

Issue 1

ENCIRCLE

M A G A Z I N E



Delivering change in the CBRN community

Strengthening a nation's CBRN defence, security and resilience capabilities can be a numbers game, and the odds are that the inevitable will happen

CBRN-UK is the national supplier organisation representing UK industry's CBRN capability to government, emergency responders, the military and Critical National Infrastructure operators. We are the one place to turn to when you need advice and knowledge; one impartial advisor you can trust for all your CBRN needs.

Supported by ADS, the UK's national defence, security and resilience trade organisation, CBRN-UK is uniquely positioned to provide impartial advice to the market regarding current capabilities and areas of innovation.

Millions of people worldwide rely on the expertise and experience of CBRN-UK members to ensure their communities and mission-critical users are protected from the CBRN threat. Collectively, CBRN-UK enables the protection, mitigation and neutralisation of:

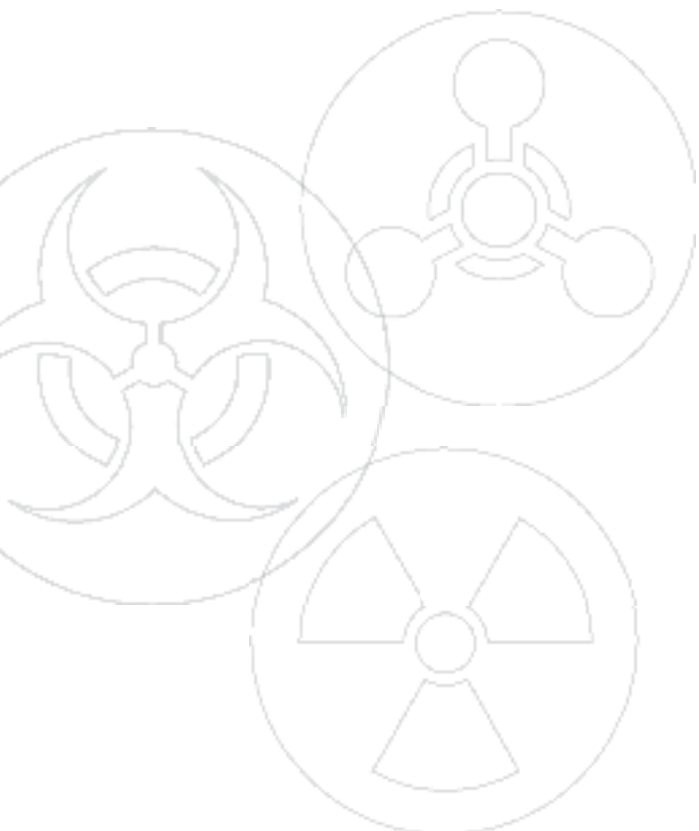
- The use or threatened use of a CBRN weapon or device by state or non-state actors;
- Hazards arising from deliberate damage to CBRN related facilities; or
- The accidental release into the environment or the deliberate misuse of a CBRN industrial material.

CBRN-UK comprises over 50 organisations and counting that provide world-class capabilities in all aspects of CBRN. The group represents the full spectrum of suppliers, from large multi-nationals to SME's and academic start-ups. The capabilities offered by CBRN-UK members, either collectively or individually, include:

- **Detection, Identification and Monitoring of CBRN substances** – aimed at establishing the release or presence of a CBRN hazard;
- **Integrated Information Management** process and services that provide exploitable CBRN information;
- **Protection** – individual personal and collective physical protection equipment designed to provide protection against direct contact with, and contamination by CBRN substances;
- **Hazard Management** – individual personal decontamination equipment and equipment for decontaminating equipment and infrastructure;
- **Medical Counter-measures** – to diminish the susceptibility of personnel to the lethal and damaging effects of CBRN hazards and to treat any injuries arising from exposure to such hazards;
- **Training and simulation** solutions to prepare individuals and organisations to respond to a CBRN event; and
- **Expert CBRN Consultancy advice.**

Strengthening a nation's CBRN defence, security and resilience capabilities can be a numbers game, but the odds are that we can help

For more information, please visit www.cbrn-uk.com



Introduction

Welcome to the first edition of the 'ENCIRCLE Magazine.' Inside you will find interviews and articles explaining what is behind this innovative four year project. Bringing together some of the most thought provoking organisations in CBRN this initiative will provide support and assistance to the whole European CBRN community, including first responders, and will act as an enabler for the Part B of the Sec-05 H2020 CBRN Cluster.

ENCIRCLE is only Part A of the SEC-05 H2020 CBRN Cluster topic and will assist subject matter experts by understanding their particular needs e.g. investment, integration, customer needs and thus tailor the support so it addresses these challenges. The blend of expertise in the project, including national CBRN consortiums, allows a truly unique perspective, especially when it comes to providing assistance to subject matter experts (SMEs).

2018 is a big year for the project, as it will be the first interaction of ENCIRCLE with the new part B projects and feedback from all sides will be an important step in the process. ENCIRCLE was instrumental in identifying the gaps in CBRN defence for the first Part B calls, and while it is not involved in the bid process will re-join the equation once contract is awarded to act as valued assistant to the consortium.

One of the ways that the consortium provides assistance is through the dynamic catalogue. This is designed to allow the industry and the user community to come together to discuss requirements, capability and best practice. The catalogue has been optimised to allow ease of use and will be regularly updated by the consortium to continually improve the offering the remaining three years of the project.

Improved communication and understanding of user requirements will result in early and better identification of market needs and the solutions needed to fill it. The products that will result from this mechanism should provide a faster route to market for the SME and allow a more competitive and vibrant CBRN industry. These improved products should also result in an evolution of tactics, techniques and procedures, which will advance user response and help keep Europe safe from terrorist attacks and other incidents (criminal acts, accidents or emerging infectious diseases etc).

We ask you to fill out the survey via www.surveymonkey.co.uk/r/NX6TVK8 and keep updated with our activities via <http://encircle-cbrn.eu/> and the Linked In Encircle group. Here you will find information on upcoming workshops and events, valuable information on other EC projects and the way to register for the catalogue. If you have any queries please do not hesitate to contact me on zoe.rutherford@cbrnworld.net





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Published by Falcon Communications Limited

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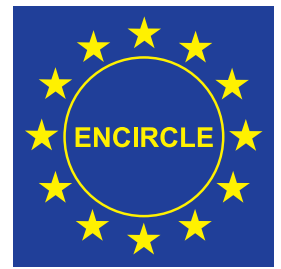
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Meet the team

ADS

ADS is the premier trade organisation for all companies operating in the UK Aerospace, Defence, Security and Space industries globally. CBRN-UK is an ADS Special Interest Group representing UK industry's CBRN capability to government, emergency responders, the military and Critical National Infrastructure operators. The group represents the full spectrum of suppliers, from large multi-nationals to SME's and academic start-ups. The aim of CBRN-UK is to act as a focal point to represent the interests of its members to domestic and international Government and other organisations or companies concerned with the CBRN sector of business.

BAE Systems

BAE Systems is an international company engaged in the development, delivery and support of advanced defence and aerospace systems. BAE Systems has, via its extensive business portfolio, an immense breadth and depth of Electronic Systems expertise and experience in the land, air, sea and metropolitan domains. This experience includes development of Crisis Management solutions at a technology, product, platform and system-of-systems level, as well as core skills in knowledge management, systems integration and project management.

