



IAEA

International Atomic Energy Agency
Atoms for Peace and Development

Free Webinars on Occupational Radiation Protection

📅 22 July 2020 ⌚ 16:00 CEST



22 July 2020

Artificial intelligence & virtual reality: How to enhance radiation protection of workers and the future of workplace safety



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Welcome to the 10th ORP webinar



WEBINAR ON
Artificial intelligence & Virtual reality:
**How to enhance radiation protection
of workers and the future of
workplace safety**



22 July 2020



16:00- 17:30 CEST



IAEA

International Atomic Energy Agency



22 July 2020

Artificial intelligence & virtual reality: How to enhance radiation protection of workers and the future of workplace safety

10th ORP webinar

Moderator: H. Burçin Okyar

Occupational Radiation Protection Unit

Section of Radiation Safety and Monitoring

Division of Radiation, Transport and Waste Safety

Department of Nuclear Safety and Security



WEBINAR on Artificial intelligence & Virtual reality: How to enhance RP of workers & the future of workplace safety

Staff Motion Tracking

Tracking system based on single depth camera



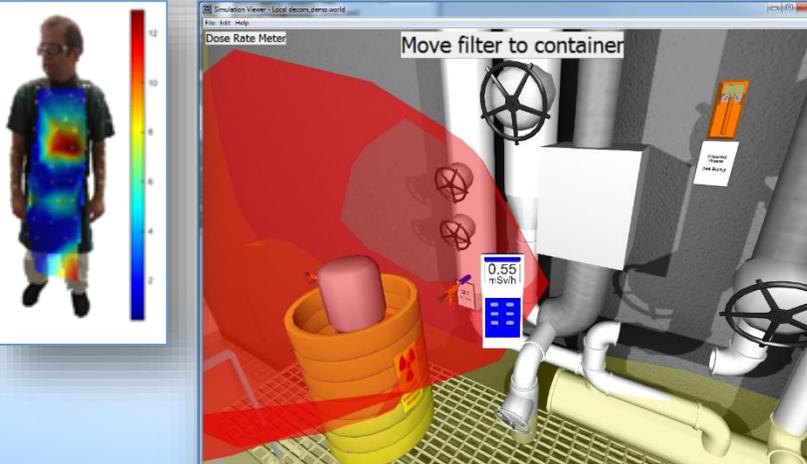
Depth Image

Skeleton Tracking

Real-time processing

Storing XYZ coordinates or send to a cloud

36

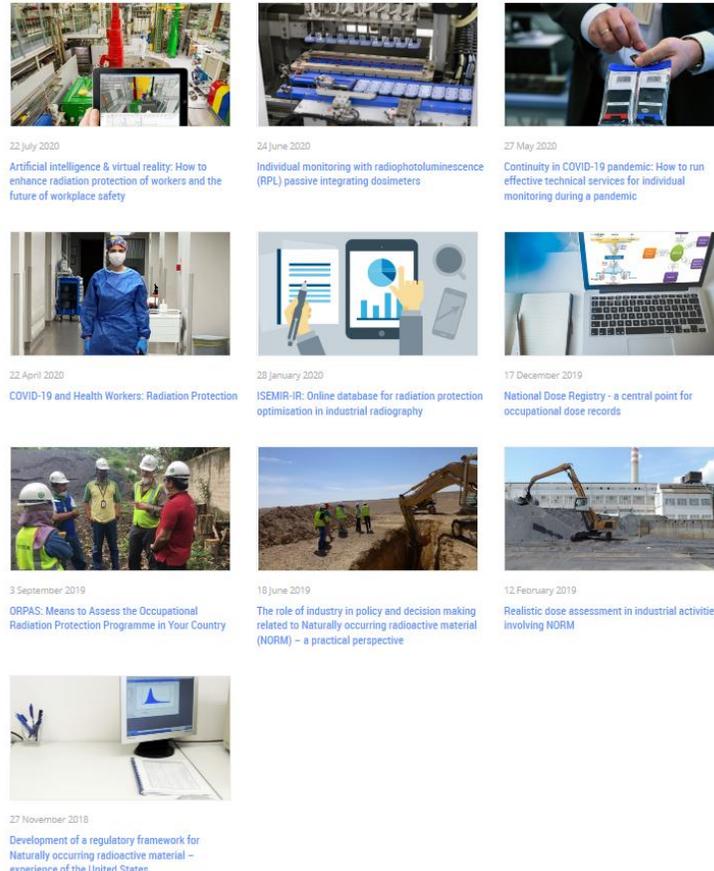


Dose Rate Meter

Move filter to container

0.55 mSv/h

Note: The mention of names of specific companies or products (whether or not indicated as registered) does not imply any intention to infringe proprietary rights, nor should it be construed as an endorsement or recommendation on the part of the IAEA.



