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MAZI

ICT - Information and Communication Technologies

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D3.4 DIY networking as a boundary object in interdisciplinary research: vocabulary and methodology (version 3)

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The MAZI Consortium

Consisting of:

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NETHOOD	NH	Switzerland
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INURA Zurich Institute	INURA	Switzerland
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UnMonastery	UM	United Kingdom

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1. History

Version	Author	Date	Status
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Executive summary

This document is the third and final version of the MAZI deliverable that develops a methodological argument exploring the potential role of DIY networking, in particular the MAZI toolkit, as a boundary object in interdisciplinary research. It documents some of the transformations and negotiations that took place at the level of the consortium at different occasions; it places them in the context of the tensions appeared and the ways out that have been accounted for in the MAZI interdisciplinary framework (D3.7); and reflects on how the predicted effects of various shifts of attitudes have been effective toward co-designing the MAZI toolkit. Co-designing the toolkit has concentrated the project activities as a 'boundary object' process, which may be discussed as transformative, integrative and transdisciplinary.

2. Table of Contents

1. Introduction

By assembling theoretical and practical conditions that facilitate the necessary interdisciplinary and transdisciplinary interactions around the design and deployment of the MAZI toolkit, the previous two versions of this deliverable (D3.2. and D3.3) have set the ground for the topic on DIY networking as a boundary object. This current document (D3.4) discusses the topic after thirty months of collaborative work in the MAZI project. As primary source of the accounts included in the following narrative are participant observations, focus groups, interviews or surveys in the consortium, and knowledge gathered through the different pilot studies and their understanding in comparison.

The three versions of MAZI deliverable on the boundary object (D3.2, D3.3, and D3.4) are an intermediate between a conceptual framework useful for interdisciplinary work, and the project's strong (self-)reflective dimension on the activities performed. More precisely, MAZI structured an interdisciplinary framework for collaborations that is documented in its three versions in deliverables D3.5, D3.6 and D3.7, and for that it made use also of (self-)reflections on the project activity that have been accounted for, so far, in deliverables D3.11 and D3.12. It is important to note that these documents are complementary and are meant to inform each other, thus in these later versions, some of the answers to surveys, speculative scenarios, and descriptions of MAZI toolkit are revisited in light of the project actions and outcomes.

Since these documents themselves play a key role in the self-reflection process, in a sense they are part of MAZI's 'boundary object', we have chosen to include in each of them material that originally was meant for the other, and vice versa. This allows us to keep alive the self-reflection and negotiation process over the full duration of the project. Simply said, this deliverable contains elements of the self-reflection exercises, while the last deliverable on self-reflection will also contain elements of the boundary object exercise, which is the documentation of a key project phase, when the toolkit is mature and robust enough to be suggested to communities outside the project's pilots.

Initial representations of the MAZI toolkit are considered the partners' definitions of DIY networking at the beginning of the project (D3.2), and its understood role recorded after a year of related work (D3.11 Section 3.6 & Appendix II). Then the toolkit development benefited of a combination of applied research in the local pilots, and of theoretical and critical interdisciplinary methodologies. Eventually the processes shifted to a transdisciplinary approach through adjustments over time of the partners' roles played in the project, leading sometimes to transformations of the disciplinary boundaries.

Thus the following sections document:

a) the transformative power of the space that a boundary object has created (Section 2);
b) the challenges faced by the consortium members while adjusting to the project requirements, which imply internal and external negotiations necessary to cope with project work, and the possibilities of expressing such transformations in a shared vocabulary useful for toolkit design (Section 3); and
c) the materialization in the MAZI toolkit co-design of the integrative power of a boundary object, and its transdisciplinary role in collaborative research and action (Section 4).

The concluding notes place MAZI activities within related research on the potential role of boundary objects for transdisciplinary research.

2. MAZI Transformative Spaces

The complex task of negotiation in the project has been tackled effectively in smaller groups, either in the local pilot teams, or in focus groups that have been organized more intensely during the last six months in the consortium plenary meetings. Working alternatively in groups with local teams and with project partners in plenary sessions was one of the manifestations of the back-and-forth process between the strong structure of the local pilots, and the weak structure of the generic toolkit, which is what describes a boundary object as process.

Before opening the discussion here on the co-design process of the MAZI toolkit, it is important to note that each pilot project had a different framing given by the project DoW, which included four different dimensions. Precisely, the first starting pilot in Berlin has been framed around information, and discourse; Deptford pilot around contact, information, discourse; the pilot in Zurich around knowledge; and the unMonastery pilot was proposed as a mix of these four dimensions namely contact, information, discourse and knowledge. In the following narrative the toolkit development processes are to be analysed in light of these framings that create a context for the different social worlds of the pilots.

Thus let us see how **the pilot framings** were initially defined in the proposal, which is important for the directions toward which co-design processes of the MAZI toolkit have been oriented. **Contact** was meant to designate the facilitation of information exchanges between strangers in physical proximity toward the generation of collective awareness at the local level over long or short periods of time. Examples given for such instantiation of the toolkit were a permanent MAZI installation in a public space or a short-term experiment in a train or festival, being a 'many-to-many' interaction that requires a critical mass of participants to be meaningful. The expected challenges of this framing regard the moderation of contents, as to give a voice to everyone and to avoid abuses. **Information** framing refers to sharing information of common interest in a 'one-to-many' fashion, and a typical example was considered the dissemination of information related to socio-political negotiation processes in the city, which can empower citizens to take part in these negotiations and mobilize them to take on authorship and initiate collective action. **Discourse** meant more elaborated public deliberations on topics of common interest and conflict resolutions, which of course, could be preceded by a 'contact' and/or 'information' phase. **Knowledge** was defined in the DoW as the construction of agreed upon perspectives and sustainable lifestyles, potentially shaping collective identity, and the possibility to share knowledge (e.g., relevant for strong communities, like cooperatives, which wish to further deepen as well as disseminate their success stories). (See the initial comparative table in the DoW in D3.6 p.14).

At the same time, there are four different **disciplinary perspectives** that the partners declared as a basis for work in the local environments of the pilots. In the Berlin pilot, UdK and Common Grounds are co-designing (infra-)structures rather than designing solutions. Participatory action research is the approach of OU and SPC team in the Deptford pilot. NetHood and INURA propose interdisciplinary structures for information sharing in the pilot in Zurich. The NU and unMonastery team suggested for the pilot in Greece, speculative design: participatory creation and dialogue.

Throughout the consortium, however, there was strong emphasis over the course of the project on allocating sufficient time for **shaping a community of interest around the MAZI toolkit**. Related to that, there was specific practical knowledge shared in the process, due the different pilots' phasing, and most likely due to the disciplinary expertise residing within each pilot team. First the Berlin pilot developed tools for face-to-face interaction and participatory practices, setting the scene for the other pilots regarding work practices in the local community; the pilot team in Deptford suggested technical capabilities of the toolkit, advocating for solutions that may be widely adopted by community groups; the pilot in Zurich stressed on the critical importance of designing the physical dimension of a MAZI zone, and of the 'space' for knowledge sharing; and the experiments in rural Greece gave examples of deploying the toolkit ad-hoc, as newcomers into an established community where the technology may play a strong role as triangulator between the pilot team and local interest groups.

Note that the MAZI toolkit was placed as a 'local' boundary object between the actors of every pilot, and working together implied negotiations toward commonly agreed outcomes, either on proposals for toolkit descriptions (see Section 4), or on developing the pilot process (refer to WP2 deliverables on the pilot processes). Pilot teams cooperation in MAZI is a part of the generic **communication and cooperation strategy** of the project (refer to Section 3 of D3.7 on interdisciplinary framework).

In complement to the pilot-related work in local teams, recently have been organized at the level of MAZI consortium, two extended sessions of focus groups and plenary project work, during the pilot workshop in Zurich

in May 2018, and at the consortium plenary meeting in Volos in July 2018. They were the outcome of negotiations among partners, based on the need to allocate more time during plenaries for collective work rather than reporting, which was frequently expressed either in the answers of self-reflection exercises or at cross-fertilization events.

2.1 Face-to-face interactions: MAZI cross-fertilization events

Since the beginning of the project, among the seven planned cross-fertilization events, three of them were organized with the occasion of the pilot workshops in Berlin in July 2016, in Deptford in June 2017, and in Zurich in May 2018. The following table presents their settings and outcomes as they have been documented after the events took place, through a proposed template form. Now after all three pilot workshops have come to completion, we may present these synthetic forms in a table, as a way to illustrate the MAZI process rather than for comparative purposes. In a similar manner, other MAZI cross-fertilization events are documented briefly in Appendix I, in addition to their extended description in related deliverables (D3.2, D3.3, D3.5, D3.6). The last MAZI cross-fertilization event will be organized in Edinburgh in October 2018.

