*Driv*ing Innovation in Crisis Management for *E*uropean *R*esilience

D44.31: Volunteer management supporting tools experimentation report (initial inventory of SP4 tools)

Restricted to the consortium

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V1.0	01st March 2015	Final resolving of all comments	AIT

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List of Acronyms

Abbreviation / acronym	Description
CM	Crisis Management
COP	Common Operational Picture
SOS	System of Systems
TETRA	Terrestrial Trunked Radio

Executive Summary

This report summarizes the lessons learned of the first DRIVER SP4 experimentation round, which took place end of November in Aix-en-Provence. It concentrates on the T44.3 "Volunteer management supporting tools experimentation" **task.**

The deliverable presents the capabilities of the AIT CrowdTasker tool, which was the only tool presented in the scope of this task. It also analyses the feedback received from the reviewers and discusses the possible experiments for phase 2 and the synergies with other DRIVER tools.

1 Introduction

1.1 Scope

The purpose of this document is to report on experiment related activities led by SP4 and more specifically on the T44.3 Volunteer Management Supporting Tools task during the first period of the project (before MS1).

This document presents the outcome and lessons learned from the first round of DRIVER SP4 experimentation in Aix-en-Provence and suggests possible experimental setups for the second experiment round.

1.2 Document overview

This document contains the following chapters:

- Chapter 2 presents the work done and results at SP4 level
- Chapter 3 presents the results at Task 44.3 level.
- Finally, chapter 4 summarizes the conclusions of the first experiment round, both at the SP4 and at the T44.3 level.

1.3 Reference documents and standards

N/A

2 SP4 Initial Inventory of tools (Thales)

All the tools available in SP4 were presented and evaluated during the 1st SP4 experimentation week in Aix-en-Provence (at POLE Risque) from Nov.24th – 28th, 2014.

A summary of this week and general conclusions are factored out and summarized in a common document D41.1.1 Initial Inventory of Tools SP4 Level Experimentation Report. This general chapter belongs to all deliverables D4x.y1 describing further on the particular results per task.

3 Task experiment report (Task Leader)

3.1 Introduction

The aim of WP44 is to improve the capabilities of the professional responders in terms of logistics, tasking and resource management by promoting, both during preparation and response, the cooperation and interoperability between organisations and the pooling and sharing of resources. This cooperation has to take into consideration the different regional levels (from local to trans-national) and the different levels of command (operative, tactical and strategic) and different types of organisations (e.g. fire-brigades, civil security, public health, police), which may be involved in an EU crisis scenario.

One important aspect of this is to provide tools, which support the preparedness and management of volunteers and the communication with them, implementing and extending the procedures developed in SP3 including, both professional (e.g. fire-fighters or paramedics) and pre-organised volunteers. Task 44.3 addresses this particular group of tools, which relates to the gaps "volunteer management" and "tools for tasking and resource management" identified by ACRIMAS. In concrete terms the challenge is to make the skills of large numbers of citizens accessible to the response. Technical solutions must thus be based on a database and has to combine proper methodologies and software to foster the skills.

3.1.1 Description of Task 44.3 Volunteer management supporting tool(s)

In order to achieve the aforementioned objectives to support crisis managers with coordinating volunteers during all crisis management cycles, we have identified two major technical challenges that have to be addressed by the tools in this task:

- A database of volunteer skills with a feasible concept for protecting their private data.
- A methodology and software, which allows the crisis managers to individually assign tasks to a large number of volunteers according to their skills and availability.

Since in this first round of experiment AIT CrowdTasker was the only tool presented, we compare it with potential interesting tools from the other WPs in section 3.2.

3.1.2 Evaluation Procedure

In order to evaluate the tools in SP4, internal reviewers were assigned to each WP. To ensure a fair and consistent review process, each WP was evaluated by three or more reviewers of different professional background (industry, academia, end users) and tool providers were not allowed to evaluate tools within their own WP. Before each tool presentation, evaluators were provided with an evaluation sheet that was prepared beforehand by the corresponding tool provider. All sheets had in common a general part where the evaluator had to judge the usefulness of the tool and give their impression on the maturity of the tool and a part specific to problems addressed by the tool. A summary of the evaluation comments can be found in section 3.4 of this report.

