Interreg
Danube Transnational Programme
WACOM

Water Contingency Management in the Sava River Basin

Transnational incident coordination tool for flood/accidental pollution emergency management

Output T2.1

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1 Introduction

The lack of a efficient, multi-country coordinated response to emergencies in case of accidental pollution and floods on transboundary watercourses is a serious challenge in the Sava River Basin. For this reason, the WACOM (Water Contingency Management in the Sava River Basin) project was launched, with the main objective of reducing environmental risks related to accidental pollution and floods, especially those that have or could have transboundary impacts in the Sava River Basin.

The main outcomes of the project will lead to a reduction of risks of transboundary dimension caused by accidental pollution and flooding by strengthening transboundary and cross-sectoral cooperation between institutions, especially between state institutions responsible for flood and accidental pollution preparedness and response phases.

Based on the T1 activities, a comprehensive process to analyse the current status and agreed upon interoperability processes in the area of accidental pollution and flood response was initiated by the project partners and stakeholders in the river basin. As part of this process, the WACOM toolbox features were defined and the design of the anticipated WACOM toolbox itself was determined. The tool supports communication among engaged institutions and sectors and dynamic exchange of relevant information for the decision making process during the emergencies, but also during the preparedness stage (i.e. contingency plans or their components).

Transnational incident coordination tool is enabling efficient and effective communication among the stakeholders (institutions) involved in the flood/accidental pollution response.

2 Transnational incident coordination tool requirements

The Transnational Incident Coordination Tool integrates several components and definitions following standard processes mirroring the Incident Command System (ICS) theory requirements. The module is essential in order to enable understanding of the organizational environment during the complex incident response. Key requirements are:

- Response should be coordinated considering participation from different countries, and different levels.
- Multi-agency coordination should be performed, following exisiting national legislation in all 4 addressed countries in the civil protection headquarters (Štabi Civilne Zaščite, Stožeri Civilne Zaštite, Štabovi Civilne Zaštite, and other istitutions (Sava Comission, Water Agencies, etc.)), which mirror the Multi-agency Coordination Systems (MACS) defined as a part of the United States standardized ICS. MACS-s provide a basic architecture for facilitating the allocation of resources, incident prioritization, coordination and integration of multiple agencies for large-scale incidents and emergencies. Main tasks of the MACS-s are:
    - Ensuring that each agency involved in incident management activities is providing appropriate situational awareness and resource status information;
    - Establishing priorities between incidents and/or Area Commands in concert with Incident Commanders or a Unified Command;

- Acquiring and allocating resources required by incident management personnel in concert with the priorities established by Incident or Unified Command;
- Anticipating and identifying future resource requirements;
- Coordinating and resolving policy issues arising from the incident(s); and
- Providing strategic coordination as required.

The coordination module requirements should follow the ICS definition of standardized organizational structure defined by the ICS 207 form (Incident organization chart ICS 207) shown on the following figure:

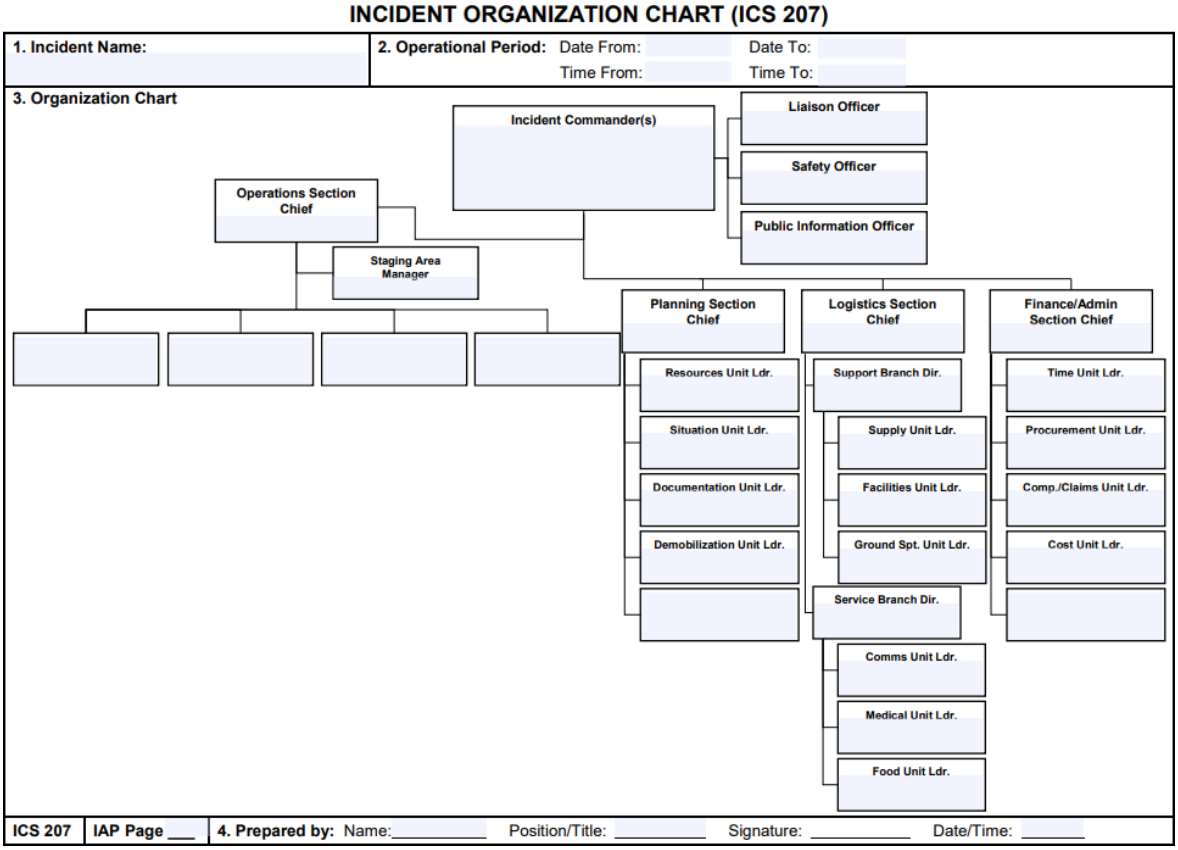

Figure 1: Basic requirements for the maintenance of the overview of the organizational structure during an incident as defined by theNational Incident Management System (NIMS)/ICS theory.

The WACOM toolbox follows this requirement, while also recognizing that similar information is not currently readily available at the transnational level. It was also recognized during the workshops that a more efficient and effective overview of the organization of an incident would also be needed at the national level of all four countries participating in the WACOM project.

2.1 Purpose

The Incident Organization Chart (ICS 207) provides a visual chart depicting the Incident Command System organization position assignments for the incident. The ICS 207 is used to indicate what ICS organizational elements are currently activated and the names of personnel staffing each element. An actual organization will be event-specific. The size of the organization is dependent on the specifics and magnitude of the incident and is scalable and flexible. Personnel responsible for managing organizational positions are listed in each box as appropriate.

The event specific case defined for the WACOM project is related to the target (possible) accidents: accidental pollution and floods, but can cover also other incidents which occur in this transnational environment.

2.2 Preparation

The ICS 207 is prepared by the Resources Unit Leader or any other person designated for human resources management, which operates in the framework of and reviewed by the Incident Commander. Complete only the blocks where positions are recognized as necessary. Minimal requirement is the definition of an Incident commander of the activated headquarter (as single instiution HQ or MACS).

The organizational structure is on one hand firm, but yet flexible, showing only the components of the headquarters that have been activated, and add additional blocks as needed, especially for Agency Representatives and all Operations Section organizational elements. Detailed information about positions, is defined by the NIMS ICS Field Operations Guide and is also specific for the countries in the Sava river basin, which not all correspond fully to the ICS theory structure.

The ICS 207 is originally intended to be used as a wall-size chart and printed on a plotter for better visibility. For the purpose of the WACOM project it it should be defined as a dashboard, which facilitates its modifications, remote access and sharing, which inevitably occur during the course of incident.
A chart (dashboard) is permanently maintained with the focus on each operational period. The specific requirement expressed for the WACOM project is requirement for the planning of the organization for the next operational period. This requirement originates from the anticipation that flood and accidental pollution events in the transboundary dimension are large, where large means also time dimension – meaning the duration over several operational periods. This induces change of headquarters' personnel on different functions (Incident Commander, Public Information Officer, Safety Officer, Liason Officer, Operations, Planning, Logistics, Finance/Administration).

3 Development of Coordination tool

Data requirements for the coordination tool are based upon the D.T1.1.2, where it was agreed that the countries in the Sava River Basin would exchange the active information on the organization of the complex transnational incident following the ICS definitions (FEMA Incident Command System). Following the ICS form 207, this corresponds to the basic organizational structure of all involved headquarters (on different levels) with information on:

- Area Command: An organization that oversees the management of multiple incidents or oversees the management of a very large or evolving situation with multiple ICS organizations. Unified Area Command is part of the multiagency response system (multiagency headquarters). The requirements for this information is dynamic and as such part of the WACOM toolbox online reporting.

- Command Staff: A group of incident personnel that the Incident Commander or Unified Command assigns to support the command function at an ICP. Command staff often include a PIO, a Safety Officer, and a Liaison Officer, who have assistants as necessary. Additional positions may be needed, depending on the incident. The requirements for this information are dynamic and as such part of the WACOM toolbox online reporting.

- General Staff: A group of incident personnel organized according to function and reporting to the Incident Commander or Unified Command. The ICS General Staff consists of the Operations Section Chief, Planning Section Chief, Logistics Section Chief, Finance/Administration Section Chief.

- Incident Command Post (ICP): The field location where the primary functions of incident command are performed. The ICP may be co-located with the Incident Base or other incident facilities (the location of the incident command is necessary for a better navigation among the multiple activated command posts in a complex accident response environment). The incident command post is dynamic and as such part of the WACOM toolbox online reporting for each activated headquarters in any country or level of operations.

The information on activated persons for each ICS task/function/assignment is provided for the active operational period and for the next operational period. In the case the activation of the staff in the specific headquarter is not full, minimal requirements define the name and contact information of the Incident Commander in the specific activated headquarter(s) for the specific institution. The number of activated persons depends on several factors (e.g. the role of the headquarters) and on the current phase of the intervention, in all phases it is not necessary that all roles are activated, only prepared.