Table 1. Three MAZI pilot workshops in brief

	Berlin (July 2016)	**Deptford (June 2017)**	**Zurich (May 2018)**
Pilot framing	information; discourse	contact; information; discourse	knowledge
Profile of outsiders (of MAZI consortium)	Community activists, Eco-activists, filmmakers, artists, urban researchers, designers that are engaged in critical urban practices in one or the other way	Community activists, artists, local residents, boaters, passers-by, MAZI community participants, community technologists and designers, local business people and non-profit organisations	Community activists, artists, local residents, MAZI community participants, INURA members in Switzerland and abroad, community technologists and designers, passers-by, local businesses and associations, invited guests from Switzerland and abroad who are active on topics related to collaborative housing and community technologies
Relationship with the outsider group	Members & friends of NAk, collaborators of UDK	MAZI community participants, SPC subscribers, Open Wireless Network (OWN) operators and local associates, members of the public attracted by promotional material	MAZI community participants, INURA, CoHab Athens, Co-Lab, ISOC-CH
Role of MAZI consortium in the event	a) Introduce DIY networking as a tool for urban activism b) discussion of issues relevant to both consortium and wider network, opening perspectives	a) Introduction of DIY networking as a tool for supporting network development, sharing resources and promoting sustainability b) Facilitating discussions around themes of social cohesion, conviviality, knowledge sharing and sustainable living c) Sharing of MAZI experiences across the pilot studies and consideration of how insights might be applied in the Deptford context d) Basic demonstration of MAZI toolkit portal	a) Introduction of DIY networking as a tool for supporting network development, sharing resources and promoting sustainability b) Facilitating discussions around themes of social cohesion, conviviality, knowledge sharing and sustainable living c) Sharing of MAZI experiences across the pilot studies and consideration of how insights might be applied in the local context

MAZI proposals	DIY networking as a means for fostering collaboration and exchange in-between actors of related fields, enriching discourse around the right to the city by introducing related issues in regards to technology, exploring possibilities provided by DIY tech for civic participation processes	DIY networking techniques, including community mapping and technology enhanced toolkits as a means to support network development, sharing resources and promoting sustainability in the face of rapidly changing local environment (urban development, changing population)	Importance of creating the appropriate "space" for knowledge sharing before introducing the technology as a facilitator. Strong focus on the physical dimension of a MAZI Zone. Strengthening the Co-hab Athens and INURA coop initiatives, establishing them as long-term processes that will eventually benefit of the MAZI toolkit, but are not defined around it
Community suggestions/ideas	Further develop modi of interaction for visitors/users of the archive (outside NAk actors), Work on usability (especially captive portal)	Preserving memory of local landscape through curating collections of photos, audio interviews and films hosted in MAZIzones along the Creek; sensing the Creek: environmental monitoring of conditions of the local environment; making the invisible visible by telling stories	Using the MAZI Zone as a means for creating links between urban gardens in Berlin and Zurich, and building a common identity for mutual support and resistance to cooptation. The importance of security and community identity (who is allowed access and who is not) through the example of eduroam as the biggest community network in the world with very clear boundaries
Challenges identified	Usability (see above), prototype can only be successful if cared for by the community partners and actors of their respective networks within the MAZI pilot	To initiate and then sustain contact and engagement with local people, their campaigns and communal activities; comprehension of terminology; ensuring onward sustainability of the system beyond the project's funded period; the need to create a social infrastructure that enables MAZI tools to be self-sustaining and not dependent on project team for onward support	Abundance of Internet connectivity in Zurich that makes less and less relevant the use of WiFi and familiarity with browser redirects, which makes even more critical the improvement of the captive portal functionality. Difficulty for the MAZI toolkit to be trully owned and appropriated by the community at Kraftwerk1
MAZI zones tried out	Custom build NAk/MAZI archive & recorder	Standard MAZI toolkit as community information exchange and internet gateway; individually customised toolkits for Deptford based contributors; Bluetooth beacon trail (12 nodes)	Kunstwerk1 hybrid exhibition, Workshop facilitation (note taking on local etherpad)
Overall feadback	The overall feedback to the event showed that the pilot team succeeded in gaining basic trust by the wider community. A sense of shared values was established and clear interest in the project by "outsiders" was stated.	Value of public sessions (hosted in public places allowing people to drop in and join in) was recognized and also the need for cross-fertilisation events to allow detailed exchanges between project peers; Value of range of session types, and to be able to visit different localities and best understand the pilot study context	The workshop was very much appreciated for the rich information provided about Zurich's cooperative housing model through guided visits and in-depth discussions with international experts on this field, while the focus on MAZI zones as a triangulators rather than on the toolkit's actual use, helped to release to a certain extent the increasing tension in

			the consortium regarding its adoption by local communities
Participatory practices	co-designing (infra-)structures	participatory action research	interdisciplinary structures for information sharing

As one may notice the overall feedback after the pilot workshops regarded engagement with the local groups toward shaping a community of digitally aware and DIY knowledgeable members, as the necessary background for any deployment of the MAZI toolkit. Internal negotiations in the Berlin pilot team revolve recurrently on creating a trusted basis for discussion with the highly politically aware activist groups in Berlin, who although focus mostly on issues related to the right ot the city, recently have been merging interest with digital activist groups, in opposing the location of Google quarters in Kreuzberg neighborhood, home of c-base and Prinzessinnengarten. In Deptford the challenge to create confidence within local community was tackled through two workshops with the MAZI partners, one preparatory in 2016 that invited London INURA members, and the main pilot workshop in 2017. They helped to place the struggle with serious Deptford gentrification in international context. Based also on the former MAZI pilot workshop in Berlin, the London team has developed tools for participatory practices as well, and noted the critical importance of local context. While Zurich team benefited of the experience of these two previous pilot workshops, built upon them and took on the challenge of knowledge transfer and networking of collective initiatives from below.

2.1.1 Pilot workshop in Zurich

The pilot workshop in Zurich is documented thoroughly in the pilot deliverable D2.9, and its template summary is included in the table above. In addition to the related activities to the Zurich pilot on knowledge transfer with respect to cooperative organization, a day of the meeting has been dedicated to MAZI focus groups. These groups worked on three topics namely

a) tensions and conflicts;
b) strategies and tactics; and
c) roles, guises and action fields.

At the end of the day, a plenary session provided debriefing on the specific topics, based on which their documentation was prepared in a synthetic form, and included in the deliverable on the interdisciplinary framework (D3.7 Section 3).

Figure 1: MAZI focus groups at L200 during the pilot workshop in Zurich, May 23, 2018

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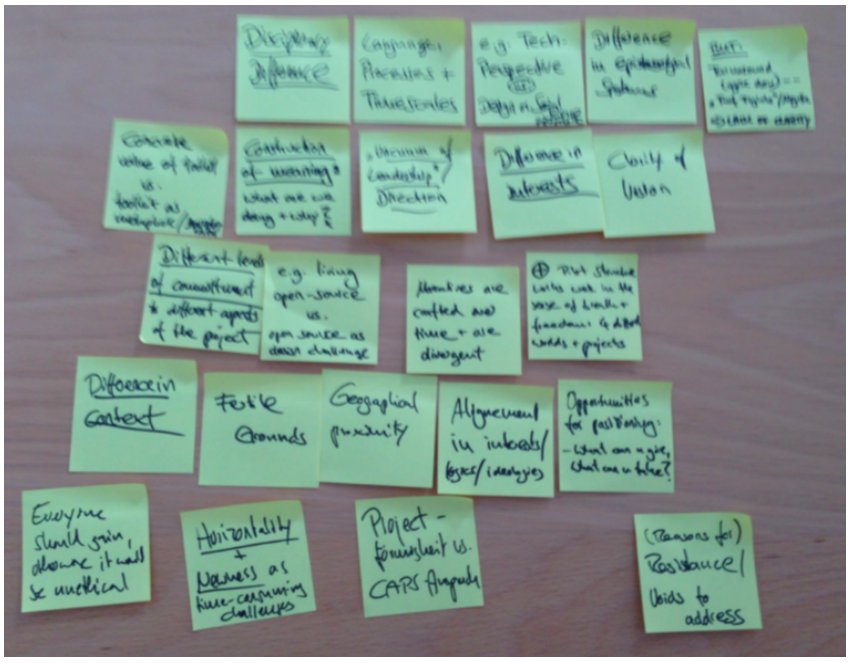

Figure 2: Collection of ideas, used at the beginning of the meeting to identify pending issues

In drawing an overview of the cross-fertilization event, the disciplinary perspective of the Zurich MAZI team has been taken to a wider context, to shape interdisciplinary structures for information sharing. Indeed the workshop activities have been revolving around the pilot's 'knowledge' framing, toward constructing agreed upon perspectives focusing on sustainability, advancing the common vision of the MAZI consortium, potentially shaping a collective 'identity' in the form of the MAZI toolkit, and the possibility to share relevant knowledge and disseminate success stories through networking and related initiatives.

