

# ELSI Guidelines for Networked Collaboration and Information Exchange in PPDR and Risk Governance

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## ABSTRACT

Networked collaboration and information exchange technologies have transformative potential for PPDR and risk governance. However, it is difficult to shape these transformations in a way that supports real world practices of collaboration and sense-making, and it is even more difficult to do so in ways that are ethically, legally and socially sensitive and proactive. This paper presents efforts to construct Ethical, Legal and Social Issues or ‘ELSI’ Guidelines for Networked Collaboration and Information Exchange in PPDR. The Guidelines would facilitate Risk Governance and serve as a living community resource to support the design and use of IT for PPDR and Risk Governance.

## Keywords

Design, ELSI, , guidelines, networked collaboration, standardisation

## INTRODUCTION

In a 21st “Century of Disasters” (eScience 2012), frequent and unpredictable disasters prompt calls for more intensive and extensive information sharing in public protection and disaster relief (PPDR) and risk governance. These calls are accompanied by an ‘informationalization’ of PPDR (Büscher, Liegl, Perng & Wood 2014). New technologies, like LTE wireless high-speed data, often focus on increasing information as a solution to problems in disaster governance. They are being developed and incorporated into information sharing practices so quickly that the ethical, legal and social issues (ELSI) around their design and use are left unconsidered.

However, addressing ELSI is necessary for successful and productive collaborations between the diverse groups involved in PPDR and risk governance. The United Nations’ Sendai Framework for Disaster Risk Reduction 2015 – 2030 (2015), for example, calls for a ‘broader and a more people-centred preventive approach to disaster risk’, which should focus on:

*monitoring, assessing and understanding disaster risk and sharing such information ...; strengthening disaster risk governance and coordination across relevant institutions and sectors and the full and meaningful participation of relevant stakeholders at appropriate levels (p. 11)*

The call amplifies already ongoing social, organisational and technological innovation<sup>1</sup> in net-centric risk governance (Boersma et al 2010) and public-private partnerships for the development of disaster resilient communities (Chen et al 2013, Scolobig et al 2015).

Innovation has arguably generated a ‘data deluge’ (Lund 2015, Ferrãos and Sallent 2015) and rising expectations for richly informed, coordinated and participatory risk governance. Difficulties in leveraging the variety, volume and velocity of this ‘big’ data arise because the amount of information to monitor is vast and the expectations are high (Figure 1). Taking social media as one example, in the first 24 hours after the Paris attacks on 13th November 2015, 4 million tweets were sent from 6 continents. The data also includes a range of formats: numbers, text, and images (Figure 2). And the public increasingly expects such data to be considered, in part due to the fact that online, digital apps and social media have become established emergency information channels. For instance, 69% of respondents to a recent study expect emergency agencies to monitor the web for crisis-relevant information. Similarly, 3 in 10 citizens now expect to be able to send a tweet to request help, even though emergency agencies currently strongly discourage this because they do not have the capacity to monitor social media for emergency calls (Hughes et al 2014). Social media analysis tools like Motorola’s CommandCentralSocial and next generation emergency call systems may change this (Trilateral 2015, LTE-Applications 2015). This example shows that unlike traditional TV and radio, digital media afford many-to-many communications, live documentation and direct dialog, raising expectations for more immediate and interactive emergency communications (Hughes et al 2014).

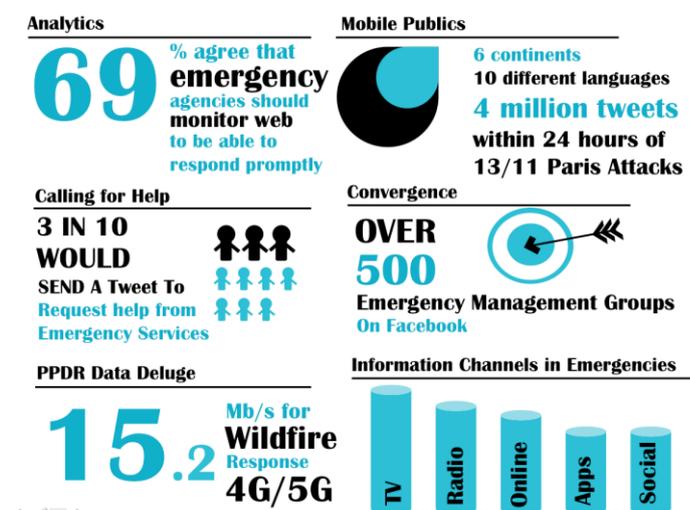


Figure 1 A collection of data that illustrates the growth of networked communications and civil society expectations.



