

**NEA WORKSHOP:**  
***THE APPLICATION OF REMOTE AND ROBOTIC SYSTEMS***  
***IN NUCLEAR BACK-END ACTIVITIES***  
***- WAY FORWARD IN SYSTEM IMPLEMENTATION***

(Draft agenda)

**Date:** 30-31 January 2019 (Optional site tour: 29 January)  
**Location:** Marcoule, France  
**Host:** CEA  
**Workshop Chair:** Christine GEORGES, CEA, France  
**Website:** [www.oecd-nea.org/rwm/workshops/2019/robsysnba/](http://www.oecd-nea.org/rwm/workshops/2019/robsysnba/)

## **Background**

As technology continues to advance, robotic systems have been more commonly used in radioactive waste management and nuclear decommissioning. In the last decade, robots with specific capabilities have been operated in harsh radioactive waste management and decommissioning environments, remotely controlled drones equipped with sophisticated sensors have collected detailed site characteristics or multifunctional robots have achieved safe dismantling and decontamination. Innovative techniques have enabled more cost-effective and safer waste management and nuclear decommissioning.

The purpose of this workshop is, therefore, to open a wide international dialogue to further evaluate the applications of remote and robotic systems in radioactive waste management and decommissioning projects (i.e. the back-end of the nuclear fuel cycle). Through this dialogue, participants will exchange experience, discuss main challenges and lessons learnt, explore how to make strategic, yet effective decisions, as well as discuss feasible international cooperation in support of developing and wider application of robotic technologies in the nuclear back-end.

## **Scope**

The workshop will focus on the technical and non-technical aspects of applying robotic and remote systems in the back-end activities and possible ways of expanding of their application.

## **Aims**

- to foster discussions between developers and users of autonomous/semi-autonomous, robotic/remote systems, including potential operators (end-users) of robotic systems in nuclear back-end activities, representatives of safety regulators in decommissioning and radioactive waste management and other interested parties;
- to exchange existing national experience/opinions and examine determining factors that affect the development and implementation of robotic systems in back-end projects;
- to discuss possible joint undertakings/activities that could support and facilitate further implementation of robotic systems in back-end activities.

## Attendees

Representatives of R&D organisations, waste management, and decommissioning operators, national decision makers, regulatory bodies and other interested parties are invited to participate in the workshop.

## Registration

The registration fee is 200 euros. The registration deadline is 20 November 2018.

## Venue

The NEA Workshop will be held in Marcoule, France.

## Technical visit

The workshop participants are invited to participate in a technical visit to the CEA center in Marcoule on 29 January. More details about the technical visit are available: <http://marcoule.cea.fr/Marcoule/Pages/English.aspx>

## Programme

- Session 0    Opening remarks
- Session 1    The global situation in the development/implementation of remote and robotic systems in various back-end activities including post-accident radioactive waste management and decommissioning
- Session 2    Main factors influencing the implementation of remote and robotic systems in the back end.
- Session 3    International cooperation in the field of development and implementation of remote and robotic systems. Prospects.
- Closing remarks

## Programme Committee

<b>Name</b>	<b>Organisation</b>	<b>Country</b>
Christine GEORGES	CEA	France
Leonel LAGOS	Florida International University	USA
Koji OKAMOTO	JAEA	Japan
Rustam STOLKIN	University of Birmingham	UK
Viktor VOLKOV	Rosenergoatom	Russia
Gloria KWONG	NEA	OECD NEA
Vladimir LEBEDEV	NEA	OECD NEA
Massimo CIAMBRELLA	NEA	OECD NEA
Jinfeng LI	NEA	OECD NEA

## Contacts

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## PROPOSED AGENDA (Draft)