3.1.3 Evaluation Sheet structure

Since several tasks within SP4 deal with different aspects of volunteer management, the evaluation sheet for T44.3 "Volunteer management supporting tools" is constructed such that it includes also **relevant features to the following tasks:**

- **T43.4** "**Interaction with citizens**"**,**
- **T44.2** "**Tasking and capacity monitoring**".

The overview of the evaluated features and the related "explanations" pertinent to **the CrowdTasker tool are shown in the Table 1.**

Task	Feature	Sub-feature	Explanation (CrowdTasker)
T43.4 Interaction with citizens	**Usage of social media**	**gathering of situational awareness info**	*This is possible with media-specific plugins, e.g. a twitter plugin for geo-tweets has already been implemented.* *Problem is not technology: few sources of freely available geo-annotated data exist, mainly for photos & geo-tweets.*
		pushing warnings via social media	*It is possible to implement this through plugins. Not implemented yet.*
	Usage of crowd tasking	**Info collection (citizen as a sensor)**	*Main purpose of this tool is to distribute tasks to mobile volunteers, and collect feedback*
		Supporting relief actions (citizen as a volunteer)	*Main purpose of this tool is to distribute tasks to mobile volunteers, and collect feedback*
T44.2 Tasking and Capacity Monitoring	**Resource Monitoring**	**Positioning**	*Volunteer positions are known (GPS) and used to decide which tasks they will receive (geo-fencing)*
		Information (availability, status, resource level…)	*- User profile information, e.g. sex, age, skills (e.g. "speaks Hungarian", "drivers licence B", ...)* *- Volunteers are free to accept or ignore any of our requests; "availability" is therefore somewhat fuzzy.*
	Assignment of Resources to Tasks	**Monitoring**	*We cannot directly assign the tasks to people. We can "ask" them, if they are ready to do the work, and they are assigned, if they accept. This can be monitored.*
		Decision Support	**Assignment is semi-automated; system chooses volunteers based on position and profiles.**
	Tasks Management	**Task Creation**	**By operator**
		Task Prioritization	**By operator**
		Task Tracking, Reporting, Monitoring	**Operator/control centre.**
	Information Sharing	**Manually**	**Manual dissemination of tasks to volunteers**
		Automatically	• **automated dissemination of local situation info to volunteers;** • **automated task generation envisaged but not implemented;** • **automated dissemination of info to other systems (plugin needed!)**

T44.3 Volunteer Management Supporting Tools	Volunteer monitoring	volunteer skills	Part of the user profile
		status and availability monitoring	Partially available. - We can ask users if they are ready to help. - We can also ignore the users which are too far away from the incident (do not send them any requests). For privacy reasons we do not automatically track users, but we could track the "active" volunteers during action.
	Volunteer tasking	Task assignment	yes
		task tracking, reporting, monitoring	yes

Table 1 : T44.3 evaluation sheet

3.2 Tools involved

The only T44.3 tool, which has been evaluated in the initial inventory of SP4 tools, is the AIT CrowdTasker. This tool fills the gap between professional resource management and tasking systems on the one hand and the crowdsourcing applications on the other hand. It allows a single operator to individually task a large number of pre-registered volunteers, monitor the task execution and assess the results.

The only other tool, which has been evaluated for "v**olunteer monitoring**" and "v**olunteer tasking**" **is the FOI SITRA – a tool for situation reasoning and risk assessment with mobile add-on, which allows the crisis manager to use the volunteers as reporters on the field, as well as to monitor their positions.**

Tool	Provider	Session	Evaluators
Crowdtasker	AIT	T44.3	Dirk Stolk (TNO), Ludwig Kastner (FRQ), Klas Laveno (MSB), Hector Naranjo (GMV)
This tool allows crisis managers to coordinate the actions of ad-hoc volunteers ("crowd") in crisis situations. The crisis manager can design specific workflows/questionnaires with concrete tasks and forward them to a subset of ad-hoc volunteers meeting certain criteria.			

Tool	Provider	Session	Evaluators
SITRA	FOI	T43.1	
SITRA is a tool suite for situation reasoning and risk assessment. (Risk) models are used in combination with an ontology based reporting tool to collect relevant information in a structured way. Information gathered from the field is displayed on a map and in the form of tables. Information is also summarized per geographical area.			