Environics

Environics is a Finnish company with 30-year experience and the world's leading supplier of Chemical, Biological, Nuclear and Radiation (CBRN) detection devices and monitoring integrated solutions, ranging from personal safety to national security. We provide innovative solutions for different safeguarding organizations in 50 countries, from civil defence and homeland security to the military. Behind our comprehensive range of products and solutions is a highly competent team of experts having years of experience in the implementation of demanding projects in CBRN fields.

European Virtual Institute for Integrated Risk Management (EU-VRI)

EU-VRI is a European Economic Interest Grouping (EEIG), which aims to facilitate or develop the economic activities of its members by pooling of resources, activities and skills, thus yielding new opportunities, not or hardly achievable for members when acting alone. In 2016 EU-VRI has 48 (6 founding / 36 associate / 6 honorary) members coming from 21 countries and from various sectors. EU-VRI promotes the integration of Safety and Security in industry and research and supports the identification and facilitation of standardization opportunities within European research with dedicated services and activities.

Falcon Communications

Falcon Communications Ltd. is a UK based SME and involved in publishing, consultancy and conference activities. It publishes the world's leading magazine on CBRNE matters, *CBRNe World* (www.cbrneworld.com) and also produces the largest events in the field, the CBRNe Convergence series. In addition to this the company has provided technical and commercial consultancy to some of the largest companies in the CBRN sector and has been engaged in a variety of EC consortiums

Istituto Affari Internazionali

Istituto Affari Internazionali (I.A.I.) is one of the major Italian think tanks in the fields of foreign policy, security and defence issues and EU affairs. An independent approach characterises policy-oriented research of the I.A.I. S&D Programme at the crossroad of four strands: the policies adopted by national and international institutions and organizations in the security and defence field; the relevant industrial and technological dynamics; the operational developments in the military and civil security areas; the politico-strategic interaction in the Euro-Atlantic framework. In several EC-funded project S&D Programme has developed a significant expertise in organizing and bringing security end user and stakeholders communities into technological projects and in managing feedback collected in workshops / interviews in compliance with the classification and confidentiality rules set by the EC

Miksei

Mikkeli Development Miksei Ltd. (Miksei) supports local and regional companies in creating jobs and innovations, increasing sales and exports, and developing new lines of business. They supports local and regional companies every step of the way, from start-up to growth and internationalisation. Typical development issues involve business models, financing, and sales and exports. Business training is also an important part of our services – Miksei has a network of experts in most aspects of business. Mikkeli is a home to CBRNE Finland, a group of companies representing Finnish CBRNE expertise. Miksei manages several national-level CBRNE related projects and also participates in EU-level safety and security programmes

Ouvry

OUVRY is an SME Company, based in Lyon – France, which specialises in the study, research, development and manufacturing of CBRN personal protective equipment and related concepts. They offer concepts across the full spectrum of CBRN protection: ranging from impermeable solutions through to wholly air permeable solutions. We manage the entire supply chain: feasibility, development, manufacturing, quality control, logistic and after-sales service based on a Quality system management ISO 9001- MQRP 2010 compliant. OUVRY has developed a good experience as prime contractor for complex programs with the European Defence Agency, the National Agency for Research ANR and the Defence procurement Agency DGA in collaboration with various foreign partners.

Przemysłowy Instytut Automatyki i Pomiarów

PIAP is a leading Polish research institute active in the fields of robotics, automation, machine vision and measurements systems, with a vast experience in developing unique solutions in the field of industrial automation, security and defence technologies, information technology, industrial and mobile robotics as well as measuring devices. For over 15 years PIAP is a successful developer of mobile robots used in EOD/IED and SAR missions. Research performed at PIAP facilities is concentrated on mobile autonomous systems, innovative human machine interfaces, data fusion, image processing and CBRN detection and environmental sampling systems. PIAP's experience in designing and production of CBRN payloads dates back to 2009.



Smiths Detection

Smiths Detection designs, manufactures, sells, and services advanced products for detection and identification of hazardous chemicals, explosives, and narcotics for the military, emergency response, transportation, ports & borders, and critical infrastructure security markets

Tecnoalimenti

Tecnoalimenti (TCA) is an Italian consortium of industries for research and innovation that integrates horizontally and vertically the main industrial players of the agro-food chain. As a non-profit research organisation, Tecnoalimenti S.C.p.A. is composed of 28 food sector industries and one financial institution, Intesa, as trustee of Ministerial funds. TCA acquired a wide experience in carrying out collaborative innovation and dissemination activities at national and international level, becoming today the leader organisation at national level within the agro-food sector. It has a wide experience as coordinator and partner in over a dozen of European projects and national projects, a selection of which is here reported: TRACEBACK, eMensa, HighQ RTE, Bioactive-net – Healthgrain – Baseline – <http://rditac.com> – Einstein II – TRISK .

Università Cattolica del Sacro Cuore

The UCSC research program closely collaborates with 16 internal colleges, 62 departments and 93 research centres. Their common goal is the understanding and study of those topics that have proved vital to the well-being of each human being: the new frontiers of economics, bioethics, environmental recuperation, developments in the judicial fields, family dynamics, major mass phenomena, the evolution of political systems, new horizons in medicine, the technological applications of physics and mathematics, and the most recent discoveries in environmental research. Within EU Project EDEN (FP7) UCSC is provided ethical monitoring and supervision through the evaluation of different tools and demoed the ethical review of selected deliverables. Most of these EDEN activities were handled through an Ethical Helpdesk.

Université Catholique de Louvain

UCL-CTMA (Centre for Applied Molecular Technologies) is a mixed academic-clinical-military biotechnological platform. It hosts at a single location, a joint civilian-military clinical and research staff of ~34 people with multidisciplinary expertise and acts as reference biotechnological platform specialized in genetics and molecular genetics for IREC/UCL as well as a reference CBRN-biological platform for the BE-Armed Forces. UCL-CTMA is a technological transfer-applied science research unit specifically acting as "Biothreat control unit of Defence Laboratory Department (DLD-Bio)" for the BE-MOD, as well as for the CUSL. One of

the main tasks of UCL-CTMA is to develop clinical and emerging DNA- and protein-based methods for a rapid diagnosis of genetic disorders and for rapid, specific, sensitive detection, identification and monitoring of infectious agents.

Université de Nice-Sophia Antipolis

Nice-Sophia Antipolis University (UNS) is the second largest multi-disciplinary French university with 26,000 students and more than 2,500 staff members. The university, research oriented, is developing innovative pedagogic and research actions with many international collaborations.

In 2016, UNS has been awarded with IDEX label on JEDI project for research activities and as one of the 10 major research center in France. Polytech Nice-Sophia has developed during the last years an exceptional network of industrial partnerships – more than 350 companies – mainly focused on innovation and ICT adapted to various sectors. The exceptional international environment of Sophia Antipolis strongly reinforces this dynamic.

Wojskowa Akademia Techniczna

The Wojskowa Akademia Techniczna (WAT) is a public and military polytechnic university under supervision of MoD and Ministry of Science and Higher Education. The WAT is the largest military university in Poland and the most important provider of scientific and research support for Polish Armed Forces. The highly skilled research staff combined with many newly developed and well-equipped research facilities, an appropriate education environment and modern accommodation facilities have earned the WAT highly distinguished credentials both at home and abroad. The main emphasis is on applied research, which results in wide co-operation with Polish and international companies leading to developing products and technologies that are often commercialized.





