# MAZI Deliverable Report D2.4: Design, progress and evaluation of the Deptford CreekNet pilot (version 1)

Other

MAZI


# ICT - Information and Communication Technologies

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## D2.4 Design, progress and evaluation of the Deptford CreekNet pilot (version 1)

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| The Open University | OU | United Kingdom |
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## Executive summary

This deliverable reports on the design, progress and evaluation of the MAZI pilot conducted in Deptford, London by The Open University and SPC from May to November 2016 (months 5 to 11 of the MAZI project). This pilot study explores how the MAZI approach and toolkit might support the resolution of local sustainability challenges encountered by groups and individuals working and living in and around the Deptford Creek area, in south east London (UK). Within MAZI, this is described as the initial Community Engagement phase of the CreekNet pilot study (Phase 1).

We report on the progress by referring to Holliman et al.'s 6P's - six principles of engaged research (In Press; 2013). Originally designed to help universities plan and reflect on public engagement with research, adhering to the 6Ps ensures we don't simply impart wisdom to publics through one-way forms of communication but that we seek to involve multiple stakeholder perspectives, engaging communities as equal partners and considering how the research is likely to impact our community partners. In Phase 1 of our pilot the 6Ps resonates with the MAZI approach of seeking to work alongside local communities and have helped guide us towards achieving the following:

- *'Preparedness'*: identifying local contexts, understanding of the challenges to be faced, the researchers' preparations for dealing with these challenges
- *'Politics'*: understanding the local social and political contexts in which the research would be carried out
- *'People'*: identifying the people that will be involved or affected by the work: the researchers, the community partners with whom we engaged, other community participants, others affected by the work
- *'Purposes'*: clarifying the aims and objectives of the research from the perspective of MAZI, the participants involved and other stakeholders
- *'Processes'*: pinning down the approach, methods and techniques that would be followed by the research team
- *'Performances':* considering what was found and the extent to which this met the objectives of the research

By referring to the 6Ps, the sections that follow provide an overview of the pilot context and an outline of the design processes undertaken, drawing on participatory action research approaches. We introduce the pilot team and the potential community partners which we initially identified, and describe their high level concerns. This is followed by an overview of the pilot design, taking a participatory research approach, considering community mapping, and undertaking community engagement and outreach events.

We then overview the evaluation of progress made in relation to these community engagement activities, and report on what we learnt regarding the purposes of MAZI from the perspective of our community partners. We describe how we have used the early prototypes of the MAZI toolkit, and reflect on insights from community partners that emerged from the pilot process so far that have implications for specific development needs for Creeknet pilot, and appear relevant for the project at large.

Finally the report ends with a discussion of the extent to which we have met the objectives of Phase 1 and concludes with an outlook to the plans we have for the following Phase 2 of the pilot that we will undertake in months 13-18.

## Table of Contents

# 1. Introduction

This deliverable reports on the design, progress and evaluation of the Deptford CreekNet pilot, during the initial Community engagement **Phase 1 (M5-M11)**, May to November 2016.

To structure our reporting, we have drawn on Holliman et al.'s '6P's': principles of public engagement with research' (Holliman et al., In Press; 2013). This framework asks researchers to consider their work against six key principles: preparedness, politics, people, purposes, processes and performances.

In ***Section 3 - The Pilot Context*** we set the scene for the pilot by describing our *'Preparedness'* in terms of our understanding of the challenges we would face; and the *'Politics'* characterising the local social and political contexts in which the research was being carried out.

In ***Section 4 - Key stakeholders*** we introduce the *'People'* that were involved (the pilot team, OU & SPC, and the community partners with whom we engaged).

In ***Section 5 - The Purposes***, we explain the *'Purposes'* of our research, and specifically the Phase 1 work, according to the aim and objectives laid out in the project Description of Work (DoW).

In ***Section 6 – The Pilot Design***, we describe the *'Processes'* that we followed: drawing from a Participatory Action Research (PAR) approach, engaging in community mapping activities, a series of community outreach and workshop activities, initial deployment of MAZI tools and other early prototyping, and set out plans for carrying out an impact evaluation of the pilot.

In ***Section 7 – Pilot Activities and Outcomes***, we explain the *'Performances'* of Phase 1 in terms of the existing community partners and further groups identified along the creek; the context and purposes of each of these communities; a summary of the insights gained from hosting the community engagement events; and the scenarios in which we intend to use as case studies to test the use of DIY networking.

In ***Section 8 – Evaluation***, we reflect on the *'Performances'* of Phase 1 in terms of the outcomes of the community mapping, insights gained from hosting workshop events, and conclusions drawn from the deployment of initial MAZI tools and other prototyping.

In ***Section 9 – Discussion & Outlook***, we summarise the extent to which the objectives of Phase 1 of the Deptford CreekNet pilot have been met, how this has informed the development of the toolkit and what this might mean for the future development of the toolkit in terms of the need to accommodate the different types of community actors. We conclude by considering future actions in this pilot during Phase 2 of our study.

## 2. The Pilot Context

This section sets the scene for the pilot by describing our *'Preparedness'* in terms of our understanding of the challenges we would face; and the *'Politics'* characterising the local social and political contexts in which the research was being carried out.

In this pilot The Open University, a large scale distance learning university with interest in community based and informal learning mediated by information technologies, and SPC, a community technology organisation based in south east London are exploring how the MAZI toolkit might help resolve sustainability challenges encountered by a diverse population living in and around Deptford in south east London, UK. This area is experiencing rapid change and redevelopment, and civil society groups and activists in the area are keen to explore innovative methods for generating, capturing, and sharing knowledge that can engage residents in issues and help work towards socially and ecologically sustainable management of urban developments.


Figure 1: Local map showing the area that the CreekNet pilot covers.

SPC has worked in Deptford since 2001 and has contacts with local people, community groups, social enterprises, higher education and business interests in the area. SPC has been running a community wireless network OWN (Open Wireless Network) to provide free street level internet access utilising the latest low cost and low power equipment since 2008, developing from their 2001 original network. SPC are interested to explore how this activity may be revitalised, and investigating services that are relevant to local communities' needs and interests. This pilot is focussed around the concept of "CreekNet" – a DIY network linking together communities running alongside Deptford Creek, that supports MAZI services to help respond to local challenges.

Historically, Deptford's economic focus was around its naval and commercial dockyards and industrial activities that used Deptford Creek, a tributary of the River Thames. The area declined economically as the Navy moved out with the final closure of military support facilities in the 1960s, and the last commercial dock closing in 2000.

The depressed economic circumstances enabled creative appropriation of the landscape. Artists, musicians and others took advantage of low rental charges to move into older social housing and occupied former industrial and warehouse properties as studios and creative spaces. Permanent boating communities were established in moorings along the Creek. A range of community-based and environmental activities were developed. While some creative enterprises and individuals were transient, others established long term residency within the area and a number have achieved significant legitimacy and recognition locally and beyond. For example, one group of artists purchased a former warehouse building to form the Artists in Perpetuity Trust, establishing their permanent right to studios along the Creek waterfront, and the Creekside Education Trust has engaged local residents and school children through low tide walks to increase appreciation of local biodiversity. As a physical border between two local authorities, and the towns of Deptford and Greenwich, the Creek represents a liminal and contested space. It changes in nature as it flows towards the River Thames, changing from the River Ravensbourne flowing through the leafy Brookmill Park, to a concrete channelled and navigable urban creek, bordered by industrial properties, opening out to the Thames in the north and flanked by recently constructed luxury apartments.

Recently, increases in London property prices and improved transport links have led to a process of development and gentrification in and around Deptford. Areas formerly seen as undesirable are now the target of financial speculation. Rapid, large scale demolition and redevelopment work is underway with

residential blocks, shops, and other privately owned facilities replacing older properties and changing industrial and waterfront areas. This has led to local debates about the identity and future of the area, with current residents at risk of eviction and creative spaces being lost to make way for new developments.

An additional challenge for the watercourse and immediate surrounding areas is managing the impact of a major city scale infrastructure project, the Thames Tideway Scheme. London's ageing sewerage system needs modernising, and the upgrading work include a large access tunnel being built next to Deptford Creek. This will require thousands of tons of tunnelling waste planned to be removed either by road, leading to a high volume of lorry traffic; or by large barges, which would mean dredging of the Creek, affecting the river environment and displacing residential boat communities. In either case there is a potential conflict not only with existing residents but also the gentrification vision of the waterfront redevelopments.

There have been a range of local initiatives from local government, civil society and community based groups and individuals to respond to local these and other development issues, but these remain fragmented and have not managed to engage a broad spectrum of the population.

The pilot seeks to address the topic of socially and ecologically sustainable forms of urban development. We start from the premise that real participation has to be grounded in approaches that allow community owned mechanisms to create, share, and exchange knowledge and learning, to identify common challenges and find collaborative solutions. This pilot covers three aspects of MAZI. First, CONTACT: building relationships across the diverse population that lives in small geographical area but with very different characteristics, and drawing in new arrivals. Second, INFORMATION in order to help build a sense of collective awareness, informing both newcomers and long-term residents about what is happening around them, and third, the hidden histories of their locality with DISCOURSE to engage community members in discussions around shared interests, and debates about the identity and future potential of their lived environment. It is intended that this will explore the extent to which a MAZI toolkit can provide an alternative media channel to current means and enable debate around local urban development issues.

# 3. Key Stakeholders

In this section we introduce the *'People'* that are involved in the MAZI CreekNet pilot, including the pilot team, SPC and the community partners with whom we are engaging.

## 3.1 The Pilot Team

### *3.1.1 The Open University*

The Open University (OU) defines its mission as "open to people, places, methods and ideas", and was founded in 1969 as the first major distance learning university. OU students study part time, at a distance. All OU courses now have a major e-learning component, although face to face sessions and hands-on learning are still important. It is now the biggest university in the UK with around 180,000 students, 6,000 tutors and more than 1000 full-time academic staff. The Institute of Educational Technology (IET) within the OU has both a strategic internal role in researching and advising the OU on the use of technology, and an international research profile. The Open University is contributing to MAZI by bringing expertise in DIY networking technologies and cultures, public engagement with research, experience of working in grassroots and community driven initiatives, and informal learning.

The OU will work alongside SPC to provide methodological support and expertise of participatory design approaches during the 'Creeknet' MAZI pilot study based in Deptford. We will also help inform the evaluation techniques for understanding the effectiveness of the MAZI toolkit in community settings, from an educational and social inclusion perspective.

### *3.1.2 SPC*

SPC was established 1996 to support individual practice, independently organised spaces, open access to network media and creative experimentation with technology, the hub around which diverse energies and

initiatives continue to interconnect. SPC has been at the forefront of media arts, DIY networking technology and open access developments since 1996, both through practical implementations in London and playing a leading role in initiating and participating in UK and international collaborations. SPC offers web hosting and project development space to groups and individuals by subscription, including local studios, community learning spaces, and art groups. Subscribers are invited to utilise the many facilities available, exchange skills and make stuff to share. A key activity is the public, drop-in 'Wireless Wednesday' sessions where local residents can come to SPC's Deckspace media lab and work with member of SPC's team exploring technology and solving problems in an informal learning setting. SPC's Deckspace media lab is in Greenwich, south east London in rooftop rooms, and is also a key node for SPC's Open Wireless Network (OWN) and DeptfordTV (collaborative video editing) which serve local community interests and promote public collaboration.

