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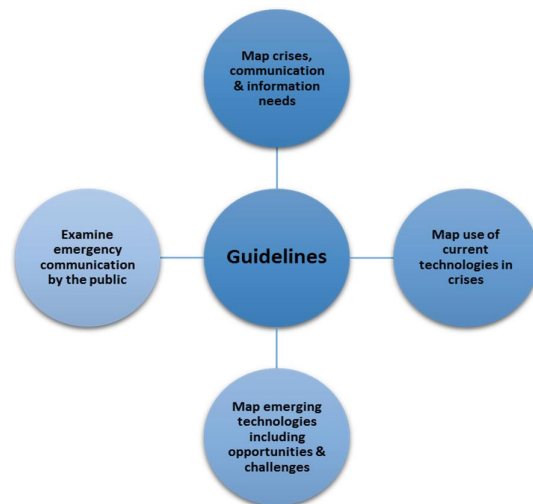
Table of Contents

1	Introduction.....	3
1.1	WP1 i Mapping Crises.....	3
1.2	W2 i Mapping the use of current technologies in crises.....	7
1.3	WP3 i Mapping the use of emerging technologies in crisis.....	9
1.4	WP4 i Emergency communication by the public.....	12
1.5	WP5 i Stakeholder analysis and engagement.....	14
1.6	WP6 i Guidelines.....	17

1 INTRODUCTION

The aims and objectives of the project included:

- To explore new and emerging communication technologies and applications and provide an insight into the most effective ways to utilise them to promote the enhanced safety and security of citizens in crisis situations.
- To assist better communication and information gathering for authorities and first responders.
- To examine the potential roles and ethics regarding citizen participation in emergency response.
- To produce guidelines that will assist authorities and first responders in deploying new and emerging communication technologies and applications to better protect citizens in crisis situations.
- To disseminate the findings to wider audiences and to seek the opinion of stakeholders working in the field via two dedicated workshops.



With the exception of the guidelines (WP6), the structure of the workplan of the project provided for addressing most of these objectives during the first reporting period, with final results appearing in the second period (end of the project) in the form of updated reports of existing deliverables and a further round of dissemination workshops and conferences.

There was progress in all WPs of the project, with work proceeding according to what is foreseen in the DoW. All deliverables of the project have been accepted as mentioned in the final review report.

1.1 WP1 – MAPPING CRISES

Appraising the contribution of social media to crisis management requires a deep understanding of the typical crises that European Member States are exposed to as well as the way citizens, emergency services, public and private organisations are prepared for and respond to typical crisis situations. The purpose of WP1 is therefore to enhance comprehension of the types of crises that European Member States are exposed to and how it impacts the security of citizens.

The aim of the different deliverables is shown below:

- D1.1: The purpose of this deliverable has been to provide a preliminary understanding of the types of crises that European Member States are exposed to and how it impacts the security of citizens.

- D1.2: The purpose of this deliverable has been to define and characterise search and rescue operations in the different types of crisis.
- D1.3: The purpose of this deliverable has been to examine the role of the different emergency response agencies before and during crisis situations, and to focus on the communication challenges they face during those situations.
- D1.4: The purpose of this deliverable has been to formulate a model/typology of crisis situations which can be used to identify, among others, informational and communicational needs, infrastructural bottlenecks, security priorities and major stakeholders associated with each type of crises. This deliverable is furthermore divided in two: D1.4.1 being a first report and D1.4.2 being a finalisation.

What the WP involved

Partners conducted a review of scientific literature as well as relevant policy documents.

WP main findings

<i>Deliverable</i>	<i>Main findings</i>
D1.1	➤ There are four types of crises that were “typical” to Europe, in that they occurred most often: flood, extreme temperature, storm and wildfire. ➤ Partners identified six types of crises that European Member States have been exposed to that have resulted in a high physical and high societal impact: flood, extreme temperature, storm, wildfire, earthquake and man-made disasters. ➤ Partners assessed the impact of six types of crises on groups in society. In all six case studies citizens, critical infrastructure and the government were affected in the immediate aftermath of the crisis. ➤ Crises affect the security of the citizen in a multitude of ways, including: the physical and mental well-being, the destruction of communities and supporting critical infrastructure, the loss of personal property, the loss of life and historically, in extreme cases, the destruction of entire civilisations. ➤ Citizens have a strong desire to help those who suffer. Individually, citizens are rarely passive and often exhibit pro-social behaviour during crisis situations. This behaviour is reflected (most of the time) in both organisations and communities and is indicative of the level of work people are willing to do, especially when new technologies (such as those of COSMIC) are to be introduced. ➤ Societal dynamics is largely dependent on the time it takes for a crisis situation to develop and on the magnitude of this crisis, but not on the type of crisis. Consequently, for individual, organisational and societal dynamics it makes no real difference whether society is confronted by,

	for example, a flood or a storm. Although, certain crisis types such as earthquakes often occur without a warning period and their dynamics is similar to the so-called flash crises, this conclusion provides valuable insights for the (possible) use of new technologies such as those of COSMIC. ➤ The role of government in the immediate aftermath of a crisis is often limited. Emergency management agencies are either not present or otherwise occupied with a limited number of citizens, or even unable to mount an effective response. It is the aspiration of COSMIC to show that this gap can be filled to some extent by citizens deploying new technologies, for the benefit of the whole society under duress.
D1.2	➤ Findings from the examination of case studies suggest that in the majority of situations, with the exception of the heatwave in France in 2003, standard operating procedures should have been in place to ensure the appropriate organisations of response efforts. ➤ Partners analysis demonstrates that whilst standard operating procedures may have been in place prior to a crisis occurring, that is not to say that they will be optimally used or strictly followed, rather, as a crisis unfolds the demands of the crisis may call for an alternative response. ➤ Findings from the analysis of different types of crises show that there are some common themes relating to communication influencing preparedness and response capabilities, although, notably the nature of the issue is not always the same. During risk and crisis communication factors such as transparency, quickness, completeness and correctness may be in conflict with each other. ➤ Some case studies demonstrated the lack of adequate information exchanged between different authorities, as well as between those involved in crisis response (including the news media) and members of the affected community. This lack of information was at times apparent during the preparation and response to crises, indicating the need for effective communication strategies at the different stages of a crisis. ➤ In some cases findings demonstrated that both authority measures and volunteers are involved in search and rescue operations. Accordingly, a well-organised response phase is not possible without one of those two parties. ➤ Greater attention needs to be focused on involving the community in the preparation and subsequent response efforts to different types of crises; ➤ The contribution of new media was highlighted in the Boston 2013 attacks, particularly with regard to keeping members of the public up-