### DAY 0 SITE TOUR – Tuesday 29 January, 2019

### DAY 1 – Wednesday 30 January, 2019

**8:30**      **REGISTRATION**  
*if not registered the day before*

#### WELCOME SESSION

**9:00**      **0.1 WELCOME FROM THE HOST**  
*CEA (TBD)*

**9:10**      **0.2 WELCOME FROM OECD NEA**  
*NEA (TBC)*

**9:20**      **0.3 WELCOME FROM the WORKSHOP CHAIR**  
*Christine GEORGES (CEA, France)*

**9:30**      **0.4 INTRODUCTION**  
*Christine GEORGES, Workshop Chair*

#### SESSION 1 - THE GLOBAL SITUATION IN THE DEVELOPMENT/IMPLEMENTATION OF REMOTE AND ROBOTIC SYSTEMS IN VARIOUS BACK-END ACTIVITIES INCLUDING POST-ACCIDENT RADIOACTIVE WASTE MANAGEMENT AND DECOMMISSIONING

*Session Chair: Michel PIERACCINI*

**9:40**      **1.1 INTRODUCTION**  
*Michel PIERACCINI, Session Chair*

**9:45**      **1.2 AN OVERVIEW OF THE DEVELOPMENT OF REMOTE AND ROBOTIC SYSTEMS IN THE NUCLEAR BACK-END**  
*Leonel LAGOS (Florida International University, USA)*

**10:15**      **1.3 AN OVERVIEW OF THE IMPLEMENTATION OF REMOTE AND ROBOTIC SYSTEMS IN THE NUCLEAR BACK-END**  
*Hua ZHANG (Southwest University of Science and Technology, China)*

**10:45**      **COFFEE BREAK (30')**

**11:15**      **1.4 THE POSITION OF GOVERNMENTS/DECISION-MAKERS/REGULATORS REGARDING THE SUPPORT OF THE IMPLEMENTATION OF REMOTE AND ROBOTIC SYSTEMS IN THE NUCLEAR BACK-END**  
*TBD*

**11:45**      **1.5 DISCUSSION AND WRAP-UP**  
*Michel PIERACCINI, Session Chair*

<b>12:30</b>		<b>LUNCH BREAK (60')</b>	
<b>SESSION 2 - MAIN FACTORS INFLUENCING THE IMPLEMENTATION OF REMOTE AND ROBOTIC SYSTEMS IN THE NUCLEAR BACK-END</b>			
<i>Session Chair: TBC</i>			
<b>13:30</b>	<b>2.1</b>	<b>INTRODUCTION</b>	<i>Session Chair</i>
<b>13:35</b>	<b>2.2</b>	<b>TECHNICAL, TECHNOLOGICAL AND METHODOLOGICAL CHALLENGES, INFLUENCING FACTORS AND ANALYSIS OF THE LEVEL OF FACTORS' INFLUENCE FROM THE IMPLEMENTER'S POINT OF VIEW</b>	<i>Michel PIERACCINI and Emmanuel WOZNIAK (EDF, France)</i>
<b>14:05</b>	<b>2.3</b>	<b>ECONOMIC CHALLENGES, INFLUENCING FACTORS AND ANALYSIS OF THE LEVEL OF FACTORS' INFLUENCE FROM THE IMPLEMENTER'S POINT OF VIEW</b>	<i>TBD (Japan)</i>
<b>14:35</b>	<b>2.4</b>	<b>ORGANISATIONAL, STAFF-RELATED AND SOCIETAL CHALLENGES, INFLUENCING FACTORS AND ANALYSIS OF THE LEVEL OF FACTORS' INFLUENCE FROM THE IMPLEMENTER'S POINT OF VIEW</b>	<i>Viktor VOLKOV (Rosenergoatom, Russia)</i>
<b>15:05</b>		<b>COFFEE BREAK (25')</b>	
<b>15:30</b>	<b>2.5</b>	<b>CHALLENGES, INFLUENCING FACTORS AND ANALYSIS OF THE LEVEL OF FACTORS' INFLUENCE FROM THE R&amp;D'S POINT OF VIEW</b>	<i>Jens VERBEECK (MAGICS Instruments, Belgium)</i>
<b>16:00</b>	<b>2.6</b>	<b>CHALLENGES, INFLUENCING FACTORS AND ANALYSIS OF THE LEVEL OF FACTORS' INFLUENCE FROM THE EXPLOITING PERSONNEL'S POINT OF VIEW</b>	<i>Thomas LOHSER (BGE, Germany)</i>
<b>16:30</b>	<b>2.7</b>	<b>REMOTE AND ROBOTIC SYSTEMS PRODUCERS' VISION OF CHALLENGES AND INFLUENCING FACTORS</b>	<i>Martin KRUPICKA (Brokk AB, Sweden)</i>
<b>17:00</b>	<b>2.8</b>	<b>AN OVERVIEW OF INFLUENCING LEGAL AND REGULATORY FACTORS, ANALYSIS OF THE LEVEL OF FACTORS' INFLUENCE AND THE POTENTIAL TO INCREASE POSITIVE INFLUENCE</b>	<i>Adrian Florinel BUCSA (Institute for Nuclear Research Pitesti, Romania)</i>
<b>17:30</b>	<b>2.9</b>	<b>DISCUSSION AND WRAP-UP</b>	<i>Session Chair</i>
<b>18:00</b>		<b>END OF DAY I</b>	