OWN provides internet connectivity via wireless connections in south east London, including Deptford. At its peak in 2010 the network had 60 mesh nodes and 400 users per day in an area of approximately 4 square km. However, it has proved difficult to develop persistent services on top of network infrastructure and numbers of participants have dwindled. SPC are interested to explore how this activity may be revitalised, and investigating services that are relevant to local communities' needs and interests.

SPC is contributing to MAZI by providing community networking expertise, technology training competencies and an existing technical infrastructure in one of the locations for the pilot studies (Deptford, South London). This expertise will inform both the immediate pilot study but also ensure SPC will play a central role in informing the technical development of the MAZI toolkit. SPC is an active community-focussed organisation in Deptford and will draw upon its network of local contacts to gather participants for the community workshops and following pilot implementation of the MAZI toolkit.

### 3.2 The Community Partners

The CreekNet pilot explores at its core how The Open University and SPC can work together to explore how the MAZI toolkit might support SPC's work in the Deptford area. SPC works closely on the ground in the Deptford Creek area with a number of local organisations, activists, and processes and brings to the CreekNet pilot an existing network that provides MAZI with a wide range of potential participants and stakeholders. These groups, already familiar with SPC's work and in some cases active subscribers to existing services, will be approached during the pilot and form the basis of a core of community partners with which we will engage, enabling us to consider how MAZI may be applied across organisations as well as individually.

These include:

- Friends of Brookmill Park: volunteers promoting use of the Brookmill Park, in the southern most section of Deptford Creek (furthest from the River Thames)
- Friends of Deptford Creek: the voice of boating community residents in the mid-section of Deptford Creek
- Creekside Discovery Centre: Charity promoting the biodiversity of Deptford Creek to local communities and schools; a subscriber to the OWN network.
- The Minesweeper Collective: a boating community of artists, running printmaking workshops and hosting art events on their boats moored on the Creek; a subscriber to the OWN network.

We will report on these groups in more details later (see Section 6.2). These provided us with a rich starting point for reaching out to a wider population within the Deptford Creek area.

## 4. The Purpose

In this section we explain the *'Purposes'* of our research, and specifically the Phase 1 work, according to the aims and objectives laid out in the MAZI project's Description of Work (DoW).

The Description of Work (DoW) document lays out four Phases for the CreekNet pilot study:

Phase 1 – Community engagement process

Phase 2 – Initial implementation

Phase 3 – Integrated MAZI trial

Phase 4 – Final MAZI toolkit trial

Figure 2 illustrates the phases of the pilot described in the DoW along a timeline of the MAZI project.

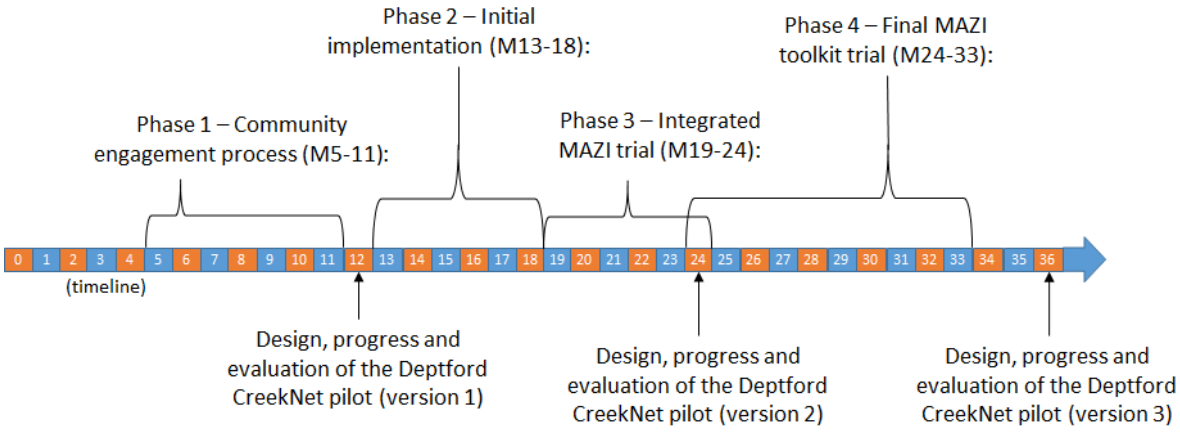


**Figure 2 Timeline of activities for the Deptford CreekNet pilot**

The purpose of Phase 1 was to understand the context in which a MAZI toolkit may be deployed by engaging with current and potential local groups, activists and other stakeholders.

This can be broken down into a number of objectives for the pilot team to achieve during this Phase:

- Initiating conversations
- Identifying current practices
- Understanding what kind of networked services and approaches to community discourse are currently in use
- Engaging with existing community network activists and active users of SPC's services
- Understanding the social, political and associated contexts in which the MAZI toolkit may be deployed
- Understanding what potential services and networking facilities might be suitable to support developments in local discourses
- Discussing potential development scenarios
- Promoting activities with different local populations
- Running community outreach activities (e.g. drop -in sessions, workshops)
- Informing MAZI researchers of challenges with existing and past initiatives of a similar nature
- Evaluating progress by inviting participants to reflect on the collected experiences and target areas to focus in ongoing MAZI developments
- Reflecting on how the outcome of these actions will inform the development of the broader MAZI approach

# 5. The Pilot Design

In this section we describe the *'Processes'* that we followed: drawing from a Participatory Action Research (PAR) approach, engaging in community mapping activities, a series of community outreach activities and set out plans for carrying out an impact-evaluation of the pilot.

## 5.1 Participatory Action Research

Participatory design, an underpinning principle of the MAZI project, can be approached through a number of theoretical framings. Based on the OU and SPC's prior practices and the local context for the Deptford Creeknet pilot, we chose to explore Participatory Action Research (PAR) as a vehicle for engaging community partners with the prospect of developing DIY networking tools to address local problems.

PAR makes sense of the world through the collective efforts of researchers and community partners. This process of sense making seeks to address questions and issues that are significant for those communities (Reason and Badbury, 2008). PAR is used to actively engage community partners in the co-creation of knowledge, the building of alliances and for the promotion of individual, collective and/or social change (Rahman, 2008). It is distinguished from other participatory approaches by its focus on empowering marginalised people (Tandon, 2002). This 'empowerment agenda' aligns itself well with MAZI's goal of democratising access to tools and their local management to enable communities to tackle their own problems in a long-term sustainable manner.

By engaging participants as active researchers and agents of change, we collectively act, create and produce new knowledge in the pursuit of co-developing an understanding that is required to develop, implement, and maintain novel DIY networking artefacts, and we seek to achieve a more sustainable outcome (Schuler and Namioka, 1993). This approach emphasises the participants (community partners) as experts for understanding the ways they live and work, rather than being treated as subjects of the research (e.g. Kindon et al., 2007; Swantz, 2008).

Adopting PAR as an approach in the Deptford CreekNet pilot has required that we make a concerted effort to integrate the three named elements within our research and pilot study approach: participation (life in society and democracy), action (engagement with experience and history), and research (soundness in thought and the growth of knowledge) (see Chevalier and Buckles, 2013).

For Phase 1 of our pilot we can see the particular objectives mapping to participatory, action and research aspects (Figure 3).

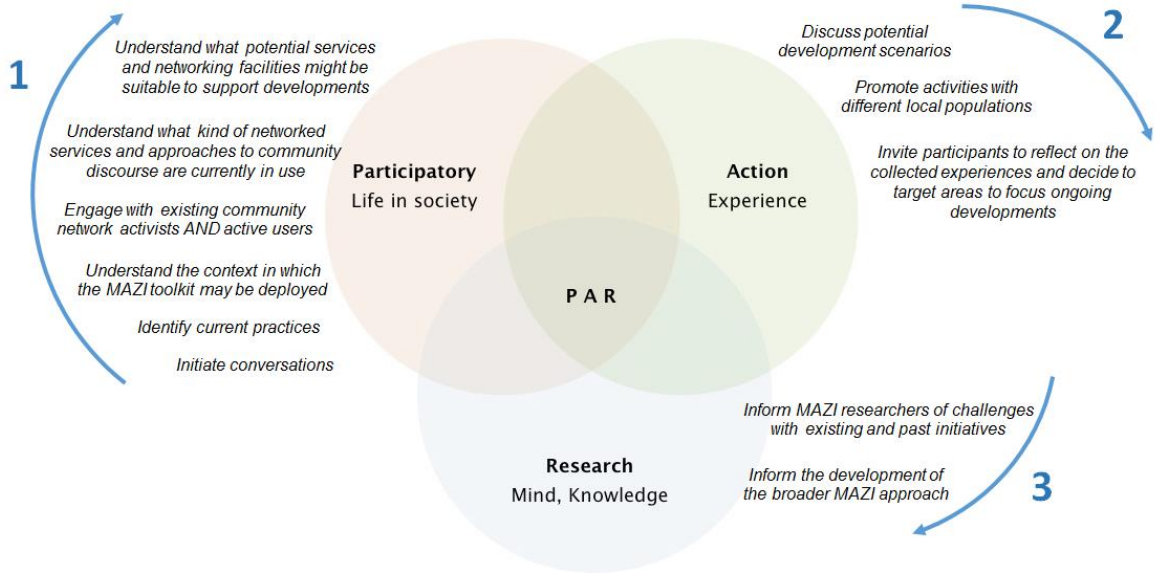


**Figure 3 Mapping Phase 1 activities to a participatory action research approach**

Ethically, we acknowledge that adopting PAR as an approach brings with it the challenge of striking a balance between the conventional approach of addressing concerns of privacy and confidentiality, using formal processes for recording consent, whilst respecting that fact that some individuals and groups will want to be heard and identified for their contribution but wary of engaging with formal processes for gaining ethical clearance, and thesemay act as barriers to engagement. This has already been identified as a challenge in the

Berlin pilot study and the community partner in CreekNet (SPC) felt that processes commonly used in formal academic settings might act as a barrier to participation amongst some groups.

Hence, we needed to establish terms of reference based on interpersonal relationships facilitated by a history of trust, rather than purely based on legal forms and contracts. While we followed the protocols agreed by the MAZI project (defined in the project's ethics report) we also recognised that the process of engaging ethically meant taking time to develop relationships, and building trust before we could proceed in our research. Ethical challenges may also emerge during the project meaning that discussions and decisions about ethics will be explored throughout the project, not just the initial design phase (Chevalier and Buckles, 2013).

In the following sections we explain how we used a combination of community mapping, workshops and impact-evaluation to implement PAR approach in Phase 1 of our pilot.

## 5.2 Community mapping

Community mapping is used broadly as a method of understanding the location, size and diversity of communities that exist within a given location. These differ from conventional maps in that they illustrate the significance of differing political, social, aesthetic and technological attributes characterising issues faced by communities (Lefer et al., 2008). For the MAZI CreekNet pilot, we were keen to understand the challenges faced by local groups, their existing relationships, key points of contact, who their members were, and determining their access to services and levels of ownership.