	to-date with relevant information.
D1.3	➤ This deliverable shows that new and emerging communication technologies may benefit the safety and security of EU citizens in two different ways: First, new and emerging communication technologies and applications may be used to improve the communication with EU citizens and news media before crises (risk communication) and during crises (crisis communication). Second, new and emerging communication technologies and applications may be used to assist communication and information gathering for emergency response agencies as well as information sharing between those who respond at the scene of the event (first responders). ➤ Though emergency response agencies differ in organisational structure, funding and tasks throughout Europe, partners have investigated several common communication challenges. These challenges are: Understanding of disaster management among the public; Evolved management of information to the media and the public; Early warning capabilities; Acquisition of information from external sources; Efficient ways to gather data from responders; Volunteer management; Harmonization of language and terminology; Sharing and implementing lessons and best practices; Interagency information sharing; Responder communications in remote areas; Retention of information and log-keeping; Psycho-social support, intervention strategies; Coordination challenges. ➤ Challenges that emergency response agencies need to overcome in order to benefit from new and emerging technologies and applications are quite universal for EU member states and between different emergency response agencies.
D1.41	➤ The sheer complexity of a crisis, the diversity of factors affecting it, the uncontrollable power of natural phenomena governing it, and the parallel evolution of many interacting processes result in a considerable degree of indeterminacy, which appears not directly amenable to modelling. That said, some concepts and some types of prescribed action (procedures) can be modelled; to this end, a well-known method for IT systems (the Unified Modelling Language) was used to formalise features and dynamics of crises as described in WP1
D1.42	➤ The partners have conducted a short survey of modelling challenges and efforts inspired by the needs of crisis management, as exemplified by crisis ontologies such as MOAC (Management Of A Crisis) and DiRes (a new, evolving ontology able to cover key interoperability gaps in existing ontologies) and languages such as HXL (Humanitarian eXchange Language). Of note here is the conclusion that a single domain ontology covering different crisis-related IT applications is not feasible. ➤ Secondly, the constructed high level model of crisis dynamics was codified with Enterprise Architect (a well-known IT tool for UML modelling) to check consistency as well as provide a uniform way of presentation.

Relevance for the COSMIC project

WP 1 consists of fundamental preparatory work to enable COSMIC to fulfil its objective of exploring how new and emerging communication technologies and applications can be most effectively utilised to promote the safety and security of citizens in crisis situations. The findings of this WP provide a useful backdrop to being able to understand, in other work packages, what contribution social media are able to make to crisis management and how different types of crises present a threat to citizens in European Member States.

1.2 W2 Ì MAPPING THE USE OF CURRENT TECHNOLOGIES IN CRISES

Work package (WP) 2 consisted of five tasks and was led by Trilateral Research & Consulting (TRI). The WP started in April 2013 and was completed in March 2014, as indicated in the description of work (DoW). The WP was allocated 21.5 person months. The output(s) of this WP consisted of five deliverables, associated with the five tasks discussed below.

Task 2.1: State of the art of new communication media

The aim of Task 2.1 was to provide a baseline analysis of communication technologies and applications that are currently available and in use for crisis management purposes. The task was led by TRI, with contributions from three additional partners (ED, HRT and KU), and with an allocation of 5.25 person months. The task led to the completion of D2.1 ñBaseline analysis of communication technologies and their applicationsò. Partners used desk-based research to complete the task, and split the deliverable into five distinct chapters. In the first chapter, partners compiled an introduction to the report along with a distinction between two terms; traditional communication technologies and new media applications. Second, the report entailed an examination of the state of the art of communication technology in the context of crisis management. It discussed telecommunication technologies as products that are ready to be deployed, and as technology components and services that can be used or further developed. Particular attention was focused on examining the functional and non-functional requirements of these technologies. Chapter three of the report provided an overview of different types of existing new media applications that have been known to be used for crisis management purposes. Focus was placed on social networking applications, web-based tools, crowdsourcing applications and mobile tools. Chapter four involved examining trends in the use of these different types of new media applications by stakeholders. The deliverable concluded in chapter five by summarising key findings.

Task 2.2: Case studies on the use of new media in crisis situations

The aim of this task was to explore the ways in which new communication technologies and applications have been used in recent crisis situations. This task was allocated 3.25 person months, and was led by HRT with contributions from ED, TRI and KU. It led to the development of D2.2 ñCase studies of communication media and their use in crisis situationò, delivered in September 2013. Building on the results of tasks 1.1, 1.2 and 2.1 partners develop eight distinct case studies focusing on the following crises: Boston Marathon Bombing (2013), U.K. Heatwave (2013), Gezi Park Protests (2013), Sandy Superstorm (2012), Colorado Wildfires (2012), U.K. Floods (2012), Haiti Earthquake (2010), and Xynthia Storm (2010). Each case study was analysed in terms of the use of new technologies, applications and social media, providing an important set of lessons learned. Overall, the findings from the

examination of the case studies suggested that in the majority of crisis situations, social media were used quite extensively, but that there is generally also a high risk of misuse of social media in crisis situations. It was striking that there was a shortage of efforts on the authorities' side to draw conclusions on the use of social media and try to incorporate them in their own formal standard crisis response mechanisms. Finally, several cases indicated that it would be wise for organizations and authorities to utilize both traditional media technologies and social media when supporting and communicating with the public.

