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Danube Transnational Programme
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WACOM PROJEKT
REGIONALNA DELAVNICA

dr. Primož Banovec, LP University of Ljubljana

WACOM Regional Workshop Slavonski Brod
September 16th, 2021

WACOM- Water Contingency Management in the Sava River Basin
Project co-funded by European Union funds (EDRF, IPA)

Structure:

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PART A - Project summary

A.1 Project identification

Programme priority	Priority 2
Programme priority specific objective	SO 2.4 Improve preparedness for environmental risk management
DTP Project Code and Acronym	WACOM
Project title	Water Contingency Management in the Sava River Basi
eMS Project Number	315
Name of the lead partner organisation/original language	Univerza v Ljubljani
Name of the lead partner organisation/English	University of Ljubljana
Project duration	30 months 0 days
Start date	01.07.2020
End date	31.12.2022

PART B - Project partners

B.1 List of Project Partners

Role	Name	Acronym	Country
LP	University of Ljubljana	ERDF LP - UL	SI, SLOVENIJA
PP	Slovenian Water Agency	ERDF PP1 - DRSV	SI, SLOVENIJA
PP	Hydro power plants of Lower Sava River	ERDF PP2 - HESS	SI, SLOVENIJA
PP	Croatian Waters – Legal entity for water management	ERDF PP3 - HV	HR, HRVATSKA
PP	~~Port Authority Slavonski Brod~~ MMPI	ERDF PP4 - LUSB	HR, HRVATSKA
PP	International Sava River Basin Commission	ERDF PP5 - ISRBC	HR, HRVATSKA
PP	Association for Risk management AZUR	IPA PP1 - AZUR	BA, BOSNIA AND HERZEGOVINA
PP	~~Federal administration of civil protection~~	IPA PP2 - FUCZ	BA, BOSNIA AND HERZEGOVINA
PP	Civil protection administration of the Republic of Srpska	IPA PP3 - RUCZ RS	BA, BOSNIA AND HERZEGOVINA
PP	Jaroslav Černi Water Institute	IPA PP4 - JCI	RS, SERBIA
AP	Croatian Meteorological and Hydrological Service		HR, HRVATSKA
AP	International Commission for the Protection of the Danube River		AT, ÖSTERREICH
AP	SAVA RIVER WATERSHED AGENCY		BA, BOSNIA AND HERZEGOVINA
AP	Republic hydrometeorological service of Republic of Srpska		BA, BOSNIA AND HERZEGOVINA
AP	Public Institution Vode Srpske		BA, BOSNIA AND HERZEGOVINA
AP	Public Water Management Company Srbijavode		RS, SERBIA
AP	Republic Hydrometeorological Service of Serbia		RS, SERBIA
AP	Ministry of Agriculture, Forestry and Water Management Republic Water Directorate		RS, SERBIA
AP	Port of Brčko		BA, BOSNIA AND HERZEGOVINA

WACOM WP T1 to WP T4

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Water **Contingency Management** in the Sava river basin

WP T1 Definiticije (how) → WP T2 Toolbox development → WP T3 Testing (pilot – TT exercise) → WP T4 Strategija implementacije

Čezmejno:

POPLAVE IN IZVANREDNA ONEČIŠĆENJA

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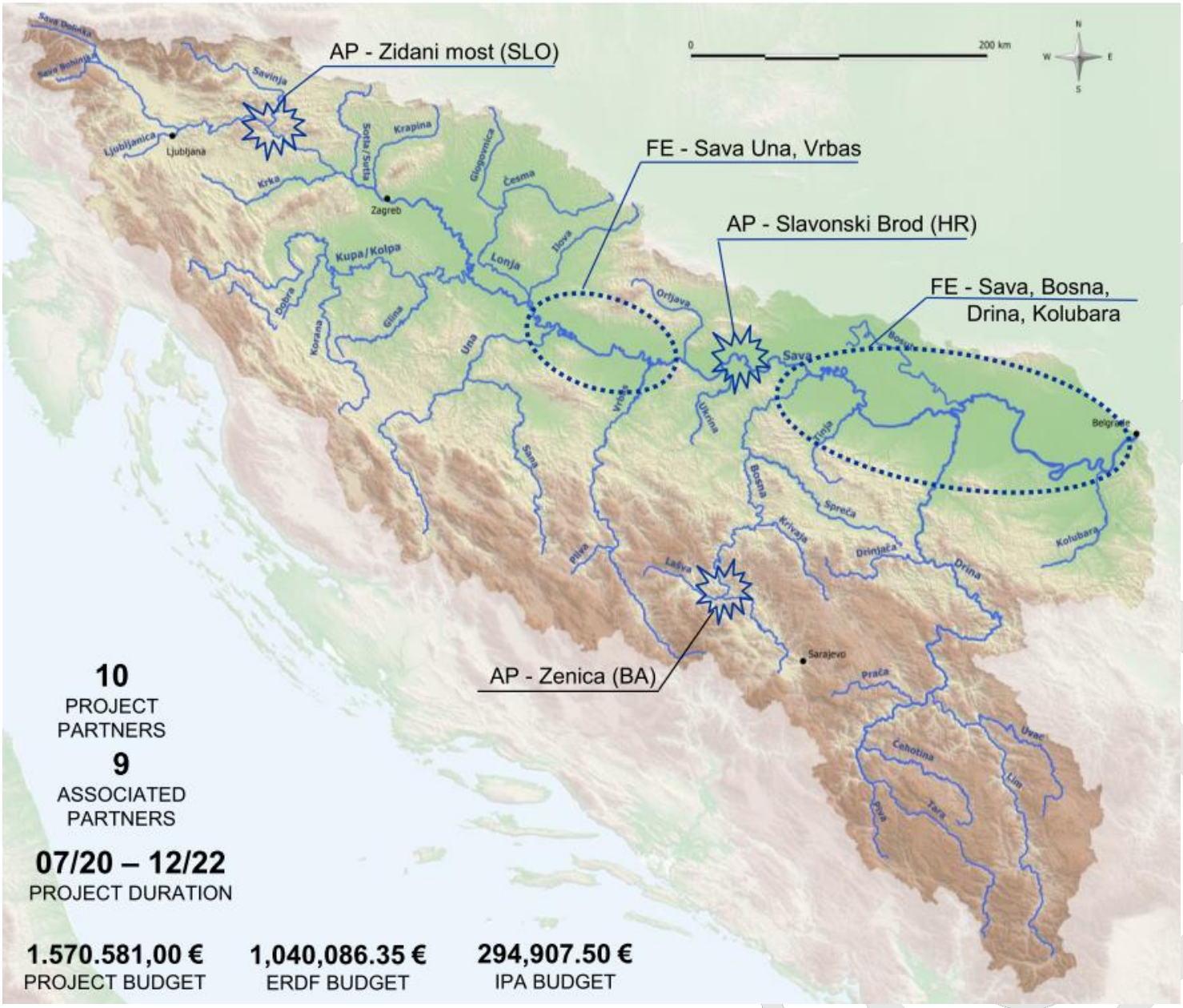

10
PROJECT PARTNERS

9
ASSOCIATED PARTNERS

07/20 – 12/22
PROJECT DURATION

1.570.581,00 €
PROJECT BUDGET

1,040,086.35 €
ERDF BUDGET

294,907.50 €
IPA BUDGET

Projekt WACOM (1)

- Gradi na aktivnostima i protokolima Mednarodne komisije za sliv reke Save,
- Uvažava međunarodne protokole – o prekograničnom onečišćenju, ICPDR - International Commission for the Protection of the Danube River
- Gradi na logici mehanizma za civilnu zaštitu EU
- Uzima u obzir suverenost provođenja intervencija u različitim zemljama

Projekt WACOM (2)

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- Uspješno upravljanje velikim katastrofama (npr. prekogranične poplave, vanredno zagađenje) zahtijeva učinkovite i koordinirane mjere institucija u svim zemljama.
- Poznavanje mehanizma odgovora na katastrofe u uzvodnim zemljama poboljšava učinkovitost i djelotvornost mjera u nizvodnim zemljama (poplave, ekstremno zagađenje)
- Povezuje zemlje kao i sektore: civilnu zaštitu, upravljanje vodama i plovidbu
- Uključuje ciljne skupine putem kojih stvara široku platformu potrebnu za bolje sprječavanje poplava i izvanrednih situacija i odgovor na njih

WACOM ORODJE: INTEGRATED TOOLBOX

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Koordinacija (ICS organizacijska struktura po zemljama, ICS obrazac 207)

Modeliranje (delno ICS 215 – Sava GIS, Sava HIS, Sava NIS)

Razmjena podataka o statusu (ICS obrazac 209)

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Hvala vam na pažnji

Water Contingency Management in the Sava River Basin

Slavonski Brod September 16, 2021

Teorija planiranja stožernih vježbi

(Table Top Exercise)

AZUR

Associate Professor Robert Mikac, PhD

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Project co-funded by European Union funds (EDRF, IPA)

Sadržaj

- Uvod
- Vrste vježbi
- Stožerno-simulacijska vježba
- Scenarij vježbe
- Zaključak

Uvod

- Vježbe predstavljaju **najučinkovitiji način provjere** spremnosti, učinkovitosti, postavljenih procedura i poslovnih procesa, sagledavanja znanja i umijeća djelatnika, uočavanja propusta i nedostataka, kao i priliku unapređenja svih željenih vrijednosti za koje se trgovačko društvo, organizacija ili određeni sustav zalaže.
- Vježbe **predstavljaju jeftiniji način** otklanjanja nedostataka i/ili podizanja razine sposobnosti u odnosu na lekcije do kojih se dolazi kroz stvarne primjere i praksu.
- Vježbe **provode sve** međunarodne organizacije,

Vrste vježbi 1/2

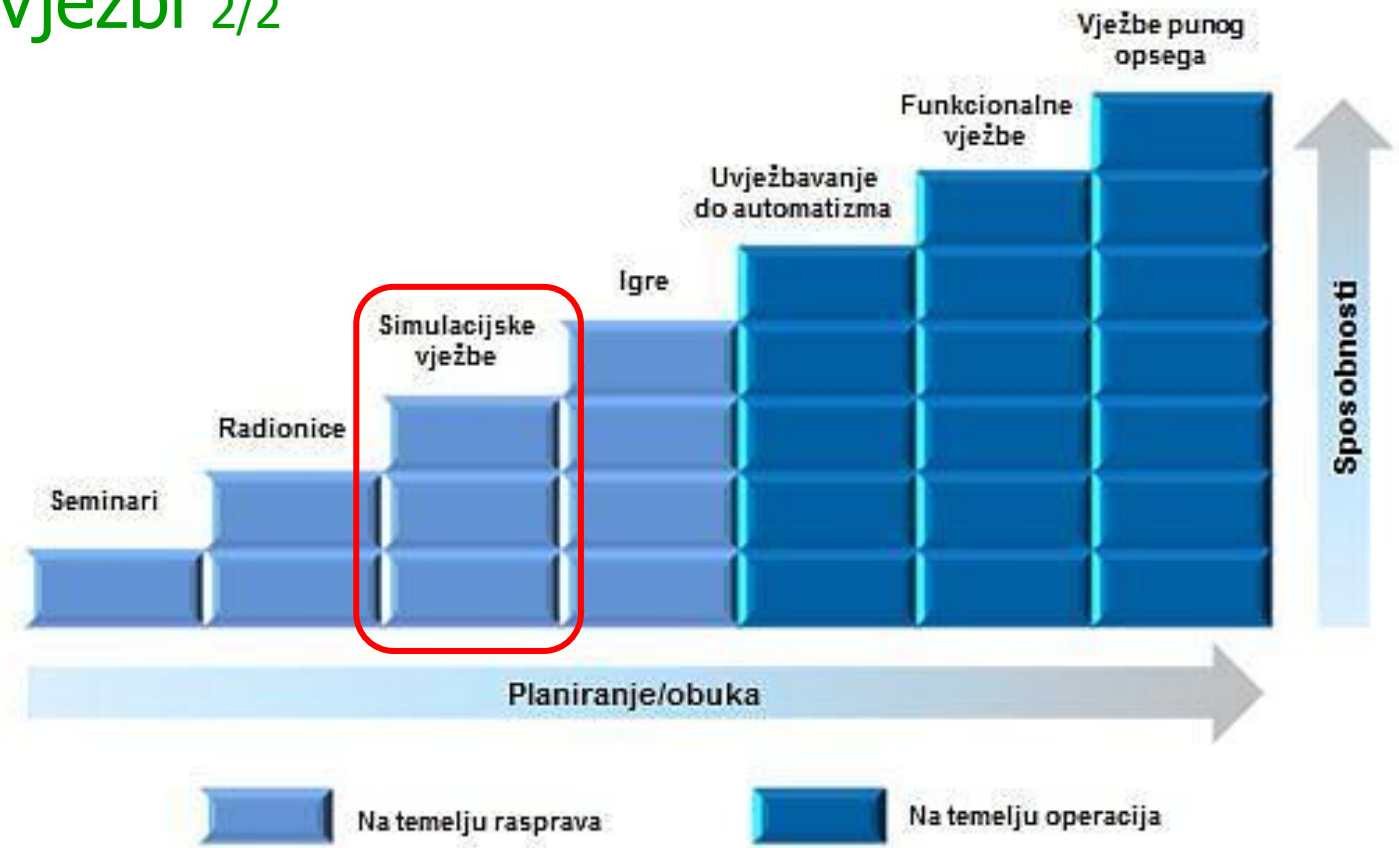
Prema razini organiziranja:

- Međunarodne vježbe
- Državne vježbe
- Vježbe jedinica lokalne i područne (regionalne) samouprave
- Vježbe pravnih osoba i tijela državne uprave i drugih državnih tijela

Prema ciljevima i angažiranim sudionicima:

- Terenske vježbe
- Stožerno-zapovjedne vježbe
- Simulacijsko-komunikacijske vježbe

Vrste vježbi 2/2



Stožerno-simulacijska vježba 1/3

- **Stožerno-simulacijska vježba** uključuju ključno osoblje (vlasnika i državne, područne (regionalne), odnosno lokalne službenike za upravljanje u kriznim situacijama) koje u (ne)formalnom okruženju raspravlja o simuliranim scenarijima.
- Vježba započinje opisom simuliranog događaja (scenarija) i omogućuje sudionicima procjenu plana i postupaka odgovora.
- Potiče sudionike na dubinsku raspravu i razvijanje odluka sustavnim rješavanjem problema, a ne brzim, spontanim odlučivanjem koje se događa u stvarnim ili simuliranim izvanrednim uvjetima.

Definicije – Bosna i Hercegovina

ИНСТРУКЦИЈУ

о основним елементима за израду елабората за вјежбе снага заштите и спасавања

- Командно-штабне вјежбе – намјењене су за руководиоце и друга одговорна лица која учествују у руковођењу системом заштите и спасавања у Републици Српској;
- Симулацијско-комуникацијске вјежбе – намјењене су за провјеру и увјежбавање комуникацијских процедура система заштите и спасавања;

Definicije – Hrvatska

PRAVILNIK

O VRSTAMA I NAČINU PROVOĐENJA VJEŽBI OPERATIVNIH SNAGA SUSTAVA CIVILNE ZAŠTITE

– stožerno-zapovjedne vježbe – namijenjene su za rukovoditelje i druge odgovorne osobe koji sudjeluju u upravljanju sustavom civilne zaštite. Vježbama se provjeravaju rješenja iz planova djelovanja sustava civilne zaštite uz informatičku podršku i korištenje zemljopisno-obavijesnog sustava (u daljnjem tekstu: ZEOS). Broj sudionika vježbe je usklađen s potrebama i mogućnostima lokacije vježbe i uporabe informacijskih i komunikacijskih tehnologija. Vježbe se iskazuju u Godišnjem planu vježbi samo ako ulaze u vrstu međunarodnih i/ili državnih vježbi

– simulacijsko-komunikacijske vježbe – namijenjene su za provjeru i uvježbavanje komunikacijskih procedura unutar sustava civilne zaštite. Vježbe se iskazuju u Godišnjem planu vježbi samo ako ulaze u vrstu međunarodnih i/ili državnih vježbi

Stožerno-simulacijska vježba 2/3

Stožerno-simulacijska vježba ima višestruke ciljeve, i to:

- Razmotriti scenarij određenog izvanrednog događaja;
- Procijeniti standardno operativno postupanje odnosno spremnost odgovora na izvanredne događaje, prirodne i druge nesreće, krize i katastrofe;
- Trening vještina i poboljšavanje učinka pod kontroliranim uvjetima;
- Uvezivanje različitih dijelova jednog i više sustava (civilna zaštita, upravljanje vodama, iznenadna onečišćenja);

Stožerno-simulacijska vježba 3/3

Stožerno-simulacijska vježba u WACOM kontekstu ima i ciljeve:

- Provjera komunikacijskih protokola, IT sustava, međusobne koordinacije i sustava veza;
  - ICS 207;
  - ICS 209;
  - IAP.