The coordination tool integrates the Incident Organization Chart (ICS 207) requirements, which provides a visual chart depicting the ICS organization position assignments for the incident. The ICS 207 is used to indicate what ICS organizational elements are currently activated and the names of personnel staffing for each element. An actual organization will be event-specific. The size of the organization is dependent on the specifics and magnitude of the incident and is scalable and flexible. Personnel responsible for managing organizational positions are listed in each box as appropriate.

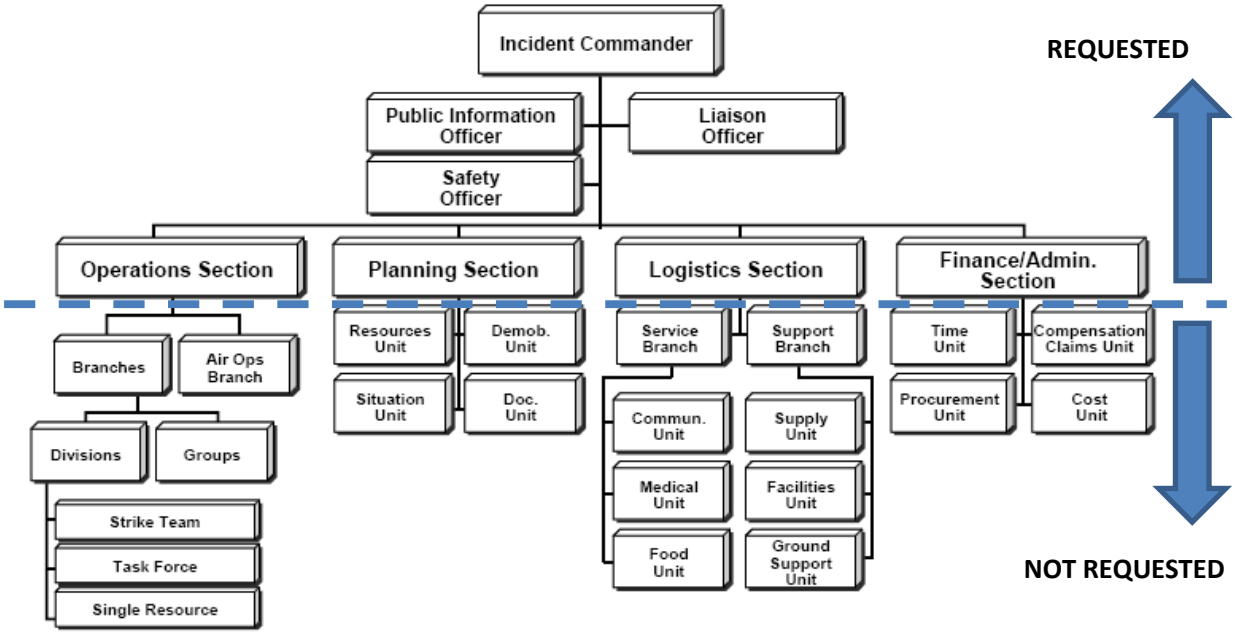

Figure 2: Requested data to the organizational structure of an incident follwoing ICS NIMS theory

The ICS 207 is prepared in each headquarter (area command) by the Resources Unit Leader (Planning Section) and reviewed by the Incident Commander. Completed should be only the blocks where positions have been activated, other information should be provided in general text. For detailed information about positions, consult the NIMS ICS Field Operations Guide. The ICS 207 is intended to be used as a wall-size chart and printed on a plotter for better visibility, but information tools in the case of WACOM project is foreseen instead of that.

A chart is completed for each operational period, and updated when organizational changes occur. The ICS 207 is intended to be wall mounted at Incident Command Posts and other incident locations as needed, and is not intended to be part of the Incident Action Plan (IAP). All completed original forms must be given to the Documentation Unit.
Notes:

- The ICS 207 is originally intended to be wall mounted (printed on a plotter). Document size can be modified based on individual needs. For the purpose of WACOM project it will be followed using the web-based dashboard, which also facilitates the maintenance of permanently changing information on the crisis management organizational structure during the response stage.
- ICS allows for organizational flexibility, so the Intelligence/Investigative Function can be embedded in several different places within the organizational structure.

Important advantage of the developed WACOM coordination tool is the clear definition of four levels of headquarters:

1. State level multiagency coordination headquarters (MACs)
2. Regional level multiagency coordination headquarters (MACs)
3. Local level multiagency coordination headquarters (MACs)
4. Single institution headquarters

