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Bridging Resources and Agencies in Large-Scale Emergency Management

Bridge: Open Research Ethics Protocol

Contents

Version Control

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Introduction

The Bridge project develops new technologies and new organizational practices for IT supported multi-agency and international emergency management (http://www.bridgeproject.eu/) through a user-centred innovation approach. This document describes the team's research ethics and process. It is an 'open' research ethics protocol in two senses. First, it is public so that all parties interested in our research can understand our approach. We invite comments and expressions of interest for engagement in the project. Second, this document is evolving. It is an on-going practical acknowledgement of 'ethics in action' – the unfolding of ethical considerations as research/design progresses. Comments and contributions are debated and, where considered important, integrated.

Project aims

The Bridge project responds to a concern raised in countless post-disaster inquiries (9/11, Katrina, London 7/7, Tohoku 2011). Again and again, and with great urgency, analysts call for better coordination, collaboration and effort to 'share the right information at the right time' (Shaw 2011). This is very difficult to achieve. In crisis situations there is often a lack of timely, accurate, relevant and verified information, a lack of organizational and technical infrastructures for sharing information safely, and a lack of support for distributed sense-making. There is severe time pressure, information overload and conflicting information.

The Bridge project is one amongst several efforts to support emergency professionals and other parties involved (such as the public and the media) in mobilising information and resources for disaster response. Its key aim is to support interoperability, harmonization and cooperation among stakeholders on a technical and organisational level. Technologically, Bridge seeks to develop:

- resilient ad-hoc network infrastructures
- middleware to support integration of data sources, networks and systems
- context management systems to foster interoperability and production of meaningful, reliable information
- model-based automated support systems and scenario-based training
- agent-based dynamic workflow composition and communication support
- adaptive, multi-modal user interfaces
- novel stationary and mobile interaction techniques
- visualization of ad-hoc networks and technology status

But while technical support is critical for multi-agency collaboration, innovation is socio-technical and relies on a deep understanding of social and material collaborative practices. This requires careful observation of everyday work practices and stakeholder engagement in a collaborative or 'co-design' process.

Research methods

The project develops an ethnographically informed, iterative and experimental co-design approach. In collaboration with practitioners, policy-makers and members of the public, the project team observes and analyses existing and emerging future practices of emergency response. Through workshops, prototyping activities and 'living laboratory' experimental implementations of prototype technologies we seek to develop socio-technical systems for multi-agency, cross-border disaster response that push the state of the art in information technology (IT) and professional and public practice.

Research Ethics

Co-design requires experimentation with real world work practices, which raises ethical opportunities, challenges and risks. For example, in an emergency situation it could be useful for personnel to access, process and share data about, for example:

Affected persons	First Responders	NGO and Volunteers	The environment
vital signs location medical data personal data (name, age, gender, employer) social network data skills equipment	organisational affiliation skills equipment hours worked levels of exposure (e.g. to radiation) past/present movement medical data vital signs	organisational affiliation skills equipment	weather temperatures video audio floorplans access codes

Table 1. Data shared between relevant emergency responders

In an emergency, many people would wish such data – normally protected under Directive 95/46/EC – to be shared between relevant emergency responders, because it is in their interest to enable production of rich and accurate situation awareness for rescue operations. Aggregation, sharing, analysing and visualising personal data can enhance emergency responders' capacity to efficiently obtain and utilise 'the right information at the right time', to coordinate and collaborate. User generated content (e.g. crisis related tweets or contributions to crisis mapping platforms such as Ushahidi[1]), social networking, consumer and financial information, criminal records, and other information may also become useful.

However, opportunities for more effective 'agile' emergency response based on such data sharing could 'spill over' into everyday life and could contribute to an erosion of privacy and civil liberties (Graham 2010). The Bridge project proposes that IT supported emergency response should not pose a choice between security ***or*** privacy, but should seek to enable accountable, careful and responsible balancing of security ***and*** privacy. Ethnography and co-design are central to embedding these values in the research and the socio-technical innovations produced. The Bridge research and design approach builds on European traditions of civic engagement in innovation: "European citizens care deeply about protecting their privacy and data protection rights" (Kanter 2011) and collaborative research and co-design methodologies offer unique opportunities for innovative solutions through 'collective experimentation', a notion developed by a panel on *Taking the European Knowledge Society Seriously*:

> the regime of collective experimentation … recalls John Dewey's conception of policy as collective experimentation. But the experimentation is now at the technological level as well. Situations emerge or are created which allow [societies] to try out things and to learn from them, i.e. experimentation. Society becomes a laboratory, one could say (Krohn & Weyer 1994). Here,

[1] See http://www.ushahidi.com/

> however, the experimentation does not derive from promoting a particular technological promise, but from goals constructed around matters of concerns and that may be achieved at the collective level. Such goals will often be further articulated in the course of the experimentation. The regime of collective experimentation, with its own division of labour in terms of participation of a variety of actors, is recognized as being productive. It depends on investment of effort from these actors who are willing to engage in innovation processes because they are concerned about a specific issue. (Wynne et al 2007:26-27).