Figure 3: MAZI partners within an international group of researchers on collective housing, at L200

2.1.2 MAZI public event in Volos

At the beginning of July 2018, a MAZI public event took place in Volos. During three intense working days, MAZI partners have worked in focus groups or in plenary toward advancing the toolkit co-design and toward finding solutions for sustainability after the end of the project. The main topics for discussion were

a) the structure and assigned roles for the MAZI e-book co-production (D4.5),
b) the pilots' evaluation, documented in the related deliverable (D3.10), and

c) interdisciplinarity, precisely regarding the necessary adjustments for cooperation toward the MAZI toolkit and the toolkit progress so far, which are documented in the following sections.

To illustrate how these workshops placed the co-design of the toolkit in the middle of the discussions, the visuals below depict two instances during the workshop on pilots' evaluation. First there have been a phase of eliciting information about three MAZI zones in each pilot, which the pilot teams have evaluated themselves. Then the team has been presenting to the plenary, and the OU team that initiated and coordinated the workshop, organized the input according to a set of criteria (Figure 4). Then the partners have been discussing, negotiating and interpreting this information (Figure 5). A more detailed account on this workshop will be included in D3.10.

Figure 4: MAZI workshop on pilots' evaluation through MAZI zones in Volos, July 4, 2018

Figure 5: Discussions around the elicited information on MAZI zones per pilot, Volos July 4, 2018

2.2 Online exchanges and interactions

A very important collective task is to develop various MAZI 'stories', documented online in various formats, which will become a part of the MAZI toolkit. This is ongoing work and will be documented in more detail in the last

version of the deliverable on self-reflection (D3.13), where information will be collected from email exchanges, from the MAZI demo server <http://demo.mazizone.eu> like the Wordpress blog or the Interview archive, and from the Github <https://github.com/mazi-project> for instance, reporting on information from Repositories, Github issues, and most importantly from the Guidelines wiki, which will add valuable information to the MAZI toolkit.

Until writing up this report, there is a number of MAZI zones documented through storytelling, as a set of pads with notes on Etherpad on the proposed template (see D3.3) <http://demo.mazizone.eu:9001/p/mazizone-stories>. These stories record

a) basics like the title, location, date, duration, and demographics;
b) some specifics like framing/objective, selected configuration or template and SSID; and
c) a few qualitative reflective notes on participation, failures, successes, outcomes, and also visual material, thus connecting to NextCloud folders <http://demo.mazizone.eu/nextcloud/index.php/s/XpQLQoqcHwwE385?path=%2FMaziZones> or to Wordpress blogs <http://demo.mazizone.eu/wordpress/index.php/blog/>.

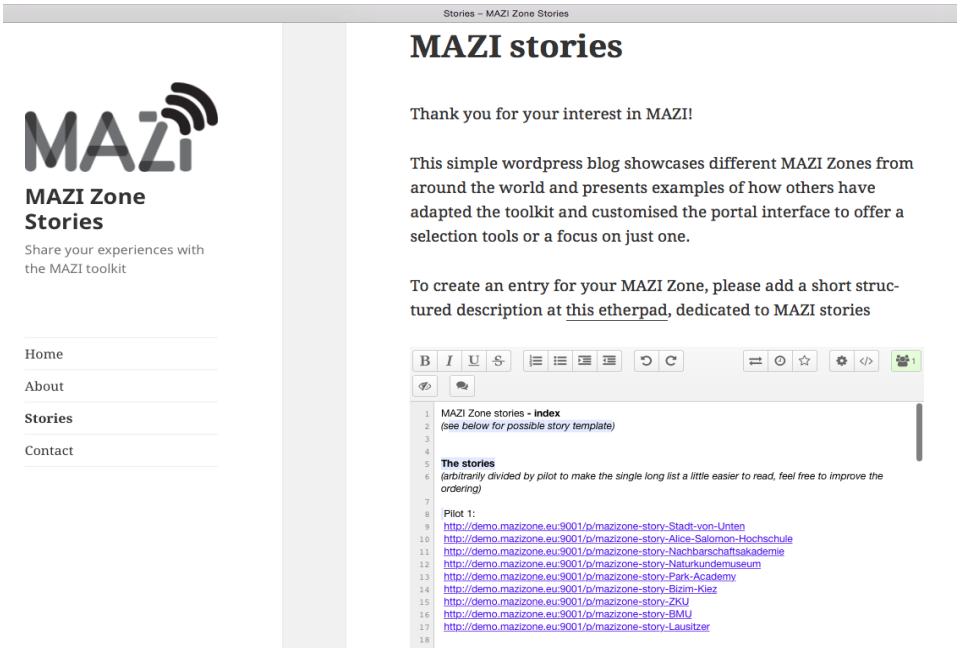

Figure 6: Stories of MAZI Zones on the wordpress blog on the demo server <http://demo.mazizone.eu/wordpress/index.php/blog/>

During the plenary workshops in Volos, there was a discussion initiated by UdK about the necessity to clarify in the stories whose perspective is represented that generated reactions fm other partners, arguing that these stories will shape a database in which all stories will be inevitably written on different voices. There were also reactions that more contributions from the partners will adapt the template proposed by NetHood and in the end it should not to be overly prescriptive but also suggest some ways of selecting and interpreting the information later on. Another recommendation was to add them to the map, so local communities could start monitoring and send out related data.

Thus on the proposed template some notes on the Etherpad document the basics of MAZI zones related to the Deptford pilot, which makes it easy to navigate the information. Currently there are seven permanent MAZI zones, i.e., 'Eileen Ford' initiated by Karen Barnes; 'Redstart Arts' by James Stevens and Cash Aspeak at the Brookmill Park; 'Hoy Cafe' and Steps' by Claire and James; 'Mayday Rooms Catalogue' by Rosemary Greenan, 'Stowage Films' by Gordon Cooper; 'Terry' by Terry Edwards and James at the Crossfields Estate; and the 'Undercurrents Gallery' at Birds' Nest Pub by James Stevens and Kevin Seven. Some of these MAZI zones are nomadic, and there is a mobile deployment initiated by with a local artist, Barbar Luck, and Paul Clayton, to create a platform to take on his travels that would allow audiences the opportunity to leave messages, upload

images and recordings of performances as well as make selections of his recorded music available to promote current products and advertise forthcoming gigs.

Additionally, there was a one-time deployment during the summer season (i.e., solar-roller), as part of the outreach and educational program of SELCE (South East London Community Energy). This energy coop built a mobile Solar Roller trailer to make a set of solar panels available at park events and festivals, which contains six panels which generate up to 1kwh of clean energy that is stored in an array of batteries to power sound systems and smartphone charging station. Another one-time event deployed four MAZIzones at Central St. Martins' School of Art in May-June 2018, when first year undergraduate students on the 3D courses were given an introductory session to MAZI by James Stevens and then four groups were set up, and each first explored the use of a MAZIzone in the main corridor of the art college.

Recordings of the MAZI zones by means of storytelling are very valuable also for their evaluation overtime, through thick descriptions that are capable to contextualize the story (e.g., the UdK suggestion during the workshop in Volos), and so far that has been achieved in some cases through Wordpress blogs on MAZI zones related to the Zurich pilot, sharing visual material stored in NextCloud folders (see http://demo.mazizone.eu/wordpress/index.php/blog).

In Zurich there are currently four permanent deployments (i.e., Kunstwerk1 and Kunstwerk2 at Kraftwerk1 housing cooperative, Zurich Wunderkammer, and the Zurich-hybrid-space at L200). Within the pilot there were three one-time deployments (i.e., Luzern hybrid poster; Volos summer school; Zurich action), and a repetitive nomadic MAZI zone at the INURA conferences (i.e., Sibiel 2016, Havana 2017, Warsaw 2018).

