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Quick Response for Operational Centres

D4.3 – Technology Market Scan

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Definitions, Acronyms and Abbreviations

ACRONYMS / ABBREVIATIONS	DESCRIPTION
IM	Innovation management
LEA	Law Enforcement Agency
OC	Operational Centre
QROC	Quick Response for Operational Centres
SA	Situational Awareness
NOC	National Operational Center

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Executive summary

The Quick Response for Operational Centres (QROC) project strives to increase coordination and collaboration of National Operation Centres (NOC) and their effectiveness in anticipating and responding to the terrorist threat.

One of the initiatives of the QROC project is to provide operational centres (OCs) with an overview of situational awareness (SA) enhancing solutions which the Law Enforcement Agencies (LEAs) involved in the QROC project consider innovative and worth sharing information on. Beforehand, the QROC project identified three types of technology (5G, intelligent data management, drones) which were considered the most promising and defined three scenarios (manhunt, CBRN incident and crowd management) in which these technologies could be applied.

This QROC deliverable (D4.3) provides an analysis of commercially available products selected by the LEAs. Information about the products was acquired through a survey conducted amongst the LEAs involved in the QROC project. The solutions were analysed to determine their applicability in improving the situational awareness of the LEAs.

1 Introduction

1.1 Background

Operational Centres (OCs) have the task to coordinate and facilitate emergency services to resolve crises or accidents. In doing so, OCs need to obtain enough information on the emergency at hand to fulfil their task as effective and efficient as possible. However, due to the digitalization of society and organizations, the flows of information heavily increased over time. This trend has massive upsides, but simultaneously poses challenges how to process this increased stream of data. OCs rely on capabilities such as those related to situational awareness (e.g. monitoring of complex situations, localization, identification) and the management of CBRN incidents (detection, containment, evacuation, etc.). It is obvious that the emergence of new technologies leads both to opportunities and risks for OCs: new technologies can help process this increased velocity and volume of data, whilst also provide new opportunities in gathering information that was previously harder (or even impossible) to collect.

Technologies can be closely interrelated. For example, remote sensing by satellites, drones and other airborne platforms can be deployed above high-risk areas to capture the movement of attackers, of witnesses and of victims, and thereby giving OCs a much better overview of the situation. In turn, 5G technologies could potentially help obtain this type of imagery from the sensor platform and distribute relevant images to first responders on the ground. Intelligent video and data management systems can use this kind of data to extract movement patterns and link other information elements (such as obtained from 5G networks) to the tracked objects.

1.2 Context

The QROC project formulated to following ambition (European Union, 2019):

> ***This QROC project shares needs and best practices and increases the foresight regarding (the uptake of) new innovative technologies for operational centres to improve the public protection. To that aim, the QROC project will build a communication capability between the Law Enforcement National Operation Centres (NOC) to share quickly and secure operational data across borders regarding terrorist threats to protect the public. Tangible results based on continuous testing of a new Capability Package (CP), self-assessment tool for NOCs, demonstration of and innovative technologies, along with education and practical training via a series of tabletop exercises will increase the efficiency, and the capacity of NOCs.***

NOCs can utilise scalable groups of technologies depending on the capabilities required for each specific frontline policing task. These tasks and the manner in which they are performed, differ greatly per NOC. NOCs also often operate within constants such as required interoperability with legacy systems and financial constraints. Thus, technologies suitable for some NOCs may not be suitable for other NOCs. NOCs could benefit enormously from exchanging information on technology amongst themselves which they have learned either through experience or though research to be (possibly) beneficial to improving situational awareness in the case of a terrorist attack.

Within QROC Work Package 4 (WP4 Technology for Public Protection by Operation Centres) the needs of NOCs will be assessed in relation to the uncertainty (both opportunities and risk) generated by the emergence of new technologies. This includes the development and execution of a capability and change management self-assessment tool on participating NOCs. OCs rely on a combination of

multiple capabilities (often provided by supporting services), many of which are affected by the data tsunami.