22 July 2020
Artificial intelligence & virtual reality: How to enhance radiation protection of workers and the future of workplace safety

24 June 2020
Individual monitoring with radiophotoluminescence (RPL) passive integrating dosimeters

27 May 2020
Continuity in COVID-19 pandemic: How to run effective technical services for individual monitoring during a pandemic

22 April 2020
COVID-19 and Health Workers: Radiation Protection

28 January 2020
ISEMIR-IR: Online database for radiation protection optimisation in industrial radiography

17 December 2019
National Dose Registry - a central point for occupational dose records

3 September 2019
ORPAS: Means to Assess the Occupational Radiation Protection Programme in Your Country

18 June 2019
The role of industry in policy and decision making related to Naturally occurring radioactive material (NORM) - a practical perspective

12 February 2019
Realistic dose assessment in industrial activities involving NORM

27 November 2018
Development of a regulatory framework for Naturally occurring radioactive material - experience of the United States

<https://www.iaea.org/topics/radiation-safety/webinars>

Learning objectives

- Innovative new tools and techniques for utilization in workplaces and how it rolls into the RP of workers and work planning.
- Online dosimetry application based on the use of modern technology such as personal tracking systems.
- State- of- the-art applications in visualization of work environments to provide planning options to reduce the worker's dose and evaluation of the impact of working in different configurations and scenarios with associated training.



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Today's Speakers



Mercè Ginjaume



István Szőke



Yury Verzilov



Occupational Radiation Protection **NET**works

ORPNET: <https://nucleus.iaea.org/sites/orpnet/home/SitePages/Home.aspx>



Welcome note from

Jizeng Ma

Head of Occupational Radiation Protection Unit, IAEA



Webinar on “AI & VR: How to enhance RP of workers and the future of workplace safety”



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Today's Speaker: Mercè Ginjaume

Head of the Calibration and Dosimetry Laboratory of UPC, Vice-chair of the International Radiation Protection Association (IRPA) TG on the impact of the eye lens dose limits, Chair of the Dosimetry Group of the Spanish Society of Radiation Protection and Voting member of EURADOS

President of the Spanish Society of Radiological Protection from 2015 to 2017 and Director of the Institute of Energy Techniques at UPC from 2005 to 2011





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Today's Speaker: István Szóke

Manager at IFE

Academic and professional background and PhD are related to research and development into application of 3D radiological simulation based digital solutions for protection of humans and the environment from radiological hazards

Working at the Institute for Energy Technology in Norway, which is a non-profit research organisation leading the one of the longest nuclear programmes of the OECD NEA Halden Reactor Project





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Today's Speaker: Yury Verzilov

Senior scientist at Kinectrics

PhD in Experimental Nuclear Physics and performed research projects related to the cold neutron source, fission and fusion reactors

Responsible for projects related to the Source Term Monitoring at CANDU stations in Canada and Romania

Extensive experience in a variety of scientific and engineering projects in the fields of nuclear engineering and physics



Preliminary assessment of the brief survey results



HOW TO ENHANCE RADIATION PROTECTION OF WORKERS AND THE FUTURE OF WORKPLACE SAFETY

BRIEF SURVEY FOR THE WEBINAR ON ARTIFICIAL INTELLIGENCE & VIRTUAL REALITY

1. Did you ever encounter with the use of artificial intelligence (AI) and virtual reality (VR) for radiation protection purposes in your respective organisations? *

Yes;

No

2. Does you/your team or institution perform investigation of applicability of AI & VR in your facilities or activities? *

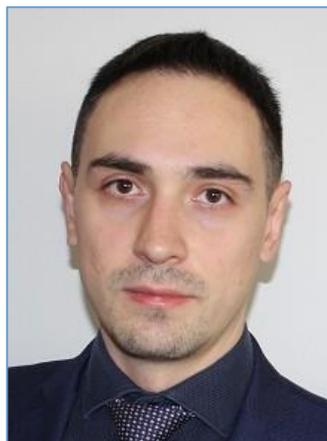
Yes, we already applied AI & VR in number of practices;

Yes, we are at designing and testing stage;

