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### Interim Review Report of the End-users and Advisory Group

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## **EXECUTIVE SUMMARY**

The End-users and Advisory Group (EAG) is a supervisory and consultancy body of the A-CINCH project. It composes of members suggested by the Management Board of the project and approved by the Governing Board. The main role of EAG is to represent the project's target groups, provide feedback on the project activities and disseminate the outcomes within the NRG field. In the project, the EAG members are asked to compose two review reports. These are the Interim Review Report (D7.4) and the Final Review Report (D7.5). This EAG Interim Review Report summarizes observations and feedback of the EAG members for the first eighteen months of the project realization. The Reports concludes that the project has progressed well and in accordance with the project plan. Moreover, some of the project activities have been pointed out and highly appreciated.

In this place, the A-CINCH project would like to express appreciation and thanks to the EAG members for all their work, effort, valuable feedback and suggestions.

## CONTENT

<b>1</b>	<b>INTRODUCTION .....</b>	<b>5</b>
<b>2</b>	<b>A-CINCH END-USERS AND ADVISORY GROUP .....</b>	<b>6</b>
2.1	EAG GENERAL RULES AND FUNCTIONING .....	6
2.2	CONSTITUTION OF THE A-CINCH EAG.....	6
<b>3</b>	<b>EAG INTERIM REPORT .....</b>	<b>7</b>
3.1	PART 1: TOR BJØRNSTAD.....	7
3.1.1	WP1: <i>Virtual reality NRC laboratory</i> .....	7
3.1.2	WP2: <i>“Virtual Reality (VR) Hands on Training (HoT)”</i> .....	7
3.1.3	WP3: <i>“Valorisation, wrap-ups and maintenance”</i> .....	8
3.1.4	WP4: <i>“Developments and revisions”</i> .....	8
3.1.5	WP5: <i>“Nuclear Chemistry Awareness”</i> .....	9
3.1.6	WP6: <i>“Dissemination &amp; Networking”</i> .....	9
3.1.7	WP7: <i>“Mobility &amp; Management”</i> .....	10
3.1.8	CONCLUSIONS.....	10
3.2	PART 2: NICHOLAS EVANS.....	11
<b>4</b>	<b>CONCLUSIONS .....</b>	<b>12</b>

## **1 INTRODUCTION**

The End-users and Advisory Group Interim Report summarizes and comments on the project activities carried out in the first half of the project duration. The Report is a tool of the project quality and innovation management and control and provides precious feedback on the project activities from representatives of the project target groups. It has been elaborated by the EAG members based on their observations at the six-months project meetings and on the project internal reports.

## 2 A-CINCH END-USERS AND ADVISORY GROUP

### 2.1 EAG General Rules and Functioning

The general rules and functioning of the A-CINCH EAG has been described in the Project Handbook.

The EAG is a supervision body of the project composed of representatives of the target groups and stakeholders. They are significant players in the development of tailor-made and, thus, widely accepted project outputs and they create highly-valued part of the innovation management process of the project. Additionally, they spread the information about the project and its activities and outputs among the nuclear community. The EAG also assists in transfer of knowledge and international coordination of relevant activities.

For membership in EAG, representatives of universities not represented in A-CINCH, related projects, regulatory bodies, relevant industries and networks, high-school teachers and students are nominated by the project partners. EAG is appointed and steered by the Executive Board of the project and approved by the Governing Board. EAG is established at the kick-off meeting and reinforced during the project.

At least two EAG members representing different target groups are invited to all plenary parts of the project meetings to follow the progress of the project activities and give instant feedback on them. The EAG members are also allowed to attend GB meetings upon invitation but have not any voting rights. The EAG is consulted in any question relating to the practical relevance of the project work and outputs as well as possible routes to optimize the activities in a direction towards practical applicability and relevance.

### 2.2 Constitution of the A-CINCH EAG

The A-CINCH EAG has been established at the Kick-off meeting in October, 2020. At the adjoin Governing Board meeting, the following EAG members were nominated and approved:

- Nicholas Evans, Nottingham Trent University, United Kingdom
- Tor Bjørnstad, Institute for Energy Technology, Norway.