The Bridge project seeks to serve the public interest by exploiting opportunities and maximising benefits of IT supported emergency response, while enabling individuals, communities and societies to be (or become) aware of risks and manage them. The advanced technical innovations listed above pose a range of challenges that can only properly be addressed through collective experimentation.

Bridge Ethical Protocols

The Bridge project's research and design methods seek to treat all participants fairly and with respect, while investigating aspects of IT supported emergency management which need to be revealed to understand the considerable ethical opportunities, risks and challenges inherent in innovation in this field. The research is collaborative, engaging emergency response practitioners, as well as policy makers and members of the public. Research will not infringe privacy without good reason and great care. The project adheres to the laws protecting privacy in the European Union, including the European Union Directive 95/46/EC.

The Bridge project research team *observes* emergency response and related practices in exercises and real world incidents. We use digital audio and visual *recording* devices to study socio-technical work practices. These are highly valuable tools for exploring *situated conduct* (Heath and Hindmarsh 2002) and to foreground practitioner/stakeholder knowledge, expertise and insight through *collaborative analysis* of observed and recorded material (via, for example, 'stakeholder workshops') (Karasti 2001). We take specific guidance from the European Union's FP7 Research Ethics Framework (FP7), the UK Strategy for data resources for social and economic research, (NDS) and the EU guidance on Ethics for Researchers (Pauwels 2007) as well as more general academic debate (e.g. Wynne 2007, Pauwels 2011).

Properly managing the ethical risks associated with this research is crucial to advance knowledge and socio-technical change. Matters such as risk, safety, autonomy, privacy, security and surveillance, are complex issues. Bringing parties with different interests and perspectives together on such matters (for example emergency response professionals, policy-makers, members of the public, IT developers, social scientists) within as equal a playing field as possible can be difficult but hugely productive. As scholars it is our responsibility to facilitate collaborative analysis in a way that balances conflicts and individuals' rights to privacy and professional autonomy with the generation of new knowledge and understanding, as well as the generation of innovative 'holistic' approaches to 'designing' 'better' ways of working.

This section presents principles and protocols for a research ethics that enables researchers to balance individuals' rights, research and public interests, and the common good specifically in the context of the research pursued by the Bridge project. The Bridge research project team will be working under the general ethics orientation to Do No Harm (non-maleficence) and Do Good (beneficence). Ethical challenges and risks will be evaluated on a case-by-case basis, seeking advice and approval from national ethics advisories (such as Lancaster University's Research Ethics Committee and the Norwegian Social Science Data Services (NSD) or the EU Ethics Review Committee) if necessary.

Privacy principles

The Bridge project research team seeks to

- balance the rights to privacy and confidentiality of participants with the importance of academic freedom and free speech and researchers' responsibility to the broader community
- observe relevant behaviour and interaction before, during and after emergency events, analyse observations and present results in ways that respect individual's privacy and integrity
- obtain consent from potential research participants for more extensive research collaboration in ways that enable genuine collaborative engagement

The Bridge research team will:

- treat all data obtained as privileged information which should not be open to third parties in a fashion that would identify any individual or organisation without their consent

Data Handling

Any personal data will be collected directly from the participants with the exception of publically available on-line information such as tweets from Twitter or news articles. The collected information may include personal opinions and experiences on any subjects related to emergency situations and/or emergency management. Data collected will take many forms including, but not limited to, video, audio, hand written field notes, typed notes, photographs and screen shots of social media sites. Data will be stored on password-protected computers, a dedicated multi-media server and also on-line using a collaborative software system, eRoom. The access to data will be protected by means of individual usernames and passwords for each user. Furthermore, the data will also be kept physically secure, by always storing the server, computers, tape-recorders etc. in lockable rooms. Where possible, identifiable data will be encrypted.