Scenarij vježbe

Scenarij predstavlja središnji dio svake vježbe.

Scenarij vježbe predstavlja opis:

- Neželjenih događaja (jednog ili više povezanih događaja) za svaki rizik, a koji ima posljedice na život i zdravlje ljudi, gospodarstvo, društvenu stabilnost i politiku;
- Svega što vodi k nastajanju, odnosno uzrokuje opisane neželjene događaje, a sastoji se od svih radnji i zbivanja prije katastrofe i „okidača" katastrofe;
- Okolnosti u kojima neželjeni događaji nastaju te stupnja ranjivosti i otpornosti stanovništva, građevina i drugih sadržaja u prostoru ili društva u razmjerima relevantnim

Zaključak

- Vježbe predstavljaju alat u provjeri i unapređenju procesura na raznim nivoima
- Izbor scenarija vježbe treba biti zasnovan na potrebama i procjeni koju prezentira organizator vježbe
- U izradi scenarija pored općeg okvira planiranja i provedbe vježbe treba omogućiti i vježbovnoj skupini (sudionici vježbe) da predlože što oni žele provježbati i koje procedure provjeriti kako bi navedene elemente tim za planiranje vježbe ugradio u scenarij vježbe.
- Tim za planiranje vježbe treba se voditi SMART modelom. Treba odabrati razuman broj konkretnih (**S**pecific), mjerljivih (**M**easurable), ostvarivih

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AZURI

Association for Risk Management • Asocijacija za upravljanje rizicima • Асоцијација за управљање ризицима

Hvala Vam na pažnji

WACOM WPT2 – Toolbox development presentation of the toolbox concept (beta version)

ERDF LP UL

Primož Banovec, Matej Cerk, Andreja Žerjav

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INTEGRATED TOOLBOX T2 (three modules):

Incident coordination Tool (ICS organization chart ICS form 207)

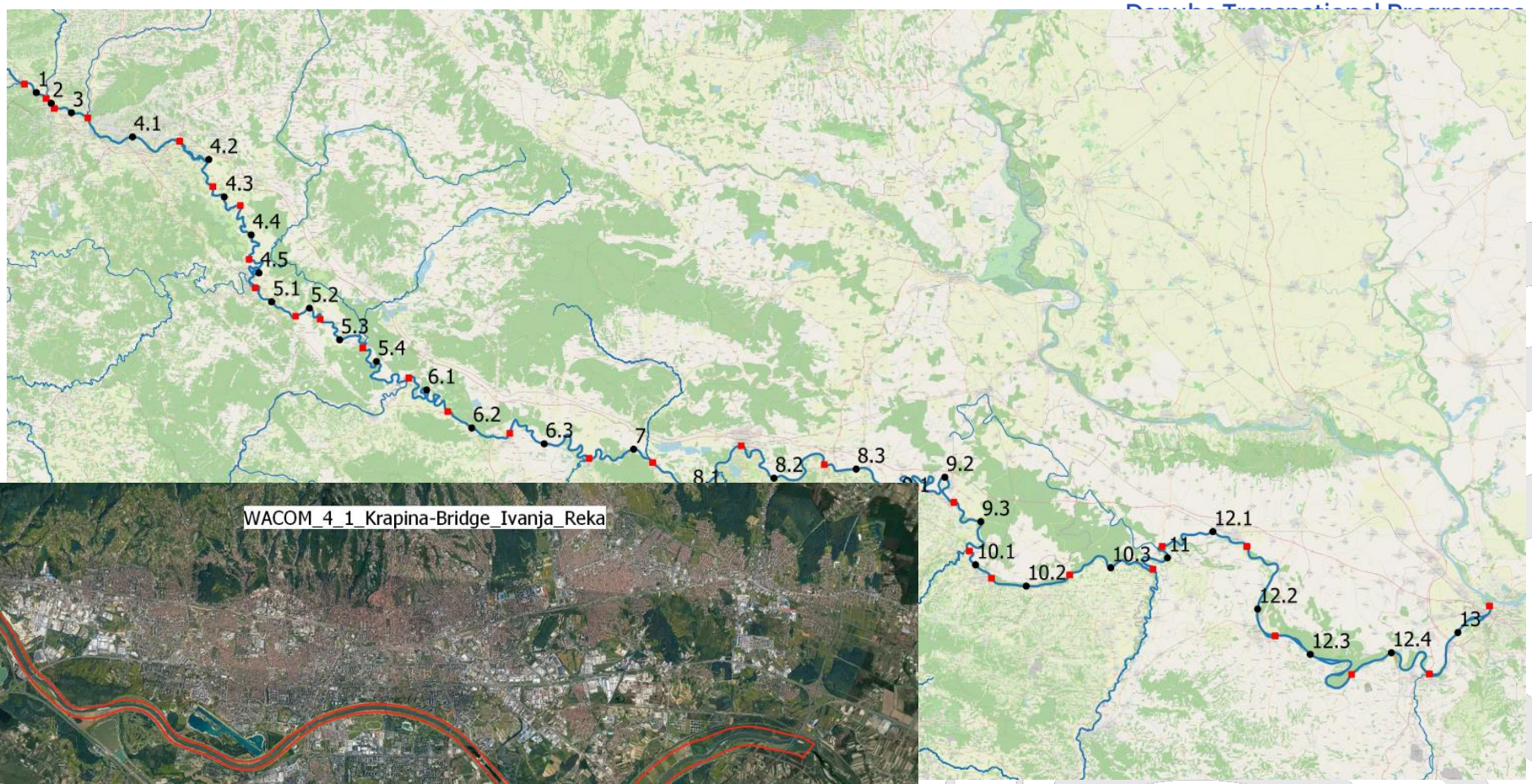
Components of IAP (incident action plan) – exchanged among countries

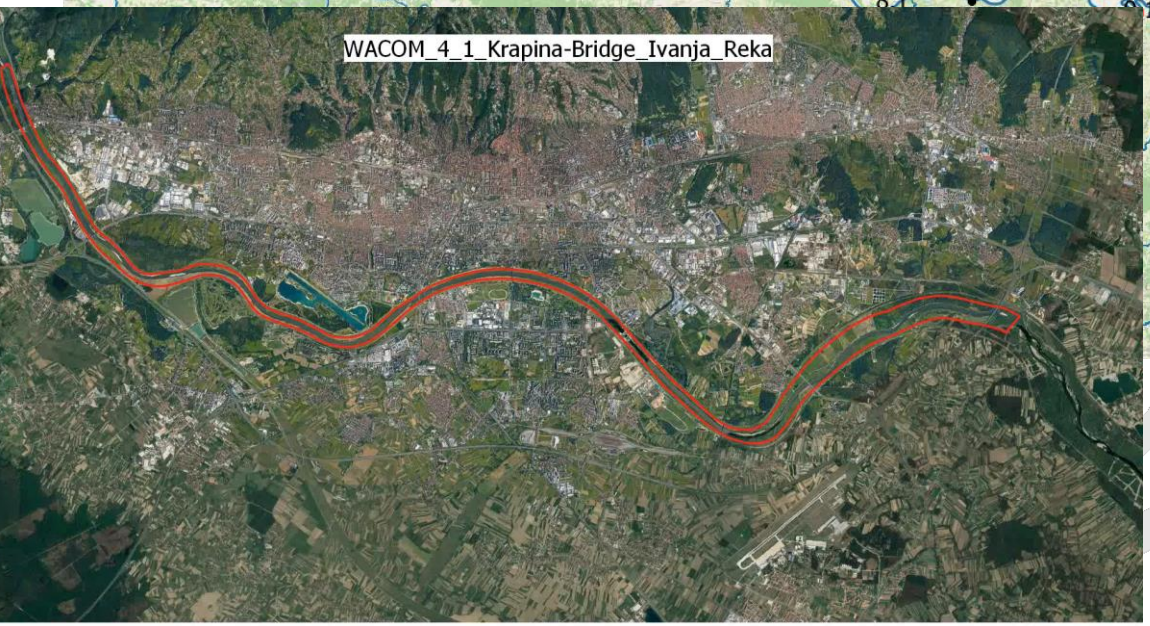
Incident modelling tool (partially ICS 215 - operational planning worksheet)

Situational awareness tool (ICS form 209)

WACOM – WP2

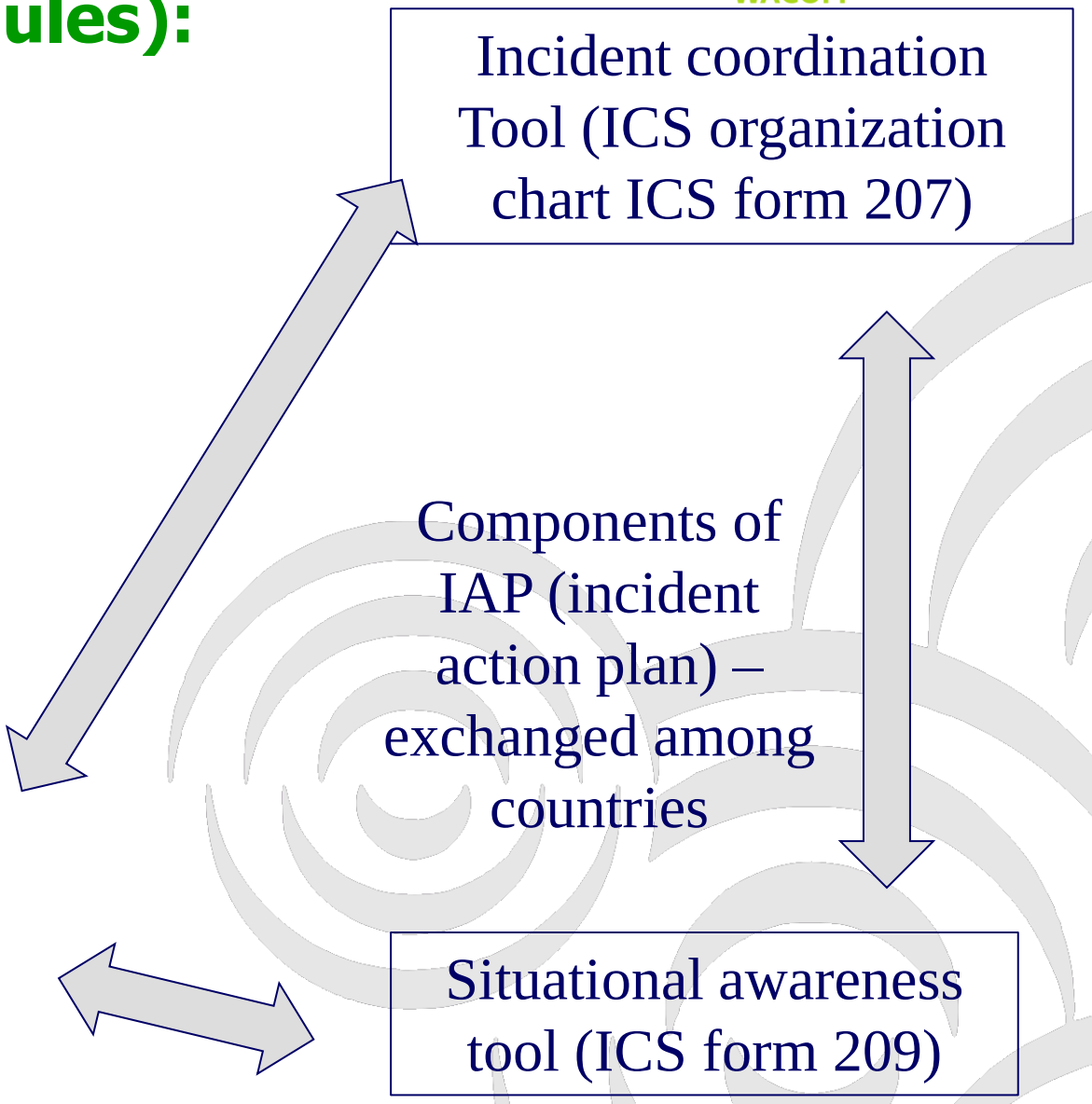
MODEL – Sava river completed –





31 sections of 2D model for Sava river

INTEGRATED TOOLBOX T2 (three modules):



Wacom toolbox tested at the pilot actions:

Who is managing the incident (ICS 207)

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Wacom toolbox tested at the pilot actions:

Who is managing the incident (ICS 207)