Leader of the Pack

ZR: What is the ENCIRCLE concept? Why is it needed? What are the project's objectives, goals and expectations?

CG: The ENCIRCLE CBRN Cluster is a new type of initiative within Horizon 2020 security research and innovation. Its aim is to try to address difficulties experienced by small and medium sized enterprises (SMEs) and larger companies in bringing new technologies and innovations in the field of CBRN to the security market. These difficulties may be because they often address niche markets, and need to be combined with other solutions, or they lack mid to long term support and investment, as well as procurement challenges and standardisation issues.

The ENCIRCLE mission is to facilitate the development of a competitive EU CBRN industrial sector in the global security market that will be capable of improving EU resilience to CBRN new threats and risks. This initiative will have a particular emphasis on SMEs. Our approach has resulted in five main project objectives that will meet the innovation, business development and market gaps in the project timeframe. They are to:

1. Create an open and neutral EU CBRN cluster. This will include enlarging and strengthening the European CBRN technological, industrial and practitioner sector by building on those registered under the European Distance and E-learning Network (EDEN) and facilitating cooperation to achieve better EU competitiveness, market development and response to user needs.

2. Provide a sustainable and flexible short to long term vision and roadmap for the development of the European CBRN market and innovation.

This will include a continuous state of the art gaps assessment and threat analysis, for science, innovation, market study, budgets and needs, based initially on EDEN and other EU and national projects. A list of CBRN relevant technologies that need to be developed will be issued with a view to integrating them into supplier platforms and end user systems.

3. Provide integration with platforms (eg systems, tools, services, products) by proposing standardised interfaces and future

EU standards to integrate CBRN technologies and innovations developed from SEC 05 Part B RIA.


4. Support CBRN safety, security and defence commercial and market services.

This will include identifying and developing interfaces with financial institutions and procurement agencies to facilitate market entry, and facilitate other commercial and other services support, enabling access to global markets.

5. Improve and facilitate European CBRN dissemination and exploitation.

This includes exploitation of the EDEN consortium and platform information that has been made available to ENCIRCLE, reporting on the cluster discussions, innovations and impact and providing a sustainable platform for the future.

ZR: How do you plan to achieve the "open and neutral EU CBRN cluster"? What is the value of the neutral piece? How do we quantify a European company? For



Clive Goodchild, external technical coordinator ENCIRCLE, talks to Zoe Rutherford about what makes the project innovative

example, can US companies with a registered European board of directors appeal to ENCIRCLE for help?

CG: To facilitate this, ENCIRCLE provides a sustainable and secure portal and database (the ENCIRCLE dynamic catalogue) to facilitate the catalogue, community networks and the marketplace. For the technological and industrial community, members comprising industries and SMEs, supported by research and technology organisations (RTOs) and academia, are being offered the mechanism to describe and present their systems and products on an equal basis, whilst respecting intellectual property.

The portal provides a forum for raising the issues and challenges that exist in this sector. For the practitioner and customer community, members will be widely consulted and involved throughout the project. This will include informing the whole technological and industrial community about their needs and their results, when non-restricted. By keeping the information as open and neutral as possible the industrial and technological community, and in particular the SEC-05 Part

B' projects, get a better understanding of practitioners' needs, while the practitioner community gains a better understanding of what new innovations and solutions are achievable. It should be noted that ENCIRCLE is a four year project, hence the intention is to progressively build this community in a sustainable manner, learning from both communities as we progress. As regards who can be in the cluster, on the industrial and technological side it should be remembered that the purpose of this new initiative is to increase the competitiveness of European industry, so ENCIRCLE has to keep this restriction in mind. On the practitioner community side it is expected that requests for help and support will be open to European and non-European communities.

ZR: How does ENCIRCLE improve upon the projects that have come before it? How much do you see of the final deliverables of the various projects, and how can we harness these to the advantage of the wider community?

CG: ENCIRCLE cannot be simply compared

with earlier projects. It is a new initiative to specifically address some of the market issues and opportunities arising with the introduction of new innovations in the CBRN area, and particularly to support the challenges for the SME community. The project will be a learning exercise for the consortium and its communities, including customers, and will adapt as we progress. One of ENCIRCLE's objectives is to see what has been done before, what new science and innovation are being developed and what are the lessons learnt.

There is an innovation watch activity in the project and a module within the ENCIRCLE catalogue enabling projects to promote their activities and facilitate increased cooperation. ENCIRCLE is actively involved in the community of users initiative to improve knowledge sharing. It will also sign agreements with the selected Part B projects in order to monitor and advise on research and innovation results to support their future success in the market. ENCIRCLE is expected to sign similar agreements with other projects, past or current.



ZR: How important is the EDEN project to ENCIRCLE? What does it share with EDEN, and how does it differ – why isn't it EDEN II?

CG: EDEN was a demonstration project and hence differs in both scope and maturity. What was required after EDEN was a new exploitation path to promote new innovations, build the communities, address some of the market issues as experienced by EDEN and provide a mechanism to help SME innovators in particular. EDEN addressed existing advanced solutions, ready for field demonstrations. It did not address research and innovation activities in an upstream and global process.

That is why this completely new type of project was initiated. The information from EDEN users and suppliers has been transferred and updated into the ENCIRCLE catalogue (unclassified needs and gaps, suppliers' tools and systems descriptions - industries, SMEs information in particular) to build a new sustainable knowledge base. Those EDEN industrial and technological organisations that have already agreed to join the ENCIRCLE community now need to register via ENCIRCLE and will then be able to update their solutions.

A particular lesson learnt, and a challenge for ENCIRCLE, concerns procurement of new innovations and integration and interfaces. ENCIRCLE has a number of initiatives planned in this area including questionnaires currently on the project site where industry and practitioners can raise their views, and workshops.

ZR: European SMEs have been facing uncertainties and difficulties that are obstacles to innovation and investment. What is it about this project that will entice people to participate? If you had to sum up the ENCIRCLE project in one bullet point what would it be?

CG: You must remember that ENCIRCLE is only Part A of the SEC-05 H2020 CBRN Cluster topic. Part B of the call is specifically for SMEs to develop new innovations to meet practitioner and market needs. ENCIRCLE will assist the SMEs by understanding their particular needs, eg investment, integration, customer needs, etc, and then tailor the support so it addresses these challenges. The first interaction of ENCIRCLE with the new part B projects takes place in 2018 and feedback from all sides will be an important step in the process. As for one bullet point, what about: ENCIRCLE will facilitate the successful market introduction of European new technologies and innovations in the field of CBRN.

ZR: What was the process for generating the first Part B calls, and how will this differ for the next calls? Will it be the



Clive Goodchild presenting at the Eden end conference

same process every time, or as the project develops will we shift as we learn?

CG: In terms of generating the first Part B calls, the ENCIRCLE consortium prioritised needs and gaps that were outstanding at the end of the EDEN project and submitted them to the commission. This methodology had to be followed by the consortium as the call was due at the beginning of the ENCIRCLE project.

For future calls, ENCIRCLE will gather new needs and requirements and prioritise them with the practitioner and customer community. The first workshop was conducted in Warsaw in 2017 [See review on pp.16]. Further analyses and consolidations will be conducted in 2018 to provide the topics for the 2019 call. This process has already adapted and will continue to evolve as we develop the cluster and practitioner networks develop. What will be important will be an 'external' review by the communities, involving all parties, so we can adapt and ensure the initiative's continued development and success.

