



ENCIRCLE

EuropeaN Cbrn Innovation for the maRket CLustEr

D3.9 Part b 2017 Call Topics

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Document Information

Grant Agreement n°	740450	
Project Title	European Cbrn Innovation for the market CLustEr	
Project Acronym	ENCIRCLE	
Project Coordinator	Université catholique de Louvain (UCL)	
Document Responsible Partner	Bartłomiej Jankiewicz	bartlomiej.jankiewicz@wat.edu.pl
Document Number	D3.9	
Document Title	Part b 2017 Call Topics	
Dissemination Level	PU	
Contractual Date of Delivery	Month 2 (08 May 2017)	

Partners involved in the Document

N°	Participant organisation name (short name)	Check if involved
1	Université Catholique de Louvain (UCL)	X
2	BAe SYSTEMS (BAES)	X
3	Ouvry SAS (OUVRY)	X
4	Przemysłowy Instytut Automatyki i Pomiarów (PIAP)	X
5	Tecnoalimenti (TCA)	X
6	Wojskowa Akademia Techniczna (WAT)	X
7	European Virtual Institute for Integrated Risk Management (EU-VRI)	X
8	Istituto Affari Internazionali (IAI)	X
9	Université de Nice-Sophia Antipolis (UNS)	X
10	Università Cattolica del Sacro Cuore (UCSC)	X
11	FALCON COMMUNICATIONS LIMITED (FALCON)	X
12	Smiths Detection Watford Limited (SMITHS)	X
13	MIKKELIN KEHITYSYHTIO MIKSEI OY (MIKSEI)	X
14	ENVIRONICS OY (EOY)	X
15	ADS GROUP LIMITED LBG (ADS)	X

Circulation list

- European Commission
- ENCIRCLE Consortium

Executive Summary

The Deliverable D3.9 presented herein provides the first version of the ENCIRCLE catalogue containing the list of technologies, Part b 2017 Call Topics, as referred to in the SEC-05-DRS-2016-2017: Chemical, biological, radiological and nuclear (CBRN) cluster topic description. It is basis for the preparation of the RIA aiming at research and development of novel CBRN technologies and innovations providing solutions for the gaps identified in the catalogue.

The first version of the ENCIRCLE technology catalogue is based on the EDEN Demonstration Project results and in particular the main remaining needs and gaps identified and classified along the EDEN improved functional and technical taxonomy, including human and social sciences.

The preparation of the final version of the first ENCIRCLE catalogue started a few weeks before ENCIRCLE project Kick-Off Meeting with the complementary analysis conducted within the consortium and by consulting with the practitioners and customers already part of the Practitioner and Customer Community at the beginning of the project (mainly from the EDEN End User Platform) as well as from suppliers and researchers, part of the Technological and Industrial Community (mainly from the EDEN SME and Supplier platforms). The ENCIRCLE catalogue was consulted, evaluated and finalized during consortium workshop held at ENCIRCLE project Kick-Off meeting, which took place in Brussels on March 21-22, 2017.

The catalogue containing Part b 2017 Call Topics has already been published on the European Commission Participant Portal in the description of the SEC-05-DRS-2016-2017: Chemical, biological, radiological and nuclear (CBRN) cluster topic.

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1 Introduction

The main goal of the ENCIRCLE project is to strengthen the European industry to help create the tools and strategies needed to consolidate the EU CBRN communities of suppliers and practitioners in order to strengthen the field of CBRN safety, security and defence in the European Union.

In order to achieve this goal the innovative approach based on the five objectives aimed at prompting the innovation and business development, and filling market gaps in the project timeframe was proposed. The project objectives include:

- Create an open and neutral EU CBRN cluster,
- Provide a sustainable and flexible vision and roadmap for the development of the European CBRN market and innovations,
- Provide integration with platforms (systems, tools, services, products) by proposing standardized interfaces and future EU standards to integrate CBRN technologies and innovations developed from the Part b projects,
- Support CBRN safety, security and defence commercial and market services,
- Improve and facilitate European CBRN dissemination and exploitation.

