Radiation Identification Equipment & Reachback Solution

Case Study

- Environics delivers new generation Mobile Radiation Detection Equipment and Reachback Data Transfer Solution to Finnish Customs
- With this new Radiation Detection Equipment program Finnish Nuclear Security Architecture will significantly improve.

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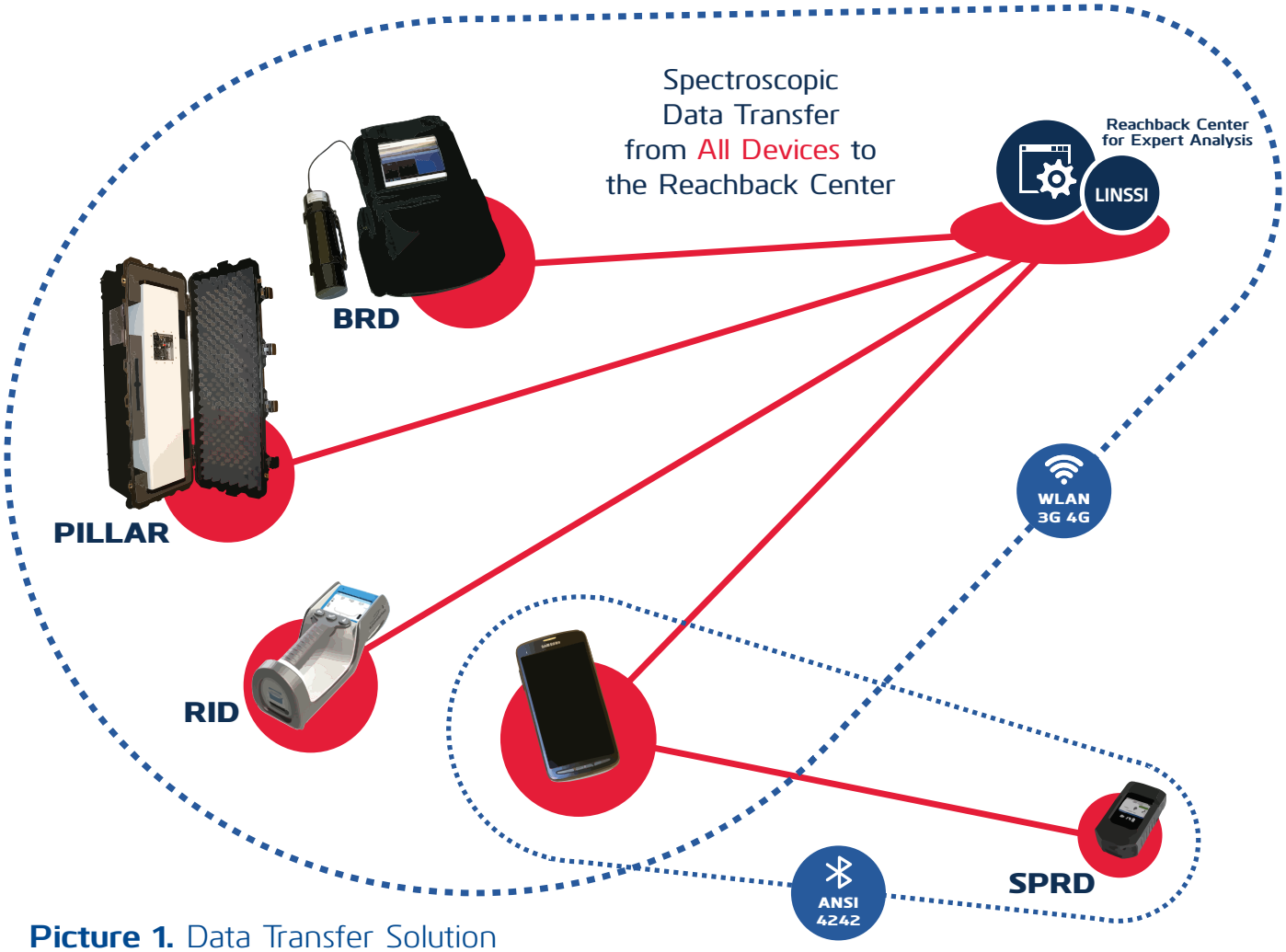


Picture 1. Data Transfer Solution

Finnish Radiation and Nuclear Safety Authority, STUK, has signed four years framework contract with Environics for radiation detection equipment program. This program will significantly improve Finnish nuclear security architecture.