Task 2.3 i Reliability and misuse of new media

Task 2.3 aimed to outline different types of misuses of communication technologies during emergencies. Also, the task focused on issues related to reliability and verification of information. The task was led by KU, with support from TRI and was allocated 1.5 person months, resulting in D2.3 'Report on the adverse use and reliability of new media', which was delivered in November 2013. In its four chapters, the report discussed a number of potential misuses of communication technologies such as misinformation, misrepresentation, propaganda, surveillance and censorship. Based on a combination of desk-based research and a survey conducted during the first weeks of the Gezi Park Protests in Istanbul (June 2013), it also outlined techniques and technologies that can be utilised for information verification in online environments.

Task 2.4: A briefing paper on new media in crisis situations

The aim of Task 2.4 was to compile a briefing paper, synthesising the findings from previous tasks in this WP. The task was led by TRI with contributions from KU and VZHZ. It was allocated 4.25 person months and resulted in D2.4 'Briefing paper for first workshop', which was delivered in January 2014. In order to share and discuss the consortium's findings thus far, this briefing paper was shared with those individuals who participated in the workshop(s) carried out as part of Task 2.5. In addition to sharing the briefing paper with workshop participants, TRI also arranged for the paper to be shared in the March 2014 issue of The International Emergency Management Society (TIEMS) newsletter, where the briefing paper, along with other project updates, was circulated among those involved in emergency management activities around the world.

Task 2.5: Stakeholder engagement workshop(s)

The aim of Task 2.5 was to conduct two national workshops in order to gather feedback from stakeholders on COSMIC's efforts thus far. The task was led by PSCE with contributions from all other partners, and was allocated 6.5 person months. On the 15th and 27th of February 2014, COSMIC held its first regional stakeholder engagement workshops respectively in Thessaloniki, Greece and Nijmegen, the Netherlands. The workshops provided a multi-disciplinary space for stakeholders interested in the contribution of new media to crisis management activities. The main findings from the workshop were summarised in the workshop report, D2.5 'First workshop report'. A breakdown of the stakeholders represented in each workshop can be found in the table below.

Stakeholder category	Greece	Netherlands
Industry	1	7
Government	2	33
Civil society organisations	1	0
Academia	1	2
Media	0	3

Findings from WP2 were utilised in subsequent work packages, particularly in highlighting good practices in the use of social media in crisis management for the guidelines for different types of stakeholders in WP6.

Progress of the WP in the second year

There have been no changes made to this WP during the second year of the project. Following on from the annual review, we have made a conservative effort to ensure a wider representation of stakeholders in the projects' workshops. Please see WP3 and 4 for further information.

1.3 WP3 – MAPPING THE USE OF EMERGING TECHNOLOGIES IN CRISIS

WP3 intends to develop a strategic roadmap for the adoption of emerging technologies in crisis situations and in addition:

- To support on-going research in the application of new technologies in this area by promoting their progress and results
- To promote the active participation of innovative SMEs and other relevant stakeholders in such research initiatives
- To help initiate the development of new ideas and research efforts in this field

Task 3.1 – Investigation of the possible use of emerging technologies in crisis situations

During this task, the consortium examined emerging communication technologies and media and the ways they can be used before, during and after a crisis. As shown in the final deliverable D3.1.2, the discussion and analysis builds on project's previous conclusions and has shown two major trends.

- First, the impact of new communication technologies and social media is expected to grow continuously in importance and extent. More people are using these technologies, the level of official reliance on them is growing, more resources, especially data resources, are being devoted, and ever more opportunities appear for exploiting them in the context of crisis management.
- Second, a wider spectrum of technologies – not necessarily belonging to the sphere of communication – is expected to become increasingly important for communication during crisis management. For example, as the amount of information being communicated continues to increase in size, it becomes impossible for the human mind to process it all: technologies that organise, analyse and present information in a human-friendly form will become integral components of the communication process.

New technologies and social media have greatly expanded the overall scope of communication in crisis management, due to several new synergetic factors, such as access to technology, richer communication modalities, communication occurring in public, and data exhaust. This scope today encompasses intentional acts of communication, unintentional acts of communication, handling information as its recipient, and accessing and analysing public information as a third party. We have identified 27 distinct emerging technology and application areas which are relevant with respect to this scope. These included: citizen journalism, cloud, crowdsourcing, data mining, big data, decision support, open data, Internet of Things, wearable sensors and others. Coupled with social media, they contribute to the

openness, fairness and quickness of communication during a crisis and can be used in a variety of ways: making diagnoses of vulnerabilities in systems and infrastructures (in preparation for crises); facilitating and simplifying search and rescue missions (during a crisis); and enhancing control and community connectedness (including the recovery stages after a crisis).

Finally, it must be noted that new and emerging technologies also entail a variety of risks, such as those to individuals' privacy and sense of identity; the correct allocation of responsibility in evolving crises; the possibility of information overload; the potential of creating conflicts of interest among responders; and the general possibility of producing unintended, negative consequences even when the initial aim is crisis management.

Task 3.2 i Political, social and industrial opportunities arising from the use of emerging technologies

This task and its final deliverable 3.2.2 looks into the political, social and industrial extensions of the use of emerging technologies for crisis situations. The focus of the investigation is on the identification of existing policies and standards for the development and use of such technologies as well as the opportunities which may arise for industrial stakeholders and for the public.