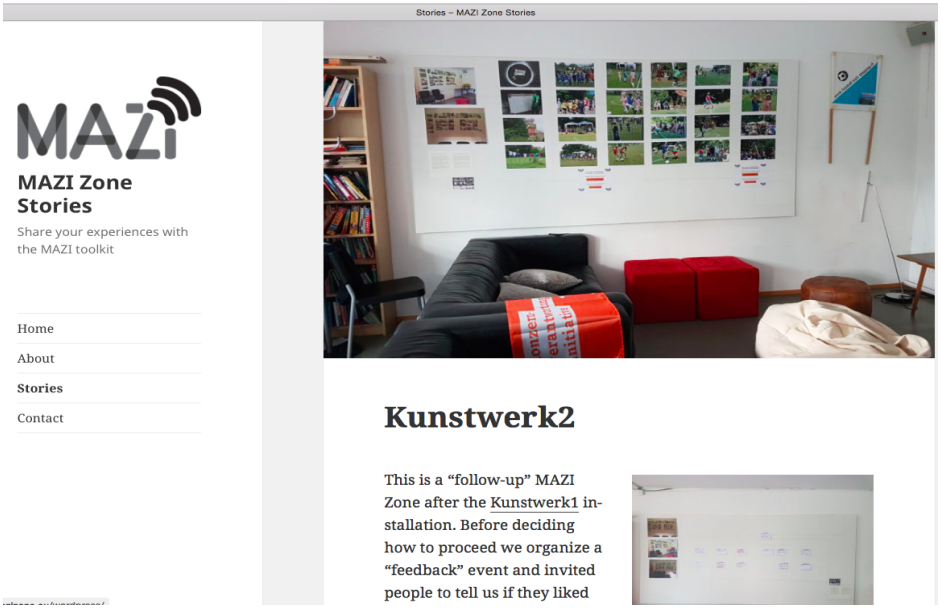

Figure 7: stories on the wordpress blog of MAZI Zones in Zurich, July 2018

3. Shaping a MAZI relational space

In the context of co-designing DIY networking, the conditions that have produced a relational space --as dynamic setting enabling transdisciplinary cooperations in MAZI-- were generated through scheduled opportunities to interact and exchange information, to have hands-on experiences and share specific knowledge. These 'tools' were noted in the sections above and in previous versions of this deliverable (D3.2 and D3.3). The tools and structures developed for collective work on the MAZI toolkit design generates a network of boundary infrastructures (D3.3).

The transformative capabilities of this space have been strengthened while dealing with inherent tensions within the local pilot projects and within the consortium, by adopting appropriate strategies and tactics toward finding ways out. For reference, they are recorded in the deliverables on interdisciplinary framework (D3.6 and D3.7). The narrative below revisits the spectrum of attitudes during collective work, which have been devised as catalysts for action in the deliverable on self-reflection (D3.12), in particular in Section 2.3.1, and in the second version of this deliverable (D3.3 Section 2.3) that records some of their effects toward shaping a MAZI relational space.

In addition, the content of this section builds on the MAZI recent survey about partners' roles played in the project (June-July 2018), which is documented in the deliverable on interdisciplinary framework (D3.7 Section 3.3), and in the Appendix II of this document. The members of the consortium have answered from their personal perspective, a) expected roles in the project, b) actually played roles or guises, and c) some of the challenges brought up by the necessary adjustments to the actions in MAZI.

3.1 MAZI partners engaged in interdisciplinary action

It has been noted already that co-designing the MAZI toolkit functions as a boundary object, which is materializing through multiple actions in the back-and-forth process between the local (pilots) and the generic (consortium) tasks during the project. Besides the planned moments that facilitated and catalyzed these actions, along the way there were diverse reactions to the planned tasks, according to differentiated ways of dealing with the task at hand and attitudes in functioning within the personal and institutional frames, or breaking through them.

Regarding the latter, one MAZI researcher's answer to the questionnaire reads that rather than the anticipated roles to "accompanying/guiding [... and] mediating between a group of researchers", more suitable to the project interdisciplinary actions were the "[d]evelopment of **reflexivity and flexibility** with regards to one's own role(s), **constant renegotiation** of pilot goals, justification of these changes to partners, home institutions and the EC (deliverables)" (Appendix II).

Based on research in the **real-life laboratory** like in applied urban studies, the project proposal suggested Donald Schön's reflection-in-action (1983) as appropriate stance, capable to change the mindset from the research - action dichotomy. The above statement shows that this attitude in practice has produced results in a complex system, in which **relational accountability** was shared at different scales and to different degrees, from personal responsibility, to accountability at the level of

a) local pilot team,
b) project consortium,
c) local 'home' institutions and
d) funding institution.

At the same time, moving the design lab from the office into the real world requires to build an understanding of how one may act in the real-life laboratory, collaborating with diverse groups during a short period of time that is actually a cross-cut intervention in the urban or rural ongoing processes.

There have been, nevertheless, various attitudes toward achieving cooperative action in MAZI. In a highly experimental pilot study, the team of researchers chose to 'step back' and observe what the community actors' team are trying out in two different chosen settings in rural Greece. As one statement reads, "The main adjustment was having to **step back to some extent from direct engagement** in the pilot study research process. This entailed changing focus to observing and aiming to understand the ways that the pilot study partners worked in their pilot study settings" (Appendix II). That shows that depending on the contextual conditions, fruitful may be also a 'stepping back' attitude, or 'laisser faire' (refer to D3.12 Section 2.3.1), which could stimulate creative initiatives and turn more efficient the collaboration in the pilot team. By and large, **empowering initiatives**

coming from the pilot teams to contribute to the overall conceptualization of the MAZI toolkit become an important aspect of the project structure, as a necessary condition for co-designing the common toolkit.

Throughout the duration of MAZI has been emphasised the critical importance of **providing contextualized 'requirements' for technology design**. There is agreement among the partners that finding out about community needs, providing technical explanations, and allowing interested individuals and local groups to engage in the initial phases of design (i.e., 'offering' of technology) are basic conditions to function in the real-life laboratory. These activities are **time intensive**, nonetheless, and in general **participatory practices unfold over longer periods of time**; of course time is one of the key constraints of such project that was noted often in the consortium surveys (e.g., D3.7 Section 3).

Complementary to hard intensive work is **empowerment and strengthening the engagement within local community**. Along these lines, note Elizabeth's statement with respect to playing the role as community actor engaged in the Berlin pilot: "One change overall is that MAZI has strengthened my voice as a civil society actor." Similarly Panayotis' enthusiastic comment on the necessary adjustments, "engagement with local communities was at the same time more needed than expected, since the appropriation of the MAZI toolkit proved a very challenging task, but also more inspiring and engaging, wouldn't exaggerate to say a life changing experience for an academic researcher. This gradual change of focus from research to action is still ongoing and is today materialized with my strong engagement with the operation and curation of NetHood's new "hybrid space" in the center of Zurich, L200."

Coming full circle, as critical conditions for innovation in applied research, the **flexibility in action** and **turning leadership into partnership** have been stimulating the social imagination as discursive design. Thus recently during the Zurich and Volos workshops, within the transformative relational space shaped together, MAZI partners have been elaborating on what could be done to accomplish the project goals, by **developing the project according to shared understandings** within the project framework, and by creating plenary explanatory sessions across-disciplines to co-design the MAZI toolkit and prepare a project's exit strategy.

3.2 MAZI glossary

To address MAZI consortium's complexity and to facilitate interdisciplinary collaborations, the partners have shared during the course of the project meaningful insights related to specific problems and related methodologies (D3.5, D3.6, D3.8, D3.9, D3.11, D3.12), and also have created a MAZI glossary. The formation of the glossary terms, which are the result of aggregated definitions, is documented over time in various deliverables (i.e., D3.2, D3.6, D3.7, D3.11, D3.12; e.g., in a brief version in D3.7 Appendix I: Beginnings of MAZI glossary).

On the guidelines wiki (<https://github.com/mazi-project/guides/wiki>), a MAZI tool that was presented in the previous version of this deliverable (D3.3. in Section 3.1 on Github repositories), among other material of the MAZI toolkit guidelines, there is also an entry for the MAZI glossary that includes terms like:

- ***MAZI Toolkit***: The MAZI Toolkit is a DIY toolkit for building wireless community networks, made up of three elements,
    - Low cost hardware,
    - Software and applications and
    - Guidelines and knowledge
- ***MAZI Zone***: The physical and the virtual space around a deployed MAZI node.
- ***MAZI Portal***: The MAZI Portal is the software interface of the MAZI toolkit and comprises of the User page and the Administration Panel. Through the User Page the user of the MAZI Zone is able to access the available applications, as well as useful statistics. Through the Administration Panel (demo.mazizone.eu:4567/admin) the admin of the MAZI Zone is able to make all the configurations of the MAZI node.
- ***MAZI Backend***: The back-end scripts between the Portal and the hardware. A lower level interface intended for developers.
- ***USB Wi-Fi Antenna***: An extra hardware that can be plugged in the Raspberry in order to connect the Raspberry to the Internet and (optionally) offer Internet to users; (doesn't have to look like an antenna, but can be on-board)...

...and it proposes future explanatory entries on the MAZI toolkit image; Offline mode; Online mode; Managed mode; Online demo version; etc.