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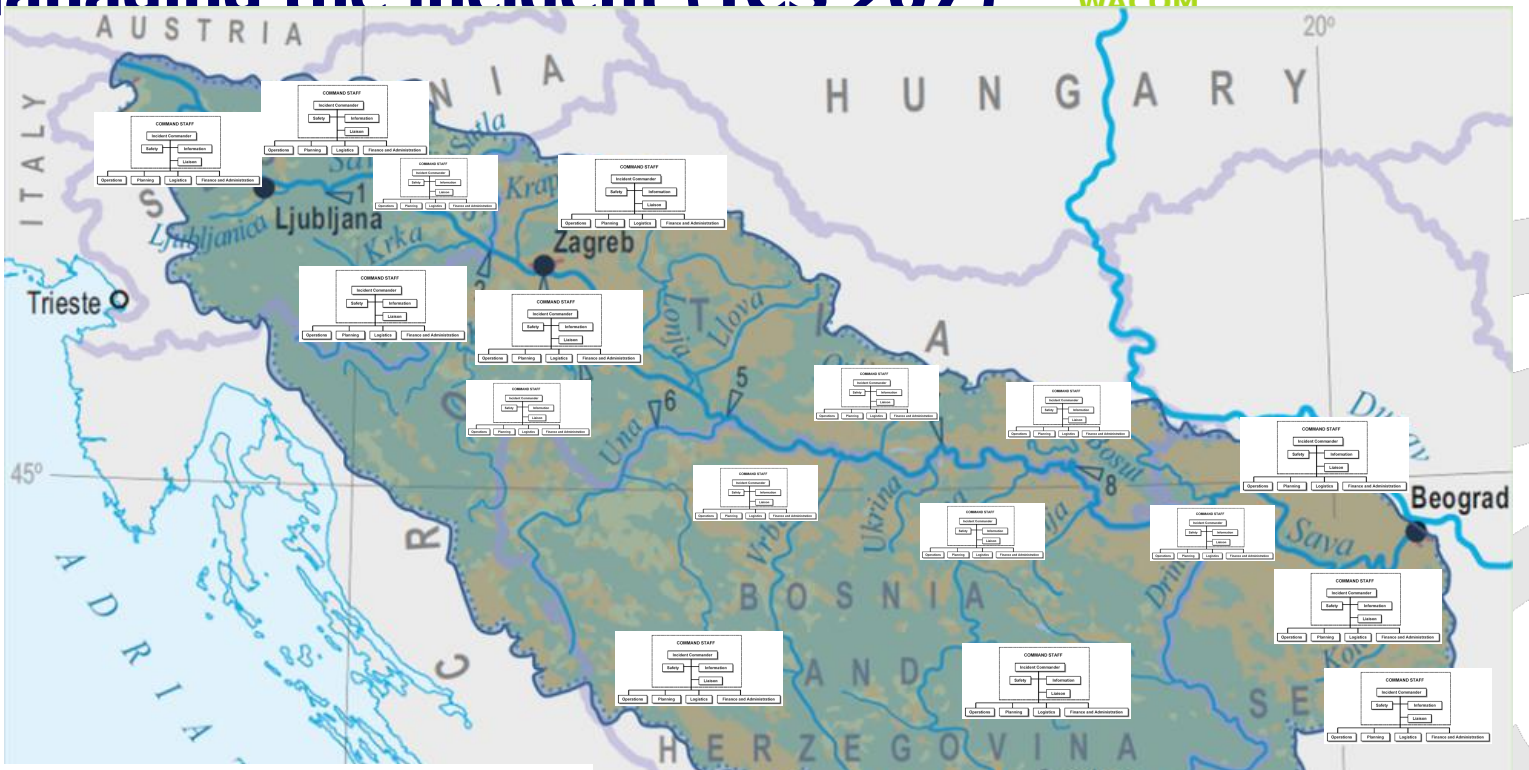
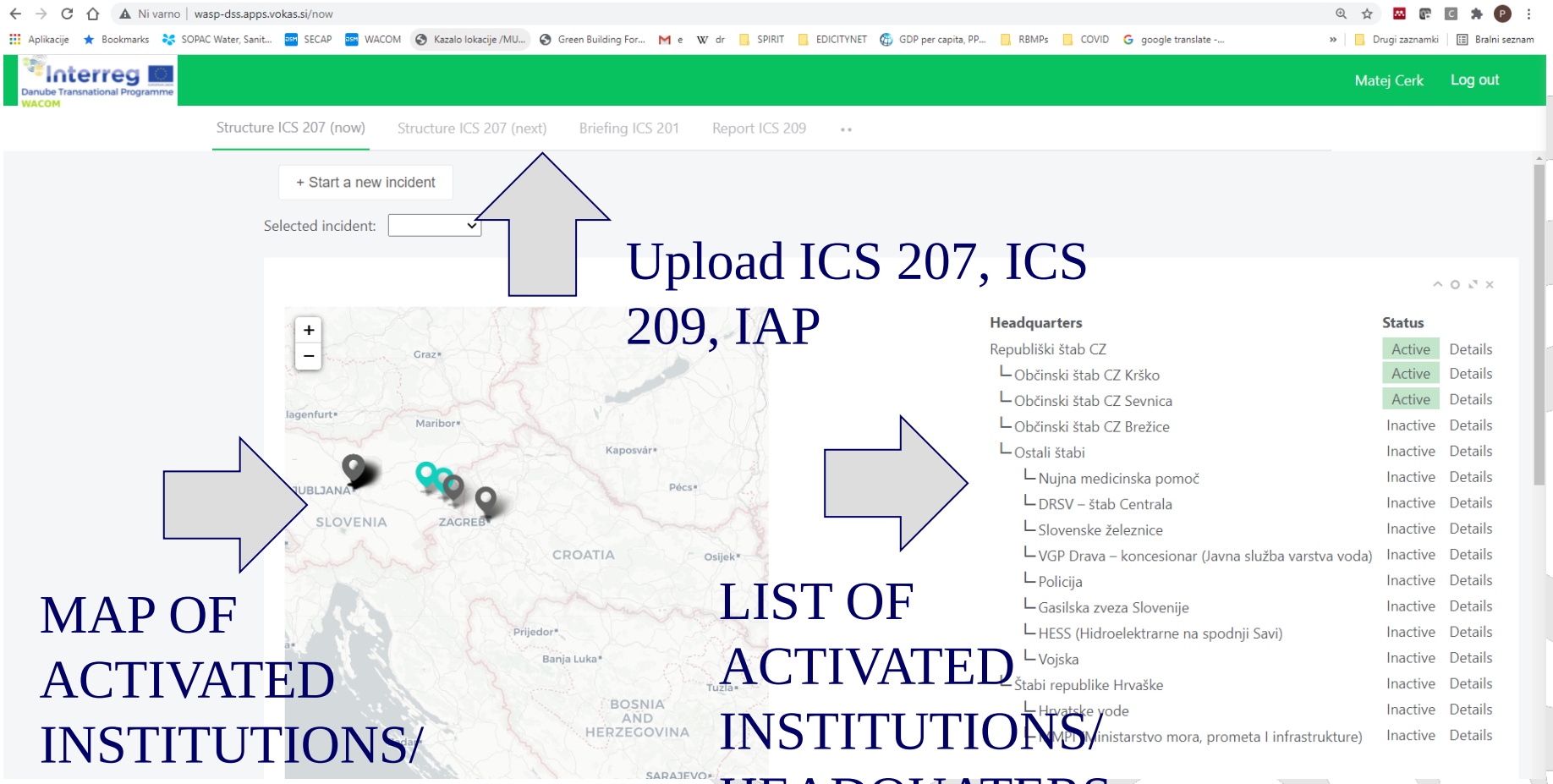


Discussion



MAP OF ACTIVATED INSTITUTIONS/ HEADQUATERS
- area command/ supporting

LIST OF ACTIVATED INSTITUTIONS/ HEADQUATERS
area command/ supporting

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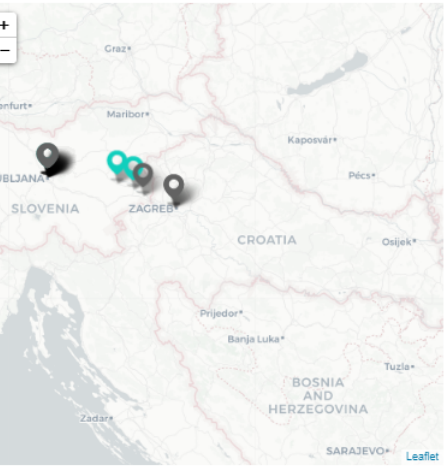
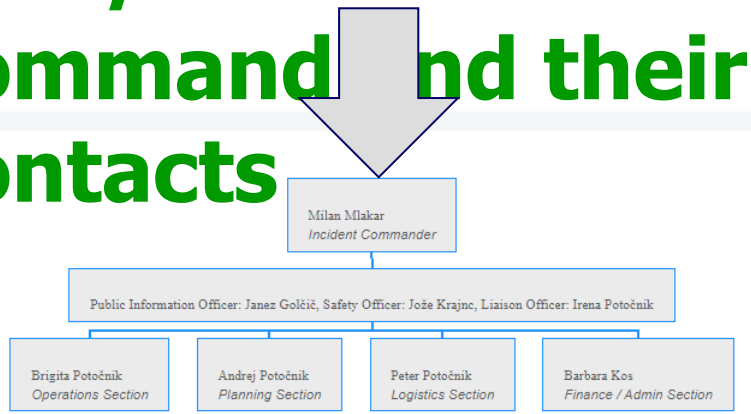
Information on the exsisting and planned (next OP) key assisgnements of ICS stucture of area/functional command and their contacts



achments:
attachments attached.

Headquarters	Status
Republiški štab CZ	Active
└ Občinski štab CZ Krško	Active
└ Občinski štab CZ Sevnica	Active
└ Občinski štab CZ Brežice	Inactive
└ Ostali štabi	Inactive
└ Nujna medicinska pomoč	Inactive
└ DRSV – štab Centrala	Inactive
└ Slovenske železnice	Inactive
└ VGP Drava – koncesionar (Javna služba varstva voda)	Inactive
└ Policija	Inactive
└ Gasilska zveza Slovenije	Inactive
└ HESS (Hidroelektrarne na spodnji Savi)	Inactive
└ Vojska	Inactive
└ Štabi republike Hrvaške	Inactive
└ Hrvatske vode	Inactive
└ MMPI (Ministarstvo mora, prometa I infrastrukture)	Inactive



ICS 207:

- Who is managing the incident – overview of the managing structures on the entire Sava river basin
- Concept of the ICS – the Incident commander for an organization is responsible for the maintenance of the span of control.
- Therefore he/she is responsible also for the build-up of the structure which is corresponding the requrements imposed by the incident itself. Dynamic adaptation of the managment stucture.

ICS 209:

- **Incident status summary – upload from all activated area command(s) and supporting institutions**
- **IAP – information on key planned measures - upload from all activated area command(s) and supporting institutions**

TOOLBOX exchange data:

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Toolbox paradigm:

1. Used in connection to maintained 207/209/IAP structure - in the case institutions are already having the corresponding framework
   i. Connectivity with xml exhange protocols
   ii. Connectivity with the API exchenge protocols (Application Programming Interface)

2. Used as the file exchange tool – own stucture developed and maintained in an excel file

3. Used as an online/offline web tool

4. Combination

5. Harmonized with the Sava GIS of ISRBC

Toolbox is under development – matching the requirements of the pilot actions

Following the requrements of the table-top exercise under development

Presentation of the baseline performance and simulation scenario for the TT exercise (planned role of the institutions) - map of the TT exercise

Regional workshop of the WACOM project

September 16th, 2021,

Slavonski Brod

Contents:

- Table-top exercise and scenarios (transboundary – accidental pollution and floods)
- Location and scenario of the event – Slavonski Brod (accidental pollution), Posavska region (floods)
- Map of pilot sites
- Table-top exercise participants and their role in the (sumulated) event response

exercises in the WACOM project (transboundary – accidental pollution and floods)

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- 5 table-top exercises:
  - Accidental pollution:
    - Zidani most, SI
    - **Slavonski Brod, RH**
    - Zenica, BA
  - Floods:
    - **Sava, Una, Vrbas**
    - Sava, Bosna, Drina, Kolubara

PURPOSE:

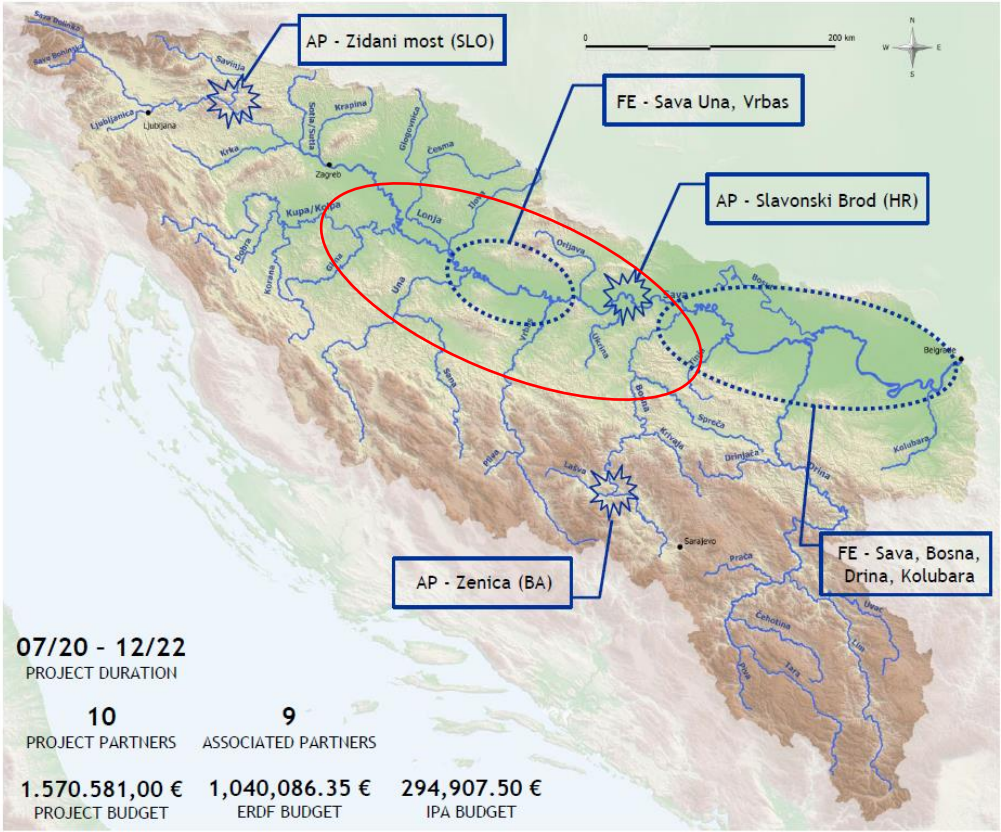
- To review the flood/accidental pollution multi agency transboundary response

PILOT ACTIONS

The WACOM toolbox will be tested and verified in 5 pilot actions in 4 countries.

Accidental Pollution (AP):
- from navigation in the area of Slavonski Brod (HR),
- from industrial facility in the area of Zenica (BA)
- from traffic accident in the area of Zidani most (SLO)

Transboundary flood event (FE):
- Sava, Una, Vrbas
- Sava, Bosna, Drina, Kolubara



2 Stožerske (simulacijske) vežbe u projektu WACOM:

1. Scenarij poplave na prekograničnom području CRO – BH

2. Izvanredno onečišćenje na prekograničnom području CRO – BH

1st TT EXERCISE: SCENARIJ POPLAVE– simulacija događaja poplave 2014

- Najave velikih kiša (DHMZ, FHMZ, RHMZ) – prognostički modeli
- Poplavni događaj HR-BA – trajanje više dana
  - Bujične poplave u BA
  - Sana, Una, Vrbas, Ukrina, Bosna – intenzivni porast
  - Sava – ugroženo šire područje uzvodno i nizvodno od Sl. Broda

- Aktiviranje Stožera civilne zaštite u BA i HR – na lokalnoj i nacionalnoj razini
- Uključivanje drugih pravnih osoba i operativnih snaga civilne zaštite
- Stalna komunikacija, razmjena informacija i suradnja HR-BA
- Problemi na terenu: nedostatak vreća,..
- Vodostaji rijeke Save u SLO

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2nd TT exercise: Scenario of the transboundary accidental pollution source in Slavonski Šamac/Šamac

- Grounding of the motor tanker „Siscia" on the Sava river at the location Slavonski Šamac/Šamac rkm 311,6-left bank
  - Type of the cargo: D2