ZR: How does ENCIRCLE balance the calls with the commission? What is an ENCIRCLE role and what is a commission one? When can we talk to SMEs and when can't we, what advice and knowledge can they seek from us?

CG: ENCIRCLE recommends a list of topic areas to the commission based on inputs from the practitioner and technological community. Before the list is submitted, there are discussions with the communities at open ENCIRCLE workshops. Surveys are then initiated for input, and the commission selects

the topics it decides to include for the work programme call. During this process, the SMEs' only contact with ENCIRCLE is for the signing of draft collaboration agreements which are required in the call for further results exchanges and monitoring. No technical discussions can be held as the ENCIRCLE consortium has to be completely neutral at this stage.

Assessment of the proposals is conducted independently from ENCIRCLE using the normal H2020 evaluation process. Once the proposals have been selected and the projects awarded, formal discussions and interactions can then be conducted between ENCIRCLE and the Part B projects, and ENCIRCLE can provide and facilitate in areas such as customer needs, innovation and business model development and maturity, integration with platforms, investment and partnership opportunities. The formal process is implemented in both the Part B projects and the ENCIRCLE grant agreements.

ZR: What stage of product design can ENCIRCLE help with? Is it just when products are at TRL6, or does it include finished products?

CG: ENCIRCLE will provide recommendations on research and innovation priorities responding to user and market needs, and achievable in a Part B project timeframe (starting from TRL4 or 5 maturity levels). It will monitor projects and results, primarily in H2020 and beyond but not exclusively. ENCIRCLE and its practitioner community will provide feedback on products and tools whatever their maturity levels, whenever

possible and as required by the suppliers in the catalogue network and marketplace. While ENCIRCLE will be primarily concerned with products less than or equal to TRL7, it has developed a business maturity model that potentially allows advice for new innovations across the full maturity scale.

ZR: How do you envisage the two elements of H2020-SEC 05 Part A 2016 (ENCIRCLE) and Part B 2017 combining? Should the bid and European CBRN sector encouragement be considered separate or part of a unified effort?

CG: Within the limits of confidentiality and intellectual property rights, the two elements (the cluster itself and the associated projects) should be part of a unified effort, by providing recommendations, feedback, opportunities for integration, and further gaps identification.



¹ <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sec-05-drs-2016-2017.html>

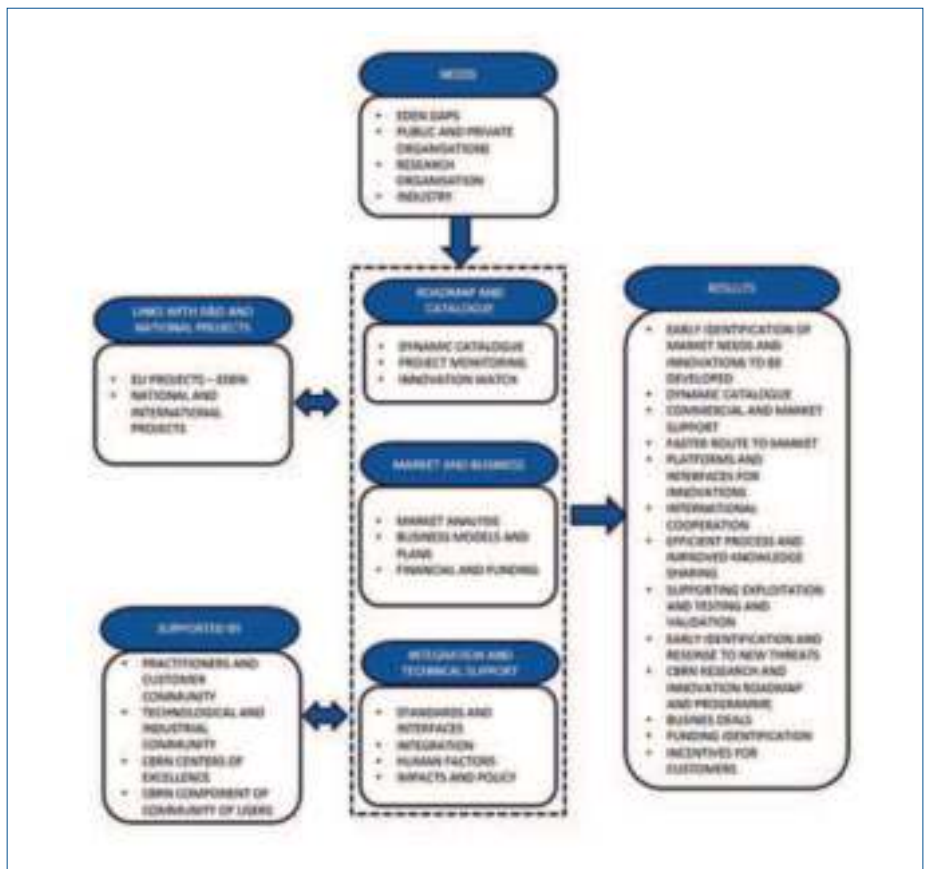
About the Project

Learn more about the ENCIRCLE project, what it will do, how it will do it and when!

European Cbrn Innovation for the market CLustEr (ENCIRCLE) is a four-year coordination and support project to address the European commission's Horizon 2020 security topic: Chemical, biological, radiological and nuclear (CBRN) cluster. It will support the commission by identifying research gaps and proposing sensible and innovative research and development projects to fill them. This will be achieved by bringing together CBRN practitioners and industry professionals to create an organisation that can get to the heart of the real CBRN needs and gaps, and bring to

market new technology to assist and benefit those on the ground.

To improve its resilience to new CBRN attacks and threats, the EU needs a specialized, competitive, efficient and sustainable industry. Capitalizing on its experience in the EDEN Demonstration Project, other CBRN relevant projects, and in the CBRN market and supply chain, the ENCIRCLE consortium proposes an innovative approach to reach this goal in a short to long term perspective. Once achieved it will allow SMEs and large



How the project meshes with other elements ©Encircle

industries to deliver and invest in the best innovations on the market.

ENCIRCLE has five key objectives aimed at promoting innovation and business development to fill market gaps in the project timeframe:

1. Create an open and neutral EU CBRN cluster,
2. Provide a sustainable and flexible vision and roadmap for the development of the European CBRN market and innovations,
3. 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 of the H2020-SEC-05-DRS CBRN Cluster call,
4. Support CBRN safety, security and defence commercial and market services,
5. Improve and facilitate European CBRN dissemination and exploitation.

The project is conducted by a consortium of specialized industries, trade associations and research organisations with flexible and lean procedures under the advice of the EC Community of Users. It will rely on two large interactive communities: practitioners and customers, and industrial and technological providers: the latter including many SMEs. To optimize the needs and gaps assessment, as well as innovation development, acceptance and success, ENCIRCLE will establish formal links with other consortia such as future Part b projects.

The main expected impact is the enhancement of the EU CBRN industry's competitiveness. This will allow it to enlarge its market share while increasing the benefits of the EU research and innovation to improve CBRN preparedness, response, resilience and recovery efficiency.

Pret a Porter

The ENCIRCLE Dynamic Catalogue is an open and neutral platform associated with commercial and technical services. The Dynamic Catalogue provides a platform for industry and technological providers to showcase European CBRN capabilities as well as provide a knowledge source for practitioners and policy makers. You need to be first registered as an ENCIRCLE Community Member to access the catalogue.

