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EMA space: a collaborative workspace as collaborative urban ecosystem generator?

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Abstract

Following the industrial background, the necessity of the innovation is found at the level of the urban systems. The innovations are not only researched at the level of the results of the urban projects but also in the processes which see them born and develop. In addition, both the societal evolutions, described by the social and human sciences, and the results of multidisciplinary researches wonder about the involvement of the citizens / users in the process of output of the city. The emergence, for few years, of the Living Labs probably gives new opportunities to lead a reflection on the involvement of the citizens in the urban projects. From then on, it consists in mixing the questionings held by the user-driven open innovation and the stakes of "democratization" of the urban projects. It is in particular what suggests the NIT Smart Cities Living Lab.

Keywords

Collaborative process, technological transfer, urban project, user-driven conceptualization

1   Introduction

The NIT Smart Cities Living Lab, notably relying on 20 years of piloting experience of project in complex background, has the capacity to tackle societal issues in all dimensions. In addition, the entirety of the resources (human, technological) it has allows it to tackle three special fields: industrial, urban and new ventures creation. The main purpose of this regional Living Lab is to establish a "user-driven" based development pattern to enhance the citizen quality of life and to support the local economic and urban development (to start on the urban area of Nancy) [NIT InoCité, 2010]. In other words, the objective is to develop smart processes in smart cities to make even smarter cities. From then on, it consists in strengthening the innovation on the region of Lorraine in the three fields that we mentioned and to contribute to the development of the Regional Innovation Systems, in particular rethinking the innovation processes thanks to the user-driven pattern.

In this paper, only the urban dimension and the technologies used are exposed. Our approach of the urban dimension (urban issue) has the characteristic to rely on multidisciplinary researches which focuses on the technological transfer from industrial engineering to urban engineering. In this context the work presented here is relying on political sciences and town planning.

Since a few years now, the town planning researches show the importance to give to the initial stage of the urban projects and invite to consider the most upstream possible the final use. On the first point, an international review of urban studies, supported by our experience in planning agence (of Nancy – from 2005 to 2009) [Dupont, 2009], indicates the early stages of urban projects which is viewed as the stage for the collective elaboration of initiatives to tackle urban issues [Janvier, 2001; Arab, 2001]. Furthermore, this initial stage of urban design refers to conceptual design where all "design" actors are separated. Regarding the second point, despite of the report, few methodological suggestions emerged. On this basis, an improvement of the

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methods, or even the creation of new practices, has been suggested. This suggestion led to the modeling of a user-driven conceptualization of urban projects from their initial stage [Dupont, 2009]. This innovative technology relies on the users' mobilization through collaborative processes which require special tools, methods and environment. It represents a true break-up in comparison with the current practices noticed in the (French) town planning and local authorities' background. Indeed, it consists (during a given period) in giving the same importance to the different expertise intervening on the project and notably giving its position to the use expertise held by the citizens, or even letting the citizens guide the emergence of robust concepts (and, if necessary, we could help them). Considering the long times of the urban projects and the paradigmatic jump (evolution of the representations from the actors) that require the development of the user-driven conceptualization, this technology must continue to be felt. The current state of the research shows the pertinence of the reasoning. In that direction, we currently develop and test the EMA space (Environment and Methods of Acceleration) as an aggregation place of appropriate tools, methods and environment to display a collaborative approach in initial stage of the projects, essential to the user-driven conceptualization. Beyond the results that we obtain on that point, it seems furthermore that the drawing up of a comparative approach between the promises and the methodologies held in the Living Labs logic, understood as scope of the realization of a user-driven open innovation, can improve our analysis works while making the Living Lab benefit from the experimentation focused on the urban issue. However, it remains gaps and boundaries in our experimentations inherent to the complexity of case studies to observe. We will conclude thus our paper on the methods that it could be pertinent to develop to compensate the current coercions.

