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Design Guidelines and Adoption Facilitation
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Executive summary

The goal of Task 3.1 is to devise a methodology for the participatory design of local applications tailored for Community Network. They have to be autonomous and be able to run without relying on the existence of Internet connectivity. They should also operate toward local collective awareness, social cohesion, citizen engagement, and conviviality. This should be a shared goal between active participants of a CN, local communities and citizens that could be served by the CN, and local authorities that can facilitate the process.

The netCommons consortium has set the objective of achieving this goal by engaging citizens in the design process and build context-specific applications that address real needs of real communities. For this, a participatory design process methodology is being developed, which borrows knowledge and best practices from different related disciplines to address the particularities of our selected case study and the resources available in the project. This report analyzes the key decisions made during the first year of the project, the first successful gathering of our participatory design process carried out in late November, and the future steps scheduled toward the accomplishment of this task's objectives as described in the DoW.

More specifically, Chapter 1 introduces the two main concepts/challenges that we have to address in this task: namely local applications for CNs, and participatory design. It explains the rationale behind our final decision to use as main case study the Sarantaporo.gr Community Network and the recruitment for this purpose, through AUEB, of members of the Sarantaporo.gr Non-Profit Organization. This collaboration has created a powerful win-win collaboration between netCommons and one of the most successful case studies of rural CN in Europe.

Chapter 2 provides a brief overview of participatory design practices and guide the reader across disciplines, from processes of practice within urban planning and participatory budgeting, to establishing collaborative environments for urban design and placemaking, and eventually for social software and design research. Aside from embedding our current research into a tradition of practice, some lessons are to be learned from this overview, summarized in Chapter 3. We also discuss the recent experiences from the SEED grants by Open Technology Institute (New America Foundation) a project with similar objectives and approach as Task 3.1, but also important differences.

Subsequently, in Chapter 4 we provide a detailed description of four reasons why local applications in CNs make sense, namely practical, political, social and economic. Having a clear motivation behind the development of such local applications is a fundamental requirement for a participatory design process to be successful, since the participants in the process need to be convinced that the object of design is meaningful in the first place. The same holds for the application design, which needs to take advantage of the reasons why providing local solutions for services that could be in principle be provided by global Internet-based platforms make sense for the users of the application, the local community.

In Chapter 5 we explain the motivation and challenges that come with the topic, and propose a specific methodology for participatory processes by describing its main principles and elements: basic steps of the organization of workshops, a set of proposed tools for eliciting information and brainstorming, the framing of the design process, and the definition of the overall strategy. The final part is devoted to the evaluation criteria that will help us assess the different phases of the process and the final outcome.

The real life case study, namely the Sarantaporo.gr CN, makes more tangible the theoretical background in Chapter 6. This Chapter presents the context, the profile of the area and the main actors of the process: the Sarantaporo.gr team, the local authorities, and the local residents. Then we analyse



the first steps of our participatory design process, by means of detailed descriptions of the project activities: a preparatory meeting in Athens, and the Sarantaporo symposium in November 26-27, 2016. This part is indeed a tell-tale story of the complexity of participatory design, and it is very useful to understand how the Task will proceed in the next months in order to achieve its goal of giving a set of guidelines that can be followed in other cases to enhance the probability that ICT-based, bottom-up collaborative project have success.

In the concluding notes in Chapter 7 we discuss our strategy for building up a methodology for participatory design for the cases of interest for netCommons, we summarize the lessons learned from the first step in Sarantaporo, and we describe our short-term and long-term future plans.

It is very important to highlight that in this Task netCommons personnel is also tapping into resources that are not, strictly speaking, of the project: the Sarantaporo.gr NGO, local people, but also complementary research projects with whom we cooperate. This is indeed in the true spirit of Collaborative Awareness: building platforms and tools that enhance the social welfare of a community by joining, merging, and blending forces coming from different pools but working together for the same final goal.



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List of Acronyms

AWMN	Athens Wireless Metropolitan Network
CN	Community Network
CAPS	Collective Awareness Platforms for Sustainability and Social Innovation
CSCW	Computer-supported Cooperative Work
DIY	Do It Yourself
GAIA	Global Internet Access for All
GFOSS	Greek Free/Open Source Software Society
HCI	Human-Computer Interaction
ICT	Information and Communications Technology
ISP	Internet Service Provider
NGO	Non Governmental Organization
NPO	Non-Profit Organization
NSA	National Security Administration
OTI	Open Technology Institute
PDO	Protected Destination of Origin
PPS	Project for Public Spaces
UX	User eXperience
VoIP	Voice Over Internet Protocol

1. Introduction

Task 3.1 aims to produce a methodology for the participatory design of local applications conceived to be hosted in a Community Network without relying on the existence of Internet connectivity to operate. This endeavor includes two very important concepts that are not always well understood: a local application for Community Networks (CNs), and a participatory design process. The former, while perfectly well defined at the engineering level, is not well understood at the societal or community level because many people are not even aware of the technical option of building a “local-only” Internet. The latter could refer to wide variety of interpretations of the notion of citizen participation in design processes, and the corresponding methodologies can differ also significantly depending on the context.

In this initial Chapter, we first introduce these the two important concepts of local applications Section 1.1 and participatory design Section 1.2, and then explain the specific choices we have made during the first year of the project to initiate a realistic and meaningful case study, given the available resources and constraints and the lessons learned from the CNs analysis reported in [netCommons D1.2](#). At the end of the Chapter we describe as well the structure of the remaining part of this deliverable.

Note that the software development has already started, in parallel with the development of the participatory design methodology, in Tasks 3.2, 3.3, and 3.4 as reported in deliverable [netCommons D3.2](#), for obvious reasons of timing and development cycles. These tasks, and especially 3.2 and 3.3 that concern the already mature platforms *Cloudy* and *Peerstreamer*, will try to exploit the insights gained in Task 3.1, only to the extent that it makes sense. Tasks 3.1 and 3.4, are more aligned and *Common-Tasker* has already proven a useful prototype for the Sarantaporo participatory design process, and will most probably evolve to adapt to the local needs in this area (see Chapter 6).

1.1. Local applications in CN

Community (wireless) networks (CN) have been thoroughly studied by social scientists in the last decade. First, because they are interesting communities of people, analyzed for their organizational structure, social identity, rituals, successes and failures (e.g., [Gaved \(2011\)](#); [Jungnickel \(2014\)](#); [Powell \(2008\)](#)). Second, because the main motivations of their members to participate and contribute effort and money are not obvious (e.g., [Bina \(2007\)](#); [Byrum \(2015\)](#); [Sandvig \(1993\)](#); [Shaffer \(2011\)](#)). Moreover, there is a significant body of literature that aims to answer a critical question: Why are such networks useful and for whom, and how can design and policy help them proliferate? (e.g., [Antoniadis \(2016\)](#); [Antoniadis et al. \(2008\)](#); [Crabu et al. \(2016\)](#); [Forlano et al. \(2011\)](#); [Powell and Shade \(2006\)](#); [Sandvig \(2004\)](#)).

This question may refer to one or both potential roles of community networks: Internet access vs. local services. As put by Alison Powell, “last mile vs. local innovation” or as the members of the Air-Stream community network in Adelaide describe their network, ‘Ournet, not the internet’ ([Jungnickel \(2014\)](#)). It is also important to distinguish whether a certain community network is “introvert” or “extrovert”, i.e., whether its services are available only to those that contribute to the network creation,

typically technology enthusiasts, or to the general public. Perhaps the most well-known example of a community network focusing on local services is the Athens Wireless Metropolitan Network (AWMN) network in Athens. Numerous local services, such as Wtube, Woogle, etc., have been developed over the years and they are part of the identity and “pride” of its members; [Forlano et al. \(2011\)](#). However, the “locality” of AWMN is mostly restricted to the members of the community and for outsiders it is useful only to the extent that it provides free access to the Internet (although Internet access is not included in the basic services offered by AWMN, some, but very few, of its members do provide public access WiFi).

[Forlano et al. \(2011\)](#) mention that “There is tremendous potential for the creation of services and applications that build on municipal and community wireless networks. These include commercial applications such as real-time mapping, games and content portals as well as services intended to enhance e-government initiatives” and also “applications such as Voice Over Internet Protocol (VoIP), streaming and web-hosting”. But until today this potential has not yet really materialized despite the numerous local services that are available in existing CNs (see for a detailed discussion netCommons deliverable D1.2 [netCommons D1.2](#)) and the question of the “killer local app” is still open.

[Jonathan Baldwin \(2011\)](#), during his master studies at Parsons School of Design in New York, tried to address these issues with the deployment of a small scale community network in RedHook, Brooklyn. He designed a collaborative mapping tool called *Tidepools* through a participatory process involving local residents. This bottom-up process for wireless community networks has since become the flagship project of the Open Technology Institute (OTI) and was tried also at Detroit Community Technology Project. Today, there is an ongoing effort to replicate it in more areas through the SEED grants project of the New America organization¹. However, there is a long way to go, since as mentioned in the SEED grants 2015 retrospective [Nucera et al. \(2016\)](#), “*When we communicate with different communities they understand networks as the capability to have Internet access. They don’t understand why they need to use local network functionality, if the Internet exists. They also see all our efforts as trying to provide Internet access for free. Their understanding can be described with simple formula: Mesh = Wi-Fi = Internet.*”

But to which Internet CNs enable us to connect? To an open and diverse network respecting our privacy and right to self-determination? Or to the big data laboratories of Facebook and Google? It is not an economic paradox that Facebook is trying to provide “basic” Internet connectivity everywhere in the world for “free”², and competes with Google over “Stratospheric Internet Plans”³. Such global Internet-based platforms have the power to become the only online places that people visit even if it is to facilitate local interactions, with a huge price: people’s privacy and self-determination. This puts CN activists in an awkward position, fighting on the side of the global players for the same objective, namely Internet access for all, even if with different motivations and underlying values.

netCommons wants to go a step further in the design of local applications for CNs toward raising awareness, increasing social cohesion, citizen engagement and conviviality, as a common goal between active participants of a CN (those who build the network), local communities and citizens that could be served by the CN, and local authorities that can facilitate the process.

¹<https://www.newamerica.org>

²<https://info.internet.org/en/story/free-basics-from-internet-org/>

³<https://www.technologyreview.com/s/601106/alphabet-and-facebooks-stratospheric-internet-plans-get-tangled-in-high-altitude-red-tape/>



1.2. Participatory design

To achieve this goal we have chosen to follow the main principles of participatory design methodologies as these have evolved after many years of experience in various related fields. More specifically, we would like to draw from lessons learned on the one hand from participatory practices in planning at various spatial scales, and the more recent participatory budgeting methods, and on the other hand from co-design practices including human and user centered design methodologies for software design, among others.

The main reason behind this multi-disciplinary approach is that Community Networks are most often constrained to a specific geographic area, a characteristic that could be treated as a positive feature with respect to local services and applications. A way to do this is to combine software design –for instance, a local application supporting local interactions that fulfill the needs of the local community– with physical design, namely designated spaces that are connected to the digital space and provide opportunities for face-to-face interactions, etc. In other words, we wish to enable the meaningful expression of hybrid space in localities, where both the network infrastructure and the software running on top of it are located in close proximity with the members of the community that own the infrastructure and use the corresponding services.

The size and complexity of the design space calls for a bottom-up design process consistent with the ideas developed in social learning, [Friedmann \(1987\)](#); participatory design, [Schuler and Namioka \(1993\)](#); and action research, [Hearn et al. \(2008\)](#), methodologies, among others. Moreover, the development of a “hybrid” pattern language, which could combine the original ideas of [Christopher Alexander \(1979\)](#) with more recent approaches, ranging from high-level meta concepts, [Schuler \(2008\)](#), to micro design details in software, [Crumlish and Malone \(2009\)](#), might enhance the building of a new common language that will not only facilitate communications between researchers from different disciplines and practitioners, but also empower citizen-activists.

[Maurizio Teli \(2015\)](#) promotes a new terminology, that of “public design” to stress that “publicly designed digital commons should be able to stimulate the formation of recursive publics, which engage with the technological and institutional elements that allow their existence as a public, deepening their knowledge and domains of action.” In this respect, “Public design should therefore produce not only useful artifacts, but also the means for discussion, improvement, and future autonomy of the publics engaged.”

In view of this, the question of interdisciplinarity in the design of the hybrid urban environment becomes urgent. Social scientists need to become more aware of the capabilities of technology and they have to get involved in the design processes. At the same time, engineers need to get in touch with legitimate local social issues and their inherent complexity going beyond simple optimization techniques and data analysis; see [Antoniadis, Ott, and Passarella \(2014\)](#). The concept of participatory design itself has been the subject of many interpretations and debates in the social sciences regarding the actual meaning of participation and the extent to which all voices and interests are taken into account, especially in cases of conflicts of interests and various divides involved.

Participation also takes numerous different forms in design research, not always with clear boundaries, ranging widely through terms like co-design, co-creation, participatory action research, user centered design, human centered design, living labs, contextual design, empathetic design, speculative design, agile development, open space technology, community informatics, design thinking, and public design among other variations of the concept of participatory design.

The inherent complexity in any participatory design process is increased in our scenario by the partic-



ularities of the core technology that we wish to promote, Community Networks (CNs), which is not very well understood by the general public. We have also to deal with important constraints in terms of available actors that can facilitate and participate in the overall process in terms of expertise and/or familiarity with the local context, including the spoken language.

1.3. Our approach

Taking into account the aforementioned constraints, among the CNs that have close links with netCommons partners, i.e., Guifi.net, ninux.org, AWMN, and Sarantaporo.gr Non-Profit Organization (NPO), we have chosen to develop our participatory design methodology for the case of the Sarantaporo.gr Community Network deployed in the area of the Sarantaporo village in Greece.

There are multiple reasons for this decision:

- The Sarantaporo.gr CN has quickly developed through external funding and now its sustainability is threatened by the limited engagement of the local population, for various reasons, including the fact that more and more villages have now improved Internet access through commercial Internet Service Providers (ISPs). The development of local services that add value to the network beyond Internet access is thus an important option for the sustainability of the network. For this, the Sarantaporo.gr team is active in searching for innovative services and sustainability models, which makes the netCommons task more than welcome. Moreover, the fact that has been recently awarded financial and consulting support by the Ashoka Impact Project (see more in Section 6) provides additional resources and motivation to collaborate with netCommons and create synergies.
- The netCommons partner responsible to develop from scratch a novel application for CNs is AUEB, which is based in Athens, Greece, and has recently recruited two members of the Sarantaporo.gr team to work in the project.
- The netCommons partner responsible for the multi-disciplinary participatory design methodology is NetHood, and more specifically Ileana Apostol and Panayotis Antoniadis. Both researchers are also involved in the CAPS project MAZI⁴, which has already run a related workshop in the area. Moreover, Panayotis Antoniadis speaks the Greek language, which makes feasible the translation of the necessary tools and templates in Greek, but also the facilitation of the overall participatory processes. The fact that the person responsible on behalf of UoW for the Task 2.1, on analysing the politics underpinning CNs and the concept of sustainability, is also Greek (Dimitris Boucas) makes the choice of this case study even more convenient in terms of avoiding the language barriers that would exist in our two other available options, Spain and Italy.
- In the Sarantaporo area one of the main activities of the population concerns agriculture, which seems to be the most important target domain of activity for which innovative technological solutions could be welcome. This allows us to narrow-down significantly the design space and also to collaborate closely with another Collective Awareness Platforms for Sustainability and Social Innovation (CAPS) project, CAPSELLA⁵, through its Greek partners Agroknow and ATHENA, which work on very relevant and complementary topics.
- The collaboration between netCommons and Sarantaporo.gr is beneficial for both parties. On

⁴<http://mazizone.eu>

⁵<http://www.capsella.eu/>



the one hand, netCommons gains much easier access to the local community for developing its local application offering in a truly participatory way, and potentially also experiment with other open source applications developed in WP3 or even in other CAPS projects. And on the other hand, exactly this process can become the driver for the required mechanisms and local engagement that will ensure the economic sustainability of the network itself, one of the most important challenges faced today by the Sarantaporo.gr NPO and many other similar organizations around the world.

Before analyzing in detail the overall context of this case study and the first draft of our proposed methodology, we provide below a selection of important concepts of participatory design as these have been evolved in different related disciplines (Section 2) and some lessons that are to be learned from this overview (Section 3). One important lesson regards the non-linearity of the problem-solving tasks in the laboratory of real life, where the triad of information gathering, problem definition and solution(s) finding requires iterative circles of reflective action. In the same dialectical manner, the issue of addressing needs and allocating resources is also discussed. Four common fallacies are then identified as 'the challenge of putting oneself at the position of the other', 'the "requirements" fallacy made by engineers' and 'the "too complex to touch" fallacy by social scientists' as well as 'the fallacy of "expected outcomes" which should be "allowing things to grow from the bottom-up".' This section concludes with the particularization into lessons for participatory practices from the experience of the Open Technology Institute (OTI) in dealing with community technology projects.

In Section 4 we develop in more detail the main reasons why local applications in CNs make sense providing a few key arguments that can be used to engage the local community in the participatory design process.

Then Section 5 describes our under construction participatory design methodology divided in four basic elements: 1) formulating an overall strategy, 2) framing a design process, 3) guidelines for events organization, and 4) tools for eliciting information and brainstorming, including evaluation metrics.

Section 6 reports on the details of the Sarantaporo.gr case study and the first steps carried out until today, most notable the first participatory design workshop in the area.

Section 7 describes the evaluation and adaptation of the methodology over time, the lessons learned from our first visit in Sarantaporo both for the participatory design process and for the application design, and future steps both short-term and long-term.





2. Participatory design across disciplines

The term is used in a variety of fields like software design, urban design, architecture, landscape architecture, product design, environmental studies, graphic design, urban planning, and more, as to create environments and systems that are built in ways that reflect the cultural, emotional, spiritual and practical needs of their inhabitants (or users).

However, the participation of people in the design process can take many different forms in terms of:

- who actually participate (a representative sample vs. all affected people),
- to what extent affected people participate (providing information, being observed while using the system under development, becoming part of the design process themselves, having decision power over the final product),
- who initiates (a local authority, a research institute, a non-profit organization, a group of citizens),
- who mediates the participation process (the initiator or a professional team),
- who has the power of decision-making (the initiator, the participants in the process, or all people affected),
- how the participation process is actually implemented (through questionnaires, physical meetings, online deliberations).

2.1. Urban planning

The experience of grassroots initiatives in the American cities plays a crucial role within a broader understanding of the rise of participatory processes with respect to the organization of urban life. Already at the beginning of the 1960s in a Lower Manhattan neighborhood, Greenwich Village, citizens self-organized in order to preserve their neighborhood life by fighting against the top-down urban development plans of the New York municipality; see [Jacobs \(1961\)](#). It is important to note that the rational model of planning is most of the time applied regardless of the local context or of inhabitants' needs and aspirations, and unfortunately it has infused planning practice for decades, although it was known that the theoretical framework for planning practice could not be reduced to a set of procedures, see for instance [Friedmann \(1987\)](#).

By the 1980s the trends of neoliberal politics and of the globalization processes brought new challenges to planning. Within a decade the planning field was in a state of crisis, as both the rational model of planning and neoliberal market schemes failed to produce positive planning outcomes and change, [Sanyal \(2005\)](#). Understanding the relationship between place and social reality became critical, the focus on both physical and social urban space standing out as a necessary condition. Thus it became evident that the planning practice should be open to a variety of constituencies, and should embrace participatory processes in political action. Along similar lines but from the perspective of urban design, [Barnett \(2003\)](#) recommended the creation of design constituencies, and in light of the globalization process, [Manuel Castells \(2005\)](#) advised the formulation of a new theory of urbanism in the Information Age that addresses the physical city.

As a matter of fact, understanding the power relations within participatory processes is critical, mostly as it seems to be in the near future the way of dealing with any collective productions of habitat, and thus also with citizen participation in the deployment of community (wireless) networks. Sherry R. Arnstein, an American activist engaged in community development studies for the commons, proposed a hierarchy of different degrees of citizen engagement in decision-making processes, which she called “the ladder of citizen participation”. In 1969 she wrote a paper on this topic, [Arnstein \(1969\)](#), from her experience with community work in the US. She aimed to provide a finer grain of detail to this generic and ubiquitous term that implies various degrees of citizen power in urban politics. This journal article became a reference for the topic, despite the more ‘top-down’ organization of participatory processes that she experienced at the time of writing it. So she argued that the degrees of power granted to citizens in participatory decision-making processes vary on eight rungs of the ladder, from non-participation (i.e., manipulation, and therapy) through tokenism (i.e., informing, consultation and placation) and reaching citizen power in the highest rungs of participatory practices (i.e., partnership, delegated power and citizen control).

Since the publication of Arnstein’s “ladder of citizen participation”, there have been variations of practices to engage citizens in decision-making processes, which have been theorized under different names such as participatory, deliberative, communicative, or collaborative planning; see [Forester \(1999\)](#); [Healey \(1997\)](#); [Hou \(2011\)](#); [Innes and Booher \(1999\)](#); [Sandercock \(1997\)](#); [Sandercock and Attili \(2010\)](#), among others. Despite all these efforts, there are still many concerns regarding the effectiveness of these processes, due to various challenges related to the limited time allocated to political activities, and also necessary skills, in addition to power games, top-down settings etc. One of the greatest challenges of direct citizen participation is the provision of tools and resources for the participants to be successful in their endeavor, being “coequals in a learning process”, [Roberts \(2004\)](#), p.338.