Yes, we perform a scientific research on applicability of AI & VR

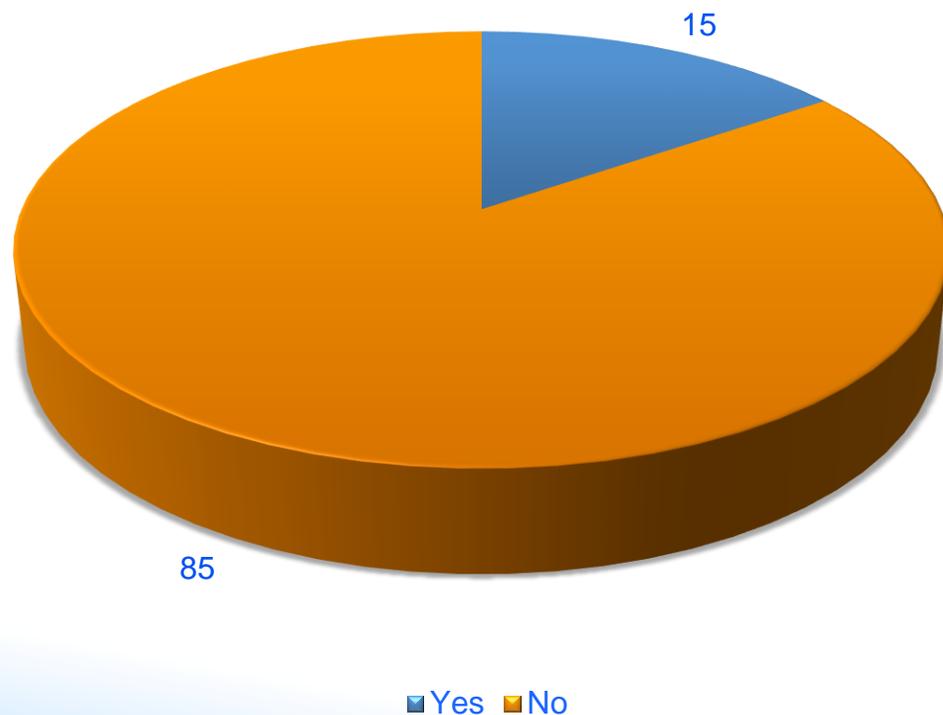
No

- 10 questions to understand the participant's understanding /practices on the use of AI&VR for workplace safety/ RP of workers

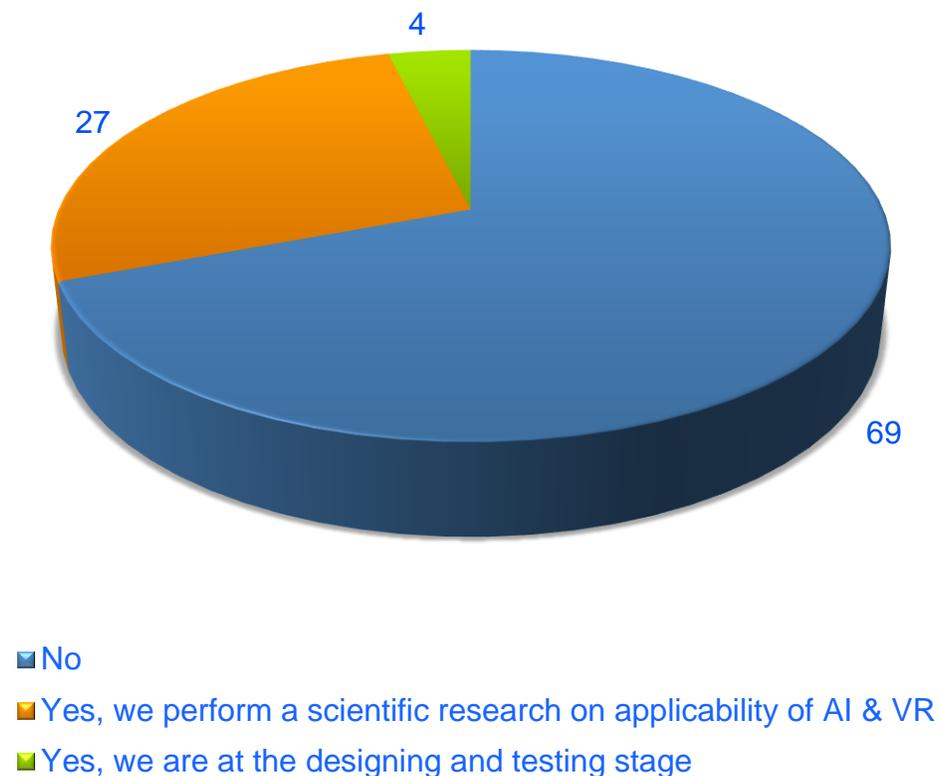


Roman Abutalipov
Associate Radiation Safety Officer

1. Did you ever encounter with the use of artificial intelligence (AI) and virtual reality (VR) for radiation protection purposes in your respective organisations?