The one of the most important objectives of the project, associated with the 3 of 4 project milestones, is to provide a sustainable and flexible short to long term vision and roadmap for the development of the European CBRN market and innovations. Most of the activities associated with this objective will be covered by the WP3 – Innovation Plan and Dissemination. In the WP3 needs and gaps analysis and generation of the Innovation roadmap will be carried out on a yearly basis. The results of these activities will become basis for recommendations for the Part b calls 2017, 2019 and 2020, which will be issued by the European Commission.

The proper selection of Part b Topics corresponding to true needs of the practitioners and customers community should result in innovative CBRN solutions, which should easier find their way to the EU market and finally to the practitioners. In order to ensure proper selection of the topics reflecting true needs and gaps ENCIRCLE consortium will:

- collaborate closely with the Practitioner and Customer Community and Technological and Industrial Community mainly via consultations during ENCIRCLE workshops and through the portal networks;
- conduct a continuous state of the art, market study, budgets and needs, gaps assessment and threat analysis based initially on EDEN and other EU and national projects;

- conduct a continuous assessment of non-technological lessons learnt from EU projects (such as EDEN demonstrations) and EU national/international demonstrations and exercises allowing better defined operational procedures.

The first results of ENCIRCLE project realisation provided herein were used for preparation of SEC-05-DRS-2016-2017 Part b 2017 Call Topics and will become basis for development of CBRN innovation by winning consortia in this call. The catalogue was issued after a first complementary analysis conducted within the consortium and by consulting with the practitioners and customers already part of the Practitioner and Customer Community at the beginning of the project (mainly from the EDEN End User Platform) as well as from suppliers and researchers, part of the Technological and Industrial Community (mainly from the EDEN SME and Supplier platforms).

2 ENCIRCLE Catalogue – Part b 2017 Call Topics

The current version of the ENCIRCLE catalogue contains the list of the technologies, which were identified as gaps in the certain functions (STACCATO functions listed below) of the main phases in the CBRN Security Cycle (Prevention, Preparedness, Response, Recovery). Due to the time constraints, very short period between the beginning of the project and deadline for providing first deliverable needed for SEC-05-DRS-2016-2017 call opening, the first version of the ENCIRCLE technology catalogue is mainly based on the EDEN Demonstration Project results. However, ENCIRCLE consortium partners a few weeks before Kick-Off meeting and during Kick-Off meeting workshop worked on the evaluation and updating the catalogue to its final version presented in Figures 1 a-c.

STTACATO Functions

- Risk assessment and impact reduction
- Protection of first responders and population
- Exercise, simulation and training
- Search and Detection
- Identification and authentication
- Situation awareness and assessment
- Intelligence, information management
- Intervention and neutralisation
- Communication
- Crisis operations management
- Search and rescue and evacuation
- Decontamination and de-pollution
- Short to long term recovery
- Psychological and Social aspects
- Control of disarmament/fight against proliferation
- Security analysis

