Report on social media and crowdsourcing network application

Final Version of 16/08/2019

Deliverable Number D.3.1.3.

Project Acronym	E-CITIJENS
Project ID Number	10044361
Project Title	Civil Protection Emergency DSS based on CITIzen Journalism to ENhance Safety of Adriatic Basin
Priority Axis	2
Specific objective	2.2
Work Package Number	WP3
Work Package Title	MODELLING "SOCIAL MEDIA BASED" CIVIL PROTECTION EMERGENCY MANAGEMENT SYSTEM
Activity Number	3.1
Activity Title	Survey of current risks scenarios, management legislation and social media and crowdsourcing
Partner in Charge	PP5
Partners involved	All
Status	Final
Distribution	Public

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1. Introduction

Modelling "social media based" civil protection emergency management system (Work package 3) aims at developing a cross border model of an emergency management system. The model should consider risk scenarios, sensors data, regulatory frameworks, and activation of citizens through social media as emergency active sensor.

The starting point is the survey of current risks scenarios, management legislation and social media and crowdsourcing. Therefore, the three thematic task forces (TTFs) are set up to perform the survey and to report about current situation, best practices, knowledge and experiences from the previous projects and to propose how to use, integrate or harmonize them in a common model. The three themes, and corresponding reports, are as follows:

1. Risks scenarios,
2. Risk management legislation, and
3. Social Media and crowdsourcing.

The report on social media and crowdsourcing covers the following:

- types of information shared on social media according the different crisis or emergency kinds;
- the most suitable and used social platforms;
- examples of Social Media's use during last risk emergencies and adopted by Civil Protection; and
- projects that developed social media and crowdsourcing platforms for emergency management and prevention.

In the following E-CITIJENS activities, this report will serve as a basis for drafting the functional model of "social media based" Civil Protection Emergency system, and later on, for hardware and software design.

This report is prepared by the coordinating partner of the TTF3, University of Split, Faculty of Civil Engineering, Architecture and Geodesy. Evaluation and approval of the report is done by Alma Mater Studiorum – Università di Bologna as WP3 leader, and other project partners involved in TTF3.

2. Methodology of the survey

This chapter explains the methodology and activities undertaken to carry out the survey on usage social media and crowdsourcing in emergency management and understand the current situation in Italy and Croatia. To this end Thematic Task Force 3 (TTF3) is envisaged in the project plan. The objective of this task force is to perform survey that will be the basis for apprehension of current situation, best practices, knowledge and experiences in using social media in emergency situations.

Thematic task force 3 (TTF3) is set up during the Kick Off meeting which took place at Campobasso, June 2019, and is composed as follows:

- coordinator: University Of Split, Faculty Of Civil Engineering, Architecture And Geodesy (PP3);
- contributing partners:
    - Veneto Region, Direzione Protezione Civile e Polizia Locale (PP2);
    - EEIG Eurelations (PP4).

Literature search and study

During the first project period, literature search and study of the current status of social media's use in emergency management is performed. Short overview of the main highlights of social media use in emergency management is given in the Section 3.

Moreover, during the E-CITIJENS Cross-Border Conference "Emergency Response Decision Support System" which took place at Campobasso, (19 June 2019), two presentations were dedicated to the theme of social media in emergency management:

- "The use of social media in the communication of risks", Luca Calzolari, Director of Il Giornale della Protezione Civile;
- "Social media and emergency/disaster management: what have we learnt so far?", Snjezana Knezic, University of Split – Faculty of Civil Engineering, Architecture and Geodesy.

The questionnaire

In order to systematically collect information on usage of social media by civil protection in Italy and Croatia the questionnaire is created. Considering different organisation of civil protection systems in Italy and Croatia, as well as needs for understanding the current situation as a basis for creation decision support platform, the questionnaire covers the following issues:

- types of information shared on social media according the different crisis or emergency kinds;

- the most suitable and used social platforms;
- examples of social media's use during last risk emergencies and adopted by civil protection; and
- projects that developed social media and crowdsourcing platforms for emergency management and prevention.

The abovementioned issues provide enough information for definition of decision support platform's requirements, which have to satisfy both Italian and Croatian civil protection organisations.