At the same time, a call for other EAG members was announced.

At the 1<sup>st</sup> Project Meeting, Michèle Coeck, SCK-CEN has been nominated and approved as EAG members.

At the 2<sup>nd</sup> Project Meeting, Lucy Platts, NIRO, and John Roberts, IAEA and IAEA's Nuclear knowledge Management Section member have been nominated and approved as the A-CINCH EAG members. Lucy Platts has actively joined the EAG at the next project meeting. John Roberts has been informed on him being approved as the A-CINCH EAG member and has been undergoing IAEA internal approval process to be able to accept the function.

Nicholas Evans resigned from his function as the EAG member on October, 2021, in order to avoid conflict of interest as he started to cooperate in the project activities directly.

### 3 EAG INTERIM REPORT

The authors of the EAG Interim Report are Nicholas Evans and Tor Bjørnstad as they have been with the project since its beginning. Nicholas Evans has summarized his observations for the first 12 months of the project as he has resigned from his function then. Tor Bjørnstad's feedback describes the whole period of 18 months of the project realization. Michèle Coeck and Lucy Platts have actively participated in the last project meeting and will put in their observations in the following EAG final report.

#### 3.1 Part 1: Tor Bjørnstad

*“Before starting on the details of the Work Packages, it should be pointed out that the first half period of this project coincided with the Corona virus pandemic sweeping across Europe. This has unavoidably somewhat affected the foreseen smoothness of cooperation and information exchange since most physical meetings had to be replaced with virtual on-line meetings. In spite of this, it is my impression that the communication and information exchange within the project at large, and between cooperation parties within each WP, has functioned impressively well.*

*The program consists of seven WPs. It is not the intention here to go through each individual WP and WP sub-task in detail, evaluating whether or not every single task is on track according to the plan in the main Gantt diagram. Such analysis is routinely followed up by principle Investigators and the Work Package Leaders. As far as I can read from my participation in meetings and the associated meeting minutes, there is no indication that the project management and WP leaders did not keep track of this in a conscientious and excellent manner. Instead, I will restrict myself to comment on general topics parts of the work which deviate (positively or negatively) from what could be expected based on the project description and plan and where discussions on the way forward are ongoing.*

##### 3.1.1 WP1: Virtual reality NRC laboratory

*(Lead: LUH, Part.: OvGU, UH, UiO)*

*The objective is to develop a 3D environment of NRC laboratories as a platform where VR HoT scenarios will be implemented. This development implies close collaboration with WP2.*

*The programming needs for implementing specific virtual HoTs are so much infiltrated with procedures in the specific HoTs that I find it natural to discuss WP1 and WP2 together, see text under WP2.*

##### 3.1.2 WP2: “Virtual Reality (VR) Hands on Training (HoT)”

*(Lead: JSI, Part.: CHALMERS, CTU, POLIMI, UH, UiO)*

*The main objective of this WP is to create scenarios and screenplays for HoT's in different areas of radiochemistry applications and to introduce a virtual teaching assistant as an interactive game walkthrough for the VR HoT users. The objective of introducing VR HoT's is to create an educational platform and to provide a learning tool, which could be used as “teasers” for high school students, general public nuclear awareness, for flipped classroom concept, and as prerequisite to be enrolled to the real (physical) HoT.*

*These tasks seem to create the most engagement but also challenges. Specialists in VR programming need to understand specialists in NRC and requirements of specific HoTs and vice versa. I believe it is safe to say that this interactive discussion needs to, and will, continue in the months to come.*

*A necessary step is the creation of a Quest system where HoT procedures are detailed with a number of tasks in several levels as an indispensable aid for the programmers. Templates are developed and presented. HoTs in discussion and under testing are: Presentation of lab equipment, half-life*

*determination, superficial decontamination,  $^{18}\text{F}$  cyclotron production and determination of  $^{210}\text{Pb}$  and  $^{210}\text{Po}$ .*