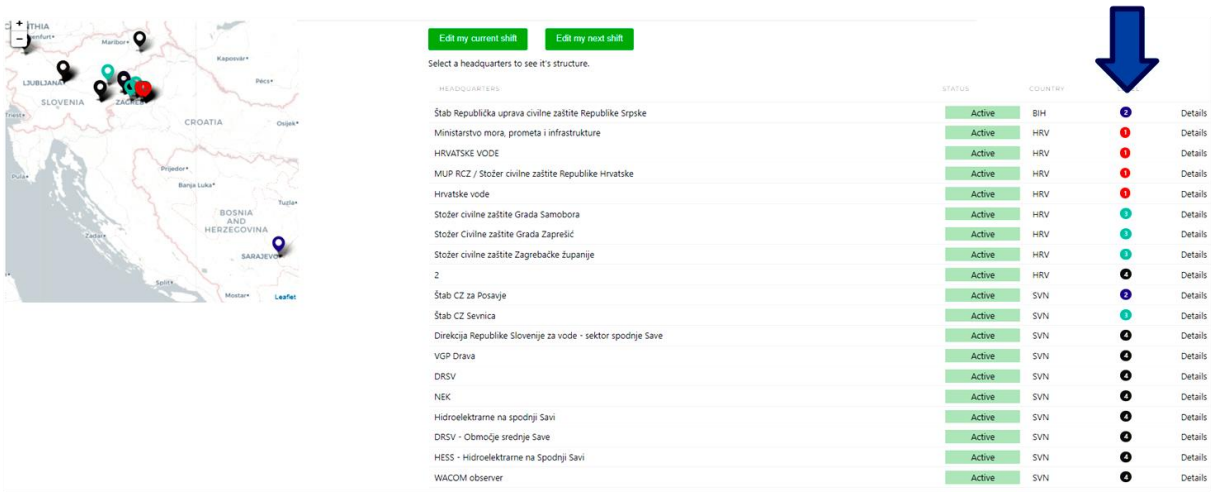

Figure 3: Level of the institutions' headquarters (1-4), which is defining the role of the headquarters in the response system.

4 Coordination tool

Communication via the WACOM tool

The WACOM tool, which brings together information on the activity of the headquarters, their activity reports can serve as an authoritative source of information on the activities taking place in the intervention. All stakeholders who are invited or allowed access to the portal can be informed through the portal. Awareness of activities performed by other involved crisis management structures can help to improve the response to the disaster and the management of the intervention in other locations.

The tool is named WASP and is available at:

http://wasp-dss.apps.vokas.si

Users can register and access the tool.

4.1 ICS: Incident Command System

The Tool aims to ease cross-country / multi disciplinary communications. The tool follows ICS protocols, enabling permanent awareness about:

- Who are the participating headquarters.
- Persons which are currently in the key ICS functions and their contacts.
- How is the incident evolving with regular reporting of all participating HQ, usually at the end of operating cycle (approx. 17:00 h).

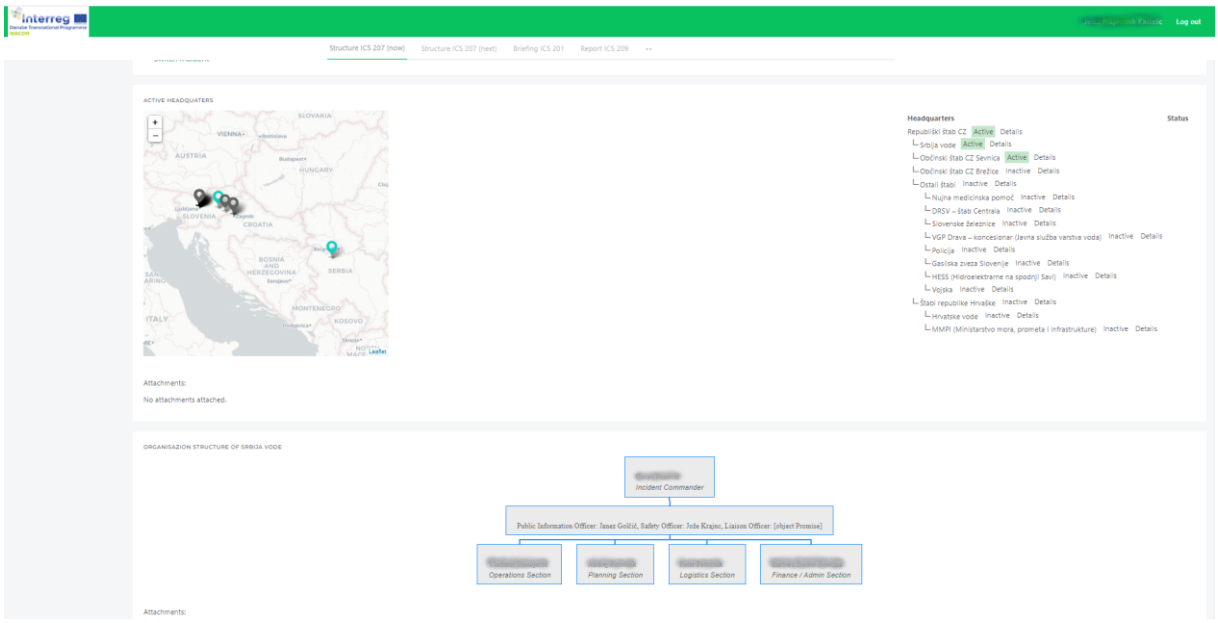

Figure 4: WACOM Incident coordination tool - ICS 207

4.2 Users

Users are the headquarters participating in joint operations in the case of large (transboundary) oil spill accident.

Anyone can register to the tool, but can't join to an active accident unless invited.