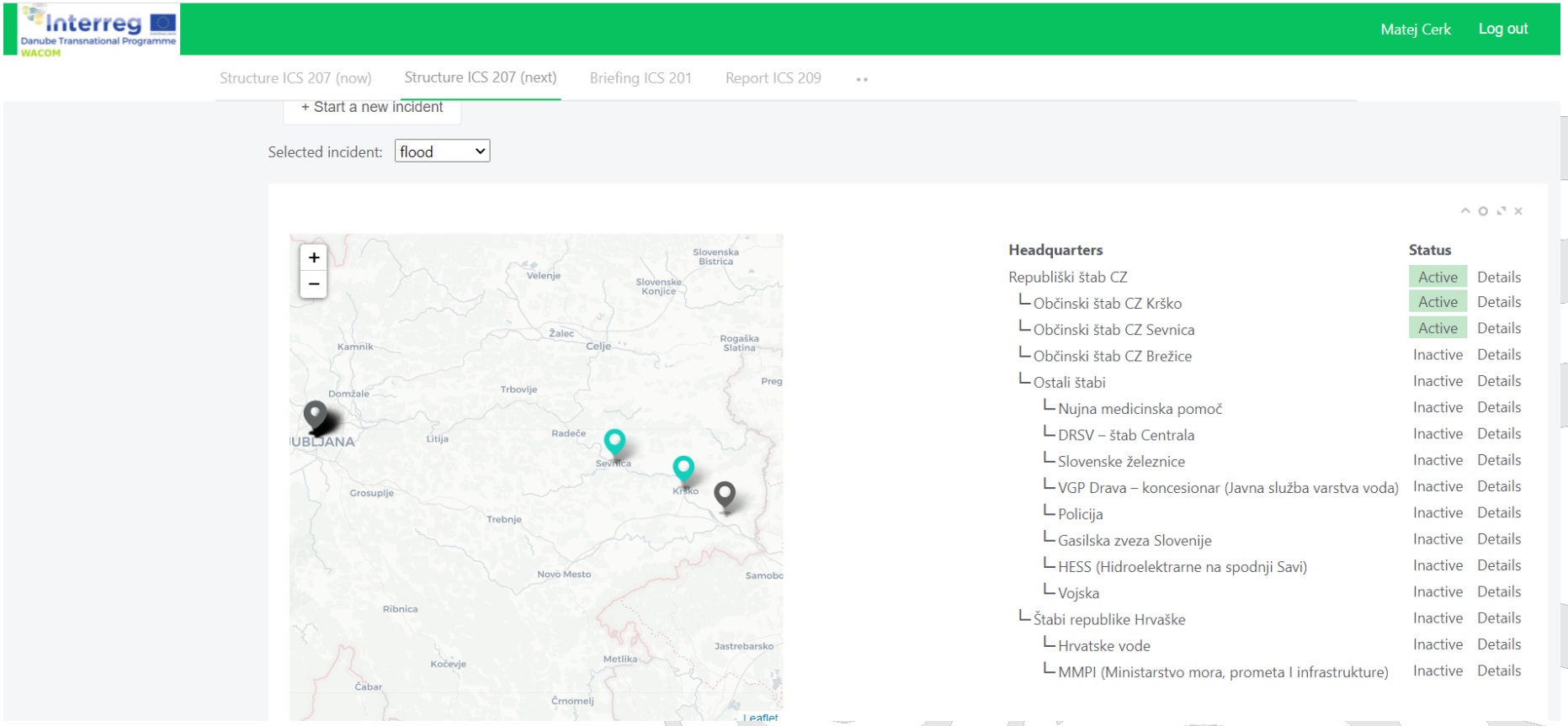
00t c

Scenario of the transboundary pollution source in Slavonski Šamac/Šamac

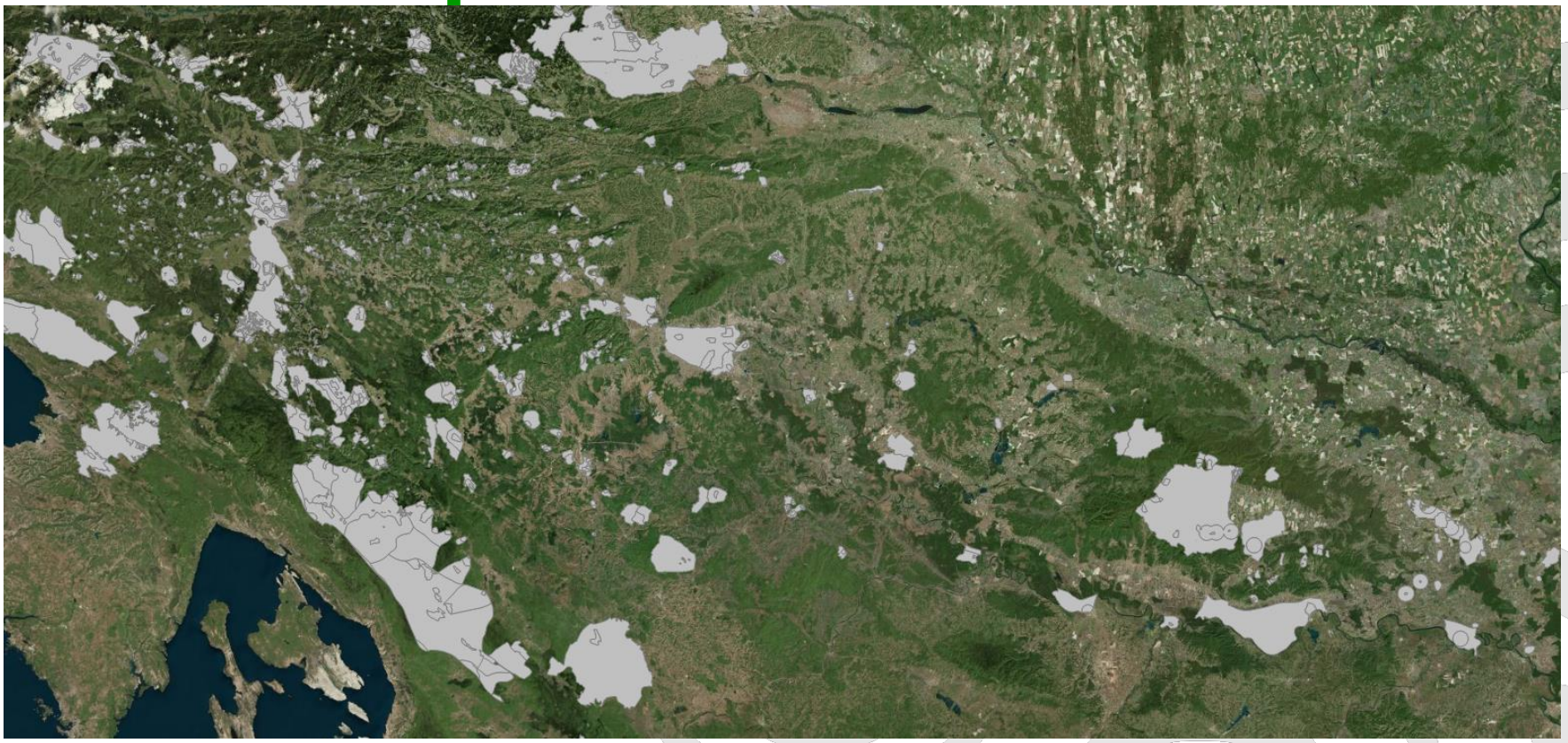
- Motor tanker „Sisc

Length	**84,5 m**
Breadth	8,73 m
Draught	2,6 m
Main engines/total	662 kw
Total cargo on board	1150 t

TT exercise Purpose: simulate information exchanges using WACOM toolbox



TT Exercise - Map of pilot sites – accidental pollution in Slavonski Brod



GIS – map of pilot sites

Map of pilot sites building on ISRBC Sava GIS database (floods)

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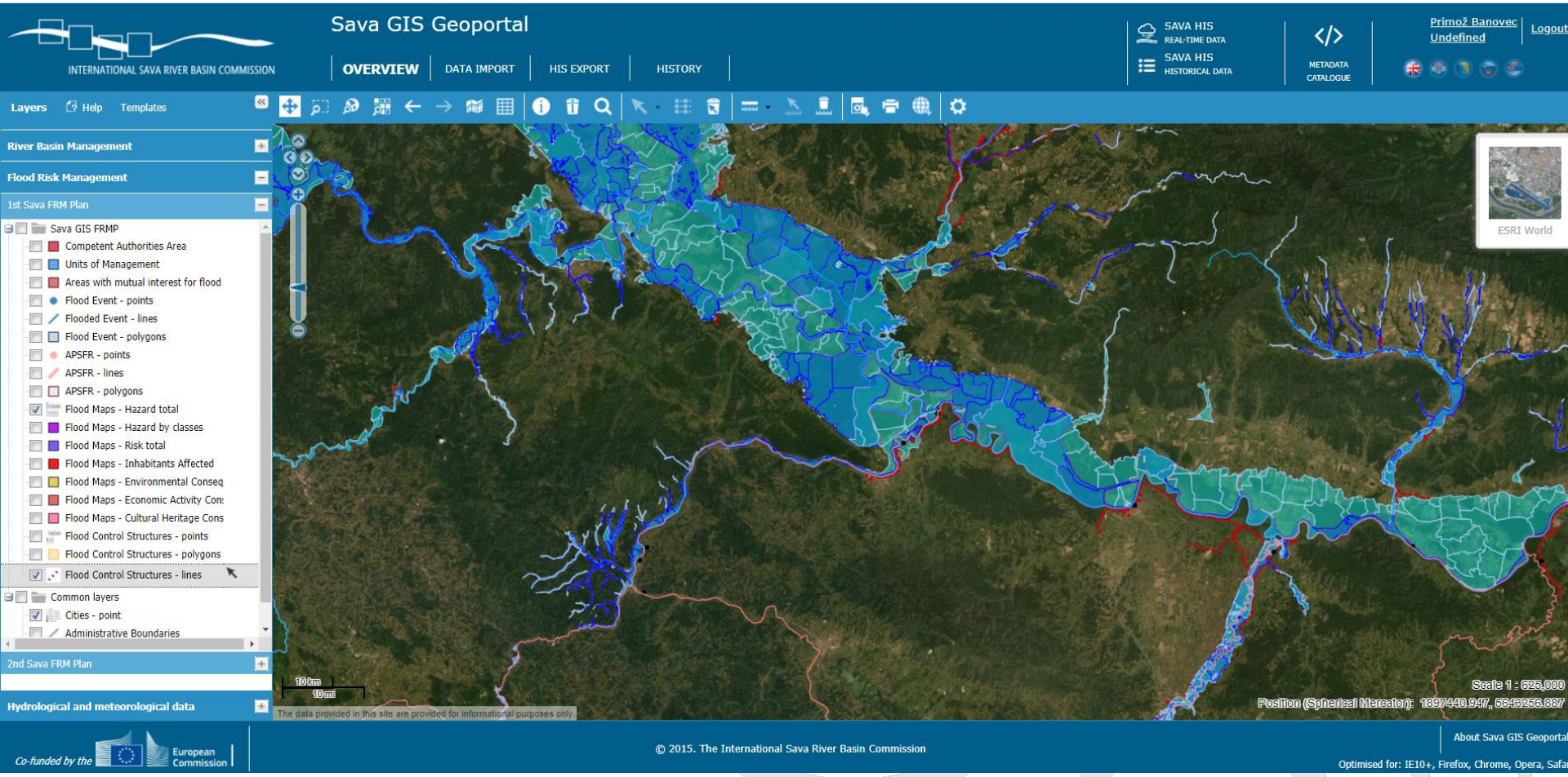


Map of pilot sites – accidental pollution in Slavonski Brod

- Basic topology, ortofoto, river network
- Potential sources of pollution (SEVESO, EID/IPPC, railway, roads, sewerage, pipelines…)
- Sensitive areas (drinking water protection zones, water abstraction rights, bathing waters, …)
- Response and mitigation measures location (GEŠP competence areas, river network access, …)

Table-top exercise participants and their roles:

- Project partners of the WACOM project involvode in these two TT exercises:
  - Univerza v Ljubljani (UL), SI
  - AZUR – Asociacija za upravljanje rizicima, BH
  - Hrvatske vode (HV), RH
  - Ministarstvo mora, prometa i indrastrukture RH (MMPI), RH
  - Savska komisija (ISRBC), international
  - RUCZ – Republička uprava civilne zaštite

Other participants are kindy invited (role: active or

WACOM Table-top exercise participants and their roles:

WACOM project partner	Basic role
Univerza v Ljubljani (UL), SI	Narrator/controller
AZUR	Narrator/controller
RUCZ – Republička Uprava Civilne Zaštite	Active participant
Hrvatske vode (HV), RH	Active participant
Ministarstvo mora, prometa i indrastrukture RH (MMPI), RH	Active participant
Savska komisija (ISRBC), international	Active participant

Role of the prticipants from target groups/stakeholders – after the break

Table-top exercise participants

Univerza v Ljubljani (UL), Slovenia and AZUR

Research institution

- Role in the TTX: **narrator/controller**

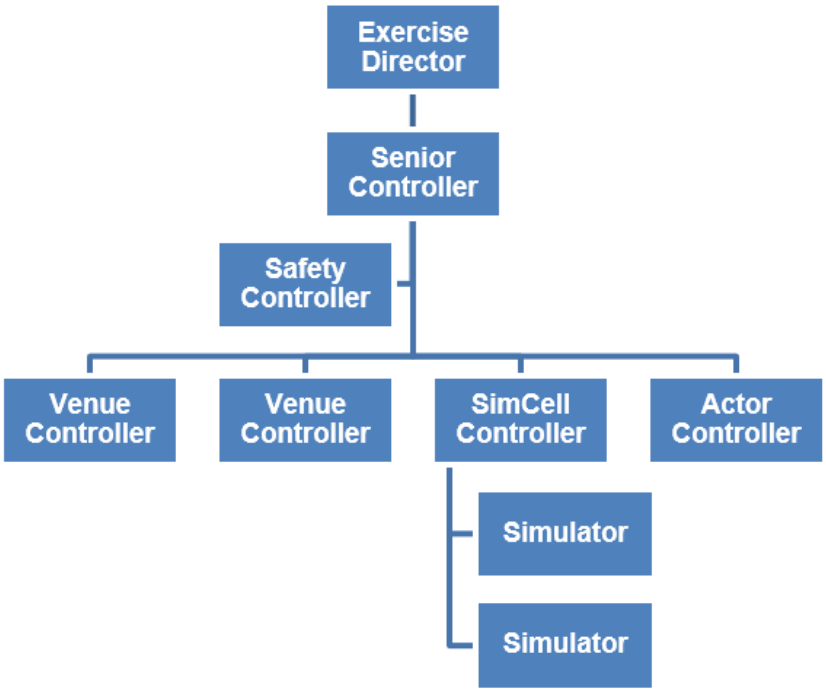
Exercise control maintains exercise scope, pace, and integrity during exercise conduct. The control structure in a well-developed exercise ensures that exercise play assesses objectives in a coordinated fashion at all levels and at all locations for the duration of the exercise.

- Controller package

Table-top exercise participants

Univerza v Ljubljani (UL), Slovenia and AZUR

Research institution – controller, narrator



ble-top exercise active participants

- **During the accident all participating institutions have to manage:**
  - **Technical processes**
  - **Legal process**
  - **Economic processes**

- **Using ICS Framework defining their internal structure supporting the overall incident:**
  - **Decision making framework (who is incident commander at the institution) and roles of the Incident commander staff (safety, PR, zveze)**
    - **Operations –** units implementing operational measures
    - **Planning** – nowcasting, situational awareness, maintenance of the span of control, overview of activated resources, **forecasting**
    - **Logistics** – procurement, cost service
    - **Administration/finance** – documentation service

Table-top exercise participants (ACTIVE participants - institution/agency/company in the multiagency response)

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Scenario of activation of different agencies (multi-agency response) with (aktiviranje sil in sredstev):

- **How the active participant is activated in the case of accidental pollution (activation pathways, internal buildup)?**
- **Which are the functions of the active participant (relative to the type of agency)? SOP-s and beyond.**
- **Which are planned/expected activities of the active participant in the case of large scale accidental pollution (ZRP)?**
- **With whom will the active participant communicate and coordinate its work?**

Postupci u slučaju prekograničnih iznenadnih onečišćenja voda
i
Obrana od poplava u Republici Hrvatskoj

Hrvatske vode
Marijana Gubić Horvat
Tomislav Novosel

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Project co-funded by European Union funds (EDRF, IPA)

Onečišćenja voda

- plovila
- plutajući objekti na vodnim putevima unutarnjih voda
- luke unutarnjih voda

Zaštita voda provodi se po odredbama propisa kojim se uređuje plovidba i luke unutarnjih voda

- ciljevi zaštite voda sukladno Zakonu o vodama
- nadzor nad stanjem voda
- obavješćivanje o prekograničnim utjecajem na vode i vodni okoliš

Glavni međunarodni centar za uzbunjivanje u Republici Hrvatskoj - PIAC

Ustrojen u okviru Danube AEWS-a (ICPDR; ISRBC)

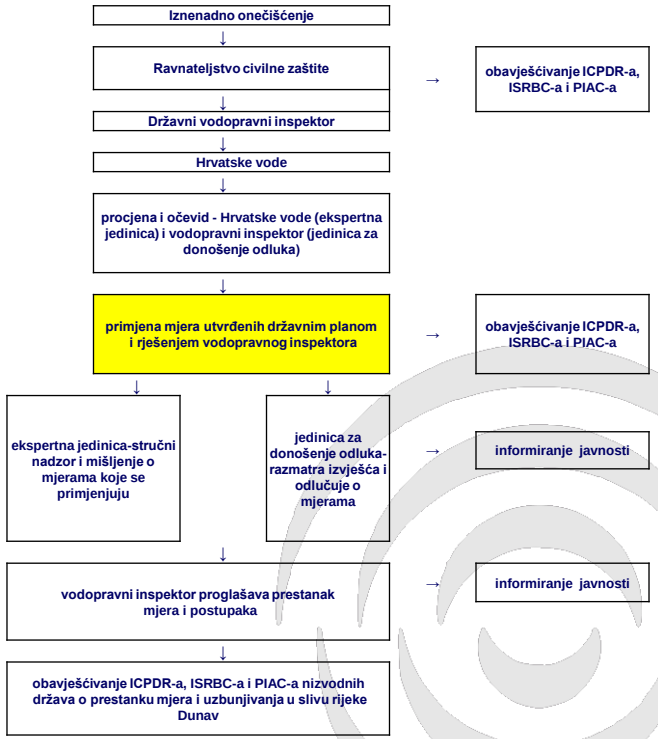
PIAC 07

Funkcijske jedinice Glavnog centra su:

- **Komunikacijska jedinica** (obavlja poslove operativnog dežurstva, prijma i prijenosa informacija) – sjedište u Ravnateljstvu civilne zaštite
- **Ekspertna jedinica** (obavlja poslove stručne prosudbe mogućih posljedica onečišćenja voda, organizira i koordinira provedbu mjera te izrađuju operativni plan sanacije) – sjedište u Hrvatskim vodama
- **Jedinica za donošenje odluka** (odlučuje o poduzimanju potrebnih mjera, proglašava stupanj ugroženosti voda i koordinira rad funkcijskih jedinica Glavnog centra) – sjedište u ministarstvu nadležnom za vodno gospodarstvo i Državnom inspektoratu

Iznenadno onečišćenja nastalo unutar granica Republike Hrvatske s mogućim prekograničnim posljedicama

