Zsolt Pastorek – Matúš Grega[1]

Hybrid Scenario Type "Terrorist Attack on the Dam and Flood Wave"

Topic

Crisis staff, evacuation commissions and selected organisations of the state administration, legal entities and cooperation bodies are involved in organising, managing and implementing measures to protect the population from the possible consequences of a hybrid war, such as a threat to a waterworks after a terrorist attack.

Objectives for the exercise

Acquainting students with the possibilities of solving emergencies using reconfigurable simulators and the WASP constructive simulation system:

- practising the basic model of the village's emergency response team in an emergency – a terrorist attack on a waterworks
- practising the implementation of evacuation measures by the evacuation committee
- practising the cooperation of the coordination centre of the IRS, the intervening units of the firefighters and parts of the crisis management at the local level
- verification of mastery of the content of essential public communication and theoretical approaches of crisis management in public administration
- checking the quality of students' readiness to fulfil the basic positions of crisis managers
- verification of the correctness of the decision-making process in the fight against hybrid threats
- generalisation of knowledge from training and its use in the educational process

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Roles and tasks of participants

Table 1: The roles and responsibilities of participants

Role (9 persons)		Responsibility	Call sign
The Crisis Staff	Mayor of Modry	Head of the crisis team, lead of operation	
	Deputy of Mayor	Risk management adviser, city radio	
	Rescue operations coordinator	Drone recognition, flash news for residents	
	Media adviser	Press releases, providing overall information	
	The transportation coordinator	Coordinates evacuation buses	Knight
	Emergency system coordinator	Overview of situation (GPS), record	
	Medical dispatcher	Leading ambulance activity	Phoenix
	Police dispatcher	Directs police engagement	Eagle
	Firefighter operator	Coordinates firefighters' deployment	Dragon
Role (9 persons)		Responsibility	Call sign
The Operational part	3× Firefighter	Driving and engagement of firefighter trucks	Fire 1, 2, 3
	2× Medical assistance provider	Driving the ambulance cars and transport	Med 1, 2
	2× Police	Driving a police car and engaging the police	Police 1, 2
	2× Bus driver	Driving the bus to the designated evacuation places	Bus 1, 2

Source: Compiled by the authors

Initial situation

In the period after (February, date), the security situation deteriorated in Eastern and Central Europe. In recent weeks, the Security Authorities of the Homeland have recorded information that signalled a threat to the territory of the country by terrorist groups. For this reason, the protection of important objects was strengthened, inspection of population protection plans in villages under waterworks were ordered, and readiness of staff and commissions was ordered to be checked.

Special situation

On (May, date) at 05:30, an unknown explosive exploded near the dam of the local waterbody called "Modrá voda". The explosion partially damaged the dam. A crack appeared in the body of the dam, through which approximately 50 m³/s of water flows uncontrollably.

The resulting situation was assessed as extraordinary, with an acute threat of the dam breaking. The management of the National Water Company informed the crisis management authorities of the state administration, the crisis management authorities of the affected municipalities and the superior departmental units. From 6:00 a.m., the immediate lowering of the water level of the waterbody was started. At the time of the terrorist attack, the local water reservoir was filled to 96% of its maximum volume. There is a direct threat of flooding Municipality Modry.

The town of Modry – The artificial environment for simulation

For simulation, the artificial town of Modry was created:
  – *Geographical description:* The town is in the *Liptovská basin,* at the northern foot of the *Low Tatras,* 10 km from the district town of *Liptov.* The town is situated on two terraced plateaus of the northern foothills of the *Low Tatras.* The cadastre of the city is adjacent to the surrounding small villages and the district town. The city consists of the central and industrial parts and the suburbs. In the central part, there is a substantial part of administrative buildings, banks, a hospital with a polyclinic and others. The industrial zone is located between the central part and the suburb and stretches to the southeastern side of the suburb *(Zbrojárska str.).* With a population of 5,260, the city ranks among the medium-sized towns of the district. There are approximately 1,500 residential buildings in the city of *Modry.* The city centre is located at an altitude of 653 m above sea level, and the *Modrá River* flows through the middle of the suburb. A water reservoir has been built on the *Modrá River,* which serves to regulate the flow of the *Modrá River* as an anti-flood measure. It is also a source for the irrigation system of the surrounding fields and is a popular tourist destination in the summer.
  – *History:* The town of *Modry* is one of the oldest in the region; its first written mention dates back to 1233. On I and *Končito* near the town,