Protection from unwanted users is necessary. Incidents are protected by a unique code that can be accessed by contacting the incident commander. The code could be shared via invitation from incident commander (HQ) which are part of an incident, HQ which want to be invited can contact the HQ that has initiated the incident using the contact phone number next to the incident.

4.3 Main features

1) Visualization of participating organization headquarters

- Active / inactive;
- Map (location) of the activated HQ & list (listed by the country and level of HQ);
- Hierarchy (4 hierarhical levels are anticipated by the WACOM project).

2) Identification of the persons in command for various ICS functions (according to ICS 207)

- Current shift / next shift.
- Contact informations for the person (phone number, email, other – i.e. wireless communication channel).

The ICS 207 is used to indicate what ICS organizational elements are currently activated and the names of personnel staffing each element. An actual organization will be event-specific. The size of the organization is dependent on the specifics and magnitude of the incident and is scalable and flexible.

3) Updating organisation information – activated HQ (single institution or MACS)

Following figure shows the information necessary to identify each institution participating in the response (its HQ).

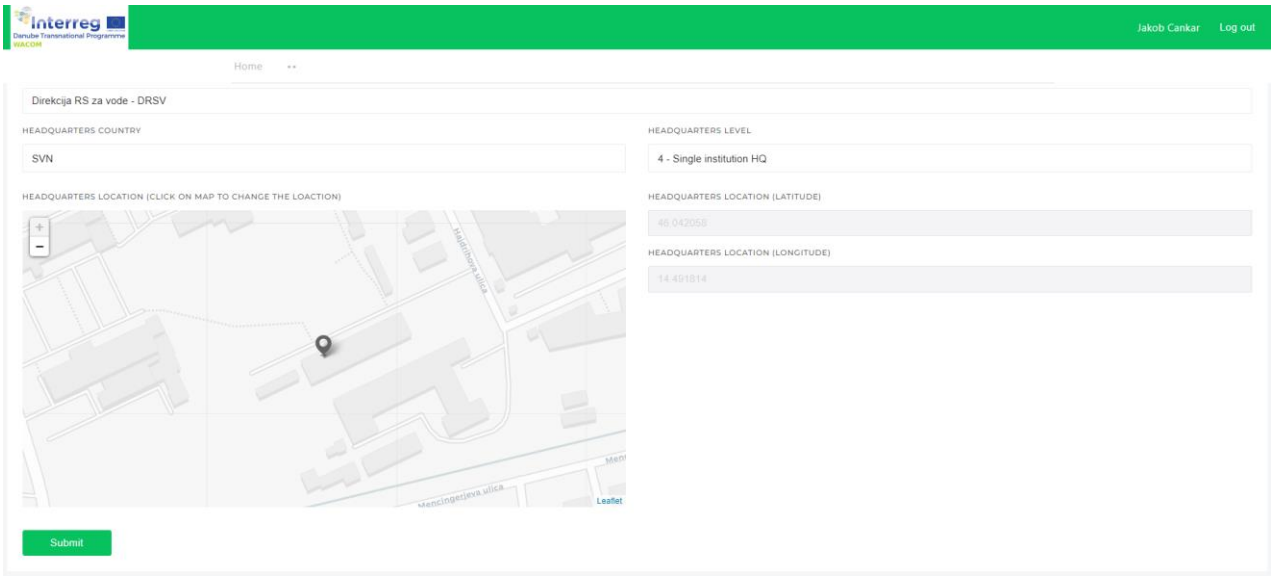

Figure 5: WACOM Incident coordination tool - ICS 207

Key information are:

- Name of the institution and its HQ, so it could be uniformly identified throughout the incident coordination process.
- Country in which the institution is operating.
- Level (1-4) of the institution – recognizing the inherent decision making potential (country, region, local community, individual institution).
- Location of the institution – by clicking on the interactive map.

In this way each HQ participating in the response is uniformly identified throughout the incident.

Following figure shows the requested information regarding the persons actively working in the institution's HQ at the initial operational period of the accident. By this each institution (its HQ) defines the persons which will be operationally active during the first operational cycle of the response and their contact information.

