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

New Technology Infrastructure at the On-Site Inspection Field Laboratory

B. Nadalut[1], O. Sukhotskyi[2], K. Khrustalev[1], A. Rowlands[1], M. Auer[2], S. Vasilyev[2], J. NG[1], R. Britton[1], A. Davies[1], P. Olagbaju[1], L. Fiserova[3]

1 Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), 2 Instrumental Software Technologies, Inc. (ISTI), 3 Radiation Solutions (RadLabs)

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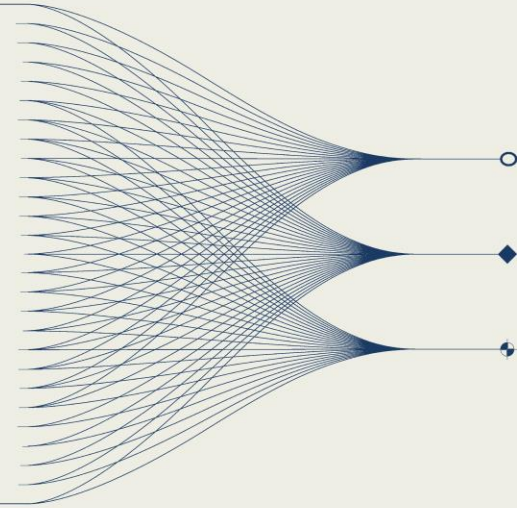
INTRODUCTION AND MAIN RESULTS

This presentation provides insights on redesigned technology infrastructure of the OSI field laboratory for full compatibility of computing platforms, internal data transmission and data analysis tools with the GIMO management system currently in use during an OSI. A GIMO laboratory application (“LabDash”) has been developed and tailored to automate the transfer of sample metadata and raw data from the GIMO field application to the OSI field laboratory. LabDash ensures that the sample and sample data chain of custody, manages spectrum acquisition, data analysis and allows Reviewed Radionuclide Reports classification and delivery. Automatic analysis and interactive data review are performed with OSI-tailored Comprehensive Nuclear-Test-Ban Treaty Organization data analysis tools (ONiaB_P and ONiaB_NG), interconnected with LabDash. Hardware and software redundancy, hot spare configurations, as well as tailored backup strategies for data, software and hardware are implemented at the OSI field laboratory. The new OSI field laboratory IT infrastructure is ready for implementation at the upcoming IFE.



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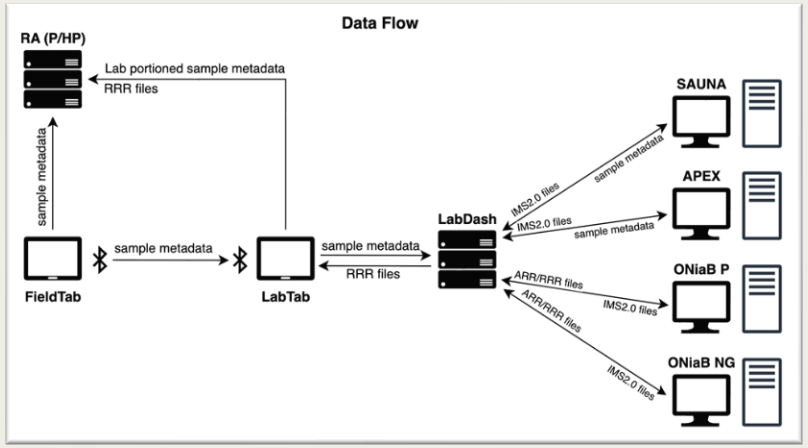
Introduction

The CTBT On-site Inspection Division (OSI) Field Laboratory is supporting Radionuclide techniques, Particulate (RN, Protocol to the CTBT, Part II, Para. 69(c) and 69(d) and Noble Gas (NG, Protocol to the CTBT, Part II, Para. 69(d)); reliable operational status of the OSI Field Lab. requires operation and maintenance of complex equipment and workflows, major components being a robust Information Technology (IT) infrastructure ensuring a reliable and sustainable dataflow.

The IT infrastructure and Dataflows of the OSI Field Lab. and their components were enhanced between 2024 and 2025, to ensure hardware redundancy and data safety during operations.



Map showing the Dataflow throughout the OSI Field Laboratory as implemented in 2025.

Methods/Data

What do you need to know about the OSI Field Lab?

- All hardware supporting OSI Field Lab. Dataflow is duplicated, with spare units ready to take over in case of hardware failure and a redundant backup strategy capable to retrieve and restore data to the desired point in time

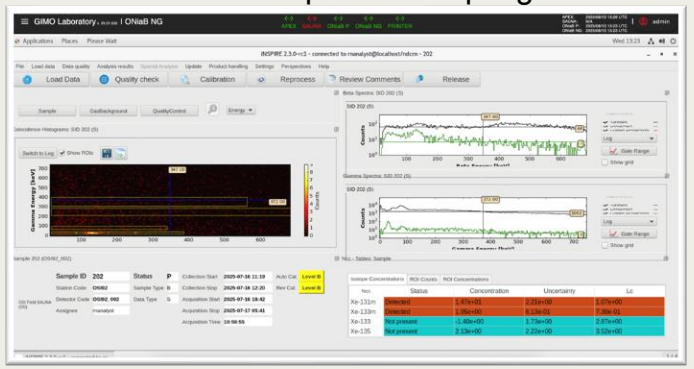
- The OSI GIMO laboratory application (LabDash) grants a robust Chain of Custody for samples and data, automated data transfer from/to the OSI Field and Working Area, as well as user friendly interface for activities summary and Reporting.

LabDash: Samples Summary page

- LabDash Clients installed on equipment data acquisition hardware has embedded data retrofitting mechanism in case of LabDash hardware failure, for Particulate (APEX) and Noble Gas (SAUNA)

What about "ONiaB" data analysis and review tool?

- The CTBTO "NiaB" tool for Particulate and Noble Gas data analysis developed by International Data Center (IDC) Division for National Data Centers of Member States is embedded into LabDash and tailored to best fit OSI specific analysis and reporting needs and requirements, with list of reported radionuclides being restricted to OSI relevant nuclides and with analysis results tailored to OSI specific sample geometries.



LabDash: ONiaB NobleGas review page

Conclusions

The new IT infrastructure of the OSI Field Laboratory constitutes a major milestone in enhancing data safety and dataflow robustness, while providing full Chain of Custody of samples and related sample data during an OSI Inspection.

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