Figure 2 Mobile phone video Paris

Sources: Red Cross Pinterest, Goel and Ember 2015, Ferrãos & Sallent 2015, CBC News 13/11/2015, Rosen 2015

The broad informationalization of PPDR is also a result of an increased diversity of responders called to work together in any given disaster. Emergency responders cross national borders regularly to support local stakeholders, digital support can be cloud-based and thus internationally dispersed, and emergencies

<sup>1</sup> ‘Innovation’ does not denote a discrete groundbreaking invention or original product here, but a process where new ways of working are shaped in relation to new technologies (Ingram, Shove and Watson 2007).

increasingly have a mobile component to them, such as the refugee situation in Europe or the Paris attacks. But risk analysis is not a standardised process. Within each context (place and time), different practices and considerations may be made, and what they are cannot always fully be known prior to the disaster.

Common information space (CIS) have become powerful concepts that respond to needs for data sharing, collaborative sense-making, and coordination (Kuhnert, Schäfer, Pottebaum, Büscher & Petersen in press). CIS aim to support people in constructing a shared sense of a given situation without requiring everyone to have the same understanding, goals, or details. They are produced through new (and old) social and organisational practices, supported by new (and old) technologies. Examples include the UK's *ResilienceDirect Network* and the Global Disaster Alert and Coordination System (GDACS) Virtual OSOCC, 'a password-restricted online platform for real-time information exchange and cooperation among all actors in the first phase of the disaster' (GDACS 2014). However, taking them into use is proving disruptive, raising complex ELSI. In order for CISs to be effective environments that enable collaboration and new partnerships between different types of responders and public, NGO and private actors, they need to support reflexive practice and attention to ELSI that arise in the socio-technical interactions they enable. Issues include opportunities for more inclusive risk governance, enhanced security and better ways of exercising solidarity, but also challenges to existing practices of establishing meaning, trust, legitimacy, and privacy, and of negotiating differences in perspective, knowledge and power (Büscher, Liegl, Rizza, & Watson 2014).

In an interdisciplinary research project concerned with the design of CIS concepts and tools (SecInCoRe [www.secincore.eu](http://www.secincore.eu)), we are developing ELSI guidelines for networked collaboration and information exchange for PPDR and risk governance to provide guidance on how to notice and constructively deal with such issues. Guidelines for ethical, social, and legally reflexive practices in IT design and use for disaster governance need to be developed in a way that treat ELSI not as in need of clearer rules, but as general matters of concern that can shape the outcome of an action. Ethical issues, for instance, are not black and white, and guidance cannot be reduced to a single sentence to keep in mind before you act. How issues should be addressed depends strongly on the specifics of the situation in which they arise. This paper presents efforts of developing ELSI guidelines as community resources that are live, lived, and living.

## ELSI GUIDELINES FOR NETWORKED PPDR AND RISK GOVERNANCE

Our ELSI guidelines are conceived as a community resource, a 'live, lived and living' repository of explanations of, and responses to, ELSI in networked collaboration and information exchange in PPDR and risk governance. A prototype has been developed, bringing together work in a number of EU projects, including EPISECC [www.episecc.eu](http://www.episecc.eu), SECTOR [www.fp7-sector.eu](http://www.fp7-sector.eu), and REDIRNET. [www.redirnet.eu](http://www.redirnet.eu).

The approach is inspired by the U.S. Department of Health & Human Services' Research-Based Web Design & Usability Guidelines (<http://guidelines.usability.gov>). In this and many different fields guidelines represent a way of providing ICT designers with a common benchmark for various factors that are critical for 'good' design. Such guidelines embody both practical knowledge and ethical principles. Our ELSI Guidelines build on existing standards for interoperability and collaboration in PPDR and risk governance, such as

- [ISO/TC 223](#), develops international standards to increase societal security
- [ISO/TC 292](#), established on January 1, 2015, by a committee from over 50 countries, to work with standardization to enhance the safety and resilience of society
- [Privacy by Design Guidelines](#), a framework to protecting privacy by embedding it into the design specifications of technologies, business practices, and physical infrastructures
- The UK [JESIP - Joint Doctrine: the interoperability framework](#)
- [Project Athena: empowering citizens, protecting communities](#), specifically [D2.7 "Guidelines for best practice for User Centred Approach"](#)
- [Guidelines on Cooperation between the United Nations and the Business Sector](#), a principle-based approach developed in 2000 as a common framework for UN-business collaboration that apply to the UN Secretariat as well as separately administered organs and programmes
- [Guidelines for cooperation between governments and the private sector for disaster risk reduction](#): Approaches, achievements and challenges, developed under the Work Programme of the Permanent

