# IDEAS: an experience to develop design capabilities in research and for innovation in territories

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## *Introduction*

The involvement of agricultural researchers in design processes, anchored in the particularities of agricultural contexts at various scales, has been inherent to the main objects (with a central place of the practices) and forms of research around which the discipline was built (Meynard et al., 2022). It was only during the last decade, though, that numerous models of innovation practices (such as innovation platforms, agroecosystem living labs, transition labs, test beds, to name but a few) have been both supported by innovation and research policies and uptake by diverse actors from the agricultural sector (Gamache et al., 2020; Massari et al., 2023; Potters et al., 2022), in opposition with linear models of innovation. Other multi-actor dynamics (such as third places, for example) are much less institutionalised in policies and recognized by the incumbent actors of the agricultural innovation systems, but are nevertheless places where agricultural researchers can get involved in initiatives and develop activities rooted in places, particularities of territories and social learning processes (Gillerot et al., 2024; Hart et al., 2016; Hermans et al., 2016). The engagement of researchers in such organisational forms, and more particularly with the growing recognition of their territorial dimensions, raises renewed concerns about their stances, the mediations and impacts of their epistemic activities, and the relation of these with the engineering part of their work.

These considerations were decisive for the creation of the IDEAS initiative in 2016, under the impetus of several researchers and with the institutional support of INRAE and AgroParisTech, with the aim of both acting in a way that is rooted in innovation processes, and fostering more generic reflexivity on this work. Within INRAE and AgroParisTech institutions, IDEAS is a network gathering scientists who are developing conceptual and methodological approaches to support design in food systems transitioning towards sustainability. As such, it is an enabling environment for the development of design capabilities (e.g. skills and competencies, methods, organizational issues related to collective design) as it is organized to support the exchange of ideas and the reflectiveness of these scientists. IDEAS also has developed a “support platform” hiring two innovation project managers whose role is to adapt such methodological approaches in multi-actor projects on a case-by-case basis, in close collaboration with researchers and the socio-economic and public actors dealing with environmental and food systems issues.

To summarize, IDEAS brings together researchers engaged in design approaches, putting methodological advances to the test and developing reflective stances while getting involved in co-design with diverse actors. We are wagering that the development of design capabilities, for scientists, innovation project managers and local stakeholders, is a way towards producing original knowledge from a scientific point of view, while creating legitimate and performative knowledge for the multi-actor collectives with whom the scientists work (Toffolini et al., 2020). The engineering approaches related to design issues and as part of our research activities, are thus considered as support of our engagement with actors as well as the production and renewing of scientific outputs.

This is continuously assessed by organizing reflexivity to question our epistemologies and our very practices of organizing scientific work (namely when the latter involves working with a diversity of stakeholder configurations and realities). Indeed, the discussion spaces within the network open the opportunity to reflect upon our various modes of engagement within multi-actor configurations and territorial processes: our respective roles (as designers or facilitators or experts, for example), our embeddedness within the multi-actors territorial dynamics, the timespan of our involvement, the production of intermediary objects (such as artefacts for recording data and translating facts) applied as mediation supports during the multi-actor design process, etc. Finally, it is an opportunity to question the various impacts that our work might have on current design capabilities (either for individuals or collectives, academics or not) or on ways of knowing for enhancing transformation of food systems.

More particularly, we question in this communication how the development of such activities within territorialised processes transforms this general perspective on IDEAS. These multi-actor and territorialised processes may not always be initiated by scholars (within or outside the IDEAS network) and are supposed to continuously impact or transform some agricultural sector features beyond the interactions with the network. Based on three illustrative case-studies, we focus our reflections on the consequences these particular contexts of engagement for IDEAS members might have on (i) the intermediary objects produced and the mediations they support, (ii) the researchers' roles and postures and how they are related to the multi-actor dynamics and to public action mechanisms (e.g. recommendations regarding modes of governance and of project management), and (iii) the ways to support, enhance and/or promote collective design capabilities as a way to perform intermediation in such dynamics.