In Phase 1 of the CreekNet pilot, we have approached community mapping undertaking three key activities:

(a) Initial reflection sessions to identify SPC's existing community partners and potential contacts

(b) Ongoing scanning of potential MAZI future partners in the Deptford Creeknet area by project team, and identifying existing community mapping initiatives

(c) In parallel, exploration of methods for recording and updating community map

We draw on Reed et. al's typology of stakeholder analysis methods (2009): they identify that "[o]nly by understanding who has a stake in an initiative, and through understanding their claims and interrelationships with each other, can the appropriate stakeholders be involved in […] decision making" (p.1936). Reed et al. identify three steps: identifying stakeholders, differentiating between and categorising stakeholders, and investigating relationships between stakeholders. We recognise this process will be ongoing throughout the pilot but in Phase 1 we have begun the process of understanding the landscape and formulating categories by which different potential participants and groups in the Deptford Creek area might be described.

We have approached this by initial paper sketching and brainstorming activities to reveal the extent of SPC's engagement with existing partners, their purposes and inter-relationships; providing us with an initial understanding of the current landscape. By considering potential contacts, both initially and ongoing, we place the MAZI pilot in a wider context and thus potentially either reinforce current proposed scenarios or identify further scenarios, with the aim of enabling greater sustainability for the approach, moving towards a critical mass of users.

Identification of other community and knowledge mapping approaches may reveal further groups we can collaborate with, and also identify alternative mapping approaches that will bring richness to our methods. One approach that we will consider exploring will be to use technology-based mapping approaches, such as open source Geographic Information Systems (e.g. http://opengis.dlinkddns.com/gis/opengis_eng.html) and community mapping tools (e.g. http://www.kumu.io). These greatly expand the potential sophistication and analytic power of community maps, making figurative and literal boundaries visible, and enable multi-layered representations that might reveal unexpected boundaries and potential bridges for furthering relationships between otherwise unrelated groups. MAZI explicitly seeks to support collective awareness, and we recognise the potential of existing open source web-based platforms for supporting the empowerment of local groups engaging not only in MAZI-specific activities, but ownership of mapping for wider purposes. For example, in the UK, building developers are obliged in some cases to provide financial contributions to the local community to

offset their building work ('S106 agreements') and there is interest in Deptford to understand how and where this money has been spent.

In Phase 2 onwards, we will encourage and empower our community partners to take ownership of this community mapping process; supporting them by giving them the know-how and technology they need to maintain community maps.

## 5.3 Community outreach events

SPC has existing ongoing interactions with local groups: interactions through maintaining services to current subscribers, promoting services to potential new subscribers, participating actively in local cultural events, and weekly public drop-in community technology workshops, the 'Wireless Wednesdays' at Deckspace, their neighbourhood medial ab. We recognised that it would be necessary to both leverage these existing interactions and extend activities to reach out and establish a broader range of contacts across the communities as process of relationship- and trust-building.

Workshops were initially envisaged as a Phase 1 activity, however it became apparent that more preliminary activities would need to be considered to move us to the point where groups were welcoming us into their communities and were comfortable meeting together with other groups. A lack of digital knowhow and understanding of what 'offline networking' would be, as a paradigm shift from the ubiquity afforded by internet access, required a more considered and incremental approach to bridge gaps in knowledge, and increase the potential for knowledge sharing in person as well. Three forms of engagement were undertaken beyond desk-based research:

- Initial contact – informal meetings, attending events hosted by the potential participants as part of their existing practice
- Informal interviews – eliciting group's existing challenges, their goals, and engagement with local communities of similar practices in the locality, introducing the MAZI project
- MAZI Mondays – drop-in events hosted around the Deptford Creek area in association with particular local groups to enable discussion of sustainability challenges and the potential for networked technologies to resolve challenges: the overlap between the groups own methods and the open source, MAZI approaches.

These were informed by OU and SPC approaches to best practice of engaging communities and carrying out public engagement with research and established PAR methods, such as those presented by Chevalier and Buckles (2013. These are intended to help to mobilise local communities to engage in local decision making and for members within and between communities to connect to each other; collectively weaving a shared understanding of ways to act for the common good.

## 5.4 Deployment of early MAZI tools and other 'pretotyping'

As well as extending current network connectivity provided by OWN and other providers with a MAZI-supported DIY network infrastructure, we have used the evolving MAZI toolkit to support local interactions. As a mechanism for both structuring conversations with community partners but also to enable the pilot team's reflections about possibilities, we have been engaging with the development of early MAZI toolkit prototypes; and exploring contender software and hardware tools and services.

However, we have recognised that for some groups we seek to engage, concepts such as 'offline networks' would be difficult to conceptualise and perhaps even alienating. Therefore, by experimenting with the developing MAZI toolkit (e.g. the collaborative, offline document authoring tool, etherpad) and testing network technologies in our own practice, we were able to both extend our understanding of what would be possible in local conditions and also identify suitable examples that might enable potential participants to imagine how such tools could be extended within the MAZI project to resolve their own challenges. Equally, we asked the groups with which we engaged to describe the tools that they were already using. Moreover, we have drawn lessons from colleagues within MAZI who have identified that low-fi and mixed-fidelity prototyping enables

participant engagement and the gathering of meaningful feedback, which has a heritage in design-based research (e.g. de Sa and Churchill, 2012). TheSPC team has also identified the concept of 'pretotyping': "between abstract ideas and proper prototypes" (Savoia 2011, p4) as a means of continually playing with ideas and technology to explore ways of finding potential solutions to our community partners' challenges.

## 5.5 Blogging

An important part of the pilot design has been to consider how we share and disseminate information, and build contacts in the Deptford Creek area. Our pilot has been endeavouring to cover three aspects of MAZI: CONTACT, by building relationships across the diverse population that lives in a small geographical area but with very different characteristics, including sharing information about the location for new arrivals; INFORMATION in order to help build a sense of collective awareness; and DISCOURSE to engage community members in discussions around shared interests, and debates about the identity and future potential of their lived environment.

Through making the commitment to record our activities in blogs (SPC: http://wrd.spc.org/; OU http://www.open.ac.uk/blogs/MAZI/), we are building bridges with our communities through a transparent and accountable public record of our shared activities; acting as both a recording mechanism and a means of encouraging interactions. This would build on SPC's existing practice of providing alternative media channels to enable debate around local issues.

## 5.6 Impact Evaluation

We recognise that evaluation of our work and its impact should be considered and planned into the design from the offset of the research ('upstream'). To frame our research, we have used Holliman et al.'s six principles of engaged research. Originally introduced in response to the National Coordinating Centre for Public Engagement (NCCPE) Engaged Futures consultation (Holliman, 2013), it has evolved into the 6P's that we draw from in this report - preparedness, politics, people, purposes, processes, and performances (Holliman et al., In Press). This seeks to ensure we move beyond dissemination and one-way forms of communication towards engaging participants as equal partners. By creating opportunities to progressively engage our communities through Irwin's first, second and third orders of engagement (see Table 1).

With upstream planning for evaluation, we intend to reflect the impact our research has had on those involved by endeavouring to move through the ranks of Kirkpatrick's four levels of training evaluation, by reporting what reactions, learning, behaviour-change and results have come about because of our partnering with our communities (Kirkpatrick, 1994). This resonates with the MAZI approach of seeking to work alongside local communities as equal partners, rather than taking a more top-down organisation of activities, and aligns well with informing our pilot through Participatory Action Research best practices.

**Table 1, Irwin's first, second and third-order thinking about communication (Irwin, 2008).**

| | *First Order* | *Second Order* | *Third Order* |
|---|---|---|---|
| *Main focus* | Public ignorance and technical education | Dialogue, engagement, transparency, building trust | The direction, quality and need for socio-technical change |
| *Key issues* | Communicating science, informing debate, getting the facts straight | Re-establishing public confidence, building consensus, encouraging debate, addressing uncertainty | Setting science and technology in wider cultural context, enhancing reflexivity and critical analysis |
| *Communication style* | One-way, top-down | Two-way, bottom-up | Multiple stakeholders, multiple frameworks |
| *Model of scientific governance* | Science-led, 'science' and 'politics' to be kept apart | Transparency, responsive to public opinion, accountability | Open to contested problem definition, beyond government alone, addressing societal concerns and priorities |
| *Socio-technical challenge* | Maintaining rationality, encouraging scientific progress and expert independence | Establishing broad social consensus | Viewing heterogeneity, conditionality and disagreement as a social resource |
| *Overall perspective* | Focusing on science | Focusing on communication and engagement | Focusing on socio-technical/political cultures |

## 6. Pilot Activities and Outcomes

In this section we explain the *'Performances'* of Phase 1 in terms of the existing community partners and further groups identified along the creek; the context and purposes of each of these communities; a summary of the insights gained from hosting the community engagement events; and the scenarios in which we intend to use as case studies to test the use of DIY networking.

The project DoW indicates that a set of four important variables will be explored in each pilot (context, purpose actors, and duration), and these can be used for understanding the community partners.

- **Context:** specificities of location; coverage area; number of participants
- **Purpose:** the high level purposes of the organisation
- **Actors:** main actors, their roles and how they might use a MAZI zone
- **Duration:** the kind of scenario in which they might engage with a MAZI zone: from temporary short term experimentation through to a permanent infrastructure installation

The initial community mapping and early informal conversation provided us with an understanding of the **context** and **purpose**, and **key actors**. As conversations progressed we introduced MAZI concepts and exemplar tools (MAZI prototypes and others) to explore potential scenarios in which MAZI zones might be deployed within the groups' local contexts.

Below, we first report on the key characteristics of the groups with which we engaged, and then turn to explore more details scenarios. In each case, we first report on the existing community partners that SPC is in contact with, and then turn to further groups identified through the mapping process (see Figure 4).

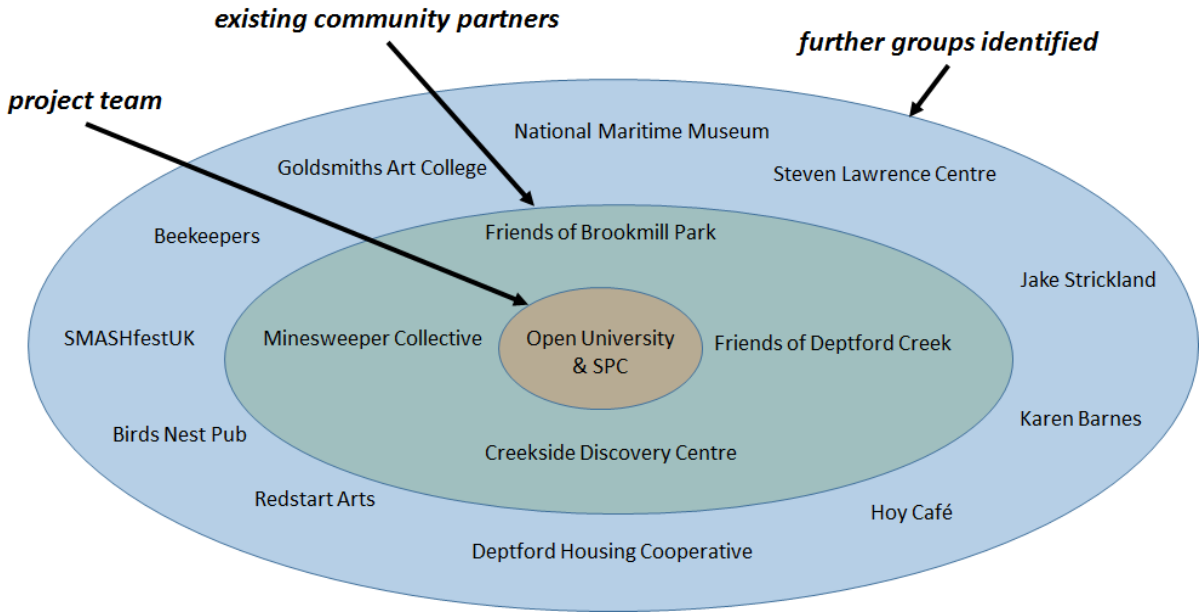


***Figure 4: Actors in the CreekNet pilot: project team, existing community partners, and further groups identified***

## 6.1 Outcomes from community mapping

Initial meetings between OU and SPC pilot team members focussed around pencil and paper mapping of existing community partners to identify key characteristics of groups that SPC was already working with in the area. We then considered potential candidate groups to approach drawing from SPC's knowledge of other local activists and groups in the area.