findings from the Kabarska period were found. Partisan bunkers from the Slovak national uprising in the second WW period have been preserved in *Modranská Dolina* and reconstructed to their original state. Its location and natural conditions constantly influenced the life and history of Modry. Favourable circumstances, especially the proximity of the river, fertile soil, a relatively protected valley in terms of climate, and the town's favourable location were essential factors. In the past, the inhabitants were engaged in agriculture and later masonry. After the arrival of the Polish tribes, members of the Kabar tribe Bielewicz settled in this area. The first written mention of the city is from 1255. It is a document confirming the area's property status from 1150 and is currently located in the church of St Peter.

– *Basic amenities:* The town of *Modry* is a cultural centre where folklore festivals are regularly held. The oldest buildings of the armoury, a former factory for producing artificial fertilisers, also deserve attention. There is a city office, where the city police are also based, a hospital with a polyclinic, a firefighter station and others. The suburb is the seat of the independent *Parish of St Peter,* where important monuments from the 16th century are located, as well as a department store, a kindergarten and an elementary school. The city, with its suburbs and industrial zone, where the Winter Stadium is also located, is an important tourism centre. It is a natural starting point for the *Low Tatras.* There are several accommodation and catering facilities in the city.
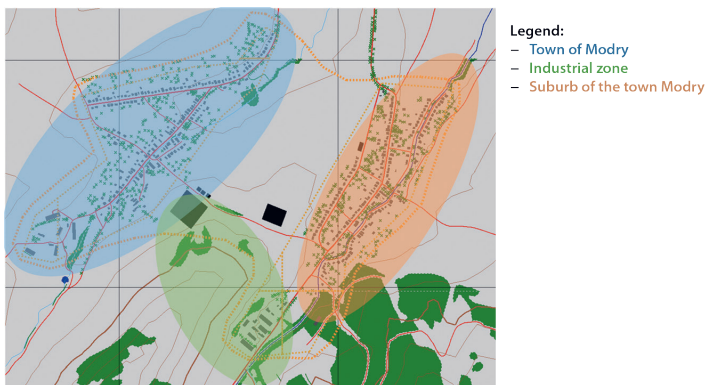

Figure 1: 2D display of Modry city zones (in WASP simulation tool)
Source: WASP
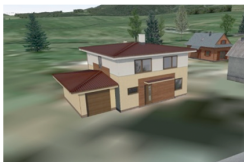
1 – City Hall and City police   2 – Hospital   3 – Firefighter station
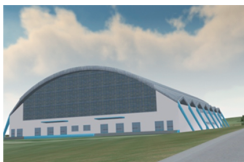

4 – Bus station   5 – Police   6 – Pulp Mill
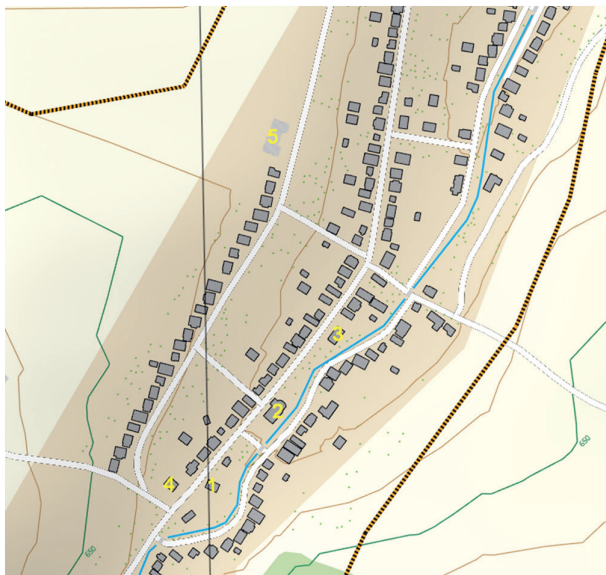