Table 2 : Overview of tools, for which an evaluation in the scope of task T44.3 is available.

In order to understand the positioning of pre-registered volunteers and crowdtasking in crisis management, it is important to:

1. **Compare the T44.3 functionality with the functionality provided by other types of tasking and informing applications. This comparison is summarized in Table 3.**
2. **Analyse the input/output relations. (Which output of other tools could be used for volunteer management? Which T44.3 output could be used by other tools?) This analysis is shown in Table 4. For the sake of simplicity, the analysis concentrates on the CrowdTasker tool and ignores the FOI SITRA tool, which can be positioned half-way between GMV Socrates Task and the CrowdTasker application. The mobile tasking and reporting SITRA App is similar to CrowdTasker, in the sense that it relies on smartphones and public communication infrastructure, but this app has not been designed for use with massive numbers of volunteers.**

Tool characteristics	Comparison with T44.3
Professional tasking systems (e.g. GMV Socrates Task)	
In daily use by many first-responder organizations. In most cases they target the vehicles (e.g. ambulances) and combine continuous GPS tracking, status tracking (idle, heading to assignment, working, returning to base) and a two-way communication system, which allows the operator to assign pre-defined or ad-hoc tasks to these resources.	CrowdTasker tasking interface and methodology is designed in a way, which allows the operator to assign tasks to a large number of pre-registered volunteers without manually assigning the tasks to specific volunteers. Unlike the professional systems, CrowdTasker (per design) does not have to continuously monitor the volunteers. Likewise, the volunteers' profile information, which is automatically taken into account when assigning the tasks, is not visible for the operator. That is, the CrowdTasker supports one to many and many to one communication and tasking in a way which is inherently privacy-friendly. On the other hand, the CrowdTasker app is designed to run on standard android smartphones, and requires a Wlan, 3G or 4G internet connection, which is a no-go for most professional users for the time being (TETRA!).
Crowdsourcing tools (e.g. GDACSMobile)	
Crowdsourcing can either be performed by scanning the general purpose information sources (e.g. twitter) or with the help of dedicated crowdsourcing applications such as GDACS mobile (http://portal.gdacs.org/Expert-working-groups/Mobile-technology). Just like the CrowdTasker tool, the dedicated crowdsourcing applications help volunteers to post well-formatted and easily interpreted information when they feel the need or follow a request through mass media.	While dedicated crowdsourcing applications allow users to report observations when they feel like it (for whichever reason), in CrowdTasker volunteers are assigned specific tasks, while taking into account the needs, volunteers' positions and volunteers' profile information. In this way, the available volunteers can be used more efficiently and with less risk, but the involved effort is higher. Another advantage is that the number of requests received by individual volunteers can be kept low even though the total number of task requests is large. This simple model (http://modelingcommons.org/browse/one_model/4237), demonstrates how a relatively small number of available volunteers can be used for efficient quality-control of the crowdsourced information.

Mass-informing applications (e.g. TV, radio, but also the DashboardApp SafeTrip and similar apps)	
Mass-informing web and mobile platforms complement older platforms such as TV and radio as mass-informing channels. Such applications can present the information on interactive maps and in text or multimedia documents, which can be consulted whenever needed.	The main advantage of the CrowdTasker over mass-informing applications is that the information can be provided on need-to-know and able-to-understand basis depending on the user's profile and geographic location (To some level also possible with DashboardApp SafeTrip!). This lowers the amount of information the user needs to process, which in turn lowers the probability of errors and overseeing important information due to information overload. On the other hand, the mass-informing applications are likely to reach far larger fractions of the population than a tasking application, which must find its way to the smartphone of the population first and which is linked to dissemination/marketing issues beyond the technical focus. In fact, a tasking application must provide some valuable content for the users, which do not participate in tasking in order to attract a critical mass of users. Providing an accurate and up to date local situation map for the CrowdTasker users is a must.