As this activity developed a parallel activity emerged, exploring potential online community mapping solutions that would allow us to structure and share data collected. Currently, we are using kumu (http://kumu.io) a relationship mapping tool to map out the different organisations, key actors, and their relationships (see Figure 5 for a sample visualisation of the MAZI pilot in London). As the pilot continues we will be seeking to develop more detailed record structures to enable more detailed understanding of how groups interact at present or potentially in the future, and will be capturing these at http://wwww.deptfordcreek.net. In line with our PAR approach we will also be seeking to open this up to our communities as something they can see value in maintaining to keep a living record of the changes in the number and diversity of communities existing along the creek.

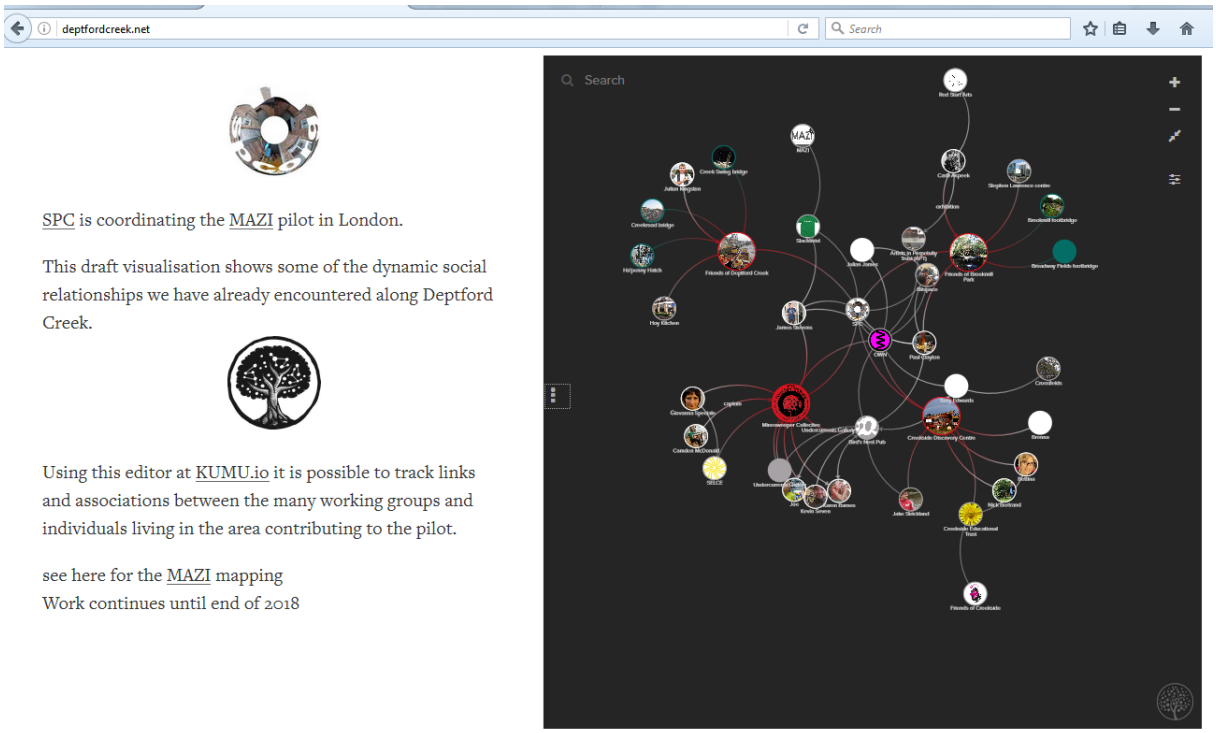


**Figure 5: kumu.io community mapping of MAZI community partners in CreekNet**

Although we are targeting a captive audience, in so far that the groups all co-exist in a very local and distinct area (Deptford Creek) they occupy different socio-cultural spaces within the locality, with different aims and objectives. In many cases, the groups or actors knew of each other's existence but might not have interacted.

The first group we describe had an existing relationship with SPC, either through James Stevens or Paul Clayton: current or past subscribers to SPC services, or drawing on their expertise. Thus introducing the pilot was easier, and there was some familiarity with the use of networked technologies but the premise of an offline networking project proved to be a cognitive barrier in a fuller range of interactions. The second group we describe, contact with additional groups, are those we have been able to reach out to through these existing relationships and attendance at community engagement events.

The following framings were devised during conversations to help encourage engagement with the MAZI project, asking groups to consider:

- Potential matching ('finding people that can help other people')
- Interventions (active involvement with a group or individual that requires support that may not be digital or requiring training time not available)
- Bridging the gap (supporting digital issues, often legacies causing inertia before anything new can be introduced)

We now provide an outline sketch of each of the groups, drawing from the initial conversations, and captured in SPC blogs. These are presented as two groups (those we have established a working relationship with and the additional groups we have contacted), illustrated in Figure 6 in geographical sequence, from the southern end of Deptford Creek, moving northwards until it emerges into the River Thames.

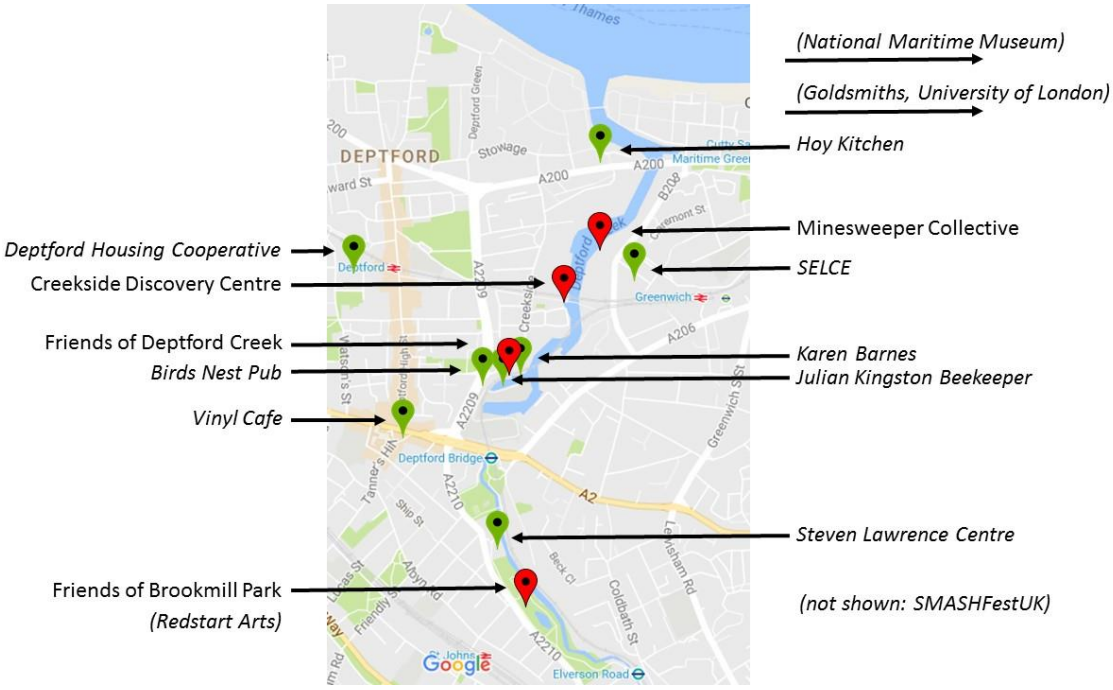


**Figure 6: Location of communities contacted during CreekNet Phase 1**

## 6.2 Existing community partners

The following communities are those with which SPC has an existing relationship, and that we have engaged in more in-depth conversations. This has allowed us to explore potential MAZI project collaborations in more detail.

### *6.2.1 Friends of Brookmill Park*

Brookmill Park is at the southern end of proposed CreekNet area, and runs parallel to the River Ravensbourne, that becomes Deptford Creek at the point it is affected by tidal fluctuations of the River Thames. Once, the river was bounded by a concrete channel but a section in the park area has been broken out to give a 'natural' courseway and offer a better habitat for wildlife. The park is considered an important nature conservation area within the borough of Lewisham, with marsh, grassland, and mature trees.

The Friends of Brookmill Park (https://www.facebook.com/Brookmillpark/) is a voluntary group, existing as an initiative of the Lewisham Parks Forum. The Friends' group has the goal of protecting and promoting the space and encouraging its use, working in partnership with the local council. The Friends' members are engaged in local conservation activities, and have access to a park warden's hut, which was used to host a MAZI-Monday meetup, and as an arts space for Redstart Arts.

The Friends group seeks improved public communications to increase their local profile, including social media, and are also interested in developing a species database. They have previously had a WordPress website but this fell into disuse when a former volunteer left, and it needs to be reanimated and sustained.

### *6.2.2 Friends of Deptford Creek*

'Friends of Deptford Creek' is a group that represents the interests of the residential boating community and those living and working adjacent to Deptford Creek, led by community activist and boat builder Julian Kingston. This community is located in the 'middle section' of Deptford Creek, the furthest navigable stretches from the River Thames. The 'Friends of Deptford Creek' has been formed to help co-ordinate living and working

amongst the clustered houseboats and workplaces, to maintain access to the water and Creekside resources and promote mooring rights. A number of boats are moored next to builders' yards that host large number of trailers and vans where people live and work; but rapid redevelopment and a recent change of ownership threatens access to these spaces.

Living on the Creek they share the joys of relative independence whilst navigating the increasingly unstable environmental, commercial and social conditions. Asserting rights to access resources, trade and reside locally are long fought battles, with increasingly rapid transformation and developments along both sides of the Creek. This is outrunning their capacity to respond and resist planning developments, to promote social enterprise and hold developers to their commitments and engage with people affected.

The group has identified a need to collect, share, and disseminate information amongst their members around these challenges, and to externally promote their rights, and James (SPC) has recently collaborated to set up a website for the group (http://friends.deptfordcreek.net/).

### *6.2.3 Creekside Discovery Centre*

Creekside Discovery Centre (http://www.creeksidecentre.org.uk/) is located on the Deptford Creek, with access via a slipway to the Creek itself. The centre is a purpose built environmental education centre, and aims to enable a better appreciation of the biodiversity of the Creek. CDC has a strong educational programme and hosts a large number of school group visits each year (focussing on younger students), as well as community and family based events. Key activities include walks along the river bed at low tide, wildlife photography, fishing for animals and identifying the huge diversity of urban fresh and saltwater plants and animals in the creek. CDC's expertise is locally recognised and the organisation has engaged in local initiatives to support environmental sustainability in the Creek, for example working with developers to advise on the siting of intertidal terraces on the Creek's walls to provide species habitats.