KEY FEATURES

- Enhancement of radiation monitoring operations at Finnish borders
- New equipment meeting the requirements of Finnish national nuclear security detection architecture
- BRD, RID, SPRD and PILLAR detectors
- LINSSI Databases
- Full reachback capability

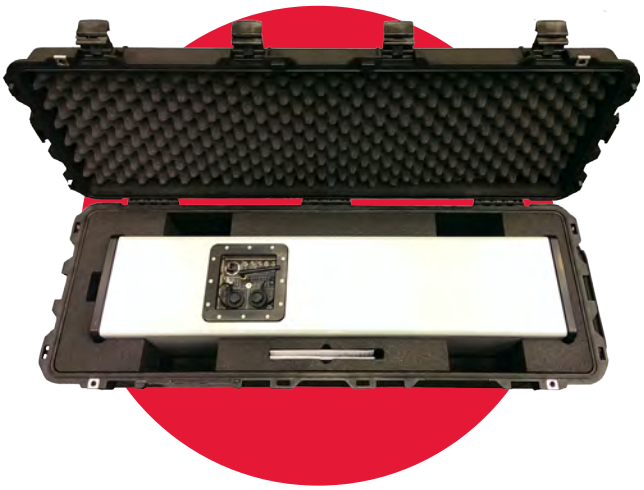
Radioactive Emergency Preparedness in Finland

Finland and other EU countries has responsibility to take measures to prevent illicit trafficking of nuclear and other radioactive materials and protect its citizens and to fulfill its obligations under international agreements.

In Finland radioactive emergency preparedness has been carried out in close cooperation with Customs and Finnish Radiation and Nuclear Safety Authority, STUK. The Customs monitoring points are equipped with spectrometric devices, which analyse the measurement results automatically. In unknown situations, the spectra can be send to STUK for further or immediate analysis. In addition to expert reachback support STUK also provides customer officer trainings and expert advices for develpment of radiation monitoring at borders. The radiation monitoring in Finnish borders covers transport on rail, road and ship as well as air traffick. Also passenger, freight traffick and post are being controlled. This new radiation detection equipment program will provide new generation tools for Finnish Customs and further enhance the emergency preparedness and illicit trafficking prevention in Finland.

National Nuclear Security Detection Architecture

In order to be better prepared and gain more efficiency different Finnish organizations, including Helsinki Police and Rescue Department, Defence Forces, Border Guards, Customs and STUK, has developed the National nuclear security detection architecture in REPO project. This National RN architecture describes future RN detection needs, standard processes, security information sharing, cooperation and maintaining competencies. It also defines optimized instruments, equipment and communication channels.



Radionuclear Identification Devices

New radiation detection equipment contract between Environics and STUK includes spectroscopic personal radiation detectors (SPRDs), radionuclide identifier devices (RIDs), backpack radiation detectors (BRDs) and mobile port monitors (PILLARs). All equipment included in this program has possibility to transfer data for reachback purposes.

Backpack radiation detectors (BRDs) and portal monitors (PILLARS) are based on Environics own spectrometric radiation monitoring solutions. 3rd party detectors are utilized in personal detectors and identifier solutions. SPRDs are based on Cadmiun Zinc Telluride (CZT) detectors and H3 neutron detector and the RIDs are based on LaBr-scintillation detector and proprietary neutron blade technology.

RanidPro200 provides new generation solution for backpack radiation detectors, it utilizes 2"x2" Labr3 scintillation detector and 6Li:ZnS(Ag) neutron detector. RanidPro200 has toughpad control unit and new web service software enables use over any mobile device with web browser. It implements unique automatic energy stabilization routines enabling the detector to conduct continuous spectroscopic measurements and analysis.

