

¹ Monta Aleksandra
Lacane, PhD

Tension of a Hybrid War and Situational Awareness of Civilians in Case of Military Aggression



Abstract: - On February 24, 2022, the Russian Federation invaded Ukraine, and it led to an escalation in the Russian-Ukrainian War, which started in 2014. September 2023 came with new disturbing trends for the Baltic countries and Finland- rapidly rising numbers of asylum seekers coming from Belarus and Russia. Belarus offers Russia a European partnership, although other former Soviet Union republics have joined alliances with Western countries and NATO. In November 2023, the Finnish government announced a temporary closure of its entire border with Russia after weeks of tensions between the asylum seekers coming from Russia, labelling it as a "hybrid operation" executed by Moscow.

Are the Baltic states well protected and prepared for military aggression from Russia and Belarus?

This paper proposes a prototype application for mobile phones, which could be used in case of military aggression from the East. By determining the type of intruder or possible threat, it would be likely to obtain additional information from the application's database and develop a diagram of the current situation to show whether the user's position is safe.

When using such applications, civilians would have better situational awareness, making them more predictable and calmer inside.

Keywords: hybrid war, rocket artillery, mobile application, situational awareness.

I. INTRODUCTION

On February 24, 2022, the Russian Federation invaded Ukraine, and it led to an escalation in the Russian- Ukrainian War that started in the year 2014. It was a day that brought anxiety and unrest to the people of many bordering or nearby countries. September 2023 came with new disturbing trends, especially with those connected with human trafficking on borders between Russia, Belarus, and the Baltic countries, also Finland. Belarus offers a partnership in Europe, although other former Soviet Union republics have joined political, social, and military alliances with the Western countries, alliances such as the European Union and North Atlantic Treaty Organization, NATO. [1.] Since the beginning of the War, countries bordering Russia, also the Baltics and Finland, have accused Russia of executing a hybrid war; this includes cyber-attacks, fake news, mixed actors to influence civilians, and human trafficking on the borders of Russia and Belarus. Since September 2023, there has been a massive rise in asylum seekers on the borders between Russia and Finland. On November 28, 2023, the Finnish government announced that it was temporarily closing its entire border with Russia after weeks of tensions among the asylum seekers coming from Russia. Helsinki has labeled it as a "hybrid operation" executed by Moscow. [2.]

Such political activities, supported by unclear movements of people, raise tension among people in the bordering countries, also in Latvia. Some countries are equipped with advanced air defense systems, sirens, or similar, which provide up-to-date information about possible threats to civilians. Still, unfortunately, Latvia is not among such countries. Being a member of NATO gives a certain sense of security. Still, there should be a means of communication to provide people with up-to-date emergency information in case any aggression from the East escalates.

The radio and sirens in Latvia are activated in case of emergency, but some additional information should be vital for civilians.

This paper aims to develop a prototype of a mobile phone application that could inform civilians about how safe their position is. The application would determine it by using a specific database and specific logic, which will be described in this paper.

The main tasks of this paper are:

- to explain the tension or hypothesis of a Hybrid war between the Russian Federation, Belarus, and Latvia,
- to explain the legal background of circumstances when NATO would defend its Allies,

¹ Associate Professor, Latvian National Defense Academy, Riga, Latvia. monta.lacane@gmail.com

- create an example of information stored in a database on rocket artillery used by the Russian Armed Forces,
 - develop a logic for the proposed application for mobile phones.
- Such an application would increase the safety of civilians and make people's movements more predictable and controlled, which might also help reduce stress.

II. LITERATURE REVIEW

Asylum Seekers- Hybrid War

Tension in people in neighbouring countries, also in Latvia, has been rising among people since the beginning of the Russian-Ukrainian war, especially since September 2023, when signs of a hybrid war from Russia were faced. In 2022, 5,286 people were deterred from crossing Latvian- Russian and Latvian-Belarusian borders. Until September 19, 2023, 8719 had been stopped, but by the end of September, the number of people had doubled compared to the previous year. Table 1 shows the number of asylum seekers deterred from crossing in different periods in 2023 and shows the number of people that Latvia had accepted for humanitarian reasons, primarily women with small children or people with serious health issues.