Table 3: relation of T44.3 tools to other types of tasking and informing applications

WP44.3 offer	WP44.3 needs
Tools which generate some kind of COP (e.g. MSB RIB C&C, FRQ COP, Socrates OC, GMV ESS Dashboard, DashboardApp, SITRA)	
"Human sensor" data as additional information for the COP generation. Quality assurance (double-checking) of the observations received through less reliable channels.	Special version of COP suitable for the use in CrowdTasker. Important features should be available as polygons (not just color-coded maps!) so that the information can be used for geofencing. For example, the CrowdTasker could easily signal the users that they are approaching a danger zone and thus assure that they do not endanger themselves by entering such zones during the voluntary work.
Information (warnings, alert instructions) dissemination tools (e.g. DEWS, PRoTect, A4All)	

"Human sensor" data as **additional input which could trigger alerting. Quality assurance (double-checking) of the observations received through less reliable channels.**	**Some of the geo-referenced warnings/alerts/instructions could be relied to CrowdTasker users.**
Tasking tools (e.g. Socrates Task)	
Possibility to use volunteers as auxiliary resource. Use of CrowdTasker as auxiliary/alternative tasking system for professionals (if allowed by the organization statute) in the preparation and mitigation phases of crisis management may also be possible.	**High-**level requests for volunteers' engagement. As in "keep civilians out of this zone", "check if there are secondary fires behind our lines", or "We need some **Chinese translators at the mass-**incident scene."
Auxiliary information (e.g. RIB Dangerous substances, RIB Resources)	
Use crowdtasking as part of the data quality assurance (e.g. for RIB)?	**Provide relevant info on, e.g. effects and protective measures relevant to toxic substances (in case of chemical incidents) to our volunteers.**
Planning tools (e.g. Mego? EvacuAid? DAA-Logistics)	
N/A	**Operational plans, in order to know which crisis types and task templates to prepare.**

Table 4: T44.3 input/output relations.

3.3 Inventory Execution

3.4 T44.3 Inventory results

3.4.1 Tools feature coverage overview

This table shows all tools which were evaluated in the context of task T43.4.

dark green=FULLY COVERED and DEMONSTRATED; light green=COVERED ACCORDING TOOL PROVIDER BUT NOT DEMONSTRATED, yellow=PARTLY COVERED, white=NOT COVERED		Task session	T43.1Damage and Needs Assessment	T44.3 Volunteer mgmt
		Tool supplier	FOI	AIT
		Tool name	SITRA	Crowd Tasker
Task	**Feature**	**Sub-feature**		
T43.4 Interaction with citizens	Usage of social media	gathering of situational awareness info		
		pushing warnings via social media		
	Usage of crowd tasking	Info collection (citizens as a sensor)		Fully
		Supporting relief actions (citizens as a volunteers)		
T44.2 Tasking and Capacity Monitoring	Resource Monitoring	Positioning		Fully
		Information (availability, status, resource level…)		
	Assignment of Resources to Tasks	Monitoring		Fully
		Decision Support		
	Pooling & Sharing	Pooling		
		Sharing		
	Tasks Management	Task Creation		Fully
		Task Prioritization		
		Task Tracking, Reporting, Monitoring		
	Information Sharing	Manually		Partly
		Automatically		
T44.3 Volunteer Management Supporting Tools	Volunteer monitoring	volunteer skills	Partly	Fully
		status and availability monitoring		Partly
	Volunteer tasking	Task assignment	Partly	Fully
		task tracking, reporting, monitoring		Partly

Table 5: T44.3 tools feature coverage overview.

3.4.1 Crowd TASKER

3.4.1.1 Explicit feedback tables

Feature	Sub-feature	CrowdTasker AIT	relevance	maturity	potential	Suggested improvements / comments			
						L. Kastner (FRQ)	K. Laveno (MSB)	H. N. Setién (GMV)	D. Stolk (TNO)
Volunteer monitoring	volunteer skills	part of the user profile	3	4-7	2-3	-	-		Elaborate skills end-users would like to have (and if which it is legally allowed to gather and store information)
	status and availability monitoring	Partially available. - We can ask users if they are ready to help. - We can also ignore the users which are too far away from the incident (do not send them any requests). For privacy reasons we do not automatically track users, but we *could* track the "active" volunteers during action.	3	7-8	2-3	Availability could be limited by time-spans as well (e.g. only within office time)	-		I am not sure whether you were able to demonstrate this feature.
Volunteer tasking	Task assignment	Yes (meaning «this is the	3	6-8	2-3	Make the field "list of choices" larger +	. More task types		I am not sure whether you

		main purpose of the tool » - this was already explained in T43.4 context)				give a "mouse over" explanation. Meaning of the field "list of choices" is not 100% clear.			were able to demonstrate this feature.
	task tracking, reporting, monitoring		3	6-8	2-3	- Task reporting should be possible by picture upload - Monitoring of tasks: progress could be on a more detailed level (not only when finished)	Good that this tool is focused on tasking and integrates with other tools to present the results.	Some additional tracking and monitoring capabilities could be required during the execution of the task	I am not sure whether you were able to demonstrate this feature.