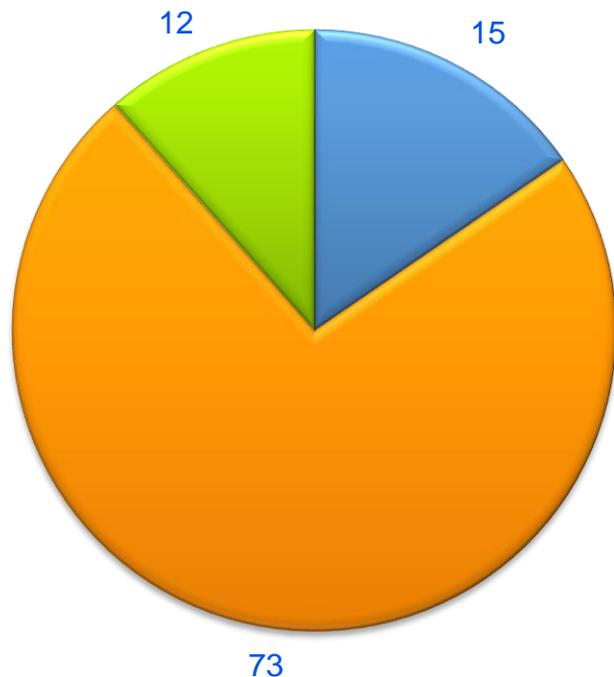


2. Does you/your team or institution perform investigation of applicability of AI & VR in your facilities or activities?



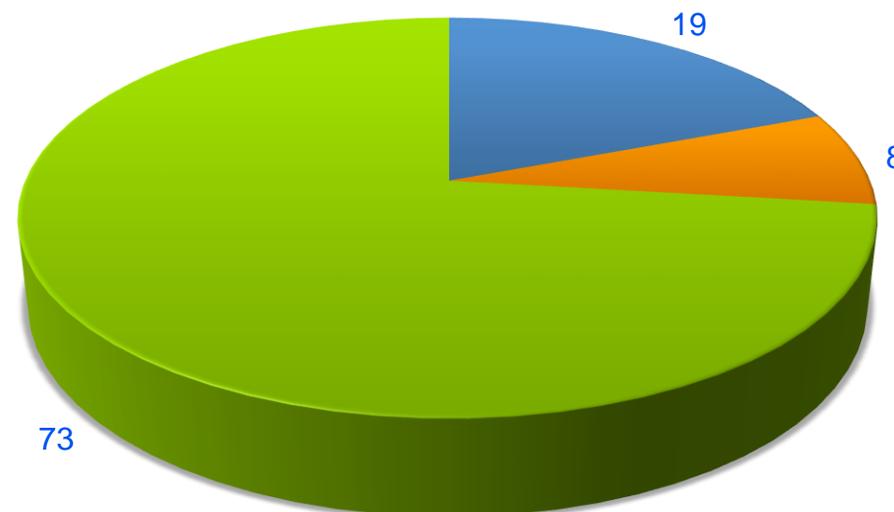


3. Did you/your company hire/plan to hire external consultants and/or IT company for design, maintenance and operation of AI & VR in radiation protection?



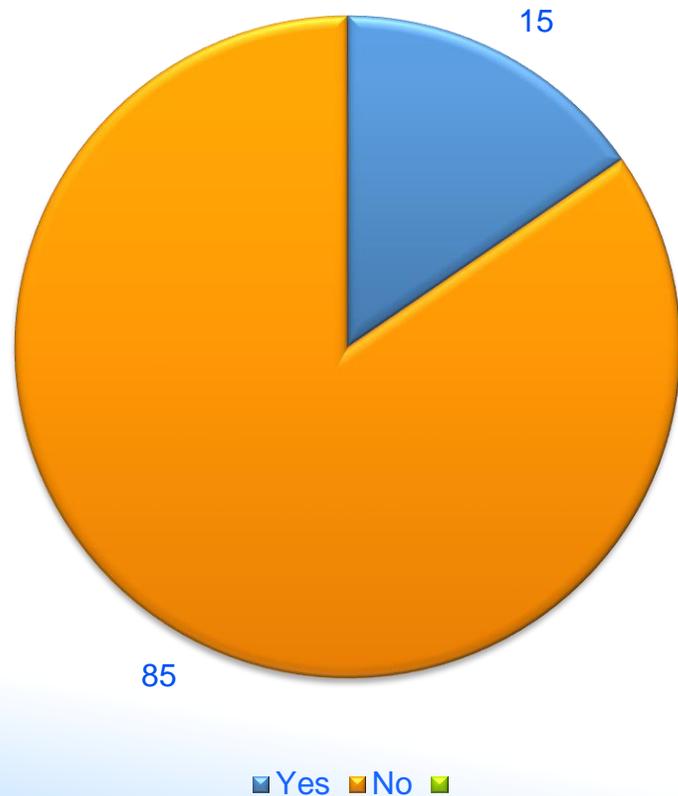
- No, we plan to realise the project(s) by our own means
- No, we had no plans to apply AI in radiation protection before that.
- Yes, we hired specialised organisation(s) and/or consultant(s);

4. Does the AI & VR application you work on/with require preliminary dose assessment, new policies application or additional certification?