Through their activities, CDC gathers a range of data about local species diversity, though currently uses little technology in their processes. CDC is keen to increase the profile in the local area, and also to engage a wider range of students (e.g. extending their offering to target secondary school students). The Thames Tideway infrastructure project is building one of its major access sites alongside the Creek opposite the Creekside Discovery Centre and potentially this development may have a major effect on the activities of the Centre, and the biodiversity of the Creek, so CDC are keen to gather data to understand both current conditions and potential effects of the construction work and subsequent activities. Tunnelling waste will need to be removed from the Thames Tideway site and one possible route for removal will be via large barges travelling on the Creek. To enable their access, dredging of the Creek will have to take place, which would both affect species directly but also potentially disturb residues in the sediment from former industrial activities. This may impact local species, as well as reduce the opportunities to take visitors on low tide walks to some parts of the Creek.

Currently, CDC hosts an environmental monitoring station built by local resident Jake Strickland. The 'CDC Weather Station' is a Raspberry Pi connected to sensors that report on river temperatures. CDC has previously had internet connectivity provided by SPC through the OWN local network. CDC are interested to explore how locally managed technologies may enhance their activities: using technologies to gather environmental data that can be reported on their website and accessed by students, an online species database to draw together observations made in low tide walks, and capturing feedback from visitors.

### *6.2.4 Minesweeper Collective*

The Minesweeper Collective (http://www.minesweeper-collective.com) is an artists' community runs as a co-operative, inhabiting a cluster of boats moored in Deptford Creek next to industrial units and opposite the landmark Trinity Laban Conservatoire of Music and Dance. The community takes its name from its main vessel, which is a reclaimed historical ex-Navy wooden minesweeper, H.M.S. Ledsham, transformed into a floating art laboratory, screen-printing studio and an art gallery.

The community specialises in creating collaborative artwork and offers creative workshops, intended for beginners to learn about the process of screen printing their own designs; live music events, cultural events and a monthly art group. It also offers artists the opportunity to work in residence towards creating collaborative artwork and events, and the Collective is developing links with the local community and

businesses by offering screen-printing onto garments in commercial quantities and at competitive prices. The Collective would like to promote their activities locally and increase awareness and their presence (e.g. via networked technologies).

Major challenges for the Collective are to secure their precarious mooring rights in the face of local developments, maintaining and repairing the minesweeper from earlier damage, and improving on their energy autonomy with solar and wind turbine installation and monitoring. As a boating community, energy management and efficiency is critical.

The community is currently accessing the Internet via OWN (SPC): they cannot easily access a connection via telecom providers; and the pilot team have been exploring ways of using DIY networking to help both promote their activities locally, and secure their mooring rights, threatened principally by the Thames Tideway building work. If Thames Tideway decide to remove tunnelling and production waste by large barges, just upstream of the Minesweeper Collective's moorings, the dredging of the Creek and passing of large vessels could literally 'wash away' the fragile cluster of old boats. Mooring requirements of the new barges might also mean that the present mooring location of the Collective would have to be shifted, which opens debate about where they could locate

DIY networking options we have discussed include managing the harvesting of energy and distribution of power through the use of open source options, including drawing on SPC expertise, and we have been given Ensemble electricity monitors by the fellow CAPS-funded project DecarboNet. The Minesweeper Collective is interested in the potential to reflect the living state of the Creek by developing a floating 'data mine' that gathers data from the Creek. This could serve the dual purpose of building a connection with their neighbours the Creekside Education Centre by providing them with an additional 'data collection node' but also provide interesting data for the Minesweeper Collective itself, that might be explored from an artistic perspective, for example creating prints from the environmental recordings.

## 6.3 Contact with additional groups

In addition to the groups that already had strong connections with SPC, the community mapping identified further groups and we are in the process of making contact as they may be interested in engaging with the CreekNet pilot. These include other local organisations already interested in developing services with MAZI type DIY tools as consequence of earlier work they have carried out. The following subsections list the groups, their key characteristics and where relevant, a synopsis of what DIY options have been discussed.

### *6.3.1 Redstart Arts*

Redstart Arts is a community arts organisation providing a platform for artists with learning disabilities. It was formed in 2011 by professional artist Cash Aspeek, who has been working with marginalised groups for over 20 years, focusing particularly on adults and teenagers with learning disabilities, and a member of the Friends of Brookmill Park. She holds a MA in Inclusive Arts Practice and currently works as an Art Educator for the Royal Academy of Art.

Redstart Arts enables people with disabilities to work collaboratively with creative professionals to create high quality art, installations or products that have a valued place within the visual and applied arts world. Its aims are to foster individual creativity, develop critical thinking and challenge ideas around inclusion and acceptance.

Restart Arts have been using the Brookmill Park warden's hut as a base for activities during 2016; Cash is also part of the Friends of Brookmill Park organisation.

### *6.3.2 Steven Lawrence Centre*

The Steven Lawrence Trust (http://www.stephenlawrence.org.uk/) is a charity whose building is situated between Brookmill Park and Broadway Fields. It was built in 2008 on the site of a Thames Water pumping works. The charity seeks to transform the lives of young people and achieve social change. It has a focus on

training and education, and has IT training facilities. The charity hosts meetings, workshops and social events overlooking the Creek, and hence may potentially be a location for hosting MAZI workshop events.

Several small companies currently rent a number of workspaces available throughout the building. For example, 'IT-house' offer technical support for the Trust, and there is a game design and software development company Playback Interactive. Radio project Mi-Soul occupy the annex building connected by an elevated walkway.

There is an adjacent small outdoor space suitable which might be suitable for beehives, and SPC is keen to broker a contact for the local beekeeping community.

### *6.3.3 Bird's Nest Pub*

The Birds Nest (http://www.thebirdsnestpub.com/about.php) has evolved into a fantastic, international music and arts venue while retaining its original South London flavour. Located at the end of Creekside and on the borders of Greenwich and Deptford, the pub is a hub of artists and musicians. The pub currently hosts live music, which varies from established well known bands, to up-and-coming local talent, and an art exhibition named "Undercurrents Gallery" showcasing emergent, underground and more established visual artists. This art gallery is curated by the Minesweeper Collective.

The Bird's Nest pub is interested to explore real time image and event publishing to a timeline blog, a custom captive portal and the publishing of event information.

### *6.3.4 Julian Kingston: Local Beekeeper*

Julian is a leading community activist in 'Friends of Deptford Creek' and a boat dweller, but also has a number hives next to the Creek and is part of a local beekeeping community. Julian not only bottles honey but also produces wax polish and mead.

Julian, along with other beekeepers in the area is highly aware of changes in local environmental conditions, and there is potential interest in how technology might help monitor the health of their hives. Prior work exploring hive monitoring has been carried out by Rob Phillips at the RCA (http://www.rdphillips.co.uk/project/bee-lab-citizen-science/), who is in contact with Mark Gaved (OU).

Julian's boat is moored at no.2 Creekside, and along with the other boat dwellers faces disruption due to changes in access and use of the land access yard, and their mooring rights being threatened. This might require Julian to find alternative locations for his hives which are currently sited in this yard.

### *6.3.5 Jake Strickland*

Jake Strickland (http://jakestrickland.co.uk/) is a local artist and technologist who has built and maintained an environmental sensor station based on a Raspberry Pi and one wire sensors, operating at the Creekside Discovery Centre, gathering data from the Creek. A long-time collaborator with James and SPC, he is keen to extend his work and further explore environmental sensing and web reporting of local conditions. He maintains a website which includes links and reports of his work in the area.

### *6.3.6 Deptford Housing Cooperative*

This is a local housing cooperative (http://www.cds.coop/co-op-directory/az-listing/deptford-housing-co-operative-limited ), which has a shared wired community network installed by SPC in 2003. This year, SPC has upgraded their wireless network services, and the cooperative has noted an interest to explore services that might be run over their network to support community engagement and participation in their organisational processes.

We can see a parallel with some of the activities that are developing as part of the MAZI Kraftwerk1 pilot in Zurich, so are keen to make contact between Deptford Housing Cooperative and the Karaftwerk1 pilot partners to explore potential exchange of ideas.

### 6.3.7 Vinyl Cafe

Vinyl Cafe (https://vinyldeptford.wordpress.com/) is a local record shop and cafe that hosts music events. The owner is seeking to set up a local wireless hotspot to present event videos recorded on their HD CCTV (installed by SPC); to list record collections, promote special deals, and provide a live calendar of events. The cafe is also seeking to improve its broadband service.

### 6.3.8 Hoy Kitchen

Local cafe' and former pub (http://www.thehoykitchen.eu/) that owns the last strip of land with access to the Deptford Creek independent of large scale development. It stood as a last point of resistance to early regeneration of this stretch of the Creek, guarding their access to Hoy steps (enshrined in covenants) and preserving this historic Creek access point. We have met the owner manager there and believe it to be a good Friends of Deptford Creek meeting point, potential workshop host and location for wireless hotspot or location-triggering beacons.

### 6.3.9 Karen Barnes

Karen Barnes is local musician, artist and famous pinhole camera photographer (https://www.londonart.co.uk/sales/cv.asp?artist_id=6722), with strong links to the Birds Nest venue and the Minesweeper Collective. She regularly performs there and exhibits her pinhole camera photography, portraits of the pub and patrons.

Karen is documenting aspects of change along the creek wheeling her large 1.6m box pinhole camera/portable dark room, to key public places along either side of the creek, crossing bridges and exploring ideas of image with people she then meets, along either side of the creek. A MAZI hotspot embedded in the pinhole camera might be a way of promoting her activities as she travels around working.

### 6.3.10 Goldsmiths, University of London

The MAZI team has made contact with researchers at Goldsmiths, a nearby college that is part of the University of London. Led by Dr. Jennifer Gabrys, the team has been exploring community based environmental sensing and has recently commenced a project inviting Deptford residents to measure their air quality, as part of the Citizen Sense project (http://citizensense.net/). They are campaigning for greater openness of data collected by local authority and development agencies.

### 6.3.11 National Maritime Museum

The National Maritime Museum (NNM) (http://www.rmg.co.uk/national-maritime-museum) is in the bordering Borough of Greenwich. In April 2017, Greenwich will host the start of the Rendez-Vous 2017 Tall Ships Regatta, a major tourist event (over 1 million visitors attended when it last visited Greenwich in 2014).

The NMM have indicated an interest in revealing the hidden histories of Deptford Creek, its community of boat dwellers and other users of the Creek, due to its long association with maritime history. This could offer the possibility of collaborating to explore how MAZI tools might be used to support location-triggered content and activities, for example using bluetooth beacons mounted in significant locations up and down the Creek. The NMM have also expressed interest in developing a collaboration with the Minesweeper Collective and SPC on print and information technology projects as part of this event.

### 6.3.12 SMASHfestUK

SMASHfestUK is a project being run from Middlesex University London. It has been set up to widen participation in a range of Science, Technology, Engineering and Mathematics (STEM) subjects through art and design activities. Using a narrative-driven and an inquiry-based engagement approach they have been awarded for excellence in public engagement (by the National Coordination Centre for Public Engagement, NCCPE) for their success in breaking down barriers to inclusion by engaging university staff and students with indigenous young people and local residence.