According to the above issues, a partner responsible for the Work package, Alma Mater Studiorum – Università di Bologna, created the draft questionnaire and distributed it to the partners for comments. The final version of the questionnaire is given below.

TTF No 3: Social media and crowdsourcing (end- user name)
1. Types of information shared on social media
(according to the different type of crisis or emergency)
2. Most suitable and used social platforms
3. Examples of Social Media used during last risk emergencies and adopted by Civil Protection
4. Projects that developed social media and crowdsourcing platforms for emergency management and prevention
(list of projects, including title, description and output expected or obtained in case of a completed project)
5. Data Sources
(list of data sources, reference documents, websites, institutions or agencies)

Identification of the civil protection services

The survey encompasses selected civil protection emergency services in Italy and Croatia. As Italy and Croatia have different organisational framework for the emergency management operations, the organisations involved in the survey are different. In Croatia, civil protection organised hierarchically (state level, regional divisions and sub-divisions) manly coordinates and have minor operating forces. Thus, the supporting organisations are involved of which the most relevant for this survey are: fire brigades, mountain rescue service and Red Cross. 112 service is also a part of civil protection system organised in five major divisions acting as civil protection operative centres. In Italy, the civil protection structure is similar and has hierarchical organisation and regional operative centres covering more functions in the system. They monitor the situation, alert and coordinate emergency services. Therefore, the survey in Croatia includes civil protection services separately and in Italy civil protection operative centres. In both countries the survey is focused on the regions involved in the project.

With a support of the partners from both countries (Veneto region, Split-Dalmatia county, Zadar County Rural Development Agency), the following organisations are identified as relevant for the survey:

In Italy:

- Civil Protection Veneto Region and
- Civil Protection Molise Region;

In Croatia:

- 112 service covering Split-Dalmatia and Zadar counties (Split civil protection division);
- public fire brigades for cities of Split and Zadar,
- mountain rescue services in Split and Zadar,
- Red Cross for Split-Dalmatia county.

Performing the survey – filling the Questionnaires

The selected civil protection operational centres and emergency services are contacted by a phone and e-mail, and informed about the survey and filling the questionnaire. To support filling the questionnaire, the project partners organised meetings with emergency services in Croatia. Throughout the discussion about the social media role in their operations, the questionnaires are filled. Prior to the meetings, a brief description of the project and the questionnaire are sent to the end-users. Meetings with end-users are held during July and August 2019 by the project partners: University of Split, Faculty of Civil Engineering, Architecture and Geodesy and Zadar County Rural Development Agency. In Italy a member of TT3 Veneto Region, Direzione Protezione Civile e Polizia Locale conducted survey in Italy.

Being civil protection directorate for Veneto Region they filled the questionnaire and contacted civil protection directorate for Molise Region, which is project coordinators.

Filled questionnaires are given in the Annex.

Questionaries' analysis

The questionaries' analysis is undertaken by the coordinating partner of the TTF3, University Of Split, Faculty of Civil Engineering, Architecture and Geodesy. The findings are given in the Section 4 of the Report.

3. Social media in emergency management

The use of social media in emergency management is ever challenging topic from the first appearance of such platforms in early 2000s. By introduction of smartphones it became even more actual since every citizen with smartphone can be considered as a sensor quickly posting information about an emergency situation with exact location and time. The Haiti earthquake (2010) was the real breakthrough moment when humanitarian organisations used social media for sharing information with affected population.

Reviewing the current global situation it can be seen that entities, which use social media as an integral tool for disaster and emergency management, are:

- emergency responders,
- governments, and
- non-governmental organizations.

The communication usually goes both ways from citizens to institutions and organisations as well as from institutions and organisations to citizens. The Figure 1a shows Twitter communication from Lincolnshire Police to citizens during the recent flooding (UK, June, 2019) about evacuation on certain areas asking citizens to check whether they have to evacuate or not. Conversely, the Figure 1b shows Twitter post during the same emergency where a resident informs authorities about sand bags' malfunctioning in this particular case, which is very useful information to be considered.

a)

b)

Figure 1: An example of communication from emergency service to citizens (a) and information sent by a citizen to emergency authorities (b)

In the global and trendy world where technology evolves on a daily basis the key question might be about the best social media platform to follow during emergencies and disasters. At the moment it appears that the most popular social media platforms are:

- Facebook,
- Twitter, and
- Instagram (the mostly used by young population).