*A taste of keyword issues for discussion are: Web version versus desktop version, when interruption happens – resume or start over(?), saving options – needs to be sorted out, application on different computers – log-in needed(?), chopping up lengthy procedures in smaller parts – go directly to selected sub-parts(?), cleaning of workplaces – part of the task list(?), ownership and copyrights of products(?), translation to different languages or stick to English(?).*

*VR programming of NRC-based HoTs is certainly a resource-demanding and time-consuming task, and squeezed between technical possibilities, ideal wishes and available time and budget. Compromises have to be sorted out and accepted. Topical meetings are planned to address the most critical questions.*

*My assessment is that the already ongoing discussions and the expressed positive will amongst the developers guarantee for a successful completion of these tasks in line with the originally defined delivery plan.*

### **3.1.3 WP3: “Valorisation, wrap-ups and maintenance”**

*(Lead: POLIMI, Part.: CEFAS, CHALMERS, CTU, JSI, LUH, UCY, UH, UiO)*

*The main objective is the valorisation of the already developed knowledge in the preceding 3 CINCH programs by improving MOOC experience, by promoting the usage of the MOOC as well as new pedagogical approaches among teachers, and by making easily accessible high-quality educational materials as Open Educational Resources (OER).*

*The MOOC issue: My impressions on the progress are: Promotional material is updated, promotion activities presented, two webinars realised (CHALMERS, JSI) and more planned, talks for teachers organized and made available on-line and MOOC material shared among program participants for testing in the ordinary lecturing programmers with request for feedback. Very positive feedbacks from students are reported from UH, JSI and UiO.*

*Progress is also made on development of OER. Keywords are: design of effective processes, GAP analysis, presentations and talks.*

*Quest for an effective method to summarize and make available CINCH resources was raised. This issue seems to be properly treated by the proposal of creating a CINCH HUB as further discussed in the chapter of WP6 below.*

*HoTs and other tools: Here are my impressions of the progress: Two new HoTs are planned (JSI, June 2022 and CHALMERS, September 2022), the RoboLab development at LUH and UiO is running as planned, discussion on NucWik are not finished and will continue.*

*In summary, this WP seems to be developing largely according to plans. It is interesting and rewarding to see and experience the productive discussion that takes place on these and other CINCH issues across and amongst institutions.*

### **3.1.4 WP4: “Developments and revisions”**

*(Lead: CTU, Part.: CEFAS, IMT, JSI, LUH, POLIMI, UiO)*

*The main objective is to develop hands-on type of training courses (HoTs) underlining the A-CINCH concept of electronic teaching (VR-lab) and real lab HoT, which support and enhance each other.*

*Focus is on new HoT courses that cover areas which are now receiving attention in the European scientific community such as decontamination and decommissioning related to (end of) utilization*



*of nuclear facilities, or nuclear forensics. Review and develop the NRC EuroMaster diploma is also a task here.*

*The forensic part scenario (JSI) and theoretical videos on the subject (POLIMI) are already developed and material on decontamination and decommissioning prepared (IMT, MSU). However, work on implementing the material on the MOODLE platform is somewhat delayed.*

*Material that should have been collected from the Chernobyl contaminated site cannot any longer be acquired due to the present geopolitical situation. Substitutions for similar contaminated material will have to be found. Associated with this problem is that the Russian institution MSU can no longer, and until further notice, be part of the A-CINCH program. This will not directly affect the economy in the program since MSU was financed from Russia. However, it has not yet been decided whether or not somebody else take ownership to the tasks defined for MSU.*

*In addition, the commissioning of the AMS experimental equipment at CTU, which should have been demonstrated and used for this task, is also somewhat delayed.*

*Still, the impression I have from listening to the lively discussions during the last plenary meeting in April 2022 is that these tasks will be finalized in due time without seriously affecting the program.*

*I also observe that the discussions on how to establish a Euromaster certificate is defined to be 3 months delayed. Discussions will continue in the working group (UiO, CTU, Nick Evans).*

