(Project Number: 945301)

DELIVERABLE D7.5

Final Review Report of the End-users and Advisory Group

Lead Beneficiary: EVALION

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Authors:	Jana Peroutková	
For the Lead Beneficiary	**Reviewed by Work package Leader**	**Approved by Coordinator**
	**Mojmír Němec** 	**Mojmír Němec** 

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Project information

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EC Project Officer:	Kateřina Ptáčková
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Coordinator contact:	+420 224 358 331, mojmir.nemec@fjfi.cvut.cz
Administrative contact:	+420 245 008 599, cinch@evalion.cz
Online contacts:	http://www.cinch-project.eu/

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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 were asked to compose two review reports. These were the Interim Review Report (D7.4) and the Final Review Report (D7.5). This EAG Final Review Report summarizes observations and feedback of the EAG members for the second eighteen months of the project realization. The Reports concludes that the project has progressed well and in accordance with the project plan.

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, especially to Tor Bjørnstad who has observed the project during its whole implementation and provided highly-valued feedback.

CONTENT

1 INTRODUCTION

The End-users and Advisory Group (EAG) Final Report summarizes and comments on the project activities carried out in the second 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 project EAG 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 1st Project Meeting, Michèle Coeck, SCK-CEN has been nominated and approved as EAG members.

At the 2nd 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. Unfortunately, the cooperation with John Roberts has not been developed further as there was no update on the internal process outcome.

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.

Lucy Platts, NIRO, resigned from her function in June 2023 due to her maternity leave.

3 EAG FINAL REVIEW REPORT

The author of the EAG Final Report is Tor Bjørnstad as he followed the project activities during the whole duration of the project. Tor Bjørnstad's feedback describes the whole period of the second 18 months of the project realization. Michèle Coeck and Lucy Platts have attended the project meetings and provided their feedback on spot.

3.1 Part 1: Tor Bjørnstad Final Feedback

3.1.1 WP1: Virtual reality NRC laboratory (Lead: LUH, Part.: OvGU, UH, UiO) and WP2: "Virtual Reality (VR) Hands on Training (HoT)" (Lead: JSI, Part.: CHALMERS, CTU, POLIMI, UH, UiO)

WP1 and WP2 are so much interconnected that it is natural to comment on them together.

The objective of WP1 is to develop a 3D environment of NRC laboratories as a platform where HoT scenarios, as developed in WP2, will be implemented by VR programming.

These tasks have created some challenges. Specialists in VR programming need to understand specialists in NRC and requirements of specific HoTs and vice versa. It is my impression that this potential knowledge/technology barrier has been reduced thanks to good dialogues between both parties, and VR-versions of different HoTs for testing have been produced.

However, testing of the flipped classroom concept using VR-labs at LUH revealed that there are still bugs to be rectified, so the learning outcome among students was deemed moderate. During writing of this report, testing of the same concept is supposed to take place at POLIMI.

Training for members of regulators and administrative bodies (90 persons) in the use of VR-labs gave also mixed results since most participants were not able to use VR-lab. The absence of the required Firefox browser on several business computers was also a barrier together with too poor performance of graphic cards.

The main conclusion is that there may still be some tasks to attend to in order to reach a final product, which is bug-free and easy to use on different platforms. The main targets for this technology are probably students or "wannabe"- students in NRC and not regulators and administrators.

3.1.2 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).

My impression is that the implementation and application of MOOC and similar tools/platforms have continued with pace and enthusiasm. Examples:

- For the MOOK "Radiochemistry for society" 240 users from 20 countries were enrolled and several certificates issued in this last period (POLIMI).
- Several new webinars realized (POLIMI).
- New interactive screen experiments available (LUH)
- Improved lab-videos on analytical radiochemistry (JSI)

- New HoT in actinide chemistry (CHALMERS)
- Maintenance and refreshing of NucWik (CEFAS, UiO)
- New RoboLab development finalized (UiO)

As a conclusion and as far as I can see, - all goals have been met in this WP.

3.1.3 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.

Excellent progress has been demonstrated in hands-on training in decontamination (CTU, JSI, POLIMI), nuclear forensics (LUH, JSI, CTU, CEFAS) and radiopharmaceutical sciences (IST, UH).

On the development and presentation of a EuroMaster diploma: This task is not finished yet, but plans are in place for fulfilment of the task (UiO, CTU, UH).

The main conclusion on this point is that the work package has developed satisfactorily.

3.1.4 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.