7 – Winter Stadium

Figure 2: Main objects in town Modry
Source: WASP, Unity

1 – Kindergarten   2 – St Peter's Church   4 – Residential home

3 – Shopping centre "CAAP"   5 – Elementary school

Figure 3: Main objects in the suburb of Modry
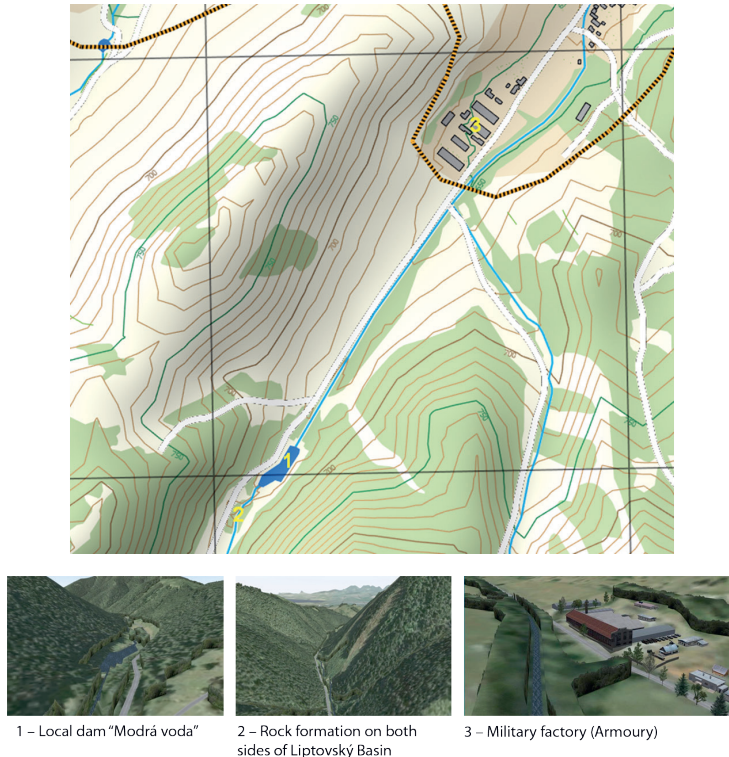*Source:* Compiled by the authors

1 – Local dam "Modrá voda"   2 – Rock formation on both   3 – Military factory (Armoury)
sides of Liptovský Basin

Figure 4: The position of a dam on the southern part of the suburb Modry
Source: WASP, Unity

The "Problem" layer

The "Problem" layer is the backbone of the scenario. This layer describes all the problems caused by the nature of the crisis itself. It contains the definition of the problem, its solution (not the only one; the participant can also find another solution to a particular problem) and the entities of the simulation software needed for the display of such an event (the chart does not contain all the entities used during the simulation, e.g. buildings, roads, maps, trees, or even the fire itself).