2 Regional innovation system: a user-centric approach.

The researches in political sciences show that the processes and devices linked to the participative democracy, carried out around the urban projects essentially, focus on the piloting and the management of the projects, that is to say when the initial stage, the conceptualization stage of the project, is concluded. Moreover, if collective processes exist (e.g.: co-design or governance), they remain piloted by the experts (technical, political, scientific, etc.). The citizens' expertise of use is not necessarily linked in initial stage of the projects. In other words, currently, when an urban project is created in terms of use, this one is created through the mobilization of experts who plan the potential use of said project. The practice of use adopted by the user does not emerge. We clearly are in the framework of use of the user-centric pattern. The urban area of Nancy does not get out of this mode of functioning [Dupont, 2009]. In the urban field, we can thus consider the regional innovation system of Nancy as based on a user-centric approach. This practice is interesting because it leads to question the experts on the use expected from a project and bring the need of use project forward the final users. Nevertheless, we have to accept that in initial stage of the urban projects for the final user, although he is entirely affected by the solution of the urban project, everything is going on as if he was reduced to a kind of abstract agent: he is the object of discussions in which he is not involved. In the end, the citizens, when they are associated, are mobilized more upstream notably through "participative devices". Processes and actors remain compartmentalized by typology and phasing. From then on, it is pertinent to wonder about the possible evolutions in terms of collaborative processes integrating the uses. In this logic, we propose to display, in the regional innovation system, an urban engineering which aims to develop the tools, the methodologies and the environment to consider better the urban issues. In fact, the main objective is to ensure their effectiveness within complex systems. Studied together, these previous elements allowed to develop a global methodology called user-driven conceptualization (concept design) and were implemented in the initial stage of urban project. These objectives are:

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- To understand better and to take into account the complexity of the urban system where the urban project are developed.

- To adopt a sustainable development strategy through:

  o An economic benefit: indeed, design decisions have a direct impact on the majority of the production costs as showed by design science (Visser, 2006);

  o A social benefit: allowed by citizen involvement as a co-producer and consumer of content and services (participatory urban planning and participative democracy);

  o An environmental benefit: from now on, the environmental dimension is a determining factor;

- To lead emergence, definition and adequacy of robust concept.

- To encourage social acceptability during the development process of urban project.

- To develop required conditions allowing an evolution (improvement) of the decision-making process management (territorial technician, elected representative) in particular by the taking into account of different points of view.

In fact, user-driven conceptualization is closely linked to the development of a *distributed collaborative urban ecosystem* [Dupont, 2009], defined as a system in which the final product is closely and consciously influenced by numerous factors (like actors) along an entire distributed collaborative process. And where, at the end of the initial stage of an urban project, a double result should be obtained: shared artefacts/concepts and shared knowledge. This can result in a more stable and shorter conceptualization process and thus to increase economic benefits. We talk about distributed collaborative process in that the process has to be collaborative beyond geographical and temporal barriers which could exist between the actors. For instance, the process has to allow to actors in initial stage of a project to be informed of and possibly exploit a suggestion made several months ago by others actors in another project.

Thus, in this collaborative logic, entirely innovative in the urban practices, we should then involve in a global process the entirety of the expertise necessary to make the development of a project and its final acceptability easier. This last one is understood as the anchorage of the project in the urban system and its pertinence in comparison with the stakes of this system. For instance, if a territory requires making its economic activity more dynamic while insuring a drastic evolution of its environmental quality, a given urban project will have to look after to answer to these two stakes. The acceptability requires to be contextualized to each project and is multifaceted. That is to say that it results as well from the qualitative as from the quantitative. Furthermore, the appropriation by the citizen is thus one of the dimensions of this acceptability.