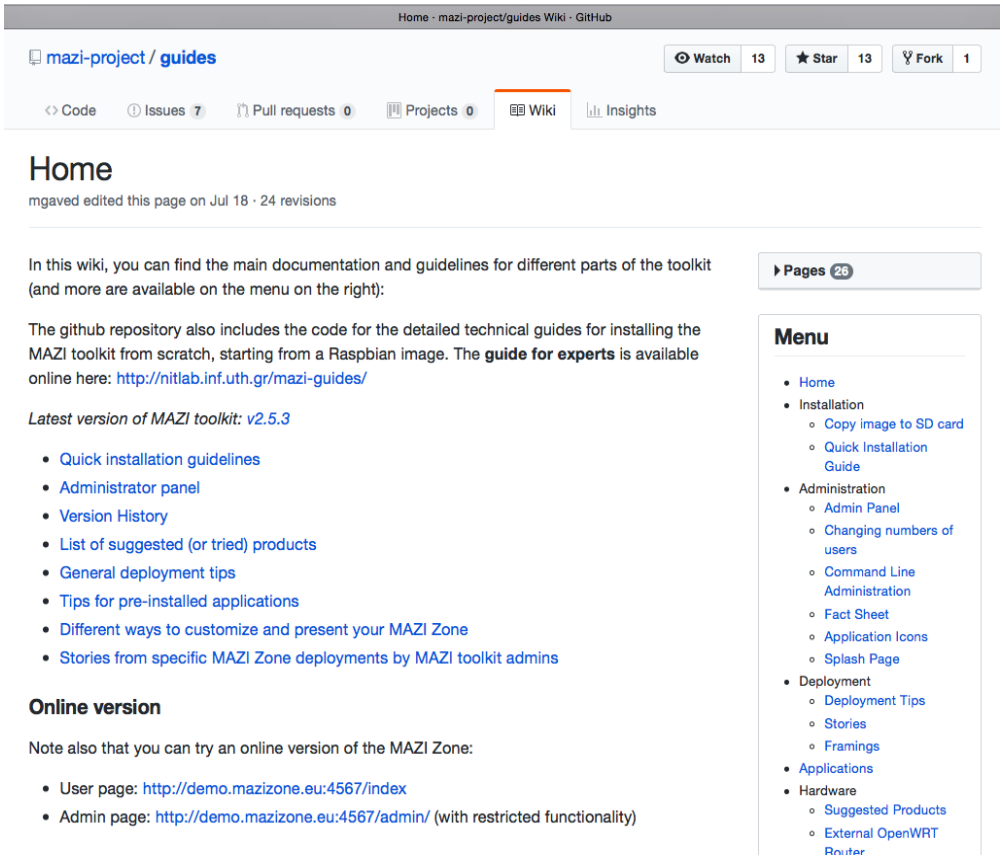

Figure 8: MAZI guidelines wiki on Github, July 2018

Currently glossary terms are being translated together with the wording used in the toolkit interface and administrative panel <https://translatewiki.net/wiki/Translating:MAZI_Toolkit>. The glossary will help in the production of the MAZI e-book (D4.5 A MAZI guide for community champions), process upon which will be reflected in the final version of the deliverable on self-reflection (D3.13). As a synthesis of the work toward developing a shared vocabulary in MAZI until now, the next section develops an attempt to a comprehensive account of the term DIY networking, which comprises also an overview of the process of the MAZI toolkit co-design.

4. DIY Networking and the MAZI toolkit

4.1 Overview: toward a definition

Throughout the project, a constant endeavor has been defining DIY networking technology, finding out and explaining to project outsiders, by means of draft versions of the MAZI toolkit, its concrete and potential role played in the ongoing processes in which the project pilots have been set. That has been a great challenge and opportunity at the same time.

Panayotis Antoniadis initially promoted the term "DIY networking", first in the interdisciplinary Dagstuhl seminar "Do It Yourself networking: an interdisciplinary approach" (Antoniadis et al. 2014), to designate "different types of grassroots networking, such as mesh networks" (Antoniadis 2016). Employing DIY networking during face-to-face interactions has been seen as complementary to internet based ICTs, and among the consortium members, there has been agreement on its role as triangulator, facilitator and catalyst for social exchanges (documented through numerous self-reflection exercises). In addition, DIY networking has the potential to raise citizens' awareness regarding the use of digital technology, and may also bridge the digital gap through affordable technology that is able to improve their digital literacy and skills.

When MAZI consortium took on the task at the beginning of the project, to define what the DIY networking technology means (2016 survey), some categories came out of the answers (D3.6 Section 2.1), related to a) technology, b) exchange of information, c) experimentation, d) self-production, and e) community organization. In the following narrative these categories are used to expand the definition, in light of the project work.

DIY networking focuses on building a network with affordable, easy-to-find hardware components, easily assembled and installed, including small-sized computers, antennas, network modules etc, by applying appropriable, open, or experimental, custom methodologies, which are beyond the pre-designed solutions that commercial providers present to customers, or as one partner called it, 'by productive "misuse" (customization) of off- the-shelf hardware'. DIY networks are resilient and could function in remote regions, or where a central power source is not available. Thus indeed from this **technology-centered perspective**, the MAZI toolkit has been designed for low-cost raspberry pi that could be battery-powered, using open source software applications, and so forth.

The communication and **exchange of data/information** enabled by DIY networking was perceived as independent, including from the Internet dominant corporations, some sort of 'the common provision of telecommunication tools,' and also being able to transfer rapidly large amounts of data. The MAZI zones have experimented with both situations, connected or not to the Internet, and notably in areas where Internet connection is not available like during the 2017 INURA conference in Cuba. Referring to this example, another way of defining DIY networking regards a particular take on using technology, depending on the specifics of situations. Such tailored solutions for interactions enabled by digital technology move away from the current communication processes that successful commercial platforms design. That stresses the **experimental dimension of technology**, which allows for social innovation and is capable to addressing locally identified needs, keeping in mind though that its adoption depends on the local groups' expertize, curiosity and interest in experimental formats.

From this perspective, there was also a way of defining DIY networking as **empowering "self"-production of toolkits and networks**. That implies some initiative toward understanding how these systems work, to self provide, to install and configure them, having high potential to adapt to the specific needs. Along these lines, a comment to the 2016 survey on DIY networking states, "At the core of the DIY philosophy are the development of skills and knowledge within the community. By taking ownership and responsibility for the creation, configuration and deployment of the network, the aspiration is that this will stimulate participation within the community and better place the participants to take advantage of the other factors" (documented in D3.2 Section 4.2).

In all four MAZI pilots the publics, in other words the individuals and community groups with whom the partners engaged, have become more knowledgeable about the capabilities and uses of DIY digital technology, and its political and social implications. More importantly, with the exception of the Deptford pilot in which James is a pioneer of DIY and community networks, all the MAZI partners who have played the role of community actors have trained in becoming users, administrators and co-designers of a MAZI zone (e.g., refer to the MAZI zones stories in section 2.2).

Community organization is a broad category that helps defining DIY networking and implicitly the MAZI toolkit. On the one hand, rather than treating it as a particular type of technology, DIY designates a methodological

context and a certain take on technology, by ensuring that social needs are at the center of the research agenda. Based on practical experiments in the real-life laboratory, such experiments with digital technology could act as catalysts for critical reflection on the broader community goals, purposes, and ambitions of the participants in the process. On the other hand, these processes could stimulate a sense of ownership and independence from the profit-making commercial companies, with high potential to strengthen the community links where some level of community ties already exist. Regarding the needs, there have been reflections in the consortium that "needs can be produced or induced by the existence of possibilities," and that such initiatives inherently inspire confidence in other areas of life.

Nevertheless, unintended consequences should be taken into account such as those related to **power relations** that could reinforce current power structures, or marginalize already vulnerable groups, or consuming critical resources etc. But under good circumstances, and by managing expectations, DIY networking could play a catalyst role on a spectrum ranging from communication and information sharing to empowerment and capacity building.

Certainly in the MAZI zones deployed so far, DIY networking has been

- building awareness, and even
- supporting educational activities (e.g., Berlin, Deptford);
- improving communication between strangers and intergenerational connections in proximity during ad-hoc installations (e.g., Platanos in Tsepelovo) or temporary events (e.g., Sofa Universitaet exhibition in KW1);
- creating a hybrid space for gatherings, discussions and exchange of information; and e) linking different existing initiatives (e.g., Zurich L200).

Local communities may become collective actors in the marketplace, by creating complementary, rather than competing, models to the corporate provision of networking infrastructure, by addressing first the needs identified by local community groups.

Concerning the **particular settings** were the MAZI zones are deployed, project partners anticipated some effects of DIY networking on the places themselves, on the participatory processes in which they intervene, and potentially in the existing power relations. They are succinctly presented in the following table.