Analysing the current situation in emergency management, the most commonly used is Twitter, followed by Facebook. Twitter, which is the most suitable for disasters and emergencies has some features that makes it most convenient in such cases, such as:

- real-time information exchange,
- hashtags effectively support finding and following tweets,
- limited number of characters, i.e. 140-character messages, and
- one-to-many information exchange.

Eventual problems during communication could create abbreviations used during tweeting due to limited number of characters. Figure 2 shows data related to Twitter usage during major World's crises between 2013 and 2015 (Muhammad et al, 2016). It is obvious that English language is mostly used for communication regardless the country where crisis occurred and war & conflict crisis is the most tweeted one.

Crisis type	Crisis name	Country	Language	# of Tweets	Start-date	End-date
Earthquake	Nepal Earthquake	Nepal	English	4,223,937	2015-04-25	2015-05-19
Earthquake	Terremoto Chile	Chile	Spanish	842,209	2014-04-02	2014-04-10
Earthquake	Chile Earthquake	Chile	English	368,630	2014-04-02	2014-04-17
Earthquake	California Earthquake	USA	English	254,525	2014-08-24	2014-08-30
Earthquake	Pakistan Earthquake	Pakistan	English	156,905	2013-09-25	2013-10-10
Typhoon	Cyclone PAM	Vanuatu	English	490,402	2015-03-11	2015-03-29
Typhoon	Typhoon Hagupit	Phillippines	English	625,976	2014-12-03	2014-12-16
Typhoon	Hurricane Odile	Mexico	English	62,058	2014-09-15	2014-09-28
Volcano	Iceland Volcano	Iceland	English	83,470	2014-08-25	2014-09-01
Landslide	Landslides worldwide	Worldwide	English	382,626	2014-03-12	2015-05-28
Landslide	Landslides worldwide	Worldwide	French	17,329	2015-03-12	2015-06-23
Landslide	Landslides worldwide	Worldwide	Spanish	75,244	2015-03-12	2015-06-23
Floods	Pakistan Floods	Pakistan	English	1,236,610	2014-09-07	2014-09-22
Floods	India Floods	India	English	5,259,681	2014-08-10	2014-09-03
War & conflict	Palestine Conflict	Palestine	English	27,770,276	2014-07-12	2014-10-02
War & conflict	Peshawar Attack Pakistan	Pakistan	English	1,135,655	2014-12-16	2014-12-28
Biological	Middle East Respiratory Syndrome	Worldwide	English	215,370	2014-04-27	2014-07-14
Infectious disease	Ebola virus outbreak	Worldwide	English	5,107,139	2014-08-02	2014-10-27
Airline accident	Malaysia Airlines flight MH370	Malaysia	English	4,507,157	2014-03-11	2014-07-12

Figure 2: Data related to Twitter usage during major crises (Muhammad et al, 2016)

Another logical question is about when to use social media will be most useful, in which phase of the disaster & emergency cycle. Figure 3 shows typical phases of the cycle: mitigation, preparedness, response, and relief. However, it could be argued that social media is mostly useful when civil protection

services want to send citizens vital information, as well as when citizens need to quickly information services about dangerous situations. Therefore, the most prominent areas of usage are the following:

- early warning system,
- situational awareness during relief operations, and
- relief operations.

Figure 3: Typical phases of the disaster & emergency cycle

Although social media are great opportunity for improvement of emergency services, there are some issues to be considered. The problems derive from the fact that messages come from outside, i.e. citizens, and if they are not checked and verified they could pose a huge threat in terms of trustworthiness. Problems and challenges can be grouped in the following categories (partially taken from Homeland Security, 2018):

- Incorrect information,
- Inaccurate information,
- Insufficient information,
- Opportunistic disinformation,
- Out-dated information, and
- Useless information.

Incorrect, inaccurate, insufficient and out-dated information categories are quite common and well understood.