Secretariat of the Latin American and Caribbean Economic System

- [Disaster Response: Guidelines for Establishing Effective Collaboration between Mobile Network Operators and Government Agencies](#)
- [IFRC 2011 Introduction to the Guidelines](#) for domestic facilitation and regulation of international disaster relief and initial recovery assistance
- [Global Disaster Alert and Coordination System Guidelines](#), a cooperation framework between the United Nations and the European Commission in 2004 to address significant gaps in information collection and analysis in the early phase of major sudden-onset disasters
- [The European Code of Police Ethics](#) (2001)
- IFRC (2013) [Professional standards for Protection Work](#), particularly chapter 6 ‘Managing sensitive protection information’ of Professional standards for Protection Work (1–115)

These standardisation efforts and guidelines cover a range of different aspects related to networked collaboration and information exchange for PPDR and risk governance. What is missing is guidance on how to design and use processes and technologies in ways that support real world practices of collaboration and reasoning in ways that are sensitive and proactive about ELSI. This is a matter both for design and implementation, better understood as a continuation of socio-technical ‘design in use’ (Ehn 2008). Over the last five years, we have developed such guidelines as part of EU funded projects aiming to develop processes and technologies for networked collaboration and information exchange for PPDR and risk governance.

A starting point have been core European values, enshrined in the European Convention on Human Rights, including respect for human dignity, liberty, democracy, equality, and the rule of law. Research with practitioners has provided practical knowledge and moral principles specific to the domains of PPDR and risk governance such as trust and partnership. This has shaped a framework for identifying various ELSI. The guidelines arise from long-term collaboration between practitioners in PPDR and risk governance, who are driving organisational innovation, technology developers, policy-makers, and social science researchers. This has highlighted a wide range of innovative (old and new) socio-technical responses to opportunities and challenges arising at the juncture of complex, distributed collaborative practices and new technologies. The ELSI Guidelines we present here are the result of collaboration within and across several European research projects. They are a work in progress.

They are being developed in *Open Atrium* (<http://www.openatrium.com>), an open source collaborative platform that enables secure cooperation. This is motivated by the intention to make the guidelines an open and evolving community resource. They currently cover a range of different aspects relevant to networked collaboration and information exchange in PPDR and risk governance, including:

- 1) A ‘Contributors’ Corner’
- 2) Some general Resources
- 3) A list and description of relevant ELSI divided into themed Chapters (Table 1), each containing:
- 4) Individual ELSI guidelines that provide:
  - a. A description of how and when this issue is relevant in design and use
  - b. Explanation of evidence for the importance and relevance of the issue
  - c. Examples of the ELSI as it arises in design and use
  - d. Links to related ELSI
  - e. A list of known technological or socio-technical responses that can support users in noticing and addressing ELSI
  - f. Guidance for translating awareness of issues and solutions into practice
- 5) A methodological discussion, addressing the fact that
  - a. There often is not one ‘right’ way to address ELSI
  - b. Socio-technical responses exist are evolving
  - c. Principles must be actionable, that is, it must be practically possible to translate them into morally sound real world practice under pressure
- 6) Overviews of existing standards, guidelines, technologies and a mapping of interdependencies through search facilities, hyperlinks and tag clouds

- 7) Instructions for how to contribute
- 8) A concept for expert evaluation and rating of the richness and adequacy of the guidelines.

Table 1 shows the overview of the portal. Underlined entries have been developed and can be shared publicly.