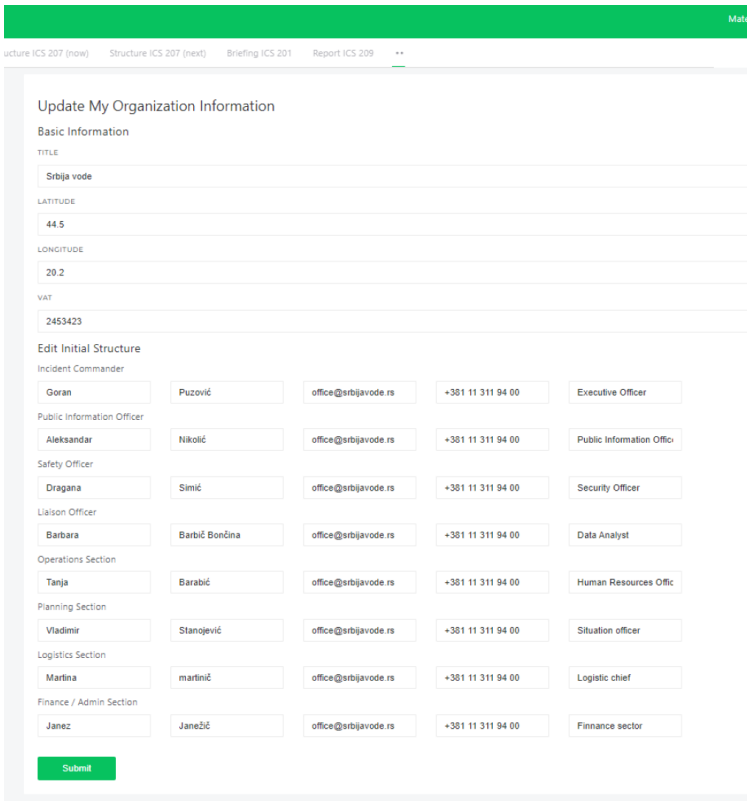

Figure 6: WACOM Incident coordination tool - ICS 207

Contact information of each position of each participating HQ is shared among all involved HQs (transboundary) and enables direct functional communication (i.e. planning to planning, logistics to logistics…). In this way Incident Commander (IC) is not involved in all communications (HQ to HQ), and can focus on the incident man agement priorities.

4) Invite other headquarters to join

This function was developed in order to define close community of HQs, which are entitled to participate in the connected management of response.

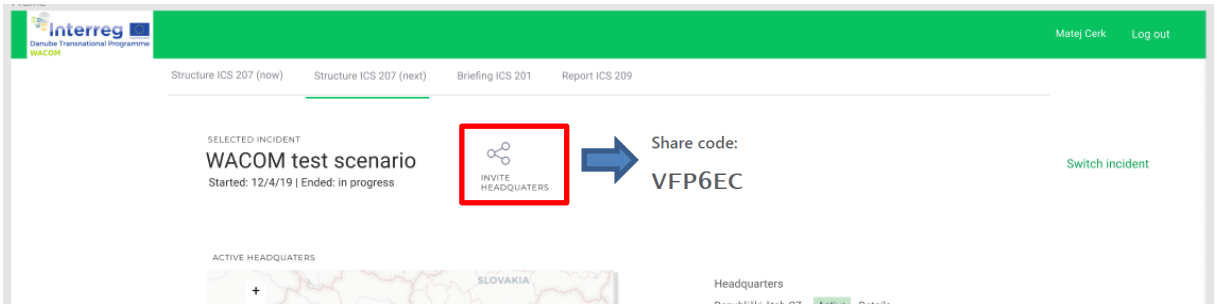

Figure 7: WACOM Incident coordination tool - ICS 207

The WACOM partnership has decided that in this way a sensitive balance between two necessities is maintained: (1) defining a close community of institutions (their HQs), preventing participation of unauthorised institutions, and (2) enabling relatively open, dynamic participation of all necessary institutions (their HQs) as an accident develops.

5) Definition of the ICS structure (ICS 207) for the next operational period

Definition of the structure of the Headquarters of specific institution for the next operational period is one of the basic prerequisites for a successful management of large, transnational emergencies. In this way the person managing the HQ (Incident Commander, or other HQ positions) is understood as a dynamic position, always occupied by the person which is:

(1) qualified for the position, and
(2) in full operational capacity for the position.

The procedure defining handover of the functions should be defined as a part of Standard Operational Protocols defining internal protocols how each HQ is functioning. Usually they follow the procedures defined by the ICS 201 form – Incident Briefing.

5 WACOM coordination tool testing

After the development of the WACOM transnational coordination toolbox, the users: WACOM project partners (PPs), WACOM associated strategic partners (ASPs), and other invited stakeholders – target groups (local, national, utilities, enterprises, international) assessed the functioning of the toolbox. The assessment was performed in two stages:

(1) testing of the three modules prototypes and

(2) beta testing of the WACOM toolbox – three modules.

A template form for collecting feedbacks were prepared. A template form (factsheet) was compiled by the PPs and ASPs. The first testing phase was conducted in June 2022 and the second testing phase in September 2022. Comments were collected from all PPs and ASPs in a prepared factsheet.

On the basis of feedback from the testing, reports were prepared describing the comments of the users and ways to improve the tools under development.

Compliments on the tool:

- Useful, easy to use, quick data input;
- Transparent, seing exact HQ location.

Ideas for improvement:

- Password recovery is necessary;
- Pre-register all potential organizations (HQ) with names and contacts would facilitate the process of joining to specific accident;
- It could be developed as a specific smart-phone application (i.e. an app on google store). However, it was tested that the application (WACOM toolbox) fully functions on the smart-phone using standard web-browser tool.
- Improved process for the institutions that want to join the concerted work of transboundary HQs;

Analysis:

- One additional proposal is now to show the location of the incident on the map, including key operational measures applied. Comment: this would transform the application closer to the NICS toolbox.
- The institutions could be sorted by colour according to their country of origin. Advanced filtering of involved institutions (HQs) may be useful in order to support extremely large events. (function was partially added, based upon this comment).
- Data structures for the reports (i.e. ICS 209) could be improved, enabling functionality: file attachments (this function was added later, based upon this comment).
- Improve readability where there is many HQ involved (this function was added later, based upon this comment).

