in a “patchwork” of different ideas with no strong concept at the base.

Creative Citizens: during the entire project divergent and convergent phases alternated - also within a single session in which we needed at times to accelerate the shift from a moment of exploration to a more effective moment of synthesis. Such change was in some cases improvised in order to deal with the emergence of a never-ending discussion on case studies and, thus, to shorten the discovery phase. This was left to the designers who were also the final evaluators of the ideas that emerged during the sessions. In fact, even if participants expressed their opinions and preferences on case studies and related service features, designers re-elaborated all these elements into a service concept, giving a final “shape” that should have been relevant for the participants, but, above all, built upon their sensibility and the expertise of design professionals. This design intervention, in a truly “steering” style of guidance, ensured effective

results, but it left open the issue of how to better balance high consensus vs output quality.

What and How

In Codesign, it is better to concurrently consider both the “what” and the “how” of a future solution in order to receive sound input from the participants. Any scrutiny of the qualities and characteristics of a service concept may, in fact, be superficial and misleading if not collaboratively reflecting on the behavioural changes that it might require of the people. In other terms, on “how” and “at what (behavioural) costs” one may adopt it.

Another consideration along this line of thinking regards the efficacy of highlighting gaps of perceptions about a certain topic, considering people’s different experiences and viewpoints.

Examples:

CIMULACT: During the “Co-creation Workshop”, in which we elaborated scenarios for the future, it was crucial to understand the differences between the present situation (“state of the art”) and the one envisioned (“future direction”). Merely by identifying these differences the group found the research directions that could lead to the realisation of the scenario.

Creative Citizens: the “what” and the “how” of future solutions were extensively considered in Creative Citizens, because every service was conceived as being rooted in the reality of Municipio 4. Hence, during the ideation phase, each citizen was led to imagine the ideas as if already in function in the neighbourhood and integrated in his/her daily life, considering time constraints, habits and effort-benefits ratio. We may claim that the focus on the “what” and the “how” of each service was one of the most positive aspects of the Creative Citizens project, in which the codesign process was conceived as a precondition for the coproduction of resulting solutions.

Feeding Milan: in codesigning the farmer’s food box we underestimated the deep study of the motivation behind people actually adopting the service and becoming users. The idea of a weekly delivery of fresh and local food, in fact, was generally appreciated, but the following field prototype showed that actual adoption thereof still proved difficult, implying as it did an “engagement” with food in terms of regularity of consumption, preparation and general constraints that, for many testers, were too limiting.

Artificial Intelligence and Digital Aid

By their very nature, massive codesign processes produce a huge amount of information and qualitative data, as input and output. The familiarisation and systematic use of software and systems that may help in analysing contents, recognising relevant patterns, sorting and clustering information in order to gain insights is no longer an option but rather a need. While the use of online questionnaires is now de rigueur for many designers, more sophisticated tools still need to be adopted. Nevertheless, when it comes to data collection, the digital divide that may prevent many people from participating should be carefully considered.

Examples:

CIMULACT: one of the biggest challenges of CIMULACT was dealing with a massive quantity of information that needed to be elaborated each and every time. We were always worried about losing important information and not keeping track of everything in a proper way. We went through all the data processing manually which required a huge amount of time and carried with it a high risk of mistakes. We believe that devices that are today used for dealing with “big data” could have been extremely beneficial during the undertaking of the project.

Feeding Milan: the online survey used to investigate activities, relations and interrelations between the farmers was useful in giving us an understanding of the main picture and producing a first diagnosis of the situation. Yet, considering that the respondents represented 39% of the total (despite personal invitation, close contact and the opportunity to reply via the post) we can conclude that online delivery created a barrier with the target population (the farmers) mainly engaged with field work and in-presence contact with clients and peers.

3.1.2 The Experience

Intensity and Fun

Codesign activities are demanding. The cognitive effort and mastery of soft skills required to deal with others are often exhausting for both participants and facilitators. Sessions must be designed with proper time to relax, socialise and even play. Pleasure has to be part of the experience: attractive material and good food are crucial factors for the successful undertaking thereof.

Designer attention to graphic images, the environmental layout and visual appeal of all the codesign artefacts is just as important as how technically and semantically suitable they are for the circumstances.

Examples:

CIMULACT: we realized that the “Co-creation Workshop” was very demanding. In terms of timing, in terms of contents, in terms of collaboration among very different people. Even if we tried our best to simplify the process, it still ended up being exhausting. Unfortunately, due to the constraints of the project, we still cannot imagine how it could have been better structured.