General remarks to the tool

	Ludwig Kastner (FRQ)	Klas Laveno (MSB)	Héctor Naranjo Setién (GMV)	Dirk Stolk (TNO)
Overall impression	The tool has a high potential to become one of the most important communication channels to volunteers. Assuming that volunteers are ready to provide detailed information about their capabilities, the tool enables to find the requested capabilities exactly when and where they are needed.	The tool seems stable and easy to use both on the server- and client side. Highly relevant tool, there is a very big interest in helping out from the public. Obviously large numbers of users that have the app installed is critical to success. Good idea to partner with Red Cross and other organisations to contribute to spreading the app. The tool is lacking the monitoring side of the concept which is solved in Frequentis' application.	Very useful tool.	Good potential. To have it operational it will take some time and needs improvement, e.g. involve end users for most important tasks for which you would like to make use of them.

	Ludwig Kastner (FRQ)	Klas Laveno (MSB)	Héctor Naranjo Setién (GMV)	Dirk Stolk (TNO)
Usability 3		The app and the server admin user interface both seem easy to use.	Some suggestions for improvement have been included but it is required to be very careful when deciding which ones (and how) to implement as it is essential that the tool is kept simple (especially in the side of the volunteer).	Dynamic practical use is not clear to me yet (lot of handling time required).
Position within the DRIVER System of Systems	The tool can be positioned in the system of systems in 2 main aspects: • Sensor (citizens as a sensor) to a Common Operational Picture • Actor (to receive tasking information)	Potential integration with Frequentis (already existing)	This tool could be integrated with the SOCRATES Suite by GMV.	Tool for volunteer management. Not useful for initiatives of spontaneous volunteers.

3.4.1.2 Statement of the tool provider

The reviewers response (and more generally the response of the meeting participants) to the CrowdTasker presentation was better than expected in terms of the trust in tool readiness. This may be a sign that AIT is somewhat overcautious or simply a result of the good presentation, but in any case positive.

Another interesting lesson learned is that "less is more". The fact that the CrowdTasking tool concentrates on very specific functionalit**ies and per-design strives for integration with complementary tools (see section 3.2.3) has been welcomed by other tool owners and opens a window of opportunity for integrating the CrowdTasker in larger experiments later on.**

On the other hand, our impression from the meeting is that the end users are not quite ready for crowdtasking yet. With the exception of the Austrian Red Cross, no other DETAT organization has clear plans for crowdtasking the pre-registered volunteers today[1].

Some end-user organizations will not be able to use crowdtasking in the foreseeable future due to organizational issues. For instance, the French elite fireman brigades are a professional organization, which does not address volunteers at all. Some volunteers' organizations, such as the German Federal **Agency for Technical Relief (THW), may even not be allowed to use the standard phone lines for communication with the volunteers due to security and reliability concerns. However, a majority of the red-cross-like organisation should be able to use the tool and methodology, as soon as they discover some attractive use cases. Therefore a re-thinking is needed in terms of the experiment planning. Initial ideas for experiments are described in section 4 (conclusions) as a preparatory material for the discussion with the end users and for preparing of the upcoming experiments.**

"General remarks to the tool", clearly show that the reviewers consider the CrowdT**asker tool a welcome add-on to the crisis management arsenal. Most of the comments are positive, two are warnings that a critical mass of users is needed to assure the tool is useful and one is mentioning that the performance monitoring is not available yet. This part will be handled by the evaluation tool (EVA) developed by Frequentis and will become an integral part of CrowdTasker in one of the next experimentation rounds.**

The "critical mass" comments are interesting. On the one hand, the number of **taskable volunteers does not need to be enormous, because they are used more efficiently than the volunteers which perform tasks on their own (crowdsourcing). On the other hand, we could easily handle a handful of volunteers without any special tools, so w**e do aim for a large number of users. The issue of users' motivation is therefore very important: the crowdtasking applicatio**n has to give the user some added value, e.g. in terms of information, which is not available to other citizens or in terms of the acknowledgement of their help.**

[1] **According to ARC sources, this may not be 100% correct anymore, as some of the first responder organisations in the EU are already decided to introduce something** similar to "Team Österreich" in their area.