Examples of these capabilities are related to situational awareness (e.g. monitoring of complex situations, localization, manhunt, identification), and the management of CBRN incidents (detection, containment, evacuation, etc.). Starting point for this work is the preliminary identification of needs done in the ENLETS OC TIG. Based on the outcome of these assessments, LEAs learn what the impact of new technologies could be, and how well equipped they are to adapt accordingly. This gained knowledge will be used to identify relevant available technologies, and to specify and develop innovative use cases based on relevant technologies for OCs (TRL6).

Task 4.3 (T4.3 Market scan) of WP4 endeavours to ascertain those technologies which could be beneficial to the LEAs in strengthening their situational awareness capabilities. These technologies are closely interrelated. For example, remote sensing by satellites, drones and other airborne platforms. When deployed above high-risk areas such platforms may capture the movement of attackers, of witnesses and of (contaminated) victims thereby giving OCs a much better overview of the situation. 5G can help obtain this type of imagery from the sensor platform and distribute relevant images to first responders on the ground. Intelligent video and data management systems can use this kind of data to extract movement patterns and link other information elements (such as obtained from 5G networks) to the tracked objects.

1.3 Aim

The aim of QROC Deliverable 4.3 (D4.3 Market Scan) is to provide LEAs with an analysis of relevant innovative technologies and solutions currently available on the market, to improve the situational awareness capabilities of their NOCs in anticipating and reacting to the terrorist threat.

1.4 Readers guide

The relevant solutions given by the LEAs contributing to T4.3 are summarised in the Solution Catalogue – a separate Microsoft Excel spreadsheet (EU QROC, 2020).

This document (D4.3) provides insight into the reason for the establishing the catalogue (chapter 1), the scope of the catalogue (chapter 2), the method used to form the catalogue's contents (chapter 3), a description of the catalogue's contents (chapter 4) and an analysis of the contents (chapter 5).

2 Scope

The QROC consortium has limited the market scan to those solutions which contribute to the improvement of Situational Awareness (SA) capabilities with regards to the terrorist threat, specifically mentioning three specific types of technology and three threat scenarios in which products based on the three types of technology could be used.

This section defines the situational awareness capabilities and describes the chosen technologies and devised scenarios for this project.

2.1 Situational awareness

Endsley in [1] defines situation[al] awareness as: "the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future" (p.36). Based on this definition, the ability to develop situational awareness in the context of an OC can be described as *(conform D4.1 V0.3)*:

> *The ability to collect and maintain complete and real time information of the emergency situation at hand and to be able to interpret this information to make decisions and take actions to assist emergency services.*

From this definition, a number of capabilities can be derived that determine the extent to which an OC is able to build and maintain situational awareness with the purpose of managing an incident. After an OC receives a notification of an incident, they will need to establish and monitor the SA by gathering information, sharing information, storing information, integrating information, interpreting this information and lastly by anticipating based on this information. These are the SA-capabilities through which a degree of situational awareness should be established with which decisions and actions can be initiated. Depending on the outcome of these decisions and/or actions, the information of these outcomes can loop back into the process again and the situational awareness can consequently be updated by OC. Thus, the degree to which the OCs possess the aforementioned capabilities, determines their SA-forming capacity. Each SA-capability is described in more detail in table 1 (definitions taken from QROC D4.1 V0.3).

Table 1 Situational awareness capabilities and descriptions

SA Capability	Description
Information gathering	The ability to perceive the status, attributes and dynamics of task-related elements in the surrounding environment by collecting data from different sources.
Information sharing	The ability to exchange data and/or actionable information between various organizations, people and technologies both internally and externally. This capability runs through the other capabilities as it is part of an ongoing process.
Information storage	The ability to store, organize, label and/or classify information. This capability runs through the other capabilities as it is part of an ongoing process.
Information integration	The ability to consolidate and map the obtained data from different sources to generate actionable information (i.e. a synthesis of the data).