## *The spaces and activities within the IDEAS network*

As shown on Figure 1, IDEAS is organized in different spaces: the extended network is composed of 450 members who are informed of the main scientific activities of IDEAS by receiving a newsletter, and taking part in the webinars or the seminars. The collaborative scientific core is composed of 100 members who are willing to share experiences, projects, teaching activities, on design for transition in agrifood systems. These members can propose agile working groups, e.g. propose an activity gathering people around a theme, a paper to write, a curriculum to develop. Nevertheless, they have to inform the coordination team and to report on their work according to modalities discussed among them and agreed upon by the coordination team. Three perennial spaces have been created respectively dedicated to the organization of webinars and seminars, to building shared teaching support or courses, to supporting exchanges among PhD and young scientists. Finally, three governance instances are in charge respectively of the whole network coordination and the relation with the institutional boards, of the scientific monitoring regarding scientific design issues for transition at large, and of the management of the service platform.

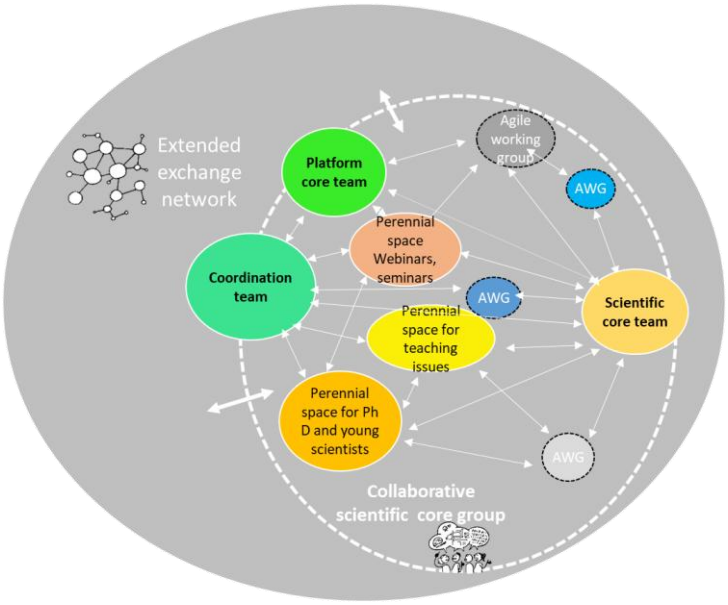


**Figure 1 : the distributed spaces within IDEAS network**

Such a network has already supported a number of collective scientific productions (see https://ideas-agrifood.hub.inrae.fr/recherche/publications/ for example, Be Creative project as another). Here, we aim to explore some of the key questions currently being raised by our work in territorialised processes. We propose to base our reflection on three cases to discuss how our design work is organized within the frameworks of territorialised public action.

## *Presentation of the three case-studies*

**The first case** is a work carried out over a long period (15 years) with stakeholders in a catchment area to improve water quality (Prost et al., 2018; Prost and Coquil, 2022). The starting point was to overcome a well-known pitfall in catchment areas with poor water quality regarding for instance nitrogen norm in water. While the public water agency mainly proposes financial support to farmers through “agri-environmental measures” (e.g. fostering a commitment to change practices but without setting a clear objective to be reached), the idea was here to ask the water agency to dedicate the funding to the facilitation of a collective design process which purpose was : (i) to collectively build among the various stakeholders a quantitative objective to be reached to regain water quality ; (ii) to imagine design workshop among farmers to design cropping systems that would help reach this objective, (iii) to collectively build a dashboard (intermediary object) that represents the causal chain—composed of successive links—linking on-field farming practices to the targeted level of nitrogen in the water catchment. Each link in the chain is associated with an indicator to assess whether the expected result at that stage is being achieved. Over the season, these indicators support discussions on the extent to which new farming practices enable the collective to reach the final objective.; (iv) to build a follow-up observatory based on measures of the different indicators in order to fill in the dashboard, but also on field tours among farmers to discuss the way some practices avoid nitrogen leaching. But overtime, the dashboard and the accompanying observatory have contributed to various dynamics. First, the annual updating of the dashboard and its presentation in a committee involving institutional stakeholders in charge of water quality have helped build a shared understanding between agricultural actors and water protection agencies. By making the cause-and-effect chain from farming practices to water quality visible, the dashboard enables discussion on whether farmers have implemented the agreed practices and whether these have led to the expected outcomes. In some cases, this reinvigorated the local dynamic (when