Opportunistic disinformation category comes from the situation when people, in order to get attraction, post their information not connected with emergency situation, sometimes malicious, using actual emergency hashtags in Twitter. A specific category is useless information that is posted in bona fide but clogs the communication in a case of emergency. Figure 4 shows the situation when, during the

abovementioned flooding in UK, the official hashtag "@lincspolice" is used to thank the emergency services, which could be considered as useless information.

Figure 4: An example of useless information shared during an emergency situation

An example from Croatia, given by Kević et al, 2018, explains the situation when a message posted on social media brought many citizens to the fire scene and in that way created an uncontrolled situation.

As a conclusion, using social media in disaster & emergency situations is still challenging although citizens' posts provide useful near real-time information for first responders. Moreover, there is lack of trustworthiness in information coming from social media in spite of constant development of AI algorithms for automatic crawling and search for accurate, useful information on social media.

4. Analysis of the questionnaires

The main objective of the analysis was to use the questionnaires to understand the gaps and needs of the civil protection services related to the use of social media in emergency situations.

Italy

The questionnaires are filled by regional civil protection organisations in Molise and Veneto, which are partners in the project. The organisations use social media communication primarily for sending information to citizens and other organisations of interest. The information has been typically sent during and after emergency situations. Occasionally, during the recovery phase the communication via social media is about post-emergency procedures for reimbursement and restoration processes that is quite useful, particularly for citizens.

The Molise Region has activated official social profiles on Facebook and Twitter and published information relates to both institutional communication and communication during emergency events. Likewise, Veneto Region has an official Facebook profile and official Twitter account for institutional communication. However, only the main emergencies are communicated using these channels. Having official social media accounts it is assumed that regional civil protection organisations in Italy have personnel in charge of communication via social media. Apparently Facebook and Twitter are the most used social media platforms and Instagram could only be used if the civil protection organisations have a valid press office with a photographer.

As a conclusion, it could be said that social media is well used for outgoing communication. There are also a number of research and innovation projects (FP7 and H2020) related to the use of social media in emergency management with Italian partners who can share their knowledge and experience with civil protection organisations in Italy. Nevertheless, there is a need for information coming from citizens like alerts, evidence of emergencies or useful information during response phase. This could pose additional work for validation of such information, which could be done by operators in civil protection centres.

Croatia

The questionnaires are filled during the interviews with representatives of civil protection services, as defined in Section 2. In order to better understand services' relationship with citizens, the interviews comprised broader aspect of communication with citizens, not only via social media.

If used in rare cases, social media is deployed to inform citizens about past events and eventual casualties (mainly shared posts from local news portals) and as preparedness information. The analysis per services (fire-fighting, 112, Red Cross, Mountain Rescue Service) revealed different degree of usage

social media for prevention and after emergency situations. For example, fire fighters and Mountain Recue Service use social media to inform citizens about fire emergencies after by sharing links to news portals. Mountain Recue Service posts useful information about dangers when going to countryside, particularly during summer season when Dalmatian coast is fully packed with tourist attracted by nearby mountains. 112 service has never thought to use social media so far, because their primary service is oriented to telephone calls and alerting as well as re-directing them to other emergency services.

After thorough analysis, the general conclusion is that the Croatian civil protection services are not used to share information through social media for emergency situations although they believe that this could be a good practice to do. However, there are obstacles, which certainly caused the low use of social media. Namely, three main causes have been encountered:

- Croatian civil protection services are part of Ministry of Interior which are not in favour of using social media due to security reasons,
- they do not have specialised personnel for communication with citizens via social media prior or particularly during emergency situations,
- citizens are not used to send alerts or inform about potential emergency situations using social media since they prefer to call 112 system, which is very well organised in Croatia.

Moreover, it is evident that there is a certain gap between usage of social media for preparedness and after emergency phases, and during response phase including alerts from citizens. In future case of using social media there is also a general concern related to trustworthiness of the citizens' posts.

The concise, main points of the questionnaires' analysis are given in the Table 1.