In spite of many voices claiming that ICTs can solve some of these problems, the promises of e-planning, e-deliberation, and e-democracy are still to be realized; the issue of digital divides adds to all of the previous concerns, as they do not seem to be properly tackled in the digital scenario as well.

2.2. Participatory budgeting

A very specific example of participatory processes at the local level is participatory budgeting, a relatively recent term designating those decision-making processes that imply democratic deliberations with respect to the allocation of common resources, namely of a share of the municipal (public) budget. At the end of these processes, citizens contribute to either a concrete financial plan (i.e., a budget) or to a set of recommendations to elected representatives. As such, citizens have the opportunity to have tangible impacts on how public spending is decided, public authorities have the chance to achieve greater transparency and accountability, while the public participation and collective learning practices may lead to a more sophisticated form of participatory democracy.

The basic steps of a participatory budgeting process are:

1. identification of spending priorities and selection of the budget delegates by community members;
2. development of specific spending proposals by the selected budget delegates together with the help of experts;
3. selection of proposals to be funded, through voting by the community members;



4. implementation of the selected proposals by the public authority.

The CAPS Project EMPATIA¹ refers to such democratic processes for public spending.

2.3. Urban design and placemaking

Establishing collaborative environments are an agreed upon manner of working in complex environments, since early human communal times. More recently, it is the role of public authorities together with planning and design professionals to invite citizens –the local community– to participate in design processes, as it is understood that the inhabitants are the experts with regard to the actual needs and aspirations for their neighbourhood. A starting point to achieving the participatory processes is to create a common vision.

For instance, to shape “great community places” in American cities, the Project for Public Spaces (PPS)², a nonprofit planning, design and educational organization, has developed over time a set of principles based on eleven key elements in transforming public spaces into vibrant community places.

We include these steps in Appendix B to illustrate a methodology that has been tried out successfully and for a long time in participatory design processes. According to their own statement, PPS “pioneering placemaking approach” have helped citizens over the years “transform their public spaces into vital places that highlight local assets, spur rejuvenation and serve common needs”. Recently, at the September 2016 “Placemaking Leadership Forum” in Vancouver, a large number of professionals attending the event subscribe to the idea that, “while many different definitions of placemaking exist, what most agree on is that it is a process that leads to public space activation as an expression of the community’s preferences and insights³.”

2.4. Social software and design research

The idea that “users”, a very contested term by itself, should be actively included in the process of designing software and artifacts that mediate human interactions online and/or offline, has a long history in many related fields like Human-Computer Interaction (HCI), Computer-supported Cooperative Work (CSCW), urban and community informatics, interaction design, and design research, among others. Numerous terms have been devised to characteristics different forms of participation like co-design, co-creation, participatory action research, user centered design, human centered design, living labs, contextual design, empathetic design, speculative design, agile development, open space technology, design thinking, and more recently public design.

A key difference between participatory design for social software and artifacts, compared to urban design and planning, is the extent to which design choices can be adapted or even completely altered through the course of the design process. In other words, moving from the physical to the digital, from big to small objects, allows for more experimentation, and try & error methodologies, even co-designing “on the way” (while people are using initial prototypes of the envisioned system), like, for example, in the case of agile development.

¹<https://empatia-project.eu/>

²<http://www.pps.org/>

³<https://medium.com/@psrenew/placemaking-and-pershing-square-e34a2866da8f#.jgm2ubgr2>



It is interesting to explore the different language that different fields use to highlight the specific form of participation that they adopt. For example, the “Field Guide to Human-Centered Design” by IDEO.ORG [IDEO Field Guide \(2015\)](#) mentions that “Human-centered design offers problem solvers of any stripe a chance to design with communities, to deeply understand the people they’re looking to serve, to dream up scores of ideas, and to create innovative new solutions rooted in people’s actual needs.” Similarly, [Maase and Dorst \(2006\)](#) define co-creation as a process in which “the ‘user’ is not just involved as a source of information, an input for the work of the designers, but the ‘users’ ARE the designers.”

[Le Dantec and DiSalvo \(2013\)](#), analyzing the idea of **infrastructuring**, distinguish between “design-for-use, centered on useful systems”, and “design-for-future-use, structured to create fertile ground to sustain a community of participants”, concluding that this distinction “entails a shift from treating designed systems as fixed products to treating them as ongoing infrastructure, socio-technical processes that relate different contexts”.

[DiSalvo et al. \(2014\)](#) distinguish between **matters of fact**, “conditions considered as objective data, separate from political conditions” and **matters of concern**, “perceived situations and their consequences”, which are “subjective experiences that constitute political conditions”. They provide examples of participatory sensing projects, such as The Pollen Map, Pollen Calendar and Smog is Democratic, which are very relevant to our case study discussed below and which “provide users an opportunity to interpret their own sensing schemes, allowing them to use their own experiences in helping construct how information might create meaningful dialogues around issues.”

What is important for DiSalvo et al in this context is that “matters of concern” are not generic affairs. “They are distinguished by the factors that constitute them”. And to address them one needs to be understand the particularities of the situation. In other words, there are no generic rules nor ready-made solutions for a designer that has to deal with a specific situation including different actors and special conditions in terms of historical moment, available resources, political context, etc.

2.5. Toolkits and applied methods

Of course, one shouldn’t feel disempowered because of the high complexity of any situation involving a group of humans in a specific place. Indeed, over time and through different experiences in different areas, there is a growing body of tools and applied methodologies for facilitating the participatory design process. These have been proven successful in various occasions and are often provided in the form of a toolkit with a set of templates/canvases that can be used to implement them in different situations.

For example, the *Commotion Wireless Kit* by the Open Technology Institute, OTI, proposes a “module” for engaging people in the design of local apps for CNs⁴ (exactly the objective of this work!), focusing more on “education” than understanding and negotiating local “needs”, as we describe in more detail in Chapter 6.

Another example of a design toolkit developed by people close to our technological case study, is the *Designing Policy Toolkit*⁵ by Laura Forlano and Anijo Mathew, reporting on a series of workshops focused on urban technology in three major metropolitan centers in the United States: Chicago, New York, and Boston. Using the authors’ words to introduce their work and the toolkit: “*The workshops*

⁴<https://commotionwireless.net/docs/cck/local-applications/what-is-an-app/>

⁵<https://designingpolicytoolkit.files.wordpress.com/2013/07/designing-policy-toolkit-final.pdf>



engaged a range of stakeholders, from policymakers and entrepreneurs to activists and academics, in hands-on activities using open and participatory co-design methods. This toolkit illustrates the ways in which urban technologies are embedded with values, as well as how co-design methods enable diverse stakeholders to come together around the complex socio-technical questions that are shaping everyday life in cities.”

Regarding our target application area, the EU’s booklet on “Participatory approaches for agricultural innovation” by the agricultural European Innovation Partnership (EIP-AGRI) [EIP-AGRI \(2015\)](#), provides a rich overview of participatory methods used in different agricultural initiatives across Europe, aiming to encourage the creations of “Operational Groups”, that is “groups of people (and organisations) who decide to work together on a specific innovation project”, including “farmers, researchers, advisors, businesses and people from Non Governmental Organizations (NGOs).”

Going to more generic toolkits, to help the creation of common understanding between diverse groups, the “story wall” is a method that allow different actors to retrospectively look at how they have perceived a joint process, e.g. a process of co-producing knowledge. The outcome of a story wall exercise is a poster of the story featuring its most important elements out of the perspective of the group and its members⁶.

To stimulate creativity and organize one’s ideas around specific problems, the **Method Kit** provides different decks of cards together with suitable “canvases” and methodologies to use them in different settings⁷.



Figure 2.1: Some of the cards of the “App Development” Methodkit deck, with important concepts like “User experience”, “Sign up process”, “Push notifications”, and “Similar apps”, together with a few proposed ways to use the cards, like “sorting”, “mapping”, and “prioritizing”, among others.

⁶<http://www.naturalsciences.ch/topics/co-producing-knowledge/methods/storywall>

⁷<http://methodkit.com/>



The Open Innovation Toolkit by Mozilla⁸ is more generic addressing different phases of a development process, and offering a wide variety of methods together with guidelines and requirements for their implementation like “mind maps”, “feature ideation”, “storyboarding”, “exploratory interviews”, and more.

Again, we stress that such pre-designed toolkits need to be adapted to the specific situation but also to the people that are available to facilitate the process. The importance of the facilitator and the need for improvisation as the interactions unfold during the participatory design meetings is stressed in many of these guidelines. There are for examples various guides for facilitators stressing the importance of this role⁹, and Nucera (ed.) (2016) provides some useful tips and examples of more facilitation methods (p.36), which we will consider applying also in future steps of our methodology, given the strong similarities, like “World Cafe”, “Problem Tree”, “Peer Consultancy”, “Free writing”, “Collaging”, “Gallery walk”, “Fishbowl discussions” and more.

⁸<https://toolkit.mozilla.org/methods/>

⁹<http://www.participatorymethods.org/task/facilitate>



3. From practice to theory and back to practice

After the examples of participatory design processes applied by various disciplines in real life situations discussed in Chapter 2, in this Section we present how such processes have been formalized through theoretical reflection, in order to produce optimal procedures and guidelines, that we can adjust to the participatory design methodology.

We choose to present three levels of analysis:

- a) one that deals with the design process itself building on existing theoretical work (Section 3.1),
- b) another that lists a series of common fallacies, representing the perspective of NetHood team on certain contested assumptions, as these are derived through the study of the literature and own experience in the organization of interdisciplinary events (Section 3.2),
- c) the guidelines devised by OTI through an applied participatory design process very close to our own case study (Section 3.3).

We conclude with the methodological approach chosen by the NetHood team in Section 3.4, as a complement to Section 1.3 that explains the choice of the case study itself, which will be analyzed in more detail in Chapter 5.

3.1. The spiral flow(s) of participatory processes

Regarding citizen participation in complex environments like those that the planning processes address, it is also important to look into the nature of planning practice itself. Planning and design practice is not a sequence of activities, but a process that occurs in a fashion that depends on the state of understanding the problem. So how do practitioners act?

3.1.1. Problem solving and reflection in action

The unique nature of planning problems was brought to attention through H. Rittel and M. Weber's article on 'wicked problems' [Rittel and Webber \(1973\)](#). Basically the authors argue that planning problems cannot be completely 'solved' due to the fact that planning practice is about performance and not about absolute value. Moreover, a process of spatial understanding on which to base the action in the real life laboratory is different than a structural approach to design that proposes sets of performance criteria. Every planning solution is a 'one-shot operation' that leaves little room to learn through trial-and-error, and even more, the lessons learned cannot be transferred across to other problems.

Therefore, building an understanding of the problem in planning and design processes calls for different procedures. Because the problem is not 'given', a phase of problem setting is necessary, and instead of problem solving according to a prescribed set of performance criteria, "one of the arts [...] is actually postponement of the formal decision in order to enhance the process of forming judgments", [Rittel \(1984\)](#), p.324. In context Rittel proposes "the study of the logic of the reasoning of the designer. What I mean by logic is the rules of asking questions, generating information, and arriving at judgments" (p.323).

Within such circles of eliciting information an important role plays also the intuitive knowledge, which is unmediated by words or rational analysis; e.g., [Myers \(2002\)](#); even more, thought and feeling are inseparable brain processes, and in practice “we perform a combination of rational and emotional, of pre-linguistic and linguistic functions”, [Madanipour \(2001\)](#), p.164. The body knowledge like “the use of the hands, members and sensory organs, and the gestures of work as of activity unrelated to work” [Lefebvre \(1991\)](#), p.40, which is beyond the explicit knowledge, is the practical basis of our outside perception of the world.

Due to the dynamic and multi-view perspectives that these complex processes require, practitioners need to learn to create opportunities for ‘reflection-in-action’. The American philosopher Donald Schön advanced the term reflection-in-action as “Practitioners themselves often reveal a capacity for reflection on their intuitive knowing in the midst of action and sometimes use this capacity to cope with the unique, uncertain, and conflicted situations of practice” [Schön \(1983\)](#), pp.viii-ix [...] “This reflection-in-action is tacit and spontaneous and often delivered without taking thought, and is not a particularly intellectual activity. And yet it involves making new sense of surprises, turning thought back on itself to think in new ways about phenomena and about how we think about those phenomena. And examples lie in ordinary conversation, making things, fixing things, riding bicycles” [Schön \(1983\)](#).

Just imagine a spiral-shaped flow, then the processes of planning and design may be seen as a counterplay of raising issues and dealing with them. According to Rittel, “You cannot understand the problem without having a concept of the solution in mind;” and “you cannot gather information meaningfully unless you have understood the problem” but “you cannot understand the problem without information about it”, [Rittel \(1984\)](#), p.321. As planning and design processes are not value-free processes, power relations interfere within the above described spiral flow. So in planning theory we “assume that the good lies in the very creative act of synthesis from the alternative possibilities presented in the dialectic” [Banerjee and Chakravorty \(1994\)](#), p.141. Yet this creative act of synthesis depends upon the effective collaboration within the participatory process, for which it is required, as briefly described in the next section, the construction of mutually possible and common worlds.

3.1.2. Addressing needs and allocating resources

In observing human motivations, American psychologist [Abraham Maslow \(1943\)](#) proposed a framework of needs as “A Theory of Human Motivation.” This hierarchy of needs stretches from “physiological” needs that insure survival, and “safety” needs such as security of resources, healthy body and family, going through “love and belonging”, and reaching higher level of needs like “esteem” that means confidence and respect from others and to others, to the highest level of “self-actualization”, which is a person’s motivation to reach his or her full potential, and eventually “self-transcendence” toward values outside oneself like altruism and spirituality. The fact that the proposed framework is hierarchical means that one should meet the basic needs before self-actualization can be achieved; however, human motivations do flow through this framework in a dynamic and complex manner.

Within the study of the Sarantaporo area, in Section 6.2 of this document, some basic needs are formulated as a result of an overview of existing research material and first impressions (see also Section 6.3.3 on the Sarantaporo Symposium). The need to support agricultural activities and the need to provide social support that alleviates isolation and feelings of loneliness are the two main areas of needs, which are identified so far as potential topics to be addressed through the participatory design of the community network.

In addressing the local needs through a participatory process, nevertheless, first a common ground



and a deliberative environment need to be established. For instance, in collaborative processes for the production of habitats, one may imagine two pools of resources. There is one belonging to experts, that is filled with related skills, knowledge and practical applications. Its content should be communicated in detail to the inhabitants, in terms of future possibilities and proposals rather than “done deals”. The other pool of the inhabitants (or so called “users”) is filled with perceived needs, aspirations and desires, which constitute precious information to be revealed and elicited during field work. No doubt, in the process of revealing information from the two pools, an open, flexible and inclusive communication process needs to be established between experts and the local community, in which other needs and aspirations may be identified, expanded, reduced or be completely different than those already expressed in the first circles of communication.

In this iterative manner within the spiral flow of participatory process formal decisions are postponed in order to generate information, to stimulate internal and external negotiations, and to mature judgments with respect to addressing local needs and to effectively allocating available resources. The engagement of local community from the beginning of this process may turn it sustainable, as the participating citizens have expressed their preferences and made choices during deliberations, they are familiar with the decisions made throughout, and thus develop capabilities to further take it on their own.

To formulate the participatory design methodology we draw on some lessons learned from the experience with such complex participatory processes in the planning practice, where local communities ‘have to live with’ the planning outcomes on a day-to-day basis. From a series of experts’ responses cited by [Forester et al. \(2011\)](#) we highlight here the reflection of Canadian architect-planner, Larry Sherman, who makes some suggestions for dealing with emotions as mediator of community consultations for participatory design; we note that the word ‘planner’ in the text below may be replaced while reading with the word ‘designer-mediator’.

“But if you want to serve as the mediator as well as the planner, and you want to help this community to strengthen itself, then this community will strengthen itself by resolving its own conflicts ... In many ways the planner is well prepared to also be the mediator: balancing fact and intuition, and knowing to trust intuition; respecting views that differ, even conflict with one another; translating problems and emotions into opportunities and options; knowing how and why to listen and be curious and ask, “Why?” a lot; knowing that the outcome must be acceptable to the folks who must own it and live with it. But the planner who wants also to mediate must address new dichotomies: being impartial and still wanting an elegant solution; empowering others to plan; trusting that the essential information will emerge from the dialogue; respecting emotion along with reason. [...] I need [Sherman says] to elaborate on this point about respecting emotion —whether dealing with an individual or the public— because we planners are rarely prepared for this. Indeed we tend to ask an emotional person or group to settle down, put aside their emotions for the good of solving the problem, instead of allowing those emotions to lead us to the source of conflicts that often block our chance of planning or designing something important.”

This attitude that Sherman describes is called critical pragmatism by planning theorist John [Forester \(2013\)](#), and means “to be at times impartial and still to seek elegant solutions, to empower others to plan, to trust and encourage essential information to emerge from the dialogue, to respect emotion along with reason” (p.12).

Regulating disequilibrium may be taken into consideration between the members of the project team as well, as contradictions, disputes and conflictual situations are inherent in interdisciplinary multicul-



tural teams (e.g., for alternative dispute transformation refer to [Sclavi, Marianella \(2006\)](#)). Therefore, in the next section, we formulate four common fallacies that may establish a common understanding of how we could proceed.

3.2. A perspective on common fallacies

This section provides the perspective of the NetHood team (Ileana Apostol and Panayotis Antoniadis) on certain contested assumptions, or common fallacies, made in the context of participatory design processes. These are derived from their own experience in related interdisciplinary events like the Dagstuhl seminar on “Do It Yourself (DIY) networking: an interdisciplinary perspective”, [Antoniadis et al. \(2014\)](#) or the EINS Volos summer school analyzed together with other similar events in [Antoniadis et al. \(2015\)](#).

3.2.1. The “expert” fallacy or the challenge of putting oneself at the position of the other

Until recently in western democracies planning experts have been responsible with the practice; when hired as consultants for the development of planning projects in foreign countries, they played also the role of conveyors of planning technology. The expert consulting teams would include sometimes local professionals educated abroad, and also professionals who had been locally trained and “were already socialized into the western (in particular American) planning style”, [Banerjee and Chakravorty \(1994\)](#), p.72, or were at least actively undergoing “anticipatory socialization”, [Merton \(1968\)](#), cited in [Banerjee and Chakravorty \(1994\)](#), p.72, with respect to the Ford Foundation consulting work in post-independence Kolkata).

Despite attempts to respond to the ‘local needs’, these ‘imported’ planning concepts overlooked the local political context, and even more, they never embedded in the particular political culture a democratic and participatory planning process. Too often, the top-down development projects were doomed to fail as soon as the (foreign) experts would leave the project area, because “the transfer of expertise was a one-way flow” (like it was the case described by [Banerjee and Chakravorty \(1994\)](#), p.77, and the design of the process had little consideration for diffusion and permanence within the local planning and administrative culture.

Such failures are commonplace; they do not pertain only to planning technology and its transfer from western countries to other countries around the world, but to many top-down development projects that have not engaged from the very beginning with the people who are directly affected by these transformations. On the one hand, local politics influence the implementation of any new project. On the other, a project is seldom appropriated by the local community without understanding it through engagement in its practical development, and in the long term many projects fail to build local institutions from the bottom-up that are capable to fuel its life over time.

3.2.2. The “requirements” fallacy made by engineers

For the sake of identifying in due time some design ‘requirements’ in a sense of user’s needs, more often than not engineers and technology designers overlook the necessity to consider in depth the complexities and variations of cultural settings and social practices. Computer scientist Paul Dourish and cultural anthropologist Genevieve Bell, in [Dourish and Bell \(2011\)](#), argue that, “*Ethnography is*



too often seen as an approach to field investigation that simply generates requirements for systems development by providing a clear sense of “what users want” (p.64); such takes imply that designers are those deciding the course of the research inquiry, placing ethnography outside the design process” (p.70). Moreover, beyond the project “requirements”, ‘thicker’ accounts of ethnographic work become potentially relevant for design, “whether or not it was conducted in a design context or in relation to new information, communication, and entertainment technologies, or even if it lacks an implications-for-design section somewhere in its closing pages” (idem, p.74), as “Implications for design encompass not only specific technological imperatives but also implications for how we go about design in the first place, what it might do, how it can be carried out, and what import it holds.” (idem, p.84).

It is important to note that the presence of researchers and designers in the field is critical not only to elicit information, but also in building relationships with the local community, in local capacity and trust building, and in providing locals the means to appropriate the project in the future. That hints at designing within a spiral structure the design processes, together with understanding local problems to be solved, that we have discussed in Section 3.1.

3.2.3. The “too complex to touch” fallacy by social scientists

Sociology is grounded on field observations; if considering “critical theory” of the Frankfurt School, empirical questions are necessarily rooted in substantive philosophical issues, thus society is a concrete totality, a social environment in which various “psycho-social agencies” of various degrees from kinship to political culture shape individual consciousness. Rushed and oversimplified views claiming to find out “what users want” from a very early stage of engineering projects are sometimes at odds with the holistic understanding of society and individuals within social sciences. Moreover, the research time-frames vary tremendously between a study framed in the social sciences or a social assessment for a study framed in an engineering project; that gap may generate conflicts within the course of multidisciplinary projects.