Our works thus aim to switch the regional innovation system from a centric approach to a "user-driven" based development pattern. For this, we rely on a transfer of technologies oriented collaborative processes from the industrial engineering to the urban engineering. Through the NIT Smart Cities Living Lab, we firmly place ourselves in an innovative reasoning for the urban practices: we intervene in initial stage of the urban projects and we create the experimental conditions potentially allowing generating a distributed collaborative urban ecosystem favoring the citizens' expertise of use. In addition, we can emphasize the very recent researches from Dupont [Dupont, 2009] which show that it seems relevant to examine if a collaborative workspace could encourage the development of a distributed collaborative urban ecosystem. In French, it seems that there is not such collaborative workspace dedicated to urban issues.

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3   From a centric approach to a "user-driven" based development pattern: proposal of EMA space

In practical terms, to identify the experimental elements to carry out, we depart from the projection of the distributed collaborative urban ecosystem that we would like to see emerge thanks to support of the "user-driven" based development pattern. So, this ecosystem is fictive when we start the experience. If we concretize such a virtual distributed collaborative urban ecosystem, the scope of the different catalyst works to carry out in order to realize such a project could seem astronomic, because the actors to be involved are numerous and merely because the parameters to "manage" are weighty, not to say countless. We are in a complex field, in accordance with the paradigm whereby we develop our thinking, it seems so more relevant to create the conditions to make evolve the system. To allow a urban system to tend toward a distributed collaborative urban ecosystem, it is necessary to act on ten special factors: Change the representation modes (Encourage this change)

- Think in terms of use(r)
- Dispose of special resources
- Networking
- Guarantee some methods
- Encourage the pedagogy
- Mobilize the citizens
- Cause special behaviors
- Encourage the transparency
- Capitalize

These ten factors were formalized on the basis of the census report of 62 best practices through the study of 9 explorative fields of the urban area of Nancy, completed by a state-of-the-art and practices which are a mix of political sciences and industrial engineering in a way to bring to light the more generic practices (not exclusive from the field of Nancy) [Dupont, 2009] (cf. Figure 1).

For instance, the factor Change the representation modes (Encourage this change) is identified on the basis of objectives gathering, coming from different fields, below:

- Adapt ourselves to the complexity rather than trying to control it, whose sub-objectives can be :
    o Tackle a societal issue in all its dimensions
    o Realize and run diagnosis, around society stakes, linked with considered local urban stakes (contextualize)
    o Have a global approach which takes into account all the actors concerned by an urban issue
    o Take into account the environment on actors' behavior
- Promote procedures made compulsory by the legislation
- Be aware of the asymmetry of power between the actors present at the same time
- Be aware of the long times linked to the urban projects, as well as the differences of actors' perception
- Show the importance of knowing how to explain a file
- Think in terms of improvement of the decision-making for the project owner/building projects (thanks to a knowledge deepening and growth)
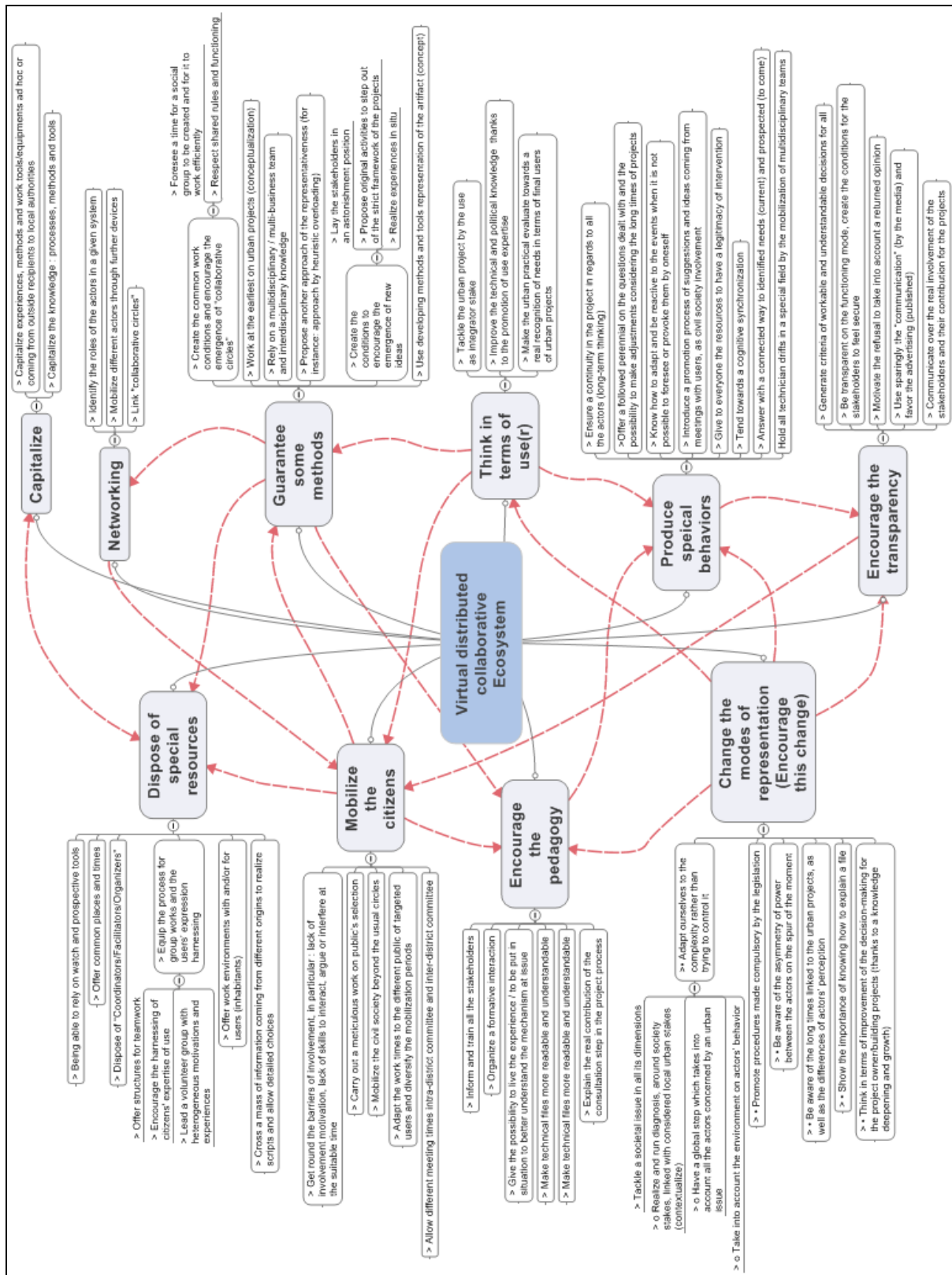
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Figure 1: The 10 identified factors to tend towards a distributed collaborative (urban) ecosystem

As we instanced it, the ten factors are interconnected (red dotted line), they depend on each other. Moreover, some objectives can be linked to many factors (in order not to complicate more this modeling, we "content" ourselves with the distribution of each objective under a single factor). To conclude this part, the best practices method allows us to operate on a certain rise in generality.

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We ascribe to our collaborative workspace the responsibility to promote the presence of theses ten factors in urban system to accompany the design of some projects. These factors then correspond to the functions that will have to ensure the environment that we conceptualize and to form functional specifications. We consider then a resource environment which must make the urban system benefit from tools, methods and suitable skills to encourage a user-driven based development pattern and the distributed collaborative design of urban projects.

From the functional specifications, a multidisciplinary team had been able to develop a prototype whose main characteristics that can be pointed up are:

An *Environment* to structure in a unique place: tools, special interface, partners (punctual users), a multidisciplinary team of animators around collaborative processes.

A *Methodology*: in reference to the set of rules, approaches, intellectual abilities (know-how, knowledge), and processes implemented in the Environment.

An *Acceleration* ability to:

- Allow a quicker acquisition of all the necessary elements of a diagnosis to understand an urban issue;

- Create in a relatively restricted time extension a favorable context to the expression of the different stakeholders' feelings and needs;

- Take into account the small actors' availability and the difficulty to gather a mass of stakeholders at the same time and in the same place.