Table 1: Main points of the questionnaires' analysis

	Italy	Croatia	Common
Types of information shared on social media	Information related to the emergency situation, post-emergency information.	There are not clear conclusions on types of information due to limited use of social media. The assumption is that time and location are the most important ones in a case of emergency.	Information related to the emergency and post-emergency information with accurate time and location.
Most suitable and used social platforms	Facebook and Twitter	If used (in rare cases for other reasons) Facebook is the most used one. There is no clear answer on most suitable one.	Facebook and Twitter
Examples of Social Media used during last risk emergencies and adopted by Civil Protection	Information is shared with citizens during and after the emergency situations.	There are cases when information is shared with citizens after the emergency situations and also for preparedness reasons.	Information is shared with citizens during response and recovery emergency management phases.
Projects that developed social media and crowdsourcing platforms for emergency management and prevention	There are no projects with direct involvement of either Veneto or a Molise region but there are number of R&I projects related to the use of social media in emergency management with other Italian partners.	No projects are identified in relation to developed social media and crowdsourcing platforms for emergency management and prevention.	No projects are identified in relation to developed social media and crowdsourcing platforms for emergency management and prevention where E-CITIJENS partners were actively involved.

5. Conclusions and follow-up activities

Apparently, the use of social media in Italy-Croatia Adriatic regions are in a development phase, being more underused and neglected in Croatian regions than in Italian ones. Considering the fact that the communication via social media has to be bi-directional, namely from civil protection to and from citizens and actual communication in both Italy and Croatia is only towards citizens, this project has to find a solution how to collect information coming from population, validate it and effectively use it in emergency management process.

Although all emergency management phases (Figure 3) are worthy to be supported via social media communication, the response phase, including early warning, usually has the priority. Therefore, this project has to define how to deal with social media in terms automatic search for social media information posted by citizens and incorporate it in the solution of the decision support platform.

Figure 5: Standard hashtags during Ebola outbreak in West Africa (OCHA, 2014)

It is also clear from the analysis of the questionnaires that obtaining trustworthy information with accurate time and location should be the goal of the solution. By putting trustworthiness outside the automatic recognition and leave to civil protection operators to decide whether the information received via social media is reliable or not, the final solution will primarily focus on getting potentially relevant information from actual posts on social media. Simple and feasible solution for automatic search for social media information should include the use of standardised hashtags for emergency & disaster responses and creating keywords for automatic search for valid social media messages. Figure 5

shows an example of suggestions to Twitter users to use standard hashtags during Ebola outbreak in West Africa, so everyone will be on the same messages' threads.

Considering the abovementioned the follow-up activities could be:

- definition of semantics that should be taken into consideration for inclusion of social media into decision support platform;
- analysis of data and the communication structure of Facebook, Twitter and Instagram (for a potential future use);
- definition of a structure of the basic thesaurus, which will be used for automatic search in the decision support platform.

Bibliography

Countering False Information on Social Media in Disasters and Emergencies, Social Media Working Group for Emergency Services and Disaster Management, US Homeland Security, March 2018

Hashtags standards for emergencies, OCHA 2014

Kević, M. Erceg, D. Bilać, D. Nađ, R, Društvene mreže – novi rizik ili rješenje za rizik? 7. Konferencija Hrvatske platforme za smanjenje rizika od katastrofa, Zagreb, 2018.

Muhammad, M. Prasenjit, C. Carlos, Twitter as a Lifeline: Human-annotated Twitter Corpora for NLP of Crisis-related Messages, In: the 10th Language Resources and Evaluation Conference (LREC). 2016.

Annex: Filled questionnaires

The filled questionnaires are put in the following order:

1. Italy – Veneto Region, Civil Protection
2. Italy – Molise Region, Civil Protection
3. Croatia – Split Civil Protection, 112 County's Centre
4. Croatia – Split Public Fire Brigade
5. Croatia – Split Mountain Rescue Service
6. Croatia – Split-Dalmatia County Red Cross
7. Croatia – Zadar Public Fire Brigade
8. Croatia – Zadar Mountain Rescue Service

TTF No 3: Social media and crowdsourcing Veneto Region, Civil Protecion

1. Types of information shared on social media

Communication is mainly about the on going emergency and about fundraising for emergency. Some communication is also about the post-emergency procedures for reimbursement and restoration.

