



A WORKSHOP/MASTER CLASS, 12<sup>TH</sup> SEPTEMBER 2016  
FUTURE TECHNOLOGY FOR CBRN CRISES MANAGEMENT

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**REGISTRATION :** [HTTPS://ELOMAKE.HELSENKI.FI/LOMAKEET/71048/LOMAKE.HTML](https://elomake.helsinki.fi/loMAKEET/71048/LOMAKE.HTML)

**VENUE :** [BEST WESTERN HOTEL RANTAPUISTO](#), Ramsinniementie 16, 00980 Helsinki

**ABOUT THE EVENT:**

What does the future technology of CBRN crises management and operations look like? What should it look like? Sensing, information and diagnostic technologies are developing so quickly that it is difficult to keep up with what is possible, let alone how best to exploit them, integrate them and plan for them.

The Horizon 2020 Project TOXI-triage is working to develop accelerated situational awareness alongside traceable point of care diagnostics. Advances in remote piloted airborne systems (“drones”), breath analysis, tag and trace, and machine learning are under development and review to provide “tools for detection traceability triage and individual monitoring of casualties”. An important, indeed vital, element of our work is listening to and consulting carefully with end-users and we are pleased to announce a workshop/master class on integrating technology innovation into SOPs and Operational Specifications for CBRN Crises Management. In this meeting we plan to share:

- best practice in the evaluation of technology innovation and integration into critical SOPs within concepts of operation;
- insights and experience on specifying new technology and communication systems for CBRN crisis planning and preparation;
- and, apply a range of expertise to the critical evaluation of technology transfer to CBRN crises operations.

The workshop/master class starts with expert practitioner presentations from NATO CBRN specialists and the Organisation for the Prohibition of Chemical Weapons (OPCW) before receiving briefings from technology developers. Perhaps the most important part of the exercise follows with three table-top discussions where each delegate will rotate through three different teams who will provide structured analysis and feedback. Each team will be supported by an expert who will chair, provoke and encourage contributions to ensure that all points-of-view, insights and ideas are heard and evaluated.

This workshop/master class will enable practitioners and planners to benchmark and align their expertise and experience and provide informed feedback and direction to the wider community of users as well as researchers and developers of next-generation technologies for CBRN crises management and response.

Enquires should be addressed to: Prof. Paula Vanninen ([paula.vanninen@helsinki.fi](mailto:paula.vanninen@helsinki.fi))



A complete picture is often not available in CBRN crises management. Like this image of samples being taken of a suspect material, information is incomplete, distorted and difficult to interpret. (Look closely and you will identify C-agent detection, protective clothing, samples in bags and a camera.) The priorities identified 20 years ago are still with us.

“Getting accurate and timely information to first responders and health care providers is crucial to their personal safety and to their ability to provide appropriate care for victims. Therefore, a priority Tokyo lesson to be learned concerns the need for real-time, multi-directional communications capabilities that connect field agencies with hospitals, the public health department, and laboratories....

<http://www.stimson.org/content/ataxia-chemical-and-biological-terrorism-threat-and-us-response>

### **ORGANISING COMMITTEE:**

#### **Prof Paula Vanninen, Director of Verifin, University of Helsinki**

Member of Scientific Advisory Board (SAB) of the OPCW; Temporary Working Group on Verification and on Sampling and Analysis of SAB, and member of Review Committee.

Other memberships include: Finnish Centre of Excellence for Serious Chemical Threats, NATO SIBCRA team, point - of- contact (Sampling and Identification of Biological, Chemical and Radiological Agents, chairperson of division of CBRN protection and medication of the Finnish Scientific Advisory Board for Defence, Finnish Scientific Advisory Board for Defence, CBRNE - alliance forum.