<p><b>ELSI Guidelines Prototype – Table of Contents</b></p> <p>These guidelines support the design and use of technologies for Networked Collaboration and Information Exchange and Common Information Spaces (CIS) for PPDR and risk governance (RG). They are developed by the SecInCoRe project team, in collaboration with EPISECC, SECTOR and REDIRNET.</p> <p><b>Contributors' Corner</b></p> <p><a href="#">How to use the ATRIUM Platform</a></p> <p><a href="#">Questions for Tech Support x</a> - Please add your questions here.</p> <p><a href="#">How to write 'good' guidelines</a></p> <p><a href="#">Open issues</a></p> <p><b>Resources</b></p> <p><a href="#">Glossary</a></p> <p><a href="#">Bibliography</a></p> <p><a href="#">Examples</a></p> <p><a href="#">Innovative Response to ELSI: An Overviews</a></p> <p><b>Introduction</b></p> <p><a href="#">Introduction</a></p> <p><a href="#">The Motivation and Scope for these ELSI Guidelines</a></p> <p><a href="#">Audience: Who these guidelines are for</a></p> <p><a href="#">Live, Lived &amp; Living: How these guidelines are produced and intended to be used</a></p> <p><a href="#">Existing Standards for Collaboration</a></p> <p><a href="#">Existing CIS</a></p> <p><a href="#">Innovative Responses to ELSI: An Overview</a></p> <p>How you can contribute</p> <p><b>Guidelines Section I: Actions</b></p> <p><a href="#">Creating or becoming a member of a CIS</a></p> <p><a href="#">Accessing</a> WIP</p> <p><a href="#">Information Exchange</a></p> <p><b>Section II: Dealing with Data</b></p> <p><a href="#">Protecting Data</a></p> <p>Making Data Secure</p> <p>Managing Data Quality</p> <p>Intellectual Property</p> <p>Privacy</p> <p><b>Guidelines Section III: Goals</b></p> <p><a href="#">Maintaining Diversity</a></p> <p><a href="#">Collaborating and Coordinating</a></p> <p><a href="#">Accountability</a></p> <p><a href="#">Trusting: How to trust, invite and justify trust</a></p> <p>Ensuring Clarity</p>
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[Ensuring Usability](#)

Ensuring Accessibility

Information Control and Ownership

**Guidelines Section IV: Values**

Democracy

Solidarity

Liberty

Responsibility

Fairness

Transparency

**Section V: Wider Uses and Implications**

Affording Overview (Regulatory)

[Learning with Others and from past Disasters](#)

[Common Information Spaces & Securitization of Societies](#)

**Table 1 Entry Page for ELSI Guidelines**

Before we provide examples, it is important to note that the guidelines are meant to inform design and use in the sense of sensitizing users to issues, pointing out opportunities, challenges and ambiguities, and mapping out avenues for addressing these. To this aim, the guidelines have three characteristics. They are:

- ‘Live’ - meaning that they are contextually embedded into some CIS technologies and organisational processes in ways that highlight particular connections ‘live’, as people are inhabiting CIS, collaborating, exchanging information, reasoning (Figure 3).
- ‘Lived’ - meaning that there is a need to translate them into lived practice. For example ‘Working with Exceptions’ explains how legal principles may be translated into practice and why, building on guidance available within the PPDR domain (Figure 4).
- ‘Living’ - the guidelines need to evolve in and through use and for this purpose there are mechanisms for adding, editing, commenting and evaluating guidelines (Figure 4).

The screenshot shows the ELSI Guidelines web interface. At the top is a navigation bar with links: ELSI Calendar, ELSI Discussion, ELSI Documents, ELSI Files, ELSI Guidelines Prototype 3, ELSI Tasks, and ELSI Timeline. Below the navigation bar are options to 'Customize this page' and 'Change layout', along with 'View', 'Edit', and 'Lock' buttons.

### 0501 Specify Access Restrictions

**Description:** By 'tagging' every unit of personal data with 'metadata' that describes data protection requirements (EDPS 2015), access specifications can be provided. This may be added when the data is generated or processed and should specify a preferred level of access, e.g. *Public, Restricted to members of the following organisations, Restricted.*

Design	Use
<p>From a design perspective this could take the form of a box like this</p> <div style="border: 1px solid grey; padding: 5px; margin-bottom: 10px;"> <p>Does the data contain personal information?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> </div> <div style="border: 1px solid grey; padding: 5px;"> <p>If that personal data were redacted, could it be publically accessible?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> </div>	<p>From a use perspective, this requires users to think through who should be accessing the information they are entering.</p>

It could also involve meta-data associated with each unit of data.

