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Augmented cooperation in education and training in nuclear and radiochemistry

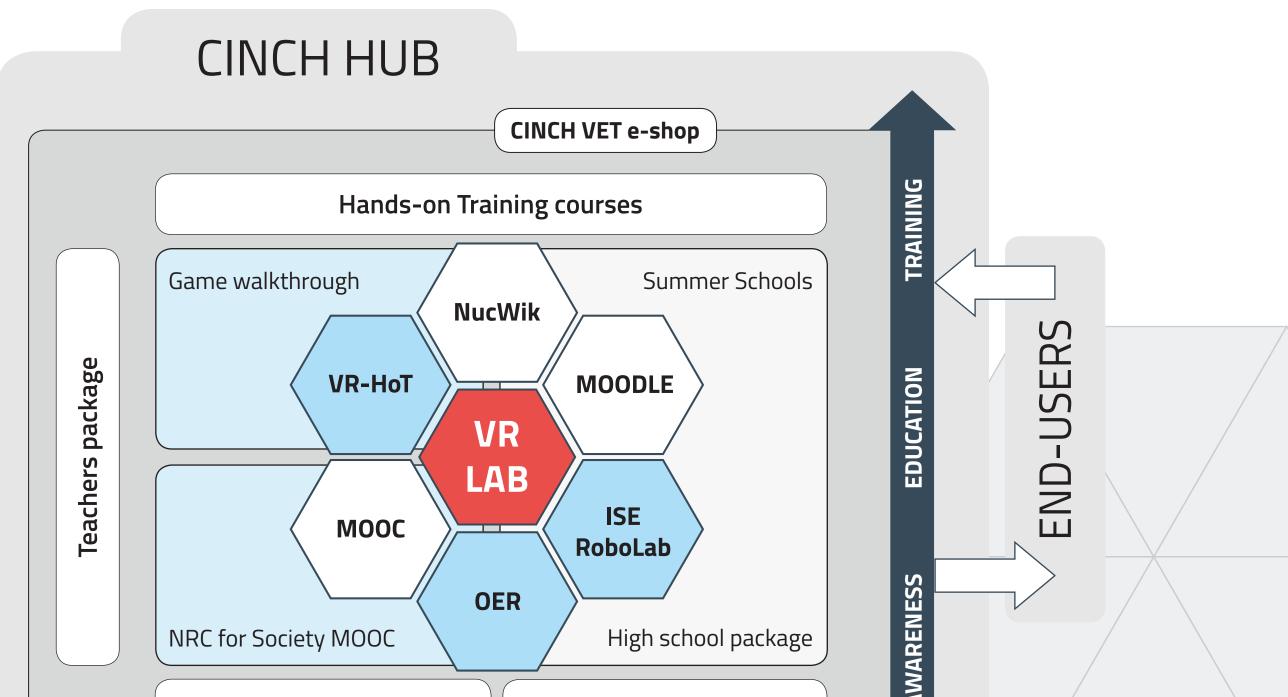
Expertise in nuclear and radiochemistry (NRC) is of strategic relevance to the whole nuclear energy sector, from safe nuclear installation operations to decontamination and

decommissioning, and waste management. The non-energy fields of NRC applications are even broader and range from life sciences – radiopharmaceuticals, radiological diagnostics and therapy – through to dating in geology and archaeology, (nuclear) forensics and safeguards, radiation protection and radioecology.

The **A-CINCH** project primarily addresses the young generation's loss of interest for nuclear knowledge by focusing on secondary education, using a "Learn through Play" concept to engage with students and teachers. The **A-CINCH** augments CINCH teaching tools developed in the three previous CINCH projects – CINCH, CINCH II and MEET-CINCH – with the state-of the art three-dimensional (3D) virtual reality (VR) environment to complete the existing toolbox for radiochemistry education. It is our belief that including a sophisticated VR radiochemistry lab and integrating it with traditional teaching, training, and advanced distance-learning methods will make the NRC field more attractive for younger generations and enhance the learning outcome of the very expensive, but indispensable, hands-on training.

CINCH teaching tools

- state-of the art **3D VR NRC laboratory** (VR-LAB)
- Massive Open Online Courses (MOOCs)
- **CINCH MOODLE** e-learning platform for Nuclear Chemistry
- **RoboLab** remote operated robotic experiments
- Interactive Screen Experiments (ISE)
- NucWik database of teaching materials
- Flipped Classroom concept providing improved interaction between teachers and students
- Hands-on-training courses (HoT) in "real" radiochemistry laboratories across Europe
- **CINCH VET e-shop** offering, presenting and organising all types of NRC courses
- High School Teaching Package, Summer Schools for high school students,



Teach the Teacher package, Lab on Tour toolkit

MOOC for Citizens

Lab on Tour

Organisation of the work

		WP1: VR NRC laboratory		
	٦ [T1.1: "The lab"	T1.2: Augmented reality	
PILLAR 1		T1.3: Implementing and evaluating VR-Task in the VR Lab		
/irtual reality				
laboratory		WP2: Virtual Reality (VR) Hands on Training		
Ť		T2.1: VR HoT scenarios	T2.2 VR HoT pilot delivery	
		T 2.3: VR HoT teaching assistant		
		WP3: Valorisation, wraps-	up and maintenance	
		T3.1: "NRC for Society" MOOC		
		T3.2: CINCH OER: Open Educational Resources		
PILLAR 2		T3.3: New didactical approaches for labs	experiments	
		T3.4: HoTs and Tools maintenance		
Vrap-ups and evelopments				
Developments		WP4: Developments and revisions		
↑		T4,1: HoT in Decontamination and Decon	nmissioning	
		T4.2: HoT in Nuclear Forensics		
		T4.3: Revision and development of NRC	EuroMaster	
		T 4.4: HoT in Radiopharmaceutical Scienc	es	
Ļ				
PILLAR 3 Nuclear Awareness		WP5: Nuclear Chemistry Awareness		
		T5.1: High School Teaching packages		
		T5.2: Summer School for secondary scho	ol students	

List of partners

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- 2 Gottfried Wilhelm Leibniz University Hannover (LUH), Germany
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- 4 Institut Jozef Stefan (JSI), Slovenia
- 5 Chalmers Tekniska Hoegskola Ab (Chalmers), Sweden
- 6 Helsingin Yliopisto (UH), Finland
- 7 University of Leeds (UNIVLEEDS), United Kingdom
- 8 Otto-von-Guericke University Magdeburg (OVGU), Germany
- 9 National Nuclear Laboratory Limited (NNL), United Kingdom
- 10 Institut Mines-Telecom (IMT), France
- 11 European Nuclear Education Network (ENEN), Belgium
- 12 University of Cyprus (UCY), Cyprus
- 13 Universitetet i Oslo (UiO), Norway
- 14 The Secretary of State for Environment, Food and Rural Affairs (CEFAS),
 - United Kingdom
- 15 Evalion s.r.o. (Evalion), Czech Republic

Awareness	T5.3: Citizen NRC MOOC	T5.4: Teach the teacher	
	T5.5: Lab in a box	T5.6: Career case studies	

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Project duration: October 2020 – September 2023

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Project linked with European Network on Nuclear and Radiochemistry Education and Training, www.nrc-network.org





This project receives funding from the EURATOM Research and Training programme under grant agreement N° 945301 and from the Norwegian Research Council under grant agreement N° 313053.





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