SA Capability	Description
Information interpretation	The ability to conduct an assessment of the actionable information that was generated in the previous step to comprehend the situation and to understand the significance of those integrated data elements on the desired goals or outcomes. This involves steps such as pattern recognition, interpretation and evaluation.
Information projection (anticipate)	The ability to project the future status of the environment based on the interpreted actionable information. This also entails anticipating and deciding upon which of the (possibly conflicting) interpreted actionable information the consequent decision making should be based.

Some examples of OC-functionality, related to each of the SA capabilities, are given in table 2.

Table 2 Functionalities per situational awareness capability

SA Capability	Corresponding functionalities
Information gathering (from)	*Civilian contact (112)*
	Emergency services personnel
	Other OC's
	Intel organizations
	Corporations
	Social media monitoring
	Sensors (i.e. camera / drones)
	Fire/medical departments
	Local government organizations
	Location data of (LEA) personnel
	Media
Information sharing	*Between LEA team members*
	Between LEA organisations
	Between LEA and non-LEA organisations
	Between OC and LEA officers
	From OC to external stakeholders (media, local government, etc.)
Information storage	*High volume data/traffic storage*
	Cloud storage
	Distributed storage
	Intelligent data search
Information integration (with)	*Police databases*
	Combining information for accuracy & validity
	Monitoring LEA personnel status
	Assessing needs for additional personnel
	Alerting relevant stakeholders (press, command units, etc.)
	Explosive / CBRN threat identification
	Pattern recognition of criminal behaviour
	Social media person-specific research
	Threat identification
Information interpretation	*Mapping of situational environment*
	Monitoring of personnel
Information projection (anticipate)	*Possible scenario mapping*
	Logistical planning & mobilization capability

SA Capability	Corresponding functionalities
	Monitor critical infrastructure

In this market scan, the solutions mentioned by the LEAs must be applicable for at least one of these SA capabilities.

2.2 Threat scenarios

The QROC market scan focusses on the following three scenarios related to the terrorist threat. These scenarios are used throughout the QROC project and are important in the scoping of the QROC market scan. The following scenarios were kept in mind while the market scan was being carried out:

1. **Man Hunt**. The manhunt scenario will focus on a direct and immediate response to collect the information of the perpetrator of a terrorist attack, activating all operational staff with the sole purpose to arrest the terrorist, making use of technology, skills and experiences.
2. **CBRN attack**. The cross border CBRN-e attack will focus on a CBRN-e incident in which multi-disciplinary actions need to be taken to identify the risks, protect the public and build a dynamic security assessment among the EU Operation Centres.
3. **Crowd Management**. The public protection crowd management exercise is an integral scenario, which will re-use elements of the manhunt and the CBRN-e exercises. Due to its specific purpose and the way crowd management and public protection is connected, this training is a separate third real life scenario.

2.3 Technologies

The QROC project focusses on solutions involving these technologies:

- 5G-based technology
- Intelligent data management technology
- Drone-based technology

This section describes these three technologies and systems using these technologies in the context of the SA capabilities described in Section 2.1 and threat scenarios described in Section 2.2.

The QROC market scan only considers solutions which are commercially available or nearly commercially available.

2.3.1 5G-based technology

General description

5G is the fifth-generation wireless technology for mobile networks, deployed worldwide since 2019. Compared to previous generations, 5G brings a higher internet speed (up to 2 Gbit/s), lower power consumption and smaller antenna sizes. The geographical area covered by one base station (i.e. cell coverage) is smaller, allowing a more accurate location or addressing of devices using 5G.