A very positive case, instead, is that of the “Codesign Workshop” which struck the right balance between effort and relaxation and ultimately ended up being both pleasant and productive at the same time. Moreover, all the artefacts were well presented and thought out, meaning the process itself was smooth even if the contents were complex and intellectual.

Creative Citizens: session by session, we realized that the Creative Citizens programme was too demanding for participants and it was impossible to have the same group of people attending each weekly meeting. In hindsight, we would re-schedule sessions to twice-monthly to ensure the participation of citizens requiring considerable advance warning. We have therefore understood that it would be better to organise fewer meetings involving more attendees rather than allowing the same group to return each time. In fact, when the group of participants varies too much it is difficult for everyone to embark on a progressive journey.

Another of the critical issues that arose during the codesign sessions was the ability to balance the tone of the meetings. A climax emerges between “codesigning” and “having fun”: on one hand we were very strict in applying methods and tools, on the other we attempted to create pleasant, fertile situations, shifting from an academic and scientific language to a more popular one, and in general, trying to continuously adapt our contribution to the meeting. We understood that it was very important to interpret and manage the “mood” of the sessions: after all, participants interpreted Creative Citizens as an opportunity to become “designers of their daily life”, at least for a few months, while enjoying having fun at the same time.

Feeding Milan: all codesign sessions at the “idea sharing stall” were accurately designed in terms of evidence, spatial signs, artefacts and tools. We aimed to create a sense of coordination so as to make the participants feel like they were embarking on a quick but structured design journey.

Relationship with Participants

One of the golden rules of any codesign practice is that of keeping the participants updated on how the project is going in order to establish a fair relationship based on reciprocity. When the codesign activities take place at the beginning of the process and involve numerous participants, the relationship needs to be carefully tended, for two main reasons: 1) to motivate participants at the beginning of a long project, showing that their contribution is valuable even if it is difficult to see the connection between their input and the expected final result; 2) to keep the participants updated during long processes, connecting their work with the ongoing progress of the project.

Examples:

CIMULACT: What we constantly did throughout the project was update all the people involved in the various stages.

For example, we translated the official project newsletter into everyday jargon and regularly sent it to all the participants.

At the end of the consultations, we also organised a specific meeting inviting all the stakeholders involved in the previous stages or interested in the project, to officially demonstrate the results and also to receive feedback.

Creative Citizens: the participants were informed about and aware of the intense schedule of the process from the very beginning. As stated, participants were highly committed people with great expectations of the project: the main one was to develop actual working solutions for the neighbourhood and to present them to the Municipality of Milan. The relationship with the participants was carefully tended to, not only by keeping them continuously updated with newsletters and meetings, but above all by personally involving the design researchers who established long-lasting friendships with the participants. This may be viewed as a weak point: once the project ended, the further development of the solutions and any other initiatives relating to Creative Citizens was perceived as still in the hands of designers. We did not plan our exit strategy at all and after such intense experimentation citizens continued to refer to us for any issue, which is neither sustainable nor effective.

Roles and rules

In the particular, ephemeral and fragile circumstances of a codesign activity, the assignment of roles (both fictional and functional) may be effective and also useful in engaging participants. We believe this is particularly true when dealing with various communities working together:

in fact it can help in the balance of power, giving a voice to weaker subjects, stepping into the shoes of others and representing all viewpoints and expertise.

Furthermore, from an organisational perspective, this may also lighten the facilitator's duties, because the allocation of operative roles may help to spread the responsibility of supporting interaction and drafting reports on the work undertaken.

Finally, by attributing roles we are able to share ownership of a process between other participants, users or stakeholders. By doing so, it facilitates skill training and the transferral of design knowledge to non-designers.

Examples:

CIMULACT: during the “Co-creation Workshop” in particular, it was crucial to assign precise roles to the participants. The groups were mixed and included citizens, experts and researchers, all with various level of knowledge and from different cultures and backgrounds.

We felt that we could have assigned more specific roles in order to enhance collaboration. However, we ensured that all participants were aware of the reasons behind the roles assigned to others. We even designed different-colour badges so that people could be recognised in their roles.

On the other hand, the role of the table coordinator was extremely demanding. He had to perform multiple tasks: providing contents, moderating the discussion and often even keeping track of it. Too late we realized that we could have officially appointed one coordinator per group, specifically to keep track of the work.