Table 2: The "Problem" layer

Institution	Problem	Solution	WASP entities
Arms factory	Request for assistance in securing hazardous substances (pumping vat)	Send fire truck	
Home of Social Services	8 patients + 2 immobile + 3 caregivers	Send bus + 2× ambulance for the removal of immobile patients (one lying, one in a wheelchair)	DOCH 01 – DOCH 13 2× lying patient (DOCH 12 and DOCH 13)
Kindergarten	22 children and four staff	Bus	MS 01 – MS 26
CAAP department store	19 people to evacuate	Self-evacuation – collection point	OBCH 01 – OBCH 19
CAAP department store	Cases of looting	Police assistance	Police – one extra deployable police member in a car
St Peter's Parish	16 believers + parish priest	bus	KOS 01 – KOS 17 (priest KOS 17)
St Peter's Parish	Valuable historical writings from 1255 in a crate	Evacuate Fire 1, Tatra – flatbed takes the box to safety Winter Stadium – elementary school	KOS 01 – KOS 17 Tatra vehicle Tatra box
Holding Pulp Mill	Fire in the building	Fire truck Fire 2	
Primary school	Accident of a child	Ambulance	
People in the village	Self-evacuation	Two groups, one to the east and the other to the west	EVA 26 – EVA 45
Intersection	Jams	Three traffic jams purely by cars	VEH 01 – VEH 04 VEH 05 – VEH 07 VEH 08 – VEH 10
Tractor	A technical breakdown blocks the way	It waits next to the Winter Stadium, blocks the road, if necessary, and is solved by towing Fire 1	Tractor
Police assistant	Police assistance in countering looting – demonstration and crate handling	Able to get in and get out of the police car	Police 1, Police 2
Demonstration	Demonstration also with a bulldozer	Demonstration at the upper intersection	DEM 00 – DEM 13
Demonstration	Demonstration also with a bulldozer	Demonstration at the lower intersection	DEM 14 – DEM 25
Drone	It flies a circuit over the town and makes a video surveillance	Radius 300, height 90 km speed 100 km tilt 4 RAD	Drone
Primary school	Injury to 1 child	Ambulance	

Source: Compiled by the authors

The "Hybrid Threats" layer

To practise hybrid threats, especially cyberattacks, all the participants in the crisis staff (not the operational part) have a mailbox and access to the local website through the user account they set up (name, password required). The model of hybrid treats is based on fake flash news. They are displayed on the town's web homepage and serve as the primary communication channel between the city hall and the citizens. The following hybrid warfare element is a fake social media blog submission, represented in real life by social media like Twitter, Facebook, etc. The next dimension of hybrid threats is e-mail communication. Namely:
  – spread the adware with a false URL
  – implement the virus for Ransomware with an "MS Word" text document as an e-mail attachment; the malicious code is hidden in the macro of the Word document

The last threat is represented as a *Bad USB.* In this case, a USB memory stick with malicious software is delivered to the recipients. If they plug in the USB stick to a computer, malicious code written in Phyton language is executed and blocks the user's computer.

Fake flash news

Flash news is one of the most efficient communication channels for the crisis staff. A template has been developed to increase the effectiveness of publishing such types of news, as shown in Figure 1. Fake news disturbing this communication concept was delivered continuously during the simulation. The desired response was to deny the report; otherwise, it would cause civil disobedience.

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Mail to: modry.news@sc.aos.sk

"Modry Flash News: #CityFlash #NewsInBrief"
For example: "Modry Flash News: Traffic Update – Delays on I-95, plan alternate routes.
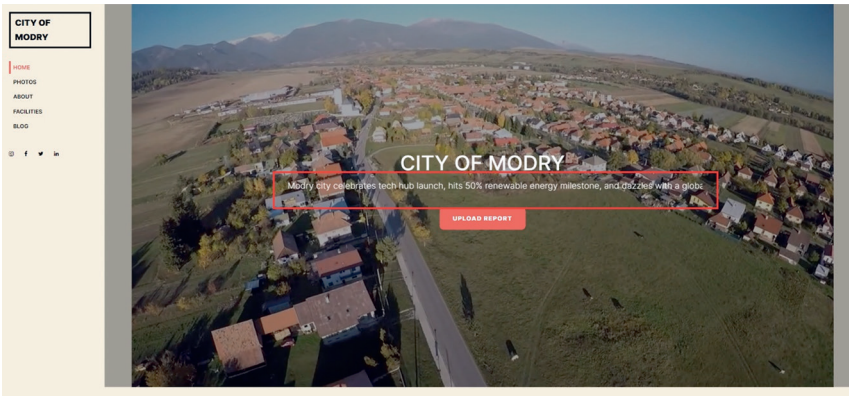#NYCFlash #TrafficAlert"