All data will be treated confidentially in accordance with the European Data Protection Directive (Directive 95/46/EC 1998). All collected data will be depersonalized before being used in any project reports or resulting publications (unless otherwise arranged with the individual concerned).Public interest

There is no single definition of public interest in the kind of collaborative interdisciplinary social science and design research we propose. It includes, but is not confined to:

- advancing understanding of situated everyday and professional practice
- developing scenarios of preferable, possible and probable futures
- identification of opportunities, challenges and risks (e.g. increased efficiency of emergency management through technology, automation of information sharing, increased surveillance)
- developing design solutions and approaches that can address opportunities, risks and challenges
- collective experimentation (Wynne and Felt 2007).

Collaborative research / collaborative design

Collaborative research and collaborative design approaches are motivated by the dynamic complexities of socio-technical-material phenomena such as security, emergency management, privacy, and surveillance. We will seek to

- develop relationships with all interested parties, including emergency response practitioners, members of the public, policy-makers, technology designers
- engage participants on an equal footing and facilitate management of conflicts of interest and perspective
- facilitate the collaborative development of 'holistic' innovation and approaches to change.

Through such engagement and collaboration within the arena of emergency management it is inevitable that participants may encounter situations which they find upsetting or distressing. It is important that the potential exposure to such risks (some physical but mainly emotional) are identified and discussed amongst those involved and that participants are able to access support services which will help minimise their impact (for example Lancaster University's counselling service: http://www.lancs.ac.uk/sbs/counselling/)

Consent

Informed consent should always be sought using the BRIDGE project consent templates (approved by the NSD and Lancaster University Research Ethics Committee). Researchers will ensure that risks are discussed with research participants in order to secure proper informed consent. However, "informed consent may be impracticable or meaningless in some research, such as research on crowd behaviour..." (ESRC REF, p. 21). As such, consent will only be sought on occasions where individuals are explicitly / directly involved in research processes (work shadowing, interviews) and not from those included as an indirect result of these processes or when research practices are taking place in wider, public settings.

If an individual or organisation asks us to stop recording, we will stop. This also applies retrospectively, if individuals contact us to erase data after having been recorded.

Protocol 1: Recording work practices and social interaction

The recording of work practices and social interactions is an extremely valuable ethnographic tool. There are three main reasons (Büscher 2005). Recordings can:

(1) capture embodied behaviour that is too fast, delicate or complex to capture by other means (e.g. note-taking)

(2) enable analysis through slowing down, speeding up, transcription and frame-by-frame analysis

(3) facilitate collaborative analysis through replay and audio-visual demonstration of phenomena

We shall operate overtly and openly unless we have decided to record covertly for research reasons (see below). Open-ness is particularly important when audio-visual equipment is not obvious as in the case of small mobile phone cameras or fixed webcams

The recording undertaken for the Bridge project will also take the form of:

- ***Electronic Note Taking*** – We will record observations in both audio and video, for example, by using small cameras or telephones, for note-taking purposes without obtaining consent.

Electronic note-taking can ensure richness and accuracy in observations. We may use note-taking recordings for collaborative analysis and publication if there is clear research justification.

- ***Recording with informed consent*** – Where individuals have given informed consent to being shadowed, we may record their activities and carry out other mobile methods of research, such as 'walking with' interviews (Büscher et al. 2010). Subjects' interactions with others may be captured, and where practicable we will seek informed consent from such interactants, which may take the form of recording their verbal approval.

- ***Covert recording*** – Covert recording is only used where it is justified by a clear research interest. It is **NOT motivated by an interest in deviance, illegal or immoral behaviour**. The Bridge team may conduct covert research to understand complex, taken for granted, usually unnoticed embodied conduct in emergency response practices. The ESRC REF states that covert recording may be used because it may provide unique forms of evidence where overt observation might alter the phenomenon being studied. This is clearly applicable to the Bridge project's research. For instance, visibly observing or recording an unfolding event or practice would be very likely to alter the phenomenon – unless carried out covertly.

  It is envisaged that covert recording will be limited to occasions when the research team observe 'publically' unfolding situations and where it is unrealistic to obtain individual consent. Any decisions to undertake further covert recording will be discussed among the project team and with the national ethics advisories prior to recording taking place in order to evaluate the need for obtaining such data.

  February 2012: Covert recording as part of the BRIDGE project is **not** currently approved by the NSD or Lancaster University Research Ethics Committee. Should covert recording be conducted, further applications to these committees will be required.

Protocol 2: Witnessing and/or recording criminal behaviour

The BRIDGE project is ***not*** about the study of deviance, illegal or immoral behaviour nor about making judgements on the appropriateness of work practices. We respect civil rights to professional autonomy, liberty and respect for private life (Human Rights Act 1998).