For such complex systems, technology would need to be constructed in basic modules that could be absorbed within a complex social system and from there allow the system to be adapted and appropriated according to the needs.

Social scientists on the other hand, should manage their own expectations and accept the fact that despite the complexity action is required and some heuristics need to be applied to make informed decisions. They could understand technology as an assemblage of basic elements that may be analysed individually, in relationships with each other, and functioning as a group, exactly the way they would approach field work in a society. In this way, social scientists would provide the connections between technology and social groups just like in an analysis of the use of traditional tools.

3.2.4. The fallacy of “expected outcomes”

It is most often the case that people come together as a group to achieve a certain objective, to produce a certain outcome. Achieving a consensus on how this objective will be achieved and what should be exactly the expected outcome becomes more difficult when such groups are diverse—with group members coming from different backgrounds and disciplines—aiming to solve problems that concern an equally diverse set of actors [Hadorn et al. \(2007\)](#). Two of the key challenges include different vocabularies and assumptions, as well as often conflicting goals of the different actors.



In such a situation, stressing the need to achieve a specific outcome can generate competition between the participants toward defending their own perspective and aspirations for the project. Starting such processes by focusing more on the exchange of information between the participants, and allowing “things to grow from the bottom-up” can be very productive in the long run, even if some time is initially dedicated on “getting to know each other” instead of “working together toward a concrete objective.” The reason is two-fold. First, rather than getting directly into doing things together, focusing more on information sharing creates a more relaxed atmosphere, and the differences between participants become a source of inspiration and knowledge instead of a hurdle, which helps in building trust and some sort of community spirit. As a result people will want to meet again, which is a prerequisite for a successful collaboration around complex issues. Second, the information shared itself can help tremendously in understanding each other’s perspectives and language, and most importantly “putting oneself on the position of others”, but also for the actual process of problem-solving.

FOR EXAMPLE: Digital justice demystifies technology to the point where we can not only use it, but create our own technologies and participate in the decisions that will shape communications infrastructure.



Figure 3.1: An example of a brainstorming canvas on how one can demystify technology as an individual, as a community, as a city, or globally, available at Detroit Community Technology Project’s “Teaching Community Handbook”; Nucera (ed.) (2016), p.14.

3.3. The OTI experience

From a relatively short experience with community networks projects, in a 2015 report Nucera et al. (2016), pp.10-11, the Open Technology Institute (OTI) recommended as critical people’s interconnections and face-to-face exchanges, as well as some “simple advice” on community technology projects



and community-controlled, autonomous infrastructure, which is cited below:

- “1. *Community networks should be led and built by the people they intend to serve. Too often outsiders initiate projects to help a local community build a network. Outsiders can serve as supplemental technical support, or provide other expertise, but should not initiate or lead a project.*
2. *Begin projects with open, participatory community meetings where everyone can be involved in the initial planning and learning. Shared ownership and responsibility are best built from the first moments of a project.*
3. *Focus on the community process at least as much as the end result. The promise of community networks is only met when they are actually built and governed using an inclusive process. How are users becoming leaders or experts? How are people engaged in the decision making process?*
4. *Are you providing a service (as an Internet Service Provider), or organizing people to build infrastructure? Either model is valid, but it is best to be clear about the goal, and establish your organization and strategy accordingly.*
5. *Choose the simplest technology or even non-tech solution to get the job done. For example, a lot of energy in community wireless has been dedicated to creating open source mesh firmware; however, in some cases a simple point-to-multipoint network will be more resilient and easier for people to understand. Similarly, a community radio station, an outdoor bulletin board, or two-way radio system may fit the need better.*
6. *Be sure the project is not a technology in search of a problem. A network should not be the goal—but a means to an end. It should be clear that the project serves a critical need articulated by the people most impacted. It is easy for people to get caught up in new technology and never get to the point where the technology is serving its intended function.*
7. *Incorporate art, media, music, and storytelling. Content is at least as important as the network infrastructure, especially for drawing diverse people into the process and keeping them engaged.*
8. *Involve other groups, organizations, and movements even if they seem unrelated. Using a shared visual language and participatory planning process can help involve a wide range of groups.*
9. *Invite kids to everything. Similarly, make sure community elders can participate. Ensuring that the process is accessible to everyone strengthens the project.*
10. *Make sure there is a cycle of learning and teaching included in every aspect of the project. Learners becoming teachers will help ensure sustainability.*”

Along these lines, for instance, some achievements regarding the grantee organizations are mentioned as: “*opportunities for co-teaching workshops or sessions at events; participating in barn raising style network build outs with partners; and facilitating retreats or gatherings that focus on exchanging lessons and practices.*”

Their concluding lines are a clear declaration of the need for a process rather than a solution: “*No single solution will solve digital access disparities, rural broadband, Internet shutdowns, and telecommunication monopolies, much less ensure traditionally marginalized groups are not further excluded from technology. Communities will seek to address these issues based on their context, resources, technical skill, interests, and organizing capacity. We have seen that a technology solution is less important than a process that redefines who has a voice in shaping the issues and solutions. Community networks are one tool we have seen groups use successfully to this end, but there are certainly*



others. We hope the practices and lessons shared here will be applicable to other types of community technology projects.” Nucera et al. (2016), pp.10-11.

Note also that OTI’s participatory design approach gave particular focus on emancipating people in terms of their understanding of how community networks function and their key political role (see Section 4.1.2). In most cases, the goal was to build new community networks from scratch, and were addressed people who had a basic understanding on how the Internet works, to the extent that they could understand the potential benefits of an “alternative”.

One year later, at the time of finalizing this deliverable, the Detroit Community Technology Project which participated at OTI’s SEED fund, published the “Teaching Community Handbook” that brings together many interesting lessons learned, and methodological tools like the canvas reported in Fig. 3.1. They introduce this handbook as follows Nucera (ed.) (2016):

“Community technology is a method of teaching and learning about technology with the goal of restoring relationships and healing neighborhoods. Community technologists are those who have the desire to build, design and facilitate a healthy integration of technology into people’s lives and communities.”

In our selected case study the politics of Information and Communications Technologys (ICTs) and the subtle differences between different technological solutions were decided to be left for a later stage of our participatory design process and we started with an approach that is closer to human-centered design in that it tried first to build trust and elicit information on the actual needs of the local community, as described in detail in Chapter 5 and 6.

3.4. The netCommons approach on participatory design

The strategic reasons why we focus on the Sarantaporo CN are explained in Section 1.3. In terms of methodology, there are already many existing methodologies to choose from the literature with respect to participatory design process, with perhaps the most obvious one being OTI’s “Teaching Community Handbook” described above. However, as the Handbook itself highlights each case is unique, so we adapt the guidelines of this Handbook to better fit our case and community.

The methodological framework we devised and present in Chapter 5 consists of four basic elements:

1. Formulating an overall strategy;
2. Framing a design process;
3. Define guidelines for events organization;
4. Devise tools for eliciting information and brainstorming.

Then, we “cherry pick” different parts of existing methodologies for each individual element of the framework, following the specific needs of the case study as well as the available resources.

For example, for the organization of workshops and gatherings we do not want to start with a pedagogical framing, as the one proposed by OTI, but more with one that can be more effective in “eliciting information and building trust”, as described in Section 6.3.3. Along the way, and based on the evolution of the process, we might reconsider some of these choices or refine them, self-reflecting in action, and documenting the evolution of both the choices and the process itself.

At the end, the derived methodology consists indeed in the documentation and the analysis of the experiment on participatory design in the Sarantaporo area, using in this specific case study existing tools and methods from different disciplines. The interpretation of this participatory experience will



be translated in the future work of Task 3.1, into guidelines on how one can repeat the same experiment in a different place. That could eventually lead to a specialized participatory design methodology for the case of local applications in Community Networks.

Before elaborating on the methodology in Chapter 5, we explore in Chapter 4 why local applications are very important and they represent a very interesting case study for participatory design.





4. Local applications in CNs

One of the most important difficulties toward engaging people in the design and eventually use of local applications for CNs is that most of them do not see the reason why they should be involved. Indeed, the main focus of the OTI's approach was to highlight the benefits of a locally-owned network infrastructure that can provide alternatives to the Internet (see Section 3.3).

Here we analyze in detail four important reasons why CNs are useful beyond Internet access, thus why local applications are needed. This analysis can help frame the participatory design processes for developing local applications, and to facilitate the adoption of the corresponding solution. They can also inform the design process itself, which needs to identify what elements make a local application attractive in comparison to Internet-based ones. For a more detailed treatment of this topic see the full paper titled "*Local networks for local interactions: four reasons why and a way forward*" by [Antoniadis \(2016\)](#).

4.1. Adoption facilitation

4.1.1. Practical reasons

Take as a first working example, a workshop, a party, or a gathering, during which participants often want to share photos, videos and other material, such as slides and documents, and engage in various contextualized (in space and time) interactions.

Instead of using an Internet-based cloud platform, a more straightforward way to exchange information in such a setting would be to have some server in the local CN hosting the corresponding service. People connected to the CN, would be immediately part of an online community whose members are de facto in the same place. Other people may access the same service if the Community wants through a global access unless the CN chooses to be completely isolated, which is a rare choice. This is by far the most inclusive and convenient way to support the exchange of content between trusted individuals in a specific location; provided, of course, that the corresponding application is well-designed, robust, and free to install. Such self-hosted applications, like NextCloud¹, have only recently reached the desirable usability levels, and if they are optimized for use in such local environments they would present a credible alternative to global commercial platforms.

Indeed, Internet-based platforms have objective drawbacks in many cases. First, everyone should have registered, or register ad-hoc, to the selected service, which excludes those that do not wish to do so; certain platforms have undesirable privacy, copyright or pricing policies for some, and others are reluctant to create yet another account on their colleague's favorite platform just to share a few files. These people might need to be unnecessarily excluded or forced to subscribe to a service they do not approve. Moreover, the network connectivity offered by a local WiFi network is always faster in both directions (download and upload) and more private than the corresponding Internet connection, which might be a rather important feature for large, and private, files.

¹<http://nextcloud.com>

If we take a long-term perspective, there are additional practical reasons why using a local network is a better solution when communication is meant to be local: resilience and environmental sustainability. First, a CN with local services enables the creation of a real communication infrastructure, offering alternative options in case of a natural disaster. The RedHook WiFi initiative in Brooklyn has proven this during the Hurricane Sandy. Second, when a local service is available through a global server energy inefficiencies are introduced. Cellular connection (3G/4G/5G) are much more energy consuming than local WiFi; data needs to be transferred over longer distances, stored, processed, and then sent back for local fruition. It wouldn't be surprising to realize that more energy is actually needed by a global platform to perform the tasks related to its commercial advertisements than the actual service. A local service built to serve a well defined group of people does not need to run additional tasks and can be in the end more energy efficient (globally) even if it cannot exploit scale-based economies. Energy savings/costs are not so easy to calculate, simply because global correlated data are not available, so it is impossible to sum the multiple sources of energy consumption related to a specific application.

Practicalities, disaster recovery, (global) energy consumption are however not the key reason to build local applications and most of all are probably not the best ones to drive participatory design. The next Subsections details reasons that are more important for the design of local applications and services.

4.1.2. Political reasons

From a political perspective, the more information and communication technologies (ICTs) play a central role in our everyday communications, the more critical it becomes who has authorship in their design, who owns the corresponding infrastructure and generated data, who takes important decisions, and according to which objectives. When these tasks are demanded to corporations with an exclusively commercial orientation, the corresponding Internet platforms, even if they are very attractive and efficient in facilitating information sharing and other complex interactions, can severely undermine our privacy, independence, and quality of life.

To make this point clearer, let's take another example of ICT-supported local interactions, this time between people that do not know each other, and/or they do not know that they are close by. Such applications that help people to get in contact with friends or strangers with common interests that happen to be in proximity, are often called location-based applications or "locative media". There have been numerous start-ups trying to develop such applications, but only a handful managed to acquire the critical mass of users needed to make them meaningful, like Foursquare and Tinder.

This is a use case for which the choice of infrastructure has very important political implications. The reason is that for such location-based services to be offered by a remote Internet platform, all candidate users should have subscribed to the same service provider and they have to communicate their position to the global platform in real time. The global access to all the data shared by people through the same platform generates unprecedented knowledge and power in the hands of actors that can use it against users, driven by their dependence on profit.

In contrast, all communications that take place in a local wireless network remain, in principle, local. Information leakages through individual devices, either intentionally by malicious users, or unintentionally due to careless information handling, are possible, but will never involve every one (if the leakage is due to users' devices) and the local service can engage in a policy that guarantees that only information selected by the users is stored forever, while information irrelevant for the user (like the detailed position, the occasional contacts with people, etc.) are automatically deleted by the platform, while instead it is always stored for possible future use by global platforms.



In addition to significant psychological benefits, such as feelings of independence, this additional privacy protection has become more and more important after the public awareness of the US National Security Administration (NSA) surveillance programs and of the aggressive online profiling policies, increasingly discussed in the popular press and very well documented in [De Filippi and Tréguer \(2016\)](#). But privacy and surveillance are not the only threats posed by the global Internet platforms as mediators of our online activities. The political question is best framed around the “right to the city” concept, and if both the physical and digital are considered together, the “right to the hybrid city” [Antoniadis and Apostol \(2014\)](#).

However, as in the case of physical disasters, it is difficult to convince people to work hard against what is invisible (i.e., manipulation) or seems improbable (e.g., a military golpe). So, there is often a need for an even more tangible reason why to develop local applications on the local network, so that is not only an Internet access network.

4.1.3. Social reasons

Since the design of global Internet-based platforms is guided mostly by commercial interests, it aims to create addiction and maximize online “stickiness”. Such platforms can thus undermine face-to-face interactions and our everyday contacts. They contribute, explicitly or implicitly, to render invisible “the different others”, even if they may be standing next to us [Wilken \(2010\)](#).

Moreover, for reasons of efficiency and usability, there is a high-degree of uniformity in design imposed by the most popular platforms, which further threatens diversity and social sustainability. This tendency is reinforced by the strong competitive advantages that these platforms enjoy, due to the critical mass required and the economies of scale involved, which makes the innovation at the grassroots level more and more difficult.

Let us now consider another form of location-based communication, this time more long-term, between those living in the same neighbourhood. There are today a wide variety of online neighbourhood community platforms, like *NextDoor*² in the US and *peuplade*³ in France, but also Facebook-based approaches like the Bologna-based *Social Street*⁴ in Italy. However, the tendency of many people to protect their anonymity and autonomy appears as an important barrier for the proliferation of such platforms. “I don’t really want to interact with my neighbours” is the answer of many people being introduced to this idea. Should we accept and respect such tendencies or try to reverse them in the name of social cohesion, conviviality, and collective awareness? And which type of ICT solutions should we invest on for this, if any? But, most of all, is the neighborhood socialization best supported by global advertisement-based players, or there are more socially-sustainable solutions? With this respect it is interesting to notice that Social Street seems to think that a closed Facebook group preserves in any way the privacy of participants.

In this regard, CNs have some characteristics that could help designers to resolve the tension between anonymity and identity in more desirable ways than the corresponding Internet-based solutions, i.e. to create a balance between the anonymity offered by modern cities, and the social control in traditional local communities, by generating ICT-mediated location-based collective awareness with low commitment in terms of time and privacy.

The most relevant metaphor here is the sidewalk, which Jane Jacobs praised as a place for essential

²<https://nextdoor.com/>

³<https://www.peuplade.fr/charte>

⁴<http://www.socialstreet.it/>



informal interactions between strangers that can achieve a very delicate balance between privacy and public exposure [Jacobs \(1961\)](#). If carefully designed, hybrid ICT applications that enable spontaneous information sharing between strangers can offer new ways to support the role of the sidewalk in contemporary cities, for generating local knowledge and a sense of belonging. But instead of relying on private ICT platforms managed by commercial companies, local applications on CNs offer the option to stimulate and empower citizens to use their creativity for setting up a local freely accessible networks hosting context-specific collective awareness applications.

There are unlimited options for the design of such applications that are more or less close to the sidewalk metaphor. The types of information to be shared and the exact framing would depend on the context, but could include simple demographics (spoken languages, occupation, or gender); general preferences or location-based ones (favourite places, commerce or artistic activities, books, films, and music); multimedia material (audio, pictures, videos); opinions and thoughts on interesting perhaps controversial questions, even sensitive personal information since the wireless medium could allow for purely anonymous interactions.

But still one could always ask: “Why not host all these nice applications on a server accessible through the Internet?” In addition to the aforementioned benefits, including privacy, independence, and practical issues, in this particular context there are three additional unique characteristics of this technology that can play a key role in making it preferable to Internet-based solutions:

- All potential users of a local wireless network being in *de facto* physical proximity, the option of anonymity, in addition to be technically feasible, is much less intimidating than in the case of global online platforms.
- By construction, a community network needs to be setup and deployed by someone that has access to the built environment: a resident with a well-located balcony, an owner of a central store, a local institution with the authority to install street furniture. This can ensure that the local network is designed and customized by members of the community, ideally in an inclusive and convivial manner.
- Being tangible infrastructure themselves, wireless networks can be naturally embedded in other artifacts and urban interventions, such as a public display, a colored bench, a phone booth, or even a mobile kiosk, and they can create naturally hybrid spaces that encourage ephemeral participation and playful engagement. This also enables the inclusion of non-users, as in the case of the Berlin Design Research Lab’s hybrid letterbox⁵, and polylogue⁶.

Finally, a local ICT infrastructure which facilitates the communication exclusively between those that can easily meet face-to-face could be designed exactly for this purpose.

4.1.4. Economic reasons

Last but not least, local networks allow for much cheaper and sustainable connectivity not only for local services but also to the Internet as the cases of Freifunk.net and Sarantaporo.gr clearly demonstrate (see [netCommons D1.2](#)). Specific aspects on incentives for CNs are discussed in [netCommons D2.3](#) and the economic part, with a particular attention to alternative currencies for their support in [netCommons D2.4](#). However, also the economic aspect must be considered when studying a methodology for participatory design in local applications for CNs.

⁵<http://www.design-research-lab.org/projects/hybrid-letter-box/>

⁶<http://www.design-research-lab.org/projects/polyloge-1/>



To this end, there is an important dilemma for the organizer of the participatory design process. More specifically, the economic argument for the deployment and maintenance of a community network is the most straightforward and the most appealing, especially for cases like in the Sarantaporo area where the main part of the infrastructure is subsidized.

In general, affordable network access comes from sharing resources. For example, if a whole area buys a leased line and shares it through a CN network, the overall cost for Internet access would be lower than if each household makes an individual contract with a traditional ISP. But, on the other hand, the cost of equipment and maintenance can reverse the equation when it is incurred by the local community, and then the economic argument would not always hold. For the situations in which providing Internet access through a CN instead of a traditional ISP is indeed more affordable, this fact can distract from the additional effort required to take advantage of the possibilities for social cohesion and technological sovereignty offered through the implementation of local services and applications.

It can even become worse than that. As the Sarantaporo.gr team confesses, their biggest mistake while deploying the CN in the Sarantaporo area was to engage people with the promise of “free” Internet. This was indeed a very strong incentive for people to participate, but did not help them in realizing that a community network is not actually ‘free’ meaning ‘gratis’, but rather as in ‘freedom’, and this freedom is guaranteed through the collective effort of the community, and through the treatment of the network as a Commons.

We will return to this delicate issue during the analyses of the participatory design process recently initiated in the area of Sarantaporo, in which we aim to help people realize that a CN needs the support of all members of the community to survive, but also to inspire them to imagine additional uses of their local network infrastructure, beyond Internet access.

4.2. Design principles

Despite the various reasons why local applications in CNs are important, and the numerous texts providing guidelines on how to design usable and effective user interfaces, there is a limited set of highly usable open source and self-hosted applications, with most notable exceptions *Wordpress*, *Owncloud/Nextcloud*, and *Etherpad*.

A possible way to think of the problem of knowledge transfer and the development of tools that can facilitate the actual design and development of software solutions is the concept of pattern languages, initially developed by [Christopher Alexander \(1979\)](#) in the context of architecture and then applied in different settings including software design [Crumlish and Malone \(2009\)](#).

In the following we identify some important design choices for which we believe that local applications for CNs should allow flexible customization options, in order for them to be decided through participatory design process according to the local context. After several iterations and experiments in real life such design choices could eventually become part of a specialized pattern language for “only local application” design.

4.2.1. Framing and vision

Perhaps the most important and the simplest technical design choice is to present the vision and objective of an ICT environment, to “frame” the activities in which citizens will be invited to participate. In most cases, this design decision is strongly related to the main objective of the community, which



needs to be reflected in the selected logo, introductory text, and other marketing elements including small details such as the choice of colors, fonts, etc.

The four reasons analysed above can inform this choice, depending on the particularities of the environment and focus on the political dimension in a progressive neighbourhood, or on the economic and practical reasons in a rural community with low digital literacy.

4.2.2. Identity and membership

There are many design elements that affect the individual and collective identity formation in the virtual/digital space. First, the selected subscription information, and which part of it is made publicly visible, creates the first attachment of the user with the host, and gives a signal on the level of anonymity assumed. This could then be reflected on the public identification element (being a real name or a nickname, followed by an icon or not) and the corresponding enforcement scheme.

