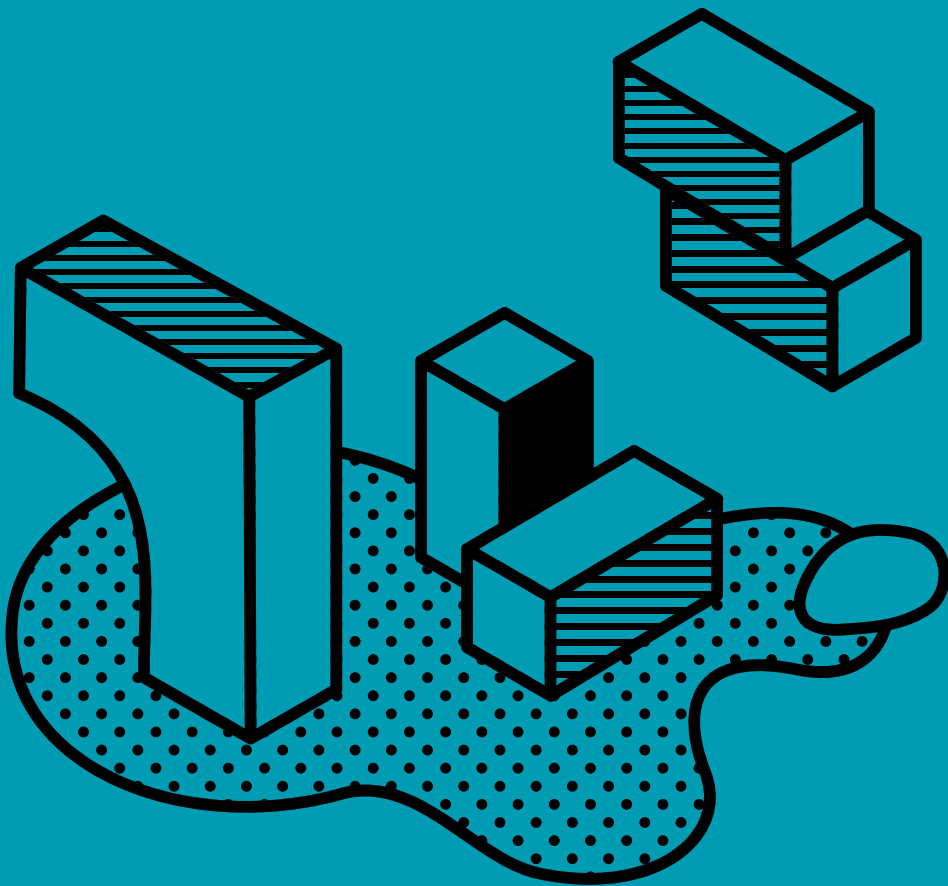# Designing Brussels Ecosystems

## Metrolab Brussels MasterClass II

**Bernard Declève**

**Geoffrey Grulois**

**Roselyne de Lestrange**

**Andrea Bortolotti**

**Corentin Sanchez Trenado**

**(eds)**

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projects in collaboration with local actors. These investigations on urban inclusion and hospitality in Brussels culminated in the In / Out Designing Urban Inclusion Conference and Masterclass organized in January and February 2017. The publication of the results of this Masterclass concluded by emphasizing the importance of the concept of "inclusive enclave" for urban policies.

The theme of urban ecology has been explored since 2017. For two years, it has given rise to seminars exploring the fields of political ecology, human ecology, metropolitan agriculture, urban metabolism, socio-ecological transition, etc. In October 2018, the Brussels Ecosystems international conference foresaw an integrated approach to environmental, social and political ecosystems. The Designing Brussels Ecosystems Masterclass was then planned as a testing ground for this transdisciplinary approach of urban ecosystems.

Each thematic cycle ends with a MasterClass where all members of Metrolab (researchers, coordinators, professors and administrators) apply methodological innovation to real-life situation and case studies in coproduction with stakeholders in the Brussels urban project (including actors in several Brussels ERDF projects). This means that the MasterClass is a unique moment for transdisciplinary experimentation and co-production: it calls upon the skills and knowledge of our researchers; it builds relationships with those in charge of ERDF projects and other urban projects; it experiments new methods for urban analysis, idea development, and urban project improvement. It allows international researchers in various disciplines (sociology, architecture, political science, landscape architecture, urbanism, geography, etc.) to gather in Brussels to reflect on the local ERDF programme and develop new and future-oriented suggestions aimed at improving urban policies.