On the policy front, we present applicable measures and current EU legislation such as the Directive on data protection and the "Telecommunications Package". Proposed reforms in existing legislation in areas such as data protection and the role of the Universal Provider in telecommunication services are presented from the point of view of their effects on crisis-laden social networks services. In a similar fashion, we examine EU policy directions on emerging issues such as the openness of the Internet and the freedom of citizens to access and run applications and content.

With regard to standardisation we identify challenges such as the underlying telecommunications technologies, the presentation layer of social media, the data involved and the means of interacting with social media services. For the latter, we draw attention to the complex interplay between market leaders and their competitors and correspondingly between proprietary and open standards. We also present examples of the standardisation effort at two different international organisations, with differing missions. These are the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) and the World Wide Web Consortium, otherwise known as W3C. The former is a crisis response organisation, while the latter is a standardisation organisation organised as a community. Their common point, with regard to social networks is that they both, through the need to serve their purpose, recognise the necessity for standardisation in social media and work actively towards its achievement.

Moving on to the subject of privacy and security, we identify and discuss the various privacy-related issues for stakeholders to consider, including the right and expectation to privacy, adequate protection of individuals' data, adhering to the EU data protection law, informed consent, transparency, proportionality and legitimate purpose, anonymity and the increasing nature of surveillance, including dataveillance, counter-surveillance and lateral surveillance. In addition, we consider the various challenges surrounding the protection of information as well as the potential impact of the use of new media technologies on citizens' safety. Our findings point to the need for added measures by organisations (and possibly members of the public) with the aim to protect those with whom they are interacting.

Use of social media by the crowds is increasingly becoming ubiquitous. Proliferation and integration of social media, most specifically social network sites and micro-blogging into the daily routines of individuals have allowed people to link and interact with each other without being limited by time and spatial constraints. This increased connectivity enabled by social media may provide opportunities for social activism. We reviewed secondary data regarding recent social movements to outline how social media facilitate mobilisation and transnational communication as well as potentially changing how activist networks organise.

Throughout chapter three, authors have also provided a series of recommendations on potential measures that can be taken in order to help promote better awareness and response to these challenges, thereby enabling greater opportunities to be gained from the use of social media in crisis management.

Task 3.3 i Strategic use of emerging technologies in crisis management

This task develops scenarios on the use of emerging technologies to satisfy strategic goals of relevant stakeholders. The final report has been realised as Deliverable 3.3.2 and examines the use of new technologies at three different levels, namely:

- ◆ among responders/law enforcement agencies
- ◆ between responders and the public
- ◆ among the public themselves

The findings regarding the strategic use of emerging technologies by different stakeholders were used in conjunction with WP4, which focuses on emergency communication by the public.

The report includes three parts, one treating the strategic communication goals, another treating the interoperability issues facing social media today and their relevance to crisis management, and a third one presenting emergency response scenarios and the role of social media in them. As the first part has identified, there are four strategic goals relating to communication namely two-way communication, one-way communication/alerts, information sharing, and situational awareness. Our findings show that each of these goals should not be treated in isolation, but rather, should be considered in relation to one another as, under some circumstances, they are dependent on each other for enhancing crisis management.

The second part treats interoperability of services and data among different social media platforms. The findings show that today we face a situation of 'walled gardens' created and maintained by large platforms wanting to control information and to contain it among their members. However, although interoperability in the technical and the semantic sense has not been achieved, partial solutions via the platforms' APIs have allowed some degree of inter-network communication and information retrieval, including users-related data. This has enabled the creation of a widely available number of network aggregator applications, which also has the beneficial effect of centralising social network information during a crisis.

The third part of the report shows scenarios on how new technologies can potentially meet these inter-connected strategic goals for each of these stakeholder groups across the different phases of a crisis. Our findings show that the presence of social media appears particularly important and also that there could be benefits for crisis management regarding the existence

of a methodological framework addressing the incorporation of weak signals in distress scenario building and in the early recognition of an incoming crisis.

The additional evidence supplied by Standard Operating Procedures of stakeholder responder organisations and the real-life situations confirm that social media:

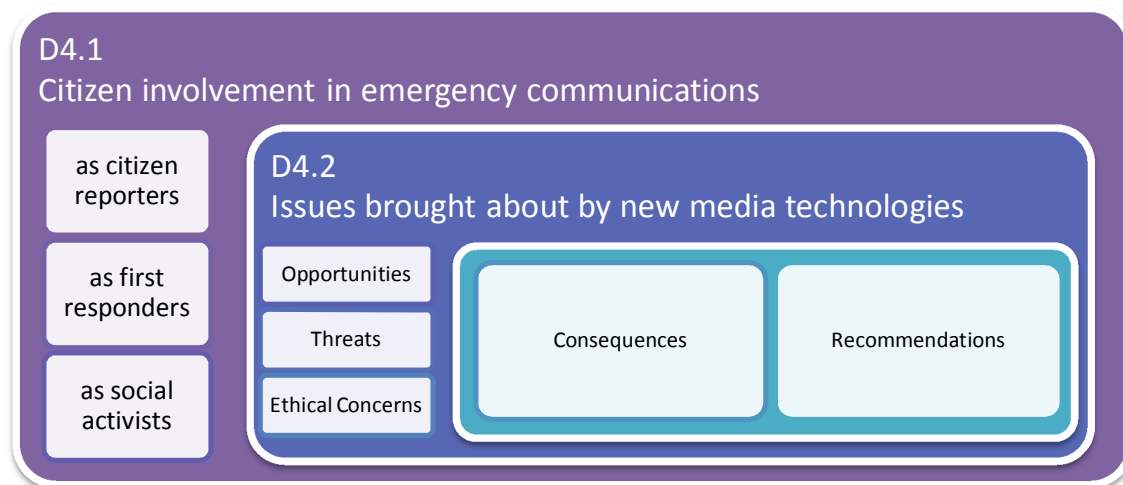
- Provide help towards responders by completing the building of situational awareness
- Are able to supply additional information, in particular at the first stages of a catastrophic incident, which can be decisive in attracting external funds and sponsoring and therefore enabling the participation of voluntary organisations (NGOs) such as the HRT
- Can provide valuable information able to direct rescuers of survivors
- Are a means of publishing information towards the public concerning rescue efforts and other vital to life information

Task 3.4 i Workshop to validate the ideas generated in Task 3.2 and promote further actions

The workshop took place on the 22nd of May 2014 and its results can be seen at the relevant report realised as Deliverable 3.4.