It is expected that the introduction of 5G will have a high impact on these industries (IEEE, 2017):

- Automotive
- Data Analytics
- Emergency Communications
- Factories of the Future
- Health Care

- LTE Broadcast Multicast
- OSS-BSS Impact (operations support system and business support system)
- Power Electronics
- Smart Cities

QROC context

The QROC market scan only concerns systems which have only come into existence because of the introduction of 5G. These 5G-based systems have unique properties which they would not have had if they were using another communication technology. Some currently available 4G-based systems could vastly benefit from 5G technology – these too have been considered in this market scan.

Types of systems that have been considered in the market scan are:

- Automotive systems (applications and sensors in vehicles relying on 5G)
- Distributed data analytics (over 5G networks)
- Mobile phone systems (for applications and sensors on mobiles)
- Smart City systems (including Internet of Things sensors using 5G)

2.3.2 Intelligent data management technology

General description

The amount of data (i.e. information) collected and distributed locally, nationally and internationally, is increasing drastically. The data originates from various sources such as sensors and the Internet and exists in many forms, such as raw sensor data and processed and actionable information. The management and effective use of all this data is increasingly challenging. Analysis tools for big data and powerful processing technology have enabled organisations to gain new insights in among others the workings of nature, the actions of people and performance of systems.

The standardisation of data formats, software protocols and hardware interfaces, and the increase of fast, reliable and ubiquitous Internet connections, brings new possibilities for the collection and distribution of data to and from OCs.

QROC context

In the context of QROC, the focus is placed on applications for managing and analysing live and recorded video and (sensor-) data, for instance to locate and track people and vehicles, either manually or automatically, or to quickly map a person's contacts through an analysis of social media.

Solutions include products which facilitate the secure transport of information from sensor platforms such as drones and CCTV systems to OCs across various types of wired and wireless infrastructure, enable a secure, reliable and methodical storage of information which can be easily accessed by the entities requiring the data.

Solutions also include those products which expedite the secure and efficient exchange of information between OCs (at a national level, but also amongst OCs of EU countries), this include the following modes of communication:

- Information can be queried from one OC by another OC;
- Information can be broadcasted by one OC to one or more OCs;
- There may be time constraints regarding the exchange of information;
- Information may be of a general nature or relating to one specific incident.

Various agreements, procedures and systems are in place to facilitate the exchange of information between OCs. It is expected that situational awareness resulting from this exchange could be improved with innovations in this field.

2.3.3 Drone technology

General description

Drones as a sensor platform have existed for some time, but recent developments in processing hardware and software, sensor technology and communications, have made them increasingly interesting for various observation tasks. Many law enforcement agencies around the world use drones for surveillance and recognisance, crime investigation, search and rescue operations, and traffic management.

QROC context

The QROC market scan will focus on the use on autonomous drone systems for creating or enhancing situational awareness from the air, for instance to locate or track people, to estimate the extent of damage after a disaster, to create a temporary communications relay, to acquire measurements on gasses released into the atmosphere, etc.

3 Methodology

The primary goal of the market scan is to assist QROC NOCs in improving their situational awareness capabilities by providing them with an overview of innovative products and their possible use, which the LEAs themselves use or are interested in.

The market scan results contained in this document and in a separate Excel spreadsheet were achieved in these stages:

1. **Solution search**. Solution products (i.e. manufacturer, product name and webpage) and their applicability (i.e. technology and scenario) were found through a survey amongst the QROC LEAs and ENLETS LEAs.
2. **Solution refinement**. The solutions found during the first stage were assessed on applicability; the product details noted during the solution search stage were further supplemented with the applicable situational awareness categories (see section 2.1).
3. **Solution Catalogue**. The information on the solutions was summarised in an Excel-based tool and made easily accessible by providing selection and filter functions in the tool.
4. **Analysis**. The results of the survey and information found on Internet regarding the products mentioned in the Solution Catalogue were further analysed to determine which product characteristics were deemed most useful for the LEAs.

These stages are explained in more detail in the next sections.

3.1 Solution search

A questionnaire was devised for the LEAs, providing information on the QROC project, and explaining the scope (see chapter 2). The questionnaire queries a LEA on relevant products known to them and their use within the NOC. A shortened version of the questionnaire is given in Annex A.

