



European ALARA Network WORKSHOP 19 on Innovative ALARA Tools

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Personal Online Dosimetry Using computational Methods (PODIUM) dissemination WORKSHOP

Athens, 26th -29th November 2019

hosted by the Greek Atomic Energy Commission (EEAE) at the Congress Center of the
National Centre for Scientific Research “Demokritos”
(Patr. Gregoriou E & 27 Neapoleos Str, 15341 Agia Paraskevi, Athens)

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Objectives of the workshops

PODIUM Workshop

The main aim of the **PODIUM** project is the development of an online dosimetry application based on computer simulations without the use of physical dosimeters.

Real movements of exposed workers captured by tracking tools have been used together with Monte Carlo simulations for the development of the application. The methodology has been applied in two crucial workplaces where improvements in dosimetry are urgently needed: neutron and interventional radiology workplaces. The availability of advanced online dosimetry applications such as these in the radiation protection field will increase awareness among workers and should improve the implementation of the ALARA principle.

During the workshop emphasis will be given on how exposed workers can be trained by using real-time dose results to effectively apply the ALARA principle.

The objectives of the **European ALARA Network** workshop are:

- to present and review recent and emerging "innovative ALARA Tools" used in the different steps of the ALARA process: e.g. radiological characterization and evaluation of the exposure, planning and decision phases and follow-up and feedback.
- to investigate the benefits of the tools and identify potential limits in their application;
- to disseminate the knowledge on innovative ALARA Tools in support of the ALARA process;
- to investigate how innovative ALARA Tools and innovation may (re)shape the ALARA process for the next years: evolution or revolution?

A significant part of the EAN Workshop program is devoted to discussions within Working Groups (each participant can participate in one Working Group). The provisional topics for discussion by the Working Groups are:

- Are there **specific challenges** in the ALARA process that may be solved by innovative "ALARA Tools" (under development or to be developed)?
- Are there **specific issues** which may limit the development and/or the use of innovative "ALARA Tools" (technical, legislative, ethical etc.)? How to deal with these issues?
- What is the **role of the radiation protection professionals** (RPEs/MPEs/ RPOs, ...) with respect to these tools?
- There is currently a lot of focus on research and innovation in areas beyond that of traditional RP research, notably "**artificial intelligence**". Does IA have the potential to shape the ALARA process in the next year?

The workshop conclusions and recommendations will summarize the main points of the presentations and the discussions held during the Working Groups

Programme Committee

Sylvain Andresz, *Nuclear Protection Evaluation Centre, CEPN, France*

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Eleftheria Carinou, *Greek Atomic Energy Commission, EEAE, Greece*

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Julie Gilchrist, *Public Health England, PHE, United Kingdom*

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Una O'Connor, *St. James's Hospital, Ireland*

Filip Vanhavere, *SCK•CEN, Belgium*

Fernand Vermeersch, *SCK•CEN, Belgium*

Local Organising Committee (EEAE)

Eleftheria Carinou,

Sotirios Economides,

Vasiliki Tafili,

Zoi Thrapsanioti

Programme (provisional)



8:30 – 9:00	Meeting points, shuttle bus, transportation
9:00-9:30	Registration
9:30-10:00	General framework of the Podium Project
10:00-10:30	Podium need in neutron fields
10:30-11:00	Podium need in interventional medical workplaces
11:00-11:30	Coffee break
11:30-12:00	Use of Individualized Phantoms
12:00-12:30	Use of indoor positioning systems in Podium
12:30-13:30	Lunch
13:30-14:00	Use of MC-GPU Monte Carlo code
14:00-14:30	Use of “Look up approach”
14:30-15:00	Development of the online dosimetry application
15:00-15:30	Coffee
15:30-16:00	Framing the needs of better dosimetry: J. Malone
16:00-17:00	Round table discussion: Advisory group
17:00-17:30	Conclusion and future work

PROGRAMME AS 20 June 2019

INTRODUCTION AND SETTING THE SCENE	Proposed Orator	Organisation /Company	Person responsible for taking contact	Status/Comment
Introduction by a EAN and PODIUM representatives and the reasons why to organize such workshop	Fernand and Filip			OK. OK.