1.4 WP4 i EMERGENCY COMMUNICATION BY THE PUBLIC

The aim of WP4 was to examine the ways in which new media technologies can be utilized to engage citizens. Also, the WP4 aimed to identify the implications (including opportunities, challenges and ethical issues), for citizens, of the utilization of new media technologies by different stakeholders during emergencies.



Task 4.1: Citizen's Involvement in Emergency Communications

The aim of Task 4.1 was to provide an in-depth analysis of how citizens are, and can be, involved in emergency communications before, during and after emergencies and crises. The task was led by KU, with support from HRT and was allocated 5.5 person months, resulting in D4.11 'First report on citizens' involvement in emergency communications', which was

due in January 2014. The final version of the report, D4.12 “Final report on citizens’ involvement in emergency communications” was delivered in Month 19 (October 2014).

The first version of the report utilized a mix of methods (desk based research, surveys, content analysis and in-depth interviews) to study the three roles that citizens may assume in emergency communications: as social activists, as first responders, and as citizen reporters. For each type of involvement, the report focused on the respective roles that different stakeholders (including volunteer organizations, government authorities, corporations) might play in facilitating or impeding citizens’ involvement in emergencies. In addition, the task investigated the respective roles that different communication technologies may play in terms of engaging citizens.

Based on feedback received from the project reviewer and stakeholders present in the Workshop in Istanbul (D4.3), in the final version of the report the following revisions were made:

- Using examples from Haiti Earthquake, Typhoon Pablo (Philippines), and Hurricane Sandy, Hurricane Katrina, the report was expanded to discuss how applications like Ushahidi may help incorporate data generated from new media sources and more conventional sources of information such as cell phone SMSs and call
 - The report expanded the discussion on how use of online and offline networks together can help bridge the gap between local communities and their existing networks (such as family networks), digital volunteer networks, and response organizations.
 - The report was expanded to include description of use of ICTs during emergencies by giving examples from recent health and food crises. Examples from HealthMap and Outbreaks Near Me are given to detail how such applications are utilized during slow onset health emergencies, including slow epidemics like Ebola.
 - The final report also expands the discussion on use of Big Data and crowdsourcing in predicting food shortages and crises.
- Sections were completely rewritten to increase emphasis on the relation between online and offline networks in “network building” as a communicative activity.

Task 4.2: Citizen Involvement and Ethics

The aim of Task 4.2 was to examine the ethical dimensions of communicative opportunities that new media bring, and recommendations for how these ethical issues can be adequately addressed. The task was led by KU, with support from TRI and was allocated three person months, resulting in D4.21 “First report on the ethical considerations of citizen involvement”, which was due in March 2014 and the final version of the report, D4.22 “Final report on the ethical considerations of citizen involvement” which was delivered in Month 19 (October 2014).

The first version of the report consisted of six chapters. Partners used desk-based research, including lessons learnt from other findings in the COSMIC project (e.g., from WP3) to identify and discuss opportunities, risks (threats), and ethical issues that are brought about by utilization of new media technologies during crises. Throughout the report, partners provided a series of recommendations for responsive action to both harness the opportunities that stem from new media, whilst negating the threats and ethical implications.

Based on input received from the project reviewer as well as the various stakeholders that participated in the Workshop in Istanbul (4.3), in the final version of the report, the following revisions were made to the initial report:

- The report was expanded to add sections that focus on health and food crises to expand the findings from other types of emergencies discussed in terms of ethical and social issues.
- The report was expanded to incorporate several examples to methodologies that have been proposed and applied to utilize social network data to predict the onset of epidemics, such as Ebola, Avian Flu.
- Content was added to discuss examples to applications (such as HealthMap, Outbreaks Near Me, and Google Flu Trends) that are used to predict and respond to epidemics.
- The report was expanded to add a section on health and food crises, which focus on Ebola. This includes efforts by Nigerian government, the CDC, private organizations, and citizens through Twitter hashtags to disseminate right information on the epidemic and the prediction of the epidemic with HealthMap nine days before the official announcement by the WHO, again including a screenshot of Twitter event by the CDC, #CDCchat.
- Expanded sections on Misinformation, Misrepresentation, and Scamming to discuss examples from the 2014 response to Ebola epidemic.

Task 4.3: Workshop on Citizen Involvement in Emergency Communication

The aim of the Workshop on Citizen Involvement in Emergency Communication was to collect feedback from various stakeholders, such as emergency response crews, law enforcement representatives, citizen journalists, and social activists on the findings obtained from Task 4.1 and Task 4.2.

The workshop was held in Istanbul in September 2014. The workshop comprised presentations from COSMIC partners as well as presentations from other researchers and stakeholders. This way, we were able to elicit feedback on COSMIC findings and facilitate exchange of information between different stakeholders and researchers. There were 5 sessions including 16 presentations in the workshop. Each session was followed by a discussion session on the presentations and COSMIC findings. Out of the 16 presentations, 5 were made by COSMIC partners and 11 were made by other stakeholders and researchers.

1.5 WP5 İ STAKEHOLDER ANALYSIS AND ENGAGEMENT

WP5 consists of three tasks and is led by TRI. The WP started in April 2013 and continues for the remainder of the duration of the project (until March 2015). It was allocated 9.5 person months, shared between TRI, PSCE, KU and HRT.