Creative Citizens: during the codesign sessions all the participants were given the same role and contributed in the same way: no operative roles were specifically allocated as they were volunteers attending the meeting and contributing their time and skills to the project. If we could repeat Creative Citizens, we would more clearly assign a range of fictional roles in order to better manage the services generated during the programme. In fact, throughout the codesign process several citizens spontaneously emerged taking on certain roles and we did not build upon this trend enough. For example, Stefano could be the “location manager” of certain types of public spaces; Massimo might be communications manager; Elisa events producer; Daniela community manager, etc. In the future, we hope to design a set of tools to envision possible roles for the implementation phase: this is especially significant for innovative forms of services in which is necessary to link the codesign phase with the co-production phase in a more positive way, simulating a possible shared governance of the services among user-participants.

Feeding Milan: the role of facilitator in interactions with visitors to the “idea sharing stall” at the market was sometimes undertaken by the Slow Food team or other contributors and volunteers. This was the case in the farmer’s food box codesign which was a very positive experience as it showed how ownership of the project was actually shared.

SPREAD: on the second of the two days, the experts participating in the vision workshop were asked to provide feedback on the four visions created by the whole group considered from the viewpoint of their specific expertise. This peer-to-peer work allowed them to regain their professional specificity after having worked in multidisciplinary teams and proved highly useful in obtaining objective and thoughtful comments that were often directed at their previous work.

Do-goodism and Criticism

When talking about personal habits, interests and values in public, people (all of us) tend to be fair, correct and polite. When thinking about the future, goodwill and do-goodism often prevail over more critical and realistic reflections. On the contrary, in some cases we may find a tendency to become “doomers”, that is prognosticators of the worst possible outcomes from global occurrences. The more we ask people about fundamental values (sustainability, peace, family, friendship, rights, ...), the more good intentions and general visions emerge, possibly appearing as naïve, innocent and lacking experience and wisdom. Without more precise tactics for delving deeper into critical and specific issues, it is hard to stimulate more critical perspectives and debates within the relatively limited time frame of a codesign activity.

Examples:

CIMULACT: A demonstration of this is evident from the results of the first CIMULACT consultation with citizens.

The issue we were posing was very broad: they were asked to share their thoughts on how they imagine the future. The only stimuli provided were some random pictures, but the possibilities were left wide open. As a result, and as expected, the visions are pervaded by more “politically correct” ideas, generally aimed at more equal rights, a fairer world and sustainable habits.

Creative Citizens: even if the general trend in public circumstances is to be fair and polite, this was not the case within Creative Citizens. In some cases, people used the codesign meetings to complain about the neighbourhood, the municipality, the government in general and it was difficult to change the direction of the discussion into something positive

and constructive. We understood that one of the main prerogatives as a designer should be the ability to turn complaints into proposals and we have to support this change designing specific methods and tools that are certainly worthy of further research.

Feeding Milan: as previously stated, visitors to the farmers' market were people highly sensitive to the issue of sustainability. They were attentive to the origin and quality of food and, thus, tended to be enthusiast and welcome our proposals at the "idea sharing stall", which is why generally they demonstrated good intentions, without really criticising our ideas.

SPREAD: even the experts involved in designing future visions for 2050 somehow risked falling into a do-goodism mentality. When creating visions, in fact, the optimism and positive thinking required risks turning into scarce self-criticism. In order to avoid this and to start assessing the visions, participants were invited to work on barriers to implement them and, above all, the facilitator encouraged the group to reflect on the negative effects and situations that certain transformation may have generated.

3.1.3 The Boundary Objects

Boundaries

Despite intentions, the material prepared for codesign activities is not always suitable for the circumstances. Considering boundary objects as entities that can be shared between and therefore understood by different communities, true linguistic and approach mediation is crucial. This becomes more complicated when people from extremely varied communities converge at the same codesign table. The message and the language cannot be adjusted without prior research on the target groups, their skills and interaction habits. One example of this is the need to share scientific contents with non-experts and people with lower levels of education: explaining what solutions could be provided by scientific achievements is a good way to transmit the message, but it may introduce limitations and bias within the exploration of future applications.

Examples:

CIMULACT: The "Co-Creation Workshop" was very challenging in this sense. The subject matter of the entire project - the research programmes - was complex and expressed through a more scientific language, thus making it hard for a non-expert audience to understand.

Nevertheless, we decided set up one task to specifically draw out citizens' opinions: the description of what is "state of the art". We simplified it by separating the expert perspective from that of the lay-person as we believed that those solutions available to scientists are inaccessible to citizens. The results confirmed our belief and were so different that we, as a consortium, decided to propose a research topic in order to address such a relevant issue. The topic elaborated was entitled: "Dissemination and continuous exploitation of research and innovation in the healthcare system".