Table 2. Impact of DIY networking technology

	DIY networking potential effects	**Examples of impact of MAZI zones**
Places	digital layer, memory, sustainability through community impact	gathering data about, sharing conversations around a physical space, 'encoding' of the different phases and threads of the process (e.g., NAk Berlin, Bird's Nest Deptford, Zurich KW1's Pantoffelbar, L200)
	promoting their identity, increasing their visibility and extroversion	(e.g., Deptford , Zurich L200, Prinzessinnengarten)
	mediate the spatial experience	Nomadic, mobile MAZI zones (e.g., Barbar Luck, INURA)
Participatory processes	triangulation, inclusiveness and enhanced citizen participation	improving the collective awareness, and exposure to ideas that stimulates innovation (all pilots); a MAZI aspiration: "the development of the MAZI toolkit in a way to include different points of view and to allow them to be expressed and become part of the collective identity."
	stimulating the conviviality of places	as alternative / complementary provision of networking infrastructure (no substitute for face to face communication), conceived and implemented hybrid and non-addictive etc

Power relations	individuals or groups may be empowered or have greater influence over decisions over local configurations of networking technologies; risk: small number of local gatekeepers	clarity and simplicity of the setup, building on the existing skills and creating a social learning environment; the more user-friendly the task of deploying and administering a MAZI Zone becomes the more actors are empowered to play this role; MAZI toolkit developers and MAZI Zone administrators have significant power over the design of the resulting hybrid spaces; it is critical to engage in participatory practices, offering the option for debates, deliberations, and meaningful democratic processes including face-to-face meetings, assemblies, etc...

As a synthesis of the information presented in the table above, there are broad implications of the MAZI zones instantiations. They range from transformations of places by making tangible their digital overlay, to potential political effects, which some of them have been already evident through deployments of the MAZI toolkit. Participatory practices facilitated through DIY networking technology may become more inclusive, citizens more empowered and by and large, such cooperative activities could set ongoing social learning processes.

4.2 MAZI toolkit design through work in pilots

As noted before, the MAZI toolkit design is the result of a dynamic process, shifting back-and-forth between specific, local, strongly structured forms of the pilots' versions to the generic, weakly structured forms of the project-wide version of the toolkit. During this process, an incipient toolkit proposed by MAZI partners was tried out, adjusted and further developed by the different pilot groups, adapting to the requirements of the local context toward developing concrete local solutions and corresponding instantiations of the toolkit. These instantiations are called MAZI zones. For illustration purposes, in the figure below is the first MAZI zone deployed at the Kraftwerk1 Pantoffelbar in Zurich, which shows in addition to its digital dimension (i.e. Raspberry pi, projector, and also Hybrid Letterbox), physical and spatial characteristics including necessary human presence and curation.

Figure 9. Kunstwerk1 MAZI zone in Zurich, December 2017

The project structure enabled MAZI consortium to try different approaches in parallel and learn from each other, once the partners became more familiar with every local context and disciplinary perspective of the pilots. Each of the four pilots shaped particular social worlds. These differences came from the specificities of the local context, as well as from the structure of the pilot team, which includes academic partners with a unique disciplinary and methodological perspective on the concept of participation, as explained in Section 2 above, cooperating with partners actively engaged with the local community, who have in turn their own take on participatory practices and how the technology may be introduced in the ongoing community action. Below is a brief overview of how work within the pilot teams has developed the narrative on the MAZI toolkit.

Since the beginning (see First reports on pilots, D3.5 Section 3.6) there has been agreement within more than one pilot team, on taking an 'open' approach to the toolkit, by using **FLOSS software and potentially recycling** existing software. Also since then partners emphasised the need **to develop toolkit interfaces that enable deployment, configuration, and maintenance by non-technical experts** (e.g., Deptford pilot), and a tool that will capture information and bring it back to its locality, based on ecological principles (e.g. Berlin pilot). In addition, the pilot in Zurich focused on **a triangulator that can mediate conversations between strangers**, in the form of a customized version of the Hybrid letterbox, which was seen as an easy way to open up the discussion on the capabilities of DIY networking and on digitally enabled face-to-face interactions.

After a year of project work (see Reflections on the MAZI toolkit by pilots in D3.11 Appendix III), the partners were in agreement on the critical work **to develop tools for stimulating and maintaining a local group to sustain a MAZI zone**. For instance, unMonastery noted that innovation will not emerge in the technological part of the toolkit but rather in developing tools for conviviality, scenarios and thought experiments for a blueprint for a slow development of a culture around each MAZI zone. The Zurich pilot suggested **guidelines for the physical presentation of a MAZI zone**, and the Berlin pilot strengthened the importance of **a 'point of entry' in enticing interest** for several target groups, and mostly for tech-novices, which may be a recipe, a physical artifact etc. The Deptford pilot team has been always resourceful in suggesting **technical solutions that are sustainable, inclusive and can bridge digital divides**.

At the end of the second year (see D3.12 Section 2.2 - Scenarios of the MAZI pilots), it became obvious that the MAZI toolkit is a process --a boundary object that derives its materiality through action-- in which the work in each pilot has benefited of cross-fertilization with the other studies in the project.

4.3 The role of DIY networking in interdisciplinary research and action

The role of DIY networking as a boundary object among the diverse and multidisciplinary consortium was first exposed through the Sarantaporo Symposium in January 2016, following the project kick-off in Volos (noted by NetHood in D3.2 Section 3.2, and by UdK in D3.11 Appendix III). To transgress, however, the initial settings toward cooperation on the MAZI toolkit design, a relational transformative space has been structured over time (Section 2, and also D3.11 Section 2.2), as a relatively familiar background where adjustments could take place, even such as crossing personal frames and blurring disciplinary boundaries (see also D3.12 Section 2.3.1).

Also at the beginning of the project, a survey of MAZI partners on the knowledge potentially deepened by the MAZI interdisciplinary conversations and experiments brought into the discussion four sets of issues. They are ranging from long-term perspectives on the topic, to contextualization, to building up technical skills, and to contributing to literature research. Note that these were individual answers, each representing the aspirations of one partner.

In the following table these four sets are revisited after two years of work in the project, looking at the concrete project outcomes. As it can be followed in the right column of the table, the envisaged benefits of interdisciplinary cooperation toward co-designing the MAZI toolkit have been reached at all levels. From the entries in the middle column, on the anticipated benefits, it is obvious that the enthusiasm and openness of the project at the beginning turned partners very optimistic about the possibilities to cooperate during the three years of MAZI. Nevertheless, for that an intense interactive process is still underway, marked by inherent tensions and conflicts, as seen in the previous discussion on adjustments and negotiations that have been necessary for shaping this collaborative space.

Table 3. Outcomes of MAZI interdisciplinary research and action

Sets of issues	Anticipated benefits of interdisciplinary cooperation	Outcomes of MAZI cooperation

Long-term perspectives on DIY networking	Adaptability	Various instantiations of the MAZI toolkit in four different pilots and a myriad of instantiations, stable or mobile during tours (INURA), short-term or permanent, as well as the highly customizable administrative panel of the MAZI toolkit.
	Physical design of a DIY deployment, in ways to build appealing, engaging DIY networks for citizens, which will not only be attractive to them but they will also manage to keep users connected to them	MAZI zones have been implemented from open spaces like the Deptford Creek, the village square in Tsepelovo, urban gardens in Prizessinnengarten in Berlin and Wunderkammer in Zurich, to indoor spaces like Bird's Nest in Deptford, KW1 Pantoffelbar and L200 in Zurich, the school in Kokkinopilos, the Natural Science Museum or university courses (TU) in Berlin
	How to improve organisational aspects of networks and other entities like cooperatives	The pilot workshop in Zurich focused on organizational aspects of collective projects like urban gardens, housing and living cooperatives, digital (community) networks, and digital technology cooperatives
Contextualization	A better understanding of what constitutes the 'local' and the role that it plays in the lived experience	Three pilot workshops in Berlin, Deptford and Zurich (Section 2)
	Contextual issues, research methodologies, evaluation techniques, goal setting etc	Documents in the WP2 (12) and WP3 (12)
	The contextualization of our common topic in the different areas of expertise and interest	All currently running MAZI zones
Building up technical skills	Technical characteristics and applications, the motivations behind certain design choices, design reasoning and process thinking	the MAZI toolkit is an example of feasible choices at the level of a three years action research project, which came out of real needs experimented in the local pilots; process thinking is described in the deliverables on self-reflection (D3.11, D3.12) and on the boundary object (D3.2, D3.3, D3.4)
	Technological understanding and ability to create	It is a long-term process that requires constant engagement with the technology, yet this project is an ice-breaker
	Building applications (coding)	It is an aspiration beyond the topic of this project
Literature research	Different theoretical perspectives enabling analysis and evaluation of DIY networking initiatives; broader understanding of the academic literature around the field	The WP3 deliverables include multidisciplinary perspectives and share theoretical insights, established and experimental methodologies, (self-)reflections on hands-on activities, on potential sustainable solutions for future deployments of the MAZI toolkit
	The smart-city discourse and its alternative narratives	DIY, self-management, grassroots initiatives, participatory practices, engaged citizens

The D3.7 deliverable on MAZI interdisciplinary framework accounts for the inherent tensions and conflicts that appeared during the project, and which may be useful for other projects that engage in both research and action. For instance, the tension between disciplinary openness versus confining to the comfort zone may be generated by the adoption of very different (field-related) methodologies in dealing with the task at hand. In addition or in

complement to that, diverse rhythms and temporalities could create divergent social worlds, which may become even deeper through attitudes in action like avoiding uncertainty rather than approaching it with curiosity.