A list of contacts was compiled from the 14 LEAs participating in QROC and LEAs from the ENLETS Police network.

The questionnaire was sent to the LEAs. Their responses were collected and aggregated.

3.2 Solution refinement

The tabulated results from the survey were examined whereby the product websites were visited. Any inconsistencies in product names, website names, benefits perceived by the LEAs etc., were checked and adjusted if necessary.

References made by the LEAs which contained insufficient or incomprehensible information were removed.

3.3 Solution Catalogue

A format for the Solution Catalogue was designed and implemented in Microsoft Excel. The structure of the catalogue is explained detail in the next chapter (chapter 4).

The refined product details were added to the catalogue along with the associations between the products and the three QROC technology types, the QROC scenarios and the SA capabilities.

A user guide was written and added to the catalogue. The user guide also explains how products can be added to the catalogue.

3.4 Analysis

The information provided by the LEAs concerning the use and perceived benefits of the products was validated against information provided by the product suppliers on their websites (as noted in the Solution Catalogue).

The product characteristics deemed most relevant and beneficial for the LEAs are summarised per technology in chapter 5.

4 Solution Catalogue

The results from the survey amongst the LEAs have been summarised in the Solution Catalogue, an Excel sheet which is available as separate document (EU QROC, 2020).

The Solution Catalogue contains the following information on 44 solutions which the LEAs contributed to this market scan:

- Technology type
- Manufacturer and product name (separated by a '|' symbol)
- Product Type
- Web page
- Relevant scenario
- SA (situational awareness) categories affected; as identified by the LEA's in the survey
- USP (unique selling point)

The Solution Catalogue has been equipped with selection and filter mechanisms to allow the reader to easily find solutions of interest. The catalogue offers the following functionality:

- Easily sort by the three technology types using the ribbon positioned above
- See the products categorized per product type
- Identify which SA categories are / could be affected by the product

A summary of the number of solutions found concerning 5G-based technology is given per scenario and per SA in table 3. As can be seen in the table, most SA capabilities can be used in multiple scenarios at one. The total number of identified 5G/4G solutions is ten.

Table 3 Number of 5G-based solutions per SA capability and scenario (N=10)

SA capability	Manhunt	CBRN attack	Crowd management
Information gathering (from) (n=6)	6	6	6
Information sharing (n=5)	5	2	5
Information storage (n=5)	4	1	4
Information integration (with) (n=4)	3	1	3
Information interpretation (n=5)	3	5	1
Information projection (anticipate) (n=0)	N.A.	N.A.	N.A.

A summary of the number of solutions found concerning intelligent data management technology is given per scenario and per SA in table 4.

Table 4 Number of intelligent data management solutions per SA capability and scenario (N=13)

SA capability	Manhunt	CBRN attack	Crowd management
Information gathering (from) (n=7)	7	5	7
Information sharing (n=13)	13	8	13
Information storage (n=11)	11	7	11
Information integration (with) (n=9)	9	7	9
Information interpretation (n=10)	10	5	10
Information projection (anticipate) (n=2)	2	1	2

A summary of the number of solutions found concerning drone-based technology is given per scenario and per SA in table 5.

Table 5 Number of drone-based solutions per SA capability and scenario (N=19)

SA capability	Manhunt	CBRN attack	Crowd management
Information gathering (from) (n=14)	10	9	9
Information sharing (n=17)	13	11	12
Information storage (n=16)	12	5	11
Information integration (with) (n=3)	3	1	3
Information interpretation (n=4)	4	2	4
Information projection (anticipate) (n=3)	3	1	2

The Solution Catalogue is mainly provided as an overview of relevant solutions per technology type and forms the input for the analysis presented in the next chapter.