This second Designing Brussels Ecosystems MasterClass explores the topic of urban ecology as part of a transdisciplinary methodological exploration of urban ecosystems and socio-ecological transition. How can urban ecosystems be approached from a transdisciplinary perspective? How can urban projects such as ERDF be mobilized to initiate a socio-ecological transition? The introduction to this publication defines the Metrolab approach to the concept of urban ecosystem and the methodology for investigating urban ecosystems. This methodology and the themes were defined by a group of researchers from Metrolab (Andrea Bortolotti, Bernard Declève, Geoffrey Grulois, Roselyne de Lestrange and Corentin Sanchez Trenado) in close collaboration with a scientific committee of local and international experts (Elena Cogato-Lanza, Brian McGrath and Serge Kempeneers) and the two Metrolab managers (Sara Cesari and Louise Prouteau). The introduction is followed by a presentation of the four Brussels Ecosystems explored during the Brussels Ecosystems Conference and Masterclass. It was prepared by a larger group of Metrolab researchers also including Marine Declève, Anna Ternon, Chloé Salembier and Stephan Kampelmann.

Following this introduction, the publication presents the design exploration co-produced by thirty researchers with diverse disciplinary and geographical backgrounds (Belgium, Italy, Spain, US, Turkey, France, China, etc.), in close collaboration with key stakeholders from Brussels. The publication closes with critical insights from the researchers at Metrolab and the international experts on the scientific committee (Elena Cogato-Lanza and Brian McGrath). We hope the Designing Brussels Ecosystems MasterClass and this publication are a first step toward building collective knowledge ecology in Brussels Ecosystems.

## Introduction
# Designing Brussels ecosystems

**Geoffrey Grulois, Bernard Declève, Roselyne de Lestrange, Corentin Sanchez Trenado and Andrea Bortolotti**

### Brussels Ecosystems: conceptual framework
**In Brussels the concept of urban ecosystem emerged over forty years ago, in the context of ecological studies conducted by the interdisciplinary teams of Paul Duvigneaud. The goal of Duvigneaud's work was to provide a broad perspective of the interdependencies that exist between the human and non-human worlds. While the positivist project of offering a global ecosystem science was eventually abandoned, the ecosystemic approach is today at the heart of research and innovation in a number of areas of natural sciences, social sciences, engineering, design and the humanities.**

Each of them includes the concept of ecosystem in its field of study in order to develop specific methods. Beyond the increasing weight of environmental issues, we suggest that the current ubiquity of the notion of ecosystem is contributing to an epistemological transition where more focus is placed on the interconnectedness of all things (human and non-human). Brussels Ecosystems intends to advance in this direction, experimenting with new interdisciplinary integrative tools for the critical evaluation and support of urban policies and urban projects.

Brussels Ecosystems is centred on a common goal: leveraging various aspects of ecology (natural, social, political and knowledge-building) as a basis for reflection on the interdependence between the components of a city, while taking into account the notions that the world is a finite pool of resources and that humans are an integral part of nature. In this way, Brussels Ecosystems wishes to contribute to forward-looking discussions on the transition of Brussels toward a new socio-environmental and technical regime.

In practice, Brussels Ecosystems included two different events: an international conference held the 18th and 19th of October 2018, and a MasterClass from 28th of January to 8th of February 2019. While the conference was intended to lay the groundwork the conceptual and methodological framework of Brussels Ecosystems, the MasterClass was a first experiment in its application to urban policies and urban projects in Brussels.

### A transdisciplinary approach to urban ecosystems
The conference explored various ways in which the concept of ecosystem can be shaped in order to allow the concepts — which are often metaphorical in nature — and the methods derived from them to come together, thus creating an integrated framework for analysis and forward-looking action.

The conference sought to put the topic of Brussels' ecosystems in a transdisciplinary perspective, by asking, 'What is an urban ecosystem?' The variety of scientific approaches to the interaction between society and environment were leveraged as a resource for knowledge, project and policy support. Which dimensions of urban reality do the various aspects of ecosystems reveal to us? What tools do they provide in the various fields of study involved?