2. Most suitable and used social platforms

Veneto Region has an official Facebook page and an official Twitter account for every institutional communication. Only the main emergencies are communicated using these channels. The most part of emergencies are communicated in the Facebook profile of Civil Protection Assessor Giampaolo Bottacin.

3. Examples of Social Media used during last risk emergencies and adopted by Civil Protection

https://it-it.facebook.com/RegionedelVeneto/
https://twitter.com/arpaveneto/status/1145786821932191744
https://twitter.com/Agricolae1/status/1149645484287393795
https://twitter.com/zaiapresidente/status/1069501566024122369
https://it-it.facebook.com/pages/category/Public-Figure/Gianpaolo-Bottacin-assessore-regionale-del-Veneto-28421502543/

4. Projects that developed social media and crowdsourcing platforms for emergency management and prevention

http://www.securepart.eu/en/
http://slandail.eu/
https://cordis.europa.eu/project/rcn/108073/factsheet/en
https://cordis.europa.eu/project/rcn/106661/factsheet/en
http://www.fp7-emergent.eu/
https://cordis.europa.eu/project/rcn/192400/factsheet/en

5. Data Sources

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TTF No 3: Social media and crowdsourcing Molise Region, Civil Protection

1. Types of information shared on social media

The Molise Region based on the DGR 540/2016 has activated 2 official social profiles: Facebook and Twitter. The information published should relate to both institutional communication and communication activities during emergency events.

2. Most suitable and used social platforms

According to our experience, Facebook and Twitter.
Instagram could only be used if the Agency / Entity has a valid press office with photographer.

3. Examples of Social Media used during last risk emergencies and adopted by Civil Protection

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4. Projects that developed social media and crowdsourcing platforms for emergency management and prevention

SUPER – http://super-fp7.eu/
TORCIA – http://www.fondazionepolitecnico.it/it/cosa-facciamo/progetti-di-innovazione/item/torcia-piattaforma-di-gestione-collaborativa-delle-emergenze#.XS17Iej7SUk
SIMULATOR - https://mediaitaly.it/?p=3091
IREACT - http://www.i-react.eu/
SOS SOCIAL SENSING - http://socialsensing.it/
All the information is confirmed to the links indicated.

5. Data Sources

Molise Region – Social Media Policy
https://sol.regione.molise.it/urbi/progs/urp/ur2DE001.sto?StwEvent=101&DB_NAME=l1200158&IdDelibere=44297

#socialprociv
http://www.protezionecivile.gov.it/media-comunicazione/dossier/dettaglio/-/asset_publisher/default/content/-socialprociv-la-rete-social-di-protezione-civile

TTF No 3: Social media and crowdsourcing Split Civil Protection – 112 County's Centre

1. Types of information shared on social media

As of the beginning of 2019 State Directorate for Protection and Rescue, which gathered civil protection services, does not exits and now 112 service works under Ministry of Interior. Formerly, certain information was shared with citizens using Facebook and Twitter, but now due to security reasons communication to and from citizens has not been established.
There is definitely a need for communication with citizens via social media, although there could be issue of trust. All types of information could be useful. Processing and filtering of data coming via social media, particularly by geolocation, should be foreseen. Thus, incoming data could be "pushed" to the corresponding office having jurisdiction over that geographic area. Use of social media as new communication channel from and to citizens asks for new employees, because one employee can cover only one communication channel, especially during emergencies when there are many calls from citizens etc.

2. Most suitable and used social platforms

The most suitable social platform is Facebook.

3. Examples of Social Media used during last risk emergencies and adopted by Civil Protection

Example of received information by social media, which was exaggerated: "Ship with 40 persons is sinking.", (actually, there were 18 people).

4. Projects that developed social media and crowdsourcing platforms for emergency management and prevention

There are no projects related to social media.

5. Data Sources

112 Centre Split

TTF No 3: Social media and crowdsourcing Split Public Fire Brigade

1. Types of information shared on social media

Split Public Fire Brigade does not share any information on social media. It is very hard, almost impossible to share information with citizens during a response phase. Although there would be useful to receive information from citizens via social media, there is no specialised person who will be in charge to search for such posts either as information about potential fire or information about status of citizens or property during a response phase.