This WP involves the development of high-school teaching packages (NNL), arrangement of corresponding workshops, development of "Lab-in-a-box" procedures including needed equipment for implementation (NNL), MOOK for citizens (POLIMI), material for "teaching the teachers" (CHAMERS) and conduction of a successful summer school in Nicosia/Cyprus in June 2023 (UCY, NNL ++).

On this WP, I will just quote my conclusion in the previous report: "*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*".

3.1.5 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.

From the previous EAG report and still valid: "*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 (ENEN)*".

From the available written material, it is unfortunately difficult for me to assess the status and progress in relation to the work plan. However, from the Minutes of the last common physical meeting in Lisboa (which I could unfortunately not join), I see no "red flags" waving.

3.1.6 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 management and to follow up on project deliverables and milestones.

Again, I have to express my satisfaction with the operation of the management team: Keywords are constructive, well organized and always ready to direct and assist in a very efficient manner.

Another task which is included in WP7 is the management of the travel fund. Due to the Corona period with restricted travelling, only 64 persons were supported out of the 70 which were budgeted. Plans are now in place to allocate the remaining travel funds to expenditures which have been larger than expected for various activities. This seems reasonable and correct.

3.1.7 WP9: Sustainability (Lead: CTU)

This is a work package which, as far as I know, has been created or attracted attention lately in addition to the original WPs. It is established to answer a question that has become more and more actual and pressing as the end of the project approached: How to ensure a sustainable future for all the learning material, tools and procedures developed during the A-CINCH phase and the three preceding program phases during the 12 years of project work?

Ideally, there should be one hub to host most of the software-based learning material. For material that also requires operation outside the host of the hub, procedures should be available on how to take the correct contacts for implementation (an example is the remote running of RoboLab procedures).

It is positive and comforting to see that the last plenary meeting discussed these challenges in depth. It now seems settled that CTU will host and maintain the CINCH Hub. The positive attitude during this meeting towards these questions and continued, may be more informal, contacts between project participants after the formal deadline, opts for a "life after death" of the project initiatives.

3.1.8 FINAL CONCLUSION

"I have been an EAG member and observer to the program (MEET-CINCH and A-CINCH) during the last 4.5 years. During this period, I have observed skilled, enthusiastic and hard-working individuals and institutions moving towards the common goal of making NRC more known to member of the public and to high-school students with potential to take a university degree in the field, and I have seen development of new and more pedagogic learning material for already enrolled students.

The discussion and cooperation climate within the project has been very good. I am very pleased with the overall progress, and that the participants, in large, has delivered the content they promised.

In addition, and in my judgement, the management of the project, or rather of the whole CINCH program, has been firm but flexible enough. Therefore, the program may be deemed as a success and a special acknowledgement goes to the management teams that have assisted in keeping the activities on track."

4 CONCLUSIONS

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

ANNEX 1: ORIGINAL FEEDBACK LETTER FROM TOR BJØRNSTAD

Brief EAG Final Feedback of the Project Entitled "AUGMENTED COOPERATION IN EDUCATION AND TRAINING IN NUCLEAR AND RADIOCHEMISTRY" with the Acronym A-CINCH

To: Prof. Mojmír Němec (mojmir.nemec@fjfi.cvut.cz), Project leader for the A-CINCH EU-project

Cc: Jana Peroutková (cinch@evalion.cz), Administrative Head for the A-CINCH EU-project

From: Prof. Em. Tor Bjørnstad (tor.bjornstad45@gmail.com), University of Oslo in his capacity as member of the Advisory Group to the A-CINCH EU-project.

Date: 26th September 2023

BACKGROUND

This brief report is in response to the A-CINCH project's request for the external advisors to provide final feedback on the project's progress and achievements during the 3 years of operation.

The A-CINCH project has received funding from the EURATOM research and training programme 2019 - 2020 under the grant agreement No 945301. The project also receives funding from the Norwegian Research Council under grant agreement N° 313053. The program duration is from October 2020 to September 2023.

For further *Background*, *Objective, Program in Brief* and *Participants*, - see EAG report dated 06 May 2022. The contents of these chapters have not changed during the last 1.5 years.

OBSERVATIONS

In the previous report, I went in some detail through the work packages, i.e. the achievements, as far as I could understand, relative to the defined work program. In the present brief report, I will limit myself into commenting on the progress during the last 1.5 years and offer a brief final conclusion.

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Yours Sincerely,

Dr. Tor Bjørnstad
University of Oslo