Table 1. Number of asylum seekers, who tried to enter Latvia by crossing the border with Belarus and number of asylum seekers, who were taken by Latvia for humanitarian reasons. [3.]

	Deterred from crossing, number of people	Taken for humanitarian reasons, number of people since January 1, 2023
in 2022 in total	5286	217
until 19.09.2023	8719	338
until 26.09.2023	9756	350
until 16.10.2023	11483	397
until 23.10.2023	12205	379

Data from the State Border Guard of Latvia shows that since September 2023, 100 asylum seekers have tried to enter the country illegally from Belarus. Table 2 shows the number of asylum seekers caught on particular days or periods. It is seen that the numbers are unusually high.

Table 2. Numbers of asylum seekers deterred in different times in 2023 [4.]

Period Considered	Number of asylum seekers deterred
19.09.2023	111
26.09.2023	153
13.10.2023- 15.10.2023	321
20.10.2023- 22.10.2023	272

For comparison, in Lithuania, in July 2023, 2,070 illegal asylum seekers had been caught, but in June- 473, in May- 77, in April- 70, and in March- only 8. From these data, it can also be seen that the question has risen sharply since summer 2023. Most of the illegal migrants in the region originate from Afghanistan, Iraq, Iran, India, and many other countries, and they intend to reach Western Europe initially via Belarus and then via Lithuania or Latvia.

NATO and Collective Defence

The Baltics were the last countries to join Soviet Union, when they were annexed in 1940, and were the first to leave the Union by declaring their independence. The Baltic States- Latvia, Lithuania and Estonia, restored their independence in 1991 after the collapse of the block in 1990. "Russia considers the Baltic states to be the most vulnerable part of NATO, which would make them a focus of military pressure in the event of a NATO-Russia conflict," Estonian counterintelligence said in a report in 2023. [5.]

After restoration of independence integration with Western Europe became a major political, economic and security goal for the Baltic states. In 2002, the governments of all three Baltics states applied to join the European Union and to become members of NATO. Latvia, Lithuania and Estonia became member of NATO on March 29, 2004

and joined the EU on May 1, 2004. Finland is another country which, as previously mentioned, has declared that Russia is executing a hybrid war against them. When the Russian- Ukrainian war started, Finland along with neighboring Sweden, joined the European Union on January 1, 1995, but with NATO there have been some difficulties. Along with Sweden, the country applied to join NATO on May 18, 2022. Following ratification, Finland became a member of NATO on April 4, 2023. This step has doubled the length of the alliance's pre-existing border because Finland has a 1340 km long border with Russia. In December 2023 Sweden has not become a full member of the NATO, because ratification is still incomplete. [10., 11.]

The principle of collective defence is at the very heart of NATO's founding treaty. It remains a unique and enduring principle that binds its members together, committing them to protect each other and setting a spirit of solidarity within the Alliance. [12.]

Collective defence means that an attack against one member state or Ally is considered as an attack against all Allies or Alliance. The North Atlantic Treaty had been signed on April 4, 1949 in Washington, USA and it contains rules, which are determined to safeguard the freedom, common heritage and civilisation of their people, founded on the principles of democracy, individual liberty and the rule of law. NATO seeks to promote stability and well-being in the Allies. The principle of collective defence is enshrined in Article 5 of the North Atlantic Treaty. The first and the only time in history when the Article 5 was invoked, was after the horrific and brutal terrorist attack on September 11, 2001. NATO has taken collective measures on several occasions, such as, situation in Syria and the Russian invasion of Ukraine. Being a member of the Alliance means security and collective defence efforts. But is it safe to be a neighbour of Russia even being a member of NATO? Would civilians be protected and well informed in case of aggression? [13.]

Critical infrastructure and areas (airspace) of limited use

In case of military aggression from neighbouring countries, which are not member of NATO, the Alliance would invoke the Article 5 and would protect Latvia and its people. But how would civilians get up-to-date information to know which parts of the country are safer?

In accordance with International Civil Aviation Organization Annex 2, Rules of the Air, a flight information region (FIR) is defined as "An airspace of defined dimensions within which flight information service and alerting service are provided" [14.]. The ICAO delegates, which country is responsible for the operational control of a given FIR. FIRs are the largest regular division of airspace in use in the world today and have existed at least since 1947.