To what extent can these additional 'lenses' help us to think about the urban reality, societies and the relationship between human and non-human? To engage in 'transversal' action within and upon society and the environment?

The conference was intended to contribute to an interdisciplinary approach of these questions, exploring four aspects of the concept of ecosystem: natural ecosystems, human ecosystems, political ecosystems, and knowledge ecosystems. Let's briefly go over these four different layers of ecology and ecosystem.
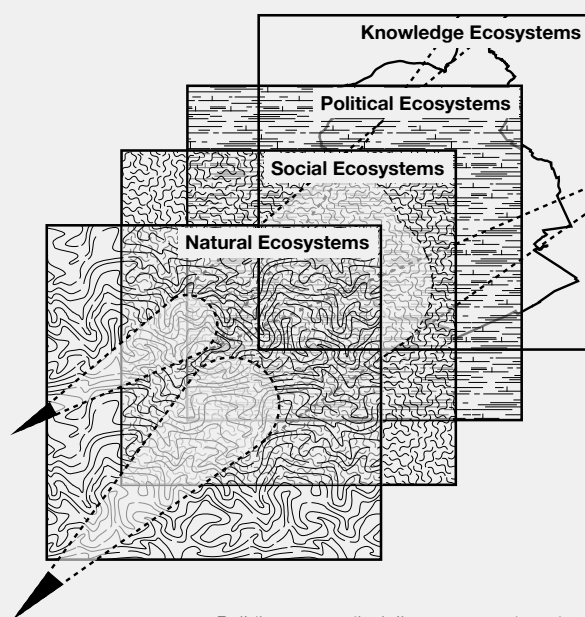


Building a transdisciplinary approach to the study of Brussels ecosystems

### Natural ecosystems

Natural sciences define an ecosystem as a dynamic group of living beings that interact with one another and with their environment's biophysical components. This definition refers to the scientific project of ecology, a term coined in 1866 by Ernst Haeckel, from the Greek roots *oikos*, 'house', and *logos*, 'study'). Generally speaking, the ecosystems-based approach relates to the scientific study of relationships between living organisms —

including humans — and their environment. More specifically, Metrolab focused here on the patterns that these interactions and their variations produce on the landscape. At the conference, Jacques Baudry and Grégory Mahy discussed the concept of biodiversity and landscape ecology by stressing the interaction between humans and nature. They insisted on the shift from a static notion of nature in equilibrium to a dynamic and process approach of ecosystems including the anthropogenic aspect. One of the interesting outcomes of the discussions was an exploration of how to connect biodiversity and sociodiversity in the Brussels context.

### Social ecosystems

A second aspect of the concept of ecosystem is based on the paradigm of human ecology developed by the Chicago School of Sociology, which proposed a theory of human environments that it developed in the context of a city seen as an 'organism' where a number of processes occur that exist in the natural world (competition, distribution, isolation, succession, symbiosis, etc.). The specificity of this approach is that it looks into the interaction between society and its environment, based on concepts and tools that are especially sensitive to the relationships between the groups that make it up (Joseph & Grafmeyer, 2004).

Setting itself apart from the environmentalist approach, human ecology is defined as the study of the relationships between different populations that are affected by the environment in which they coexist (Wirth, 1945; Park, 1953). While also taking into account both the biotic and symbolic dimensions of human environments (Cefaï, 2015), human ecology aims at understanding and describing interdependent relationships between the environments that make up a 'web of life'; these relationships are determined by spatial as well as social factors.

During the conference, a thematic session on social ecosystems brought together contributions by Francis

Chateauraynaud and Joëlle Zask. While Joëlle Zask reminded us of the ecology of democratic space, Francis Chateauraynaud explored methods for investigating environmental crises and technological risks.

### Political ecosystems

A third aspect of the concept of ecosystem takes into account political ecology, examining the kinds of issues that might be raised by a 'human government that takes non-humans into account'. The issue here is not knowing the environment or describing the interdependence between its components, but rather questioning human actions within the environment (Augagneur, 2015).