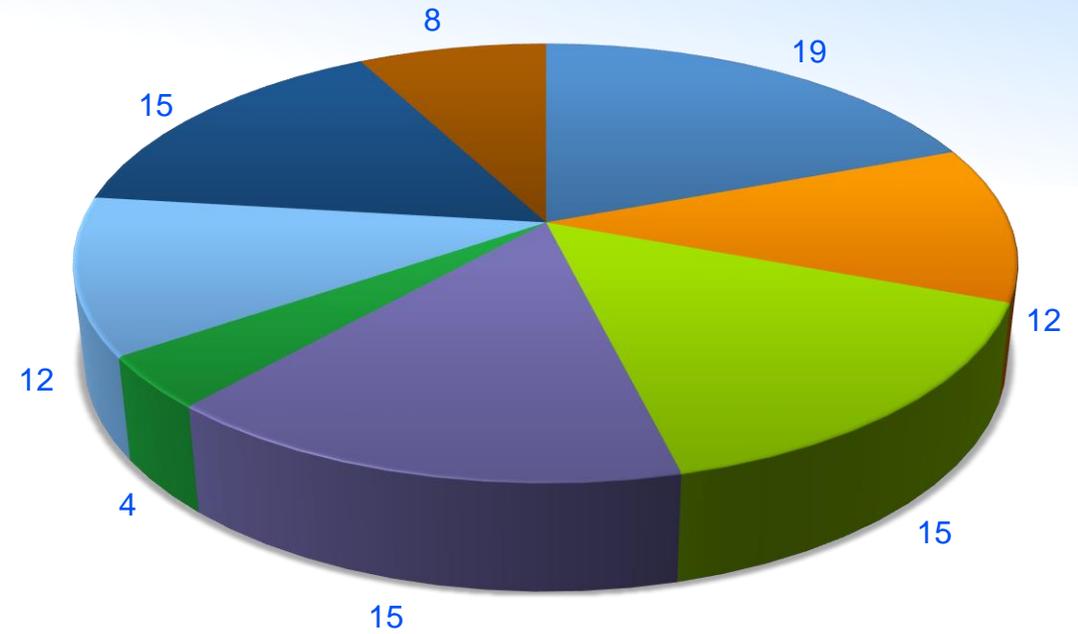


- Yes
- No, overall changes in processes are not significant;
- No, we had no plans to apply AI & VR in radiation protection before that.

5. Do you or your company participate in international projects focused on application of AI & VR in the field of radiation protection?

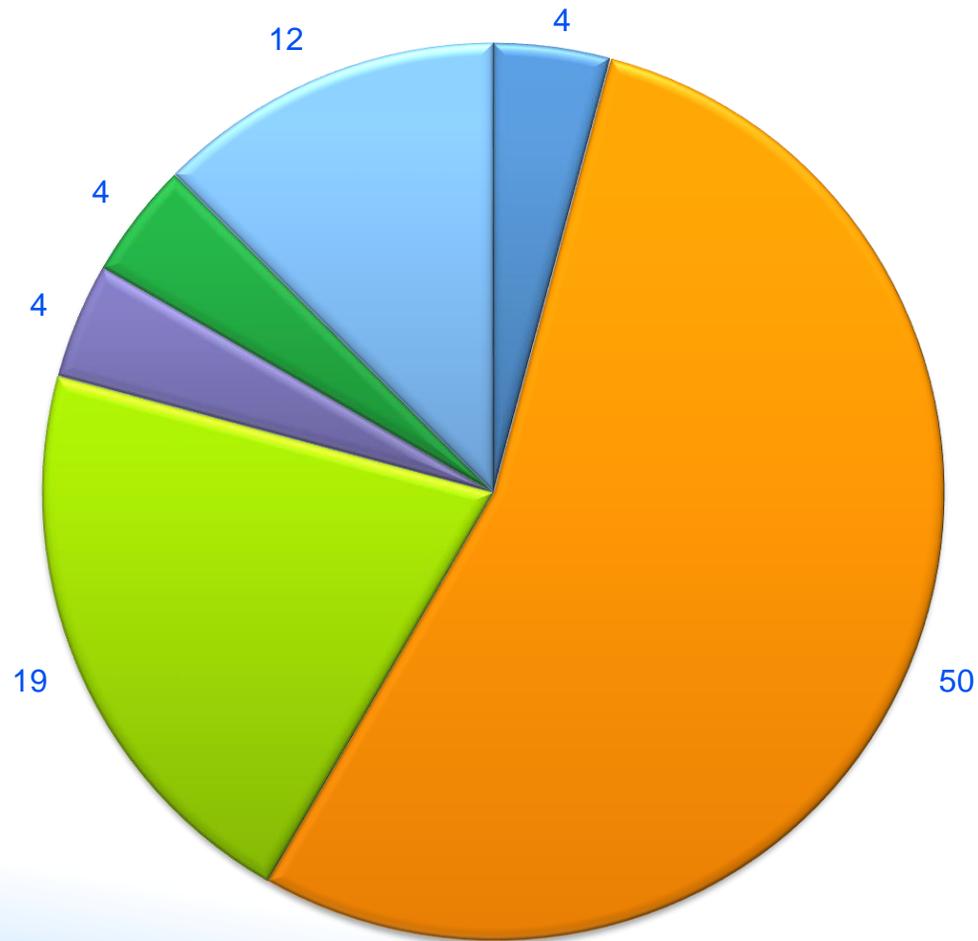


6. In what domain do you work?



- Medical (Nuclear medicine, interventional cardiology, etc.);
- Training;
- Dosimetry services;
- Nuclear Power Plant operation;
- Design and construction of nuclear facilities;
- Science and research
- Regulatory Body
- Decommissioning, dismantling, waste management and remediation;

7. What of other technologies are applicable in radiation protection from your point of view?



- Virtual and augmented reality; Machine learning;
- I'm not familiar with these technologies;
- All of them;
- Data mining;Virtual and augmented reality;
- Data mining;Machine learning;
- Machine learning;

8. What kind of tool would you like to have in your daily practice?

- Tool for education and training;
- Tool for planning and evaluation of radiation protection;
- Tool for complex simulation and modelling;
- Tool for radiotherapy and medical data analysis;
- All of them;