In accordance with Convention on High Seas, which was signed on April 29 1958 in Geneva and as for restoration of independence of Republic on Latvia on May 4, 1990, airspace controlled by Latvia is called Riga Flight Information Region.

Article 1 named "Sovereignty" of ICAO's "Convention on International Civil Aviation", (Doc 7300) states that "The contracting States recognize that every State has complete and exclusive sovereignty over the airspace above its territory". And Article 2 of "Territory" states that "For the purposes of this Convention the territory of a State shall be deemed to be the land areas and territorial waters adjacent thereto under the sovereignty, suzerainty, protection or mandate of such State." [15, page 2]

As a result, Riga Flight Information Region (FIR) consists of three parts:

- Airspace extending upwards from the ground territory of Latvia;
- Airspace extending upwards from the territorial waters;
- Airspace extending upwards from the part of the Baltic Sea which has been delegated to Latvia.

A diagram of Riga FIR is shown in figure 1.

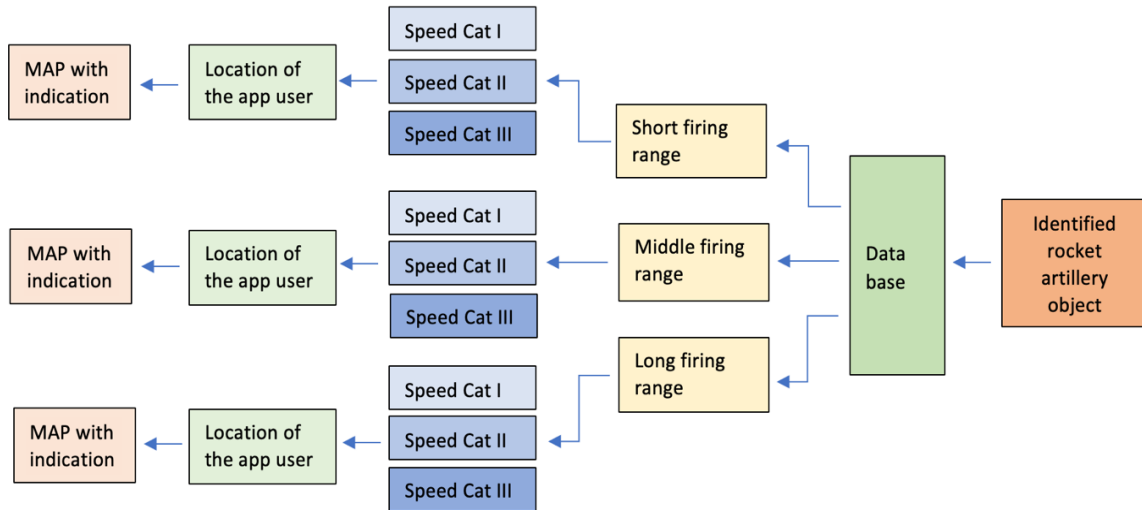


Figure 1. Riga Flight Information Region. [Aeronautical Information Publications of Republic of Latvia, En-route Chart, FL095- FL660] [24.]

Airspace parts of limited use

Airspace shall be classified in accordance with ICAO’s airspace classification, which define requirements for controlled and uncontrolled airspace and their different classes. Airspace can also include specially designated parts (both designated horizontally and vertically), which are used for special purposes or which protect or mark activities, which might be dangerous to other airspace users or similar. Three main types of such airspaces are:

- A danger area is an airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times. (16. ICAO Annex 11: Air Traffic Services)
- A restricted area is an airspace of defined dimensions above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with specific conditions. [14., ICAO Annex 2: Rules of the Air]
- A prohibited area is an airspace of defined dimensions, above the land area or territorial waters of a state, within which the flight of aircraft is prohibited. (14., ICAO Annex 2: Rules of the Air).

All areas of limited used are published in Aeronautical Information Publication of a country. Danger, restricted and prohibited areas are shown in figure 2.