Manipulability of the Boundary Objects

The importance of designing boundary objects (prototypes or toolkits) perceived as being or which actually are able to be manipulated by codesigners – including being completely disassembled and reassembled – should be emphasised. To this end, we recommend the preparation of modular structures, comprised of pieces and elements that participants can creatively modify from the earliest moments of the activity.

Examples:

CIMULACT: during the "Codesign Workshop", the 3D representations of the scenarios were boundary objects that had been specifically designed and studied as artefacts that could be manipulated. All of them were composed by movable modular parts. During the prototyping activity, the group could choose whether to build a 3D model from scratch or to start with the ones already provided and just modify them. Most of the groups decided to modify the existing ones, meaning that they were already inspiring and functional in forming the new idea.

In the Caravan process, we used "workshop delivery scenography" that was actually a boundary object designed to be manipulated and adapted to the various situations. It was conceived as a "workshop trolley" equipped with a CIMULACT brand-sign, a screen playing an introductory video about the whole project; storage for all the workshop material to be used in the room and other material necessary to set up the hosting environment.

Creative Citizens: for the prototyping sessions we built a set of boundary objects representing the concepts elaborated in the previous meetings which also became the departure point for their implementation. Hence, we used them both as a way to introduce as well as elaborate and detail the service ideas. For this reason, we conceived boundary objects consisting of different modules ready to be manipulated, or with blank spaces to be filled in. For example, when we designed the board game mock-up for the Municipio 4 Ciceros, we envisaged tracing the routes

along the map of the city and superimposed various layers of the map. This board game also became part of the final “exhibition”, presenting the services to the Municipality of Milan.

Feeding Milan: both the “farmer’s food box” prototype and the “conversation table” used for codesigning the local distribution system were considered manipulable artefacts. Though they were mainly operated on by the designer in order to support the explanation of the proposed concepts, this both apparent and real openness of the artefacts gave the impression of a dialogue regarding open subject.

SPREAD: we thought to integrate the “idea cards” used to lead the initial conversation during the vision workshop with comments from the participants and then edit and transform it. And so we did. The resulting texts were pinned to the posters to create the team’s vision of the future.

Room for Expression, Imagination and Improvisation

Boundary objects, considered to allow “interpretive flexibility”, must be open enough to be integrated by the participants by completing missing parts and adding comments and stories, including new elements. This could be done in a number of different ways: verbally, visually or through writing. This suggests the importance of not overdesigning interaction, leaving room for improvisation and creating “open” artefacts.

Yet, even when tools and prototypes are created with “blank” areas to be filled in or transformed by the participants, when components can be manipulated, and when new ideas are welcome, unless they have a proper time and setting this important co-creation phase may be underperformed. Therefore, on one side, keeping aside specific time during a codesign session for the individual expression of the participants is vital if we want to enrich the work. On the other, especially when dealing with people who are unfamiliar with creative and pro-active processes, too much freedom and “blank” templates may paradoxically inhibit people’s contribution.

Examples:

CIMULACT: As designers, our designs tend to always be in accurate detail, whether they are templates, models or visualisations.

Indeed, all the codesign sessions managed by the POLIMI DESIS Lab were carefully designed in each and every aspect; this often helps to maintain a certain level of control, but can also leave very little space for improvisation.

Instead, we learnt a great deal from the “Social Need Clustering Workshop” in which the process was roughly sketched and we were able to appreciate how it evolved and formed while in progress. Seen from the

opposite viewpoint, this brings with it a certain amount of risk, so the optimal solution probably lies in a happy medium between the two possibilities.

Creative Citizens: at the end of the programme we realized we had “over-designed” several meetings. We designed and developed tools that – for a number of reasons – were not used: either we ran out of time, or citizens were too involved in discussing other issues, or they were exhausted after a particularly demanding phase.

As designers managing the sessions, we have to be able to recognize when it is time to change something or to simply leave space for improvisation, feeling the “momentum” of the session and letting it flow.

SPREAD: the “idea cards” used to generate visions included a blank area for comments, and some completely blank cards were provided to add participants’ practices and knowledge. Generally speaking comments were added though hardly any cards were created from scratch. Paper notes were provided for noting barriers, drivers and gatekeepers and these were instead fully used, as we dedicated a specific exclusive slot for this activity.

Visual Thinking

The construction of 2D and 3D visual material (pictures, images, charts, mock-ups, and also 4D simulations) is extremely effective in creating boundary objects, since it permits the stimulation of both “perception” and “conception” (in the words of philosopher Dewey) therefore facilitating understanding and creativity. In the inspiration phases in particular, pictures are more effective than diagrams in helping people to think creatively while, conversely, different forms of data visualisation may help in decision-making, selection phases and, finally, convergence.