You can register in a Community at different levels associated with different "rights": Practitioner and Customer community member:

- On behalf of your Organization or as an "individual",
- With or without (operational) systems and tools,



Technological and Industrial community member

- On behalf of your Organization or as an individual expert,
- You need to register at least one tool or one project to be accepted.

Registration Process

- Open the ENCIRCLE dynamic Catalogue home page: <https://www.encircle.eu/>,
- Click either on "Register as Practitioner and Customer community" or on "Register as Technological and Industrial community",
- Fill in the organization, points of contact, functions compulsory fields,
- For the Technological and Industrial community, fill at least one tool or project,
- Submit your request (at the bottom of the questionnaire),
- You will receive a mail with a Letter of Intent to return signed,
- After receiving your LOI, your request will be approved by the project Management Board,
- At the end of this procedure, you will receive a link to activate your account and choose your password.

Once you have received your registration confirmation you will be able to access the catalogue and begin to contribute to the content and community networks. The objective is to gather users, tools and needs and for the CBRN community to work together through the catalogue.

The catalogue has been designed in an easy to use format and, importantly, it is secure. It contains a variety of resources such as tools, projects, conferences, community networks and 'market place' functions where users will be able to place their needs in front of other users who may be able to help fulfil them.

Other functionalities of the catalogue will be a technical support section which will contain sections on integration and standards, an innovation watch summary and a roadmap summary and a funding, procurement and business section, this will provide information on sources of funding, procurement agencies and cluster business discussions.

The catalogue currently contains over three hundred needs and gaps which will continue to grow with use and input from the community.



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It takes a village

ZR – What are your plans for building and managing the industrial and technological community? What past experience do you have in this area?

TH – As regards Ouvry, it is important to know that we are an industrial company. We have vast experience and have been involved in a host of different European projects as members or a coordinator. These have been projects from FP7 and H2020, as well as some with the European Defence Agency, and the DGA (Direction générale de l'armement) in France.

It was clear that ENCIRCLE needed to have two active communities, the community of practitioners, and then the industrial and technological community. We have to be sure that they are able to work together, so it is important that these two communities can interact directly.

In our own projects we made sure that there were direct and active links between the practitioners and us. We cannot create innovative R&D programmes unless all parties are engaged early in the project. The CBRN community needs vibrant supplier and

practitioner communities, this is the logical way of working if you want to create really good projects. Our company was also a member of the Eden Cluster, not to be confused with the Eden project, and we participated in two technological demonstrations and workshop on needs and gaps. As such we have experience interacting with different suppliers specialized in different types of technology. We are also a member of Groupement des industries de defense et de securite terrestres et aeroterrestres (GICAT, the French homeland security and military industrial association), and within this group we participate in discussions about new projects and R&T orientations. It is therefore not difficult for us to interact with other companies that are not directly involved in our business.

In regard to building the community, what's most important is to be able to clearly explain the benefits of being part of the ENCIRCLE community to potential members. As such ENCIRCLE proposed different kinds of communication actions to disseminate all the information they need to

understand their interest. We also build upon the community of professional networks as well as national and regional clusters, such as Pôle de compétitivité (the competitiveness cluster). Through these networks we are able to reach out to more groups and to disseminate information about the ENCIRCLE project rapidly and effectively.

We also participate in various types of information days in relation to other European programmes such as H2020 or, in the future, FP9. These, too, generate interest in ENCIRCLE and are a good way of reaching large numbers of people at a time. I have received two letters of intent to participate in ENCIRCLE just after an Encircle presentation in Lyon .

ZR – What kind of response to the catalogue have you received so far? How many have signed up to it from this community? Can we take feedback from the community and re-insert it into developments?

TH – We do not have much feedback concerning the catalogue as it has only been

Thierry Pollet, technological and industrial community coordinator, and R&D Manager at Ouvry SAS, talks to Zoe Rutherford about building the ENCIRCLE communities

The purpose of the ENCIRCLE industrial and technological community is to be a source of independent advice and provide an authoritative steer for the project. It gives an opportunity for industry, including small and medium sized enterprises, research and technology organisations and academia, to raise awareness of their products and tools, including procedures and human and social sciences methods and their project results for integrators, other suppliers, practitioners and future customers.

operational for a few months. There will be more after the second edition, which should be released around February. Since September 2017 we have added 15 new members, bringing our total to 85, that is a good build on the Eden catalogue which had around 70 members.

Although ENCIRCLE is a CBRN cluster it is very important to inform all the supplier communities that some technology they have could lead to improvements in CBRN, even if the technology is not a CBRN tool itself. For example, software and 3D printing tools may not have been developed with CBRN in mind, but they could be relevant to that area. It's important for us to increase response to the catalogue and that

includes enlarging our community beyond that of CBRN alone.

When we do receive feedback, we will use it to improve the catalogue, which is essential as the catalogue should be dynamic. The only way to ensure this happens is to have active participants from both industrial and practitioner communities.

ZR – So you think an important legacy of ENCIRCLE will be the strengthening of the CBRN community, and the project. Reaching out to other types of supplier communities you will be able to say: "You may not have developed something with CBRN in mind but it's a piece of technology we can actually put to good use in this field"?

TH – Yes! For example after the recent ENCIRCLE project presentation at Lyon Chamber of Commerce, someone approached me from a company that is developing new technologies for plastics production to say that they might be interested in ENCIRCLE. There was no direct connection to CBRN, but he understood that he could perhaps find a new market or new applications for the company's technologies.

We have now more than 300 tools in the catalogue, but most members of the supplier community have only registered one or two tools, which clearly cannot be their global portfolios! So, in order to grow the community and projects it is important that we encourage these suppliers to upload



Encircle will work with previous projects to try and help commercialisation of their products ©GIFT

more products and introduce new tools to the catalogue.

ZR – How do you propose to encourage further communication between the two communities? What forms is this communication taking and what types of advantage of in future, for instance social media, email, face to face, etc?

TH – One of the purposes of the ENCIRCLE catalogue is to encourage communication. Membership of this catalogue will appeal to suppliers and practitioners as it will allow them to access information and use it for their own businesses, purposes, and interests. The place for this communication will be a forum within the catalogue site. This will be where we encourage and promote direct communication between the two communities. The forum is currently under development and will be integrated into future versions of the catalogue. We are also encouraging and promoting communication through our workshops as these are places

where the different communities can interact with each other.

The first of these was oriented towards practitioners, the second will be oriented more towards the industrial community. I think another element that will encourage lively communication between the communities will be the marketplace area in the catalogue. This is now being developed and will be in future versions of the catalogue. We are continually thinking and planning ways to encourage communication between the communities, such as the forum and marketplace.

ZR – What lessons do you think we can learn from the Eden project in order to improve ENCIRCLE?

TH – The main lesson learned from Eden is the importance of dissemination. If the suppliers don't know that such a project exists they will not participate and engage. This kind of project needs to make sure it is known and identified since its beginning, and not wait until it is too late to

disseminate successfully and secure partners. Projects are of great interest to suppliers, but we have to make sure we inform them correctly and fully about each one.

ZR – Are there guidelines for how the community should promote and disseminate current and future products and services in the catalogue, or is it up to them how they do this? Are we going to have a 'question of the day/week/month' that we can use to promote the best idea, and further drive engagement?