Postupak



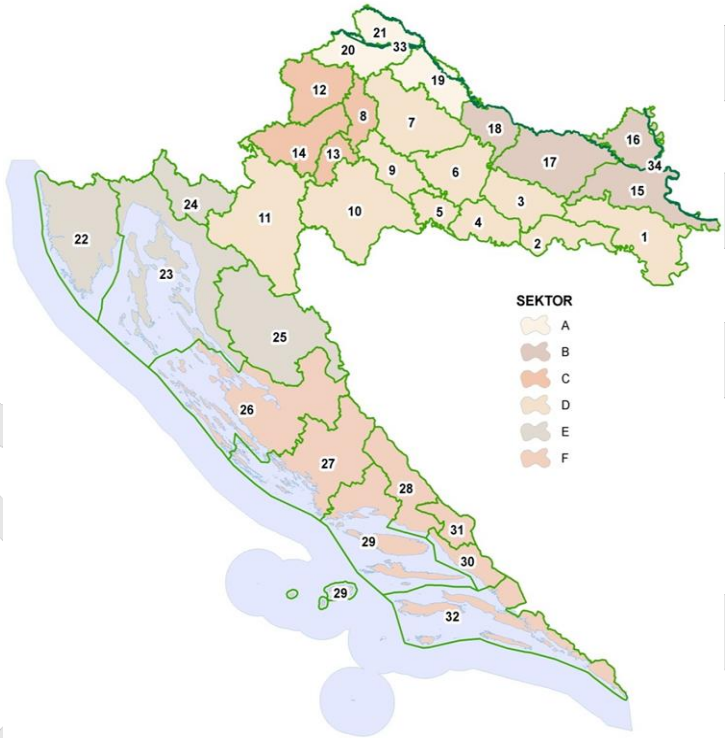
OBRANA OD POPLAVA

- Nositelji obrane od poplava:
  - Ministarstvo nadležno za vodno gospodarstvo
  - Hrvatske vode
  - Certificirane tvrtke za radove u provedbi preventivne, redovne i izvanredne obrane od poplava
  - Državni hidrometeorološki zavod
  - Ravnateljstvo civilne zaštite
  - Jedinice lokalne i regionalne samouprave
  - Druga nadležna tijela državne uprave
- sukladno Zakonu o vodama obranom od poplava upravljaju Hrvatske vode

- operativno upravljanje rizicima od poplava i neposredna provedba mjera obrane od poplava utvrđeno je:
  - Državnim planom obrane od poplava – donosi Vlada RH
  - Glavnim provedbenim planom obrane od poplava – donose Hrvatske vode
  - Provedbenim planovima obrane od poplava branjenih područja – donose Hrvatske vode

- svi ovi planovi javno su dostupni na internetskim stranicama Hrvatskih voda www.voda.hr

- obrana od poplava u Republici Hrvatskoj provodi se po teritorijalnim jedinicama za obranu od poplava:
  - vodnim područjima
  - sektorima
  - branjenim područjima
  - dionicama
- Republika Hrvatska podijeljena je na 2 vodna područja, 6 sektora i 34 branjena područja
- branjena područja podijeljena su na veći broj dionica



RUKOVOĐENJE OBRANOM OD POPLAVA

- za upravljanje obranom od poplava odgovorni su glavni rukovoditelj obrane od poplava, voditelj Glavnog centra obrane od poplava i rukovoditelji obrane od poplava teritorijalnih jedinica (sektori, branjena područja i dionice)
- glavni rukovoditelj obrane od poplava je generalni direktor Hrvatskih voda
- svaki sektor, branjeno područje te svaka pojedina dionica ima svog rukovoditelja obrane od poplava i njegovog zamjenika
- raspored imenovanih rukovoditelja obrane od poplava i njihovih zamjenika sastavni je dio Glavnog provedbenog plana obrane od poplava

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IZVOD IZ GLAVNOG PROVEDBENOG PLANA OBRANE OD POPLAVA

Dionica obrane broj	VODOTOK Obala Naziv dionice Stacionaža Dužina Ukupna dužina	OBJEKTI NA KOJIMA SE PROVODE MJERE OBRANE OD POPLAVA: Nasipi (Naziv nasipa, Naziv dionice, Stacionaža po vodotoku, Stacionaža po nasipu, Ukupna dužina nasipa)	OBJEKTI NA DIONICI	PODRUČJE UGROŽENO POPLAVOM: Županija, Općine, naselja i objekti	Mjerodavni vodomjeri i kriteriji za proglašenje mjera obrane od poplava: V - vodomjer. km. (aps.kota „0") P - Pripremno stanje R - Redovna obrana I - Izvanredna obrana IS - Izvanredno stanje M - Najviši zabilježeni vodostaj
1	2	3	4	5	6
BRANJENO PODRUČJE 2 MALI SLIV BRODSKA POSAVINA					
D.2. 1.	**rijeka Sava, Lo.:** Babina Greda - Novi Grad: rkm 305+600 - 330+000 (24.400 km)	**Lijevi savski nasip Bič - bosutskog polja:** *rkm 305+600 - 330+000* km 67+720 - 86+620 (18.900 km)	***rkm 317+550* km 74+190** most Slavonski Šamac-Bosanski Šamac, ***rkm 318+430* km 75+156** vodočuvarnica Sl. Šamac, ***rkm 319+650*** AVS Slavonski Šamac, ***rkm 329+943* km 86+491** vodočuvarnica Novi Grad	**Brodsko-posavska:** Sl. Šamac, Kruševica, Sikirevci, Jaruge	**V - Sl. Šamac,** rkm 319+650 (80.70) **P = +400 R = +670 I = +770 IS= +870 M** = +891 (17.05.2014.)
D.2. 2.	**rijeka Sava, Lo.:** Novi Grad - Ušće ZLK Bič polja: rkm 330+000 - 345+200 (15.200 km)	**Lijevi savski nasip Bič - bosutskog polja:** *rkm 330+000 - 345+200* km 86+620 - 103+350 (16.730 km)	***rkm 340+350* km 96+378** vodočuvarnica Svilaj, ***rkm 345+200* km 103+350** brana Gajina	**Brodsko-posavska:** Novi Grad, Svilaj, Oprisavci	**V - Sl. Brod,** rkm 377+900 (81.80) **P = +400 R = +750 I = +850 IS= +950 M** = +939 (18.05.2014.)
D.2. 3.	**rijeka Sava, Lo.:** Ušće ZLK Bič polja - ušće Glogove (Ruščica): rkm 345+200 - 369+000 (23.800 km)	**Lijevi savski nasip od spoja s nasipom ZLK Bič polja do Ruščice;** *rkm 345+200 - 369+000* km 5+220 - 23+000 (17.780 km)	***rkm 345+200* km 5+220** brana Gajina, ***rkm 347+700* km 7+515** vodočuvarnica Poljanci, ***rkm 367+154* km 20+984** vodočuvarnica Bebrina, ***rkm 369+000* km 23+000** ustava Glogova	**Brodsko-posavska:** Poljanci, D. Bebrina, Klakar, G. Bebrina, Ruščica	**V - Sl. Brod,** rkm 377+900 (81.80) **P = +400 R = +750 I = +850 IS= +950 M** = +939 (18.05.2014.)
D.2. 4.	**rijeka Sava, Lo.:** ušće Glogove (Ruščica) - silos: rkm 369+000 - 370+680 (1.680 km)	**Savska visoka obala;** *rkm 369+000 - 370+680* km 23+000 - 24+410 (1.410 km)	***rkm 369+000* km 23+000** ustava Glogova, ***rkm 369+000 - 370+680* km 23+000 - 24+410** pristanište tjelil, ***rkm 370+605* km 24+335** čep	**Brodsko-posavska:** Ruščica, Gornja Vrba	**V - Sl. Brod,** 377+900 (81.80) **P = +400 R = +750 I = +850 IS= +950 M** = +939 (18.05.2014.)
D.2. 5.	**rijeka Sava, Lo.:** silos - ušće Istočnog lateralnog kanala Jelas polja: rkm 370+680 - 371+450 (0.770 km)	**Lijevi savski nasip od visoke obale do spoja s lijevim nasipom Istočnog lateralnog kanala;** *rkm 370+680 - 371+450* km 24+580 - 25+390 (0.810 km)		**Brodsko-posavska:** Slavonski Brod	**V - Sl. Brod,** rkm 377+900 (81.80) **P = +400 R = +750 I = +850 IS= +950 M** = +939 (18.05.2014.)
D.2. 6.	**rijeka Sava, Lo.:** Ušće Istočnog lateralnog kanala Jelas polja - C.S. Migalovci: rkm 371+450 - 386+000 (14.550 km)	**Lijevi savski nasip Jelas polja od spoja s nasipom ILK JP do CS Migalovci;** *rkm 371+450 - 386+000* km 1+580 - 14+180 (12.600 km)	***rkm 376+920 – 377+963* km 5+100 – 6+200** obalоutvrda Sl. Brod, ***rkm 371+450* km 1+580** ispust, ***rkm 377+800* km 6+022** čep, ***rkm 377+900*** AVS Slavonski Brod, ***rkm 378+000* km 6+237** most Sl. Brod-B.Brod, ***rkm 378+100* km 6+366** ustava Mrsunja, ***rkm 378+424* km 6+700** CS Mrsunja, skladište ***rkm 381+550* km 10+000** most viseći-rafinerija B. Brod.	**Brodsko-posavska:** Slavonski Brod	**V - Sl. Brod,** 377+900 (81.80) **P = +400 R = +750 I = +850 IS= +950 M** = +939 (18.05.2014.)

BRANJENO PODRUČJE 2:

PODRUČJE MALOGA SLIVA BRODSKA POSAVINA

Rukovoditeljica obrane od poplava	**Marica Babić,** dipl.ing.građ., Hrvatske vode, VGO za srednju i donju Savu, VGI Brodska Posavina, Slavonski Brod
Zamjenik rukovoditeljice	**Matija Miletić,** mag.ing.aedif., Hrvatske vode, VGO za srednju i donju Savu, VGI Brodska Posavina, Slavonski Brod
Centar obrane od poplava	VGO za srednju i donju Savu, Zagreb, Ulica grada Vukovara 220 telefon: 01/6151-778 telefax: 01/6151-783
Pravna osoba za provedbu mjera obrane od poplava i rukovoditelji na branjenom području	**Brodska Posavina d.d.,** Slavonski Brod Šetalište braće Radić 22, 35000 Slavonski Brod telefon: 035/446-776 telefax: 035/446-385 Rukovoditelj obrane od poplava: **Ivan Čosić,** mag.ing.aedif. Zamjenik rukovoditelja obrane od poplava: **Mato Pavić,** ing.građ.
Podcentar obrane od poplava	Hrvatske vode, VGO za srednju i donju Savu VGI Brodska Posavina, Slavonski Brod Šetalište braće Radić 22 35000 Slavonski Brod telefon: 035/446-521, 035/446-524 telefax: 035/446-597
Vodočuvarnice	Slavonski Šamac, Novi Grad, Svilaj, Oprisavci, Poljanci, Gornja Bebrina, Migalovci, Dubočac, Slavonski Kobaš, CS Mrsunja, CS Grlić, CS Dubočac

DIONICA: D.2.1.

Rukovoditelj: **Đuro Štefančić,** ing.građ., Hrvatske vode, VGO za srednju i donju Savu, VGI Brodska Posavina, Slavonski Brod
Zamjenik: **Igor Tomašević,** dipl.ing.građ., Brodska Posavina d.d., Slavonski Brod

DIONICE: D.2.2. i D.2.9.

Rukovoditelj: **Đuro Štefančić,** ing.građ., Hrvatske vode, VGO za srednju i donju Savu, VGI Brodska Posavina, Slavonski Brod
Zamjenik: **Vlado Rečić,** dipl.ing.građ., Brodska Posavina d.d., Slavonski Brod

DIONICE: D.2.3., D.2.4., D.2.5., D.2.10. i D.2.14.

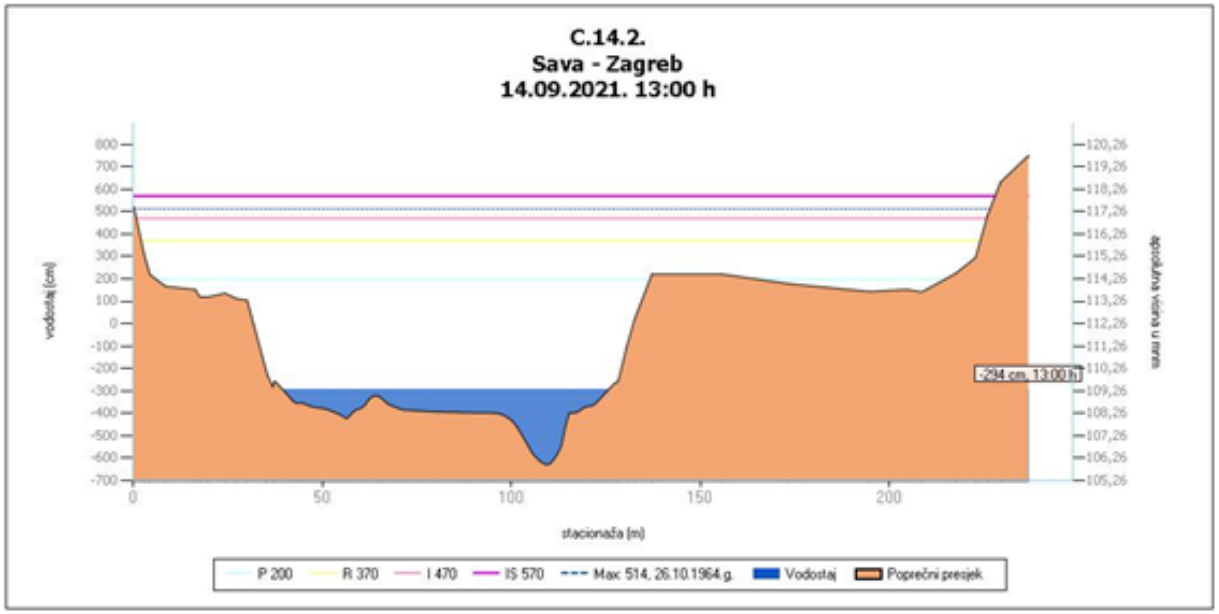
Rukovoditelj: **Stipo Ćurić,** ing.građ., Hrvatske vode, VGO za srednju i donju Savu, Slavonski Brod
Zamjenik: **Antun Đamić,** građ.teh., Brodska Posavina d.d., Slavonski Brod

- Glavni provedbeni plan obrane od poplava za svaku dionicu utvrđuje mjerodavne vodomjere i kriterije za proglašenje mjera obrane od poplava
- u ovisnosti o visini vodostaja razlikuju se četiri stupnja obrane od poplava:

1. **Pripremno stanje**
2. **Redovna obrana od poplava**
3. **Izvanredna obrana od poplava**
4. **Izvanredno stanje**

GORNJA SAVA

Dionica	Vodotok	Postaja	Funkcija	Mjerna jedinica	P	R	I	IS	Razdoblje obrade max	Max	Datum max	Zadnje očitanje	Vrijeme zadnjeg očitanja
C.14.2.	Sava	Zagreb	Mjerodavna	cm	200	370	470	570	1900.-2015.	514	26.10.1964.	-294	14.09.2021. 13:00



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SUSTAV OBRANE OD POPLAVA

- 10.200 km vodotoka I. reda
- 21.900 km vodotoka II. reda
- 4.100 km obrambenih nasipa
- 60 višenamjenskih akumulacija ukupnog volumena od 1,0 milijardi m^3
- 44 brdske retencije
- **5 velikih prirodnih retencija ukupnog volumena većeg od 2,0 milijardi m^3 (Odransko polje, Lonjsko polje, Mokro polje, Zelenik i Kopački rit)**
- 3 velika odteretna kanala (Sava-Odra, Lonja-Strug, Kupa-Kupa)
- 2 spojna kanala (Zelina-Lonja-Glogovnica-Česma, Ilova-Pakra)
- 900 km lateralnih kanala
- 9 odvodnih tunela ukupne duljine od oko 17,3 km
- veliki broj manjih regulacijskih i zaštitnih vodnih građevina

- **velika važnost u obrani od poplava se pridaje očuvanju prostranih poplavnih područja u Republici Hrvatskoj, odnosno prirodnih retencija, koje prihvaćaju velike količine poplavnih voda i na taj način smanjuju opasnost od pojave poplava**

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PRIRODNI RETENCIJSKI PROSTORI I SUSTAV OBRANE OD POPLAVA SREDNJEG POSAVLJA

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- Sudjelovanje drugih sudionika se omogućava putem Ravnateljstva civilne zaštite, te Stožera civilne zaštite jedinica lokalne i regionalne samouprave, odnosno putem odluke čelnika jedinica lokalne i regionalne samouprave o obvezi sudjelovanja pojedinih pravnih osoba i građana s ugroženih područja.
- Operativnom suradnjom Hrvatskih voda, Stožera civilne zaštite područnih jedinica i Ravnateljstva civilne zaštite omogućava se bolja koordinacija i uspješno korištenje ukupnih snaga na terenu, uz jasnu podjelu zadataka i nadležnosti, čime se postiže veća operativnost snaga na terenu. Osim lokalne i regionalne suradnje, za potrebe pripreme i koordinacije obrane od poplava na nacionalnoj razini održavaju se i sjednice Stožera civilne zaštite Republike Hrvatske

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Postupci u slučaju prekograničnih iznenadnih onečišćenja voda u Republici Hrvatskoj

Lana Deraković-Rakas

REPUBLIKA HRVATSKA
Ministarstvo mora, prometa i infrastrukture

mmpi.gov.hr

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Uloga Ministarstva mora, prometa i infrastrukture u slučaju onečišćenja voda

→potpora u smislu pružanja pravnih smjernica → zakonska osnova i protokoli za zaštitu od onečišćenja u RH:

- →Zakon o vodama
- →Državni plan mjera za slučaj izvanrednih i iznenadnih onečišćenja voda
- →Plan zaštite i spašavanja na području Republike Hrvatske
- →Zakon o potvrđivanju Protokola o sprečavanju onečišćenja voda uslijed plovidbe uz Okvirni sporazum u slivu rijeke Save (međunarodni ugovor)
- →Zakon o plovidbi i lukama unutarnjih voda → čl. 12., st. 1. propisano je sljedeće:

"Zabranjeno je s plovila odbacivati, izbacivati, izlijevati ili ispuštati otpad, predmete ili tvari koje mogu ugroziti sigurnost plovidbe, ošteti brodove, ljude ili onečistiti okoliš."