practices were no longer widely adopted); in others, it revealed the uncontrollable influence of climate (practices were implemented, but their effects were offset by weather conditions). It also showed that the strategy itself might not be suitable in all cases (practices proved insufficient), leading to a new round of co-design workshops. Second, the observatory fosters ongoing exchange among farmers: they visit each other's fields to observe practice outcomes, receive individual feedback for discussion with facilitators, and collectively discuss shared results. Third, the accumulation of data over time helps build a systemic understanding of how each farm functions. This supports an iterative, step-by-step in situ design process that is increasingly localized and tailored to each farm's specific context.

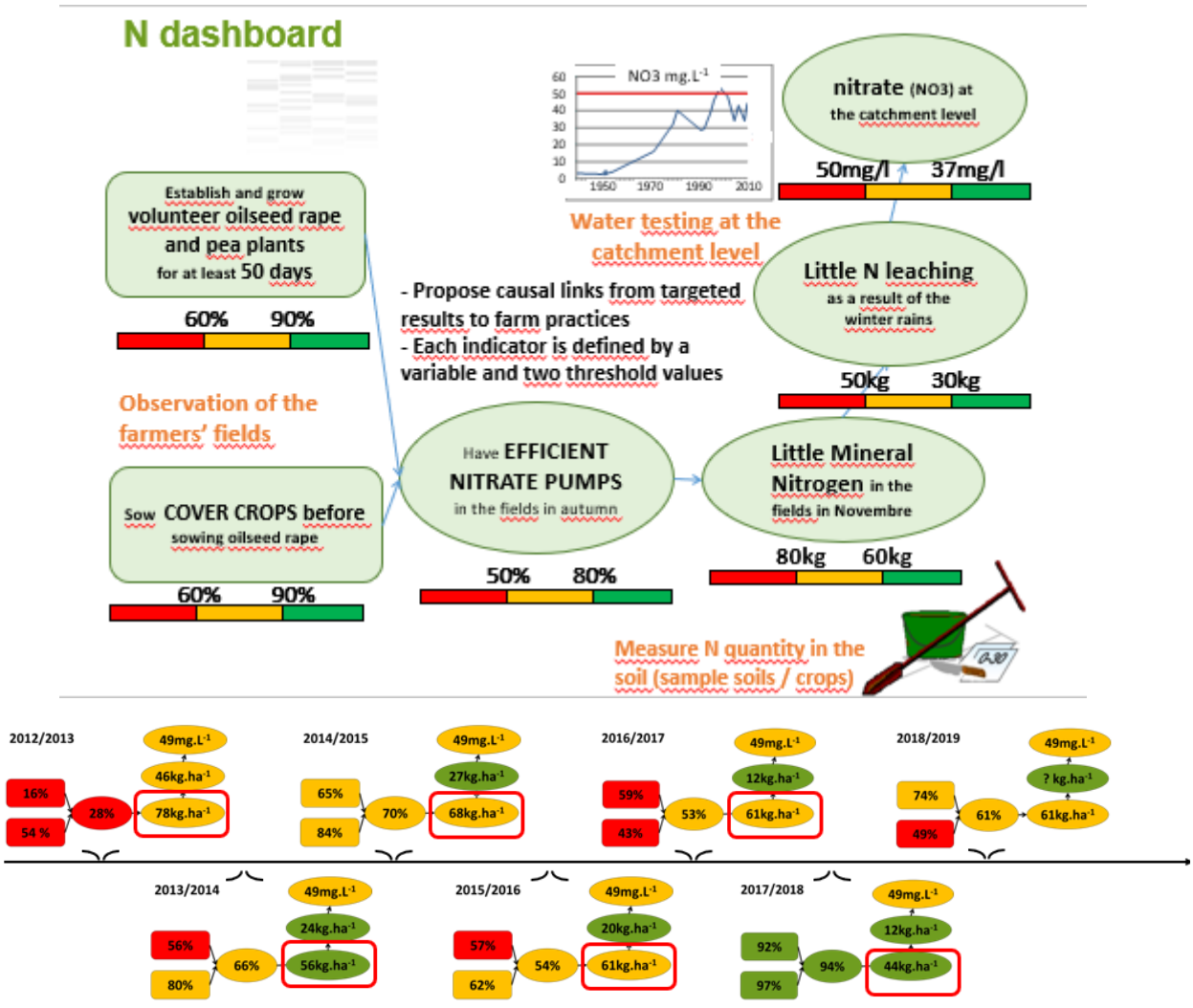


**Figure 2: The dashboard (intermediary object) and an illustration of its use for long term dynamics interpretation support**

**Figure 3: Illustrations (landscape, map, joint indoor and outdoor activities) of the first case-study.**

**The second case** is a work carried out on another water catchment area, that consists of ongoing support (3 years) for local players to: (i) imagine and move towards a pesticide-free area, (ii) structure a collective dynamic around this issue by combining different design resources. This water catchment is concerned with pesticides pollution. From an initiative of the local water service, local authorities and agricultural stakeholders committed to an objective of moving toward pesticide-free farming by 2040. A research project was undertaken five years ago to contribute to this objective, combining different design approaches. First, scenarios were designed, assessed and discussed with farmers to identify problems raised by moving toward pesticide-free farming