Task 5.1: Generate a stakeholder engagement strategy

The aim of Task 5.1 was to develop a high level strategy to engage stakeholders involved in the security of citizens, both as individuals and as members of groups or societies. The task was led by TRI, with contributions from HRT and PSCE. The task led to the completion of

D5.1 Stakeholder engagement plan. In tandem with D7.1 (Project Dissemination Plan), D5.1 aimed to identify stakeholders with an interest in the project's findings. The deliverable consisted of six objectives:

1. **Identify stakeholder categories and decide on the level of granularity of stakeholder types.**
2. **Identify stakeholders' motivations and why each stakeholder type should be engaged.**
3. **Identify different means and media through which different stakeholder types should be reached.**
4. **Evaluate the cost-effectiveness of each of the different ways of reaching out to stakeholders and decide how the cost-effectiveness is to be evaluated or measured.**
5. **Translate and distribute press releases and selected other materials in different languages in order to reach out to international stakeholders.**
6. **Initiate and implement the stakeholder engagement plan.**

Although the deliverable was submitted early on in the project, in July 2013, engaging stakeholders with the project's findings is an on-going activity.

Task 5.2: Compile a contact list

The aim of Task 5.2 was to compile a list of organizations, and where possible, individuals within organizations whom we wish to reach to share information on the project's activities and findings. The task was led by PSCE, with contributions from all other members of the consortium, and has been allocated 2.75 person months. This contact list produced as part of D5.2 Stakeholder contact list provided an overview of different types of stakeholders, including organizations working on similar research projects in the EU, member states of the EU, and third countries. When the list was first established it had 2000 entries.

As of the project's interim review in May 2014, the database had 2111 entries including representatives from 43 countries, the majority of which are experts from Ministry of Interior; Police Departments; Red Cross / NGOs; Fire Departments; Emergency Services; Universities; Ministry of Environment; Mountain Rescue services and others. The identified contacts are receiving regular COSMIC updates in the form of press releases, notifications of deliverables available for them to view, news updates, and notifications and invitations to relevant events. The contact list is updated regularly and will continue to be updated throughout the duration of the project.

The database currently has 2544 contacts. Figure 1 illustrates the wide-range of countries that these contacts are from. The variation in the number of contacts from each country may be due to the availability of information in different languages and language barriers.

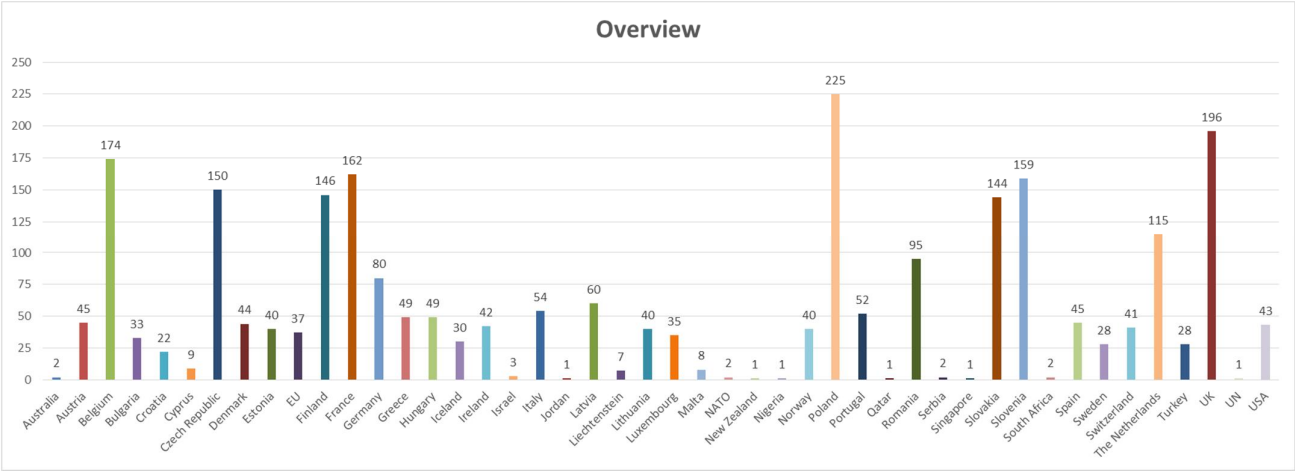


Figure 1. Contacts by country

Figure 2 highlights the different sectors that the 2544 contacts are from. Appendix A provides a more detailed breakdown of the contacts from different sectors for each country.