### **3.1.5 WP5: “Nuclear Chemistry Awareness”**

*(Lead: NNL, Part.: CEFAS, CHALMERS, LUH, POLIMI, UCY, UNIVLEEDS)*

*The focus is on development of a distributable and sustainable toolkit of standalone resources to promote and increase awareness of the field of nuclear and radiochemistry. The overall objective is to make the field attractive to a younger generation and motivate school students to pursue a career in nuclear chemistry in industry or academia.*

*A comprehensive activity with corresponding development of educational resources have recently been presented to the A-CINCH program community. The developments range from high-school teaching packages (NNL), collection and further development of the impressive suite of MOOCs (POLIMI), program and material for an up-coming summer school (UNIVLEEDS), materials for teaching the teachers (CHALMERS), so-called “Lab in a Box” which is material that can be used by institutions to promote nuclear and radiochemistry at science festivals and similar(NNL), and videos describing examples of variety of careers available to candidates in nuclear and radiochemistry (UNIVLEEDS).*

*From the available material, I judge that developers are exceptionally able and enthusiastic on the subjects and there are no obvious deviations from original plans.*

### **3.1.6 WP6: “Dissemination & Networking”**

*(Lead: ENEN, Part.: CHALMERS, EVALION, POLIMI)*

*The main objective of WP6 is to provide support in the dissemination and implementation of project results to ensure that the information about the project and its results will be delivered broadly among the nuclear community and among other potential end users.*

*Central in these activities is the development of a CINCH HUB which should accommodate a platform to inform the nuclear community and the public about the project, dissemination of deliverables among project partners and stakeholders, and promotion of events or participation in networking events at the national and international levels.*

*An alpha-version of such a HUB has already been presented and distributed for test and comments among the program participants. I registered a general enthusiasm for the product as such, and I support and applaud the now ongoing discussions on further development of the dissemination platform.*

### **3.1.7 WP7: “Mobility & Management”**

*(Lead: EVALION, Part.: CTU, ENEN)*

*The main objective of WP7 is to provide efficient management of the A-CINCH activities including overall project steering and to follow up on project deliverables and milestones.*

*My impression is that these tasks are very well taken care of by the management team.*

*Another subtask in WP7 is to assure international exchange of knowledge and practical experience among students, teachers for secondary, higher and vocational education, end-users, and lecturers through the mobility scheme (Travel Fund). These activities have, until now, been limited due to the COVID19 situation. However, this is foreseen to change now along with ease of travelling restrictions. Hopefully, we can see encouraging physical attendance in training courses (HoTs), summer school and topical and plenary meetings in the months to come.*

### **3.1.8 CONCLUSIONS**

***In conclusion, as an EAG member and observer to the program, I am very satisfied with the overall progress. In spite of the counteractive COVID19 situation, all partners worked enthusiastically, collaboratively and hard, on delivering the content they promised. The communication climate within WPs and across disciplines in the program seem to function very well. A special acknowledgement goes to the firm program management that keeps the activities on track.”***

## **3.2 Part 2: Nicholas Evans**

*“Progress on the A-CINCH project has been very impressive in the first 12 months, despite the impacts of Coronavirus on travel and face-to-face meetings.*

*Production of the virtual reality NRC laboratory is progressing well in WP1*

*In WP3 (Valorisation) there has been an impressive take up by participants for the CINCH webinars within the MOOC. Other videos are being produced and will be available shortly. In WP2 HoT courses are ready to run whenever COVID allows, but the electronic aspects are still being used.*

*Nuclear Chemistry awareness (WP5), especially in High Schools, is also making good progress, with a useful temporary website having been created to host the high school educational resources already created.*

*It is my belief that the A-CINCH consortium have made significant progress in the first 12 months of the project, despite the difficulties created by COVID19. I foresee no difficulties that cannot be surmounted by the team in the coming years. I commend the whole team for their efforts so far.”*

## 4 CONCLUSIONS

The A-CINCH End-users and Advisory Group Interim Report is based on the observation from the EAG members for the first 18 months of the project realization. The EAG members have concluded that the project has progressed well with no major drawbacks and in accordance with the project plan.