SMASHfestUK 2016 took place in Deptford at The Albany and Deptford Lounge. The team used fictional "What if..." scenarios to engage participants in thinking how they might use science and creativity to overcome common challenges. Participants were engaged through live performances, poetry, visual reality experiences, coding clubs and interactive installations where they were challenged to think about how they might generate resources and energy to build a new future in Deptford to overcome a recent solar storm (e.g. through human power stations, self-build planetarium and culturing the genetics of superheroes).

Wyn Griffins and colleagues from SMASHfestUK have expressed an interest in the potential DIY networking has to offer their team, e.g. to better engage young people and local residence and to bring to life their "what if..." scenarios. The type of installations we have discussed include the use of SALSA beacons with captive portals to act as a digital guide to the themes presented at one of their events. Wyn has also expressed an interest in exploring ways of using DIY networking to enable the groups that attend their events to continue to be connected rather than reverting back to the status quo.

#### *6.3.13 SELCE*

South East London Community Energy (http://selce.org.uk/) is a community based organisation formed in February 2014 by a group of Greenwich and Lewisham residents. Its mission is to generate sustainable energy through installing micro-renewable generation facilities, 'by the community, for the community'. SELCE has a direct link to the Minesweeper Collective, and advises this group and others on wind and solar installation.

SELCE are seeking a wireless hotspot and public energy monitoring for their portable solar truck. The intention is to be able to present information about SELCE to visitors to the truck, as well as providing monitoring information on the operation of the solar panels (energy generation vs. load) at events they attend in and around the local area. We have also explored working together on MAZI-enhanced and solar-powered signage.

## 6.4 Insights gained from hosting community engagement events

Community engagement activities were held around the Creek throughout the duration of Phase 1 of the pilot, and allowed to gather an understanding of each participant's challenges and gradually make sense of common threads and interweavings.

The MAZI Monday meet-ups were held at different locations in and around the Creek, typically between 12pm and 6pm. Whenever possible these meetings were arranged to coincide with other events to maximise the breadth of communities we were engaging. For example, one Monday we started earlier with a MAZI Low Tide Walk at 11am then took everyone to have lunch on board the Minesweeper followed by a brief presentations till 4pm followed by a visit to SPC headquarters at Deckspace, ending with a visit to the local Birds Nest pub. Six workshops were also held on board the Minesweeper. These coincided with their weekly Minesweeper Collective meetings between 6pm and 8pm, which James Stevens (from SPC) was also able to attend. At these meet-ups, local people came together to explore the issues related to the boat, its surrounding boats and shore-side access to resources. For example, issues that were discussed included ways and means of refurbishing the damaged craft; how the canopy on the top deck could be repaired; how to optimise and improve on energy storage, e.g. by charging of batteries, installation of wind turbine, solar panels. By being present at these meetings meant that we were able to understand their challenges giving us a better idea of the ways DIY networking might benefit them.

At Brookmill Park we also held a series of four MAZI Monday meet-ups in the Park Keepers Hut from 12 noon till 6pm. A very few local people visited and helped with tidy up of the space and contemplation of how to progress with development of the friends ambitions for improvements to communications in the park. Finally we left the space ready for Redstart Arts to make use of during summer months. Most recently we met the friends there for general meeting and it was much more civilised and well used. External lighting and CCTV or other security concerns remain untended. We made a special visit to Stephen Lawrence centre and met with Larwood, the manager, to prepare for future workshop use of their available spaces.

These events gave us cause to reflect on the landscapes occupied by the groups we talked to. The physical environment is an underpinning context in which all the groups inhabit, and by visiting groups we began to think more about the bridges that cross and bind the Creek: bridges as crossings and the physical geographies that link the communities. At the opening of the Creek out to the River Thames, there is a new Swing Bridge, opened in 2015 and connecting the Thames path on the south of the river. Moving south, the busy Deptford Creek Road lifting bridge enables the passage of busy road traffic and offers views north to the gentrified developments and south to development in progress, the Minesweeper Collective, and a concrete making plant that uses the Creek for transporting aggregates ready to be mixed and hence keeps some lorry traffic off the roads . Next, between the Minesweeper and Creekside Discovery Centre, the rail 'Iron Bridge' is an industrial heritage monument but which is due a raft of safety improvement measures not least the replacement of the housing and engine lifting equipment with GRP simulations. The Ha'ppeny Hatch (a historic wooden bridge shut down in the 1920's and re-opened in 2002) just beyond was installed after huge public appeal for a footbridge at this point to provide safer crossing and links Norman Road to Creekside. Environmental designs for a continuation of pedestrian walkways stretching from New Cross Gate to Woolwich were outlined in Borough Plans of the 1990s. The A2 crosses over the creek at Deptford Bridge where the DLR also spans overhead. A cycle and foot path picks up again in Broadway Fields an open space with basketball courts and opportunities for public socialising often occupied by small groups playing sport or hanging out meeting and enjoying the rare chance for a view of sky. The Ravensbourne river cuts along the side of the park in a concrete trench almost under the DLR to end of line at Lewisham. A humpback footbridge jumps back over to the path leading south into Brookmill Park and the wide footbridge adjacent to Stephen Lawrence Centre and out on to Brookmill Road on route to Lewisham. The landscape and bridges frame and allow passage between the communities, yet for their proximity, some groups inhabit very different social and cultural spaces.

There are common challenges, however. Asserting rights to access resources, trade and reside locally are common long fought battles faced by the groups we have made contact with, and sustained against the odds. The rapid transformations underway along both side of the Creek are outrunning the capacity of residents to respond to the challenges, and large amounts of energy are spent resist planning processes and holding developers to their commitments and ensuring that they engage with people affected. City workers and their families are moving to new apartments blooming at every corner, unaware of the cultural and historical richness of the area. The increasing cost of domestic rents and ever-restricted workspaces are contributing to a crisis of identity and insecurity that will continue to oppress homemakers and local enterprises in the area and perpetuate the churn of fortunes many are already experiencing.

A significant challenge noted by all groups is the effect of the Thames Tideway sewer overflow construction: a large scale infrastructure projects in progress across London from Ealing to Becton along the Thames and directly impacting the Creek. In Deptford there are two deep excavations planned, and both will contribute massive local disruption for five years or more, whilst offering little in compensation or shelter for those affected. At a recent meeting of the Deptford and Greenwich Liaison Working Group held at Creekside Discovery Centre, we heard from officials of the Thames Water, Tideway and Lewisham council about their commitment to public liaison yet despite detailed project plans, there was a sense of little being presented to allay fears of further sweeping aside of community interest. Signs of awareness and resistance came as a surprise to many of those present from the commercial sector. Requests for detailed data about environmental monitoring already taking place or any commitment to make such data feeds available were only received with tacit offers of aggregation and post- collection reporting on offer. Thames Tideway have installed a large array of riverside noise sensors to build up background data set, and meeting attendees requested access to this data stream at the recent public meeting. Desire from communities to have data is strong. Additional topics to the prepared agenda tried to focus on awareness of how to negotiate for the £2.5 million 'Section 106' contribution from developers to benefit local activities. Planning consent for 500 ton barges to carry away spoil from the Tideway tunnel dig has been requested to limit the use of road haulage consent already offered. This would result in two transports per tide rather than 100 trucks a day on the local urban roads, but requires dredging of the middle section of the Creek including adjacent to the Minesweeper cluster of boats. The effect of all this will be to destabilize the small community of boats clustered opposite the Laban Dance centre and make the study area for Creekside Discovery Centre low tide walkers inaccessible. Dredging may turn up

unexpected issues for those along this stretch as historical uses of the creek have left a noxious sludge residue yet to be clarified.

## 6.5 Scenario creation

As meetings with community partners progressed, we began to explore how locally managed and run networking technologies might resolve challenges, or help achieve aspirations. These conversations were often mediated by discussion about networking technologies that participants were already familiar with, in order to set the scene, provoke reflection and provide some context for the unfamiliar concept of 'offline networking'.

Not all community challenges identified by participants in these meetings could be effectively solved by DIY networking technologies, and the MAZI project is limited in the capacity to which it can respond for varied requests. Part of this process was managing expectations of what our team might be able to contribute. In many cases we were seen as technology experts, so for some groups there was the hope that we could solve their broader IT challenges (e.g. building websites, sorting out problems with equipment). A challenge for the project team, therefore, has been to work with potential partners to reach an agreement of viable areas of potential collaboration. Below we sketch five exploratory scenarios that have emerged and which we will investigate further during Phase 2 of the pilot. We see this as (a) a way of providing stories that can be discussed with potential users to discuss whether we've captured what they'd like to have built; (b) a method for checking our gaps in our understanding; and (c) identifying required interactions with different MAZI partners to ensure successful construction.

Our pilot has been endeavouring to cover three aspects of MAZI: CONTACT, INFORMATION, and DISCOURSE. Aspects of these are starting to emerge in the community engagement discussion but as yet there is not a clear or perfect mapping to each of the groups or across the groups, and we expect these initial, illustrative examples to evolve during Phase 2 when we start to introduce prototype tools to participating groups and start to gather feedback.

### *6.5.1 Sensing the Creek*

Conversations with Creekside Discovery Centre (CDC) explored the challenges they have in collecting and disseminating data collected through their activities, and engaging with wider audiences in the local area. Their key activity is taking visitors, including school children on class visits, on walks along the riverbed of the Creek at low tide, to introduce the participants to the biodiversity present, and to engage in species recording activities themselves. Currently, data is collected using pencil and paper and there is a limitation on what can be recorded and the rigour of the processes. Jake Strickland's 'CDC Weather Station' operates at CDC, and SPC has worked with CDC since it's opening, when it was one of the earliest of the community mesh network 'nodes' and today continues to host OWN, so these formed the basis of discussions around what technologies might be appropriate to consider for a MAZI collaboration. A range of possibilities have been discussed: including using technology to capture species recording (e.g. iPads on a local network); storing the data on a website so students could continue to access it when back at their school, and made available to other local residents; and placing automated sensors like Jake's weather station up and down the Creek to get a broader set of environmental readings.

Automated monitoring of environmental conditions up on the Creek would allow additional data to be gathered, and this could be used in conjunction with species recording to better enable researchers (e.g. students) to explore how changing conditions affect the health of river populations. This opened up discussion about how freely accessible to make the resulting data sources and we reflected on the 'open data' debate: would it be better to let everybody access such data, or whether there local actors that CDC might not wish to share the data with (e.g. building developers).

At first sight, monitoring of environmental conditions might be considered to respond to the INFORMATION aspect of the MAZI pilot: collecting and disseminating data about the Creek to build a sense of collective awareness. CDC are keen to engage more local residents in awareness about the biodiversity on their doorstep, and that they too could become involved. Gathering information about Creek conditions before and during major Thames Tideway work and other building activities in and around the Creek will provide data to inform DISCOURSE and support local discussions, providing independent evidence that might be used by a variety of groups along the Creek to actively engage in debate. By providing these resources, CDC can enable CONTACT to be made between groups and activists. To gather data in different locations up and down the Creek, CDC will need to reach out to different groups (CONTACT) and work with them, including groups with very different foci but may share common purposes. For example, the Minesweeper Collective will also be greatly affected by Thames Tideway work and could share data about local Creek conditions.

***Example: The River Sensor***

**Purpose:** Creating a MAZI node 'river sensor' will allow interested users (e.g. a local educational trust) to gather data about environmental conditions in the river. This can strengthen the offering made to local schools (providing them with richer data over a longer time period, and extending the interaction with the education trust), provide a resource for local residents to explore, and provide a data source that might be interpreted in alternative ways (e.g. a source for local artists to generate art works).