TH – For the moment I do not really have much information on the first point. A question of the day/week/month could be a very good way of speaking about one subject, one idea, or one programme, yes, I think this could be a good thing. I think it will be something for the forum, and in this area we will be able to have such subjects. This is an interesting point and we should work out how to do it.

ZR – How do you envision networking and integration with other suppliers via the community working? Eden had a big end conference to focus the mind, what triggers does ENCIRCLE have to do the same?

TH – Networking and integration with different kinds of suppliers will firstly be done via the workshops. This is the main place for achieving successful networking and integration between these two groups. We also need better relationships and integration with the new innovations that are developed within the Part B project. There will be a major end conference but we should not wait until the end of the project before doing a big push of the information.

ZR – How will you encourage the industrial and technical community members to come forward and provide independent advice and an authoritative steer for the project? Is there a limit to the amount we can do?

TH – In the first instance we have prepared two different questionnaires for the community members to complete [they can be found here - www.surveymonkey.co.uk/r/NX6TVK8]. One is on policy and procurement and the other is on market analysis. These are very important as this is the best way for us to ask for, and receive, feedback from the members. It is also a good way for us to obtain information concerning needs, policy, procurement etc, and for us to highlight these issues.

The questionnaires are currently available in the catalogue. As it is important for us at this moment to obtain information rapidly, the community members were emailed directly about the questionnaires and asked to go online to the catalogue and complete them.



Encircle will promote communication between groups ©CBRNe World



The Encircle catalogue will provide information on a wide range of products ©CBRNe World

Is there a limit to the amount we can do? Yes, we are limited in some ways. We cannot go to each practitioner, each supplier and ask for lots of information so we need good communications to explain that we have produced questionnaires and ask them to read and complete them.

ZR – What would you say to anyone considering signing up for the catalogue to encourage them to do so? What makes it better/more special than other free products on the market – such as ECBC, MRI Global etc?

TH – The first point is the catalogue includes a real place to promote your products. A place where not only can you provide information on your current products but also somewhere to promote and give information on future products and get feedback on your ideas from practitioners. We offer a place for networking, for example new members who are not making products specifically for CBRN purposes can link up and network with other suppliers who are developing CBRN specific products that can lead to new collaborations and technologies. The tools in the catalogue allow direct contact with different types of users who will express their needs. These can be seen by suppliers who may be able to meet these needs by focusing on new technologies. This will be a real asset. It is also important to state that the ENCIRCLE catalogue includes rules of confidentiality in the exchanges between the two communities

ZR – What are the benefits for those who sign up to the community/catalogue? Will some types of community (ie users) get a different experience than suppliers? How different do you think it will look in month 36 (March 2020) compared to the

starting point in March 2017 or now?

TH – The experience of the users and suppliers will be a little different as their interests are not the same, so their experiences will not be the same. What is interesting is the fact that they could have an answer, and it is important that at the end of the project they have found a common interest. The success of the ENCIRCLE project

will be in the direct relations and interactions within these communities.

What will be the results in three years? I think one of the positive outcomes that will lead to the success of ENCIRCLE is a European willingness to push projects to share their knowledge and to interact with each other in order to create a community of real results. This is good for ENCIRCLE as its purpose is to build a community. I am quite sure we have a good opportunity to do this as there is a general feeling that we all have to share information for the general good. We have to capture this interest and momentum from the community to share information on different projects. In three years we should have made a lot of improvements using these types of projects. The present situation is different to what it was years ago, and this is a positive thing. Now all the projects want, and are willing, to share information.

Already this environment of openness and cooperation has meant that ENCIRCLE has been able to create links with other ongoing commission projects. At present around 13 other projects have agreed to collaborate with us, so this will be good in creating improvements and fostering relationships between all the projects and their members. ENCIRCLE will be a catalyst to help all these projects to interact with one another.



Users will be able to find out information on products and ask for help with CBRN problems ©CBRNe World

The first ENCIRCLE Workshop

The first ENCIRCLE workshop was held at the Military University of Technology (WAT) in Warsaw, Poland on 7 and 8 September 2107. It brought together CBRN practitioners, industry professionals, participants from other EU projects, and some from education

The first ENCIRCLE workshop was held at the Military University of Technology (WAT) in Warsaw, Poland on 7 and 8 September 2107. It brought together CBRN practitioners, industry professionals, participants from other EU projects, and some from education.

This first workshop was dedicated to practitioners, whether they were fire hazmat, law enforcement, health professionals or even other government departments. Its aim was to provide a better understanding of the ENCIRCLE project and its objectives, and one of the most exciting opportunities was to understand the extent of the CBRN Cluster B call.

ENCIRCLE is one element of the CBRN cluster within the European commission's Horizon 2020 project, and is officially called Cluster A. The other element is Cluster B, which has several research innovation actions (RIA) focussed on research and development of novel CBRN technologies and innovations. Over the years ahead different consortia will bid for individual calls within Cluster A. Each consortium implementing such a RIA must establish a collaboration agreement with ENCIRCLE and settle how the results from the RIA will be exploited and integrated into platforms ENCIRCLE manages.

Cluster B bids will lead to development up to technology readiness level (TRL) four to seven and be worth between €2 and €3.5 million per action. As such there is a great deal of interest from organisations to find out how ENCIRCLE fits into the CBRN Cluster B call and how it will inform future CBRN Cluster B calls by helping set needs and gaps agendas. There was also information on funding opportunities and networking with other CBRN specialists that might be involved in future bids.

During the workshop the initial results of the project were presented along with an analysis of current needs and gaps in the

CBRNe field. Another aim was to get firsthand feedback from participants on what capabilities they feel are missing and what ENCIRCLE can do to fill them. As part of this workshop, and with practitioner support, the consortium also conducted a new threat assessment to take into account new needs, threats and technologies. Further workshops and events will be planned throughout the life of the project, aimed at different community groups with different subject themes. The results of these workshops will be available on the ENCIRCLE website¹.

Following an opening address, day one began with talks from consortium members starting with an overview of the project by Anne-Sophie Piette from Université catholique de Louvain. She explained the project's purpose, how the consortium is made up in terms of the different types of knowledge and experience that members contribute, and the links between the different CBRN communities. Also covered was the way ENCIRCLE aims to create a bridge between disparate communities in order to establish a more cohesive CBRN community in Europe.

Brigitte Serreault from UNS gave a presentation on the dynamic catalogue, which is a platform for industry and technology providers to showcase European CBRN capability and provide a knowledge source for practitioners and policy makers. She explained how the different aspects of the catalogue work and how those that register will be able to use, and benefit, from it. The catalogue is easy to use and currently holds around 300 needs and gaps and 85 suppliers. These will continue to grow as the community uses it. Those wishing to register for the catalogue can find the necessary information on the ENCIRCLE website, www.encircle.eu.

Noel Mitchell (ADS CBRN UK) covered market analysis in the CBRN arena. He discussed the current market space and how

it is very fragmented on both the supply and demand sides with differences between the first responder and defence sectors. He went on to state that in future there will be yearly analysis of EU and international markets and that the method of engagement for the analysis will be via multiple routes including social media, email and the ENCIRCLE website. Much will be done through surveys. Eventually four surveys will be available, targeting different user groups and refreshed over a 12-month cycle.

The current survey can be completed at www.surveymonkey.co.uk/r/NX6TVK8. It is aimed at users, industry and procurement agencies so that a broad overview of results can be gathered from the wider CBRN stakeholder communities. The questions are completed anonymously.