It is also interesting to interpret the reviewers' responses to questions which are related to other tasks in the T44.3 context. Table 6 below summarizes the answers to the first question: "is the advertised feature available**?**" for all. **The first four yellow columns indicate the answers of the reviewers. These are** given "as is", except for "0" replacing an empty cell where **no answer was given. Fifth column is the consensus note and the last one is the expected note. The expected note is based on the descriptions given by AIT (see section 3.1.2).**

The "overall" and "expectation" columns are color**-**coded to simplify assessment: green for "yes", orange for all other options.

Majority of the assessments confirm the expectations, but there are three exceptions:

- T44.2 "Information sharing" presentation confused at least one of the reviewers.
- Implementation level for T44.2 "**Assignment of Resources to Tasks**" was assessed only by one reviewer.
- T44.3 "task tracking, reporting, monitoring" is a mixed bag.

Comparison of the "**Task** Tracking, Reporting, Monitoring" feature notes in T44.2 and T44**.3 clearly shows that our presentation was somewhat confusing for the reviewers. Retrospectively, it is most likely that the confusion has been caused by the fact that the reporting part is delegated to a tool that will be delivered by Frequentis later on and therefore the functionality is planned but not really available today. A s**imilar issue occurs at the level of "information sharing"**, where only a few features have been fully implemented so far.**

Implementation status assessments			FRQ	GMV	MSB	TNO	Overall	Expected?
Task	Feature	Sub-feature	Yes / No / Partly	Yes / No / Partly	Yes / No / Partly	Yes / No / Partly	Yes / No / Partly	Yes / No / Partly
T43.4 Interaction with citizens	Usage of social media	gathering of situational awareness info	Not yet	Partly	0	P	Not yet	Not yet
		pushing warnings via social media						
	Usage of crowd tasking	Info collection (citizens as a sensor)	Yes	Y	0	Yes	Yes	Yes
		Supporting relief actions (citizens as a volunteer)						

T44.2 Tasking and Capacity Monitoring	Resource Monitoring	Positioning	Yes	Y	0	Yes	Yes	Yes
		Information (availability, status, resource level…)						
	Assignment of Resources to Tasks	Monitoring	Yes	Y	0	0	Yes	Yes
		Decision Support						
	Pooling & Sharing	Pooling	0	0	0	0	-	-
		Sharing						
	Tasks Management	Task Creation	Yes	y	0	Yes	Yes	Yes
		Task Prioritization	Yes	0	0	Yes	Yes	Yes
		Task Tracking, Reporting, Monitoring	Yes	0	0	Yes	Yes	Yes
	Information Sharing	Manually	Yes	Y	0	?	Yes/?	Yes
		Automatically	Yes	0	0	?	Yes/?	Yes
T44.3 Volunteer Management Supporting Tools	Volunteer monitoring	volunteer skills	Yes	Y	Yes (not demo)	Yes	Yes	Yes
		status and availability monitoring	Yes	0	Partly	P	Partly	Partly
	Volunteer tasking	Task assignment	Yes	Y	Yes	P	Yes	Yes
		task tracking, reporting, monitoring	Yes	0	No	P	Y/N/P	Yes

Table 6: T44.3 (AIT CrowdTasker) implementation status assessments.