**The MAZI node:** The node will be a small computer with additional sensors to measure e.g. water temperature, flow direction, turbidity.

***Water temperature****:* A sensor will capture periodic recordings of water temperature. This will be stored locally but also uploaded to a central internet connected server for remote viewing and visualisation.

***Flow direction:*** A sensor will measure the direction of river flow enabling analysis of tides. This will be stored locally but also uploaded to a central internet connected server for remote viewing and visualisation.

***Turbidity:*** A sensor will measure the opacity of water and hence allow extrapolation for scientific measurements e.g. measuring oxygen levels in water, and hence conditions for the well-being of species. This will be stored locally but also uploaded to a central internet connected server for remote viewing and visualisation.

**Display of data:** the MAZI node will pass data to a remote server, or allow logging into the node directly.

**Remote distribution of data:** Data collected and stored locally on the River Sensor will be distributed to the internet via a network connection to a local access point/network node that will then connect to a webserver. Alternatively, a local webserver can run on the River Sensor itself. Remote storage of the data is required and is expected that remote viewing will be via a webserver. This should allow viewing of individual nodes, as well as integrated viewing of multiple nodes (e.g. a map of conditions up and down a river, historical records for longitudinal analysis). MAZI developments allow for the possibility of a mesh of Pi's - in this case, River Sensors - to be distributed along a landscape and for a user to be able to interrogate not only the Sensor they are nearby, but others up and down the water course.

For the River Sensor administrator who maintains a number of river sensors in a local area it would be useful to have remote reporting of the MAZI nodes to enable them to understand at a distance which of the nodes are operating and which have stopped functioning.

### *6.5.2 Community Information Exchange*

A significant challenge for the residents of the Creek, particularly the boating community, is in asserting and assuring their rights of occupancy in the face of the rapid developments happening along the Creek. The 'Friends of Deptford Creek' for example, has been formed with a key purpose of enabling a diverse community to come together, share information and resources, record their activities and present their case to the wider world. For the boating residents, access to conventional internet connectivity and online services that might support this activity is more problematic. An offline network might offer a more portable, low powered and flexible tool for maintaining a collective memory and sharing and promoting resources. This would respond to the MAZI pilot goal of supporting the storage of INFORMATION, enable DISCOURSE amongst a community mobilising to fight a common cause and allow for CONTACT with potential additional participants.

***Example: The community information exchange point***

**Purpose:** A central repository of community knowledge that can be accessed by residents in the locality: holding resources, promoting activities through a broadcasted wireless node, and allowing interactions through web based tools.

**The MAZI node:** A standalone small computer with low energy requirements and external antenna enabling wireless communication over a wide local area. Tools to include a public facing website, forum, and document repository. Administrator access to allow local configuration of permissions enabling both 'public access' and 'members only' sections.

**Display of data:** General access to data via webserver; though potential for local administrator access.

**Remote distribution of data:** Potentially, this could be linked either to an internet connection (wired or wireless) or networked as part of a larger mesh allowing viewing and sharing of resources across a network of similar devices to enable greater reach over an area.

### *6.5.3 The Networked Bird box*

Conversations with the Friends of Brookmill Park presented the group's intent to highlight and develop the 'bird sanctuary' that the park provides. The resident naturalist Conrad Ellam (https://www.facebook.com/conrad.ellam) hosts early morning walks for birdsong and dusk walks for bat spotting opportunities. Along the Creek, there are many nesting places, and a desire to promote the diversity of wildlife that prospers in the urban neighbourhoods, particularly to groups who would otherwise not recognise its presence. Prompted by the construction of bird boxes in the Brookmill Park hut, and discussions about the potential of older smartphones to act as offline network nodes in their own right, the CreekNet pilot team has considered how localised networks of re-engineered smart phones might offer a relatively discrete way of enhancing and widening the potential audience within the park users as a whole. Bird boxes, or bat boxes, with data feeds (e.g. time lapse cameras, a range of sensors) might allow a range of local park users to gain an insight into the activity around them, from casual passers-by just interested in finding out recent activity, and leaving comments and thoughts, to more 'scientific use' of the data over a time period and across the park by researchers such as local naturalists, and school groups. This would also allow us to explore the possibilities offered by re-using smartphones as environmentally sustainable use of technology.

**Purpose:** Adding a MAZI node to a community built wooden bird box will allow local members of the community to watch and listen to birds' nesting activities via their network-capable devices (e.g. smartphones, tablets, laptops). Functionality will allow the exchange of images, and commenting.

**The MAZI node:** Smartphones, flashed and rooted with open source software (e.g. http://www.cyanogenmod.org/), will be used as the local MAZI nodes, physically mounted to the side of wooden bird boxes.

***Images and Video****:* The phone's camera will capture activity in the nest. This could be:

- A live video stream
- Periodic photos
- Images taken on request

Images will be stored on the phone so passers-by can login and view. Perhaps they can also be uploaded to a central, internet connected server for remote viewing.

***Audio:*** The phone's microphone will record ambient audio so users could listen to audio, and access graphs of audio levels. Again, these might also be automatically uploaded to a central, internet connected server for remote viewing.

***Environmental data:*** *The* temperature sensor on the phone could report on local temperature at the bird box.

**Display of data:** Local passers-by could access the phone through its web server portal and view the collected data through the web interface. This might require custom coding to further develop web server interfaces e.g. https://piratebox.cc/ software.

**Remote distribution of data:** Data collected and stored locally on the smartphone might be distributed to the internet via a wireless network, to enable an integrated view of multiple bird boxes, e.g. images, records of audio. For the "bird box administrator" who maintains a number of bird boxes is a local area it would be useful to have remote reporting of battery levels on the MAZI nodes to enable them to understand at a distance which of the nodes are operating and which have stopped functioning/will need batteries replacing soon.

### *6.5.4 The Datamine*

For many of the groups we contacted creative, or artistic explorations were central to their activities, and the appropriation and repurposing of tools in the local environment for their own purposes. This sense of playfulness and experimentation resonated with similar values found in DIY networking and we are keen to ensure this joyful aspect of autonomous networking is captured in the MAZI toolkit.

Exploring how we might bridge conversations (CONTACT) and encourage the exchange of data (INFORMATION) for shared purposes up and down the Creek we recognised that the Creekside Discovery Centre's goal of gathering environmental data could be strengthened by the participation of other communities with access to different parts of the Creek. Their near neighbours, the Minesweeper Collective, are moored downstream and would be a useful further place for data collection. As a group of artists, we wondered what localisation they might offer. The group was intrigued by the idea of generating art from environmental data and representing it through their preferred medium (printmaking) and the opportunities this might offer to provoke discussion (DISCOURSE). We have mused on the development of a custom river sensing node hosted by artists, and playfully taking our cue from the original purpose of the host vessel, envisaged the idea of a 'Data Mine': a floating environmental sensor that gathers data from the surroundings and reports via a tether to its host community,

**Purpose:** Reflecting on how MAZI zone nodes might be operated up and down the Creek by different groups to bridge their interests and develop collective awareness of issues through their different lenses

**The MAZI node:** A small, battery powered low energy computer with environmental sensors, reporting on water and air conditions (e.g. temperature, noise level, local radio emissions) similar to the River Sensor but in a waterproof, floating container tethered to a host vessel.

**Display of data:** Direct connection via a wireless link to an onboard web server (captive portal) might be enabled but the environmental conditions may require that a wired link is fed to a nearby wireless access point and connectivity achieved from there.

**Remote distribution of data:** In combination with a wireless access point, the Datamine may connect to other nodes along the watercourse.

### *6.5.5 Beacons on bridges*

Discussions with groups made us realise both how rich in stories the Deptford Creek area is, but also how much is hidden, and how local knowledge could be swept away by developments. There would be great value in telling these stories (INFORMATION) and enabling residents, both long term and new to make contact with each other (CONTACT) and also to engage in debate (DISCOURSE) via boundary objects such as MAZI installations. A long term resident film-maker attended MAZI-Monday meetups on the Minesweeper and announced he had been capturing images over decades, and had footage of former industries that had since been displaced. We have met naturalists who have opened our eyes to the wealth of local wildlife; and throughout all the conversations there have been stories and reminiscences of people and places, social and cultural events. Our informal conversation with the National Maritime Museum reminded us of the maritime historical significance of the Creek.

We imagine that the MAZI toolkit might be used as a boundary object to make the invisible visible, to provide a trigger for revealing the richness of the Creek and also to initiate conversations. With eight bridges crossing the Creek, we see the potential for a 'discovery trail' which will encourage people to explore the Creek and gradually understand the interwoven stories, and perhaps add their own. In a previous project (http://www.open.ac.uk/blogs/salsa/) we have used Bluetooth beacons to trigger prompts for activities as language learners move around a town, working inside and outside and not requiring internet connectivity of data downloads. We propose to experiment with repurposing and expanding this system to trigger historical, natural, and cultural themed stories and prompts to action.

#### *Example: the CreekNet discovery trail*

**Purpose:** Local triggering of content (themed by history, nature, and culture) to encourage the exploration of Deptford Creek: often there are rich stories and insights that might not be immediately visible to the casual passer by and this will encourage engagement. As well as prompts to listen to stories, watch footage, and look around, we will explore how users can also be contributors, adding their own images and commentary. As the user follows the discovery trail, they will be prompted at significant points (the bridges) to pause and engage with content.

**The MAZI node:** Simple computer with webserver and Bluetooth beacon, in some cases with internet access. The beacon will be used to trigger an app and invite the user to engage with pre-populated content. In prior trials the app has held all content and a simple broadcasting beacon acts as a trigger, however with the incorporation of a simple computer (e.g. Raspberry Pi) co-located with the transponder there is the possibility to dynamically load content at each location, for the user to add content (e.g. upload a photo, and comments to a story). Adding internet access to the nodes will enable remote viewing and collating of user participation across different nodes.

**Display of data:** Direct connection via a wireless link to an onboard web server (captive portal).

**Remote distribution of data:** In combination with a wireless access point, the discovery trail beacon may allow for content to be refresh and user stories to be captured and drawn together for remote viewing.

# 7. Evaluation

The potential impact of the Deptford CreekNet pilot is to help communities overcome local challenges through the use of DIY networking; developing and maintaining their own technology solutions. In Phase 1 community engagement was achieved through the community mapping, a series of outreach events, development ideas for tools through 'pretotyping' and dissemination through blogging.

In this section we reflect on the *'Performances'* of Phase 1 in terms of the outcomes of the community mapping, insights gained from hosting workshop events, and conclusions drawn from the deployment of early MAZI tools and other pretotyping.

## 7.1 Community mapping

Community mapping so far has been carried out through informal conversations, invitations to events hosted by potential partnering organisations, and the setting up of MAZI-Monday meetups. The outcomes have been captured through pencil and paper sketching, reflecting on the context and the purpose of the different groups. This has led the pilot team to start exploring more formal methods of recording and sharing the landscape of groups, starting with the kumu community mapping software platform. This will enable us to represent the richness of information that we are gathering and show potentially multi-layered linkages.

Key observations so far are that this is a time consuming process, and has to be managed sensitively. We are contacting small, often voluntary groups and individuals who have many demands on their time and are not familiar with the purposes of our project, hence there has to be a gradual process of building trust and confidence. Our goal as we move into the second phase of the pilot we will explore ways of bringing groups into the shared generation of community maps, with the intention of eventually handing over control so this becomes a local resource.