Session one of the workshop comprised a review of past and current EU activities in the CBRNe domain. Piotr Swierczynski (H2020 NCP and EU project manager) gave a talk on the Polish national contact point (NCP) and funding opportunities in H2020. Mariusz Mlynarczyk (War Studies University, Poland) delivered a presentation about project eNOTICE² and their work on setting up CBRN training centres as a result of the needs and gaps analysis performed within the project. Jean Christophe Hilare (Ministry of Interior, France) presented on project iLEAnet³ and informed attendees of the innovations made through law enforcement agency networking. Next, Marek Bryan (Military Institute of Epidemiology and Hygiene, Poland) discussed the work he has been a part of with project 34 and gave a thought-provoking talk on CBRN event response and the related medical emergency response, which prompted numerous questions from the audience.

Marcin Podogrocki (University of Lodz, Poland) spoke about the ERASMUS+⁴ project



and the development of CBRN training programmes for Polish police officers. A range of products was created including a training needs analysis report, a good practice and partners capabilities report, a CBRN course curriculum, trainer's handbook, student handbook, a set of three instructional brochures and three instructional videos.

Next came a talk on project DAIMON⁵, which supports decision-making in respect of marine munitions in the Baltic Sea, and which generated a lot of questions and interest. This was delivered by Jacek Beldowski (Institute of Oceanology PAS, Poland). He gave a project overview and covered the history and current status of degradation products, how they have been dumped in both legal and illegal sites, and how the project has created a fish disease index which helps to show how the environment is being affected by munitions/munitions degradation. Piotr Cholyk of the independent anti-terrorist sub unit of the regional Polish police then spoke about building CBRN capabilities and mitigating risks at air and road border crossings. He discussed an upcoming exercise, planned for Lublin airport, which would involve the use of a full aircraft.

Session two focussed on the results of ENCIRCLE's initial activities, and was presented by Bartłomiej Jankiewicz of WAT, who explained some of the next steps in the project. One of these will be ascertaining whether the needs and gaps from the Eden project are still valid and what will be done to ascertain this. Participants were presented

with examples of the needs and gaps questionnaires. He also advised that the results from the thematic workshops at this event will form part of the calls for future topics.

The afternoon of day two required the attendees to participate in thematic needs and gaps workshops. The audience was presented with a scenario, and then split into four groups each focussing on a different area. The groups looked at: protection, detection and identification, decontamination and recovery, and situation recovery and command/control. Each group ran through the scenario it received and discussed and tried to identify and needs and gaps that were present. In due course the entire audience reassembled to hear how each of the four groups had got on.

Each group had identified between 10 and 20 needs and gaps, which when presented promoted pertinent and active discussions across the full audience, making for a very productive session. The pressing need for training was a common theme that was actively agreed on across all four groups, however.

This was a useful activity for the project with a positive outcome as it delivered instant input and feedback from the community of users on what they need, want, and see as missing in their CBRN fields. This can be analysed and built upon as well as being added to the list of needs and gaps presented in the dynamic catalogue.

Day two began with a session on CBRNe policy and procurement considerations and

consisted of talks from Rafał Wierzchosławski of the Polish internal security agency about Poland's CBRNe security system. This was followed by an engaging talk about chemical and ecological rescue services by Iwona Nowak-Maj of the Polish state fire service, and then a presentation on EU CBRNe policy by Anne-Sophie Lequarré (European commission, JRC). The day's final presentation was delivered by Clive Goodchild (BAE Systems) who spoke about procurement and policy and the lessons learned from FP7 project Eden.

The first workshop was a highly successful event that achieved its aims of: active participation, identification of current needs and gaps by practitioners, and active networking between different CBRN sectors. The workshop was well attended with practitioners joining from over 13 countries including Austria, Czech Republic, Denmark, Finland, France, Germany, Italy, Latvia, Macedonia, Netherlands, and Sweden. Everyone who attended the workshop was engaged by the talks, which contributed to making it an interesting and valuable networking experience that had brought together practitioners and industry and started conversations which could lead to innovation.

More workshops are planned for 2018, and will be tailored for the different communities with specific topics relevant to each. Information about these workshops will be released on the project website www.encircle-cbrn.eu, LinkedIn and social media platforms.

¹ <http://encircle-cbrn.eu/>

² <https://www.h2020-enotice.eu/>

³ <https://www.ileanet.eu/>

⁴ <http://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details-page/?nodeRef=workspace://SpacesStore/288f6a19-2ef4-4a06-a145-559400f05404>

⁵ <https://www.daimonproject.com/>

Totally Topical

The information below was the first list of technologies for Part b 2017 Call Topics, also referred to in the SEC-05-DRS2016-2017: Chemical, biological, radiological and nuclear (CBRN) cluster topic description. It was the basis for the preparation of the RIA which aimed 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 was based on the EDEN Demonstration Project results and in particular the remaining needs and gaps identified and classified along the EDEN improved functional and technical taxonomy, including human and social sciences. 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.

These results will become the 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).

Function ID	Description	Phase in security cycle				Field				Priority	ENCIRCLE TECHNOLOGY NEEDS Desc	Tool Requirements
		Prev	Prep	Resp	Rec	C	B	RN	Med			
Risk Reduction	Too little research/ identification of improvised CBRNE devices and production facilities.	X				X	X	X	X	L	#N/A	#N/A
Protection	Lack of ordinary working suit for daily-use, including embedded detectors.			X	X	X	X	X		H	#N/A	#N/A
	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 includes communication, localisation devices and sensors): a) Respiratory protection system with an improved sound quality for communication; b) Gloves that allow use of touch screen devices and buttons; c) Protective suits which are effective 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	X		H	Lack of the ability for fast scanning of large numbers of containers for threatening CBRNe material.	#N/A
	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.	X		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.	#N/A
	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.

Function ID	Description	Phase in security cycle				Field				Priority	ENCIRCLE TECHNOLOGY NEEDS Desc	Tool Requirements	
		Prev	Prep	Resp	Rec	C	B	RN	Med				
Detection	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.	#N/A
	Lack of stand-off detectors for CE threats cheap enough to allow a spatially comprehensive deployment.			X	X	X	X				H	Lack of stand-off detectors for CE threats cheap enough to allow a spatially comprehensive deployment.	#N/A
	Lack of detectors for relevant B agents and toxins in various matrices, especially in food production.	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.
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 managementsystems 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	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 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	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				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.
	Mid 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				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.

Function ID	Description	Phase in security cycle				Field				Priority	ENCIRCLE TECHNOLOGY NEEDS Desc	Tool Requirements
		Prev	Prep	Resp	Rec	C	B	RN	Med			
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.	#N/A
Decontamination	Decontamination, which balances 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	X	X		H	Decontamination, which balances 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.	#N/A
	Lack of automated decontamination equipment such as unmanned vehicles allowing recovery teams to work outside of harm's way.			X		X	X	X		L	Lack of automated decontamination equipment such as unmanned vehicles allowing recovery teams to work outside of harm's way.	#N/A
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			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 (UAVs) 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				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	#N/A



Making the CBRNE world go round



Philippe Quevauviller, research programming and policy officer at the European Commission, talks to Gwyn Winfield about Encircle putting arms around the community

CBRNE delights in silos. Chemists like speaking to chemists, microbiologists to microbiologists, police to police etc, etc. This means that the system can work efficiently... but only sometimes. Yet in the real world it would be rare for any CBRN attack, for example, to only have policemen in attendance, or for an area to be screened only for chemical agents and not radiological. Events mess up the tidy silos, so an organisation that doesn't move in silos is needed to help people 'think outside their box' (or silo!).