Moreover, visual material seems to be more effective when used as input in codesign processes than as output: in fact, montages of images, drawings, mock-ups or other artefacts potentially generated in a session may hardly be decipherable and interpretable beyond the actual scope of a workshop. This is particularly the case in the codesign of services, the intangibility of which makes it even more difficult for non-expert designers to visualise evidence or, even more so, “tone of voice”. For this very reason, the chance and convenience for a designer to work on the visual material produced as an output of codesign activities is clear.

Examples:

CIMULACT: As well as the “Codesign Workshop”, in which we used an extensive amount and a wide range of visual material, overall the project did not benefit from visualisations as enhancers of complex content. The

“Codesign Workshop” was the most familiar ground for visualisations being aimed at designers, but we could have challenged ourselves even more, using a more visual language with other audiences as well.

During the “Co-creation Workshop”, for example, we used text almost exclusively. We were of course limited by the fact that research programmes are written, therefore we were somehow induced to use text.

However, during the session, we looked for images to accompany the concepts outlined, but it was very difficult to find something that could be representative of such deep and intellectual ideas so quickly.

Creative Citizens: we designed a great variety of 2D and 3D visual material, mainly as inspiration for starting the conversation and to make the sessions more interactive and imaginative. This was particularly necessary because Creative Citizens dealt essentially with services, which being intangible meant we had to find a way to make every last detail visible. In the warm-up meetings we used numerous inspirational pictures and ad hoc photomontages, including them in the “Suggestion Cards” or the “Good practice boards” and citizens often referred to those images in their discussions. When we had to design the user journeys, we mainly created diagrams and schemes which were less powerful in terms of inspiration, but which helped participants envisage each service stage. We printed them in large formats so we could all work on the same template in view of establishing actual interaction. They also functioned as a final “deliverable” during the generative sessions.

3.2 An Actionable Collaborative Design Framework

This chapter discusses the action research projects previously presented in the Collaborative Design Framework and suggests some final directions on how to plan, design and implement codesign activities for massive collaborative processes.

3.2.1 General Considerations

We have organised our thoughts on the practice in 3 main clusters of issues, each one characterised and discussed with reference to the 4 quadrants of the Collaborative Design Framework (chapter 1.3).

The first cluster is about **how to design effective boundary objects** (prototype and tools) and how to manage the interaction with them. A first general consideration concerns the potential of the artefacts to bridge different worlds and cultures. We have seen that it is not easy to find objects that can adapt to very diverse communities as is the case in massive processes in which many different people are engaged often all at the same time. In fact, it implies that boundary objects are either changed from session to session (this is the case of some phases of the CIMULACT project) to comply with the kind of participants, or built in multiple layers of complexity and with adequate languages.

Another general consideration regards the importance of flexibility and manipulability of the boundary objects, which goes together with dedicating enough time during the sessions for imagination, improvisation and personal expression. In the case of codesign activities populated by numerous participants with dissimilar backgrounds (such as experts and citizens together), there is a high risk of losing some voices. Self

expression can be facilitated by assigning roles and isolating moments for individual reflection and collective sharing to ensure that everybody can contribute without anyone feeling inadequate.

A third requirement in complex and massive processes, is to design boundary objects that can facilitate the capture of feedback and inputs from participants. Given the huge amount of data that is likely to be generated, the management of the data must be well planned before the activity in order not to rely only of the work of a reportee as a source of synthetic information. This is connected with reflections around the process.

The second cluster of issues regards **how to approach and conceive a codesign process** in the emerging fields of systems and service design. A first question is how to enrol participants: we have seen that the risk of recruiting solely via the researchers' network is to reduce the variety of people and perspectives. This can result in serious biases in projects in which the collection of multiple and diverse inputs is a key factor of success.

A second general consideration is how to manage the complexity of a flow of data that increases as the process unfolds. In extended consultations this flow is massive and continuous. While the design community is increasingly getting familiar with online tools for conducting surveys or questionnaires, this is less the case for artificial intelligence, data mining, machine learning or other recent digital technologies. This includes learning to understand and organise data through visualisations.

Finally, it is worth reminding the importance of being particularly attentive to the design of the beginning and the end of the processes in order to correctly frame the state of mind of the participants and to make the logic and concatenation of the activities comprehensible and the results produced together understandable. This is in line with the consideration of Aguirre, Agudelo and Romm (2017) that the experiential qualities of a design facilitation process peak at their inception and end. «At the beginning of these events, experiential facilitation tools may have been used to create momentum among participants. And when events were close to finishing, experiential tools were likely used to support the participants' collective memory and shared sense of accomplishment» (p. 206).