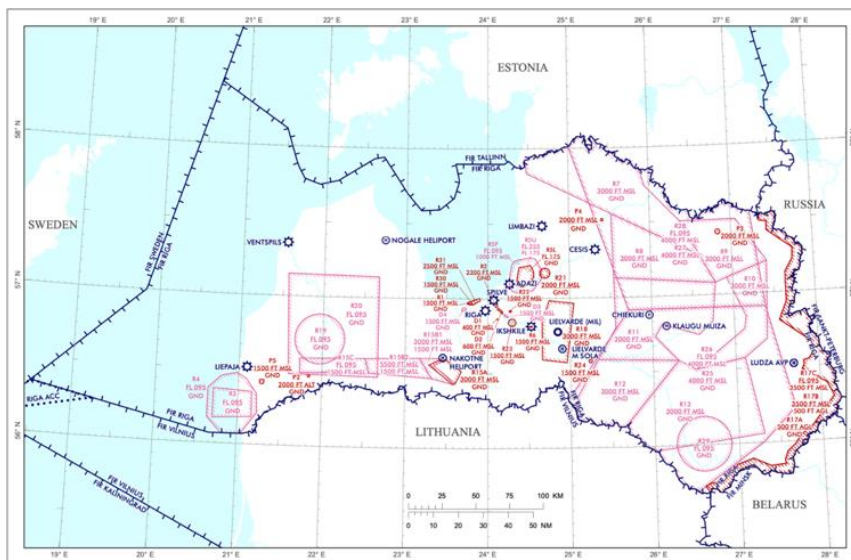


Figure 2. Prohibited, restricted and danger areas in Riga Flight Information Region- Indexed chart. AIP, ENR. 6.3.-1 [24.]

Often these airspace restrictions are due to military activities or even military objects, which shall be isolated from public access. When developing the application, it shall be considered, that some application users might want to see these areas for safety or security purposes.

Weapons used by Russian Army

There are typical weapons for each army, also for Russian Army, which historically was based on Soviet Union weapons. After information analysis, two tables have been created which reveal parameters of rocket artillery which is used by Russian Armed Forces. This information further will be used in creating logics of mobile application. This information should be kept in Data base of the application, so that it would be accessible any time it is needed.

Russian Army

Examples of rocket artillery which could possibly be used from the East is shown in table 2.

Table 3. Characteristics of rocket Artillery used by

Model	Type	Weight	Missile speed	Max firing range
9K720 Iskander-M SS-26 (1988) [17.] NATO: SS-26	Mobile short-range ballistic missile system	3,800 kg (8,400 lb)	2100–2600 m/s (Mach 6–7)	500 km
OTR-21 Tochka (1973) [18.] NATO: SS-21 Scarab	Tactical ballistic missile. Tactical Operational Missile Complex "Point"	2,000 kg (4,400 lb) Scarab A	1.8 km/s 1.1 mi/s; Mach 5.3	70 km (43 mi) Scarab A
		2,010 kg (4,430 lb) Scarab B		120 km (75 mi) Scarab B
TOS-1 (1A) Buratino (TOS-1: 1987–Present TOS-1A: 2003–present) [19.]	Heavy Flame thrower System, multiple rocket launcher capable of using thermobaric warheads, MLRS	45.3 t	M0.1.01.0 4M	Effective firing range: 5-3 km (TOS-1) 10 km (TOS-1A) Min firing range: 400 to 1,600 metres
BM-21 "Grad" 1963 [20.] NATO: M1964	Multiple rocket launcher, MLRS	13.71 tons (30,225 lb)	Muzzle velocity: 690 m/s (2,264 ft/s)	0.5–52 km
BM-27 Uragan (1975) (Uragan-1M was commis. in 2008) [21.] NATO: 9P140	Self-propelled 220 mm multiple rocket launcher designed in the Soviet Union to deliver cluster munitions	20 tons (44,092 lbs)		Effective firing range: 35 km (22 mi); Max: >75km
BM-30 Smerch (1989) [22.] NATO: MRL 280mm M1983	Heavy self-propelled 300 mm multiple rocket launcher	43.7 t		120 km (75 mi) (9M542 rocket) 200 km (120 mi) (9M544 rocket)
Tornado (Tornado-G (2014) and Tornado-S (GLONASS)) (2011) [23.]	Multiple rocket launcher	24.65 t		200 km (300 mm 9M544 rocket)