#### **CDR. Spyros Kintzios H.N , M.S, CBRN Defence, Hellenic National Defence General Staff**

Officer in Operations Directorate and Head of CBRN Defence Office with responsibility for Special Joint CBRN Unit operations, and continuous presence on EDA and Alliance forum and working groups concerning on CBRN Defence planning, exercise, training and operations. He has received significant high-level training in Damage Control, Disaster Preparedness, including the full range of CBRN OPs.

#### **Prof Michael Eddleston, National Poisons Information Service - Edinburgh, Royal Infirmary of Edinburgh**

Director and Consultant Clinical Toxicologist, National Poisons Information Service - Edinburgh, Royal Infirmary of Edinburgh. Professor of Clinical Toxicology & Lister Prize Fellow Pharmacology, Toxicology and Therapeutics, University of Edinburgh. He leads research in the diagnosis and treatment of poisoned patients, particularly in resource-poor locations, involving OP compounds and other C- agents.

#### **Prof C. L. Paul Thomas, Project Co-ordinator, TOXI-triage, Loughborough University**

Analytical Scientist and co-ordinator for the H2020 Project TOXI-triage. He leads research in ion mobility spectrometry and non-invasive diagnostics with specific emphasis on emergency medicine applications. He has led 30 National, EU and Industry funded projects with distinguished co-ordination of multi-national experiments in emergency diagnostics and detection for urban search and rescue applications.

## OUTLINE OF THE DAY'S PROGRAMME

| Time start | Time finish | Title  |
|------------|-------------|--|
| 08:30      | 09:00       | Registration   |
| 09:00      | 09:10       | Welcome Address<br>Prof Paula Vanninen, Verifin  |
| 09:10      | 09:30       | Aims and objectives for the day<br>Prof C. L. Paul Thomas, Loughborough University   |
| 09:30      | 10:00       | <b>Reflections and lessons from recent OPCW operations</b><br>Mr. Nihad Alihodzic, Head, Declaration Assessment Team (DAT), Organisation for the Prohibition of Chemical Weapons   |
| 10:00      | 10:30       | <b>Exercise IMPRESS and the needs of paramedic responders</b><br>Brigadier General (ret'd) Ioannis Galatas, MD, MC (Army)  |
| 10:30      | 10:45       | Reflection, questions and answers  |
| 10:45      | 11:00       | Coffee and breakout  |
| 11:00      | 11:20       | <b>What are the critical elements of CBRN CONOPS and how to classify them?</b><br>CDR. Spyros Kintzios (Hellenic Ministry of Defence); Dr Marco Plaß (Paderborn University) and Hilary Pillin (Consultant in Healthcare Response & Preparedness) |
| 11:20      | 11:40       | <b>"I am in the hot zone. I need..." a Reflection on User Needs</b><br>Matti Kuula, Verifin  |
| 11:40      | 11:55       | <b>Accelerated delivery of situational awareness: a technical briefing.</b><br>Dr. Andreas Walte, (AIRSENSE)   |
| 11:55      | 12:10       | <b>Fast triage: developing breath analysers for R/N and C-agent injury assessment.</b><br>Dr. Emma Brodrick (GAS) and Prof. C. L. Paul Thomas (Loughborough University)  |
| 12:10      | 12:25       | <b>Radiation detection and measurement for crisis management</b><br>Prof. Jukka Lehto. (Head of Radiochemistry, University of Helsinki)  |
| 12:25      | 12:40       | <b>Data, big-data, information, communication and prediction.</b><br>Mr. Florian Käding (Prometech), Dario Ruiz Lopez (ATOS), Mr. Ejoywoke Onojeharho (Loughborough University)  |
| 12:40      | 13:40       | Working lunch with technology presentations  |
| 13:40      | 15:40       | Table-top exercise with three structured discussions: <ul style="list-style-type: none"><li>• CONOPS and planning for future technologies;</li><li>• Detection and situational awareness; and</li><li>• End-user needs and priorities.</li></ul> |
| 15:40      | 16:10       | Tea, coffee, technology presentations and breakout.  |
| 16:10      | 16:30       | Plenary review and feedback  |
| 16:30      | 16:45       | Next steps, Summary and farewell   |
| 19:00      | Till late   | Follow on discussions and dinner   |



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**INTEGRATED AND ADAPTIVE RESPONSES TO TOXIC EMERGENCIES FOR RAPID TRIAGE**

TOXI-triage addresses the operational, technological, ethical and societal dimensions of CBRN response and recovery, and importantly the economic base from which sustainable CBRN and multiuse systems are derived.