6 Beta version of the Coordination tool - WASP

The WASP tool is a relatively novel concept aiming at the improved coordination among headquarters from different countries, different type of headquarters (multiagency, single agency), different levels (national, regional, local) and different sectors (civil protection, water management, navigation, industry etc.). As such it was relatively soon identified that to certain extent it has a similarity to social networks, but it is clearly distinguished from those and relatively clearly defined to be a Multiagency Coordination System (MAC) as defined by the NEMA (National Emergency Management Agency of the USA). A MAC is not simply a physical location or facility. Rather, the MAC System:

- Defines business practices, standard operating procedures, and protocols by which participating agencies will coordinate their interactions.
- Provides support, coordination, and assistance with policy-level decisions to the ICS structure managing an incident.

Cooperating agencies and organizations may develop a MAC System to better define how they will work together and to work together more efficiently.

The WACOM toolbox is addressing both components of the MAC System, with a specific focus on the second (support, coordination, and assistance). Therefore the integration of the first components (business practices, standard operating procedures, and protocols by which participating agencies will coordinate their interactions), now have to be improved and better integrated in the WACOM toolbox. During the Table-Top exercises (TTX) several issues have been revealed, which were analysed and will be part of the WACOM strategic guidance documents (WPT4).

The central role of the multiagency cooperation is defined by the primary functions of MACSs, which are to:

- Support incident management policies and priorities.

- Facilitate logistics support and resource tracking.
- Make resource allocation decisions based on incident management priorities.
- Coordinate incident-related information.
- Coordinate interagency and intergovernmental issues regarding incident management policies, priorities, and strategies.

Direct tactical and operational responsibility for the conduct of incident management activities rests with the on-scene Incident Commander.

With the table top exercises (TTX) performed the focus on the final WACOM toolbox analysis was suggested to:

Improve the identification (positioning) of the incident area in the toolbox – currently the area of the incident is only defined by:

- Description of the location in the name of the incident and the more detailed description of the location and event
- Description of the event propagation in the reporting system of the participating headquarters (ICS 209 form)

The necessary improvement will enable positioning of the event location and propagation in the map of the WASP tool, and the added possibility of file upload to the ICS 209 reporting providing even more detailed positioning of the event under dynamic development in the spatial context.

Improve the search tools in the toolbox – with the increased number of participants in the TTX it was identified that the number of reports available are heavily limiting the usage, where transparent and rapid search of a specific report (especially by the reporting institution or its headquarters, by time, by country) is necessary. For the management of large-scale events this functionality is necessary, enabling effective and efficient access to critically needed information.

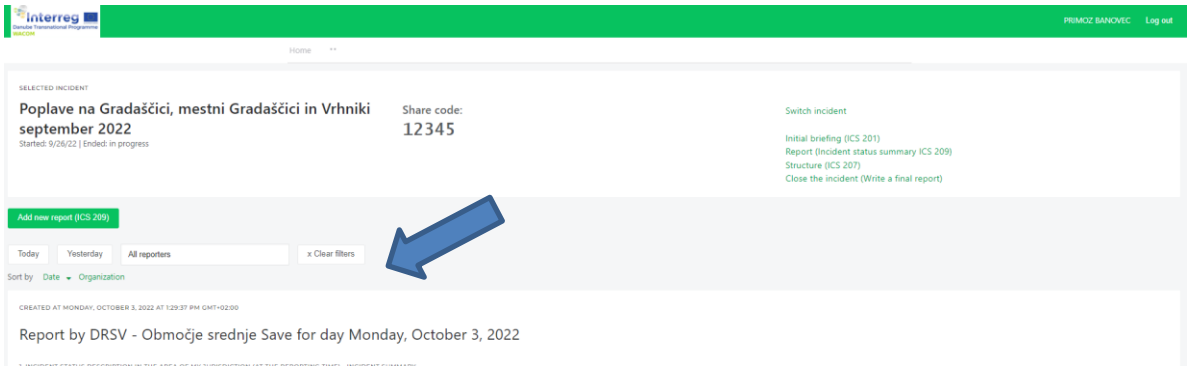

Figure 8: Improved search and filtering in the ICS 209 reporting process

Emergency closing protocols – during the TTX it was identified that the closing protocols of the incident is not adequately defined. While on the level of basic information (AEWS) the closing protocols is defined, it was not defined on the level of WACOM WASP toolbox. The closing protocol should be defined on the level of single participating institution providing together with the final ICS 209 report also the confirmation on the closing of its participation in the event, and

the institution which has opened the event also eventually closing the entire event afterwards. The event is after that only stored and used for the documentation purpose.