on this very territory. It highlighted strength: as a territory specialized in livestock farming, grasslands, which do not require pesticides, represented half of the agricultural area. In addition, 25% of farms were certified in organic farming and already did not use pesticides. But the territory also faced threats: because of low profitability, farms were shifting from livestock farming toward cash crops production, which are more reliant on pesticide use. Organic farming is also facing a declining demand from consumers, which leads to outlet concerns for its productions. The problem to be solved was reformulated as "How to maintain livestock farming and associated grasslands on the basin, by improving the profitability of milk and meat production?". An innovation track was carried out to identify innovation already implemented out of the territory, which could help to solve this problem. A sociotechnical diagnosis has been undertaken to better understand milk and meat value chains and opportunities to innovate toward pesticide-free farming, with the support of the IDEAS platform. This led us to distinguish three sociotechnical systems: 1) the dominant sociotechnical system is

characterized by long value chains based on milk production and was facing the problem of generation renewal of livestock farmers, 2) besides, a sociotechnical system based on cash crops production is rising, but relies on herbicides to manage weeds in cropping systems without grasslands and with limited tillage, 3) finally, a sociotechnical system of organic farming stakeholders demonstrate the feasibility of pesticide-free farming, but is facing the limited demand for its products, more expensive than those from conventional farming. Differentiated actions were developed and are under progress to accompany each of these systems toward pesticide-free farming.