**Examples:**

**Research:**

EDPS. (2015). *European Data Protection Supervisor: Opinion 4/2015: Towards a new digital ethics*. Retrieved from [https://secure.edps.europa.eu/EDPSWEB/webdav/site/mySite/shared/Documents/Consultation/Opinions/2015/15-09-11\\_Data\\_Ethics\\_EN.pdf](https://secure.edps.europa.eu/EDPSWEB/webdav/site/mySite/shared/Documents/Consultation/Opinions/2015/15-09-11_Data_Ethics_EN.pdf)

**Clarity of Description:** 1 2 3 4 5

**Strength of Evidence:** 1 2 3 4 5

**More about the Rating Scales**

**Groups**

**Teams**

**Users**

Do not send notifications for this update.

The network diagram shows connections between guidelines: 0302 Data Protection, 0502 Exceptions, 0704 Inclusiveness, 0201 Accountability, and 0609 Social Sorting.

**Figure 3: ELSI Guideline ‘Specify Access Restrictions’.** The prompts provided in the grey boxes would appear in the systems used – for example *ResilienceDirect*. A link would take the user to the guideline, where a map of related guidelines supports further exploration.

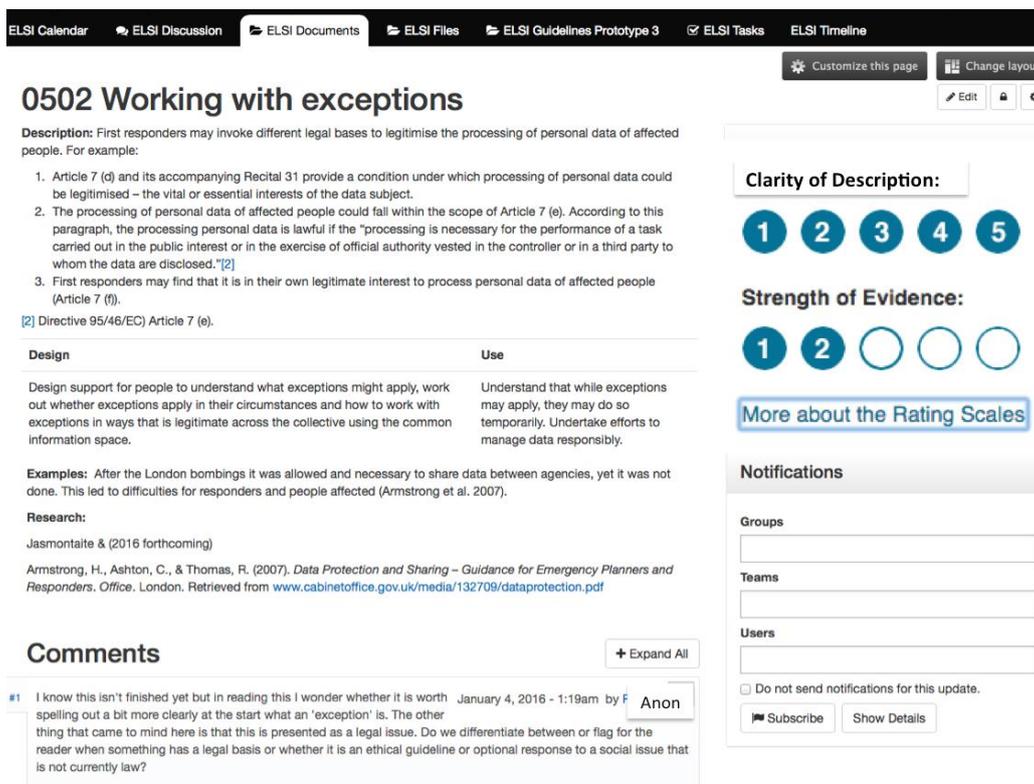


Figure 4: ELSI Guideline ‘Working with Exceptions’

The guidelines also have an effect on the structuring of common information spaces. For example, based on meta data about data protection requirements for individual units of data, search results can be tailored to role-based clearance levels. But the embedding of ELSI guidelines can make such role-based access restrictions more flexible – responding to the need for role improvisation in crisis management (Webb 2004) – by supporting flexibility and socio-technical work-arounds.