The third cluster of issues is about the **expected results of the codesign activity** that are to be analysed from two perspectives: their impact on participants and the quality of the outputs actually generated.

There is a well established narrative in design about codesign as a way to create engagement, ownership and awareness. The same holds for its

role in building relationships with stakeholders and enabling them to act and create networks from which new opportunities may arise (Hillgren *et al.*, 2011). Yet, it is worth observing that, when participation is wide and multi-actor, the triggers to engage people are necessarily very different and we have found that focussing on a common intention, rather than on motivations is more effective. In fact, when there are so many parties involved, the attempts to create a common alignment on a shared vision by leveraging motivations might results completely pointless.

A second general consideration concerns the requirement of keeping all stakeholders and people engaged in the previous phases updated over the whole timespan of a project. This is crucial in massive processes because it helps to secure a base of trust and respect for the project and the approach, contributing to create a solid culture of participation and collaboration.

A final point to ensure that codesign has an impact on participants, regards the ability of the process to transfer “design thinking” competencies and to empower participants to make things happen by providing a cultural and technical “infrastructure” for doing, rather than doing things for them. This approach is crucial in projects with social innovators, so that the capacity of operating as “coach” of groups and communities is one of the crucial skills of a designer in this context.

With regard to the results generated in terms of design ideas, the wider and ambitious is the project, the more diversified is the chain of codesign intermediary outputs (from visions, to product/service specificities). Here, the ability of the designer lies in controlling this evolution, curating consistency, meaning and features of the design object.

When it comes to services, this normally implies an increase in the number of stakeholders and relevant parties. In large participatory projects, the outputs generated at the beginning of the chain inform the whole process and therefore are crucial for its quality and success. Therefore, we must pay special attention to the design of the first phases, which produce the knowledge basis and the insights that will inform all the following activities. This could require testing the codesign activities (not only the process but also the actual outputs) with a limited number of participants, before implementing them on a bigger scale.

Without expecting to be fully exhaustive, in the following, concluding, paragraphs, we will outline a series of proposals on how to tackle the design of the boundary objects, of the process and how to set the expectation of the results in the four quadrants of the Collaborative Design Framework.

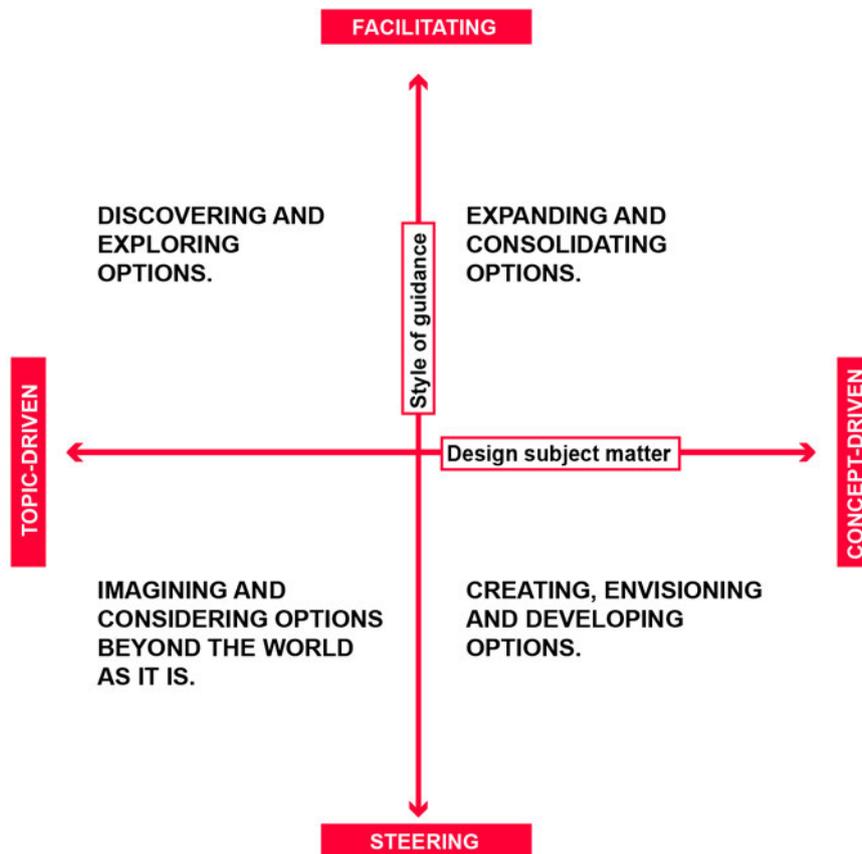


Fig. 3.1 – The Collaborative Design Framework

3.2.2 Quadrant: Topic-Driven / Facilitating

This area is about discovering and exploring options. Collaboration is aimed at taking into account the needs and experiences of relevant stakeholders and users, in order to capture their knowledge and/or engaging them in the process.