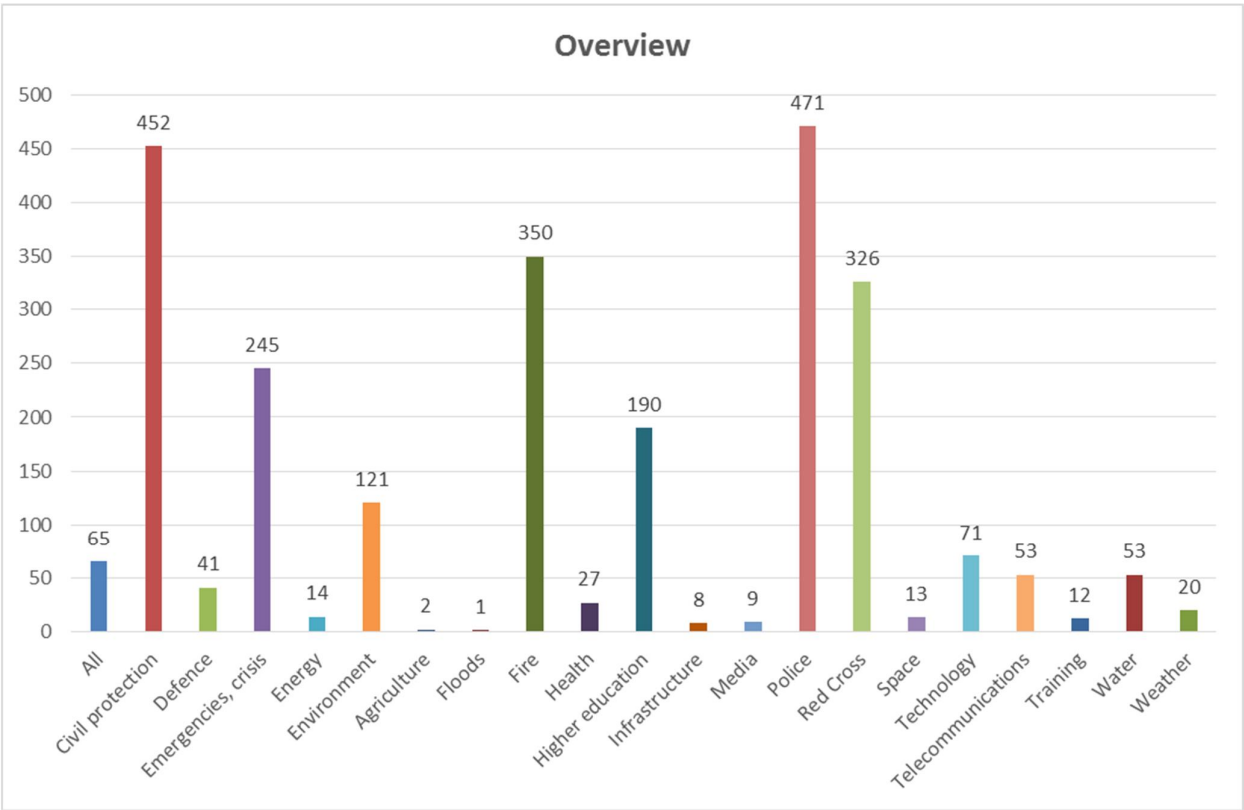


Figure 2. Contacts by sector

Task 5.3: Creating a network of international participants

The aim of task 5.3 has been to create a network of international participants with whom the consortium can share news and findings of the project, with particular emphasis on sharing and discussing the project’s guidelines for different types of stakeholders (WP6). The task is

led by PSCE, with contributions from TRI, KU and HRT, and has been allocated 3.25 person months. The network of international participants was and continues to be, invited to COSMIC workshops and conferences to validate our findings and welcome their feedback.

As part of this network, the consortium have completed the establishment of the COSMIC advisory board, which contains three individuals from the research institute (TNO, Netherlands), civil society organisation (Austrian Red Cross) and research and development (HW Communications, UK).

Partners have also developed a LinkedIn profile and group of which they are using to set up the network to engage participants in discussing the projects findings. Additionally they have set up a Twitter account with which they have been communicating with external groups and individuals. Lastly, the COSMIC website remains a key avenue for participants to learn more about the project and its outputs. The work related to T5.3 will remain on going throughout the lifetime of the project and is currently being used to attract participants to the projects final conference (part of WP7).

Statistics include:

Twitter	LinkedIn
June 2014: Number of Tweets: 135 Number of followers: 71 Following: 73 January 2015: Number of Tweets: 240 Number of followers: 171 Following: 94 Included on 1 list (ICT Media Projects)	June 2014: COSMIC Profile - number of connections: 55 Exact number of posts is almost the same as the number of tweets (each time we 'tweet' we also put the post on LinkedIn). January 2015: COSMIC Profile - number of connections: 77 Exact number of posts is almost the same as the number of tweets (each time we 'tweet' we also put the post on LinkedIn). COSMIC group Number of members: 29

1.6 WP6 GUIDELINES

The main aim of COSMIC is to identify the most effective ways to utilise new information and communication technologies (ICTs) in crisis situations for the protection of ordinary citizens. In order to do so, the aim of WP6 is to develop guidelines, aimed at ordinary citizens, public and private organizations for the most effective use of ICTs, that should enhance the safety and security of EU citizens prior during crises.

What the WP involved

Partners conducted a review of existing new media guidelines from public and private organizations and used the findings of previous deliverables to conduct COSMIC guidelines.

The aim of the different deliverables is shown below:

- In D6.1 guidelines for involvement of the public with new media in crisis situations are developed. D6.1.1 is a first draft which will be finalized into D6.1.2.
- In D6.2 guidelines for professional stakeholders with new media in crisis situations are developed. D6.2.1 is a first draft which will be finalized into D6.2.2,
- Following the creation of the guidelines in D6.3 recommendations for future research are identified. D6.3.1 is a first draft which will be finalized into D6.3.2.

WP main findings

<i>Deliverable</i>	<i>Main findings</i>
D6.1.1	➤ Based on D4 partners find out that citizens can take different roles on social media: citizen journalists, civil society activists and volunteers as first responders. For this task two roles have been added: firstly the citizens who are directly affected by the crisis but who are still able to act in a self-resilient manner, and secondly civilians who are not directly affected but want to be informed for other reasons such as curiosity ➤ When citizens take on the role of citizen journalists, they should be aware of the strengths and weaknesses of their network. During the communication process, it's important to keep the target group into consideration and to be clear about the source of the information. In addition, validating and verifying the information is essential for citizen journalists. ➤ For citizens who are acting as volunteers and first responders, it is important that they prepare themselves in non-crisis periods. By using social media, these citizens can assist the official authorities in filtering information and making sense of information for emergency response functions such as crisis mapping. ➤ The most important tips and tricks for citizens as self-resilient victims concern the fact that they should have the possibility to disclose their location and, at a later stage, ask for help. Using applications with the feature to share the current location is essential for citizens in this role. ➤ Citizens as social activists should be aware that all their actions and all the information they spread are monitored. Citizens in this role should know that not only they themselves, but also their opponents dispose of new and social media. As by citizen journalists the aspect of verifying information is important here as well. ➤ Non-affected citizens (news consumers) will use new and social media to be informed about the crisis situation, but also in the process of raising awareness and/or money. With blogs and social media a large group of people can be reached in a short time.
6.1.2	➤ The roles citizens assume during crises have been transferred to actions: when seeking aid, when aiding, when seeking information, when mobilizing and when reporting, to emphasize the practical relevance, fit better to citizens worldview and to have a broader scope