Function	Description	Phase in security cycle				Field				Priority	ENCIRCLE TECHNOLOGY NEEDS		Tool Requirements
		Prev	Prep	Resp	Rec	C	B	RN	Med		Desc:		
Risk Reduction	Too little research/identification of improvised CBRNE devices and production facilities.	X				X	X	X	X	L			
Protection	Lack of ordinary working suit for daily-use, including embedded detectors. Lack of standardised or universal and multifunctional (with integrated sensor systems) PPE, that is not heavy and bulky. Lack of respiratory protection, with an extended range of protection from toxic agents.			X		X	X	X	X	H	Find the optimum balance between comfort, systems integration and protection of PPE (standardised, light – for longer use -; usable also at high outside temperatures, and including communication, localisation devices and sensors); a) Respiratory protection system with an improved sound quality for communication; b) Gloves that allow to use touch screen devices and buttons; c) Protective suits against general toxic threats (with no changing of air filters).	Respiratory protections to first responders that can protect towards a range of toxic agents. Standard and multifunctional, light, non-bulky and easily manoeuvrable PPE. Additional features should include: end of filter life, rail mounting, disclosure coatings, novel closings.	
Detection	Lack of the ability for fast scanning of large numbers of containers for threatening CBRNE material.	X				X	X	X	X	H	Lack of the ability for fast scanning of large numbers of containers for threatening CBRNE material.		
	Insufficient equipment for estimation of contamination, and insufficient training in the use of the equipment. Lack of instant scanning, single or multipurpose detectors, which are fast, sensitive, robust, reliable, affordable, handheld and which do not disturb business continuity when applied in the prevention or preparedness phase. Needs to detect a large spectrum of hazard and residual, post decon, contamination. Must produce less false positive results.	X		X		X	X	X	X	H	Insufficient equipment for estimation of contamination. Lack of instant scanning, single or multipurpose detectors, which are fast, sensitive, robust, reliable, affordable, handheld and which do not disturb business continuity when applied in the prevention or preparedness phase. Needs to detect a large spectrum of detectable agents, and detect degree of hazard and residual, post decon, contamination. Must produce less false positive results.		
	A general lack of accurate and instantaneous detection equipment and technologies for search and detection (also a gap between commercially available instruments and those which are really used).			X		X	X	X	X	L	Quick detection of the presence of contaminating agent (without need of immediate identification).	Further development and improvement of RN detection systems. Important issues are: reduction of weight, natural background rejection, improvement of sensitivity, capability of interconnectivity between sensors, integrated neutron detection. Also procurement of up to date detection systems.	
	Lack of detectors for wash water and water used in food production processes.		X			X	X	X	X	H	Lack of detectors for wash water and water used in food production processes.		
	Lack of stand-off detectors for CE threats cheap enough to allow a spatially comprehensive deployment.			X		X	X	X	X	H	Lack of stand-off detectors for CE threats cheap enough to allow a spatially comprehensive deployment.		
	Lack of detectors for relevant B agents and toxins in various matrices, especially in food production.					X	X	X	X	H	Contaminating agent sensor with simplified and direct reading having an improved false alarm rate.	Possibility of detection of pathogens which are relevant for food contamination in an automated, real-time and fast way. Possibility of detection of natural occurring, intentionally and accidentally released pathogens.	

Figure 1a – List of Part b 2017 Call Topics

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Function	Description	Phase in security cycle						Field				ENCIRCLE TECHNOLOGY NEEDS		Tool Requirements	
		Prep	Resp	Rec	C	B	RN	Med	Priority	Desc					
Medical countermeasures	Lack of effective specific long term medical treatment.	X	X	X	X	X		X					H	Better coordination and identifying of responsibility party for long term treatment	Remote and easier tele nursing systems
	Lack of new and improved antidotes, vaccines, and medical equipment available in adequate numbers (new medications should have long shelf lives, not require special storage, and be easy to administer).		X		X	X		X					M	Improving the logistics, communication systems; track and trace	logistics and traceability of stocks, improved supply chain management systems to administer vaccines easier
	Lack of fast and reliable on-site information on nature and severity of exposure. Many of the existing systems do not support simulation and/or training modes.				X	X		X		X			M	Information exchange between all stakeholders in the field, crisis managers, authorities, situational awareness, decision making. Advanced devices for the field detection and identification of pathogens presenting a threat on civilian populations	fast efficient threat detection and diagnostics, including simulation and training possibility. Fast audio/visual information exchange between field responders and hospitals
Information management, command and control, communications	Few systems/methods to coordinate results and integrate them to make a total picture of the events. Very important points are those of resilience and dependability, essential in many systems: focus has to be on the verification and proof of programming languages and assessment of critical software to fault tolerance, robust architectures.		X		X	X		X		X			H	Managing a large quantity of information coming back from the users (can crash the system).	A system architecture which can manage and coordinate a large amount of information. The system must be resilient and robust.
	No tools today to process and manage all information from social media.	X	X		X	X		X		X			H	Improve information collection of social media, analysis, dissemination	Real time information from various social media channels for improved early warning and situational awareness and better response coordination
	Lack of dispersion calculation tools which are used for the calculation of the spread of radioactive material in real time and therefore can be used for real time assessment. These modelling tools should not only take various information into account like weather conditions but also should be easy to use.		X		X	X		X		X			M	Dispersion of radioactive cloud or contamination must be considered in real-time (via analysis and modelling tools of dispersion of contamination). Based on the prediction of what will happen in next few hours response activities are coordinated and decisions are made with regard to what has to be done immediately. Modelling systems for prediction are needed involving factors related to wind, agent type, dispersion type, topography, orography, etc.	Development and further improvement of modelling systems for real time dispersion calculations taking into account wind, agent type, dispersion type, topography, orography, etc. Also improvement of real-time information gathering and provisions (e.g. weather condition) for getting a better information basis for the calculations.
	Mtd to long term recovery: need for long term strategies for recovery, decontamination, reoccupation and eventually reconversion including monitoring, logistics, Human and social sciences, ethics...			X	X	?		X		X			L	Long term monitoring, decontamination, environmental protection, population handling	Sensors, monitoring, databases, human and social sciences
	Lack in precision for traceability of units along food chains (particularly complex chains).	X			X	X		X		X			H	Traceability system for food products which covers the whole chain from producer to customer in order to make a proper recall and back track each single batch.	Increase the precision and scope of traceability systems all over the chain.