5 Analysis

Each LEA has investigated and collected information on solutions, within the scope of QROC and related to their own specific needs. These solutions are summarised in the Solution Catalogue (see chapter 4). The catalogue was analysed to gain insight into the unique selling points and the compatibility of the three scenarios with each of the QROC technology categories, based on the (foreseen) use as noted by the LEAs during the survey. The results of the analysis are presented in this chapter.

LEAs can use these results to help make decisions in improving a situational awareness capability. The decisions concern whether a solution is suitable for implementation in the LEA's operational environment and worth pursuing (i.e. could possibly lead to a general improvement compared to the current situation). In this process, the Solution Catalogue could be used for acquiring further details from the solution providers.

As advantages and disadvantages are relative concepts, being dependent upon the current situation of each LEA, the results of the analysis have been summarised as general solution characteristics, based on the LEAs' responses to the survey.

For each of the three QROC technologies, the general solution characteristics have been summarised according to the following categories:

- Functionality (i.e. extraordinary/innovative functional qualities the solutions may offer, e.g. multiuser, target localisation, etc);
- Performance (i.e. general solution performance features or gains. e.g. range, accuracy, speed, etc);
- Physical characteristics (where applicable, e.g. size, volume, weight, etc).

The analysis, based on product information given on the solution providers' websites, has resulted in the following summaries of characteristics per technology, presented in the following sections.

Each of the following sections contains two tables showing the main characteristics of one of the three QROC technologies. The first table summarises the characteristics, whereby each characteristic is numbered and labelled with the characteristic category (i.e. Functional, Performance, Physical). In the second table the characteristics are linked to the situational awareness categories and scenarios.

5.1 5G-based technology

The market scan as performed by the LEAs has revealed that products are mainly 5G-ready (i.e. currently 4G), meaning they are not yet compatible with 5G but are planning on integrating 5G connectivity into their functionality. Among the identified suppliers there is no actual use of 5G yet, but upgrade paths are announced.

Furthermore, the scan as performed by the LEAs have identified different kinds of detectors which can be used to identify different kinds of agents (biological, chemical, thermal). These are useful for the scenarios but are not directly related to 4G/5G because they mainly operate without requiring an active network connection. For the added value to the scenarios these detectors are still included in the market scan.

The most relevant characteristics associated with 5G-based solutions and the category of each characteristic are given in table 6.

Table 6 Relevant characteristics of 5G-based solutions

#	Cat. F/P/Ph	Relevant characteristic
1	F	5G based technologies are backwards compatible with earlier standards (3G/4G).
2	F	All handheld / portable detectors classified as 'handheld detectors' are stand-alone and do not need a functioning network for their primary detection capability.
3	P	Increase in quantity of data that can be transmitted through the use of 4G (5G ready) devices.
4	Ph	IoT solutions are generally portable and can be easily monitored remotely.

5.2 Intelligent data management technology

Intelligent data management technology is a rather broad category which encompasses a lot of types of technological innovations, the main four identified in the market scan are:

- OC platforms
- GIS (Geographical information systems)
- Video analytics platforms
- Data platforms

The most relevant characteristics associated with intelligent data management technology solutions and the category of each characteristic are given in table 7.

Table 7 Relevant characteristics of intelligent data management technology based solutions

#	Cat. F/P/Ph	Relevant characteristic
1	F	Geographical information systems (GIS) can incorporate a lot of information sources and can even anticipate what the next actions could be. I.e. based on weather predictions and terrain lay-out, GIS can predict the spread of a fire.
2	F	Some countries (i.e. Finland) have developed their own emergency response systems (OC Platforms) for use by emergency services. Sharing these systems between EU member states could lead to better integration, exchange of information and a potential reduction in cost.
3	P	Video analytics software is advanced in its capabilities to quickly and efficiently analyse large sets of data. I.e. by using a simple query 'show me red cars on the road in the last two hours', it can detect and display all 'red cars' in the last two hours in a single still image.
4	F	Two of the identified technologies are open source. Potentially more technologies can be freely found and used under an open-source license.