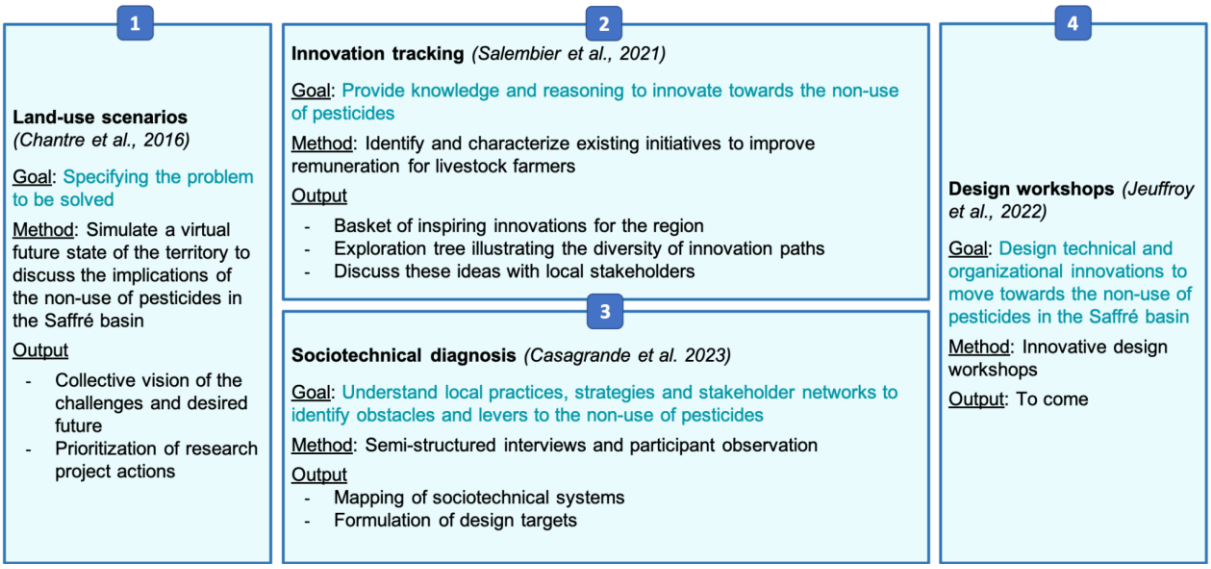


**Figure 4: Approaches combined on the second case study**

**The third case** is an ongoing support (4 years) for stakeholders involved in a territorial food project (TFP) which purpose has been set by some local stakeholders (three agri-urban associations and three public collectivities mainly) as increasing collectively the food resilience of their territory called “de la Plaine aux Plateaux” located in the south-west part of Ile de France. This TFP is labelled as such by a national public policy as it fulfils the requirements set by such policy (build a collective local governance gathering NGO, public and private organizations, make a diagnosis of the local food resilience, set a plan to purposely develop local food systems, increase access to sustainable food for vulnerable consumers, support change in collective catering which has to comply to reach 20% of organic food and 50% of food quality signs (such as IGP) in their offer). As researchers we acknowledge an unaddressed although important issue in the Food Territorial Plan : the adult food collective catering while 407 000 people are working in the area (against 800 000 people living in the area). Discussion with the association which is in charge of the monitoring of the plan showed that it views adult sustainable food catering mainly as an opportunity to increase the outlets for their local farmers. The public collectivity in charge of the working group addressing the issues related to the transformation of collective catering within the area, although interested to take on board adult sustainable food in mass catering had neither the time and the mission to identify and gather stakeholders such as local collective catering restaurants, enterprises located on the whole area, etc. As researchers we then “took the hand” in order to: (i) structure a collective inquiry (here this notion refers to Dewey’s theory) on sustainable food issues in mass catering at workplace, (ii) support a structuring process to increase the use of locally produced cereal-based and legume-based products within meals taken locally in mass catering. The whole process and the co-produced intermediary objects are represented in Figure 2. Researchers embarked the members of the association and of the collectivity who were in charge respectively of the global monitoring of the FTP and of the

collective catering group. Although these ones participated in all the workshops, they nevertheless did not express need and interest in the co-monitoring of the inquiry. Rather they act as participants among others until last June workshop in which they agreed to endorse a facilitation role. Participants acknowledged their interest in sharing experiences and getting more understanding of each other's activities and constraints. Nevertheless, it is hard to really assess if they developed any design skills.