The approach defines a concept of operations that envisages accelerated delivery of situational awareness through an ensemble of embedded sensors, drones, standoff detectors, artificial intelligence for processing sensor signals and web-traffic from social media, and centralised command and control. Dynamic mapping of casualties and medical treatment by real time tracing. Two field exercises are intended to test and verify the operational attributes of the systems.



COOPERATION

|                       |                         |                         |
|-----------------------|-------------------------|-------------------------|
| <br>www.lboro.ac.uk   | <br>www.ed.ac.uk        | <br>www.helsinki.fi     |
| <br>www.ntua.gr       | <br>www.uni-hannover.de | <br>www.ous-hf.no       |
| <br>www.cik.upb.de    | <br>www.promotech.eu    | <br>www.gas-dortmund.de |
| <br>www.environics.fi | <br>www.helmholtz.de    | <br>www.jyu.fi          |
| <br>www.hscor.cz      | <br>www.t4i.co.uk       | <br>www.mod.mil.gr      |
| <br>www.espl.fi       | <br>www.atosresearch.eu | <br>www.airsense.com    |

- ICT
- Situational Awareness
- End User
- Triage
- Clinical



**TOXI TRIAGE** | [www.toxi-triage.eu](http://www.toxi-triage.eu) | Tools for detection, traceability, triage and individual monitoring of victims



- ▶ Information and communication technology
- ▶ Situational Awareness
- ▶ End User
- ▶ Triage
- ▶ Clinical



**1**  
**Headlines**

**Traceability by design:** End-to-end mapping of casualty journey, End-to-end mapping of end user interventions

**Environmental monitoring:** Toxic chemicals and radioactive compounds on surfaces and in the air, fast sampling methods with ion mobility spectrometry (IMS), gas detectors, hyperspectral imaging, (R)- and (N)-detectors

**Aptamer based biosensing**

**Clinical trials:** Metabolomics (organo-phosphorous, toxic alcohol and radiation injuries), GC-IMS

**CBRN toolkit and data base** designated by CWA laboratory

**Field trials:** Rigorous field trials through exercises "Focus" and "Disperse"

**Integrated approach to cross-cultural communication, security and ethics**

**Managing and exploiting the semantic web**

**Pathways to economic impact** through multi-use technologies

**2**  
**Objectives**

**Accelerated delivery of situational awareness**

**Command and control** with secure, dynamic and seamless communication

**Traceable point-of-care diagnostic tests** with integrated casualty tracking

**Comprehensive field toolbox** for CBRN threats for end users

**Protocol for the registration of biomarkers of injury** from CBRN poisoning

**Establish a harmonized European framework** for ethical and accountable civilian CBRN operations

**Establish a community of commerce** and deliver a commercial vision

**3**  
**Technologies**

**Airborne and hand-held detection of CBRN release and contamination:** IMS, (R)- and (N)-detection, Hyperspectral imaging

**Non-invasive assessment of metabolite markers of injury:** GC-IMS

**Information and communication technologies:** Traceability by design, Artificial intelligence for sensor and web-traffic data processing, Wireless traceability of casualties, Dynamic mapping, including medical care

**DETECTION**

**TRACEABILITY**

**TRIAGE**

**MONITORING**



**4**  
**Research**

**Integrated environmental and stand-off hazard designation**

**Rapid non-invasive assessment of exposure/injury through monitoring**

**Metabolic markers of injury, aptamer-based biosensing**

**Casualty-to-discharge system integration**

**Traceability by design**

**Exploiting the semantic web**