5.3 Drone-based technology

The market scan performed by the LEAs revealed multiple drone-related technologies and services. These can be categorized into different components. Various drone-related products and services can be identified, such as:

- Drone flight simulation / planning software
- The drone platform itself
- Drone payloads (i.e. various sensors)
- Drone flight (flying, monitoring & recording) software
- Data analysis tools based on data collected by the drone itself

The most relevant characteristics associated with drone-based technology solutions and the category of each characteristic are given in table 8.

Table 8 Relevant characteristics of drone-based technology solutions

#	Cat. F/P/Ph	Relevant characteristic
1	F	Drones are increasingly diverse in their application possibilities.
2	Ph	Physical drone sizes are increasingly varied (very small to large) and can be equipped with a multitude of rotors, which can create a very stable and precise flight (up until flight accuracy in centimetres)
3	F	Various sensors (chemical, biological, thermal) can be fitted to drones to increase their functionality
4	F	Smaller drones (i.e. DJI Mavic) can be handheld and deployed be a single operator, for example a police officer at a crime scene
5	P	A general relation can be found between the size of the drone and the flight time. Generally, the larger the drone the longer the flight time

6 Conclusion

Task 4.3 has produced a Solution Catalogue in which products designated as innovative by the LEAs involved in QROC are summarised for use by the same QROC LEAs. The catalogue has been designed to enable the LEAs to easily find products related to the three scenarios and the SA capabilities. The products were further analysed to ascertain the most beneficial product characteristics for the LEAs in the context of the QROC project. The results of the analysis are included in this report.

Within the QROC project, innovative OC use cases will be designed for the emerging technologies, based on selected products from the Solution Catalogue and the analysis results in this report.

This report and the Solution Catalogue are a means for the QROC LEAs to learn from each other. The catalogue will be further disseminated to EU LEAs via existing links and be available to download it from the QROC website.

7 References

[1] "Toward a Theory of Situation Awareness in Dynamic Systems", Mica R. Endsley, First Published March1, 1995 Research Article, https://doi.org/10.1518/001872095779049543.

ANNEX A SURVEY FORM

This Annex contains a compact version of the questionnaire. The introduction and the answer fields have been omitted to save space.

The aim of the survey is to know which commercially available solutions the QROC LEAs regard as most innovative and how they (intend to) use these products. The survey refers to the three technologies and three scenarios defined in the QROC project.

For each of the three technologies (5G, intelligent data management, drones) please answer the following questions:

Which innovative products based on the technology are you using (or know that are in the market or close to the market) suitable for solving the following scenarios?

MANHUNT:

Technologies related to:

- collection of information of the perpetrator
- activate all operational staff

Product names:

Product types:

Websites:

Role of the products in the scenario (what function does the technology perform, which information does the product provide, who is using the product in your organization…):

How do these products improve your situational awareness?

Which benefits do you see that these products offer in comparison to your current working methods (e.g. improvement in speed, accuracy, etc):

Which possible drawbacks could these products have? (e.g. risks):

CBRN-e:

Technologies related to:

- Risk identification,
- Protect the public
- Build a dynamic security assessment among the EU Operation Centres

Product names:

Product types:

Websites:

Role of the products in the scenario (what function does the technology perform, which information does the product provide, who is using the product in your organization…):

How do these products improve your situational awareness?

Which benefits do you see that these products offer in comparison to your current working methods (e.g. improvement in speed, accuracy, etc):

Which possible drawbacks could these products have? (e.g. risks):

CROWD MANAGEMENT:

Technologies related to:

- Exchange of information between control centres
- Exchange of information between control centres and special units

Product names:

Product types:

Websites:

Role of the products in the scenario (what function does the technology perform, which information does the product provide, who is using the product in your organization…):

How do these products improve your situational awareness?

Which benefits do you see that these products offer in comparison to your current working methods (e.g. improvement in speed, accuracy, etc):

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