Despite some initial expressions of interest to cross interdisciplinary boundaries, one of the main tensions within the consortium was generated by the dichotomy: technological perspective versus social sciences practices. All in all, however, the partners have made significant progress in reducing the distance between these two fields, and a result of it is the successful deployment of MAZI zones by community activists who have not been technology-savvy before the project kick-off.

At the same time, with respect to research in action, one answer in the recent survey on the MAZI partners roles and necessary negotiations (July 2018) reads, “I have had the opportunity to work with a lot of interesting experts from different fields so have had to work to understand their different disciplines and perspectives. For example: reading theoretical perspectives I'd not previously come across; seeking to understand what is important or challenging from their perspective, trying to view the work from their perspective, and to understand the methods they use which might not initially seem valid from my prior perspective” (see Appendix II).

This statement explains to a certain extent the requirements for flexibility and active listening toward building shared understandings in interdisciplinary collaborations. Furthermore, in order to be active in the co-design process, creative conflict management is necessary and in MAZI the way out was by organizing focus groups and plenary meetings during the 2018 cross-fertilization events, when the space was cleared through consent techniques. Some useful recommendations for transgressing interdisciplinary boundaries toward transdisciplinary cooperation have been listed as ways to deal with the identified tensions in the MAZI interdisciplinary framework (D3.7 Section 3).

5. Concluding notes

Given the rich material included in the three versions of this document, coming to a synthetic conclusion is not an easy task. Therefore we propose instead some guidelines for structuring a reasoning process, which stem from the MAZI experience of placing DIY networking / MAZI toolkit as a boundary object in interdisciplinary cooperation.

It is critical that the MAZI toolkit has been materializing through inter- and transdisciplinary interactions over the three years of work in the project. For that to become reality, similarly to working in local pilots, an essential element is shaping a familiar ground for cooperation, a relational space based on planned moments and actions, which at the same time allows for dynamic transformations related to contextual requirements.

Throughout this process, a necessary condition is to allow room for (self-)reflections on the performed activities, challenges, tensions, conflicts and reactions from outside the project as well. That offers opportunities for 'common group' learning, on the pilot scale as well as on the consortium or larger groups like at INURA or CAPS conferences.

Last but not least is the content itself that, in order to be truly the result of cooperation, requires its own shared vocabulary, tools and methodologies, which are devised as outcomes of extended negotiations, deliberations and engaging collective activities. The phase of integration is the core part of a transdisciplinary project, and most challenging (Hadorn et al 2008) nevertheless, and we will reflect on it in the last deliverable of this series (D3.13). So far in MAZI, co-designing the toolkit has concentrated both research and action, as transdisciplinary 'boundary object' process, which has been to a certain degree transformative and integrative as shown in this document.

6. References

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MAZI Deliverables:

D3.2: DIY networking as a boundary object in interdisciplinary research (V1)

D3.3: DIY networking as a boundary object in interdisciplinary research (V2)

D3.5: An interdisciplinary framework for comparisons and cross-fertilisation strategies on MAZI pilots (V1)

D3.6: An interdisciplinary framework for comparisons and cross-fertilisation strategies on MAZI pilots (V2)

D3.7: An interdisciplinary framework for comparisons and cross-fertilisation strategies on MAZI pilots (V3)

D3.11: MAZI as an experiment in interdisciplinarity: the outcome of a self-reflection exercise (V1)

D3.12: MAZI as an experiment in interdisciplinarity: the outcome of a self-reflection exercise (V2)

7. APPENDIX I – Thee MAZI cross-fertilisation events in brief

	Sarantaporo Symposium after the MAZI Kick-off in Volos (January 2016)	INURA Conference, Bucharest and Sibiel (September 2016)	2nd CAPS Community Workshop, Volos (July 2017)
Profile of outsiders (of the MAZI consortium)	The team of Sarantaporo.gr, researchers and other public interested in the network, local farmers and network nodes owners	A well-established network of researchers and activists at their yearly conference gathering every year around 100 people from all over the world	Researchers and practitioners engaged in CAPS projects.
Relationship with the outsider group	Panayotis is actively engaged with Sarantaporo.gr, and the network	Secretary of the network (Philipp Klaus) and members of the network (NetHood)	MAZI project partners are a part of the CAPS community
Role of MAZI consortium in the event	Panayotis was organizer of the symposium and the consortium members having the experience of a community network	Introduce DIY networking as a tool for urban activism and also different forms of activism represented by the MAZI pilot studies and MAZI guests.	organizer of the event and active participant in disseminating the ideas, findings and practical knowledge on DIY networking and the MAZI methodology to other CAPS projects' partners; and also networking within the CAPS community.
MAZI proposals	Building an understanding of the role of DIY networking; realizing the importance of the local context;	DIY networking as a means for informing citizens for topics of concern, more egalitarian collaborations between researchers and activists.	Three MAZI zones relevant to the activities at the location of the event, and most importantly to create a list of participants and also facilitate the communication during the plenary of the CAPS Community Workshop.
Community suggestions/ideas	Using the boundary object terminology, we can afford having a "weak" structure of what the toolkit is/should be. This will allow more interpretive flexibility and more information available for the next steps of making the structure more concrete.	Coordinate urban actions protected against surveillance.	Creative ideas for possible uses of the MAZI Toolkit like configuring a MAZI Zone at a concert including a page that introduces the band; and a suggestion that was realized during the CAPS Community Workshop, to use post-it with the active applications on the MAZI Zone poster like a playful presentation of what is inside the active zone.
Challenges identified	The requirements demanded by the engineering team in Volos, in social sciences are subject to long processes of participation, deliberation, and decision-making and in our case they would also require as input a comprehensive set of the capabilities of technology. How can one describe their	Appropriation of the technology by corporations, dependence on ICT.	Sensitivity of the SD cards with consequences regarding the reliability in saving data and the need for regular back-ups.

	requirements if they don't understand in depth what technology, and in our case DIY networking, can actually deliver?		
MAZI zones tried out	Owncloud.	Owncloud, etherpad.	Different elements of the MAZI Toolkit namely etherpad, nextcloud, interview tool, and guest book.
Overall feedback	The visit to Sarantaporo helped us realize of what is the current mainstream image of community networks: community-owned Internet access infrastructures. What this means is that our task to present DIY networking technology as means to build complementary networks that operate outside the public Internet with their own local services deployed and managed by local actors will be a challenging task.	Many people liked the proposed tools being all aware of the risks of using corporate platforms like google, but not having the technical expertise to discover alternatives. The most popular use of the MAZI zone was for sharing photos, but etherpad was also widely used (even if mainly its online version). Many discussions for future collaborations and a very positive view on the fact that MAZI supported the participation of activists for whom it is not easy to come to INURA conferences.	interestingness of the tools; synergy created with the CAPS project EMPATIA that led to various ideas on how the produced ICTs could be merged or co-designed, including collaborations on of methodologies and sharing of experiences with participatory practices in a future workshop (see also the workshop at the C&T 2017 Conference in Troyes, France, June 2017); the formation of an interested group in interdisciplinary research staying in touch for exchanges regarding methodologies, relevant literature, participation in conferences and publications etc.

8. APPENDIX II – MAZI pertners survey on the roles played within the project

(1) The role(s) that were expected from your personal perspective
- what did you think you would be doing?
(2) Role(s) that had to be played during the project
- what roles did you actually have to play?
(3) Adjustments that had to be made
- how did I have to change the way I was working, what new things did I have to do?