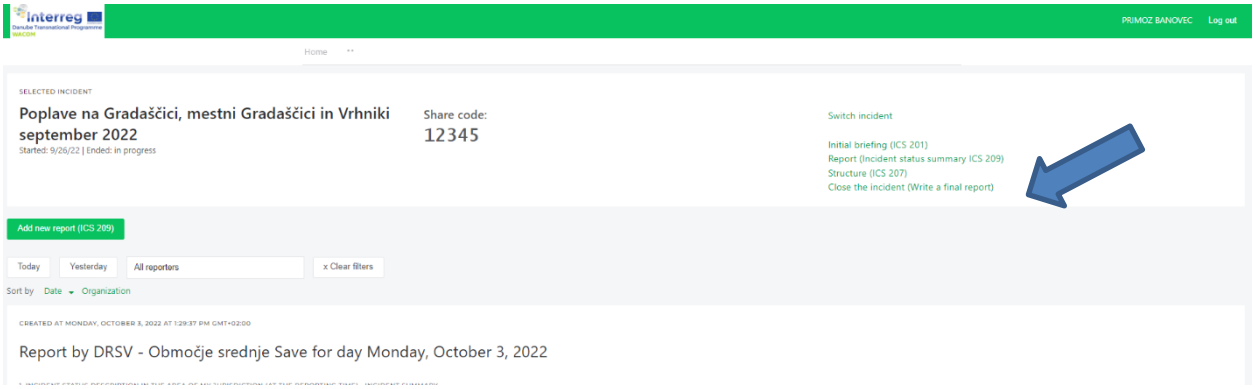

Figure 9: Improved incident closing procedures

Management of the participants' access to application – one of the key challenges of the muiltagency cooperation tool is also management of the participants. On one hand it has to be relatively open in order to enable relatively accessible participation of different institution, while on the other hand it has to be close to prevent mis-use and participation of the unwanted participants/persons. This was recognized and discussed. The partnerhisp decided on the invitation based control of participants where a random access code is created together with a new incident, which is subject to MAC. The discussion was open on the potential functionality to omit specific participant/institution (headquarters) from the application, which could be performed only in very rare circumstances (i.e. false entry).

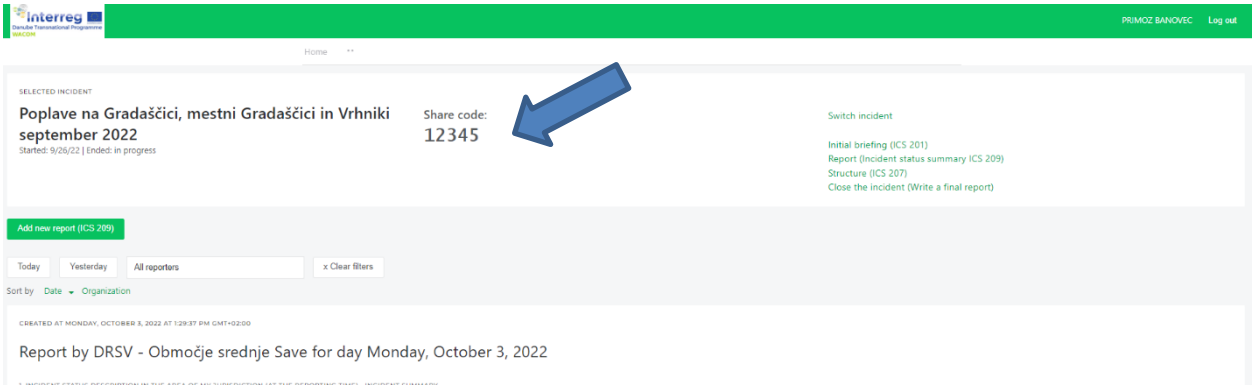

Figure 10: Improved procedures relative to access protocols

Management of the participants in the application – with the increased number of participants headquarted in the multiagency coordination it is necessary to better structure their list in the application enabling a better overview of the participating institutions/headquarters. In some TTX it was noted that with the number of headquarters above 20, management and overview of the processes and participants could become difficult. An improved structuring of the partners on the page with participants is necessary.

Graphical and user experience – with the use of the toolbox the postinioning of the contents and functions (mouse click buttons) was analysed and suggestions provided. It was suggested to improve the positioning of the icons and contents in the toolbox in order to improve the user experience.

7 Conclusions

In order to reduce the environmental risks related to accidental pollution and floods, especially those that have or could have transboundary impacts in the Sava River Basin. For this reason, the WACOM (Water Contingency Management in the Sava River Basin) project a toolbox for improved organization during the complex incident response was developed. Transnational incident coordination tool is enabling efficient and effective communication among the stakeholders (institutions) involved in the flood and/or accidental pollution response. The coordination tool integrates several components and definitions following standard processes mirroring the Incident Command System (ICS) theory requirements.

Transnational incident coordination tool was developed on the basis of Incident Organization Chart (ICS 207) which provides a visual chart depicting the Incident Command System organization position assignments for the incident. The ICS 207 is used to indicate what ICS organizational elements are currently activated and the names of personnel staffing each element. An actual organization will be event-specific. Personnel responsible for managing organizational positions are listed in each box as appropriate.

The event specific case defined for the WACOM project is related to the target (possible) accidents: accidental pollution and floods, but can cover also other incidents which occur in this transnational environment.

Using the application, Transnational incident coordination tool, headquarters will be able to efficiently and effectively communicate with all parties involved in the response on flood/accidental pollution. In case of emergencies, quick and efficient organisation is crutial and the Transnational Incident Coordination Tool supports that part through the web platform

According to the stakeholders, the tool WASP is a well-designed and useful tool, but it still has room for improvement. Therefore, we will continue to work on developing this type of tool to support the emergency response.