Table 4. Maximum speed and operational range of rocket Artillery used by Russian Army

Model	Max speed	Operational range
9K720 Iskander-M / SS-26 (1988) (Replaced by OTR-21 Tochka by 2020 [17.]		500 km
OTR-21 Tochka (1973) [18.]		120 km

TOS-1 (1A) Buratino (TOS-1: 1987–present; TOS-1A: 2003–present) [19.]	60 km/h (37 mph)	550 km
BM-21 "Grad" 1963 [20.]	75 km/h (47 mph)	405 km
BM-27 Uragan (1975) (Uragan-1M was commissioned in 2008) [21.]		500 km
BM-30 Smerch (1989) [22.]	60 km/h (37 mph)	850 km (530 mi)
Tornado (Tornado-G (2014) and Tornado-S (GLONASS)) (2011) [23.]	90 km/h	1,000 km

III. RESEARCH METHODOLOGY

This paper aims to develop a prototype of an application for a mobile phone, which civilians could use in case of identified military aggression from the East of Latvia.

The author has used both- quantitative and qualitative- methods of research. Qualitative data collection includes literature reviews, which explore concepts of topics and tendencies analysed in this paper, and also a review of media articles in different countries to obtain in-depth insights on topics that are not well understood and that are not explained to the public because of the absence of precise evidence.

Quantitative data has been obtained and analysed to prove the tension is in place near the Latvian-Belarus border, or in other words, that the number of asylum seekers is rising.

By the aim of this paper, a prototype of a mobile application has been developed. To show the application's logic, it was necessary to create a list of rocket artillery and their characteristics. The information from different sources has been analysed, and a list of weapons with their characteristics has been made. The two main parameters on which emphasis has been put are:

- maximum firing speed of the artillery,
- maximum speed of movement of the whole system.

All the other parameters which are included are optional and, in the future, might also be supplemented.

IV. FINDINGS AND DISCUSSION

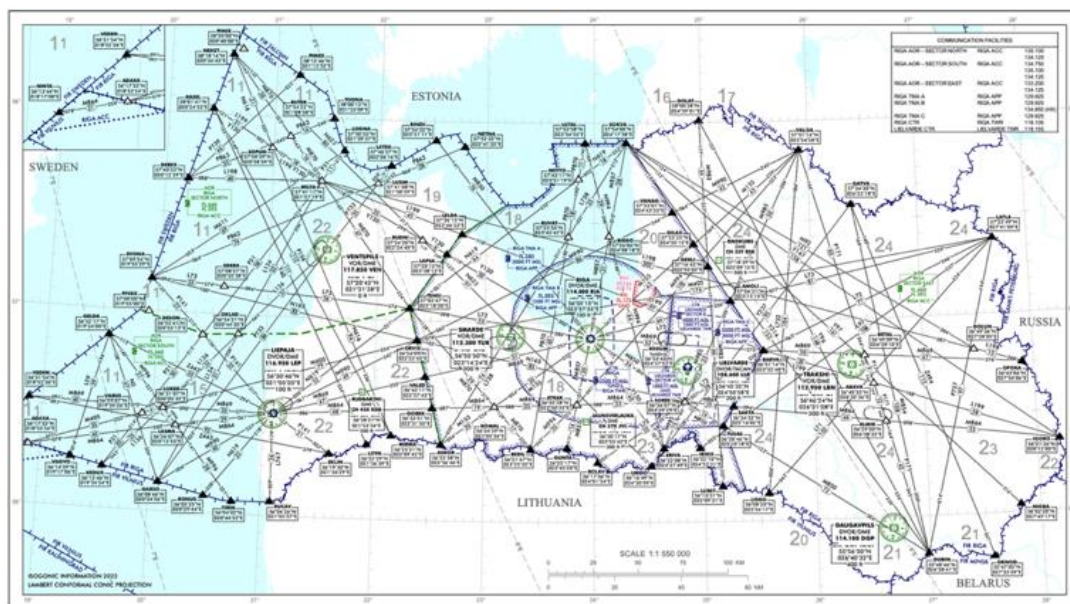


Figure 3. Logics of the proposed application, which shows order of information processing. [Author’s developed diagram]

Logic of proposed application is shown in figure 3. The main task for the application is give indication to a civil user by sending appropriate information to person’s mobile phone.