For example, on the one extreme, Facebook asks from users that are suspects of using false identities to upload their ID card in order to prove their claimed identity. NextDoor also promotes as its key feature the fact that it can provide secure online spaces “only for real neighbors” and thus makes sure that participants do live in the neighbourhoods that they wish to join through the use of their credit card, their fix phone number, or other verification methods.

On the other extreme, there are online spaces that allow pure anonymous communication that can create intimidation especially when they are crowded. However, in the case of CNs and especially when the scale is rather small, e.g., a CN over a district or neighbourhood, there is some sort of identification by the very fact that someone has joined the network and this could enable novel ways to promote anonymity in a local application.

Finally, in addition to the users’ identity, a local application should also define the identity of the corresponding area covered by the community network. Is it a whole city? Or a specific district? Where are the limits?

4.2.3. Borders between private and public

In addition to the definition of the neighbourhood itself, a designer has also multiple choices regarding the borders between private and public. First, all or part of the community activity and outcomes could be made freely accessible to outsiders. At the other extreme the online activity of neighbours in sites like *NextDoor* stays completely invisible to non-members. Moreover, community members could be allowed to have their own private spaces, either personal or in groups, of various access policies. Another privacy issue is related to the collection of personal information by the hosting, which can be made available to external parties for data mining, advertisement, or other purposes without one’s consent.

4.2.4. Content management and online activity

Depending on the vision of a neighbourhood community, participants might be invited to upload information and multimedia material, comment and evaluate the contributions of others, participate in group discussions, deliberations or even decision-making processes, and engage in hybrid activities like face-to-face meetings. [Button and Partridge \(2009\)](#) and [Flouch and Harris \(2010\)](#) provide informative high-level classifications of popular neighbourhood communities based on their character



and the functionality that they offer. However, what is often more important is not the existence of certain functionalities but their special position in the structure of the website, the priority given by the design to some of them, and the internal mechanisms for promoting, filtering, and moderating content, which constitute some clearly important design decisions. For example, in a design aiming to encourage the sharing of individual's impressions on the community as a whole, see [Apostol, Antoniadis, and Banerjee \(2013\)](#), the software designer could consider various incentive schemes such as the exhibition of the "spatial coverage" achieved by each member, or the definition of community games that challenge local residents from a target coverage area, and the promotion of content based more on the overall coverage achieved rather than standard popularity metrics such as the number of views or votes.

But there are numerous small details, such as the constraints on the size of content, the feedback on activity in private and public e-places, the specific wording used to describe certain interactions, relationships, and roles, or even the exact placement of certain outcomes and activities, among many others, which can also play a critical role.

To give an understanding of what these details could be, we give here only a few representative examples of non-obvious details of some of the most popular online social networks. Twitter is an interesting case study since it was one of the first online social networks that implemented some atypical social software design strategies, clearly with a great success. For example, the strictly enforced constraint of 140 characters for each post has contributed significantly in the immense levels of participation and the mostly news-oriented character of the content shared. But there are even less visible details like the fact that the "what's happening?" input field disappears when one visits the page of their own tweets, the difficulty to browse old tweets and to engage in long discussions (in the past it was impossible even to reply to a certain tweet), which push participants to become part of the "flow" and keep posting news and updates without reflecting too much on the past.

Facebook has a similar strategy and one of its "secret" innovations is that it hides the "likes" of its users to the visitors of their home page, according to our intuition, to encourage them to "like" as many posts as possible without worrying about them being visible in the future. Related to this design strategy, [Lee, Antoniadis, and Salamatian \(2010\)](#) compared the liking reciprocity behaviour, to what extent users reciprocate a received "favorite" or "retweet" among *Flickr* and Twitter users. They conjectured that the more the favourite items of users are made part of their own image and visible to visitors, the less strategically in terms of "liking" reciprocity they are expected to behave since their liking choices become more visible in their personal profile.

Another information "elimination" strategy that causes stickiness is the lack of feedback on the invisible activity on one's home page (i.e., the number of visitors and/or their identity), for which again Facebook follows the more extreme policy, by not offering any information, while *Flickr* for example informs users about the total number of visitors, but not their identities. Finally, the rules for the creation and administration of group discussion, the ability to organize them in different threads, the notifications generated to help people follow the conversation without overwhelming them, and the means of content moderation and group management, are among the decisions that can affect significantly the means for communication and the corresponding outcome. This point leads to our next social software design category.

4.2.5. Past and future

It is interesting that the most successful online social network sites today such as Facebook and Twitter do not include any content aggregation function. Everything is sorted based on the time of posting



and important contributions can be very fast forgotten, if they are not re-posted in some way. This fact creates a very intense rhythm and a fierce competition for attention, favoring those that spend more time online. This design choice is responsible for the success of these sites, but at the same time causes strong addiction effects, and reduces significantly the attention span of people. If we choose as social objectives to encourage people to deliberate on important issues and allow them to keep their selected rhythm of participation in public issues, and even more to achieve a healthy balance between online and physical or face-to-face activities, we need to invest on more sophisticated design options that facilitate discussions in threads, that include clever aggregation functionality, and more.

4.2.6. De facto physical proximity and hybridity of space

Taking into account the aforementioned reasons why a local applications makes sense and the special characteristics of DIY networking, one could derive certain additional design principles specific to our scenario:

- Explore advanced forms of online identity and rely on the assumption that face-to-face contact is feasible.
- Identify the boundaries of the network and stress the fact that it is owned by the local community, and all infrastructure and data reside in the area.
- Highlight the fact that the approximate location of users is available without the need of continuous recording of sensitive private information (e.g., GPS).

4.3. From design principles to design guidelines

In the previous section we identified a few important areas of application design that require particular attention when developing an online platform, focusing on the “details that matter”. To transform these generic principles to specific design guidelines is a rather complicated and case-specific task. There are numerous such “design guidelines” in the literature ranging from low-level social software functionality, [Crumlish and Malone \(2009\)](#), to high-level *User eXperience (UX) Strategy* [Levy \(2015\)](#). Our goal in this task is not to produce “yet another” generic design guidelines handbook since it is clear that there are no magic algorithms that produce successful applications. Instead we will develop a highly engaged and context-specific application development process, guided by an equally context-specific participatory design methodology, both aware of the specificities of the geographic location, in the area of Sarantaporo valley, but also of the specific technology, a community network; being treated as a “package” together with the corresponding design choices for the different application design categories identified above. Experiencing successes and failures will hopefully provide evidence on the effectiveness of different decisions, and produce a framework that will empower further experimentation and social learning.



5. A participatory design methodology

A well-structured participatory process is often carried out by experts who have built over time familiarity with the theory and have significant practical experience. To make it successful, they should also have significant knowledge of the context, they do speak the language of the local community, and they should spend a significant amount of time with local actors.

In the netCommons project there are no people with practical experience in participatory design processes among the project team members to facilitate closely the process. For instance, although Ileana Apostol has a proven theoretical background derived from practical experiences in the urban planning field, she does not speak Greek. Moreover, we do not foresee that CNs and local applications for CNs will ever be supported by professionals in standard situations, thus the development of a methodology that can be deployed only with vast resources and professionals would in some sense contradict the bottom-up, diffused nature of CNs. Therefore, we decided to use the expertise in the consortium toward developing a suitable methodology to be followed by non-experts but motivated people, who can fulfill some of these requirements, being familiarized with the target CNs and their local contexts. Toward this end, the methodology will be developed in parallel with the participatory design process, to be applied and improved in steps, first engaging the most motivated people and slowly reaching a wider part of the local population.

We select relevant techniques and strategies from different fields where participatory processes have been tried out for a long period of time, and adapt them to the specific environment. As the process advances we expect this methodology to be comprised of a variety of techniques developed in different environments, as such forming a unique customized methodology for the proposed case study in the Sarantaporo area, and hopefully for similar CN situations in Europe and all over the world.

The case study in the Sarantaporo.gr Community Network we tackle offers many unique opportunities, but also challenges. More specifically, the participatory design methodology can assume some special favorable conditions:

- The project team is in close collaboration with the Sarantaporo.gr team, some of the Sarantaporo non-profit organization (NPO)'s members being directly engaged in the project, and other members in close collaboration;
- One of the founders, George Klissiaris, has already performed questionnaires with key actors for his master thesis on business models for the Sarantaporo.gr NPO.

But in addition to the limited experience in participatory design, we have to face the following challenges:

- Low digital literacy, especially regarding the elderly people, who account for the majority of the population;
- Existing conflicts around the operational aspects of the network (e.g., the payment of the required contribution by each village: Albeit very low, 50 EUR per month, there are villages that refuse to pay for various reasons);
- A patriarchal society in which women are not expected to raise their voice in public discussions; debates mostly take place in tavernas and in “men-only cafes” (kafenio).

- An aging population and strong focus on financial problems since the economic crisis of 2008.

We will return to these challenges and opportunities in Chapter 6, where we describe in detail the selected case study; however, it is important to keep these characteristics in mind while reading the next section on methodology, since this is specifically developed for the case study in the Sarantaporo area.

5.1. Formulating an overall strategy

Participatory practices aim to incorporate a variety of interest groups in the design process, thus marginalized groups have also an opportunity to participate. Such practices attempt to harmonize views among all of the participating parties, as well as to prevent conflict between opposing parties. Therefore, it is important to frame the design process with people in mind, making use of various techniques of eliciting information and of deliberation. As it is required to achieve “*a balanced flow of information –from the environment to all levels of subsystems rather than primarily from centralized control to lower units*”, [Smith \(1973\)](#), p.286, such processes imply dialogue¹ and flexibility over time. For deciding on the overall strategy that will be followed, which is meant to be supportive rather than normative, one needs to identify beforehand a few core elements discussed above, and summarized here as part of our proposed methodology:

1. The demographic, social, economic, political, and cultural characteristics of the target area at large;
2. The available human resources, budget and total duration of the process;
3. The different actors and perspectives that need to be taken into account in the process, together with the available expertise in terms of organizing and facilitating meetings, mastering the tools for eliciting information and documenting the process, and producing the actual application design and solutions’ development;
4. The possibilities for building a common understanding of, and agreement on the objectives, guiding principles, and selected participatory design process by the initiating team;
5. The potential service/application to be offered, as well as the flexibility in terms of produced outcome(s), according to the expressed needs by the local community.

In our case, the overall strategy concerns a particular situation that we have to deal with: the participatory design of a local application for a specific Community Network deployed in a rural area in Greece; it is run, for a duration of about 20 months by a group of three Greek speaking researchers namely an interdisciplinary researcher based in Zurich, Panayotis Antoniadis (NetHood), a senior researcher, Merkouris Karaliopoulos (AUEB), and a PhD student Panagiota Micholia (AUEB), together with two members of the Sarantaporo.gr NPO team, George Klissiaris and Vassilis Chrysos, based in Athens, a non-Greek speaking urban researcher based in Zurich, Ileana Apostol (NetHood) and a software developer based also in Athens, Aris Pilichos (AUEB).

Moreover, many of these variables were initially defined by the description of work of the netCommons project (e.g., the composition of the initiating team, budget and time constraints, and overall objective and principles), while others were chosen based on the analysis of the different available options and interactions with key actors, most notably with the Sarantaporo.gr NPO team.

¹Dialogue considered as “*role exchange, conditional validity of the point of view of any party engaged, and empathy* [Dunn \(1971\)](#)”, [Smith \(1973\)](#), p.286.



In an effort to generalize this initial phase of a strategic plan, we have developed a questionnaire (see Appendix A.4) to be used as a guide for the initial phase of other cases, to replicate the overall methodology in other contexts, if appropriate. As noted before the methodology will be further refined along with the progress of the Sarantaporo case study.

5.2. Framing a participatory design process

The design process refers to a dynamic perspective across the project phases, which the various events and actions define, and at the same time could be determined by an important change in planning, an important milestone reached, or just a shift of mindset of the group. The turning points could be then either scheduled or happening spontaneously. In any case, it is helpful for the project initiator to conceptualize a possible path throughout these moments and phases of participatory design, that will lead to the expected outcome in the given timeframe, keeping in mind that these will not really take place in a linear fashion nor can be truly predicted or anticipated.

In the overall planning of the project, the duration, interruption and timely shifting between different phases will inform the appropriate framing of the individual events. For example, being in the initial phase of the Sarantaporo case study, the first event was framed as a “get to know each other” with the main objective to elicit information regarding local needs, to share knowledge and perspectives, and to initiate a process of trust building. In later phases, there will be the need to shift to more outcome-oriented work like brainstorming for idea generation, co-design processes, and more (see Section 5.3).

The initiator of the participatory design process in the area of Sarantaporo, the netCommons project, is not part of the target community and comes mostly as an “outsider.” Moreover, during the short duration and limited resources of this project, methodologies like participatory action research, [Chevalier and Buckles \(2013\)](#), are not really feasible. Even if we have tried to narrow down the available options according to the specificity of the target case study, there are still numerous combinations and decisions to be taken by the initiator of the process, depending on various contextual variables. Moreover, the process itself and its different phases would depend on the available resources and the corresponding objectives of the process, but also on the initiator team who should feel comfortable with the methodology and the assigned tasks.

As already mentioned, we take inspiration from the human-centered design [IDEO Field Guide \(2015\)](#), in which the iterative process is implemented through gatherings at different levels in the design process. It is conceptualized in three phases: **Inspiration**, **Ideation**, **Implementation**, and implies a possibly iterative process of “opening up” and “narrowing down”, “diverging” and “converging” until a good solution to the agreed upon “problem at hand” is identified by all parties involved. Figure 5.1 pictorially represent this process, showing the ups and downs of it.

In this context, it is very important to “*trust the process even if it feels uncomfortable*” because “*you rarely get to new and innovative solutions if you always know precisely where you’re going. The process is designed to get you to learn directly from people, open yourself up to a breadth of creative possibilities, and then zero in on what’s most desirable, feasible, and viable for the people you’re designing for.*” [IDEO Field Guide \(2015\)](#).

In setting participatory design processes in context across disciplines, we noted concerns raised about the complexity, and mostly the difficulty to act in fast changing environments where designers need to deal with uncertainty (see Section 3.1). We choose this simple yet inspirational process of human-centered design as a starting point, because it is easily understood and offers a compromise between



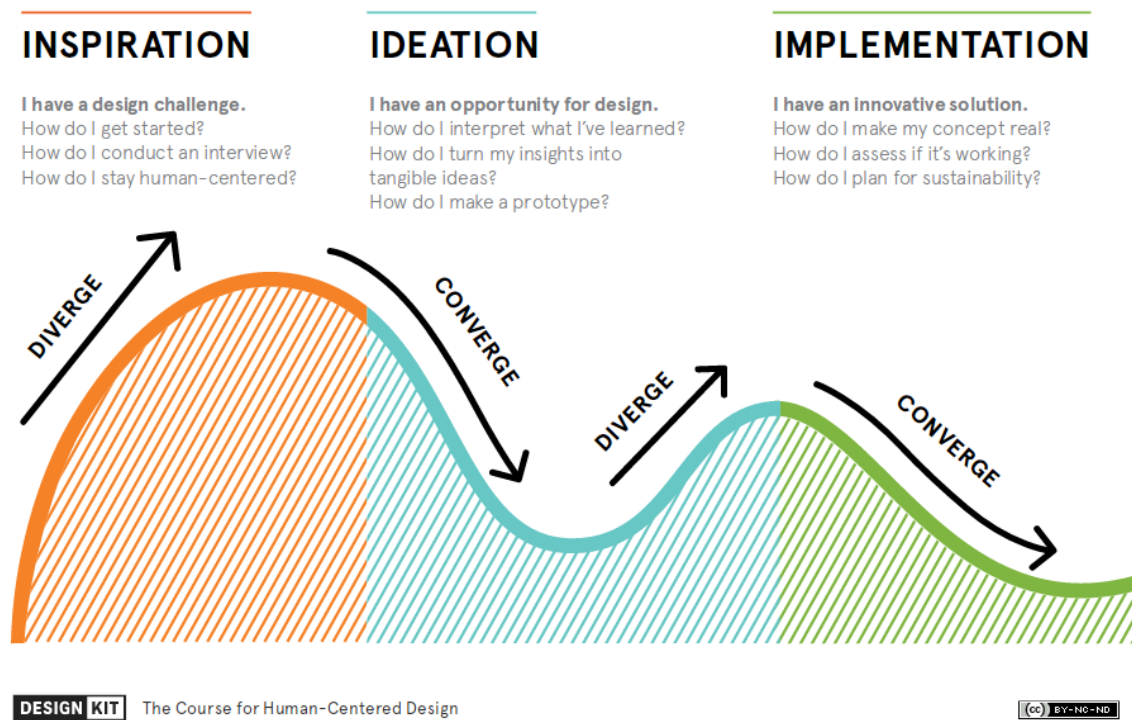


Figure 5.1: The human-centered design process: Inspiration, Ideation, Implementation. Photo by IDEO.org & +Acumen’s “The course for Human-Centered Design”. Available at: <http://www.designkit.org/resources/5>

the requirements for a generous exploration of possibilities, and the real-life constraints especially in the context of a limited timespan project, funded to deliver a specific output.

Note that from the human-centered design methodology at this stage we choose only the overall process as a guiding principle and in Section 5.3 below, we describe the netCommons choice for the organization of participatory events.

5.3. Guidelines for events organization

To add to the suggestions of the previous sections in structuring an overall methodology for the different phases during the project timeline, we select from the participatory design literature a technique by the name “Planning for Real” for the organization of events and activities that these processes imply.

5.3.1. “Planning for Real” Community Participatory Technique

For the case study of the community network in the Sarantaporo area in Greece, we propose to reiterate a participatory process that to a certain extent has been initiated with the CN implementation phase. At present, however, the conditions of this grassroots project are changing, and to establish a sustainable community project, the follow-up participatory processes need to be carefully designed.

For that we propose the structure of “Planning for Real”, [Forester \(2008\)](#), a community planning participatory technique that has been initiated and developed by Tony Gibson in the UK and implemented



for many decades in neighborhoods all over the world. In Torino, Italy, for instance, it inspired the initiative *Avventura Urbana* that is been active since the beginning of the 1990s².

We choose this practice as it is a simple way of applying the principles of openness and inclusion of the genuine grassroots projects that help the manifestation of community, and at the same time are building local capacity by creatively unveiling the skills that are latent in the community. Among the advantages of the “Planning for Real” participatory technique is its setting on non-committal freedom allowing collective explorations, and the establishment of an intimate work environment around practical tasks, having the consequence of developing working relationships of trust and confidence among community members.

The process depends on creating a group dynamic that cannot be simply “set up” and thus needs to be adapted to, and flexibly supported as it unfolds. What could be prepared beforehand are “*situations which encourage bystanders to try something out, picking and choosing, singly and together. (That’s how our human species has got where it has.) It grabs people by letting each of us start out on our own, drawing on our own experience at the coalface of the community, taking the initiative individually, choosing option cards without consulting anyone else at first, feeling free to have second thoughts and put forward alternatives, gradually noticing what others in the group are up to, joining in as and when we choose; putting our heads together, absorbing others’ ideas, adding our own; trying out variations; talking nineteen to the dozen as a background accompaniment to what we are doing together; without needing anyone to lead, instruct, or direct us. Back at long last to Homo habilis, pooling our practical ideas, calculating our shared ability to go first for what we find we can agree on, now, or very soon; leaving to later what needs a re-think all round*” as Gibson worded the process in [Forester \(2008\)](#), p.128. By finding out as a community what could be done for the common good, rather than receiving from the top projects conceived by some remote ‘authority’, the people engaged in the participatory process understand their role in making it for real. Moreover, the more participants establish during deliberations agreements that outnumber inherent disagreements, the more confidence is built within the group.

The basic steps of the “**Planning for Real**” **participatory technique**, which we have chosen as the basis of the netCommons methodology, are the following:

1. create a physical model of the area of interest; in our case in the area of Sarantaporo, the sarantaporo.gr community network, so people can talk while looking at and touching for real the shared space of interest;
2. catch people’s eye and interest for simply coming over at the meeting in the first place, in a non-committal free and open way;
3. open up the discussions toward expressing interests, values and desires;
4. try things out, before making commitments;
5. create implementation options by means of triangulators (e.g., option cards);
6. engage those interested gradually in the participatory process, by getting nearer and nearer to a commitment, and develop an action plan according to the revealed skills;
7. form action groups around a particular kind of action.

It is critical to take very detailed notes on these participatory events, as relevant information dwells in the details and small actions performed. In that sense, we include in Chapter 6 of this document a series of detailed accounts of the project gatherings for the initial phase of the participatory process.

Along with the development of participatory processes within workshops on skills inquiry and local

²<http://www.avventuraurbana.it/>



capacity building, throughout the project timeline we employ various qualitative methods to elicit information including a) participant observation; b) open or semi-standardised interviews with inhabitants (users); and c) analyses of artifacts, text, content, and the relevant contexts. In the following Section 5.4 we describe the initial tools that are employed within this methodology.

Finally, note that step 1 above, actually transforms the Community Network to a “boundary object” as defined by [Star and Griesemer \(1989\)](#), objects placed in the “middle” between a diverse set of actors to help them build a common understanding of their diverse perspectives and facilitate collaboration. These ‘objects’ could be abstract or concrete, ranging from specimens, field notes, and maps of particular territories to repositories, dictionaries, diagrams, forms, standards, classification schema, and more. Our choice for a concrete and “tangible” boundary object is also due, on the one hand, to the low digital literacy of the local population, and on the other hand, to their familiarity with physical tools and a good perception of the territory, which is a valley visible from many vantage points.