Figure 5: The flash news template
Source: Compiled by the authors

Table 3: Fake flash news delivered to the WEB main page of the town

Ranking of fake flashes	Fake flash	Reaction	Action
1.	There is no threat. The dam is in excellent condition!	There is no mobilisation of citizens	Dementing News, City Radio
2.	They want to evict you for new highway construction!	Demonstrations near a nursing home and at an upper intersection with heavy equipment	Demented message, firefighters on towing and police with deployable policeman
3.	The whole thing is camouflage to steal the factory!	Demonstration at a nursing home	City radio, police with deployable policeman
4.	There is an accident at the Winter Stadium, so do not get on the buses!	People don't board buses; they stay at meeting points	Dementing News, City Radio
5.	There is a free sale in the store!	Traffic jams at intersections	Exit of the police to two intersections with an officer

Source: Compiled by the authors

Fake social media blog submissions

The registered users can submit media blogs for closer information about the citizens. A template was developed to support this activity. On the other hand, submitting fake social media blogs is possible. These fake texts were generated with the help of artificial intelligence (e.g. ChatGPT ver. 4). The fake blog was delivered to the web page in two ways:

1. cracking the user's account, the fake blog was delivered to the city's web page under the name of the hacked victim; this situation is only caused if the user makes a weak password during the registration process to the web page
2. if no weak password was detected, the false text was published on the web page under the hashtag *#TheFlods*

The texts of fake inputs are as follows:

"Breaking: Allegations Surface of Staged Floods Concealing Illegal Armoury Hoards"

In a shocking twist, recent claims suggest that particular floods are not natural disasters but meticulously orchestrated events designed to cloak illicit armoury storage. The timing and scale of these floods are raising eyebrows, prompting scrutiny of the potential cover-up. Stay tuned as we investigate the evidence behind this startling revelation.

"Highway Havoc: Construction Halted as Defiant Landowners Resist Unjust Land Grab"

In a surprising turn of events, highway construction comes to a standstill as resilient landowners refuse to sell their properties. Unconfirmed reports suggest that the halt is not due to property disputes but a calculated move by the state to employ evacuation tactics for forced expropriation. Stay tuned for more updates on this alleged government manoeuvre to seize private lands under the guise of public infrastructure development.

"Chilling Crisis Unfolds: Ice Rink Stadium Hit by Ammonia Leak, Authorities Downplay Dangers"

In a shocking incident, an alleged ammonia leak at the local ice rink stadium is causing panic among residents. Despite concerns about the potentially hazardous situation, authorities are reportedly downplaying the risks, insisting that the leak is minor and poses no immediate danger. Stay tuned as we investigate the true extent of this chilling crisis and question whether public safety is being compromised in the name of reassurance.

Mail to: modry.news@sc.aos.sk
Modry Press Release
Headline: [Concise Headline]
[Modry], [Date] – Modry [Govt/Dept/Agency] announces [News/Event/Initiative]
[Press Release]
"Text of the press release"
Contact: [Contact Person]
For example:
Headline: Armour Unveils Quantum Pulse Rifle, Pioneers Green Tech Integration
[Modry], [18 January 2024] – Modry [Armoury] announces [News]
[Press Release]
"Armour shook the defence industry by revealing their Quantum Pulse Rifle, leveraging advanced quantum technology for unparalleled precision. The company also surprised observers by integrating eco-friendly processes into production, sparking a surge in stock value and prompting strategic global security partnerships."
Contact: Mayor