Protokol djelovanja za područje unutarnje plovidbe:

→u slučaju kada je onečišćenje nastalo unutar granica Republike Hrvatske s mogućim prekograničnim posljedicama sukladan je sa procedurama opisanim u Državnom planu mjera za slučaj izvanrednih i iznenadnih onečišćenja voda (NN 5/11):

- brodar u što kraćem roku obavješćuje Lučku kapetaniju o onečišćenju koje je uočeno ili uzrokovano,
- nadležna Lučka kapetanija obavješćuje Ministarstvo unutarnjih poslova – Ravnateljstvo civilne zaštite
- nadležna Lučka kapetanija odlazi na uvidaj mjesta onečišćenja

Government of Republic of Srpska
Civil Protection Administration

Interreg
Danube Transnational Programme
WACOM

Water Contingency Management in the Sava River Basin

Slavonski Brod September 16, 2021

Definisanje uloge Republičke uprave civilne zaštite Republike Srpske

Republička uprava civilne zaštite Republike Srpske

Danijela Ždrale

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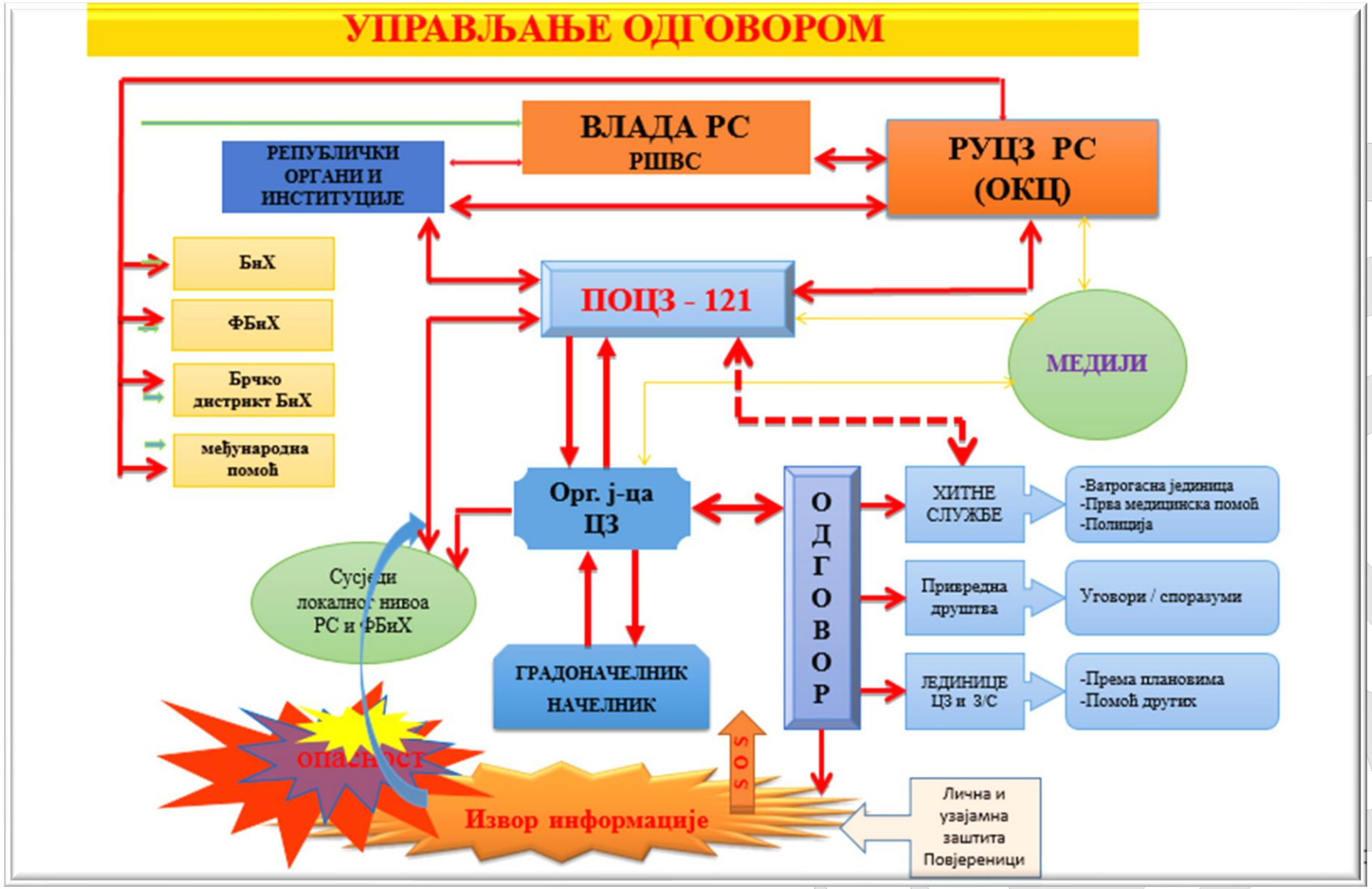
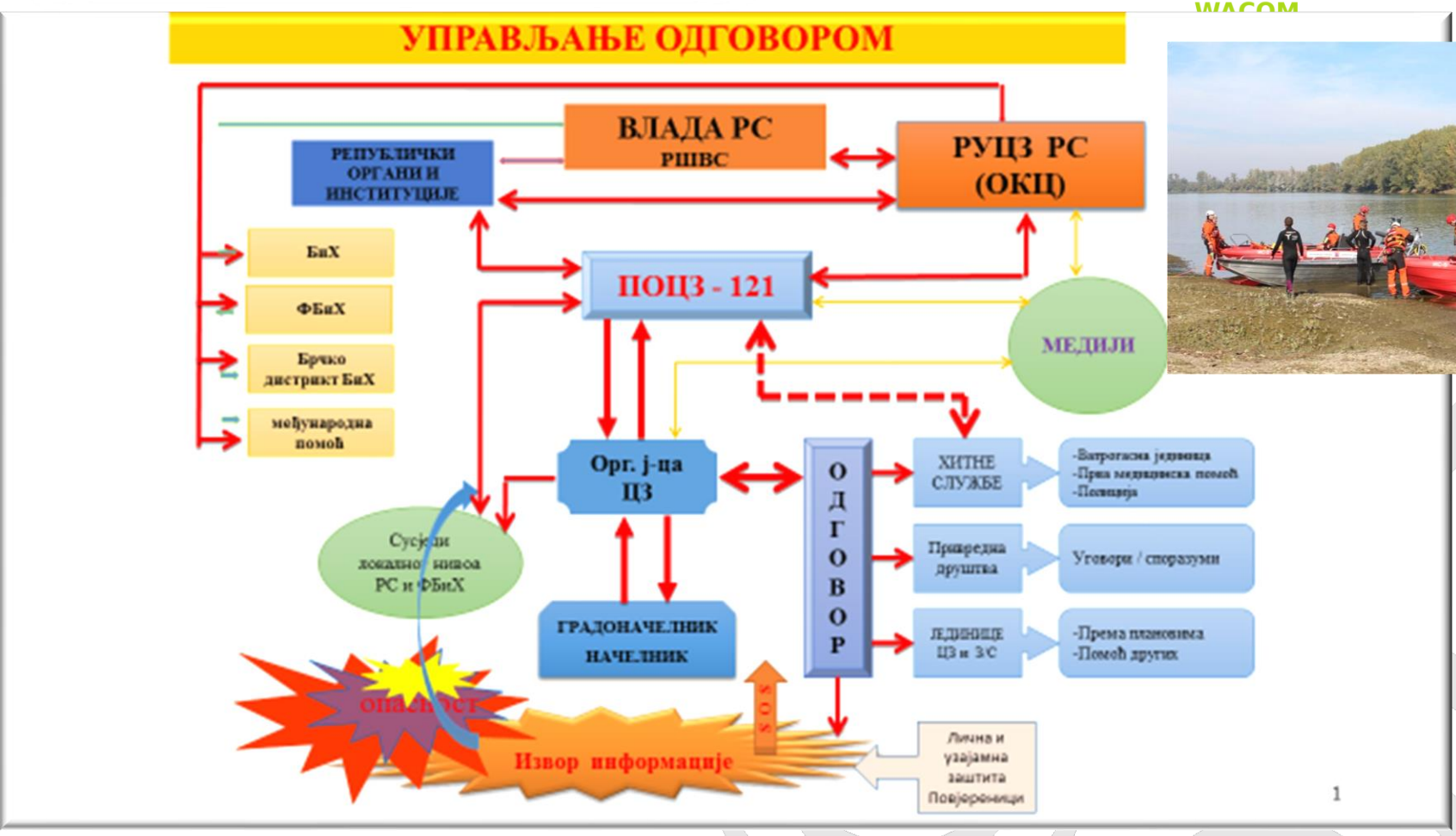

УПРАВЉАЊЕ ОДГОВОРОМ
ВЛАДА РС
РШВС
РУЦЗ РС
(ОКЦ)
РЕПУБЛИЧКИ ОРГАНИ И ИНСТИТУЦИЈЕ
БиХ
ФБиХ
Брчко дистрикт БиХ
међународна помоћ
ПОЦЗ - 121
МЕДИЈИ
Орг. ј-ца ЦЗ
Сусједи локалног нивоа РС и ФБиХ
ГРАДОНАЧЕЛНИК НАЧЕЛНИК
ОДГОВОР
ХИТНЕ СЛУЖБЕ
-Ватрогасна јединица
-Прва медицинска помоћ
-Полиција
Привредна друштва
Уговори / споразуми
ЈЕДИНИЦЕ ЦЗ и З/С
-Према плановима
-Помоћ других
SOS
Извор информације
Лична и узајамна заштита Повјереници



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Transboundary cooperation in the Sava River Basin in Accident Prevention

Regional workshop –BA/HR

September 13, 2021

Samo Grošelj, Goran Šukalo, Mirza Šarac

ISRBC

WACOM- Water Contingency Management in the Sava River Basin

Project co-funded by European Union funds (EDRF, IPA)

Protocol on Prevention of the water Pollution Caused by Navigation

- **Content:**
  - basic regulation for vessels
  - ports equipment and other reception facilities
  - spill response
  - monitoring
  - transboundary cooperation

- **Signed, June 2009, entered into force October 2017**

- **Art. 9 of the Protocol:**

  2.The Parties, by means of the Sava Commission, shall **develop a program of joint action to prevent water pollution** from shipping, and **establish a mutual information system**.

  3.When a **competent authority** becomes aware of a threat of transboundary pollution of the water in the Sava River Basin, it **shall immediately notify** all competent authorities of the Parties downstream of the location, quantity and substances of pollution, using all means of communication including the shipping radio network for early warning of the pollution in progress.

