SnT 2025 8 SEPTEMBER ONLINE DAY 9 TO 12 SEPTEMBER AT HOFBURG PALACE, VIENNA & ONLINE
CTBT: SCIENCE AND TECHNOLOGY CONFERENCE

Harnessing Virtual Technology to Empower Youth and Early Career Scientists for CTBT

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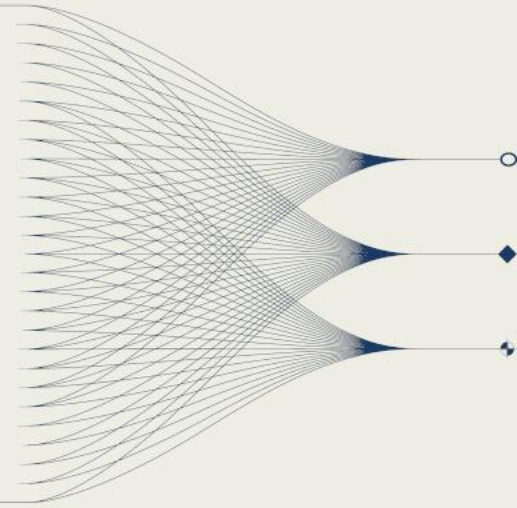
INTRODUCTION AND MAIN RESULTS

For the CTBTO to effectively achieve its mandate, capacity building is essential to ensure the verification regime functions reliably today and to prepare a skilled workforce for the future.
A major challenge remains the limited reach of in-person training, compounded by resource and travel constraints.

Virtual technologies present an opportunity to enable global participation and bridge this gap effectively.



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Impact of Virtual Technologies on Training and Access

Virtual tools provide immersive, hands-on training experiences that bridge theory with practice.
They ensure equal access to high-quality training for scientists in developing regions.
These approaches are scalable, reusable, and essential for building a sustainable workforce.

Immersive Virtual Resources for Training

Data analysis platforms allow learners to engage directly with monitoring data.
Interactive virtual laboratories, such as Jupyter Notebooks, support step-by-step guided analysis.

Simulations create realistic training scenarios.
Collaborative online platforms encourage real-time teamwork in data analysis.
Artificial intelligence systems can provide automatic grading and instant feedback for trainees.

The Virtual NDC Academy

The Virtual NDC Academy is envisioned as a structured online program.
It builds on NIAB, vDEC, and CTBTO e-learning platforms to create a coherent training pathway.
Modules are multilingual, modular, and reusable, ensuring broad accessibility.
Each course culminates in a capstone project where participants deliver a mock bulletin or analysis cycle.

Virtual Table-Top Exercises (TTX)

Virtual table-top exercises adapt scenarios into interactive online simulations.
These exercises use scenario injects such as IMS bulletins, ambiguous event data, and logistical challenges.
Participants collaborate in real time, making decisions as teams and later debriefing to reinforce learning.

Reusable & Updatable Content Library

The training ecosystem is supported by modular training packs that include slides, datasets, and quizzes.
Offline-compatible versions allow access for participants in low-bandwidth regions.
All modules are updated regularly to reflect the latest CTBTO software and tool upgrades.

Benefits to Youth & Early Career Scientists

Virtual training ensures equal access to knowledge and resources for scientists worldwide.
It provides hands-on training that mirrors the workflows of National Data Centres.
Participants gain pathways into the CTBTO career opportunities.
This approach fosters a diverse and inclusive CTBT scientific community.
An annual Virtual Data Challenge engages youth scientists in creative applications of verification data.

Sustainability & Relevance

Reusable and continuously updated modules guarantee the longevity of training programs.
These approaches are scalable to thousands of experts democratizing, regardless of geography, gender and language.
Integration with the CTBTO Knowledge and Training Portal ensures alignment with existing frameworks.
It builds resilient verification capacity for the future of the Treaty.