	Questions	MAZI partners answers on the roles played within the project
Answer 1 MS - NU	**Expected roles**	Researcher/Academic
	Roles actually played	Academic
	Adjustments made	Focussed on being an academic, liased with UM (occasional visits to watch them in operation) and sought to communicate the work of the project to the HCI community and wider audiences.
Answer 2 IH - NU	**Expected roles**	Broadly the expectation was that the role was to act as a researcher within a collaborative project. This entails working as part of a team carrying out activities such as; background research into the domain, working on methodological framings and approaches alongside other partners, analysis and synthesis of data gathered during the pilot, writing up and presenting the outcomes. There are many other tasks involved in the role, but as researcher these are the key ones.
	Roles actually played	The role remained that of a researcher but due to the distance issues, and the evolution of the pilot settings that came about as the pilot developed, the ways of working had to be continuously revised. The negotiation, organisational, administrative and planning aspects of the role gained importance, and the research activities diminished.
	Adjustments made	Adjustments were made on an ongoing basis as is expected in a project lasting a few years. The main adjustment was having to step back to some extent from direct engagement in the pilot study research process. This entailed changing focus to observing and aiming to understand the ways that the pilot study partners worked in their pilot study settings.
Answer 3 LL - UM	**Expected roles**	As a community partner I expected to coordinate an unmonastery test lab. As a priority this work would be bringing together an initial group of people and begin to understand the needs of the rural community attempting live and connect with.
	Roles actually played	- Understand the relevance of DIY and local networks to rural communities and brainstorm functionality - Test the MAZI toolkit in relation to our normal practice and unmonastery way of living and working together. - Codesign and suggest improvement on the toolkit. - Collaborate with our academic partner and other pilots - Interface between the MAZI toolkit and the community - A technical Co designer of implementations.

Answer 4 JS - SPC	**Expected roles**	expectations | Expected to contribute toward the design brief for the Mazi toolkit as well as advise on community network needs of consortium members. As pilot coordinator to identify, invite and engage with pilot contributors, experiment with existing tools and report on experiences. To refresh local community wireless networking with contemporary mesh equipment as well as introduce street signage to compliment the wireless advertising to help local people identify with new mazi and own installations.
	Roles actually played	revelations | Early on it was clear how these roles would have to adapt to demands of reporting required by our academic partners and coordinators needs for statistical, observational and reflective attention.
	Adjustments made	distractions | Prolonged exposure to these unscheduled demands nudged the role between local activist, academic research assistant and meddler. I needed to be researcher in the local context to make the best of the time available between social interactions, to upscale my academic attention when meeting with the consortium but retain activist role for the consortium in the local context.
Answer 5 MG - OU	**Expected roles**	The activities I took part in were close to what I expected I would do - collaborating with James (SPC) to envisage, initiate and drive forwards Creeknet pilot - theorising around DIY networking, and collaborating with partners to write synthesising work - coordinating and guiding work of OU researcher (Gareth Davies) - synthesising reporting to write deliverables - clearly set out responsibilities and roles (as not a work package leader)
	Roles actually played	More detailed investigation of the technical aspects of the system, required more understanding of the system than I initially imagined. MAZI has been more self-organising than other EU projects that I have worked on so I had to take on more coordinating and interpreting of working tasks than I imagined. I played more of a coordinating "work package leader" role than I imagined initially.
	Adjustments made	Blogging as a form of dissemination was new to me and didn't come easily: I still have to work hard to assign time to write in this format. Self-organising of project meant that my inexperience in estimating what a suitable level of pilot activity would be caused challenges, we probably did too many pilot activities in Creeknet (reached out to too many groups, took up too many opportunities?) and it took more time than expected to manage all the "mouths to be fed". I have had the opportunity to work with a lot of interesting experts from different fields so have had to work to understand their different disciplines and perspectives. For example: reading theoretical perspectives I'd not previously come across; seeking to understand what is important or challenging from their perspective, trying to view the work from their perspective, and to understand the methods they use which might not initially seem valid from my prior perspective. Unexpected tasks took up more time than I allowed leading to challenges in fulfilling 'core' tasks I had planned to carry out. This lead to a challenges managing the limited time my university management allowed me to work on the project (like all of us this is not my sole occupation so has to be balanced with other commitments). I have had to learn to step back and be more of a manager of a researcher rather than be a hands-on researcher myself, while I am inclined to want to be working at a pilot's ground level.
Answer 6 PA - NH	**Expected roles**	I was expecting to have multiple roles (research, technical, and action oriented) with most challenging task being a multi-level translation between researchers of different disciplines, and between the pilot groups and the technical team. This was especially so since I was the person that brought together the consortium and the only one knowing all partners before the beginning of the project.
	Roles actually	In the beginning of the project I started playing all the roles expected initially, but gradually I had to focus more on a very concrete and critical task: the communication of the benefits and

	played	particularities of the MAZI toolkit both toward the interested international community of researchers and activists but also toward local communities with very limited engagement in digital politics. In the last year of the project I had to limit significantly all coordination task at the "project level" both due to the lack of time (consumed by the aforementioned task) but also due to the realization that giving up my "de facto" central, somehow leadership, role was very constructive and beneficial for the project.
	Adjustments made	I found myself working much more than expected (and than ever did) "on the ground", collaborating closely with various civil society and activist organizations, mostly in Zurich and Athens. This engagement with local communities was at the same time more needed than expected, since the appropriation of the MAZI toolkit proved a very challenging task, but also more inspiring and engaging, wouldn't exaggerate to say a life changing experience for an academic researcher. This gradual change of focus from research to action is still on-going and is today materialized with my strong engagement with the operation and curation of NetHood's new "hybrid space" in the center of Zurich, L200, http://nethood.org/l200/.
Answer 7 IA - NH	**Expected roles**	research and action role bringing in the project knowledge related mostly to space and locality, as well as experiences from previous interdisciplinary and transdisciplinary project work.
	Roles actually played	documenting in nine deliverables the project work performed in various plenary meetings and events, to reflect the evolution of MAZI collaborations toward co-designing the Toolkit; providing relevant theoretical knowledge (e.g., the comparative method or participatory practices in planning), in an effort to share methods and practices; organizing a multitude of pilot related events in Zurich and abroad.
	Adjustments made	allocating time beyond the scheduled (paid) time budget in MAZI, based on personal commitment to the project and due to the successful evolution of the project work; structuring and coordinating deliverables in the WP3 on interdisciplinarity, as a measure of performed work; adjusting to different 'cultures' depending on the groups of interest: inhabitants in Zurich coops, coops and neighborhood related initiatives in Zurich, international research and action community members (INURA, CAPS), interest group in Athens (CoHab). it included different language skills, different communication strategies, different participatory practices etc
Answer 8 ECL - CG	**Expected roles**	I perceived my initial role as a community partner, where it was supposed to keep doing my core work within the community and the garden. I remember a moment during the kick-off meeting in January 2016, where one partners said, in a joking manner, "so you are our guinea pigs". This reaffirmed the my role as a community partners, but also hinted on a dichotomy existing between Uni/Community, Researcher/Activist a s o. Because of changes in the project and our own change in focus, we were able to take a more active and co-creative role within the MAZI project.
	Roles actually played	My role changed according the the setting I was in. Within the Berlin pilot, I felt like a team member - a very leveled, non-hierarchical working partner to Andreas or UdK. This space had no inside or outside. In front of other communities in Berlin my role became blurred between researcher/ intermediary/ community actor. Working in communities it became tech service person, seen more as within the group itself. Both working in front of and within communities, the role of mediator between discourses and translator between "cultures" was an important role. In the consortium, my role as community partner, stayed but fluctuated depending on the situation - if we were public (with an audience - then the community characteristic was highlighted), if we were consortium internal this role was continuously blurred.
	Adjustments made	Technical servicing was new; Project work (deliverables); Embedded research; One change overall is that the MAZI project has strengthened my voice as a civil society actor.

Answer 9 AU - UdK	**Expected roles**	a) accompanying/guiding a diverse group of people through a design process – that is to provide the processes, structures and tools to create meaning, and from that meaning derive designed artifacts; in a setting that's content is not my own (as steward, maybe); b) mediating between a group of researchers that work in adherence to specific logics and a group of non-researchers/activists, that operate according to entirely different rules and logics. In-between these two mediating roles I anticipated taking on strong design lead functions, e.g. in processes of giving shape to objects (e.g. props), interfaces and so on.
	Roles actually played	While both anticipated roles were in fact taken on, they developed into something that was not entirely foreseeable. Firstly, the strategy to create a research partnership as equal as possible fell on very fruitful ground, and the boundaries between research and community partners quickly vanished. From here, the design role was not so much grounded in facilitation, but in maintaining and protecting a partnership in finding ways forward. Secondly, the focus of the pilot adjusted to the contexts and the feedback provided by those involved in the pilot's first deployments, through which the qualities of the toolkit as a boundary object became increasingly important, outweighing the actual use-value of the technology. This development of shifting the focus to the design of discursive and mental infrastructures (Welzer) of practices brought to the background the attention to details of the design aspects of the toolkit itself as well as the development of material components for its deployment, as it demanded the reallocation of resources and focus on the construction and development of the „social platform" in Berlin and beyond. In this sense, I perceived large stretches of my role mainly as jumping in and out numerous (and very different) discursive contexts, conveying the project's (or rather the pilot's) narratives and core messages to different audiences in a way they can connect to.
	Adjustments made	Development of reflexivity & flexibility with regards to one's own role(s), constant renegotiation of pilot goals, justification of these changes to partners, home institutions and the EC (deliverables).