**Note: Titles can be revised by the invited speakers.**

**DAY 2 – Thursday 31 January, 2019**

**MORNING SESSION**

**9:00 2.10 INTRODUCTION**  
*Session Chair*

**9:05 2.11 NEEDS IN STANDARDISED APPROACHES TO THE DEVELOPMENT, TESTING AND CERTIFICATION OF REMOTE AND ROBOTIC SYSTEMS FOR THE IMPLEMENTATION IN THE BACK-END ACTIVITIES**  
*Rustam STOLKIN (University of Birmingham, UK)*

**9:35 2.12 NEEDS IN EDUCATIONAL AND STAFF TRAINING PROGRAMMES, CENTRES FOR PREPARING THE EXPLOITING PERSONNEL**  
*Patrick DEVAUX (CEA, France)*

**10:05 2.13 NEEDS IN JOINT ACTIVITIES/INSTITUTIONS ON THE INFORMATION, DATA AND KNOWLEDGE COLLECTION, ANALYSIS AND APPLICATION FOR SUPPORT THE REMOTE AND ROBOTIC SYSTEMS IMPLEMENTATION**  
*TBD (Japan)*

**10:35** *COFFEE BREAK (25')*

**11:00 2.14 DISCUSSION AND WRAP-UP**  
*Session Chair*

**12:30** *LUNCH BREAK (60')*

**SESSION 3 - INTERNATIONAL COOPERATION IN THE FIELD OF THE DEVELOPMENT AND IMPLEMENTATION OF REMOTE AND ROBOTIC SYSTEMS. PROSPECTS.**

*Session Chair: Leonel LAGOS*

**13:30 3.1 INTRODUCTION**  
*Leonel LAGOS, Session Chair*

**14:00 3.2 AN OVERVIEW OF INTERNATIONAL INITIATIVES/ACTIVITIES AND THEIR READINESS TO ADDRESS THE NEEDS IN SUPPORT THE IMPLEMENTATION OF REMOTE AND ROBOTIC SYSTEMS IN THE BACK-END**  
*Christine GEORGES (CEA, France)*

**14:30 3.3 PROPOSED INTERNATIONAL UNDERTAKINGS UNDER THE AEGIS OF THE NEA**  
*NEA RWMD*

**15:00 3.4 DISCUSSION AND WRAP-UP**  
*Leonel LAGOS, Session Chair*

**CLOSING SESSION**

**16:00 4.1 SUMMARY AND CLOSURE OF WORKSHOP**  
*Christine GEORGES, Workshop Chair*

**16:30** *ADJOURN*