RanidPort Mobile is easily deployable spectroscopic portal monitor including integrated GPS and mapping function. RanidPort Mobile is based on 4"x 4"x 16" NaI(Tl) detector and its standard operation time is more than 30 hours. The mobile port can be used for example in cars, helicopters, boats and airplanes.

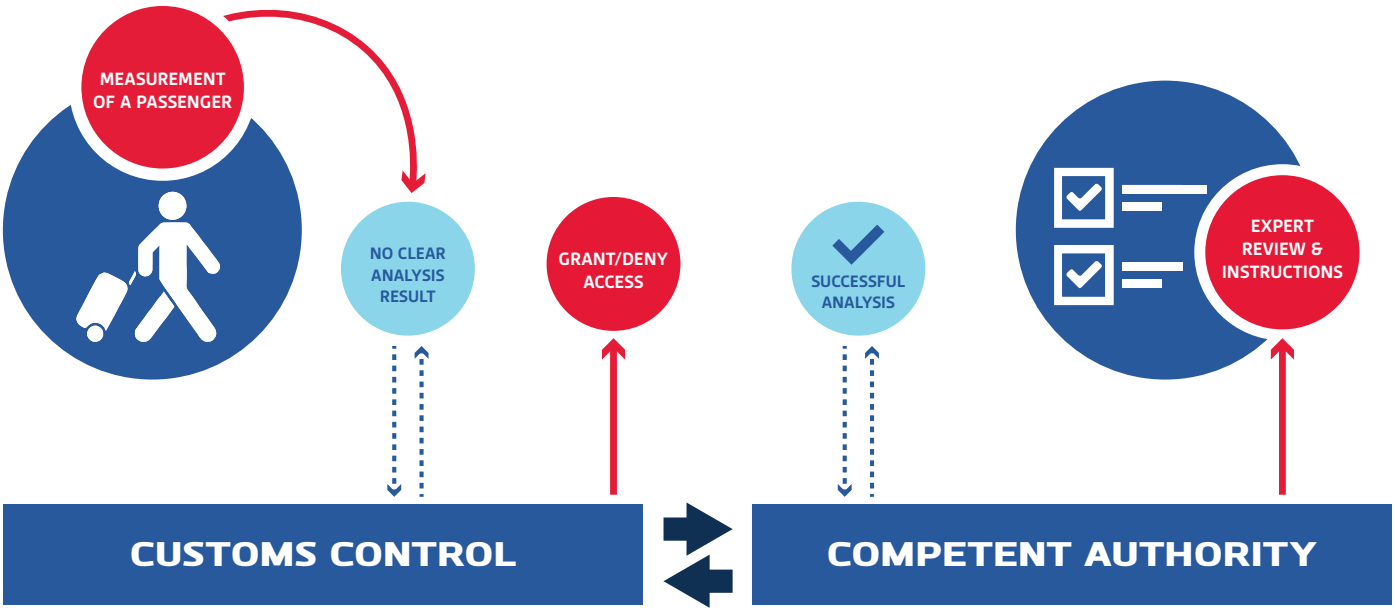
Data Communication and Reachback Capability

Environics' reachback data transfer solution is utilized in all detectors (BRDs, PILLARs, RIDs & SPRDs) included in STUK's Radiation detection program. All Detectors support wireless data transfer methods (WiFI, 3G, 4G or Bluetooth) and are able to be in constant contact with the control centers where the experts can process the measurement for more in-depth analysis. Using the unique reachback data transfer it is possible to verify threat rapidly and provide immediate instructions for action (see picture 2.).

In Environics' data transfer solutions spectral data is based on sending LML-files from devices to reachback server. The data is first prioritized, then packaged and encrypted. In priorization alarms comes always first, after that comes data in time order (newest first). With data buffering the system ensures that no data is lost even with poor bandwidth.

The data transfer can be done in two optional ways, with SHH or with Cloud-Service. The SHH-case is recommended when internet connection is not available or cloud-services can't be used.

Picture 2. Reachback Concept



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