Split Public Fire Brigade use to share information after emergency situations informing citizens that the danger is over, about the damage and eventual casualties or safeguarding the emergency scene, etc.

However, the most important data that is worth to share together with the main information are time and location (metadata). The main information should preferably be accompanied by a photo(s), but also live streaming should be foreseen too.

Citizens are used to call 112 number, which directs them to the adequate emergency service, in this case fire-fighting.

In a rare case of evacuation, as an either preventive or life-saving measure, they communicate directly to the endangered citizens.

2. Most suitable and used social platforms

Split Public Fire Brigade is most familiar with Facebook, but any kind of social media, which may contribute to efficient reaction to the emergency situation, is welcome.

3. Examples of Social Media used during last risk emergencies and adopted by Civil Protection

Split Public Fire Brigade posts information on social media after emergency situations informing citizens that the danger is over, about the damage and eventual casualties or safeguarding the emergency scene, etc. It is usually links to newspaper's web portals (slobodnadalmacija.hr), as presented in the picture below.

4. Projects that developed social media and crowdsourcing platforms for emergency management and prevention

There are no projects related to the development of social media and/or crowdsourcing platforms for emergency management and prevention.

5. Data Sources

Split Public Fire Brigade
https://hr-hr.facebook.com/jvp.split

TTF No 3: Social media and crowdsourcing Split Mountain Rescue Service

1. Types of information shared on social media

Split Mountain Rescue Service shares information with citizens on social media during and after search and rescue operation. They receive information dedicated to them, for example about missing people, from 112 service and police operational-communication centre. Moreover, it is noticed that citizens post comments about service's interventions. Thus, social media is used for communication from the Split Mountain Rescue Service towards the citizens and the opposite way, from citizens to the Service only in post operation phase. One of the reasons is that today the Split Mountain Rescue Service is not organized or equipped as a call centre.

There is a good basis for use of social media and posting very detail information during the interventions because Split Mountain Rescue Service teams are equipped with vehicle with electric-power generator and GPS antennas. Also, in case of missing persons, their last location, if recorded on social media, could be very useful for the search operations.

2. Most suitable and used social platforms

Most used social media platform is Facebook. However, Twitter could be used as well and official Split Mountain Rescue Service web site could serve for posting information to and from citizens.

3. Examples of Social Media used during last risk emergencies and adopted by Civil Protection

Split Mountain Rescue Service shares information on its Facebook not only after the intervention, but also during the one (see pictures below). It also shares advice notes to citizens, particularly targeting foreign tourists during summer period.

4. Projects that developed social media and crowdsourcing platforms for emergency management and prevention

Currently, Split Mountain Rescue Service collects information from citizens in order to improve its service, and among others the communication is included in this survey. The results are expected to be available in forthcoming months and will be considered in this project.

5. Data Sources

Split Mountain Rescue Service
http://www.gss.hr
http://gss-split.hr
https://www.facebook.com/HrvatskaGSS/
https://hr-hr.facebook.com/gsssplit

TTF No 3: Social media and crowdsourcing Split Red Cross

1. Types of information shared on social media

Split-Dalmatia County Red Cross uses social media, preferably Facebook, to announce their actions, which are not necessarily related to disaster or emergencies. In the most cases they announces their trainings and workshops for citizens, as well as blood donation campaigns. Usually, during a disaster response phase there is no time for posting announcements on social media, except in case of disaster that strike slowly like plain floods with long early warning period or heat waves. However, during a recovery phase social media could be extremely useful for sharing information with citizens. Also, very useful could be to filter social media data by geolocation and forward it to the office having jurisdiction over that geographic area. But, there is a question of trustworthiness of data coming from social media.

Split-Dalmatia County Red Cross does not have experience in receiving information from citizens during disasters. In the county the major disaster so far are forest fires, where Split-Dalmatia County Red Cross prepares shelters for citizens. The communication directly goes from fire fighters to endangered citizens.