Protocol on Emergency Situations to FASRB

- **Scope**
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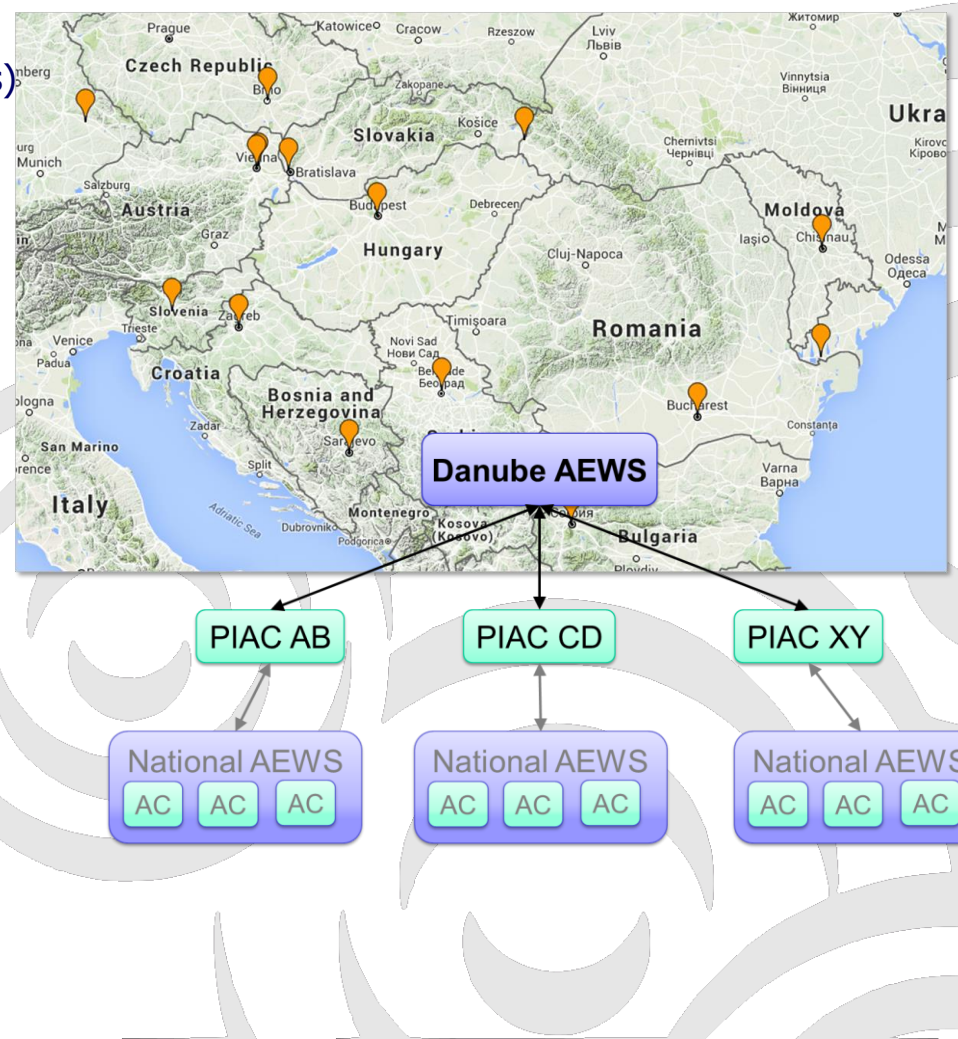
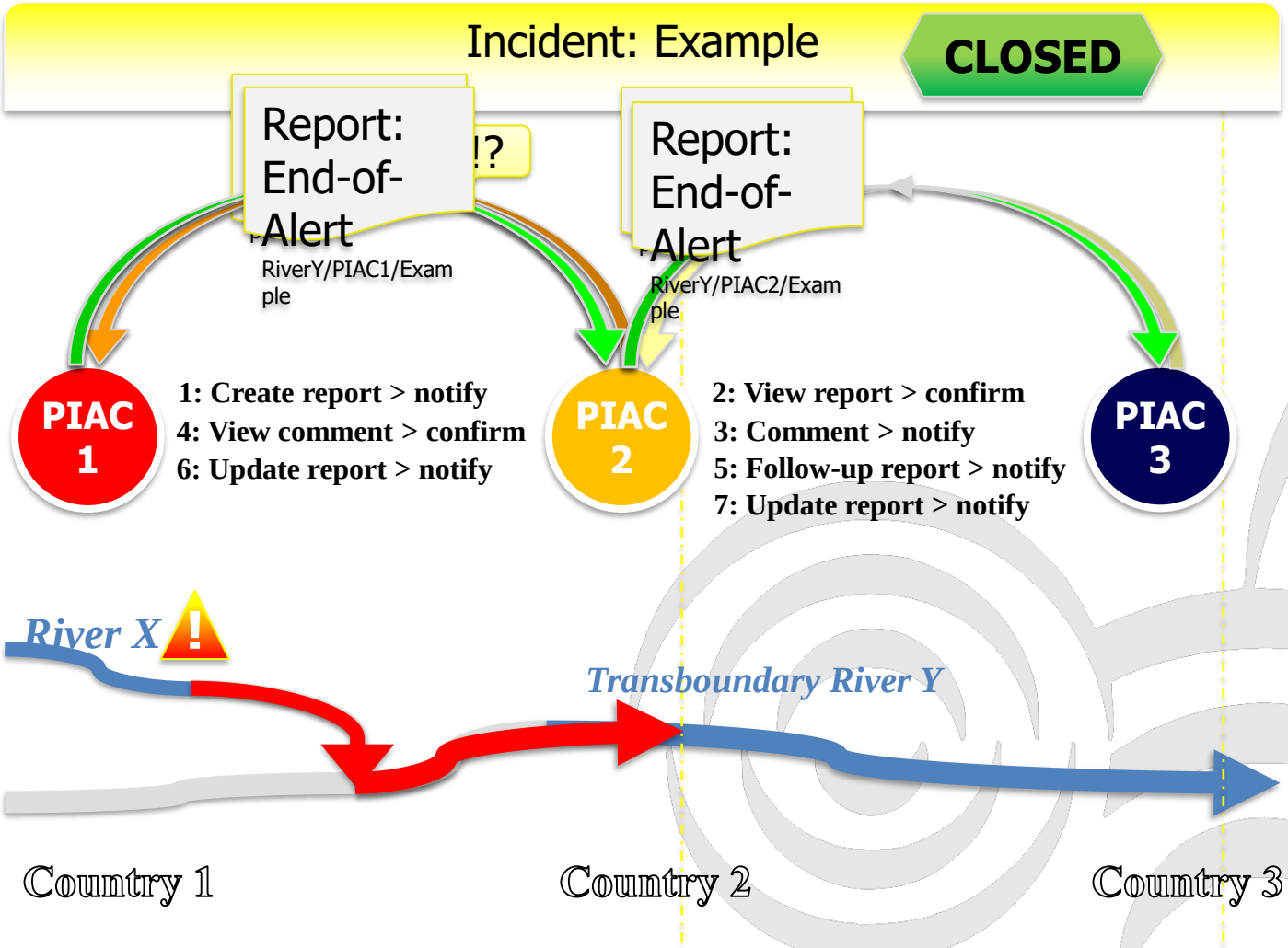
Danube AEWS

- **Communication system for:**
  - Principal International Alert Centres (PIACs)
  - during accidental pollution incidents
  - on rivers in the Danube River Basin

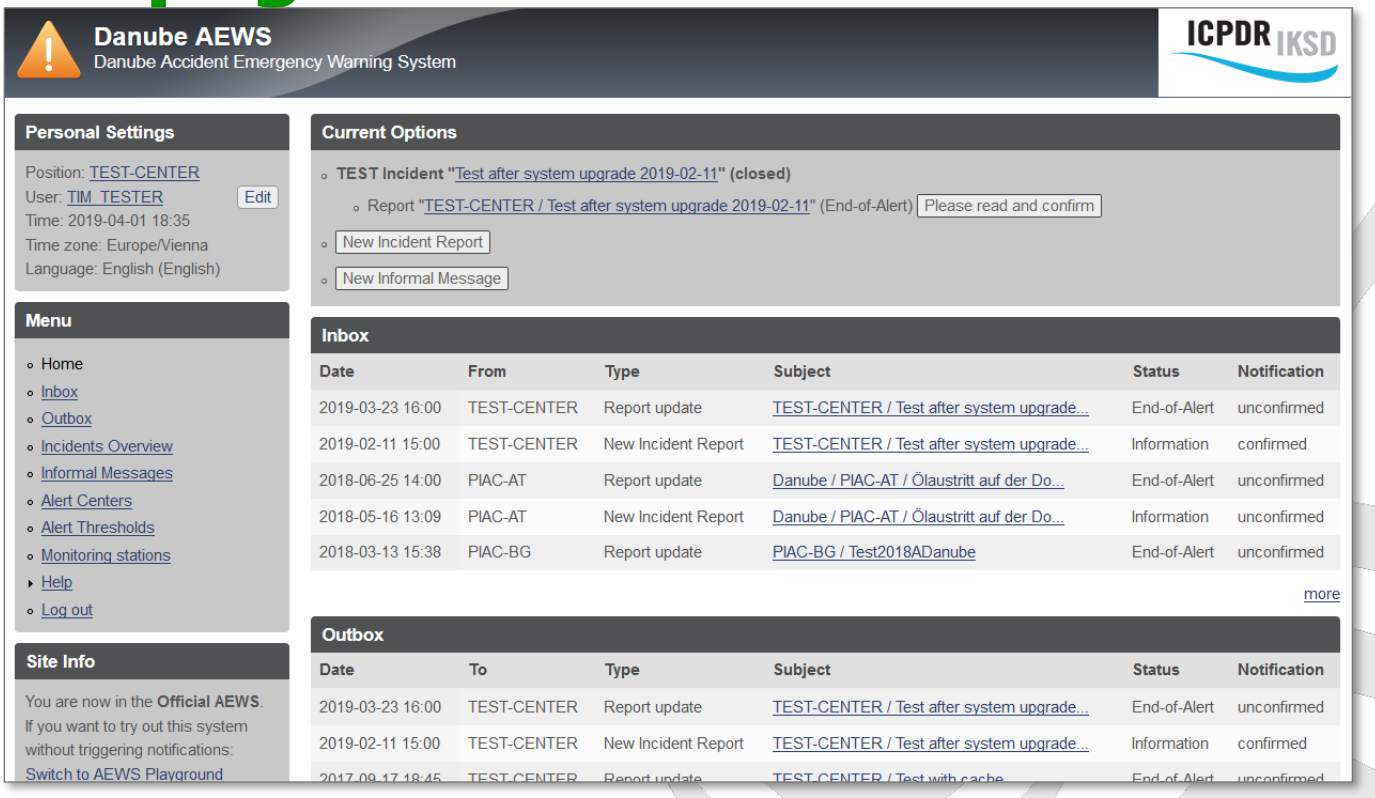
- **Web-based system =**
  - Centrally maintained by ICPDR
  - Low requirements for users

More information on ICPDR web page.




Incident: Example
CLOSED
Report: End-of-Alert
RiverY/PIAC1/Example
Report: End-of-Alert
RiverY/PIAC2/Example
PIAC 1
PIAC 2
PIAC 3
1: Create report > notify
4: View comment > confirm
6: Update report > notify
2: View report > confirm
3: Comment > notify
5: Follow-up report > notify
7: Update report > notify
River X
Transboundary River Y
Country 1
Country 2
Country 3

Homepage of the AEWS



Protocol on Flood Protection

Entered into force in Nov 2015

- **Flood Risk Management Plan** (EU Flood Directive)
- **Flood forecasting, warning and alarm system**
- **Exchange of information**
- **Flood defence emergency situations** (incl. mutual assistance)

The Protocol states:

The Parties shall establish a Flood Forecasting, Warning and Alarm System in the Sava River Basin and to jointly undertake all necessary actions for establishment of the System, including the development of the project documentation

The Sava Commission shall coordinate the activities on establishment of the System

After the System is established, the **Parties shall ensure its regular maintenance and performance control**, as well as regular training of the engaged personnel, with application of joint standards

In case of flood that induces or may induce transboundary impact, the **Parties shall, without delay, inform the Parties that might be affected by this impact, through the System** or any other appropriate manner in line with the agreed procedure for exchange of information important for flood defence

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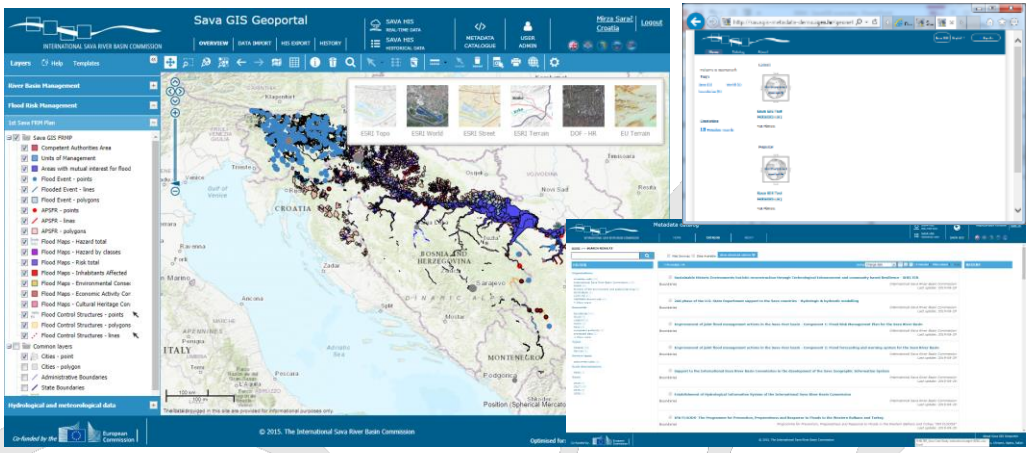
Sava GIS and Sava HIS

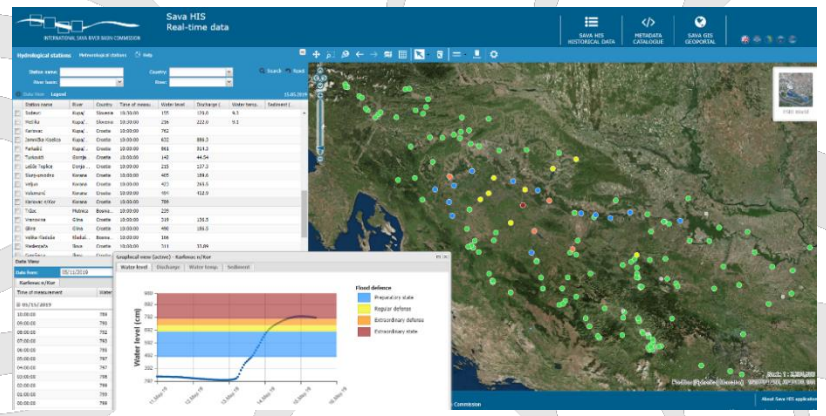
Sava GIS – Geographical Information System
www.savagis.org

- **Flood risk management** database
  - Historical flood events
  - Areas with potential significant flood risk
  - Flood hazard and risk maps
  - Flood Risk Management Plan measures
  - Flood protection structures
- **Metadata** catalogue

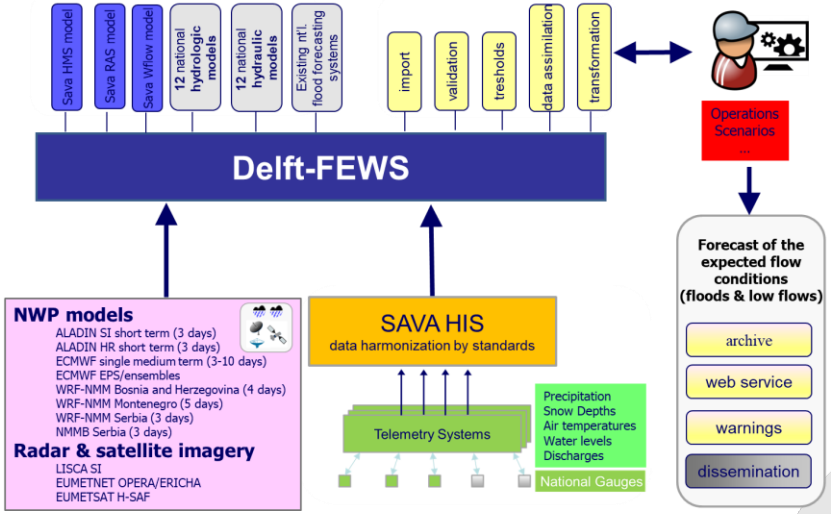


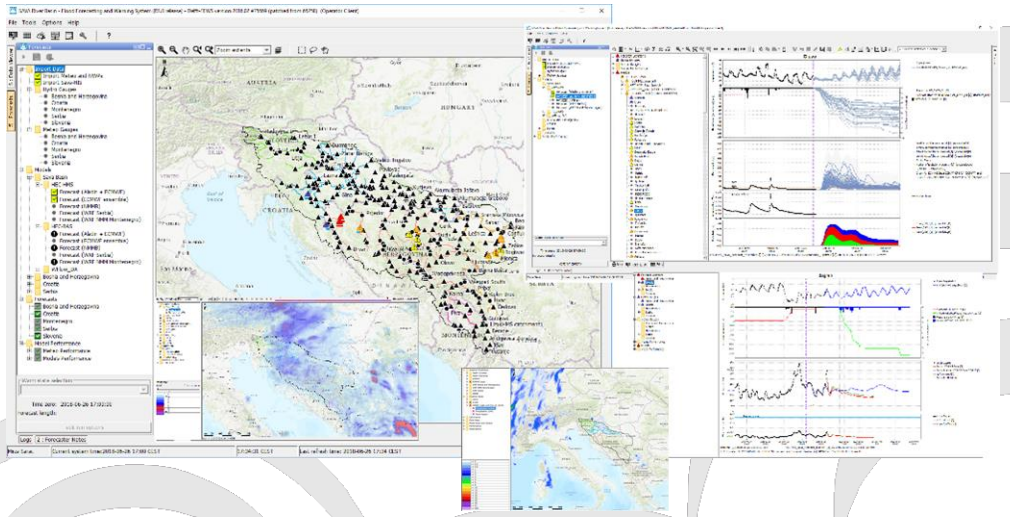
Sava HIS – Hydrological Information System
www.savahis.org

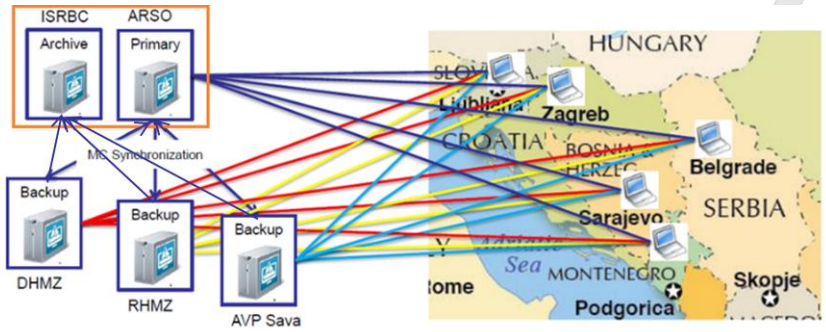
- **Real-time** data (hydrological and meteorological)
  - Hourly, daily values
  - Treshholds (for water levels)
- **Historical** data (hydrological and meteorological)
  - Daily, montly, yearly values
  - Statistics