Until recently the same has been true for research within the European Commission. Research and technology organisations (RTOs) did research that interested them, and while it might, one day, have made an impact on the job that people were doing on the ground, it was removed from that. Since there was a gap between the research and those who would ultimately benefit from it, like police, fire, and health professionals, there was also a gap between what technology was 'nice to have' and what was needed. This has meant that some of the

commission's research was ultimately only of value to the RTOs, and a certain disenchantment grew in the user community.

Encircle is an attempt to try and span that gap, and the information in these pages helps explain how it is going to do so. Philippe Quevauviller, research programming and policy officer and the European Commission's Encircle project officer, came to CBRN from outside the field, eager to bring to this area the same type of community that he experienced as a policy



Encircle has identified effective decon as one of the gaps in European CBRN ©CBRNe World

officer working on water and climate change. He saw a need for harmonisation, to break the cycle of RTOs producing outputs that were digestible for them, but not for the people on the ground.

He explained his rationale in moving away from the previous system of putting together research 'calls' and his hope that it would result in greater integration. "The previous situation allowed market fragmentation in CBRN areas. The lack of a coordination mechanism in R&D, which

would lead to uptake by the market, meant that many tools and technologies developed by FP7 projects did not result in marketable products. We feel that another approach is needed to help small and medium sized enterprises (SMEs) enter the market dimension, hence this cluster idea, which should make it easier for them to align tools/technologies at appropriate technology readiness level with market opportunities. It is a kind of mentoring group, guiding SMEs in the post-development phase."

Outside the radiological detection market, which often has major national projects like Cyclamen in the UK, many of today's established CBRN products emerged thanks to large military procurements. These provided the critical mass to enable companies to finalise their products and then sell them on to small purchasers. One of Encircle's goals is to try and bring some of these smaller organisations together to share information through the catalogue and hopefully, through interaction, find other agencies that are buying similar products.

The benefit for purchasers is economies of scale, which will, hopefully, reduce the unit price, while the companies gain the necessary security to finalise the development of cutting edge technology.

M Quevauviller agreed that that was Encircle's vision, but said it was only a small step in the process of trying to strengthen the European CBRN industry. More steps would come in the future, but first we would have to see what strides the team was making! "For the time being a European-wide procurement strategy has little visibility as we are still in an exploratory phase. The Encircle cluster will work on it in the coming years, but it is premature to speak about any strategic vision as we currently don't have one for procurement.

There will be a lot of discussion in the CBRN area in 2018, especially with Clive Goodchild [see the interview on pp 8], who has a clear grasp of what can be done and advice on how we can do it. We will have discussions at the community of users event in March, but even after that we won't be certain what to do on procurement aspects. We all need to learn and I rely on Encircle to shine a light into what is possible in the CBRN area. It will be good to have something clearer, and I will be interested to hear the detailed discussions in March."

With Encircle running from 2017 through to 2021, there is plenty of time to gauge and assess progress and increase effort in one sector or another if it is felt that there is an



Encircle will help shine a light on what is possible in CBRN defence

imbalance. Yet within this period another procurement project called FP9 is starting. This will build on the Horizon 2020 series, of which Encircle is part, and potentially there

could be crossover between the two, in terms of themes but also methods of working. M Quevauviller stated that it was much too early to predict how the two projects would meet, but that if the Encircle model worked then it could be considered for FP9.

"I am not Nostradamus, but if this initiative works, it is clear that it will have an impact on how we shape specific programmes in FP9! We are at the stage of agreeing the borders for FP9 with the Directorate General for Research. It is early for us so we can't talk yet about specific programmes. What we are planning for is that we know we need to have some feedback on what will happen with the 2017 topics, and that will start in 2018 as Encircle interacts with them. I hope we will have feedback from Encircle in 2019 to see whether these interactions, between the cluster and research and innovation actions [are effective], and it is why we didn't want a 2018 call on CBRN as we need the feedback.

"We will have calls in 2019 and 2020, and if by 2019 we see that the instruments / interactions make sense and we can push it, then that is something we would like to put in our discussions in FP9 for possible specific programming. It means that in 2018, and the early part of 2019, we still have time to inject some suggestions with respect to new instruments. It is very open and there can be



Encircle will look to improve the relationship between protection and thermal burden in PPE

no strategic thinking about this, as we need to negotiate a lot in terms of budget, what research will happen, who will take over in different fields of security, etc. Discussing this is premature, but what I hope is that we will get some interesting feedback from Encircle and links with research and innovation actions before FP9 is adopted. That will only happen in the fall of 2019 or early 2020 in readiness for a 2021 start, so we have a parallel route that needs to be combined. We need to make sure that we are exploring different routes in procurement, as we know we have to consider that in FP9, but we don't have anything written and well considered."

For some of those previously involved in CBRN research this is seen as an opportunity to hunker down and wait until the new way of working has ended... then return to business as usual. Unfortunately for these organisations, and they tend to be the RTOs, there is no definite promise of a return to status quo ante. Accordingly, M Quevauviller is keen that all CBRN players wholeheartedly embrace the new way of working that Encircle represents, and use the lessons from it to further improve their offering.

"They can't continue with 'business as usual'. They need to reflect on what needs to be changed. SMEs have a better understanding of what is interesting, interacting with Encircle and getting a better entry to market. I don't feel that RTOs understand that this is a new strategic instrument, at least not yet. We need a lot of communication and to explain what is behind it. Currently it is chicken-and-egg, there's no strong examples of how it could work. Without Encircle success stories it is difficult to engage, but 2018 is an exploratory phase and will be a



Improved comms is also an Encircle goal



Encircle is a new way of working ©CBRNe World

critical year in this respect. We will be in a better position to engage with RTOs in 2019, but right now they don't feel concerned."

Through the catalogue and workshops, Encircle will listen closely to the stakeholder community. This is going to be vital for the European CBRN defence enterprise as SMEs and other sections help inform the consortium as to what the next group of calls needs to be. While the Encircle consortium will ultimately be responsible for handing the potential calls to the commission, future calls will be better informed through a collaborative process.

There isn't a distinct mechanism yet for stakeholders to engage with the consortium and encourage them to go further in one direction, or to tell them when they are going wrong, but Philippe Quevauviller stated that this would emerge. "We do need a filtering mechanism. We will run an external review and here we might have a review involving SMEs as external evaluators, which would be interesting. First we need some results to discuss, but it will be important to involve them as if we don't, we'll end up with separate routes and won't

achieve what we want in the coming years. We want to involve them, but we'll have a limited number of projects for 2018 as the new projects will only start in May 2018, so this would have to be discussed at the end of 2018, if not 2019."

Not only does Encircle represent a new way of working, but a revolutionary one. It promises to bring all the user communities together, to help educate the users in what they want and how to get it, to provide opportunities for specialist equipment providers to develop tools that they can quickly sell into the market and to receive support from the consortium in delivering value. The RTOs will gain a mechanism to ensure that they develop practical research, which is then delivered to industrialists to transform visions into reality. The process will improve as more calls are put through the consortium in 2019 and 2020 and this experience should help inform future research projects like FP9. This gathering together will have far reaching effects, forging links between disparate organisations, which will have a positive impact on both the bottom line and the front line.

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