5.4. Tools for eliciting information and brainstorming

As facilitators and structuring tools in eliciting information the project team members employ questionnaires, open-ended interviews, brainstorming tools such as network physical models, concept cards, and visuals such as the documentary film on Sarantaporo.gr³, and the like.

5.4.1. Questionnaires

For this stage of the field research in the area of Sarantaporo, the project team was asked to answer a series of questionnaires meant to establish common grounds for the beginning of the participatory processes, all available in Appendix A, for which answers are collected and their analysis will be included in the next version of this deliverable.

The first questionnaire template (Appendix A.1) is structured like a spiral around personal perspectives, starting from a description of existing local resources –which include people, skills, artifacts, tools, technology, knowledge and everyday life habits– shifting to the desires’ expression without constraints, and then moving back to the existing situation, yet keeping in mind this time the perspective of personal desires to be fulfilled. Some of the desired outcomes might need only different resource management (e.g., sharing resources) in order to be realised. At this moment in the process, the role of the experts is considered in terms of bringing something new that does not exist at the moment in the common space of interest, and what resources would be needed for that. The questions spiral then into naming the variables that are a) acceptable to be changed, b) should change or c) should stay unchanged, so as to understand also if some of the variables are changing in a relation to other ones. That step of inquiry is meant to tackle the project’s social acceptance.

The second questionnaire (Appendix A.2) explores the collective perspective by asking about the common activities or other forms of collaboration already happening in the area of interest; about what stimulates their expression and activities; if some of these triangulators are physical elements (places or objects) that through their presence facilitate communication and exchanges, and if anything in particular hinders the collective activities. Then the level of desires is invoked again toward the imagination of a collective project supporting current common activities or creating new ones, thus finding out what would be its starting point and what resources would be needed for it, and whether technology might be among those resources. In the end the possibilities from the point of view of

³<https://www.youtube.com/user/sarantaporogr>



experts are to be described, so the inhabitants can understand and participate in the design process, as to have the capability to appropriate the project once implemented in their habitat.

The third questionnaire (Appendix A.3) aims to evaluate the participatory process already initiated. It asks a brief description of what has started; the main objectives of the deliberations; the personal motivation, role and expertise brought into the process; the personal, the new and useful information gathered on these occasions; the misunderstandings and/or conflicts of interest, and a possible path toward the overall objective in light of the discussions that took place.

Finally, questionnaire four (Appendix A.4) addresses the potential initiator of the process as part of the first step of the methodology. The questions are meant to make the formulation of the overall strategy explicit.

5.4.2. Interviews

In addition to iterations by means of questionnaires reviewing research and field activity, during the next years the project team will consider conducting semi-structured, informal and open-ended interviews depending on the evolution of the process. Semi-structured interviews are interviews in which the interviewer prepares a structure, that is called an “interview guide”, by means of questions and topics to be covered during the conversation. This type of interviewing is best used when there is the chance to interview more than one time the same person, and when there is a team of interviewers, so in this manner the tool provides comparable data.

Informal and open-ended unstructured interviews are those that do not benefit from a predefined structure, but only have a set of topics to start with, leading casual conversations with local actors in the area of interest. Note that in this case, taking relevant interviews is more of an art than only a technique, and its secret consists again in setting a suitable atmosphere for casual conversations with the interlocutor; what is required from the interviewer is knowing how to listen more than anything else. The open ended questions are many times regarding how the interlocutor ‘feels’ about issues, and also they may follow a conversation thread. This tool is an essential part in building an understanding of the situations as well as of the local community members’ ways of seeing their shared space (the area of interest); it helps at the same time in the process of building relationships with the local community.

5.4.3. Brainstorming Tools

Structuring relevant questions within questionnaires and interviews is critical to eliciting information, but we may employ also other triangulators within the design processes, which rely on other senses as well, and for which language may fall on a secondary position. Such tools are very useful in multicultural projects like in the case of the area of Sarantaporo in Greece, where language might become a barrier rather than a connector.

Among these non-verbal triangulators we propose to employ physical models of the community network, card decks like those developed by MethodKit⁴, and visual means such as projections on site of the documentary film “Building communities of Commons in Greece” already mentioned, and other visual media on Sarantaporo.gr, etc.

⁴<http://methodkit.com/>



5.4.4. Recording, Interpretations and Evaluations

Most important is taking detailed notes narrating “thick descriptions” [Geertz \(1973\)](#) of the discussions and performed activities, during and immediately after the participatory process of eliciting information. What in cultural and symbolic anthropology is called a “thick description” of a human behavior refers to the contextualization of observations and research ‘findings’, so to explain both practices and discourses within a society.

Within the project material we develop templates like those of the questionnaires (see Appendix A) as well as tabular forms to be used for recording, organizing, analyzing and evaluating the gathered data. In this manner we may observe patterns, similarities, differences and contradictions that can be sorted out during the reiterations of data collection.

The final outcome of the participatory processes is to be recorded in narrative form by means of storytelling techniques (on the role of storytelling in design processes refer to, e.g., [Sandercock \(2003\)](#)). Ideally, different people should be responsible for different documenting tasks but one should also adapt to the circumstances. During the first project visit to Sarantaporo, in order to avoid intimidating the local participants at the very first contact, there was no dedicated photographer, and Panos Antoniadis (NetHood) played the role of facilitator and also has documented in narrative form (see Section 6.3.3) the course of this participatory event.

5.5. Evaluation criteria

It is not an easy task to evaluate a participatory design process. Was the sample of the people contacted representative? Were all the voices heard during the participatory process? Were people thorough about their needs and desires? Were they given enough information to estimate the potential impact of the proposed solutions to their everyday life both in the short-term and the long-term? Were individual choices suitably integrated into collective decisions? Were conflicting interests democratically managed and disputes transformed? Was the final product/solution successful? Did it indeed address the expressed needs?

All these questions cannot have a definitive answer, and especially one that is quantitative. Of course, a key criterion of success is the eventual implementation of a local application that will enjoy a critical mass of users sufficient to result in a continuous, even slow, growth in terms of interactions and positive feedback, and will have a measurable effect on the “local need” target.

The exact numbers corresponding to these criteria will depend on the target group of the application, its nature influencing the expected frequency of interaction, and other unknown at this stage characteristics. We should be aware though that numerical evaluations do not always correlate with positive social impact. We would not evaluate as successful a very addictive, for example gambling, application that has achieved a high level of utilization, but at the same time has resulted in the decrease of mental health and social capital in the area.

Note also that in the case of Sarantaporo.gr we are faced with a dual objective. On the one hand, to build a local application that would give value to the network and enable the local community to profit according to the four reasons analysed in Chapter 4. On the other hand, the sustainability of the network itself: helping more people to get engaged in maintaining and expanding the network would be by itself a big success. And that may happen not only due to the application, but also due to our presence in the area, and the overall participatory process that could unveil the skills latent in the community, develop collaborative relationships and stimulate social cohesion, which can lead to the



community network's growth.

Finally, it is clear that not all tangible evaluation criteria can be assessed from the beginning of the process, and that many iterations are needed, as explained in Chapter 2. There is, on the one hand, a group dynamic set into motion, and on the other, a process of forming judgments shall unfold; these processes often require significant time to develop. In many cases also small design details or a "tipping point" can make a big difference, and can turn very quickly a not-so-popular application into a very popular one. For that local actors can play a critical role, if they could be influential in its adoption as well as in building trust in the application developers.

Trust is a very critical, perhaps the most important, ingredient of success in participatory design process, but also the most difficult to achieve and very easy to lose at any moment. In terms of evaluation, it requires very experienced and independent participant "observers"; one can also rely on a simple heuristic: the smile of people and their desire to meet again. However, there is evidence that within the design process one can observe individual steps in building trust and eliciting information, for instance, the level of citizen participation in the discussions, the richness of information shared, participants' feedback toward the process documentation at the beginning, as we exemplify in this document, and toward the first prototypes at later stages. But again, these can be measured only in qualitative ways through the selected qualitative tools for eliciting information described in Section 5.4).





6. The Sarantaporo.gr CN

The Sarantaporo.gr Community Network (CN) was initially built by a small team of young activists¹, who was awarded hardware through their participation in the Open WiFi Call² of the Greek Free/Open Source Software Society (GFOSS)³ and funding by the EU project CONFINE⁴. At later stage, high speed bandwidth was provided “pro bono” by the University of Applied Sciences of Thessaly. The CN provides internet access to fourteen small villages in Ellassona municipality, accounting for approximately 5000 permanent inhabitants in total. A detailed account of Santaporo.gr CN can be found in [netCommons D1.2 \(2016\)](#).

The area of Sarantaporo, and more specifically its CN, has often attracted international interest including multiple articles in popular media platforms like Shareable.net⁵, and The Conversation⁶.

The documentary “Building communities of Commons in Greece⁷,” has managed to achieve its crowd-funding objective and has been screened in international events like the Battle of the Mesh conference in Porto, Portugal⁸, and the Transmediale festival’s “off-the-cloud zone”, in Berlin, Germany⁹.

Very recently the CN was chosen as one of the successful examples of commoning to be presented at the European Commons Assembly at the European Parliament, while the Sarantaporo.gr Non Profit Organization (NPO) has been awarded financial and consulting support by The People’s Trust and Accenture through its participation in the Ashoka Impact Project¹⁰.

Moreover, since 2015, Sarantaporo.gr NPO is one of the initiatives selected to participate at the Connected Communities EU-led Initiative¹¹. In this framework it has been consulted by members of the World Bank concerning the sustainability of its social business plan.

Despite the international interest of more or less specialized communities, the inhabitants of Sarantaporo area are not aware of the impact that their small community has achieved, as it seems to exist a gap between the local level and the larger scale levels of interest in the CN.

¹<http://www.sarantaporo.gr/node/382>

²<https://openwifi.ellak.gr>

³<https://gfoss.ellak.gr/greek-freeopen-source-software-society-gfoss/>

⁴<https://confine-project.eu/>

⁵<http://www.shareable.net/blog/sarantaporo-residents-create-commons-in-rural-greece-through-a-diy-wireless-mesh-network>

⁶<https://theconversation.com/diy-networking-the-path-to-a-more-democratic-internet-67216>

⁷<https://en.goteo.org/project/building-communities-of-commons>

⁸<http://battlemesh.org/BattleMeshV9/Agenda>

⁹<http://www.furtherfield.org/features/review-transmediale-2016-necessary-conversations>

¹⁰<http://netcommons.eu/?q=content/sarantaporogr-non-profit-organization-awarded-financial-and-consulting-support-ashoka-impact>

¹¹<https://ec.europa.eu/digital-single-market/en/news/connected-communities-initiative>

6.1. Context and main actors

6.1.1. Profile of the area

The area of Sarantaporo is located in the Thessaly region in Greece. Fig. 6.1 provides its location in the global Greek geography. According to the “Regional Strategy for Innovation and Smart Specialisation of Thessaly Region for the programming period 2014-2020, 4th Edition, February 2015”, Thessaly “presents considerable lag in all areas of smart growth as compared to the average national level and at European level¹².” Professional engagement in the region is highly concentrated in the primary sector and in processing with low level of knowledge. The human resources fund in science and technology is at a relatively good level for the country, so there are sufficient resources, who could respond to and support innovation activities. The research capacity of the region concentrate in two higher education institutions namely the University of Thessaly and the University of Applied Sciences of Thessaly.



Figure 6.1: A map of central Greece depicting the municipality of Ellassona and the Sarantaporo village (where the star is located).

The Municipality of Ellassona¹³ is characterized by rugged hills, since the largest percentage of the territory is mountainous (38%) or hilly (40%), while only a few areas are plains (22%). The highest mountain in Greece, Mount Olympus, is located in the area. The municipality has more than 50 villages, scattered around a mountainous relief, just opposite of the Olympus mountain.

The economic profile is highly connected with agriculture and livestock sector of economy. The main local products are: feta cheese, which is an internationally recognized, high quality dairy products, vegetables, traditional pies, sweets, homemade pasta, honey, almonds and oregano. Some of the

¹²https://www.espa.gr/elibrary/RIS3_Thessaly_201503.pdf

¹³<http://www.dimoselassonas.gr/>



products are Protected Destination of Origin (PDO): Feta cheese, Galotyri, Kasseri, Manouri, Batzios cheese, Ellassona lamb PDO and Ellassona Goat PDO, but they do not get the recognition they deserve since the area is unknown to most people. In the area of Ellassona the secondary production sector (industry, crafts) does not appear particularly developed since it is limited to small units of family-related, mainly in industries processing agricultural and livestock products produced locally. Such units are the creameries (17 in total), the roller mills and freezer businesses. In the area, only small scale hotel accommodations exist, so that also tourism is not well developed.

The municipality of Ellassona is sparsely populated area with 20 inhabitants/sq. km. There is small scale industrial activity dealing with processing agricultural and livestock products; moreover, only 34% of the population is economically active, while the rest is economically inactive. 17% of the active population is unemployed. The total population of the municipality is 32.121 inhabitants, which represents the 4,38% of the population of the Region of Thessaly, and 11,30% of Regional Unit of Larissa¹⁴.

In the ICT sector, both at infrastructure and at content level, the entire region of Thessaly lags behind the Greek and EU average, and the Ellassona municipality lags behind Thessaly. At present, in terms of accessibility to ICT, there is a single company, namely OTE—the former state telecommunications provider, now privatized—which provides xDSL connections in some of the villages in the area. Cellular network providers are officially present, but they have not invested in the area because of low potential return on investment. There are still some villages with no access at all to telecommunication services, as OTE infrastructure does not cover the whole area. Moreover, in some of the villages provided with a connection, because of shortage of sufficient number of xDSL lines, the company cannot support more than a limited number of customers.

By and large the available lines are not enough to cover the demand of existing users. Very significant is the case of the village where only a single client can be connected to the xDSL line! The maximum broadband speed officially provided in Santaraporo is 20 Mbit/s; however, the actual speed measured by Sarantaporo.gr team in other villages in the area, where available, does not exceed 4 Mbit/s.

6.1.2. The Sarantaporo.gr team

To alleviate the lack of satisfactory Internet connectivity in the area, the Sarantaporo.gr NPO was founded in 2013 (but its members were active starting from 2010) to promote sustainable development in the area.

More specifically, the Sarantaporo.gr NPO designed and deployed wireless community networks in fourteen villages, which are currently interconnected under the same backbone network along with other community networks in Greece and Europe.

This infrastructure, offered as a ‘commons’, is openly accessible by all and currently serving approximately 5,000 people. It is supported by the Sarantaporo.gr NPO in collaboration with local support groups of 4-5 people in 12 villages, totaling almost 60 people who wish to be actively involved on a voluntary basis.

The main tasks of Sarantaporo.gr, as documented in the Sarantaporo.gr web site¹⁵ are:

- To create, maintain, operate and develop the Sarantaporo.gr Community Network (CN), safeguarding its “infrastructure as a commons” character. The access to the CN is open to everyone and everyone is welcome to participate.

¹⁴Source: Municipality of Ellassona <http://www.dimoselassonas.gr/>

¹⁵<http://www.sarantaporo.gr/node/382> (in greek)





Figure 6.2: The green links correspond to the backbone network of Sarantaporo.gr CN interconnecting 14 villages in the Sarantaporo valey and including a long-distance link to the Internet gateway in Larissa (bottom)

- To connect and collaborate with other community networks (wired or wireless), aiming to promote the widespread use of this technology for the benefit of the local communities.
- To be involved in and facilitate scientific research on the technologies that enable the Information Society.
- To be involved in and facilitate research concerning scientific approaches relevant to society, ecology and sustainable development.
- To defend and build awareness about digital rights and digital freedoms.
- To promote citizen access to information, knowledge and culture on a basis of equal rights, using ICT.
- To contribute to the bridging of the digital divide between urban and rural areas.
- To promote and build awareness around common infrastructure and open source technologies.

The Sarantaporo.gr NPO has an organic relation with the local communities of the region, as well as with other open source and wireless communities around Greece (e.g., AWMN, Hackerspace.gr, P2P Foundation, Greek Free/Open Source Software Society, SciFy, CommonsFest etc.) and with academia (i.e., University of Applied Sciences of Thessaly, University of Thessaly) and with the local administration.

The NPO has participated in the European FP7 FIRE CONFINE Project (Community Networks Testbed for the Future Internet) since March 2014, after being selected for funding among many other proposals (during the second open call for proposals). The role of the organization in the project was to expand the testbed in its area with additional nodes, offering cultural, socio-economic, geographical and topographical diversity to the initial testbed.

It should be emphasized that by participating in the CONFINE project and being part of the testbed that has been deployed, the Sarantaporo.gr CN is connected to four community networks across Europe:



- Athens Wireless Metropolitan Network in Greece;
- Guifi.net of Cataluna in Spain; , comprising over 30.000 active nodes;
- Ninux.org in Italy;
- Funkfeuer in Austria.

The NPO has a major role in adopting ICT technology in the rural area of Sarantaporo and bridging the gap between academia and local real sector (farmers / livestock farmers), according to locals asked about the NPO's role and objectives in the framework of a master thesis titled "Utilization of digital technologies as growth factor in remote rural areas - the case of Sarantaporo.gr Non Profit Organisation", Klissiaris (2016). The qualitative research conducted in Klissiaris' thesis concluded as a prevailing opinion among the respondents (local professionals in the primary sector, representatives of academia, professionals associations / organizations and local authorities) that Sarantaporo.gr NPO could have the following important roles in the local community:

- **Role of coordinator and strategic leader** in new technologies and their exploitation generating directions; strategizing cooperation with other organizations and companies –developers of innovative solutions for the agriculture, tourism, telecommunications; being also a coordinator of their implementation;
- **Role in the promotion of digital technologies** in the professional field, bringing concrete solutions to meet the needs and address the problems of the primary sector in the region;
- **Role to eliminate the lack of digital skills**, not only of professionals, but for the entire local community;
- **Role in networking and promotion of products** of the region.

6.1.2.1. Profile of the most active members

George Klissiaris (m) – (1979) Dipl. Engineer in Production Engineering and Management from the Technical University of Crete, Greece and holder of Master's Degree in Marketing and Communication from the Athens University of Economics and Business. His origins are from Sarantaporo village and he is the initiator of Sarantaporo.gr organization's set-up and the establishment of the networks in the area. He is a marketing expert in a large trust of Greek companies. Information technologies are his great passion and a field for volunteering work for common public benefit. He is currently in charge of the technical support for operation and maintenance of Sarantaporo.gr Wireless Community Network, along with the communication both internal and external. He is responsible for the general coordination of tasks within the non profit organisation.

Vassilis Chryssos (m) – (1975) MSc in Production Engineering & Management and MSc Quality Control & Environmental Management, has a rich experience in Project Management and Community Building. He is the Co-Founder of Ex Machina¹⁶, an IoT startup, and he is a founding member of The Things Network Athens. He also has expertise in Open Data Training, being an ODI Registered Trainer. For the past 5 years he has been working with free/open source software and open technologies as a consultant and as community building officer in collaboration with NGOs such as Medicines Sans Frontieres and GFOSS. He has been volunteering in social and development aid groups since 2000, as a project manager and environmental expert. He also was a member of the organizing committee of the 3rd "CommonsFest 2015" that took place during May 2015 in Athens Greece. He is

¹⁶<http://exm.gr/>



currently one of the legal representatives of Sarantaporo.gr NPO, a great believer of the endeavor and has a key role in keeping it alive and wide spreading the case as emblematic of commons.

Achilleas Vaitzis (m) – (1975) Engineering degree in Planning and Regional Development. He has research experience in rural space development. His role in the team is the operations management and the outreach and contact with local citizens of the rural areas concerning the deployment and expansion of the Community Network and of the services that are offered. He is one of the hands-on persons for the actual deployment of the CN nodes and the contact person of the group with the locals.

Fotis Klissiaris (m) – (1977) a Radio Networks and Telecoms Engineer possessing also MBA, with more than 15 years of experience in wireless networks planning, implementation and optimization in Greece and Belgium. He is a founding member of “Sarantaporo.gr NPO”, contributing to the planning, implementation, growing and maintenance of the wireless networks in the area, supporting and participating in its various cultural and educational activities, while also impersonating a communication link towards local communities, press and authorities.

Antonios Broumas (m) – (1981) A technology lawyer, a social researcher and a militant in movements that promote social autonomy and the commons. He has studied law at the University of Athens and holds postgraduate degrees in philosophy of law and IT & e-Comms law. His main areas of interest, research and writing focus on the interaction between law, technology and society. Antonis has published, among others, a contributing chapter in the 2013 Routledge Handbook of Media Law and Policy under the title “Governing Media through Technology: The Empowerment Perspective”, [Broumas \(2013\)](#). He is currently working on his PhD at the University of Westminster regarding the interaction of intellectual commons with the law.

Rossie Simeonova (f) – (1979) Dipl. Engineer in Environmental Engineering from the Technical University of Crete, Greece, Master Candidate in Investment Project Management from the University of Structural Engineering and Architecture L. Karavelov, Sofia, Bulgaria, Associate at the Sarantaporo.gr NPO. She works on various environmental projects such as developing and designing integrated waste management systems in different European countries. She is interested in building sustainable communities not only in environmental, but also in socioeconomic terms. Her role in the NPO is the search for funding opportunities, proposal writing, and participation in the organization, implementation and coordination of tasks.