12 %

- Tool for education and training;
- Tool for planning and evaluation of radiation protection;
- Tool for complex simulation and modelling;
- Tool for radiotherapy and medical data analysis;
- All of them;

35 %

- Tool for education and training;
- Tool for planning and evaluation of radiation protection;
- Tool for complex simulation and modelling;
- Tool for radiotherapy and medical data analysis;
- All of them;

12 %

9. For what kind of data would you like to apply AI & VR?

- Radiation exposure and dose;
- Simulation;
- Job planning;
- Training;
- Images;
- Field characteristics;
- Shielding characteristics;
- Risk estimation and assessment;
- Radiation biology data;
- All of them;

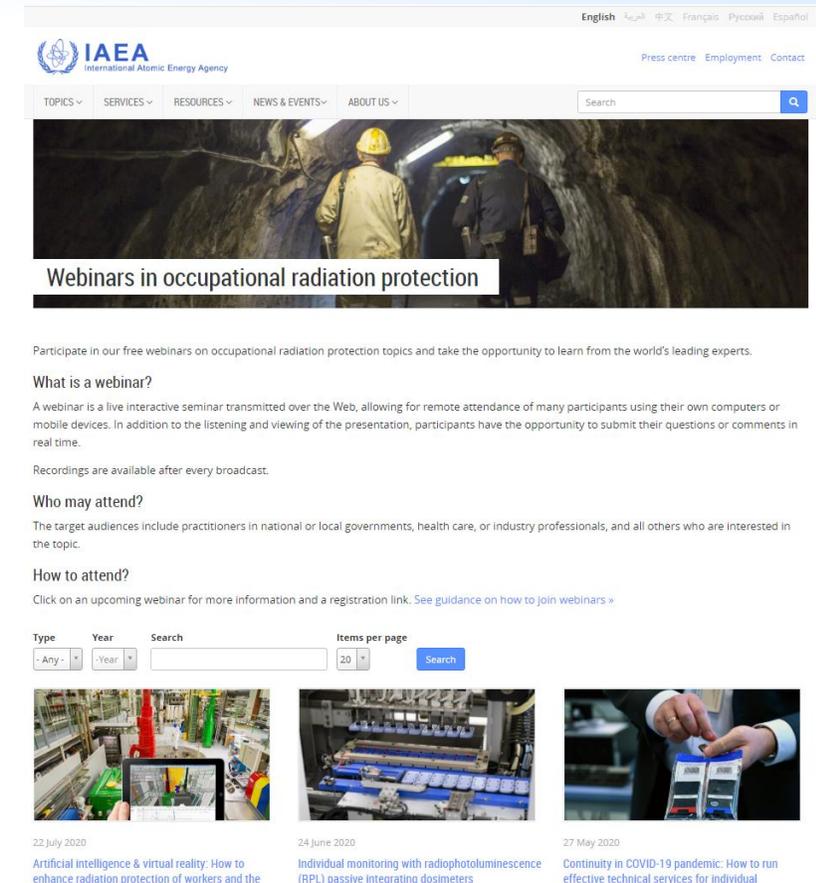
27 %

- Radiation exposure and dose;
- Simulation;
- Job planning;
- Training;
- Images;
- Field characteristics;
- Shielding characteristics;
- Risk estimation and assessment;
- Radiation biology data;
- All of them;

8 %

10. Please give us your suggestions for topics for future webinars on occupational radiation protection

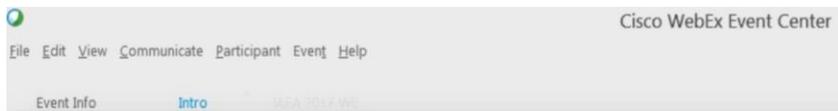
- Dose optimization during design of nuclear facilities (to comply with regulatory requirements)
- Development of VR&AR applications for simulation/job planning in regards of dose calculations for workers
- Monte Carlo simulations in low doses and applications in internal dose distribution and radioisotopes in nuclear medicine.
- Use of data mining and AI to create algorithms for predicting radiological accidents
- Low dose dosimetry
- Overview of the international standards for ORP



The screenshot shows the IAEA website's webinar page. At the top, there is a navigation bar with the IAEA logo and the text 'International Atomic Energy Agency'. Below this is a search bar and a menu with options: TOPICS, SERVICES, RESOURCES, NEWS & EVENTS, and ABOUT US. The main content area features a large image of two workers in a tunnel, with the text 'Webinars in occupational radiation protection' overlaid. Below the image, there is a paragraph inviting users to participate in free webinars. The page then defines what a webinar is, lists target audiences, and provides instructions on how to attend. At the bottom, there is a search filter section with dropdown menus for 'Type' (set to 'Any') and 'Year' (set to 'Year'), a search input field, and a 'Search' button. Below the search section, three webinar cards are displayed, each with a thumbnail image, a date, and a title: 'Artificial intelligence & virtual reality: How to enhance radiation protection of workers and the...' (22 July 2020), 'Individual monitoring with radiophotoluminescence (RPL) passive integrating dosimeters' (24 June 2020), and 'Continuity in COVID-19 pandemic: How to run effective technical services for individual...' (27 May 2020).