Figure 6: Media blog submission template
Source: Compiled by the authors

Adware spreading

Pre-prepared e-mails were continuously delivered to all participants with e-mail. After clicking the fake URL presented in the e-mail, for five minutes, full-screen images (mostly cats – because everybody loves cats!) appeared on the user's monitor, interrupting his activity. The wording of e-mails is as follows:

E-mail 1: Subject: *Welcome to the Revamped Modry City Website!*
Dear [Recipient],
We're excited to announce the launch of our brand-new Modry City website! Say goodbye to the old and hello to a fresh, user-friendly experience. Explore the improved features and enhanced design at our new address: http://10.1.69.51:7000/.
Best regards, [Your Name]

E-mail 2: Subject: *Your Invitation to Explore Modry City's Redesigned Website!*
Dear [Recipient],
We're thrilled to unveil the new and improved Modry City website. Please navigate the city's offerings effortlessly at our updated address: http://10.1.69.51:7000/.
It's time to discover a better online experience!
Warm regards, [Your Name]

E-mail 3: Subject: *Exciting News: Modry City's Website Upgrade!*
Dear [Recipient],
We are pleased to announce the launch of the revamped Modry City website. Bid farewell to the outdated version and say hello to a more dynamic platform. Dive into the enhanced features by visiting us at http://10.1.69.51:7000/ *today!*
Best regards, [Your Name]

E-mail 4: Subject: *Unveiling Modry City's Modernised Website!*
Dear [Recipient],
Great news! Modry City's website has undergone a significant makeover. Experience the city like never before by exploring our new website at http://10.1.69.51:7000/. *Discover the improvements firsthand!*
Kind regards, [Your Name]

E-mail 5: Subject: *Your Invitation to Modry City's New Online Hub!*
Dear [Recipient],

We're excited that Modry City's website has been completely overhauled for a better user experience. Visit us at our new address: http://10.1.69.51:7000/ *and enjoy the enhanced features. Your journey through Modry City just got even more exciting!*
Best wishes, [Your Name]

Ransomware

Phishing to the ransomware victims could be realised via e-mail attachment (there is an MS Word text document, the macro of which contains the malicious code). Some examples of the text in the e-mail body:

For the list of victims of the dam breach, see the attached, continuously updated file. If there is any update from your side, or you have noticed a wrong entry, please download the attachment to your computer, update or change the data and send it to The_flods@aos.sc.sk.
We stay with you!
Sincerely
IT support team

There are essentially unlimited possibilities when generating ransomware text. The important thing is to arouse the interest of the victim. The text is more convincing if it also has an emotional charge, e.g.:

The list of properties to be confiscated can be found in the attached Word file. In case of inaccuracies or incorrect entries, download the attachment to your computer, correct the form and send it to The_flods@aos.sc.sk.
We stay with you!
Sincerely
IT support team

The second approach was delivering a so-called Bad USB (an official look-a-like letter is supplied by a human agent, and malicious software is activated immediately after plugging the USB key into the computer). In this case, the letter is only for outlining the situation for this methodology, and it is not necessary to use for infiltrating the Bad USB key by the agent to the "victims":

Henry Clark
Cartographic authority of Northern region
123 Main Street, Modry City, MD 56789
Henry.Clark@email.com, phone: (555) 123-4567

City of Modry
City Hall
456 Civic Plaza
Modry City, MD 56789

February 1, 2024

Subject: Urgent Information – Flooding MAP Update

Dear Modry City Officials,

I hope this message finds you well. I am writing to provide a brief mapping update on the current flood situation in our city.

Please find attached a **USB drive** containing essential information regarding the floods, **including maps of the impact areas**, emergency response efforts, and safety guidelines for residents. This information aims to keep everyone informed and safe during this challenging time.

For immediate inquiries, please get in touch with me at henry.clark@email.com or (555) 123-4567.

Your prompt attention to this matter is greatly appreciated.

Sincerely,

Henry CLARK

Emergency Response Coordinator
Cartographic authority of Northern region

Figure 7: A cover letter for delivering a Bad USB
Source: Compiled by the authors