Sava FFWS







Country	Institution	Role	
Slovenia	ARSO, Ljubljana	User	Primary Host
Croatia	DHMZ, Zagreb	User	3rd Backup Host
	Hrvatske vode, Zagreb	User	
Bosnia and Herzegovina	AVP Sava, Sarajevo	User	2nd Backup Host
	FHMZ, Sarajevo	User	
	RHMZRS, Banja Luka	User	
	JU Vode Srpske, Bijeljina	User	
Serbia	RHMZ, Belgrade	User	1stBackup and Testing Host
	PWMCSrbijavode, Belgrade	User	
Montenegro	ZHMS, Podgorica	User	
	ISRBC, Zagreb		Archive/Web Host

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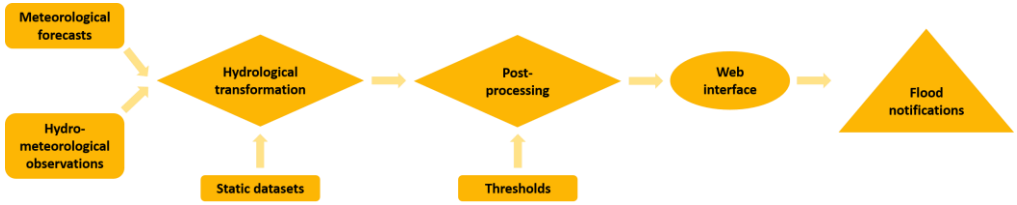
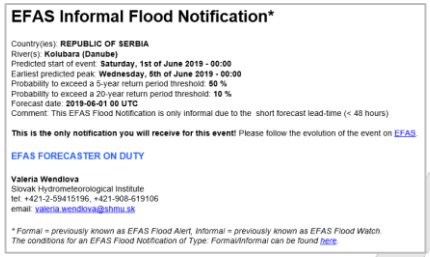
Flood Alarm(?) System – next steps

The EFAS hydrological forecasting chain
(https://confluence.ecmwf.int/display/COPSRV/EFAS+hydrological+forecasting+chain)





EFAS Informal Flood Notification*

Country(ies): **REPUBLIC OF SERBIA**
River(s): **Kolubara (Danube)**
Predicted start of event: **Saturday, 1st of June 2019 - 00:00**
Earliest predicted peak: **Wednesday, 5th of June 2019 - 00:00**
Probability to exceed a 5-year return period threshold: **50 %**
Probability to exceed a 20-year return period threshold: **10 %**
Forecast date: **2019-06-01 00 UTC**
Comment: This EFAS Flood Notification is only informal due to the short forecast lead-time (< 48 hours)

This is the only notification you will receive for this event! Please follow the evolution of the event on EFAS

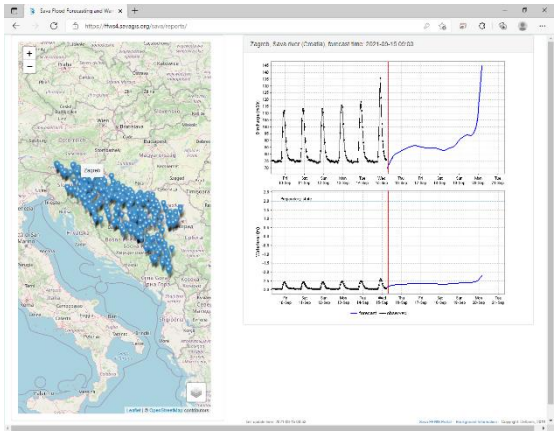
EFAS FORECASTER ON DUTY

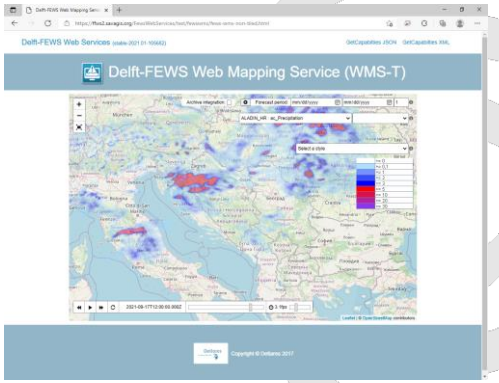
Valeria Wendlova
Slovak Hydrometeorological Institute
tel: +421-2-59415196, +421-908-619106
email: valeria.wendlova@shmu.sk

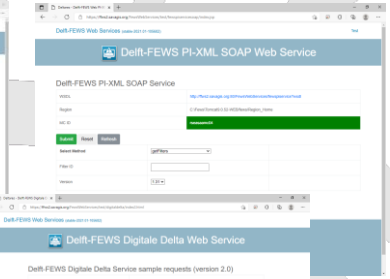
** Formal = previously known as EFAS Flood Alert, Informal = previously known as EFAS Flood Watch. The conditions for an EFAS Flood Notification of Type: Formal/Informal can be found here*

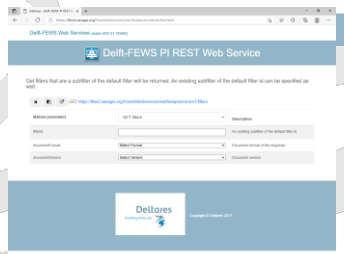
Sava FFWS Web Interfaces and Services

How to **upgrade the existing warning procedures** on a harmonized strategy and developed products and services, including **procedures for the transboundary exchange of warnings and their harmonization ?**









Flood defence emergency situations and mutual assistance

The Protocol states:

The Parties shall undertake appropriate measures for establishment and maintenance of preparedness, as well as **measures related to flood defence emergency situations**. The Parties shall ensure that these measures also include the **measures for mitigation of transboundary impacts**

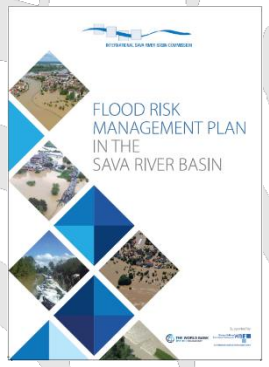
In flood defence emergency situations, **each Party shall undertake the measures mutually agreed upon in the Flood Risk Management Plan**, including the water level monitoring as long as the emergency impacts exist, and, thereon, inform the Parties on whose territory the flood emergency defence situation has arisen

In case of flood defence emergency situation, **the affected Party(ies) may request assistance from other Parties**, indicating the scope and form of assistance needed. The requested Parties shall, as soon as possible, consider such request and inform the Party requesting the assistance on its capacity to provide the required assistance, as well as on the scope and conditions of the rendering assistance

For purpose of efficient assistance in case of flood defence emergency situations, the Parties shall agree in details on all necessary actions and activities in the Flood Risk Management Plan

1st Sava FRMP implementation of the Summary of non-structural measures

- Web app for information exchange between stakeholders involved in emergency flood defence
- Border-crossing procedures for import and export of protection and rescue equipment and delivery of humanitarian aid
- Studies with analysis of the effects of accumulations and reservoirs on downstream transboundary areas in the Sava River Basin
- Studies / guides for data and information collection during flood events
- Workshops and round tables including manuals and publications



ISRBC – International Sava River Basin Commission
role
Transboundary cooperation in the Sava River Basin
in Accident Prevention

Regional workshop – SI/HR

September 16, 2021

Samo Grošelj, ISRBC

WACOM- Water Contingency Management in the Sava River Basin
Project co-funded by European Union funds (EDRF, IPA)

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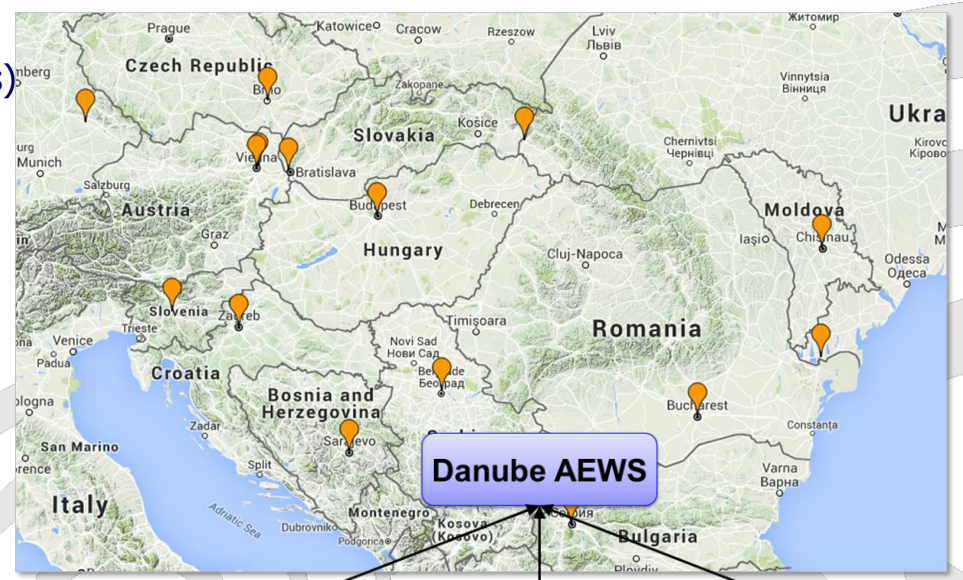

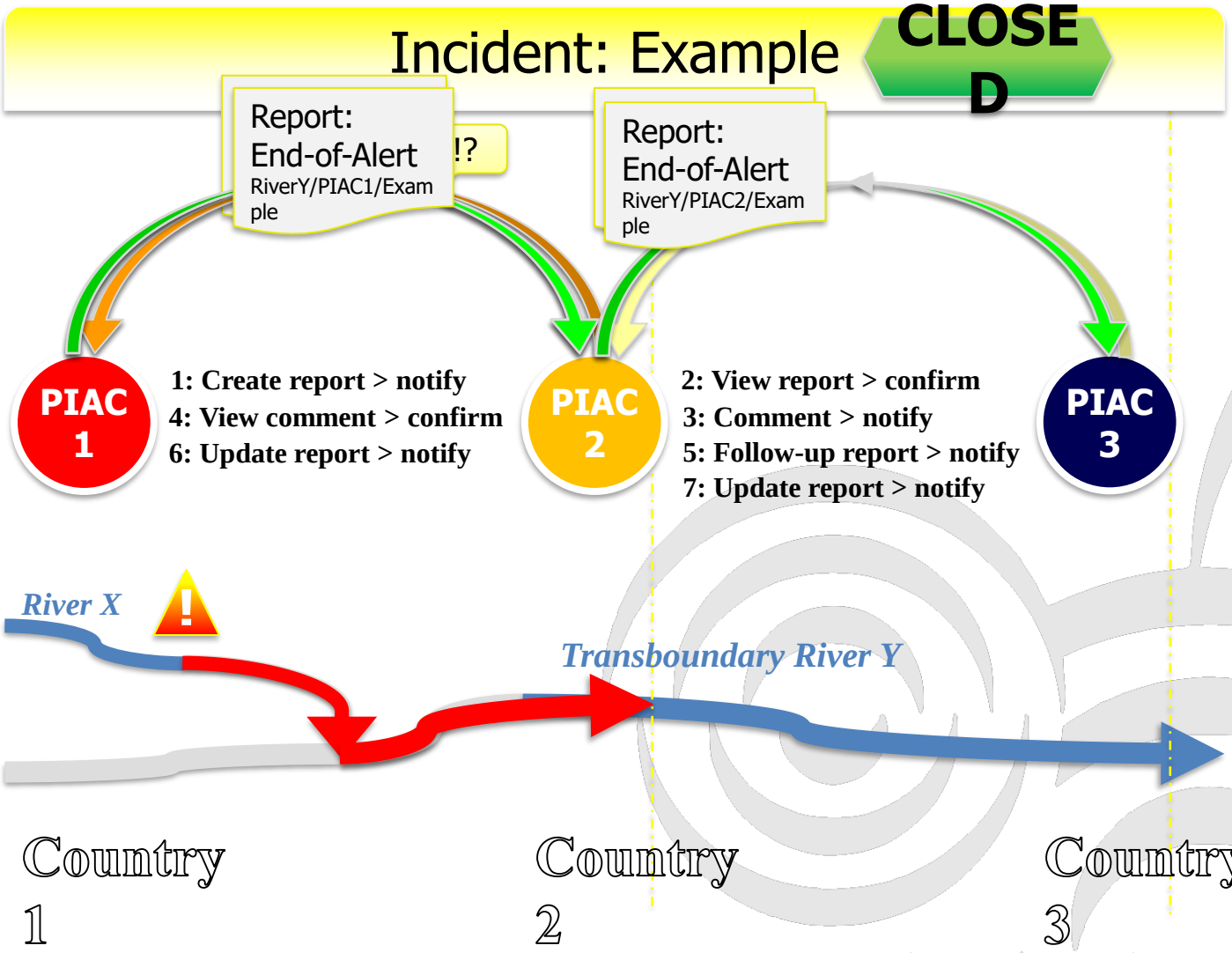
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EUROPEAN UNION
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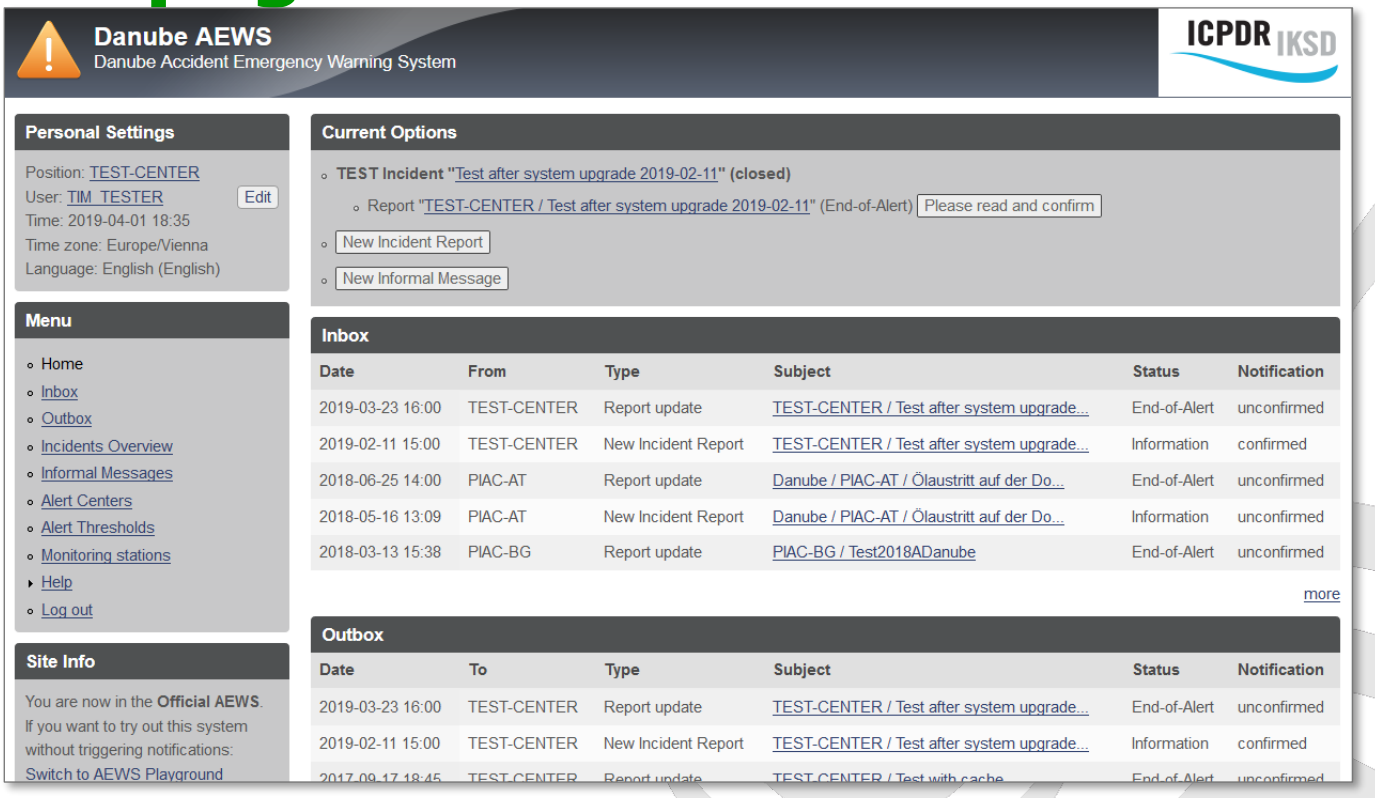

Table-top exercise participants

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Target groups

- National public authority
- Local public authority
- Enterprises
- Infrastructure and (public) service provider
- International organization under national law

Role in the exercise:

- Active participant
- Observer

Thank you for your attention.