Firing range can be divided into three categories as shown in table 5.

Table 5. Firing range categories of rocket artillery

Firing range category	Firing range limits	Examples
Short	10 km or less	TOS- 1A
Middle	More than 10 km, but less than 120 km	OTR 21 Tochka, Scarab A, Scarab B
Long	More than 120 km	BM- 30 Smerch, Tornado- G, Tornado- S

For example, rocket artillery system OTR 21 “Tochka” belongs to middle firing range category, because its firing limits are max 70 km in case of Scarab A, and 120 km in case of Scarab B. These two values fall into category “more than 10 km, but less than 120 km/h”, which is “Middle”.

This parameter is needed in order to define the level of safety of people in their current position. By knowing, how far the weapon can cause any damage, it can be visualized on a map in the application.

- Speed of weapon’s movement- maximum speed at which rocket artillery can move (change the location of the whole system).

Speed categories of the rocket artillery could be divided into groups as shown in table 6.

For example, TOS- 1A system belongs to Cat I speed category, because its speed limit is 60 km/h or less.

This parameter is vital to define how long the following threat will exist or on the other hand- how much time the people have to move to a relatively safe or safer position. This parameter can expand information shown in the application. Information can be arranged in a form of circles, where each of the circles show, how far the threat will be able to cause any damage in one, two or three hours, as shown in figure 4:

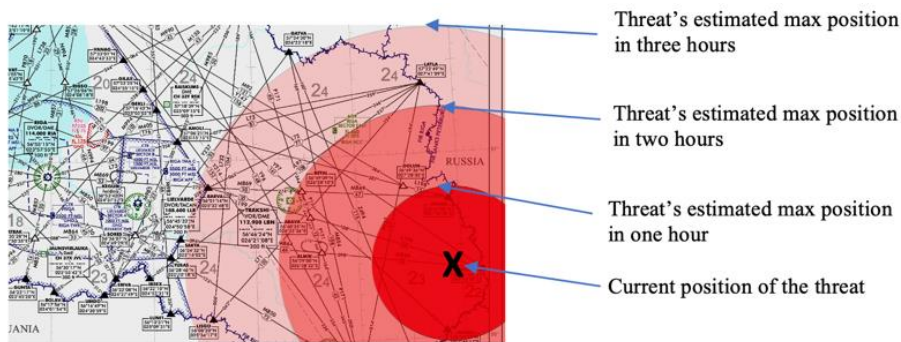


Figure 4. Level of safety determination for a user depending on its position relative to the threat [Author’s developed diagram]

- Location of the user shall be available all the time. This application proposal is intended to be used for mobile phones. To use it, a GPS data shall be available. To do it, a Wi-Fi coverage or full Internet connection shall be useful.

There three values should be enough to determine, whether safety of the person might be in danger. When combining all available and needed information, a diagram shall be generated. Examples of such diagrams are shown in figures 5 and 6.

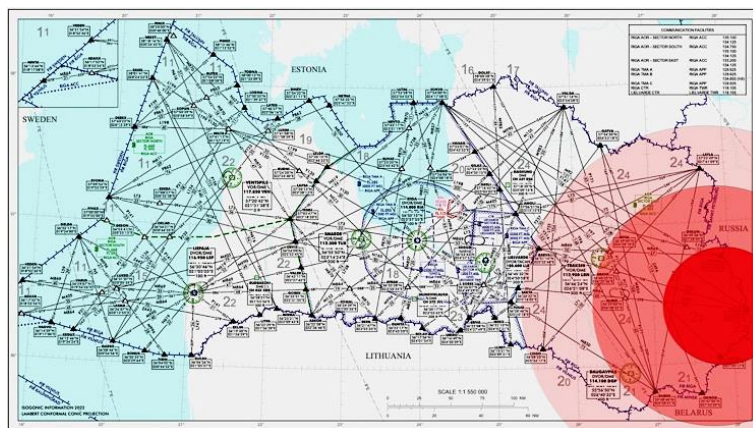


Figure 5. Example of a diagram produced by application in case of Cat I speed threat. Estimated speed of the intruder is 50 km/h. [Author’s developed diagram]

Table 6. Speed categories of rocket artillery.