The Metrolab conference focused on one branch of urban political ecology. Inspired by the eco-Marxist discourse of authors such as Henri Lefebvre, André Gorz and Ivan Illich, it is based on the idea that nature is itself a social and cultural construct. In turn, it has inspired Piers Blaikie and David Harvey's classical concept of 'political ecology', as well as Erik Swyngedouw's and Matthew Gandy's 'urban political ecology' (Swyngedouw, 2006; Gandy, 2004). Urban political ecology builds upon the eco-Marxist discourse by calling upon more recent notions such as hybridization, collectives and the actor network theory, proposed by authors such as Michel Callon, Bruno Latour and John Law, and popularised in the English-speaking world by Donna J. Haraway and Sarah Whatmore. This branch has also reappropriated the concept of metabolism, including the work of Erik Swyngedouw and Matthew Gandy on urban networks. Matthew Gandy and David Wachsmuth contributed to the Political Ecosystems session of the Metrolab conference by fundamentally questioning the concept of socio-nature and urban metabolism.

### Knowledge ecosystems

The fourth aspect of this reflection links the concept of ecosystem to the process of knowledge-building. Here, the quest

for innovation is based on the idea that humans are not only part of an environment whose reproduction they are associated with — together with non-human species — but they are also completely permeated by the environment. A major publication in this field is Gregory Bateson's book "Steps to an Ecology of Mind", which sets the foundations of the interactional approach based on the idea that the environment inhabits both individuals and communities, and that it determines the systems through which meaning is produced at every level of society's structure. Authors such as Félix Guattari, François Cooren, Laurence Kaufmann and Cynthia Fleury have contributed to opening this perspective of ecology: in this context, it is no longer only about the environment, but about an epistemological system based on building healthy relationships between humans and the environment that they inhabit and that inhabits them. This fourth aspect relates more to the role of culture as a process generating ecosystems of individual, collective and social subjectivities that display varying degrees of resilience to the alienation of individuals from their environment.

A panel discussion was organized for the conference to foresee how Metrolab can contribute to the Brussels knowledge ecosystems in relation to urban projects and urban policy.

### Themes connected to Brussels ecosystems

The Brussels Ecosystems conference also initiated – in collaboration with public, associative and private stakeholders – an analysis of the issues linked to the ecologies of urban policies in Brussels and in particular the ERDF programme and its urban projects. This first analysis went through the description of a few ERDF projects and their environmental, social and political ecosystems. The discussion helped to identify some paradoxes that emerge from a lack of connections between those dimensions. Alongside the exploration of the four

dimensions of ecosystems, four key themes related to urban policy in the Brussels-Capital Region were problematize with local stakeholders. During the discussions, the four themes pointed toward four different socio-spatial and socio-technical systems that may play a key role for the transition of Brussels Ecosystems. These themes and the associated socio-spatial and technical agencies are:
1. Agriculture and city
2. Density and open spaces
3. Work and territory
4. Circularity and resources

### MasterClass methodology
The MasterClass's purpose was to put the transdisciplinary ecosystem approach to the test, starting with the realities of Brussels and the intercultural profiles of the participants. The MasterClass continued with the multi-layer analysis of the issues and paradoxes of urban policies previously identified with a focus on different cases including innovative projects funded by the ERDF programme for 2014-2020. These innovative projects were identified in relation to contextual situations that could act as catalysts to initiate the transition of Brussels Ecosystems. The aim of this two-week workshop was thus to contribute to drawing up an atlas of Brussels' innovative projects and their contextual situations pointing toward socio-ecological transition through:
— the understanding, description and mapping of the spatio-environmental and socio-political ecosystems in these different situations/projects;
— the identification of challenges and opportunities emerging from these situations/projects;
— the elaboration of design scenarios and proposals aimed at enhancing these situations and ecosystems and guiding the transition of Brussels ecosystems.

During the MasterClass, participants were divided into four thematic groups identified during the conference: agriculture – agro-landscape; density – transitionary occupation, work – third places, and circularity – hotspot of material flows. Each theme is related to an ecosystem of an innovative project and the contextual situations of socio-ecological transitions, which means spaces of experimentation and their related stakeholders as well as potential sites and actors that could play a key role in the ecosystems' transitions.
Designing Brussels Ecosystems was approached with a twofold method: first, a descriptive atlas of Brussels' innovative project and contextual situations and, second, scenarios and proposals to guide the transition of the Brussels-Capital Region. (See p.13)