SESSION 1. INNOVATIVE ALARA TOOLS IN THE RADIOLOGICAL CHARACTERISATION AND THE FIRST EVALUATION OF THE EXPOSURE	Proposed Orator	Organisation /Company	Person responsible for taking contact	Status/Comment
Remote detection technique, imaging and the use of virtual reality	M. C. Mahé, charly.mahe@cea.fr	CEA Marcoule, France	Fernand	OK.
Gamma cameras and their uses in nuclear installations	...	University of Liverpool	Fernand	To be contacted
Manuela: an advanced 3D characterization material in NPP	B. Chagneau benjamin.chagneau2@orano.group	Orano, France	Sylvain	Contacted and waiting for management answer

SESSION 1. INNOVATIVE ALARA TOOLS IN THE RADIOLOGICAL CHARACTERISATION AND THE FIRST EVALUATION OF THE EXPOSURE	Proposed Orator	Organisation /Company	Person responsible for taking contact	Status/Comment
Radiological characterisation and dose mapping in outdoor environment	...	...	Julie	To be contacted
Use of drones in the assessment of uncommon exposure situations	Johan Camps	SCK•CEN	Fernand	OK
Intervention of terrestrial vehicles and robots in place of human — the use in emergency situations	Julien Bleuze	Groupe Intra, France	Sylvain	
Personal dose computation with the aid of monitoring systems and 3D cameras			<i>Eleftheria to contact PODIUM</i>	Contacted and waiting for name
Radiological characterisation using computing code (Actiwiz)	C. Theis christian.theis@cern.ch	CERN, Switzerland	<i>Sylvain</i>	OK
In-vivo incorporation of radionuclides of workers: measurements vs. evaluation with GEANT4	S. Medici Siria-maria-chiara.medici@chuv.ch	IRA, Switzerland	Sotirios	OK

SESSION 2. INNOVATIVE ALARA TOOLS IN THE PLANNING AND DECISION PHASES	Proposed Orator	Organisation /Company	Person responsible for taking contact	Status/Comment
The VISIPLAN software: to perform dose assessment under different scenarios		SCK•CEN, Belgium	F. Vermeersch	OK
MCNP for the design of the European Pressurized Reactor. Example of the funnel in the Reactor Building	M. Longeot matthieu.longeot@edf.fr	EDF, France	S. Andresz	
CADOR Software: the optimised schedule to install your shielding Or VV-PRO software (= Google Street view technology applies for reactor building in NPP)	To be identified	EDF, France	S. Andresz	Contacted : confirmation beginning July
Using neural network for the planning of patient treatment in radiotherapy	Pierre Emmanuel Leni Pierre_Emanuel.Leni@univ-fcomte.fr	Université de Franche Comté, France	E. Sotirios	Contacted ➤ Expense are not covered ➤ Highlight the benefit/limit of the tool for the ALARA process
Advanced screening method for building materials as a decision aiding tool	Bern Hoffman	BfS	C. Nuccetelli	OK
Contribution(s) from UK	...	...	J. Gilchrist	To be contacted
Decision aiding tools considering multiple criteria	To be identified		Una + Hugh Synnott	Update 19/06

Podium input or Strasbourg or Rayexpert	To be identified		Elefteria and Sotirios	Contacted and waiting for name
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SESSION 3. INNOVATIVE ALARA TOOLS FOR THE FOLLOW-UP AND FEEDBACK	Proposed Orator	Organisation /Company	Person responsible for taking contact	Status/Comment
Quality control in external radiotherapy using artificial neural networks	F. Chatrie Frederic.chatrie@Outlook.com	Toulouse University, France	Sotirios	Identified by Sylvain at <i>SFRP Event</i> To be contacted
Database and their use for the optimisation of patient exposure	C. Steinville claire.steinville@ge.com	General Electrics Healthcare System	S. Andresz	Contacted –answer received, under investigation
The “PSPR” system: using advanced materials to collect data from jobs performed in nuclear power plants	laure.bourmaud@edf.fr , muriel.mage@edf.fr	EDF, France	S. Andresz	Contacted – answer received, under investigation
Contribution(s) from UK	...	...	J. Gilchrist	To be contacted
Using innovative tools for Education and Training	...	EUTERP ?	Fernand via P. Allisy-Robert	To be contacted
SHAMISEN-SINGS WP2: Critical review of existing plug-in's and apps to turn smart devices in radiation detectors	Paola Fattibene, paola.fattibene@isis.it	ICC, Italy	P. Croûail and. C. Nuccetelli	OK
The D-Schuttle for the collection, capitalization and broadcasting of radiological data after radiological events	W. Naito, P. Croûail	AIST, Japna and CEPN, France	S. Andresz	OK

...	Prof. S. Balter	From New York	Una	Speaker not available but can attend via webinar Webinar system to be checked by EEAE
Visualisation of X-rays for medical staff	Tessa Klunder	Utrecht University	S. Andresz, via P. Allisy RObert	To be contacted https://www2.projects.science.uu.nl/cs-gmt/upload/project/90/T-Klunder_Poster_XrayHoloLens2.pdf