Boundary objects – Tools and prototypes:

- Boundary objects used in this context are a series of toolkits which work as “scavenging” devices, to extract the experience, knowledge,

desires and needs of users and stakeholders to scope the project and frame its fundamental assumptions.

- Visual materials such as pictures, 3/4D mock-ups and spatial environments are effective ways to stimulate people's thinking in the "discover" phase, while graphs and charts summarising information and (big) data, are tools that help the selection and decision process in the "define" phase.
- The openness of tools and attitudes (blank spaces, unfinished artefacts, open room for contribution, etc.) is key to create a genuine environment for listening (designers) and being heard (participants).

Approach and process:

- Asking questions that are too wide or addressing values that are too fundamental can produce answers that are generic and idealised. Focussing on more specific issues accelerates the dialogue and helps address key aspects more critically.
- When codesign activities are focussed on broad topics, an ice-breaking activity can help include all participants and allow them to get to know the designers and each other. This can be designed as an opening "ritual" that helps to generate a collaborative state of mind.
- The analysis of the data produced in this phase can be supported by artificial intelligence, data mining, machine learning or other digital technologies. This implies to take into consideration the digital competencies of the codesign participants.
- Activities in this area overlap with rapid-ethnography, so that boundaries between the methodologies are occasionally blurred.

Expected outputs and outcomes:

- The outputs of this stage are stories, knowledge, insights and visions that will inform the following stages of the project, laying its foundations and ensuring its legitimacy.
- A huge quantity of outputs is likely to be generated in these phases. Appropriate recording instruments and activities need therefore to be planned in the process and potentially, be embedded in the codesign toolkit.
- For the participants, an expected outcome is a heightened sense of engagement and binding with the project and the design team.

3.2.3 Quadrant: Topic-Driven / Steering

This area is about imagining and considering options beyond the world as it is. Collaboration is aimed at stimulating the capacity of stakeholders and users to envision options beyond the existing way of doing things, so to challenge behaviours and conventions.

Boundary objects – Tools and prototypes:

- Boundary objects used in this context are toolkits working as “seeds” of knowledge and glimpses of practices that can inspire participants and stimulate them to think out of the box and the current constraints or habits. Their role is to provide the “bricks” for envisioning future possibilities.
- Materials challenging and provoking the participants with unusual viewpoints, thoughts associations or creative practices, help steering imagination through a sort of “wow effect”. This is amplified by the use of expressive visual material and storytelling.
- The openness of tools and attitudes (blank spaces, unfinished artefacts, open room for contribution, etc.) is key to gather suggestions from the participants and to open up otherwise uncovered project’s directions.

Approach and process:

- Functional or fictional role-playing activities are useful to facilitate the contribution to the project of all participants, because it allows for balancing the powers, giving voice to weaker subjects, stepping into the shoes of the others, representing all viewpoints and leveraging expertise.
- Sharing operational charges and duties with the participants relieves the designer from the responsibility being the only one to support the interaction and to report the work done, while it eases the design knowledge transfer to non-designers.
- A proper time for individual reflection must be planned, besides the one for sharing with the others, in order to let everybody find her/his room for expression.
- Voting ideas and concepts rather than trying to converge toward shared ones preserves from losing the most original and groundbreaking inputs with distinctive features and unique meaning.
- As for the previous quadrant, the analysis and scrutiny of the many data produced in this phase is better to be aided by artificial

intelligence, data mining, machine learning or other digital technologies.

Expected outputs and outcomes:

- Main project outputs are visions, clusters of ideas and strategic orientations to be used to steer and ground the following decisions about the project.
- Visual material such as assemblages of images, drawings, mock-ups, or other artefacts generated during a session are often hard to decipher and interpret if not combined with clear explanations. A key role of the designer is to visualise the outputs of these activities.
- The expected impact of these activities on the participants is nourishing their curiosity, stimulating their imagination and appealing to their personal motivation in taking part to the project.

3.2.4 Quadrant: Concept-Driven / Facilitating

This area is about expanding and consolidating options. Collaboration is aimed at expanding or assessing given concepts, adding elements of interests, feasibility and concreteness.