### Atlas of Brussels Ecosystems
The main task during the first week of the MasterClass was to carry out an investigation on the spatio-environmental and socio-political patterns that characterize the ecosystem of innovative projects and their contextual situations in Brussels. A field trip to collect data and meet the stakeholders enabled the participants to explore this socio-spatial description.
The groups organised a continuous back and forth between urban scales on the community, neighbourhood, urban, regional, metropolitan and global levels. On the one hand, they attempted to describe the ecosystems of actors and their relationships with their socio-political environment (top of the diagram). On the other, they had to describe the 'sites', their relationships with their spatial-environment and the flows (i.e. metabolism) generated by the activities (bottom of the diagram).
Each group combined different description and design tools: spatio-environmental mapping, socio-political diagram, metrics and typologies of situations, etc., in order to understand the patterns of interdependencies at stake for each theme.
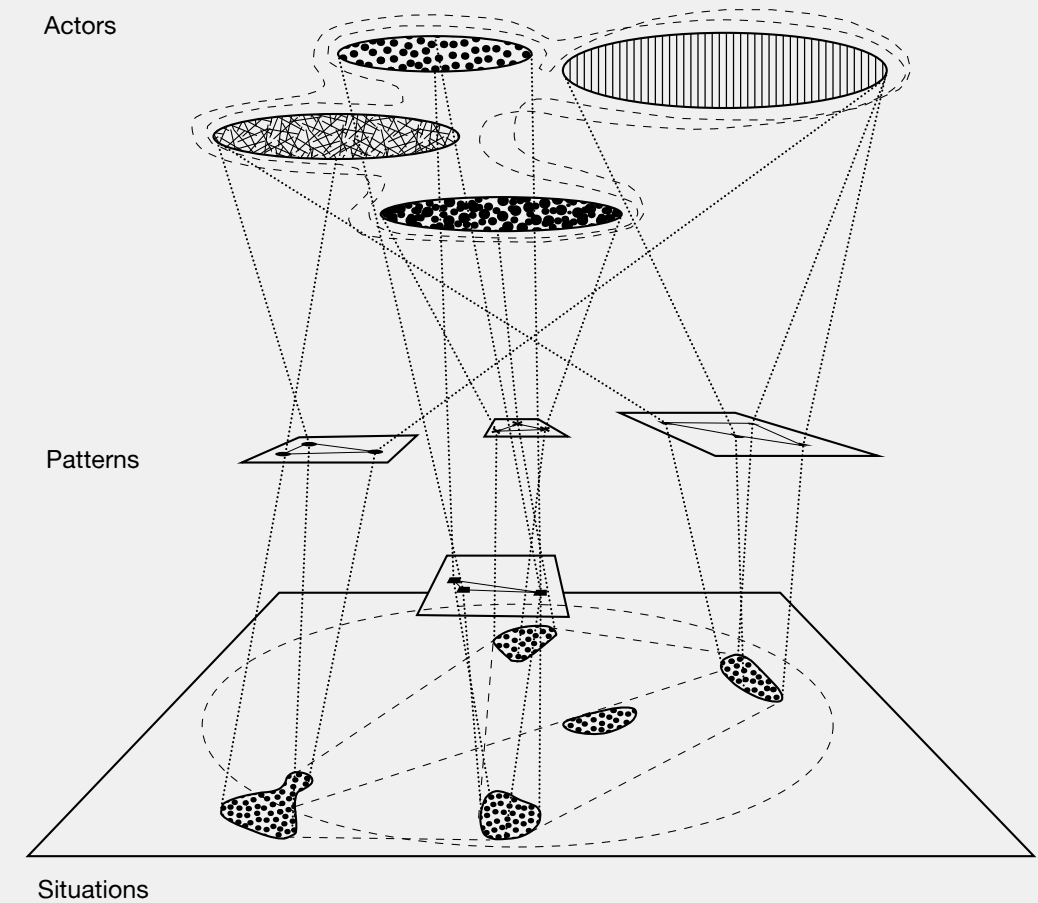


Methodological diagram proposed for the study of the Brussels Ecosystems by the MasterClass

Participants used the communication system and graphic matrix crafted for this workshop in all the representations they produced during the MasterClass. In the second part of this publication (Design Exploration), dedicated to the work and reflexion produced during the MasterClass, the reader will find a summary of the graphic material prepared by the group of researchers.
While identifying the patterns of interdependencies among innovative projects and between them and the contextual situation, the teams discussed and negotiated existing spatio-environmental and socio-political links and missing connections between and across the aforementioned scales.
The results of the first week of the MasterClass is an innovative contribution to an atlas of Brussels Ecosystems. The participants had the opportunity to present their progress during a mid-term presentation and discussion with the stakeholders they met with during the week. This was an opportunity to compare the patterns identified and to discuss the hypotheses of the forward-looking scenarios to be developed during the second week. The teams were then ready to move toward developing their scenarios and design for guiding the transition of Brussels ecosystems.