Speed category	Speed limit	Examples
I	60 km/h or less	TOS- 1A
II	More than 60 km/h, but less than 100 km/h	Tornado- G, Tornado- S
III	100 km/h and more	

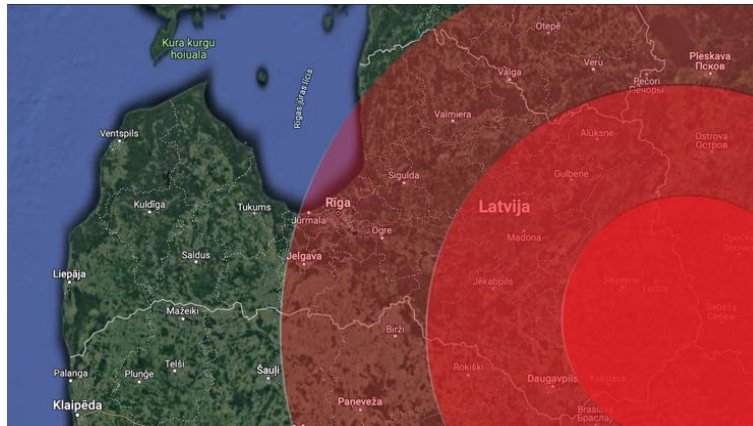


Figure 6. Example of a diagram produced by application in case of Cat II speed threat. Estimated speed of the intruder is 100 km/h. [Author’s developed diagram]

For a user, it should be possible to choose the background style of the application diagram. The following options might be suggested:

- Aeronautical chart- for users involved in aviation and who might travel by air. This option is shown in Figure 5. It could also add dangerous, restricted, or prohibited areas so that the user could more precisely define a route to be flown, and it would also be possible to evaluate threats from outside.

- Geographical chart- a simple map for those users who know the area well or can read a geographical map. This includes names of cities, towns or settlements, rivers, lakes, and terrain, which might help the user choose the easiest and fastest route to move from one point to another. This option is shown in Figure 6.

If the user is inside the first, closest circle (the threat is in a distance of less than one hour), then there shall be a warning given, for instance, “MOVE AS SOON AS POSSIBLE, THREAT ZONE”. If the user is inside the second circle (the threat is in a distance which is more than one hour, but less than two hours), a warning shall be given, for instance, “THERE IS APPROACHING, SUGGEST TO MOVE”. If the user is inside the third circle (the threat is in a distance which is more than two hours but less than three hours), a notification shall be given, for instance, “BEWARE, THREAT”.

V. CONCLUSION

In any everyday situation, information plays a vital role. If the situation involves people’s safety, is it critical? Having up-to-date information can save lives and rescue people. As described above, mobile applications could serve people as an additional tool in case of emergency or unclear situations.

Advantages of the application:

- Civilians are better informed about possible threats and can decide what action should be taken to save lives.
- Informed people are more predictable, so controlling them is more accessible. In this case- to bring them to a safer place, consequently- it is easier to predict what people in certain areas might do.
- Informed people are calmer inside; they panic less about stress and risk management in human factors. Informed people can follow instructions, which might be more accessible for some people because of loss of situational awareness due to high-stress levels and increased risk.

Disadvantages of the application:

- Military applications must be well protected to prevent false alarms or fake information from being entered. Security questions have priority in this case.

- The application relies on information obtained from areas near the Latvian border. The type of intruder shall be designated correctly to make the system work properly.
- A GPS signal is needed to track the user's position.
- A Wi-Fi or full Internet connection is needed to use the application, which might be challenging in some places.
- The user's mobile phone shall be charged, which might be difficult in case of loss of power supply or absence of a charging device.

Disadvantages considered above are more of a technical nature- Internet access cyber-security of the application. Still, advantages are more connected with human factors and performance in critical and high-risk situations. Information protects people- the better informed, the safer.

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