Figure 1b – List of Part b 2017 Call Topics

D3.9 Part b 2017 Call Topics

Function	Description	Phase in security cycle				Field				Priority	ENCIRCLE TECHNOLOGY NEEDS		Tool Requirements
		Prev	Prep	Resp	Rec	C	B	RN	Med		Desc		
Information management, command/control, communications	Lack of suitable equipment for use with untrained persons. Many of the existing systems do not support simulation and/or training modes, making them difficult to operate for personnel who are not normally involved in CBRNe activities.			X	X	X	X	X	X		L	Lack of suitable equipment for use with untrained persons. Many of the existing systems do not support simulation and/or training modes, making them difficult to operate for personnel who are not normally involved in CBRNe activities.	
Decontamination	Decontamination, which balance efficacy, environment and electronic sensitivity. This topics includes: shortage on knowledge on how different surfaces should be decontaminated; insufficient equipment and techniques for decontamination of electronics, rough or porous surfaces (like concrete surfaces or wallpaper); Responsible decontamination (wastes) etc.				X	X	X				H	Decontamination, which balance efficacy, environment and electronic sensitivity. This topics includes: shortage on knowledge on how different surfaces should be decontaminated; insufficient equipment and techniques for decontamination of electronics, rough or porous surfaces (like concrete surfaces like concrete surfaces).	
	Lack of automated decontamination equipment such as unmanned vehicles allowing recovery teams to work outside of harm's way.			X		X	X				L	Lack of automated decontamination equipment such as unmanned vehicles allowing recovery teams to work outside of harm's way.	
Ground Systems	Severe lack of radiation resistant equipment (for working in highly contaminated areas), e.g. helicopters, UGVs (unmanned ground vehicles), UAVs (unmanned aerial vehicles) and RN detection systems			X	X						L	Radiation resistant equipment: vehicles for working in contaminated areas (remote controlled, autonomous or manned).	Development of equipment (Unmanned Ground Vehicles (UGVs), helicopters, Unmanned Aerial Vehicles (UAV s)) which can operate under elevated radiation levels. Testing of existing equipment concerning radiation hardening prior to procurement and deployment for field use.
	Lack of specific function parts of robots for handling RN sources in terms of disposal (e.g. after finding a smuggled R-source). More relevant for C			X							H	Lack of specific function parts of robots for handling RN sources in terms of disposal (e.g. after finding a smuggled R-source). More relevant for C	

Figure 1c – List of Part b 2017 Call Topics

D3.9 Part b 2017 Call Topics

3 Way forward

The delivery of the Deliverable D3.9 is starting point for the future ENCIRCLE consortium activities, which will result in the recommendations for the SEC-05-DRS: Chemical, biological, radiological and nuclear (CBRN) cluster Part b calls in 2019 and 2020. The main activities related to the preparation of the recommendations for future calls will be carried out within the WP3 in the collaboration with WP4.

The overall approach and methodology will be based on collaborative innovation built on regular exchanges and inputs through the ENCIRCLE portal capabilities and networks (gathering the partners and the two communities' requests, questions, recommendations and inputs), including the progress achieved in the different WPs and around a series of collaborative workshops that will be held yearly during the project to meet the requested projects deadlines.

In the upcoming months the activities of WP3 (Task 3.1 Needs and roadmap monitoring) will be dedicated to review of:

- needs from previous projects such as EDEN and other CBRN related projects, workshops and interviews with the Practitioner and Customer community, threat analysis,
- gaps from projects, state of the art from the innovation watch and the competition analysis.

The first set of the recommendations for the future calls will be discussed during the First ENCIRCLE Workshop, which will be held on September in Warsaw, Poland.