3.4.2 FOI SITRA

3.4.2.1 Explicit feedback tables

Feature	Sub-feature	FOI SITRA	relevance	maturity	potential	Suggested improvements / comments				
						Julia Zillies (DLR)	Carsten Dalaff (DLR)	Edith Felix (Thales)	Annika Nitschke (THW)	Dirk Stolk (TNO)
Volunteer monitoring	volunteer skills	Volunteers that have access to an Android device can use our reporting tool and act as reporters on the field. Volunteer positions can be tracked and be displayed on the map. SITRA can push actions and questions to any volunteer in the field via the Android device.	1-3	2-4	1-3-	Good potential, but a basic training would be necessary.	A test with a higher number of participations should be done.	The emphasis of the demonstration was not on that part. This does not seem to be the most powerful feature of the tool.	Need for assessment of information quality, especially coming from civilians	-
	status and availability monitoring									
Volunteer tasking	Task assignment		2	2-4	1-3	See above, task assignment may be more generic.		I am not sure of what has been demonstrated.	-	-
	task tracking, reporting, monitoring									

General remarks to the tool

	Julia Zillies (DLR)	Carsten Dalaff (DLR)	Edith Felix (Thales)	Annika Nitschke (THW)	Dirk Stolk (TNO)
Overall impression	Very useful tool to support disaster management missions. Several features have a great potential. To cover certain cases (like power failure, multiple reports of the same incidents, etc.) further development is indicated. The map view is structured in a good way and clearly arranged.	Professional research prototype.	The tool is very promising. The usage of ontology is a very good potential for the tool. Models have to be developed; capitalized and improved by the experiences on the field - which is not the easiest part to be organised.	Generally an interesting tool that can help to assess a crisis quicker. However: - What happens, when the infrastructure fails (Internet) - Privacy laws (pictures) - Assessment o quality of reports - Where is the info (maps) coming from?	- End-user involvement lacks - Risk models lack any proof/validation - How to use this in an operational environment is not clear
Usability 2	3	2	3	Still relatively immature (1-2)	1-2
Position within the DRIVER System of Systems	Including pre-disaster information, as well as information collected by other partners could be a helpful feature	Could be used to gather online information from the field during a crisis to provide input to the common operational picture	-	Could be used as an information gathering tool during a scenario based interactive experiment.	There is potential, e.g. wrt. damage assessment based on info from the field.

3.4.2.2 Statement of the tool provider

The reviewers' **response**s to FOI SITRA are a mixed bag, from "very immature" to "fully usable". **The reality is as usual somewhere in the middle: FOI SITRA is a tool, which is still in development but already past the early prototyping phase.**

Seen in the T44.3 context, it is important to keep in mind that SITRA is primarily a tools suite for situation reasoning and risk assessment and not a volunteer management tool. Information gathered from the field is used to improve the risk assessment. Our primary ambition therefore lies in integration of additional data sources. Mobile volunteer management and data gathering tool is a secondary feature which complements other sources of information.

4 Conclusion

4.1 T44.3 Inventory of tools

The most striking feature of the CrowdTasker tool is that it gives the population a low-threshold possibility for task-based volunteering, which does not replace traditional forms of volunteering, but complements them by means of ICT solutions. Additionally, it allows professionals to channel the willingness to help and the offered skills of each individual available to the response effort. In this way, a formerly unknown category of informal volunteers, also known as "pre-registered volunteers/citizens", is created. This can either be the citizens that are willing and able to help in the case of crisis, but are not willing to invest large amounts of time for training activities by becoming affiliated to the response. Also traditional volunteers outside of CM or, as well as the affiliated classical volunteers and even professionals that are currently off-duty for any reason, could be targeted by this solution.

> As soon as the volunteers become part of the dedicated response (also known as "affiliated volunteers"), e.g. by joining a fireman squad, they are managed by a local commander and thus managed in exactly the same way as the professionals, so no special volunteer management tools are needed.

To-date, only a few crisis management organisations have developed a methodology and infrastructure that allows them to effectively use pre-registered volunteers as valuable resources. One of such early adopters is the Austrian Red Cross (ARC), which is directly involved in this task.

From the point of view of such an organisation, the key differentiator between the management of pre-registered volunteers and other forms of volunteer participation and resource management lies in a combination of the following features:

1. Managers are separated from the volunteers (so we need a communication tool).
2. The number of volunteers per manager is so large that they cannot be managed individually without the help of a dedicated tool.
3. The number of volunteers per manager is so large that we cannot equip them with professional communication devices either.
4. The tasking is individual and based on the volunteers' skills, current position and trust level rather than "one task suits all".
5. Constant tracking of the volunteers (resources) is not possible due to a combination of ethical/legal and technical/organisational issues.