	then the former roles. ➤ Especially the non-affected citizens have translated into a broader action category: 'when seeking information', as this action can also be undertaken by victims/ self-resilient citizens searching information in order to respond adequately to the crisis at hand. ➤ 'When reporting' provides not only tips and tricks for people reporting information about the crisis themselves, but also for those sharing information provided by others. ➤ 'When aiding' also emphasizes that those providing direct aid in the field should share the knowledge they have about the situation at hand as they thereby possess crucial (local) situational awareness, necessary for others to respond adequately. Vice versa, receiving such information from other first responders increases the own situational awareness and thereby provides more opportunity for an (overall) adequate and efficient response. ➤ In general the tips and tricks have a realistic perspective, meaning that they will mainly concern the actual crisis phase as D1.1 has shown that citizens only prepare for those crises that they perceives have a significant and imminent threat to themselves or their relatives. ➤ In line with D1.1 even more emphasis is placed on the (self)resilience of citizens. The tips and tricks all try to increase the own (effective) action potential of citizens, in whatever action they undertake.
6.2.1	➤ As organisations may have different tasks, responsibilities and stakes during a crisis situation a distinction is made between guidelines for public and for private organisations. Therein both organisations that regularly as those that don't regularly carry out tasks in crisis management are addressed. ➤ Within the guidelines a division in 5 categories is made: 1) promotion of new media before crisis situation 2) communicating with citizens via new media during crises 3) communicating with citizens via new media after crises 4) using information from new media in crisis management activities 5) implications for the organisation of crisis management activities. ➤ Many tips and tricks for public organisations regard stimulation the flow of information on social media and the engaging of citizens. E.g. by stimulating citizens to use it, specifying which channels to use, asking citizens to provide specific information as well as share your information and thanking people for sharing. But also by providing guidance in how to use social media for both your employees and citizens, to ensure to the quality and by adding value to your messages. Additionally make sure that such also flows towards the first responders in the field.

	➤ Note that it is important to share information quickly instead of waiting until all information is available as time is of the essence. Additionally it is important to be honest and transparent: state what you know as well as what you don't know. ➤ To ensure success it is important to adjust to existing practices. An overall communication strategy should be created including several traditional and new communication technologies. ➤ For private organisations many tips and tricks involve increasing citizens involvement in their organisation and social media, adjusting to the communication channels the target audience uses and the way these citizens use them. Monitoring what happens on the social media accounts and regularly interacting, especially in response to questions, concerns and pleas for help, through them is important as well. ➤ Additionally it is important to use unique, compact and canonical hashtags and icons and especially using those already in use. ➤ Crosscheck information obtained through social media.
6.2.2	➤ The primary stakeholder addressed by these guidelines was refined to public authorities while noting that nevertheless the relevance for other organisations remains high. ➤ In interdependence with the above and as a critical revision showed that many tips and tricks across the different guidelines were either very similar or relevant for both organisations both sets of guidelines have been integrated. Additionally the tips and tricks have been reshuffled into new categories: the pre-, during and after crisis phase, bundling tips and tricks relating to the specific moment in time an organisation might want to undertake action. As such the practical usefulness is increased. ➤ Furthermore underlying key principles have been specified that structure the approach towards social media public authorities should undertake in crisis management, again from a realistic perspective. The first key principle is that citizens are self-resilient and luckily so, as they are often the first ones present at an emergency scene, while the capacity of emergency services is limited. Furthermore the extent to which citizens and companies adjust their behaviour is limited, unless they perceive urgent and significant reasons to do so and there already is a blooming social media practice, led by entrepreneurial businesses. As such the second principle is that governments should catch up with the existing social media use rather than reinventing the wheel. Lastly, public authorities should through the use of social media stimulate the capacity of civil society to safeguard its own wellbeing further.
6.3.1	➤ Six areas have been identified in which further research can be conducted

	➤ Understanding the public: - Comprehending the structural factors that might impede the adoption of ICTs and the associated individual and social differences that may dis-/ encourage this adoption during crises. - Comprehending the role online communities can play in the wake of disasters and crises. - Analysing how cooperation of citizen journalists with professional reporters (for fact-checking and editing news stories) can be enhanced as well as which factors prevent citizen generated content from challenging the boundaries created by the content and journalistic approaches of established journalism. - Analysing the level of public awareness regarding the available verification methods and how to reach out to the public to increase media literacy. ➤ Understanding public and private organisations: - Further analysis of those organisational and individual factors which affect this communication will help develop methods to allocate resources to e.g. process large influxes of data from the public and engage in dialogue with them instead of just one-sidedly sending information. ➤ In order to understand the current contribution and possibilities but also limitations of social media in crisis management, research is needed to what extent, why and when emergency employees use social media as what their background is. Only then can the same questions be analysed for the enhancement of situational awareness through social media. ➤ Currently the guidelines do not address the differences that occur between crises and following possibly in the use of social media and type of messages spread. In order to effectively utilize social media this should be gained insight in as in the possibilities for social media use in predicting crises. ➤ Also is unclear how citizens and organisations perceive and currently address social, legal and ethical issues. Especially should be researched how confidentiality can be protected with the enhanced recording facilities. ➤ Lastly to enhance acceptance for open standards for social media and following interoperability between all platforms attention is needed with regard to the automatic recognition of distress and crisis messages transmitted via social media and the possibilities of (partial) solutions for interoperability.
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