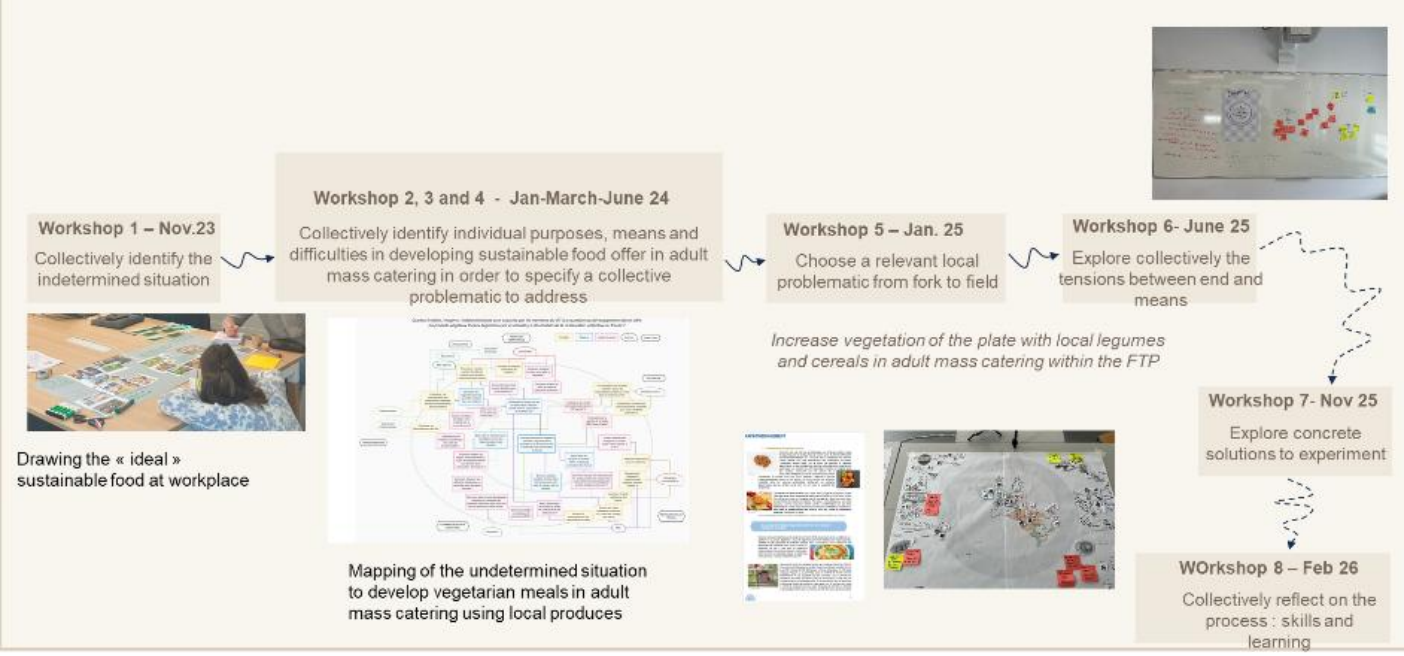


**Figure 5 : A 2 years inquiry process on sustainable food in adult mass catering within the FTP**

Up to now, no transversal analysis was performed on these cases. This workshop is a first opportunity to start this analysis.

## *What do territorialized innovation processes make us do? How a network such as IDEAS may adapt to being anchored in multiple of them?*

These case-studies offer an occasion to reflect on how a network such as IDEAS would transform its competences or activities in response to its involvement in territorialized processes. Are there new training needs for researchers? Are there needs for establishing local relays who could adapt, maintain the implementation of some methods and learn from their impacts? In order to support reflection about these opportunities, we discuss the trends of evolution noticed in the ways IDEAS members mobilize intermediary objects, adopt particular stances and roles, and contribute to collective design capabilities.