The only software tool, which fully addresses these needs, is the AIT CrowdTasker, which has been specifically designed for the task at hand. Undeniably, more mature smartphone apps for tasking and reporting exist. For instance, the FOI SITRA can be used to manage smaller groups of smartphone-equipped volunteers, and the GDACSmobile allows sourcing of observations from the masses.

Since "pre**-**registered volunteers" is a novel category, **it is still not clear how to optimally use this tool** and methodology in crisis management. In fact, some organisations, such as the German THW can't **use such volunteers due to their internal culture and organisation, while other may find it easier to deploy pre-registered volunteers in preparation, early warning and mitigation phases of the crisis management than during the acute crisis situation.**

It is interesting that none of the reviewers mentioned major legal and ethical constraints regarding the applicability of the crowdtasking in different national contexts. Nevertheless, T44.3 will seek close cooperation with SP9 and SP8 regarding the ethical and legal boundaries in which set up tasks must remain especially if transferred to the national contexts of the countries selected for Joint Experiments.

Our main exercise scenario idea therefore foresees the use of T44.3 tool(s) and methodology in the preparation and early warning phases of crisis management. For example, in a scenario where a major crisis is likely to happen within a couple of days, the citizen's **resilience can be assessed and enhanced through a combination of the following actions:**

1. **Ask already registered volunteers to mobilize their friends and neighbours (network multiplication task)**
2. **Explain the key characteristics of the upcoming crisis and present best responses to expected challenges (micro-learning) to volunteers.**
3. **Ask volunteers to report on their own emergency stocks (improves the COP) and re-supply (improved resilience).**

Shortly before a predictable crisis event (e.g. storm, flood, tsunami) also ask volunteers to:

1. **Perform the last-minute preparations, and notify their neighbours.**
2. **Head towards the nearest safe zone (e.g. in case of a tsunami or storm event).**

This type of scenarios is also interesting for e.g. WP36 and T43.4 "Interaction with Citizens"**, which address even larger numbers of civilians and even less organised volunteers than T44.3. Therefore,** we intend to combine the "spontaneous volunteers" and "crowdsourcing" with "pre**-registered** citizens/volunteers" **in at least some of the experiments.**

In the acute crisis phase, the dedicated volunteer management tools can be used to e.g. keep the civilians out of the high-danger zones, assess the damage and need for assistance or to communicate optimal evacuation routes. The main limitation here lays in the fact that electricity and communication infrastructure may be damaged, in which case the tool will be of no use within a few hours.

> **In a blackout scenario, the public communication infrastructure (in particular cellular phone networks) will remain operative only for a few hours; in earthquake or tsunami scenarios it may even be ruptured immediately. This problem could be partially addressed through ad-hoc networking, but this would also fail, as soon as the smartphone batteries run out of power.**

The T44.3 test scenarios will therefore be limited to situations, where power and communication infrastructure remains intact. Since this applies for the majority of European crises – and even days or many hours before e.g. heavy storms or flood strokes, we intend not to test our tool within a "emergency communication and power supply for volunteers" **scope unless required by other DRIVER experts. This issue is also shared with other DRIVER tasks and WPs, which rely on public electricity and communication infrastructur**e. In fact, resolving the "how to handle a large numbe**r of loosely bound volunteers in a situation,** where no network is available" is an interesting research and **practical question, but currently not considered in-scope of T44.3.**

Annexes

4.2 Completed Evaluation sheets

4.2.1 AIT/Crowdtasking tool

L. Kastner (FRQ)	K. Laveno (MSB)	H. N. Setién (GMV)	D. Stolk (TNO)
Microsoft Excel 97-2003 Worksheet	Microsoft Excel 97-2003 Worksheet	Microsoft Excel 97-2003 Worksheet	Microsoft Excel 97-2003 Worksheet

4.2.2 FOI/SITRA

Julia Zillies (DLR)	Carsten Dalaff (DLR)	Edith Felix (Thales)	Annika Nitschke (THW)	Dirk Stolk (TNO)
Microsoft Excel 97-2003 Worksheet	Microsoft Excel 97-2003 Worksheet	Microsoft Excel 97-2003 Worksheet	Microsoft Excel 97-2003 Worksheet	Microsoft Excel 97-2003 Worksheet