6.1.3. Local authorities

Sarantaporo.gr NPO has repeatedly tried to engage local authorities with the CN endeavor during its six-years existence. Multiple times, the organization has conducted both official and unofficial meetings with many representatives of local authorities. In particular, members of the NPO core team have tried to present the benefits of the CN existence to both the ex- and the present mayor of Elassona, to the town council of Elassona, as well as to representatives of Thessaly Region based in Larissa.

Fortunately, in 2014 the Municipality of Elassona issued a permit to use the municipal antenna park, which was a critical point for the CN to reach the University of Applied Sciences of Thessaly in Larissa, the CN source of high speed internet access. This was not the one and only collaboration with Elassona Municipality, but they have signed several letters of support upon request of the NPO for its candidacy in various research project proposals.

Despite the NPO’s efforts, until now there is neither further collaboration –except than what is on paper, nor potential will for collaboration on behalf of the municipality.



6.1.4. Local residents

The demographics and the residents' needs related to the CN are explicitly stated [netCommons D2.3 \(2017\)](#). In short, the residents in the Sarantaporo area may be pictured according to their occupations as a) farmers and breeders, b) returning expats to spend their pension time in their village, c) their families including small children and women, who are mainly taking care of the household and of the taverna, if the family owns one, and d) a small number of youth who attend the school in the town of Ellassona. Many villagers work or own a house in town, so they are frequent commuters between their village and Ellassona. Below we include some profiles of residents who have been in close connection with the NPO team, as described in [Klissiaris \(2016\)](#).

Some of the residents have embraced the Sarantaporo.gr effort from the very beginning. Sakis K., permanent inhabitant of Pithio village, is one of the main supporters of the CN. Sakis is a professional farmer and also holds a tavern. He initiated the integration of his village to the network and continuously supports the endeavour being the head of the local support group, securing the financial contribution of his village, and supporting basic technical issues, when raised.

Others like Athanasios M., a successful professional farmer and awarded winemaker, have been friendly, but not really engaged. Athanasios is an opinion leader not only in his village, but also in the area. Until recently, he was a simple user of the CN, but after the Sarantaporo Symposium, hosted at his winery, he expressed his intention to become the mediator between the NPO and the locals. He is a typical example of the fact that locals are not aware of the vision and mission of the NPO and the CN's scope. He declared that he realized what the CN was, just after the symposium. He looks forward to more collaborations with the endeavour's stakeholders, having in mind the development opportunities new technologies and new synergies can offer.

There are also people that hold a position of distrust. For example, despite long and persistent efforts to mobilize local inhabitants from Sarantaporo village to actively participate to the community network, the prevalent mentality has been one of "committal", in the sense that people expected from some actor (prominently the municipality) to provide them with the whole service. In large part the majority failed to see the community side of the project. The Sarantaporo.gr team repeatedly tried to inform the local population, but the "battle" was really tough: a strong mentality of resignation and self centeredness became the fertile land for rumors, such as "they are from some political party", or "they receive tons of money from various funds".

Combined with a lack of permanent local presence from the NPOs members (no member of the NPO is currently a permanent inhabitant in the village) and perhaps lack of communication skills, this led to multiple misunderstandings and even a certain negative disposition towards the team and its work by influential members of the local community.

The only way to resume dialogue with the local community passed, unfortunately, through the decision of the NPO team to temporarily disconnect the local access network. Eventually this fact motivated some members of the local community to get more actively involved. Currently the NPO team is collaborating with these people to set the operation of the local network to a more participatory course.

This incident highlights the necessity to have local opinion leaders on board the project from a very early stage and to profoundly understand their motives. If one earns their support, it is expected to have a strong local ally to one's cause.



6.2. Basic needs and challenges (first impressions)

During the last year there has been a lot of material produced in relation to the Sarantaporo.gr CN, including the documentary on Sarantaporo.gr NPO titled “Building communities of commons in Greece¹⁷”, the workshop organized by the MAZI project “Together in Sarantaporo¹⁸”, the “Transitional networks¹⁹” two hours panel hosted by the Onassis cultural center, and George Klissiaris’ master thesis at the Athens University of Economics and Business, [Klissiaris \(2016\)](#), some of which already mentioned above.

All this material offers a first glimpse on the basic needs of the local people in the area (on addressing needs refer to Section 3.1 of this document), and on how residents integrate the provided Community Network into their spatial practice and daily activities.

Next we summarize some key conclusions referring partly to this material, which is considered as the “basis” for the initiating phase of the participatory design process in the netCommons project. For that, the analyses performed within the master’s thesis of G. Klissiaris provide an overview of potential needs to be addressed, not only in Sarantaporo but also in similarly geographically and socio-economically isolated rural areas in Greece.

6.2.1. Basic need 1: Support of agricultural activities

In all the interventions by locals documented in the aforementioned material the need to address the economic challenges that have appeared after the economic crisis is very prominent.

[Klissiaris \(2016\)](#) analyzes in detail all the challenges faced by rural areas like Sarantaporo and the potential benefits from ICTs. Specifically, in the case of Sarantaporo and concerning agriculture and livestock farming, the needs and problems, which arise from the qualitative research in his master’s thesis, seem to be:

- **Economic** – increased tax / social security contributions due to recent measures; high production costs (increased VAT, expensive fuel, expensive raw materials and machinery); high transport costs; liquidity problem.
- **Lack of infrastructure and equipment** – lack of modern facilities / tools / machines; insufficiently developed road network; lack of irrigation infrastructure in many rural properties.
- **Mindset / culture** – conservatism and negativism to adopt new crops, practices etc.; in addition, farmers in Greece are often considered socially degraded.
- **Missing collaborative / cooperative structures** because of lack of collaborative culture.
- **Remoteness** from urban centers.
- **Lack of formal education.**
- **Limited knowledge, lack of information** in a more general perspective than formal education; this is normally related to the cultural isolation of the community and its long failure to be included in mainstream development.
- **Lack of strategic planning** related to primary sector.
- **Legislative framework** – no stability in the legal framework regarding cooperatives.
- **Issues with quality of raw material (absence of sufficient state monitoring and control).**

¹⁷<http://goteo.cc/sarantaporo>

¹⁸<http://www.sarantaporo.gr/node/377>

¹⁹https://www.youtube.com/watch?v=G_w_pH1TR8k



The potential benefits from ICT utilization in agriculture / livestock farming, reported by the respondents of the above mentioned research were reported beyond the **economic** dimensions, which were anyway expected to be reported and assessed as most significant.

There were several other dimensions considered essential, such as better communication with the market and improved product promotion, or direct contact with critical information, knowledge and expertise. The focus of this work was explicitly to understand ways in which technology can support local agricultural activities from the wide range of possibilities available both operationally (providing knowledge and tools) but also organizationally (facilitating the creation of cooperative structures).

As a result, some important findings came from the Klissiaris' field research. In short:

- Respondents perceive that new technologies can offer solutions to many of their problems and may optimize the production process, but cannot fully understand the long term benefits from ICT utilization.
- Most farmers have the perception that ICT is only about surfing the Internet, information and data search.
- Before starting to use the Internet in 2010 when Sarantaporo.gr CN was launched, ICT were indifferent to most of the respondents and they had absolute ignorance of the ICT value.
- Most farmers, but even the officials in the farming sector, are unaware of the range of new technologies and solutions that can offer them various solutions. They are completely unaware of the possibilities and opportunities ICT use may offer.
- The majority of respondents understand the importance of education and recognize the lack of it on both personal and sectoral level in the area.
- There is a significant part of respondents who believe that the EU subsidies in the primary sector has demolished the farmers natural mindset for cooperativeness, as being subsidized they felt they can make it on their own. The current economic state and the subsidy cut off, however, have completely changed the situation. Funding is not easy and safe while the lack of knowledge and expertise and potential availability of products at competitive prices threatens the viability of many professionals who do not participate in cooperative initiatives.
- Most farmers, participating in the survey, appreciate the effort of Sarantaporo.gr NPO in addressing the digital divide, however, they do not anticipate that they could work with the organization on any professional level and on any subject. They have it in mind as a welcome volunteer effort, without realizing the value of a possible cooperation.

6.2.2. Basic need 2: Human presence and loneliness

Sarantaporo and the neighboring villages have been suffering a population decline since decades. Many of the older people which now largely constitute the local population have children and grandchildren in other cities, countries or even continents. Geographically and digitally isolated, the only opportunities they got to see their kin was during (some of the) holidays and in some cases every other year. As an old lady put it: *“I see my grandchildren every other year, when they come visit from the United States. They cannot afford to make the journey every year. Every time I see my grandchildren, they are much bigger than I remembered!”*

This fact of life has been the motivation for older people to start using technology and specifically teleconferencing software. The same lady carried on saying: *“Now with this Skype we can drink our coffee together and I can see them grow ...”*.



Another recurring theme in the responses of people regarding the importance of the Internet in their life, e.g., in the Sarantaporo documentary, is its significant power in keeping young people in the village. This has two dimensions: young people who live in the villages and young people who visit the villages during weekends / holidays.

The first category are young people who are, for example, following their parents' line of work, trying to improve it by using new technologies. Or even people who are just looking for a remote job, which will allow them to live at their place and work from there.

The second category are young people who live in the city or some place away from the village and “demand” internet connectivity in order to go to the village, otherwise they refuse to visit their grandparents. In the villages that are part of the community network it has been observed that Internet availability prolongs the period of stay of the visiting family members, thus contributing to the enhancement of the social fabric.

6.2.3. Basic challenge 1: Free riding and sustainability

From the very beginning until now, the Sarantaporo.gr CN has passed through three different stages. The first one, in which the core team members announced the coming of the free internet to the area, was not able to promote the vision behind. It was also ineffective in convincing people to participate, to contribute voluntary work, or even to believe it is useful. They acted as simple consumers, who were offered internet service for free.

The second stage came up as an attempt to overcome the issues of this first phase. The local cultural associations and organised local groups were authorized by the NPO to promote its vision and mission, as well as to become mediators between the NPO and the locals. They were supposed to technically support the CN and gather the financial monthly contribution per village. In some areas this model partially worked, but most of the times it was problematic. When these organizations had internal problems, this had a direct impact on the CN. There was a lack of any kind of support. Transparency was not ensured, because neither the locals, nor the Sarantaporo.gr team knew what was the actual financial contribution of locals and what was finally done with the amount collected. Furthermore, these associations never tried to share and promote the CN vision. They presented the fund-raising as support to their own effort to offer free internet to locals.

The third stage has come up recently by the need to secure the CN's sustainability and community building. There was an effort to directly communicate to the people without mediators. The way that the NPO team decided to follow was to approach people who have already contributed in some way –the node owners– as they have been informed in detail, from the start until today, about the CN whole story and all of the efforts to keep it alive. In case they believe in it, they agree to undertake the responsibility to secure annual financial contribution for the node placed in their premises by neighbours and people from the village. Otherwise, they have to deliver the equipment back to be used by another supporter.

The Sarantaporo.gr team chose this approach in order to decentralize the effort for gathering the needed financial contribution. Yet the most important point is that this seems to be the most effective way to build a community with common vision, and also to develop a platform for exchange of ideas and knowledge. Most importantly, local inhabitants may turn from consumers into active participants in the CN, and potentially further in their community.

As for how free riding is perceived, and how the associated behavior has implications for the network's sustainability, Panayotis Antoniadis (cited as **Panos** below) reports on two interesting anecdotes from



the visit of the MAZI project consortium in the area (MAZI Symposium January 2016).

“During the preparation of the workshop, Panos and Achilleas Vaitsis visited the Kokkinopilos village for arranging a group lunch. In the taverna La Noi there was a farmer who joined their table. Very quickly the discussion moved to the question of who is paying for the network and who is using most of the bandwidth. Achilleas had in front of him a graph with the utilization of the different access points in the village. The farmer noticed that one of the person who refuses to pay uses most of the bandwidth, and so he asked Achilleas to give him permissions to close his Internet access. He seemed very puzzled by the reply of Achilleas that the network should be open and free for everyone, and every village should find a way to achieve a fair level of contribution by all inhabitants.

Later, during the MAZI workshop, and more specifically during its last part at the Pithio village, a large group of local residents, all men, came to meet the MAZI group and discuss possibilities for collaboration. Local people seemed intimidated and were not talking and the MAZI group as well. At some point, Panos who was moderating the discussion and translating, asked people to say something “negative” about the community network. It was then that the discussion became really lively with people narrating funny stories of conflicts between residents, like the priest who took out the plug of the network node to save on electricity.”

Overall it was interesting to see how the network has become one of the hot topics of discussion and debates in men’s cafes, in addition to football and politics. These observations are significant for future participatory events.

6.2.4. Basic challenge 2: Institutional and legal framework

Sarantaporo.gr has been incorporated as a non-profit company, which under Greek law is a type of legal entity corresponding to common law non-profit associations or foundations. Establishing such a legal entity is easy. Yet, operating a non-profit community network is an activity that lies at a grey regulatory zone in terms of electronic communications law.

Greek electronic communications law is a more or less direct transposition of the EU telecoms package of directives, as in force today. Such a regulatory framework does not distinguish between the regulation of for-profit and non-profit network providers. That imposes extreme regulatory burdens to non-profit entities, forcing them either to turn into for-profit or become extinct under the force of criminal law enforcement or fines. Sarantaporo.gr NPO has thus been forced to balance between the informal and non-remunerated provision of electronic communication services, and the inability either to gain rights of way for the deployment of its network or to interconnect with larger ISPs and receive wholesale access to the internet.

6.3. First gatherings with the Sarantaporo.gr team

The approach of netCommons to Sarantaporo.gr Community Network was initiated between George Klissiaris, Sarantaporo.gr administrator, and Dr. Iordanis Koutsopoulos from AUEB. Sarantaporo.gr was by the time already a successful and well known use-case and George happened to be finishing his Master’s thesis on Sarantaporo.gr at AUEB in the same period. The initial discussions took place from May to July 2016 in Athens, on the premises of AUEB.



From the netCommons project's point of view, Sarantaporo.gr CN is an ideal end-user, since it combines a local community in a remote area with the 'infrastructure as a commons' approach. From the Sarantaporo.gr CN point of view, the netCommons project is an opportunity to research and develop useful services in a local context. Since a strong synergy opportunity was identified, both actors agreed to join forces and work together in the framework of the netCommons project.

The first meetings were introductory to exchange information on current state and plans for the future. Vassilis Chryssos and George Klissiaris from Sarantaporo.gr described the history of the Community Network to the collaborating participants and shared some insights on the potentially useful services that could be developed for the local communities. Such services included telemedicine and knowledge / resource sharing among farmers. During these meetings, the Sarantaporo.gr CN administrators emphasised on the criticality of consulting with locals in a participatory process before deciding on the specific use-case.

This approach was deemed critical because it is quite a cumbersome process to get locals engaged with new services, and once they do it is important that they find the value they expect. Possible failure in this process could potentially harm the trust relationship between the local communities and the CN.

The special interest of the CN in developing local services for the communities lies both in raising the value of the infrastructure as a community tool, and in opening a new stream which could contribute to sustainability. Eventually a common course of action was agreed, which led to the organizing of the Sarantaporo symposium in November 2016, as a first step of a dynamic participatory design process for this particular case study.

6.3.1. Toward a specialized participatory design process

When the strategic decision to focus the participatory design task T3.1 of the netCommons project on the Sarantaporo.gr case study, we started working on the methodology that may be suitable for this particular process in the Sarantaporo area, taking into account also the various constraints like the expertise of people engaged in the project, the available resources, and the availability of the local actors.

NetHood is the main responsible project partner for this task, and more specifically Ileana Apostol and Panos Antoniadis. While Ileana is the person with the most relevant background by holding a PhD in urban planning from the University of Southern California, both NetHood partners have been developing, and in the last two years intensively, an expertise in the organization of interdisciplinary gatherings.

One of the first challenges that they faced during the initiation phase was to introduce some basic principles of participatory design to the engineers of the netCommons project team; this task was carried out by Panos Antoniadis, who can talk both Greek and has engineering background. In addition to that, there were several rounds of discussions between the project team members meant to establishing some common ground before opening up the discussion with the local community in the Sarantaporo area. As a consequence, in comparison with other participatory processes, in this case the interactive circles within the spiral process of participation have been doubled to cover also a phase that we call "internal" to the netCommons project.

Already during the discussions for the organization of the Sarantaporo symposium we faced the need a) to identifying a suitable "structure" of the event in the CN area that the members of the project team agree upon, b) to defining realistic objectives and to formulating expected outcomes, considering the



reiterative nature of this process, and c) to achieving gender balance in the representation of the locals but also in the whole group.

For the first issues, after a few rounds of debates, consensus was reached and this initial event in a series of participatory events was rather loosely framed both in terms of structure and expectation. One of our strategic choices was to start with a “closed” event inviting people from the productive economy, farmers and breeders, and especially those that have been in contact with the Sarantaporo.gr team and have developed a certain level of trust. Putting together the right mix of people from the local community, researchers, entrepreneurs, and commons activists, and a specific set of questions we would like to address would be enough in terms of structure²⁰

We only failed to achieve complete gender balance because invited women from the project team and external guests from Athens could not travel to the Sarantaporo area for the event.

Moreover, striving to design such processes in an open and inclusive manner is always a demanding challenge; for instance, are the ‘local’ perspectives truly taken into account especially when only men from the local community participate in the discussion groups, even if that builds on a local tradition?

As a final remark, note that the methodology introduced in Chapter 5 was developed in detail after the decision to focus on the Sarantaporo case study within the netCommons participatory design process, and to some extent in parallel with the preparations and actual implementation of the first two steps described below that gave us the opportunity to gather some additional information to fine-tune the methodology.

This feedback loop between structuring the methodology and the actual interactions taking place in the field will continue until the end of the process, in order to come-up with a suitable methodology, which could be then proposed to inform similar processes in different scenarios, like the Guifi.net network which contains similar “islands” in rural areas.

6.3.2. Preparatory meeting at the Impact Hub Athens

A great opportunity to rehearse the presentation of the netCommons project and more specifically of the Sarantaporo.gr case study was the preparatory meeting in Athens, two days before the Sarantaporo symposium. It included project team members and guests who couldn’t make it for the long trip to mount Olympos, and so in addition to George, Vasilis, Merkouris, and Panayotis, who were going to visit the Sarantaporo area, participated also Eleni Toli, coordinator of the CAPS project CAPSELLA, as well as Giouli Doxanaki from xorafaki.gr (meaning “small farm”)²¹, and from AUEB Panagiota Micholia.

After a quick round of self-introductions, the discussions shifted directly to critical issues from the perspective of each participant. For instance, during the description of the Sarantaporo.gr CN by George Klissiaris, Eleni Toli highlighted that the problem of Internet access for smart farming applications is very important because it is not always the case that farmers have Internet-enabled devices nor that Internet connectivity is available on site, in their farms.

The discussion then moved to the objectives and approach of the CAPSELLA project. Eleni Toli explained that the project builds an open data repository collecting data from different farmers all around Europe, and offering an API for applications to elicit useful information. This sounded like a great design space in which AUEB’s application could fit in, and for which the Sarantaporo.gr

²⁰<http://netcommons.eu/?q=content/agricultural-sector-ict-innovations-and-commons-towards-building-synergies>

²¹<http://www.fortunegreece.com/article/xorafaki-gr-epistrofi-stis-rizes/>



CN could provide an invaluable infrastructure. Therefore, our team addressed to Eleni numerous questions regarding the assurance of the quality and data maintenance, ownership and related privacy concerns, the relation with other open data repositories in Europe, examples of related applications using such data, and more. Eleni highlighted that data ownership and privacy is an important issue and careful treatment is required. Regarding the quality of the data, CAPSELLA will aggregate data from trusted data sources and thus assumes that the data have been already verified. In the case of the CAPSELLA generated data, all parameters ensuring data quality will be of course taken into account. Then, Giouli Doxanaki stepped into the discussion to give an example of a Greek small-medium enterprise [xorafaki.gr] active exactly on this lifecycle of data, bringing together small farmers with experts from different fields who make sure that the data are reliable in direct contact with the farmers, but also to provide consultancy and education. She confirmed that xorafaki.gr would be very interested to have access to a database like the ones under construction by CAPSELLA, and that they could also contribute since, at least for certain types of data, she was confident that the farmers collaborating with xorafaki would be happy to make them available.

An interesting discussion followed regarding the formalities required to acquire the consent of farmers for the intended use of the data shared with external actors, which will be very helpful if the netCommons application in Sarantaporo.gr will focus on this area.

The discussions ended with a short description of the project netCommons and the upcoming symposium in Sarantaporo, focusing on the challenge to bring the attention of people back to the cooperative model that is not always well seen in Greece due to previous failures and bad experience. We explained our vision to take advantage that there is already a network infrastructure in this area, which requires such cooperation. So, the local community network could hopefully act as a catalyst for stimulating cooperation in productive activities, such as farming and breeding, including data collection and knowledge sharing. But also to help address many related challenges in terms of opening up toward developing skills and capacity building.