## 7.2 Community outreach events

Methods used to reach out to local groups who may potentially participate have emphasised informal and low key approaches in order to gain confidence, for example attending events that they themselves host, and then moving to informal interviews and more structured meetings. The original intention to hold workshops has been delayed by taking a longer view and will be brought to the fore in Phase 2. Our ambitions to promote MAZI as a means of helping support local communities overcome challenges are very timely, with intensive building work in progress on both sides of Deptford Creek, reaching crisis point as projects increasingly coincide and collide and impact the groups to which we are talking. Our plans for environment monitoring, neighbourhood awareness and useful responses could be foiled by the speed of these changes if the project team does not make rapid progress. However, SPC's prior experience had taught us that it would be very important to gain community trust and commitment. We recognise that if a project is seen as an outside intervention with no lasting value, it would most likely be rejected or ignored.

We have found that people need opportunities and situations to talk to each other, find the community in which their networks exist. Meetings and meetups are important, and the MAZI project itself has acted as a boundary object: for example introducing groups who are physically closely co-located but until now have not directly talked with each other. We have had to manage expectations: SPC is recognised as a local technology expert organisation, and presenting ourselves as seeking to help solve community challenges required that we bound what we were capable of supporting and the scope of our project.

MAZI as a project, and the concept of an 'offline network' has not been straightforward to communicate. While a minority of the groups we talk to have encountered community based approaches to networking (in some cases as subscribers to SPC's services), online access is generally ubiquitous in the Deptford Creek area, and introducing an alternative has to clearly show a definitive purpose to address a localised need. External factors

in the political and financial arena have also been motivators for getting people to listen when local ownership of a network is being offered.

This has revealed the importance of offering a conceptual framing: we need a narrative to engage people beyond inviting them to try new technologies. This narrative can have both practical aspects ('offline networks as a means to have control over your own data') but also inspirational: SPC has been exploring frames that will resonate with local iconographies, histories, mythologies and concerns. For example the concept of offline networking as 'digital Anchorites', playing with the metaphors of local maritime history and the loss felt when an old anchor, a key feature of the High Street and symbol of Deptford, was recently removed by the council, as well as the idea of a modern version of medieval recluses communicating with the world (a role that artists sometimes play). Alternatively, with the rapid development of the Creek, the concept of 'hydrarchy' the hierarchy of access to the waterfront, is being mused as a framing for how the MAZI toolkit might support discourse, as this is being physically and politically played out and directly affecting a number of our contacts. We will be playing with such metaphors to see if such framing might capture the imagination locally and encourage participation and exploration.

The groups we are in contact with are generally small, and limited in their resources, so we have to take into account the extent to which they will be able to invest in MAZI. Generally, they are not highly technically focussed groups, and are busy in their own activities, so utility is the primary motivation for digital use, and they will not necessarily have a great deal of capacity for learning specialised skills that are not directly applicable to their main focus of activities. The groups' prior experiences of engaging with networking technologies has not always been positive; for example, website that have been set up by volunteers who have since left and left the group locked out due to lack of documentation or depending on an individual no longer involved, and the recognition that computer technologies require ongoing support.

MAZI will need to address the valid concerns of these groups who are wary of engaging with further technologies. We should ensure that the case for using an offline networking approach is well made: with examples of how it might be used, ensuring tools are accessible and well supported, offering opportunities to share experiences and providing carefully structured support materials.

## 7.3 Deployment of early MAZI tools and other 'pretotyping'

Introducing examples of current networking technologies that approximated some of the likely functionalities of the future MAZI toolkit was a valuable method to help our potential participants imagine what could be possible and how they might engage with us. For many of the groups we spoke to, there was a limited expertise around networking technologies. We also had to manage expectations and explain that we might be able to support a specific set of responses to challenges, and that we could not support all technological ambitions.

We showed examples of existing technologies to potential partners as during this first Phase of the project, as well as finding out what was currently in use by the community groups. The MAZI toolkit itself was in its early stages of development, so first of all we ourselves as a project team had to spend time understanding its capabilities before we could introduce it to others. We integrated the toolkit into our own working practices, using the etherpad and sandstorm shared document authoring environments, carried with us on a Raspberry pi. This familiarisation process consumed a significant amount of time, but enabled us to better understand what was possible and what we might offer to potential participants, as well as specific challenges that would need to be considered (e.g. the default behaviour of smartphones to attempt to connect via 3G networks making accessing a local offline network more problematic in some cases). We integrated the toolkit into our own working practices, using the etherpad and sandstorm environments to capture the notes from our meetings.

The examples we have drawn upon (from other OU projects, and other MAZI partners) have steadily and slowly created interest. Having a 'pretotyping stance' has maintained the scope of our involvement with the MAZI participants, and restricted the engagement for possible project creep into other arenas. It has also drawn out concerns the contacted groups have around technologies, and alerted us to where they might need support. For example, open source software has many great positives, but can be demanding in delivery/ installation/maintenance, needs appropriate documentation and a level of development to enable the average

end user. Also ongoing maintenance has to be considered: while Jake Strickland's weather station proved to be a great exemplar to structure conversations with CDC, it also flagged up that systems have to be maintained: during this Phase the system went offline as a rat chewed through an essential cable!

It became clear that training will be an important aspect for MAZI to consider as the project continues, and take up, and sustainability of services will be more likely with 'digital champions'

# 8. Discussion & Outlook

In this section we summarise the extent to which the objectives of Phase 1 of the Deptford CreekNet pilot have been met and how this has informed the development of the toolkit and what this might mean for the development of the toolkit in terms of the need to accommodate the different types of community actors. We conclude by considering future actions in this pilot during Phase 2 of our study.

## 8.1 Summarising key activities

Within the first 6 months of the pilot, (Phase 1) we note the following key outcomes.

*This first phase of the pilot was chiefly concerned with:*

- Setting up the project and establishing meaningful ways of working together as a project pilot team (OU-SPC)
- Reaching out to relevant communities, to identify potential partners and local community challenges
- Initial experimentation with the MAZI toolkit within the pilot team, and also to support conversations with potential participants

*In these high level objectives, the pilot succeeded in:*

- Establishment of effective working practices between OU-SPC and management of distributed expertise
- Mapping potential communities within and along the creek and engaging with members of these groups, to understand their contexts, purposes and challenges
- Established an effective working relationship with UTH (lead developers of MAZI toolkit) which has enabled the OU-SPC team to integrate the prototype MAZI toolkit into working processes
- Exploration of MAZI toolkit that has enabled the team to reflect on its potential, and the requirements for its future development in order to support specific CreekNet community challenges
- Initial development of potential use case scenarios to act as boundary objects between community partners, the pilot team, and the MAZI technical developers

## 8.2 Future outlook

In Phase 2 of the CreekNet pilot, we will build on the community engagement processes so far carried out and move towards initial prototyping and trialling of the MAZI toolkit within the Deptford Creek area, alongside participating groups. We will continue to reach out to local organisations and activists, seeking out interested potential participants and further develop the community and knowledge mapping so far undertaken (e.g. use of kumu). In Phase 2 onwards, we will encourage and empower our community partners to take ownership of this community mapping process; supporting them by giving them the know-how and technology they need to maintain community maps.

Some preparatory work may be required to enable field testing of MAZI tools: developing local network infrastructures (building on the OWN expertise and current network) and setting up individual services,

including the development and deployment of appropriate support materials (drawing on work carried out in WP1).

This will enable initial field testing of individual MAZI tool kit components with engaged community partners to enable critical reflection on their usability and affordances, and likely opportunities for integration within MAZI toolkit. We will undertake practical hands on events with neighbourhood contributors, discovering MAZI toolkit components, recipes, techniques, sensors and systems. We will use pre and post evaluation forms at workshop events; send out online surveys to all participants post each event; and carry out semi-structured interviews with community leaders to gain feedback on the effectiveness and usability of services.

Our initial scenario development work will be continued, to further aid the process of imagining developments of the MAZI toolkit to support the resolution of community challenges, acting as boundary objects between community partners, the pilot team, and the MAZI technical developers: but also the wider MAZI research community.

In conjunction with this Phase of the CreekNet pilot study, as part of the MAZI project we will be hosting the WP3 London cross fertilisation event in M18. This will provide an opportunity to enable CreekNet groups to engage with DIY networkers from elsewhere in the MAZI project and also the wider population of both Deptford Creek and interested community networkers, and acknowledge the breadth of life and social currency end to end along the Creek.

## References


Chevalier, J.M. and Buckles, D.J. (2013). *Participatory action research: theory and methods for engaged inquiry*. Routledge, London.

Holliman, R. (2013). *An engaging thesis*. National Coordinating Centre for Public Engagement (NCCPE) blog. Available from: https://www.publicengagement.ac.uk/blog/engaging-thesis

Holliman, R., Davies, G., Pearson, V., Collins, T., Sheridan, S., Brown, H., Hallam, J. and Russell, M. (2017, in press). Planning for engaged research: a collaborative 'Labcast'. *In:* Kucirkova, N. and Quinlan, O. (eds.) *The digitally agile researcher*. Open University Press, Maidenhead.

Irwin, A. (2008). Risk, science and public communication: third order thinking about scientific culture. *In:* Bucchi, M. and Trench, B. eds. *Public communication of science and technology handbook.* Routledge, London, 199-212.

Kindon, S.L., Pain, R. and Kesby, M. (eds.) (2007). *Participatory Action Research approaches and methods: connecting people, participation and places.* Routledge, London.

Kirkpatrick, D. (1994). *Evaluating training programs: the four levels*. Berrett-Koehler, San Francisco, CA.

Lefer, T.B., Anderson, M.R., Lambert, A.F.A., Fletcher, J., and Baquero, M. (2008). Using Google Earth as an innovative tool for community mapping. *Public Health Reports*, 123 (4), 474-480

Rahman, Md. A. (2008). Some trends in the praxis of Participatory Action Research. In Reason, P. and Bradbury, H. (eds.) *The SAGE Handbook of Action Research*. Sage, London, 49–62.

Reason, P. and Bradbury, H. (eds.) (2008). *The SAGE Handbook of Action Research*. Sage, London, 49–62.

Reed. M., Graves, A., Dandy, N., Posthumus, H., Hubacek, K., Morris, J., Prell, C., Quinn, C., and Stringer, L. (2009). Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management* , 90 (5), 1933–1949.

de Sa, M. and Churchill, E. 2012. Mobile augmented reality: design, prototyping and evaluation. *In:* Churchill, E., Subramanian, S., Baudisch, P., and O'Hara, K.*,* eds. *Proceedings of the 14th international conference on Human-computer interaction with mobile devices and services companion (MobileHCI '12)*. ACM, New York, NY, USA, 225-228.

Savoia, A. (2011). *Pretotype it* (online: Available at http://pretotyping.blogspot.com/p/pretotype-it-book.html)

Schuler, D., and Namioka, A. (1993). *Participatory design: principles and practices*. Erlbaum, Hillsdale, NJ.

Swantz, M.L. (2008). Participatory Action Research as practice. *In* Reason, P. and Bradbury, H. *The SAGE handbook of action research: participative inquiry and practice*. Sage, London, 31–48.

Tandon, R. (ed.) (2002). *Participatory research: revisiting the roots.* Mosaic, New Delhi.