Exploring decision making during emergency situations is one of the aims of the Bridge research effort, researchers therefore expect to observe situations which may not fit with their own ideas for action in those circumstances. However, by recording and observing work practices and responses to emergency situations we may, on rare occasions, inadvertently witness and/or record unprofessional conduct. These will be discussed with the individual in order to further understand the actions taken.

Protocol 3: Researcher interaction with minors or vulnerable adults

The BRIDGE research does ***not*** focus on minors or vulnerable adults. Normally, research subjects will be above the age of 18. However, it may be that, researchers record minors where they are involved in crisis response training exercises or 'real world' emergency situations.

- If this occurs during training exercises, the Bridge research team would give the children and parents/guardians information in a form that both parents/guardians and children could understand about:
  - The benefits and risks of the specific research activity (e.g. observation of their participation in the exercise)
  - What the research involves

- Issues of confidentiality, anonymity and data storage
- Contacting researchers

- If this occurs during a 'real world' emergency situation then 'Protocol 1: Recording work practices and social interaction' must be applied with even more sensitivity than with adults. This may include seeking to obtain informed consent for continuation of observation, if practical to do so.

Conclusion: Ethical Innovation in Emergency Response

Opportunities of innovation in IT supported emergency response include, for example, the mobilisation and integration of citizen intelligence through social media and crisis informatics, while risks arise from transformations of privacy, software sorting and creeping securitization, and proactive law-making in a highly uncertain innovation environment, or from automating parts of essentially social practices of sense-making, collaboration and improvisation.

Ethical opportunities, risks and challenges arise in relation to:

1. *The substantive innovation undertaken as part of the Bridge project*. That is, new IT supported practices of responding to crises raise new ethical dilemmas (such as function creep, where data collected and processed for one reason is later used for other purposes, or a soft erosion of civil liberties through increasingly panoptic monitoring) as well as new ethical possibilities (such as more resilient societies through engaging the public more closely in understanding and responding to crises)
2. *The research process*. To explore opportunities, risks and challenges adequately, the Bridge project engages closely with professionals and members of the public. These participants will be asked to participate in collective experimentation with socio-technical innovations and will, in the process, be exposed to ethical opportunities, risks and challenges, for example by having some personal data collected, processed and shared as part of the experimental implementation of Bridge prototypes.

The substantive innovation and the research process are intimately connected and there are parallels with other highly contentious areas of science in society, for example, nuclear energy, genetic engineering, nano-technology or synthetic biology, health informatics and ambient intelligence. All these advances promise great benefits, but also pose grave risks, and challenge societies with unpredictable transformations and uncertainties. The devil is in the practice and in the detail. Beresford and Stajano (2003), for example, show how even anonymized location data can yield the identity of users when combined with profile information. Much of this detail is only found out through trial, confirming the dictum that nowadays "society [and the larger environment] is the laboratory"' (Wynne 2007: 52), where the effects of science and innovation are inherently unpredictable. Researchers across diverse fields recognise a need for more informed public debate and engagement. This is not easy.

Members of 'the public' have often been portrayed as disinterested and as suffering from "scientific illiteracy". This makes engagement mainly a matter of education through experts. However, more recent debates show that genuinely informed democratic decision-making becomes possible only through practical as well as detailed and specific communicative engagement. This is difficult, but different groups have developed methodologies that enable public involvement in science and socio-technical innovation, placing control over science more firmly *within* society (Wynne et al 2007, Pauwels 2011). Such methods include the use of ethnographic studies to understand existing and emergent future everyday practices, hopes and concerns, interdisciplinary co-realization of new socio-technical

futures where diverse 'located accountabilities' can be defined and negotiated (Suchman 2002), community sensing and citizen science (Hemment et al 2010), iterative collective experimentation (Wynne and Felt 2007), for example in living laboratories. The 'living laboratory' approach (Hemment 2006, Büscher et al. 2008, Schumacher and Niitamo 2008) builds on participatory 'provotyping' approaches (Mogensen 1991), enabling experimental appropriation or 'colonisation' and shaping of prototype socio-technical systems.

Bringing together experience from collaborative IT design (Greenbaum and Kyng 1992), the engaged programme in science and technology studies (Sismondo 2008), public sociology (Burawoy 2004), design research (Baerenholdt et al 2010) and design thinking (Cooper et al 2009), the Bridge project team employ and develop such methodologies. However, while this enables public participation, it also exposes stakeholders – professional and 'ordinary' members of the public or non-academic analysts and designers – to risks. In this document we have explained key aspects of these risks and the measures we take to enable all participants to mitigate them.

Contact and complaints

If you have any comments or complaints regarding this statement, please contact either

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