**(i) the intermediary objects produced in each of these contexts and the mediations they support in relation to the territorial dynamics**

The intermediary objects identified in these cases are the dashboard (case 1), the scenarios (case 2) and the identified sociotechnical systems (case 2), or the map of the undetermined situation to develop vegetarian meals in adult mass catering (case 3). These artefacts may not seem disruptive as such. We put a stress, however, on the fact that they are built and applied over time to collectively follow situations and systems dynamics (case 1). The dashboard was built to share and transform representations of systemic causal relations, but was then embedded in workflows of advisors. After

several years, it has been used to represent the dynamics of evolution in practices, to reflect on its uptake and interpretation by the participants. The same applies for the mapping of the undetermined situation in case 3: the format was used to set participants in a reflective stance and openness to others' perspectives, but then transformed as the collective inquiry was pursued. Finally, beyond the observed diversity of these intermediary objects, these are more and more applied in two synergistic ways: 1. To catch a part of the system and its dynamics and share their representations and understandings at a specific time, considered decisive for orienting the innovation activities; the artefact stabilizes a part of the situation dynamics; and 2. to support the construction and to maintain the collaborative process, building on the collective ownership and interpretations of the artefact's evolution and uses.

**(ii) the researchers' roles and postures, and how they are related to the territorialized processes shaped by public action mechanisms**

In the different case-studies, the researchers were not only providing mediation supports for creating intelligibility or alignments in representations (e.g. systemic representations, results of sociotechnical diagnoses), but they were also led to engage in their dynamic use among the stakeholders to transform problematizations and ongoing adaptations between means and purposes. In case 1, the system dynamics leading to water pollution (or quality) were represented through a dashboard above all thought as a support for collective action in a results-based logic of impact. By implementing it, the researchers demonstrated to the water agency the relevance of supporting a collective design activity with a motivation based on a logic of results, whereas this player is much more used to financing means of action (for example, the implementation of specific practices, investment in machinery). In case 3, the same reorientation of problematization and modes of collective action (i.e. towards adult mass catering, which was not an area of action envisaged by the local association leading the TFP activities) was demonstrated firstly by the researchers exploring it. This role endorsed by IDEAS researchers was thus to support the transformation of the ways in which change is accompanied by the people (public agencies, collectivities, NGO…) who are doing it within territories, by demonstrating it, suggesting modes of governance and of project management. This is directly in line with the stance adopted by IDEAS researchers, i.e. addressing the methodological part of their activities as a part from which novelty emerges and which generates knowledge. This directly questions the legitimacy and role of a research organisation to do so. Namely regarding its long-term involvement in territorialised processes.

**(iii) the way they act to support, enhance and/or promote collective design capabilities as a way to perform intermediation in such territorialized multi-actor dynamics**

The preceding points of analysis have already brought out part of the various ways in which research activities promote collective design capabilities: to build a common target among various actors (case 1 or a common desirable food catering system(case 3)); to support problem (re)formulations and providing training in how to do this (case 2); to build engagement into the observation of systems (case 1, through systemic approach, indicators, collective interpretations); to suggest (and leave possibility for) actors to endorse roles that they were not used to play or which they don't feel confident playing at first (case 3). We underline the fact that these examples show the importance to reflect not only about the building and assignment of capabilities, but also about the creation and maintenance of the conditions for their realization. For instance, the dynamic assessment of systems through the dashboard (case 1) certainly build new capabilities regarding diagnoses, collective interpretations, planification, but it relies on new and extended material means : new types and large numbers of sampling and measurements, organization of timely measurement campaigns, investment in material devices or instruments to realize it, and so on. Who is responsible in the long

term for maintaining such conditions so that collective design capabilities continue to develop and evolve? Are the required organisational adjustments temporary or should they inspire restructuration of R&D organisations? How could the costs of such transformations be envisioned, evaluated, and spread across actors and organisations?

## *Final remarks*

These discussions lead to question how the IDEAS network (as an infrastructure anchored both at a national level in research institutes, and a territories level through mid-term multi-actor projects) should adapt to what these involvements in territorial innovation processes transform in its activities and own capabilities. Build resilient local antennas? Accept and retrospectively examine failures to maintain transformation processes when the lack of institutionalisation is beyond the reach of such a research network? More explicitly address the structural changes in innovation systems called by some projects and engage interdisciplinary work with policy researchers and makers?

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