- Encourage, in the initial stage of urban project, thanks to the user-driven conceptualization, the emergence, the definition, the adjustment, the (social) appropriation and the urban projects improvement to reduce the risk of mistakes raised (in particular in relation to the need of use) and the associated costs during the carrying out of the project.

For practical reasons, we will so talk about EMA space for Acceleration Methodology and Environment. Currently we experiment, following an action research approach (through a Soft Systems Methodology - SSM), the extended regional innovation system allowed by EMA space. In this case, the methodology consists in researching observable and irrefutable elements [Assielou, 2009].

4   Findings: limits of experimentation with EMA space

To sum up the condition of our current works, we can make the scheme below (cf. Figure 2).

With the EMA space (collaborative workspace of 250 m²), we materialize in practical terms the technological transfer from the industrial engineering to urban engineering. This last one benefits from a suitable support to design the user-driven conceptualization and encourage the development of distributed collaborative ecosystems. The follow-up and estimate process associated with EMA space will allow us to analyze if this technological transfer is real.

It is important to add that the experiences relative to the EMA space are in the pipeline. At the present time, the long times of the urban projects strongly restrain our explorative protocol. The elements that follow are the object of a limited analysis, which will be detailed in the coming months.

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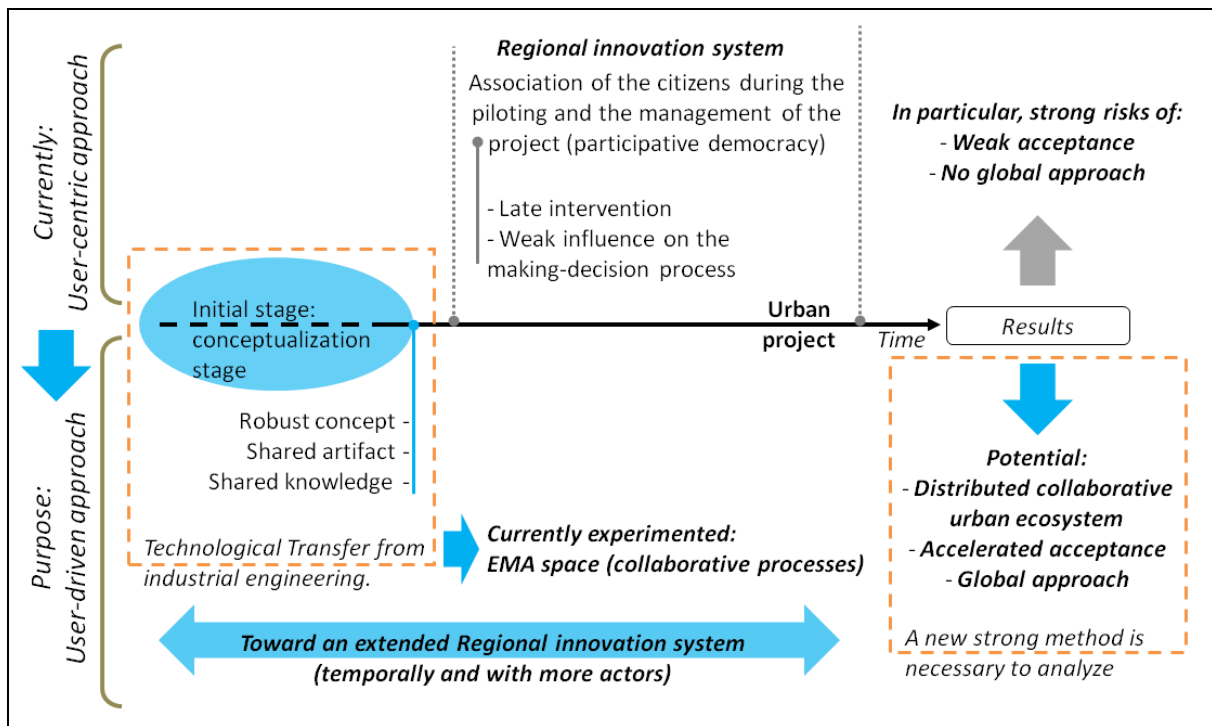
Figure 2: Our intervention in Regional innovation system thanks to an user-driven based development pattern: example with an urban project

What inputs can we thus encourage around the EMA space? The only results that we currently have on the collaborative workspace result from previous works which precisely contributed to identify the best practices.