### Designing the transition of Brussels ecosystems

During the second week of the MasterClass, participants designed scenarios and projects for the transition of Brussels ecosystems. The scenarios addressed interdependencies, missing links and new relations between ecosystems and innovative projects, asking the question: what would happen if these missing/new links were to be activated? With the scenarios, the groups were now asked to design and propose a plan of action aimed at transforming existing situations and ecosystems following the common values identified on the first week.

Design scenarios are a set of structured visions that aim to catalyse the capabilities of the various actors and agencies involved in the process of framing the ecosystem transition.

Participants were given a few days to use their initial findings from the first week to formulate alternative social, economic and political frameworks that served as bases for new design scenarios. Groups developed a series of scripts and diagrams that represent connections and interfaces, potentially generating the transition of ecosystems. Most importantly, the groups were asked to articulate and negotiate spatio-environmental and socio-political dynamics between and across the initially assigned analytical scales, boundaries and thresholds, with the idea that it is not only physical things that are being designed here, but also the protocols and policies that will ensure the ecosystem transition.

During the last two days of the MasterClass, the final step in this process was to design and develop specific projects. Assuming that a team's design scenario proposes the many artefacts ('things') and systems (interdependencies) needed for the transition to work, each team member then focused on one such artefact and system. In doing so, we assumed that the project, as a heuristic device (logic of invention), defines relations among: practices (of the actors identified in the research, 'the stakeholders'),

processes (that bring them together in forms of interaction and possibly collaboration and co-production), resources (both the available resources and those needed for the proposal to work) and outcomes (the desired outcomes of the proposed project as defined by team's design scenario). The goal of the MasterClass was to strengthen interdependencies and ecosystems that allow all of these characteristics to work together in a way that promotes local resource renewal, social inclusion and ecosystem transition. This means that the projects must generate an ecosystem transition that is both socio-natural-political and geographical at the same time.

For this, the different thematic groups formalised design tools (graphs, diagrams) to reflect on the possible innovative relations between the different elements needed for the ecosystem transition.

The results were presented and discussed during the last afternoon, at the end of the two-week MasterClass. Stakeholders were invited to give a final comment on the proposals drawn up in collaboration with them. The presentations were followed by an intense debate with local stakeholders and academics. These comments were taken into consideration by the four groups in order to submit the final contribution to this publication.

### Structure of this publication

In order to contextualize the work of the four groups of researchers in the MasterClass, this general introduction is followed by a more detailed presentation of the four thematic ecosystems: Agriculture, Work, Density and Circularity. These thematic introductions lay the groundwork for each theme in the context of the Brussels-Capital Region. What are the current challenges that concern these themes in terms of urban transformation and urban policies? What are the situations, projects and potentialities of change related with each of them? And lastly, what is the conceptual framework required to analyse them in a forward-looking way?

A cartographic atlas displays some of the important layers concerning the four themes in order to illustrate how they are developing in the Brussels-Capital Region. The atlas acts also as an introduction to the graphic material prepared by each group in the following section.

Following the four thematic introductions, the reader will find four design and narrative contributions produced by MasterClass participants and a set of short reflections by the urban project stakeholders. These design contributions and presentations are followed by a reflection by Metrolab about what compass is needed for navigating the socio-ecological transition.

The last part of the book brings together some reflections on both the methodological approach and the results of the MasterClass by members of the scientific committee (Elena Cogato-Lanza and Brian McGrath). The general conclusion by Mathieu Berger presents the entire process implemented over these two years in the perspective of an ecology of knowledge, for which he gives an overview of the challenges posed in terms of epistemology and the bridges between disciplines.

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### Graphic protocol

| | |
|---|---|
| ■ (black) | The elements of the existing context |
| ■ (yellow) | Underlying elements and situations |
| ■ (teal) | The proposals developed during the MasterClass |