Generally speaking, Split-Dalmatia County Red Cross receives information from 112 centre, which directs alerts from citizens to Red Cross centres depending on the territory/location of a disaster or incident.

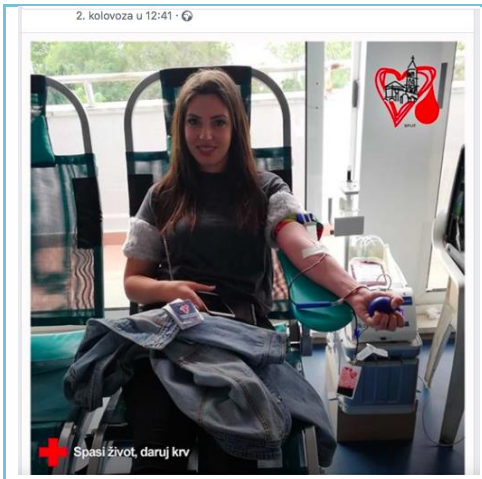
Split-Dalmatia County Red Cross is also engaged in lifeguarding on the beaches, providing both education and service. Considering the actual growth of nautical tourism and cruisers, Split-Dalmatia County Red Cross is also planning their engagement in maritime emergency situations.

2. Most suitable and used social platforms

The most used suitable id Facebook, but they believe that Instagram should be also considered as a popular social platform among young people.

3. Examples of Social Media used during last risk emergencies and adopted by Civil Protection

Locally they do not have any examples, although at Red Cross global level there are certainly examples. The figure below shows the usual use of social media for promotion of blood donation campaign on Facebook.



4. Projects that developed social media and crowdsourcing platforms for emergency management and prevention

There are no projects launched by local Red Cross. Mostly such project could be undertaken by Red Cross International federation.

5. Data Sources

https://www.hck-dcksdz.hr
https://hr-hr.facebook.com/crvenikrizsdzupanije

TTF No 3: Social media and crowdsourcing Zadar Public Fire Brigade

1. Types of information shared on social media

Zadar Public Fire Brigade does not use social media to share information with citizens. It is very hard, almost impossible to share information with citizens during a response phase. Nevertheless, social media could be very useful since information are recorded permanently and easily used during the response phase. The main obstacle for efficient use of social media is the unavailability of the personnel, so reorganisation and having additional personnel or unit for dealing with social media would be a good step forward.

Therefore, Zadar Public Fire Brigade has certain doubts about using social media for getting information from citizens, primarily because of lack of personnel to deal with it and also they believe that citizens are used to give a call to emergency services rather than posting information on social media.

2. Most suitable and used social platforms

No particular opinion.

3. Examples of Social Media used during last risk emergencies and adopted by Civil Protection

There are no examples.

4. Projects that developed social media and crowdsourcing platforms for emergency management and prevention

There are no projects related to the development of social media and/or crowdsourcing platforms for emergency management and prevention.

5. Data Sources

Zadar Public Fire Brigade

TTF No 3: Social media and crowdsourcing Zadar Mountain Rescue Service

1. Types of information shared on social media

Zadar Mountain Rescue Service as a part of national mountain rescue service actively shares information with citizens on social media. The posted information usually warns citizens about potential threats and informs them about safety in countryside.

There were rare situations when they received information from citizens, but it is more likely that citizens will call emergency services rather than post information on social media.

2. Most suitable and used social platforms

Most used social media platform is Facebook.

3. Examples of Social Media used during last risk emergencies and adopted by Civil Protection

Zadar Mountain Rescue Service shares about their search and rescue intervention (see pictures below). They also share advice notes to citizens, particularly targeting foreign tourists during summer period.

4. Projects that developed social media and crowdsourcing platforms for emergency management and prevention

Currently, Zadar Mountain Rescue Service collects information from citizens in order to improve their service, and among others the communication is included in this survey. The results are expected to be available in forthcoming months and will be considered in this project.

5. Data Sources

Zadar Mountain Rescue Service
http://www.gss.hr
https://www.hgsszd.hr/en/
https://www.facebook.com/HrvatskaGSS/
https://hr-hr.facebook.com/pages/category/Nonprofit-Organization/HGSS-Stanica-Zadar-1066443473419032/