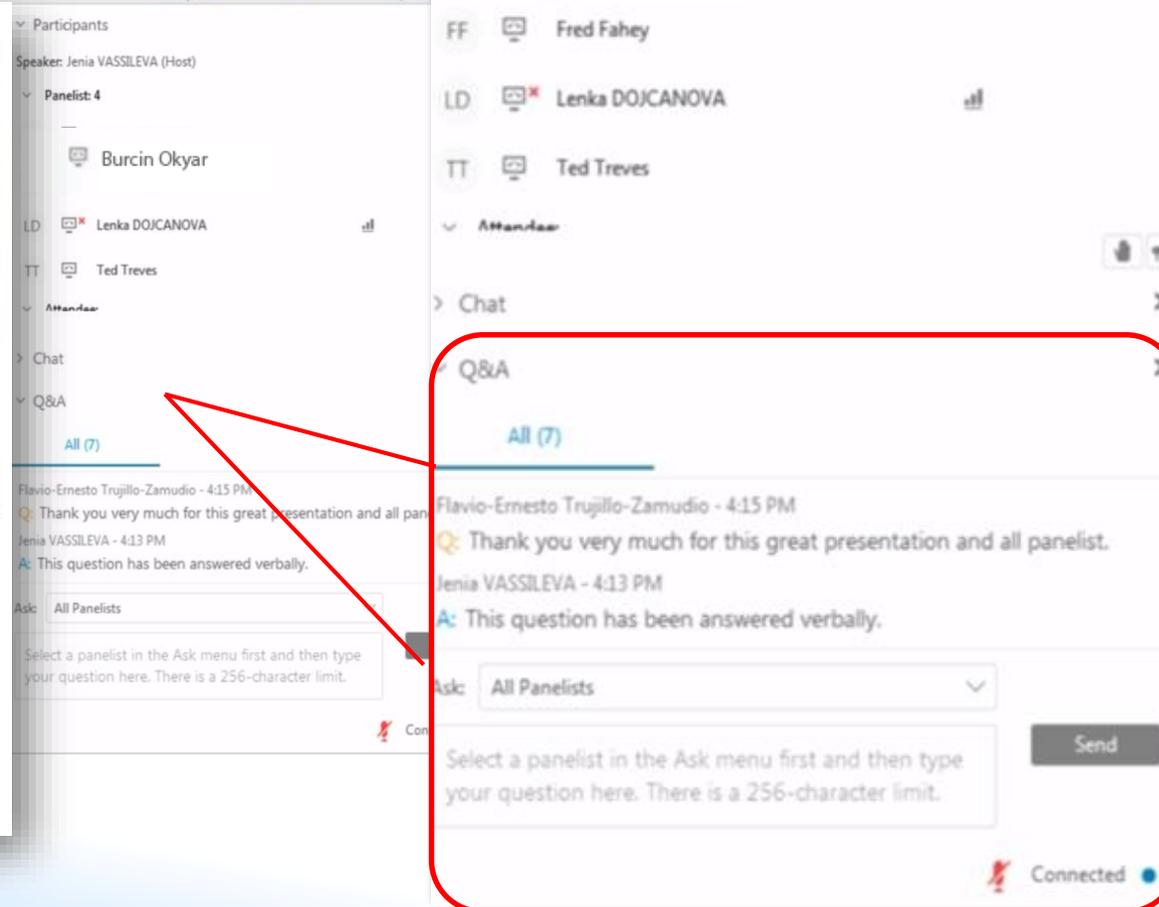


How to ask questions ?



27 May 2020

Continuity in COVID-19 pandemic: How to run effective technical services for individual monitoring during a pandemic



Participants

Speaker: Jenia VASSILEVA (Host)

Panelist: 4

- Burcin Okyar
- LD Lenka DOJCANOVA
- TT Ted Treves

Attendee

Chat

Q&A

All (7)

Flavio-Ernesto Trujillo-Zamudio - 4:15 PM

Q: Thank you very much for this great presentation and all panelist.

Jenia VASSILEVA - 4:13 PM

A: This question has been answered verbally.

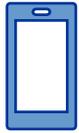
Ask: All Panelists

Select a panelist in the Ask menu first and then type your question here. There is a 256-character limit.