Boundary objects – Tools and prototypes:

- Boundary objects used in this context are combinations of prototypes and tools. They provide different options to choose from or open rooms for free expression about one or more given concepts. As such, they help participants to make up their mind about some topics and give them a way to integrate their knowledge into the proposal.
- Digital tools for consultations and assessments are useful to reach a vast audience, but need to carefully adapt their language to the target or/and provide participants with multiple levels of explanation.

Approach and process:

- The “what” and the “how” of the concept(s) discussed with the participants are inseparable and must be articulated through interconnected questions that help them to consider why and at what behavioural costs an innovation could be introduced in people’s lives.

- Involving stakeholders in managing the process and not only contributing to the outputs is a way to train their skills as service designers.

Expected outputs and outcomes:

- Main project outputs are enrichments, ranking, prioritisations and assessments that can be considered as pre-prototypes.
- The expected impact on participants is an increased interest and commitment to the project. Skill training and progressive transfer of knowledge about the topic and the process may derive from the involvement of the participants in running some codesign activity.
- Discussing about prototypes is not always the most effective way to evolve the design of products or services, but it can make questions and opportunities emerge unexpectedly. A listening stance on the part of the designer allows to learn from these moments and to incorporate them into the design process.

3.2.5 Quadrant: Concept-Driven / Steering

This section is about creating, envisioning and developing options. Collaboration is aimed at generating new possibilities or elaborating on existing ones. The creative and thought provoking process may also question some basic principles.

Boundary objects – Tools and prototypes:

- Boundary objects used in this context are combinations of prototypes and tools to intervene on the concepts.
- Modularity, scalability and transformability of the prototypes are mandatory to ensure that the creativity of the participants is not inhibited.
- Boundary objects must help designers step into other peoples' shoes and reflect outside their own worldview.

Approach and process:

- Designing a good experience for the participants is crucial for the positive outcomes of the work in this phase: nicely designed materials (prototypes and tools) and environments, well organised spaces and good food, help to release creativity during the demanding codesign sessions which characterise this quadrant.

- Time for fun, enjoyment and mutual discovery feeds imagination and creativity.
- Functional or fictional role-playing is an effective way to stimulate the contribution of all participants in this highly creative phase, balancing the power dynamics, giving voice to weaker subjects, taking other perspectives, representing all viewpoints and leveraging expertise.
- The involvement of stakeholders in designing the process of the codesign activity rather than only its outputs, is a way to foster project ownership and advocacy. This may contribute to generate the level of commitment needed to continue the project after the departure of the designer.

Expected outputs and outcomes:

- Main project outputs are scenarios, concepts and prototypes of services.
- As for the previous quadrant, the visual material such as assemblages of images, drawings, mock-ups, or other artefacts that might be generated during a session, being referred to services or scenarios, are often hard to decipher and interpret, if not associated to explanations. A proper role of the designer in visualising the outputs of these activities is key.
- The expected impact on the participants is the development of a sense of ownership for the project and a service design mindset and skills to implement it.

3.2.6 Conclusions: From Experiments to a Standard Approach

The previous set of practice-led and pragmatic guidelines aims to facilitate the replicability of the codesign experiences. At the beginning of this book, we claimed that the design of increasingly complex socio-technical artefacts, that we define scenarios and services, calls for engagement and participation; and that, for their very nature, these projects can be defined “massive”. Despite the complexity of a collaborative design approach, we believe that this could become a new standard for most projects, and for those regarding public interests, complex societal issues and policies, in particular. Furthermore, such an approach might help service organisations to create the social infrastructures that empower

human beings to creatively and continuously support each other and take projects forward (van der Bijl-Brouwer, 2017).

Adopting a definition by Hillgren (2013), these massive codesign projects are characterized by a «continuous process of building relations with diverse actors and by a flexible allotment of time and resources» (p.81): this makes it difficult to precisely plan efforts and assets and increases the risk of uncertainty in terms of the financial and human costs of implementation. The designer exit strategy also needs to be organized from the outset of the project. A requirement for the project to continue after the designers leave the team is how successful they have been in creating commitment and skills in the participants. This is due to the fact that the project is not only in the designers' hands, but is a shared endeavour of multiple actors, a form of collective intelligence in action to create more inclusive and effective solutions. Massive codesign projects, can in fact, be seen as systems which are shaped and directed by different purposes and worldviews: as Sangiorgi, Patricio and Fisk (2017) suggest, complex systems cannot be thoroughly understood or designed, therefore a codesign approach helps to interpret them collectively through a collaborative process.

Streamlining and optimising the processes, sharing experiences and lessons learnt is therefore a significant step into making massive codesign processes more feasible.

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