We thus position ourselves in a comparative logic of projects realized outside the EMA space and of projects developed in the EMA space. We notably rely on the citizens' panels. In Nancy, there were six before the development of the EMA space [Dupont, 2009]. Two others are currently in process in the EMA space since December 2009. A citizen' panel is a collaborative process which allows associating a group of users from the conceptualization of an urban project with a qualitative approach of the citizen representation (notably relying on the heuristic overloading). This device is an experimental suggestion aiming to apply the user-driven conceptualization. No length has been formalized for the moment. Nevertheless, the practice incites us to propose only three meetings with the group. If it possible, on a length from 3 to 6 months maximum.

The experience [Dupont, 2009] shows that the citizens' mobilization, thanks to this kind of devices, allows inflecting the conceptualization of a developing urban project and improving the definition of the urban project to be created. Concepts, which were a priori not planned by the experts, have been introduced in the developing projects. Moreover, the citizens' group expressed its interest regarding the final result to come in terms of realization.

Concerning the new experimentations, the current results are not convincing. If the first reports allow us to confirm the pertinence to rely upon the citizens' expertise of use. Their inputs have still not been encouraged, in that where it strikes quite difficult a chord with the "original experts" (as the town planners or the elected members) of urban systems. Different factors come into the picture. Nevertheless, according to a first qualitative analysis, it seems that a delicate work remains to do on the representations of the role and the place of the user (in some technical and political decision-makers). Or again on the way to make a collaborative approach appropriate.

If concrete tasks of actions take shape to tackle in a pertinent way the evolution of the decision-making processes and the input of the user-driven based development pattern, the experimental reasoning remain too empirical and fumbling. To date, the EMA space is mainly formalized on

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the organization of citizens' panels and their observation. What was already done before the EMA space! Furthermore, one cannot but notice that the processing of collected data remains basic and does not really allow contributing to the decision-making process in the choices of the attributes to maintain in an urban project.

So, after five months of development and observation of this experimental tool, the results remain close to the modeling of the tool and the definition of the goals to reach thanks to it.

5   Conclusion and perspectives

The conceptualization of the EMA space as potential generator of a distributed collaborative urban ecosystem widely benefited from the maturation time allowed by a work of thesis [Dupont, 2009].

The physical design of such an experimental tool returns us to more classical coercions of the management of the project. Nevertheless, the action does not have to burden with debt the meaning. The EMA space enrolls in an experimental logic, what notably implies to rely on a scientific harshness and to benefit from time to realize and analyze. The EMA space is also part of a larger entirety within the NIT Smart Cities Living Lab and answers to the solicitations of eclectic actors. In the current situation of our reasoning, we can draw two conclusions in the form of perspectives of action:

1. At the level of the practices and representations, we have to consolidate the positioning of the EMA space as a collaborative process in initial stage of the urban projects. This tool does not have to enroll in the continuity of the practices based on the user-centric pattern (and for instance risking being comforted to the habits of the system).

2. At the level of the outputs of the EMA space, regarding the resources mobilized, we have to clarify, for the actors of the system (and in particular the decision-makers), the short-term pertinence of such a device. Indeed, the initial reasoning enrolls in mid-term and/or long-term (more than 2 years) results a priori obvious. To that end, we propose to develop an entire tool, that is to which integrates the different techniques in order to make the arbitrations between the different parties present easier on the basis of a visual tool.

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