**Audience: Who are these guidelines for?**

The ELSI Guidelines for Networked Collaboration and Information Exchange in PPDR and Risk Governance are designed for two types of users:

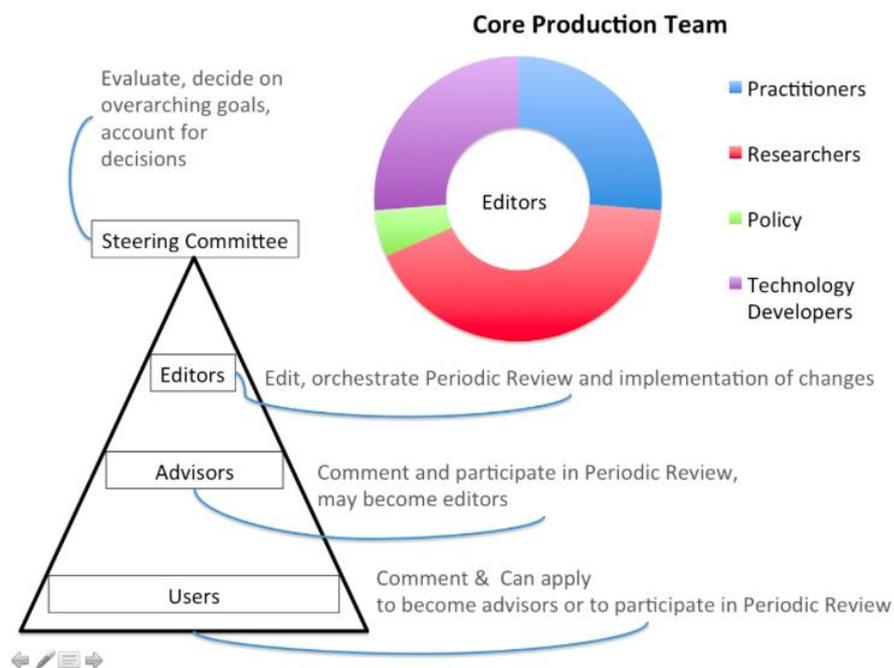
- designers of policy instruments, technologies, regulatory frameworks or organisational approaches to PPDR and risk governance.
- individuals and groups within PPDR agencies and all stakeholder groups involved in risk governance who will utilise networked collaboration and information exchange technologies

There are ‘direct users’ and ‘indirect users’. Direct users actively participate in the design or utilisation of networked collaboration and information exchange technologies and therefore come into contact with the ELSI Guidelines, at least in their ‘Live’ embedded aspects, even if they never explicitly consult the guidelines themselves. There are also ‘indirect users’, who benefit from a more informed and better coordinated, ethically, legally and socially sensitive risk governance practice, such as citizens and non-citizens (e.g. tourists and migrants). Societal implications are also considered. It is useful to consider indirect users, because the innovations around networked PPDR and risk governance have wider societal implications for democracy, solidarity and liberty, for example (Büscher et al 2014).

**Methodology: How these guidelines are produced and intended to be used**

The guidelines integrate diverse perspectives on and practices of innovation. It is critical to note that guidelines

that result from this collaboration are not a product but a process in nature. While we are developing a core of guidelines and support for producing and utilising the guidelines, there is no end product per se. That is how they are 'Living'; they are intended to have continual mutability. The governance structure to aid the constant modification, learning, and growth necessary for mutability to work is described in the Figure 5 below:



**Figure 5: ELSI Guidelines Producers**

The ambition of making the guidelines live, lived and living can best be fulfilled through making the process of producing them participatory and inclusive. We therefore pursue a strategy of 'collaborative experimentation' that provides multiple channels for engaging in the design and use of these guidelines.

There is a recursive relationship between ELSI and technology (see, for example, Hoven & Weckert, 2008). Practical knowledge and moral principles are culturally specific, subject to contestation, and shift in times of disaster. Thus, in order for guidelines to be useable, they must be transparent in regards to their cultural positioning, be flexible enough to be adapted to other contexts, and be open to debate and change.

Most importantly, the guidelines are meant to be practical. Each guideline is formulated as an actionable task/practice, with the practical knowledge and/or moral principles behind each guideline provided in 'tags' and links to related guidelines. Each guideline is also separated into design and use considerations.

#### NEXT STEPS

Having had the opportunity to discuss the ELSI Guidelines in a range of different fora, including an ELSI Task Force that brings together a group of EU projects, the European Security Research Conference in Dublin (November 2015), the Federation of European Firefighters' Meeting in Vienna (November 2015), many project meetings, and the Public Safety Communications Europe Conference in Oxford (PSCE, December 2015), the basic motivation and outline for the guidelines has been adapted in response to rich expert feedback. The guidelines are also developed and evaluated in relation to our project's participation in the Joint Working Group 8 as a Liaison Organisation. Plans now focus on developing a full prototype platform and draft of Guidelines and on exploring how to realise the 'Live, Lived, Living' affordances.

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