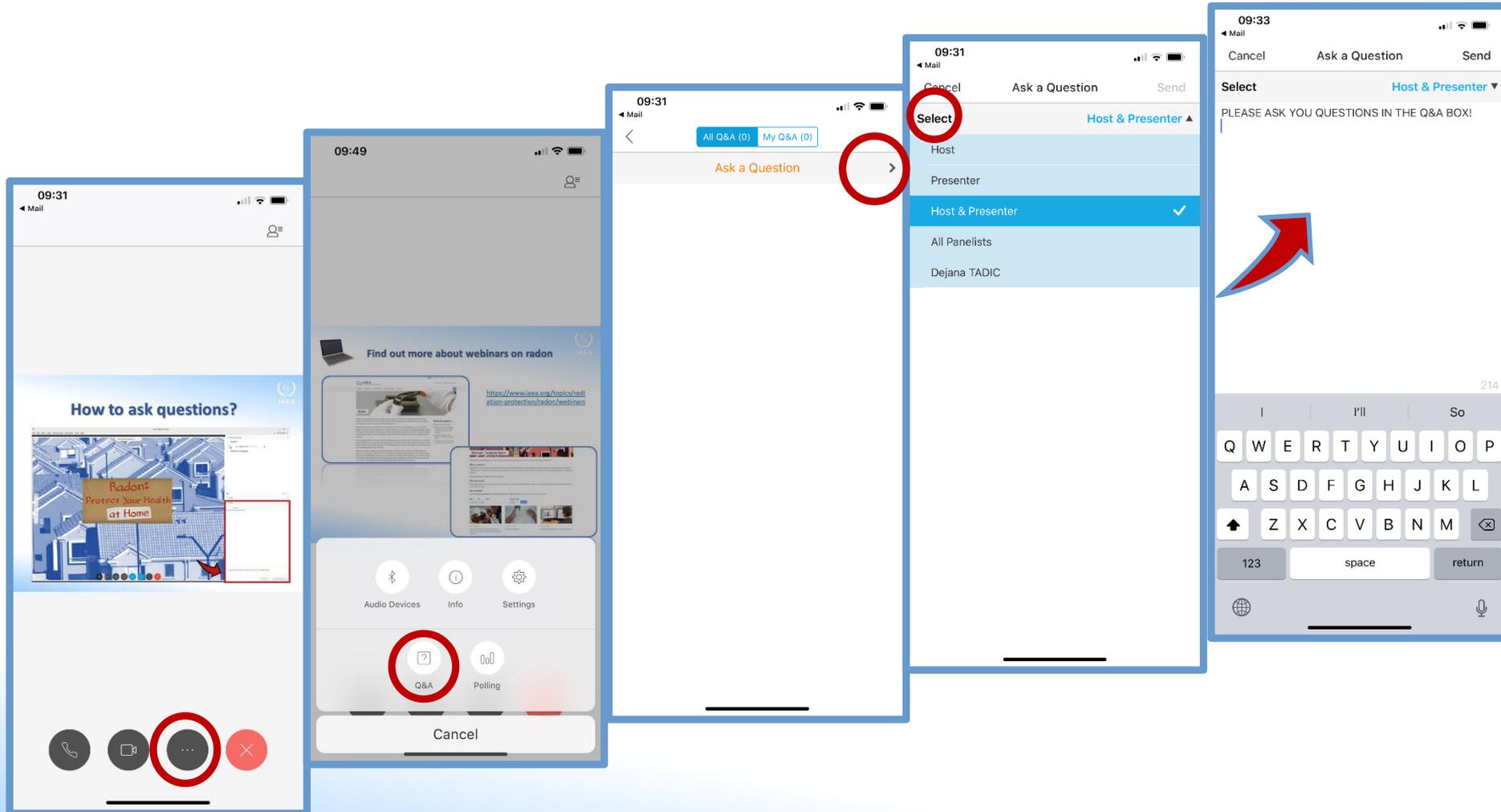
Send

Select a panelist in the Ask menu first and then type your question here. There is a 256-character limit.

Connected



How to ask questions?



The sequence of screenshots illustrates the process of asking a question:

- Home Screen:** Shows a webinar banner titled "How to ask questions?". At the bottom, a red circle highlights the "Q&A" icon in the navigation bar.
- Webinar Interface:** Shows the webinar content. At the bottom, a red circle highlights the "Q&A" icon in the navigation bar.
- Ask a Question Screen:** Shows the "Ask a Question" screen. A red circle highlights the "Select" dropdown menu.
- Selection Menu:** Shows the selection menu with "Host & Presenter" selected. A red arrow points from this screen to the final screen.

The final screen shows the "Ask a Question" screen with a text input field and a keyboard. The text input field contains the instruction: "PLEASE ASK YOUR QUESTIONS IN THE Q&A BOX!".

Book your seat (Upcoming webinars)

Topics to be addressed;

- Internal dosimetry – State of the art practices (In-vivo & in-vitro)
- Individual monitoring with OSL passive dosimeters
- Establishment and Operation of Management Systems for TSPs
- Personal Protective Equipment- Lessons learned from the shortage during the COVID-19 pandemic
- Recognition as a third party and laboratory accreditation – demonstration of fulfilment

Watch the announcements @

ORP webinars web-page: <https://www.iaea.org/topics/radiation-safety/webinars>



Occupational Radiation Protection **NET**works

Thank you for your participation



Register for
ORPNET Newsletter

IAEA ORPNET: <https://nucleus.iaea.org/sites/orpnet/home/SitePages/Home.aspx>

IAEA ORP Webinars: <https://www.iaea.org/topics/radiation-safety/webinars>

We invite proposal submissions for consideration in our ORP webinar series

Contact us at Occupational-Protection-Unit.Contact-Point@iaea.org