On an optimistic note, Giouli stressed that in Greece, and especially in rural areas, due to mimetic behavior, the tendency to simply replicate best practices, it is relatively easy to involve the local community if a small group of committed people are willing to engage with the project and demonstrate a successful case study. This proved a very valuable remark, and it was one of the key lessons learned also from the Sarantaporo symposium that is discussed in the next Section 6.4.2. From our guests Eleni and Giouli during the meeting at the Impact Hub we ended up learning a good deal, and promised to the group to come back with a detailed report from Sarantaporo and with plans for future brainstorming gatherings.

6.3.3. The Sarantaporo symposium

In November 26-27, 2016 netCommons project team members visited the Sarantaporo area to make a first step toward a long-term collaboration with local actors around the question on how technology, and especially community networks, can help addressing the real needs of the local community.

More specifically, AUEB and NetHood initiated a potentially reinvigorating participatory design process for the current CN, engaging professionals from the ICT agricultural sector, local farmers, breeders, and stakeholders, and members of the commons movement in Greece together with the Sarantaporo.gr non-profit organization, to develop synergies and imagine together solutions that address pressing needs after many years of severe economic crisis.

The outcome of the first Sarantaporo symposium has been very encouraging. For example, it resulted



in the identification of promising synergies between GAIA INFARM or GAIA Epicheirein (i.e., Intelligent Services for Agricultural Production), Sarantaporo.gr, and AUEB around the complementary use of networking infrastructure for both Internet access and for crowdsourcing of farming information, which will be delivered to the artificial intelligence system developed by GAIA, through an application under development crowdsourcing mobile application by AUEB.

When we realized that it was possible to make a collaboration with all main actors in the room, being complementary and fully beneficial for everyone, there was true joy expressed by participants, either jokingly proposing to transform this participatory design workshop into a wedding feast, or seeing it from the future, as the workshop host, A.M., announced a little later, “This was a historic gathering!”. Most importantly, the gathering helped the participants to make a first, but significant step, in building trust among the group, and to create a very friendly and inspiring atmosphere. That is so important in breaking the ice for any participatory process and in further establishing common grounds (refer to Section 5.2). At the same time, the reference to the wedding feast is most telling, as the commoning practice that has survived unaltered in the rural culture in Greece are the collective feasts, Panigiria, as such feasts are called in Greek, which are very good representative examples of the local commoning culture²². Thus the biggest reward for the efforts of initiators and organizers was that the most popular action proposed as a next step was to visit again the area as soon as possible, and to enlarge the group by opening the discussions to many other people interested in the design process for the Sarantaporo.gr CN.

6.3.3.1. Documentation of the first participatory event

In this section we provide through storytelling a detailed description of the most important interactions that took place during this event (refer to role of storytelling and Geertz’s “thick description” in Section 5.4). The purpose of the whole process’ documentation is to facilitate participants’ self-reflection and the development of common understandings between all people involved; engaging many and very diverse actors into a participatory design process is a complex and multifaceted practice. At the same time, there are details that transgress discourse and practices, and are telling many stories beyond words (refer to Schon’s “reflection in action” in Section 3.1). Thus in the detailed narratives dwell ‘findings’ of the ethnographic research that may be consulted at later times in the project or also by other researchers (i.e., primary sources of information) just as other written archives and visual or audio documentations. If used in context and within comparisons, moreover, the stories may have explanatory power.

To facilitate the evaluation process (see the concluding notes Chapter 7) by means of content analysis showing how language brings forth reality (refer to, e.g., [Krippendorff and Bock \(2009\)](#)) the following text receives annotations that highlight the most important “moments” analyzed in Section 6.4: (a) relating to the methodology, especially to the process’ “facilitation”; (b) pertaining to information gathering; (c) perceived as incipient moments in trust building. The relevant text is marked as: for (a) *[M.1, M.2, etc], for (b) *[I.1, I.2, etc], and for (c) *[T.1, T.2, etc].

6.3.3.2. Storytelling about the first symposium in the Sarantaporo area

On Saturday morning, November 26th, 2016, we gathered at the winery of A.M., at the village by the name Milea located in close proximity to the Sarantaporo village. A.M. used to be a farmer but

²²<http://trigiro.com/what-is-a-panigiri-%cf%80%ce%b1%ce%bd%ce%b7%ce%b3%cf%85%cf%81%ce%af-greece/>



before the wave of subsidies appeared he decided, as he noted during the discussions, to focus on the more delicate business of winemaking.

There were four main groups of people.

- Some members of the local community, who at the time when we arrived were already drinking their coffee next to the fireplace. N.V. (farmer and baker), T.A. (breeder and farmer), P.P. (president of the Milea village community), G.T. (breeder), S.N. (farmer, member of the agriculture cooperative of Ellassona) and Achileas Vaitsis (farmer, and member of Sarantaporo.gr) who acted as the mediator between the locals and the outsiders.
- The Sarantaporo.gr team, George Klissiaris and Vasilis Chryssos, representing also Ex-Machina (a start-up company developing IoT technologies), together with Antonis Broumas (a member of Sarantaporo.gr non-profit organization living in Athens, an expert in legal issues and PhD candidate at the University of Westminster, London, on the Commons; see also profiles in Section 6.1.2) and Nikos Kourtzis, Connectivity for Refugees Coordinator, UNHCR Greece, who was recently recruited to help resolve some technical issues. George's mother also joined, as the trip was also a chance for her to visit friends and relatives in the Sarantaporo village.
- Visitors from other places, including researchers from Athens, Merkourios Karaliopoulos and Aris Pilichos from AUEB; from Larissa, Vasilis Vlachos from University of Applied Sciences of Thessaly (the person responsible for the complimentary Internet access offered to the Sarantaporo.gr CN); from Ioannina, Vasilis Niaros from the P2P Lab; and from Zurich, Panos Antoniadis from NetHood, the moderator of the gathering.
- We also had the chance to have with us Fotis Chatzipapadopoulos from Gaia Epicheirein, a well-known company in the farming sector in Greece, and Pavlos Peridis from Athens Impact Hub, who joined the event at the last moment, after our preparation meeting that had taken place two days before.



Figure 6.3: The Sarantaporo symposium venue and the circle formed for the first round of self-introductions. Notice that the only two women in the room sit at the “side” table.

After a round of self-introductions by all the participants, the first session was dedicated to listening



to the local actors *[M.1]. They were all men (!). Throughout the meeting, the two-three women in the room were sitting on the side, listening carefully.

The discussion was focused quickly on identifying needs and so was advancing very fast, since there are many needs in the area including basic infrastructure (roads, water); information and knowledge on best practices and important developments (e.g., the level of prices in different places); human capital and especially youth living in the area; important data (such as local weather conditions monitoring and forecasting); communication and marketing; business models and access to markets; adoption of new technologies in a conservative environment and the cooperation required to address the fragmentation of land in an already small geographic area, making it difficult to compete with big producers from big countries *[I1].

The visitors to the area of Sarantaporo were listening with great interest to the local producers describing, one after the other, their numerous problems and needs, when the president of the local community, P.P. interrupted the flow by saying “we know all these problems, we can describe problems until tomorrow morning. Tell us which solutions you have to offer.” His voice revealed some sort of suspicion and mistrust in the good intentions of the ‘outsiders’; something like ‘so, tell us about what exactly you want to sell us’ *[M2].

Thus, Panos took the opportunity to stress that we did not come to offer ready-made solutions but to help each other in a complicated endeavor. As he said, in this room there are people with “problems that search for solutions”, and others with “solutions that search for problems”. These two groups need sustained collaborative work, trust, and patience to produce good matching; this gathering was only one step toward this direction *[T1].

But it was already time for lunch, prepared by the owner of a taverna in another connected village called Pythio, who is one of the most engaged locals with the maintenance of the network. At the same time, A.M., the owner of the winery proved to be a great host *[M3] + *[T2]. During lunch, he reminded us of the monasteries in mount Athos where monks eat while listening to someone reading the new testament. In a similar manner, he told us the story of the place, a great opportunity to make a video recording; in general we had decided not to record the workshop, to avoid create tensions and undesired distance between discussants, but this was an exception²³.

After lunch A.M. also offered us a guided tour to his cellar, and explained in detail how the wine is produced and the special care required to make it taste nice.

Before the start of the 2nd part of the symposium Panos asked to what extent there is interest in biological and/or organic farming. A.M. run to bring a sign from the “good old times” when a cooperative specialized on biological produce did exist in the area *[M4] + *[I2]. Figure 6.4 is a picture of A.M. showing the sign of the old cooperative while narrating the history of his place.

For the afternoon session, we decided to change the circular set-up, which was very useful to create a nice atmosphere, and arranged the room in a way to be able to watch and listen to some “solutions” as the president of the community urged us to do *[M5].

First, George Klissiaris offered a short presentation of the Sarantaporo.gr Community Network. What seemed to be rather common knowledge (if us as outsiders have heard so much about this network I could imagine the locals being accustomed to the subject) was actually for many people new, and somewhat surprising, information. N.V. remarked, “I didn’t know that the quality was so good for such a low cost. I remember the first days that, to have more bandwidth, my kids were pulling out the cable of the neighbour’s router!” *[I3].

²³The video is posted on YouTube with the agreement of the participants https://www.youtube.com/watch?v=ANz8ITdcW_w





Figure 6.4: A.M. showing us the sign from the old biological agriculture cooperative.

Achilleas admitted that there was not very good communication between the NPO members and inhabitants; especially at the Milea village, there was the feeling that the locals do not communicate closely with the Sarantaporo.gr team, at least not as much as one would expect.

Afterwards, Vasilis Niaros from P2P Lab presented a very interesting case study in France where farmers decided to build their own tools and make their design open source. “L’atelier paysan”, as it is called, has evolved to a sustainable activity by itself producing related educational material around the tools. When Vasilis started showing some of the tools that those farmers in France have built, a playful buzz covered the room. N.V. said: “When you show us such things it is like bringing us to the kindergarden. We can watch this stuff all day...” *[I4].

Anyway, the event had to go on faster, and Panos was very careful in keeping the time *[M6]; there were many interesting presentations in the schedule. Despite the high level of entertainment offered by the youtube videos showed by Vasilis, we moved to the 2nd presentation by Fotis from GAIA Epicheirein, who had already attracted a lot of interest during his self-introduction. As he explained, GAIA Epicheirein has shifted its focus from managing the farming subsidies (the reason is was very well-known in the farming sector) to smart farming technologies, in collaboration with farming cooperatives all over Greece. Fotis’ presentation was very professional *[T3]. The room was completely silent and everyone seemed very interested in the new technologies developed by GAIA Epicheirein, which aim to collect useful farming data with the use of sensors, to analyze them and derive customized recommendations for improving the production.

Fotis was speaking the farmers’ own language *[T3]. He was very careful showing the direct benefits from smart farming, with the use of concrete examples from a series of pilots that have been implemented all over Greece. It was also very important the fact that GAIA Epicheirein is a company owned partially by the association of farming cooperatives, and that a representative of the Ellassona cooperative, namely S.N., was in the audience providing additional credibility and interest to what Fotis had to say.

It was very interesting that, as Fotis highlighted, their data gathering stations require Internet connectivity to send the data to the central database, and a network like Sarantaporo.gr could prove very



useful. Without having anticipated it, we were revealed a very strong complementarity between the two projects *[I5]. Time passed very fast, and Panos abandoned the timekeeping, since Fotis was clearly the star of the day and his presentation deserved more time *[M7].

After the end of this talk, Panos asked the audience whether they think it would be of interest to other people in the area *[M8]. P.P. replied “of course!” and his voice was now much more friendly and soft *[T4]. And it was the right time for a coffee break, before the next presentation on the netCommons project.

Merkouris Karaliopoulos presented the main objectives and structure of the netCommons project highlighting the fact that are many European success stories of CNs like Guifi.net, Sarantaporo.gr being one of them!. Then Aris, a very talented bachelor student recruited to develop the software application, presented some first ideas of possible mobile apps. The tentative name of the app was “CommonTasker” and the main focus on the concepts of cooperation and crowdsourcing, like information/knowledge sharing (post and answer questions of any type, e.g. road conditions after extreme weather conditions, ways for cultivating specific types of seeds, etc), a micro-task exchange system, or a sharing economy platform for allowing farmers to share their tools when they do not use them. People laughed when the last idea was presented, and N.V. noted humorously that “it is easier to share your wife than your tractor!” *[I6].



Figure 6.5: Merkouris Karaliopoulos and Aris Pilichos presenting the netCommons project and the first prototypes for the Sarantaporo crowdsourcing mobile application

Of course, Aris has no experience in farming and his language was not as convincing as Fotis’. So, the first reaction to all different ideas presented was that they are not really needed, or it is not necessary to be supported through ICT platforms because people manage already with personal relations, face-to-face meetings, etc. In general, when the application was about enhancing the level of cooperation between farmers, those present in the workshop had a rather defensive attitude; they were showing more interest if ICT tools would help them reach people outside their community *[I7].

In general, those draft ideas generated interesting discussions that helped us understand how this small community of producers operate and their relationship with technology, very useful information for



the next steps of our participatory design process.

Normally, the obvious distance concerning vocabularies or manners to approach the subject would have created a moment of slight disappointment on whether “promises” to address the local needs would be eventually fulfilled in practice (what was perhaps anticipated by P.P. at the beginning of the meeting). But Fotis’ previous presentation had actually played the role of a “deus ex machina”. Indeed, we had in the room a representative from a very competent and credible company that knows how to transform farming data to useful recommendations for decision-making processes, a non-profit organization that deploys network infrastructure as a commons to facilitate the collection of this data, and a young talented man who wants to develop a mobile app that does something really useful: makes it easy for farmers to record and upload their data, and the people that were expected to fulfill this task *[M9].

The impression that there is a good reason for all these people coming from so different walks of life to being all together here—in the winery at the Milea village— created some sort of relief, or even euphoria *[T5].

It was the moment to define the concrete next steps! Panos proposed to form parallel working groups, one to discuss the potential of collaboration between GAIA Epicheirein, Sarantaporo.gr and net-Commons; one to organize the next gathering, and one to discuss the engagement of locals in the maintenance of the Community Network. But people were already tired and there was the suggestion to have instead a final round all together in which everyone would suggest what could be the next step.

George placed the whiteboard in the middle and people started summarizing their impressions from our meeting and proposing ideas for action. This is what was written on the whiteboard at the end of the circle of proposals *[M10] + *[I8]:

-
1. Open the discussion - invite and inform many more local people
 2. Extension of the Sarantaporo.gr network to the farms
 3. Organize the next gathering as soon as possible (February and/or May combined with the “Conference on the Commons” in Thessaloniki)
 4. Financing and deployment of a local weather forecast station
 5. Explore synergies between GAIA + Sarantaporo.gr + netCommons (meeting in Athens)
 6. METRO16 funding - formation of an operational innovation team/group
-

Pavlos, from Athens Impact Hub, who stayed silent throughout the meeting, said that he preferred to listen because his main interest is to pay attention and listen to what people have to say. He identified as the most important challenge a relatively low level of education, which prohibits people from realizing the capabilities of technology, as well as the limited amount of time available to explore available tools and knowledge, and to get in contact with experts *[I9].

N.V. stressed that this meeting was an exception of a civilized dialogue, in comparison with similar gatherings that often end with verbal fights and with the creation of smaller clusters of people; he joined the general impression that such events should take place more often *[I10].

Pavlos also brought up the question of cooperation and short-term versus long-term thinking, which had been raised in different moments during the day. Someone referred to a previous reaction during Vasilis Niaros’ presentation on the culture of cooperatives in France and other European countries, that in these countries such culture is established through ages and people inherit it “ready” from



their grandparents. However, successful cooperatives do exist in Greece and communities can always decide to start from scratch especially in a moment when cooperation, in particular in the farming and breeding sector, is considered as the only means for survival.

An interesting moment during this circle of discussions appeared when T.A., a herder from the Livadi village expressed his need for Internet connectivity at the farm. George Klissiaris asked him “how come there is no Internet connectivity” in his village. T.A. mumbled an answer and George insisted since he knew, as revealed later, that although the Livadi village has been in negotiations with Sarantaporo.gr to join the network, the negotiations were abandoned for no good reason. The most coherent answer by T. A. during this short but intense exchange was that such things require presence in the field and continuous effort, somehow pointing at the weak point of Sarantaporo.gr NPO: its limited presence in the area *[I11]. Panos tried to break this uncomfortable moment by saying that “since we have now become friends and thus can afford being more honest, as an external observer I have to say that I find that George is complaining more than he should about the lack of engagement by the locals, but I understand him because the whole team has worked very hard, on top of their everyday jobs and family commitments, to achieve this remarkable result, and it is sad seeing that local people do not engage actively even for a small amount of time, which seems to be against their own interest!” *[T6].

When the discussion moved to the question of when we will organize the next meeting, it was made clear that the limited physical presence of members of Sarantaporo.gr NPO is one of the most important reasons behind the miscommunication and lack of engagement of the local community. Indeed, the local participants were eager to organize the next gathering as soon as possible, while the visitors, including the Sarantaporo.gr team, were looking at each other somehow embarrassed, avoiding to commit for a next visit too soon *[I11].

Before we closed the meeting, Panos asked also the women in the room to say their opinion, as they kept silent all day, if they were not serving coffee or performing various housekeeping tasks. People laughed like this was not something really necessary! One woman confirmed that “they don’t know about these things and trust their husbands to sort them out”... Similarly the young persons present at the gathering —the son of A.M. and a young breeder— did not feel like talking. It seemed quite clear that in this sense, of course, if desirable in the local context, more attention would be required in order to include also women and youth in expressing their perspectives on the “local needs” *[I12].

George noticed that Panos also did not share his impressions from the day. Panos mentioned jokingly that he felt some sort of jealousy for the Sarantaporo.gr team working for their hometown, while himself was doing the same in a foreign place instead of his own hometown in Lesbos. This was an opportunity to stress the important “first mover” advantage that allows a community engaged in the development of innovative solutions to attract the attention from outsiders.

The meeting was expanded to the next day with a visit to Sarantaporo village and a tour to the Community Network’s infrastructure *[M11]. It was a moment of more intimate discussions and networking, as for example the contact between Fotis and Vasilis Chryssos who realized that they share many common interests through the second affiliation of Vasilis, the start-up Ex Machina, active in the development of intelligent systems for evaluating weather forecast predictions from various sources in terms of accuracy in a given area.

Final destination was Sakis’ tavern in Kokkinopilos village, where we took the opportunity to socialize in a more informal way, over a wonderful meal. From the local participants of previous day’s workshop only N.V. appeared. This situation was expected somehow, as they are all very busy at their farms; probably it was already great to have kept for a full day the attention of local community’s



members!

N.V. had brought a small present for everyone. A bag full of almonds from his farm, reacting to the joke of Panos the previous day that “we hear all day about almonds but we don’t see almonds on the table!” He seemed happy offering produce from his farm, and in general willing to keep in contact with the group. As was stressed by Giouli in our meeting at the Athens Impact Hub, one needs to engage only a few but competent and influential people. N.V. seemed to fit perfectly this description. We had also the chance to meet his wife, and had relaxed and more informal conversations together with her and George’s mother.



Figure 6.6: The Sarantaporo.gr team together with G.P., showing him the server room and how to reset the router, at Kokkinopilos village.

On the one side of the table, the uneasy spirit of the Sarantaporo.gr techies found its way to our dessert! The paper tablecloth became the optimization battleground for our Community Network’s architecture and a little later with a local inhabitant, G.P., who has returned recently to his home village after 40 years of work in Munich and was very interested to learn how to maintain the network, visited the server room, where all equipment is stored.

A little later, G.P., was delving into the arcane knowledge of cable patching!²⁴

On the other side of the table, Panos was asking about the story that A.M. told him during dinner the night before. When he was a member of a very innovative broccoli cooperative, he had the idea to organize monthly dinners where men would go with their wives and contribute all a small amount of money, to buy a small present that would be offered to one of the women through a lottery. This was very successful, and these dinners were growing bigger and bigger. However, when the cooperative business started getting worse, the relationships between men started to degrade, and this communal activity came to an end *[I13]. “Wouldn’t it be nice to rethink this idea, and give more attention to

²⁴See here an auto-generated video from Vassilis Chryssos’ camera: https://archive.org/details/sarantaporo_network_design





Figure 6.7: At taverna La Noi, Kokkinopilos village, G.P. and N.V. observing Achilleas Vaitis who shows them how to patch an ethernet cable.

the brave women in the area, like Antonia, the hands and soul behind the taverna at Kokkinopilos?”
*[M12].

It appears that one of the challenges that the participatory design process shall try to address is those ‘social’ needs that people tend to forget about in times of economic crisis, when (mostly individual) efforts are concentrated on basic survival needs. Nevertheless, human contact and collective activities are probably the most effective means to reveal those needs somewhat more difficult to express, which are placed at higher rungs in the hierarchy (refer to Maslow in Section 3), and cannot be satisfied only by technological tools, but require social tools as well *[I14].

So, we need to keep in mind that these concluding notes include only partly the actual community needs: on the one hand that depends on the relatively limited number of participants in the initial gatherings around the CN’s topics, and on the other is due to an initial attitude of local community to being reserved in public deliberations, and thus expressing issues that feel more comfortable or somehow “expected” to be publicly discussed. In more advanced reiterations of the participatory process we expect that the ‘ice’ may break, and deeper relevant issues can surface leading to the formulation of commonly shared needs that pertain more to social and political domains, “matters of concern” as called in the field of “design research” rather than economic and survival needs, the “matters of fact”.

6.4. Initial analysis of the first gathering

From the detailed narrative describing the course of the Sarantaporo symposium, we synthesize here the three main areas highlighted through annotations.

In terms of information gathering, a list of general basic needs *[I1] was formulated, some of them



potentially connecting with the further developments of the CN. Regarding the network itself, there is concern about NPO's limited presence in the area *[I11] expressing the request to stay in communication and inform the local community about the CN *[I3]. As for the digital technology, there seem to be interest mainly for the purpose of reaching outside their community *[I7], and also interest in the possibilities offered by the open source tools presented through the video samples from France *[I4]; there is also skepticism about implementing locally cooperative services, for instance, due to limited willingness to share tools *[I6]. In this series of local challenges are mentioned in the narrative also the relative low level of education and the limited amount of time to invest in learning about technology *[I9]. Nevertheless, there are also some past experiences with successful cooperative initiatives such as the biological produce coop *[I2], and the broccoli coop that organized among its members common celebrations, awarding presents to women through a lottery system *[I13].

Hitherto, deliberations (when 'civilized dialogues' might be exceptional *[I10]) and decision making processes do not include representatively women and youth *[I12]. In general there is a subtly expressed desire to support the local community also for social needs, through technological as well as social tools *[I14]. On the positive side of the gathering's outcomes, a complementarity has surfaced between the Sarantaporo.gr CN and the Global Internet Access for All (GAIA) data gathering stations *[I5] as well as all the Symposium participants' proposals for the next meeting *[I8].

In terms of advancing the methodology, there are two categories of actions. On the one hand, in building trust, sustained collaborative work rather than ready-made solutions would be desired *[T1], backed up with professionalism, ideally expressed in the 'locals' language' *[T3], and reflected also in the relationships and group dynamics created by bringing together complementary actors *[T5]. The good quality of the event organization like simply "being good hosts" mattered *[T2], as well as caring for those who are not present to enjoy that too *[T4], and showing understanding toward each of the parties (e.g., the locals' disengagement in the CN and the NPO's overwork and voluntary efforts) *[T6]. These relational practices need ongoing care, as they cannot be 'solved' in one action but rather should be one of the specificities of the participatory design process.

On the other hand, in the facilitation of the participatory process, the timing measures seemed to prove successful and the rhythmic organization of the course of events such as first listening to the locals *[M1], from time to time rearranging the setting according to the different activities of the sessions *[M5] and *[M10] (e.g., bringing the whiteboard in the middle of the group, to write down the next steps), providing some interruptions like site visits *[M11], as well as holding on the prepared structure in terms of program and time *[M6] but only when needed, keep it flexible and allow more time *[M7].

Successful facilitating actions worth noting are, in terms of content, a) the clarification of misunderstandings *[M2] (e.g., 'translations' of what it's been heard as 'mistrustful'), b) drawing synergies between convincing professionals and local interests *[M9], and c) the revival of good ideas placed in the new CN context *[M12]. In terms of facilitating the organization, strategies that proved to be useful are a) the collaborative work in the organization of the symposium *[M3], b) at moments of agreement pushing the discussion a step forward *[M4] and when reaching some form of consensus, also opening up the discussion toward what it may be if other members of the community would be present, so to enlarge the scope of the discussions *[M8]. These practices indicate the reflection-in-action lesson (refer to Section 3.1) and may depend upon the presence and spontaneity of the mediator, so as to seize the moment and orientate the process toward productive directions.



6.5. The Symposium aftermath

Before Panos was ready to depart for Zurich, he had a short meeting with Merkourios Karaliopoulos and Iordanis Koutsopoulos to evaluate the outcome of the symposium, and to adjust the overall planning of the corresponding project task. They were all very happy for the unexpected complementarity that emerged during the symposium between the GAIA Epicheirein activities and the AUEB. The possible links to the CAPS project CAPSELLA appear also very promising, and the AUEB application could be used for feeding both databases. But since both of them reside on the Internet, it was not obvious to what extent such an application could take advantage of the locality of the Sarantaporo.gr community network, except from providing access to the Internet from remote farm locations.

At the same time, it was also made clear during the first visit in the area, that farming applications cannot satisfy all the needs of the local people, and that additional incentives might be needed to encourage people to use the application in the first place. An idea that came out is, in addition to the “standard” crowd-sourcing functionality of sharing local information from the farm, the application could integrate a local-only audio or even video communication channel, similar to the radios used by taxi drivers or other professionals. A local broadcasting medium with separate channels that allow for direct interactions between anyone that wishes to participate, not necessarily restricted to “professional” groups.

Back to Sarantaporo, Achilleas Vaitsis reports that every participant in the symposium with whom he met was very happy and eager to receive the group again. Those that were not in the meeting kept asking what happened and some were asking, why they were not invited. Without having this intention by starting the participatory process with a “closed” event, but rather to initiate the process through an icebreaker event, this fact stimulated curiosity and interest in the visitors’ presence in the area. The fact that the project team is more than welcome for the next visit fulfills a viable evaluation criterion at this stage.





7. Concluding notes

7.1. On methodology

From the first experiments with participatory processes, it seems that rules cannot be easily formalized, as every local context presents variations and specificities, and in a real life laboratory every problem is a one-shot operation, which needs to be thought through and tackled with care and patience over a relatively long period of time.

This deliverable documents some first steps in developing a suitable methodology for participatory processes related to the CN's future in the Sarantaporo area in Greece. Multiple reiterations are necessary, in order to elicit relevant information about local needs and available skills, to build capacity in the region and to strengthen social ties that could impact the CN's survival as well.

The tools and research methods have been chosen after careful consideration of the different options available inside the project, given the relationships of project partners with key actors, the available resources within the project, the potential for meaningful local applications for community networks, and the capability to engage in the project members of the local community.

In terms of methodology we try to keep a balance between abstraction and specificity. As a matter of fact, although we have started the process with a selected set of established methods in the participatory design field, we intend to keep our approach flexible and open to adapt step by step the methods used in every occasion, while documenting carefully the intermediate decisions and their outcome. For example, although to allocate a certain time for collaborative work in smaller groups [See section 5.2, step 7] was part of the methodology proposed here and that we kept in mind while structuring the work in the field, in practice, in the first gathering at Sarantaporo, people were too tired to follow all the suggested steps; due to the limited amount of available time, insisting on following the methodology at that point would have been a mistake, and could ruin the workshop's outcome. For the particular situation of the first symposium, plenary discussions have proved to be the acceptable participatory techniques. This is what reflection in action is meant to add to the process.

It is clear that one can not list all such unexpected situations, when someone should take a spontaneous decision, "reading" the dynamics of the group according to intuition and perception. Exactly for this reason good methodologies should provide guidance, and not strict rules and steps to be followed rigidly (refer to Schon in Section 3.1). Despite the very encouraging feedback from the first visit of the project team in the target area, it is obvious that the design of the participatory process needs continuous attention and reiterations.

7.2. Lessons learned from the Sarantaporo symposium

The lessons learned from the Sarantaporo symposium for the participatory design process include the following:

- Proposed solutions need to present short-term and clear benefits to attract interest but more subtle needs do exist, although not easily expressed. Perhaps it is good to advance by developing

the most obvious solutions and work in the “background” for eliciting the less expressed social needs, especially from marginalized groups.

- Need for human presence and contact is also very important but solutions are not straightforward and could be more controversial (e.g., perhaps restaurant and hotel owners might like the idea of a program aiming to increase tourism in the area, but farmers and breeders not necessarily).
- People are resistant to solutions that address the “internals” of their community but are more open to ideas that allow them to communicate with the outside world.
- The most important challenge lies in the communication of the Sarantaporo.gr with the locals mostly due to the lack of physical presence in the area; Sarantaporo.gr core team shows signs of frustration due to the significant effort put in the project, which is not fully appreciated by the locals and this can harm the objectives of the participatory design process (need for a “fresh start” is required).
- It is important to motivate people to bring to the table their familiar tools as well as the “objects” of their work (N.V. was intrigued to be asked for almonds and seemed happy bringing many bags with him the next day to offer to the visitors).

In the next event in the Sarantaporo area, the next steps of the “Planning for Real” participatory technique (refer to Section 5.3.1) to follow are:

- to try things out before making commitments; whether these ‘things’ are related to the community network itself or to the proposed application, it is important to focus on doing rather than talking;
- to create action groups around topics of interest and existent skills in the community, according to an agreed-upon action plan.

Regarding the software application development, lessons learned from the Sarantaporo symposium include the following:

- There is a very obvious and easy “entry point” in implementing something meaningful and compatible with the spirit of the general framework of AUEB’s mobile app (crowdsourcing): the sharing of local information as an exchange for informed recommendations for the farming practice.
- There is real need for Internet connectivity in distant locations and the possibility for synergies between Sarantaporo.gr, netCommons, and GAIA Epicheirein is very promising.
- The ideas of sharing and cooperation inside the local community are difficult to promote since the population is limited in numbers, and people feel that they know already how to “do it” (up to their wishes, which is not always the case).
- There is a lot of need for human presence but it is not easy to express and not obvious in what ways an ICT application should attempt to address. This dimension requires more steps into the participatory design process and we will keep returning to it in following documentation and interim reports before the next version of this deliverable.

7.3. Future steps

The outcomes of the first Sarantaporo symposium, in combination with the theoretical structure provided by the four main reasons ‘why’ analyzed in Chapter 4, and by the corresponding design prin-



principles, will guide the further development of the first prototype of the CommonTasker into a concrete application that will both try to address immediate needs (smart farming) and at the same time to explore possibilities of incorporating local complementary services hosted on the Sarantaporo.gr community network. For this, in the following months we will develop more specialized application design guidelines focusing on the type of crowdsourcing applications that AUEB is developing, and which seem to have found an important local need to address (smart farming), in close collaboration with Task 2.3 on incentive mechanisms ([netCommons D2.3](#)), which will be documented in the next version of this deliverable.

In parallel, we will further analyze the answers to the questionnaires included in Appendix A, and organize our next visits in the area that will take place in February and May 2017. In addition, we will establish a regular schedule of exchanges with the locals, approximately every 3 or 6 months. As the application development advances, the deeper we get to understand the local needs, and the more we interact with key actors in the area, the more the participatory design workshops will get to focus on the application design; thus the overall methodology will crystallize and it will be possible to use it as a basis for tackling similar case studies, e.g., rural areas in the Guifi.net network.

The fact that our first visit brought important developments toward the engagement of the locals in the operation and maintenance of the network itself —i.e., the decision to reconnect the Sarantaporo village, the engagement of locals in Kokkinopilos village to learn the basics for maintaining the network, and the realization of many key actors like A.K. and N.V. of the significant benefits of becoming part of the network— provide significant evidence that this task can contribute also to the netCommons objective to provide incentives for participation and improve the economic sustainability of the network (Tasks 2.2 and 2.3).

7.4. Beyond Sarantaporo

Having concluded the initial phase of our methodology —gathering information and establishing trust—the project teams are entering the next phase of actual participatory design as described above, following the overall process as in the human-centered design methodology, and organizing the February visit in the Sarantaporo area inspired by the “Planning for real” participatory technique (see Chapter 5). Yet, we are also prepared to adapt our initial suggestions according to the evolution of the process, and refine them to match better the specific context of our work.

At the same time, we keep in mind that the lessons learned from the overall process need to be generalized and formulated in a way to inform the initiation of similar participatory design process in other areas, where local groups are willing to develop local applications for existing Community Networks. Again, the more different the context, the more the process design teams will need to adjust the proposed methodology. For example, in environments where people are more technically savvy and experienced Internet users, one could borrow elements from the OTI methodology (Section 3.3) emphasizing the political dimension of CNs, and the independence they offer from Internet-based platforms.

For this, we will work closely with other partners of the project, and involve them in the development of the ongoing participatory design process in Sarantaporo to build a common understanding of the corresponding requirements in terms of resources and expertise. We will also invite them to imagine themselves in the position of the initiator of a participatory design process, by answering the proposed questionnaires. This exercise will help us to identify which elements of our methodology are the ones that are more likely to be generic (i.e., they can be applied as they are in different situations),



and which are context-specific (i.e., they would need to be refined or even replaced by other more appropriate ones). Then based on the evaluation of this continuous adjustment, in terms of selected methodologies for the particular case study, we will provide guidelines on how this adaptation process can be better informed from past experiences.

More specifically, the final outcome of this task will take the form of a small set of possible choices for every one of the four basic elements identified in Chapter 5: 1) formulating an overall strategy, 2) framing a design process, 3) guidelines for events organization, and 4) tools for eliciting information and brainstorming. Although these choices are initially selected from the state of the art in different disciplines, they will be further refined based on the experience built within this project from applying them in practice. This experience will be then translated into guidelines on how one could use the proposed tools in different occasions, how to choose among competing options, and possibly how to adjust these choices along the way. It will have similarities with methodological guides that we took as inspiration, such as [IDEO Field Guide \(2015\)](#) and [Nucera et al. \(2016\)](#), but focused on the specific case study in the Sarantaporo area, i.e., an existing subsidized CN in a rural area where the main productive activity is agriculture and breeding. It will be also less normative since our knowledge from applying these methods will be based on a single “experiment”, but at the same time different initiating teams may further try it out in different situations, toward a better global understanding on designing applications for the community of inhabitants that could be served by the community network.



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A. Templates of questionnaires developed during the case study

In this Appendix, we attach the four main questionnaires used to elicit information from the different actors in our participatory design process (see Section 5.4. Templates 1 & 2 are addressed to all actors, Template 3 to people attending the various events, and Template 4 for the initiator team.

The analysis of the answers received until now from our first event, and those that will be received in the meanwhile, will be included in the next version of this deliverable.

A.1. Template 1: Establishing Common Grounds for Collaborative Productions of Habitat: the personal perspective

1. What exists now in the area of interest [Sarantaporo valley] in terms of: (please specify for each category)

- People
- Skills
- Knowledge
- Technology
- Artifacts and Tools *
- Everyday life (habits, socialization, activities, etc)

2. What would you desire, without thinking of any constraints, to bring new (in any of the above categories)?

3. From the perspective of your desired future, can you identify resources that already exist but need different types of management (e.g., sharing) in terms of:

- Artifacts and Tools
- Skills
- Knowledge
- Technology
- Tasks for People

4. What is possible to bring new from the expert side at this moment toward this direction?

5. What is needed for it to become reality from your side / from others' side in terms of:

- People
- Skills
- Knowledge
- Technology
- Artifacts and Tools

6. Which variables need to change or stay fixed? In more detail, please answer the following:

- 6.1. What should stay unchanged?
- 6.2. What should definitely change?
- 6.3. What is not acceptable to change?
- 6.4. What is in your view changing in relation with other variables?

7. Can you imagine possible reiterations toward the long-term objective?

- What?
- When?
- Who?

8. What is a next tangible step?

9. Please add at least one thought, impression or idea that is not covered by the questions above

A.2. Template 2: Establishing Common Grounds for Collaborative Productions of Habitat: the collective perspective

Triangulators, Facilitators and Catalysts

- 1. What common activities or other forms of collaboration already happen in your community [or area of interest]?**
- 2. What does facilitate / stimulate social exchanges or collaboration in your community [or area of interest]?**
- 3. Are there any physical elements (places or objects) that through their presence facilitate communication and exchanges?**
- 4. What hinders activities led in common?**
- 5. What would be for you an interesting collective project toward supporting current common activities or creating new ones?**
- 6. How would you start this new collective project and who/what should be included in the process?**



7. What resources (people, skills, knowledge, etc) would you try to gather for the project?
8. Would the provision of technology help this process? How according to your view?

A.3. Template 3: Evaluation of participatory design process for the outsiders project team?

1. What has been initiated in the area of interest (i.e., Sarantaporo)?
2. Can you describe in a few words the main objective of the deliberations in which you have just participated?
3. What was your role in the process and what type of expertise did you bring at the table?
4. What is your personal motivation for participating in this process?
5. Was there any useful, not already known, information provided from your perspective / from others' perspective?
6. Where there any misunderstandings and/or conflicts of interest?
7. What is in your opinion a possible path toward the overall objective given the discussions that took place?
8. What else would you like to bring into the discussion next time?
9. What resources (people, skills, knowledge, technology) would you try to gather for that?

A.4. Template 4: Gathering information for the design of a participatory design process for building local applications for CNs

1. Which are the members, and what expertise has the team that will initiate the participatory design process?
2. What is the available budget for the design and the application development process; how much time is necessary to reach a result?
3. Is there a suitable space where gatherings will be organized?
4. Have you identified the persons that will organize, facilitate, and document the different events, gatherings, workshops? Do they have previous experience in participatory design processes?



- 5. Is there a CN already deployed in the target area? How big is this area? Are non-members of the CN aware of its existence? Which percentage of the wider community has access to the CN through their homes and/or public spaces?**
- 6. Are there any existing local applications hosted in the CN? How many people use them daily/monthly/yearly, among the members of the CN and outsiders?**
- 7. How would you explain to a member of the target community the reasons why, rather than an Internet-based, a local application is desirable?**
- 8. Do you plan to implement a new application from scratch or there is an already available local application that you would like to modify/adjust according to the local needs?**
- 9. Have you ever been a participant in a brainstorming workshop or have experienced a participatory design or decision-making process? Can you identify a few key elements that helped/hindered the process?**
- 10. Can you describe a successful and/or a non-successful methodology that you have used to solve a concrete problem or to address a need?**



B. The eleven steps for transforming public spaces into vibrant community places

These eleven steps have been identified by the non profit organization Project for Public Spaces, through field observations and research, and reveal a simple methodology for participatory design processes, for transforming public spaces into vibrant community places¹.

1) ***The community is the expert***, which leads to identifying the talents and assets within the community. “In any community there are people who can provide an historical perspective, valuable insights into how the area functions, and an understanding of the critical issues and what is meaningful to people. Tapping this information at the beginning of the process will help to create a sense of community ownership in the project that can be of great benefit to both the project sponsor and the community.”

2) ***Create a place, not a design***, which means introducing some physical elements at the same time with managing the existing setting, such as “changes in the pedestrian circulation pattern, developing more effective relationships between the surrounding retail and the activities going on in the public spaces”, so as to “collectively add up to something more than the sum of its often simple parts. This is easy to say, but difficult to accomplish.”

3) ***Look for partners*** for brainstorming, developing scenarios, getting the project off the ground etc.

4) ***You can see a lot just by observing***, making possible assess what makes places work or not work, “what kinds of activities are missing and what might be incorporated; when the spaces are built, continuing to observe them will teach even more about how to evolve and manage them over time.”

5) ***Have a vision*** coming out of each individual community. However, “essential to a vision for any public space is an idea of what kinds of activities might be happening in the space, a view that the space should be comfortable and have a good image, and that it should be an important place where people want to be. It should instill a sense of pride in the people who live and work in the surrounding area.”

6) ***Start with the petunias: lighter, quicker, cheaper***; due to their complexity, the approach should be experimental and starting from what is feasible to have some visible results in a short period of time; “the best spaces experiment with short term improvements that can be tested and refined over many years! Elements such as seating, outdoor cafes, public art, striping of crosswalks and pedestrian havens, community gardens and murals are examples of improvements that can be accomplished in a short time.”

7) ***Triangulate***; As William H. Whyte stated, establishing relationships “Triangulation is the process by which some external stimulus provides a linkage between people and prompts strangers to talk to other strangers as if they knew each other”, which means that “the choice and arrangement of different elements in relation to each other can put the triangulation process in motion (or not). For example, if a bench, a wastebasket and a telephone are placed with no connection to each other, each may receive a very limited use, but when they are arranged together along with other amenities such as a coffee cart, they will naturally bring people together (or triangulate!). On a broader level, if a children’s reading room in a new library is located so that it is next to a children’s playground in a park and a

¹See Section 2.3; more details can be found online at <http://www.pps.org/reference/11steps/>.

food kiosk is added, more activity will occur than if these facilities were located separately.”

8) **They always say 'it can't be done'**; establishing relationships and networks, thinking across fragmented activities of departments and disciplines; “Creating good public spaces is inevitably about encountering obstacles, because no one in either the public or private sectors has the job or responsibility to “create places.” For example, professionals such as traffic engineers, transit operators, urban planners and architects all have narrow definitions of their job – facilitating traffic or making trains run on time or creating long term schemes for building cities or designing buildings. Their job, evident in most cities, is not to create “places.” Starting with small scale community-nurturing improvements can demonstrate the importance of “places” and help to overcome obstacles.”

9) **Form supports function**; a spatial concept is shaped based on the findings from the previous steps (The input from the community and potential partners, the understanding of how other spaces function, the experimentation, and overcoming the obstacles and naysayers provides the concept for the space.)

10) **Money is not the issue**, having a manyfold meaning, “For example, once you’ve put in the basic infrastructure of the public spaces, the elements that are added that will make it work (e.g., vendors, cafes, flowers and seating) will not be expensive. In addition, if the community and other partners are involved in programming and other activities, this can also reduce costs. More important is that by following these steps, people will have so much enthusiasm for the project that the cost is viewed much more broadly and consequently as not significant when compared with the benefits.”

11) **You are never finished**; “By nature good public spaces that respond to the needs, the opinions and the ongoing changes of the community require attention. Amenities wear out, needs change and other things happen in an urban environment. Being open to the need for change and having the management flexibility to enact that change is what builds great public spaces and great cities and towns.”







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