Pathway for Citizen Science: radiation detection and every-day sources of radioactivity (RadiZcan – citizen)

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// OBJECTIVES

Opening-up pathways for new CS projects to be designed and launched in the field of radiation detection.

Mapping of high natural radiation areas in our neighbourhood (e.g.: mapping radiation in sediments and radon risk areas, collection of time series of radon activity concentration in outdoor air).

Increase radiation/radon monitoring capacity at the local level and support efforts to address these threats.

To encourage citizens to test their homes for radon/to test soil samples, while at the same time contributing their data to cancer prevention research efforts in the public domain.

To mobilize people/communities to start measurements, to understand how they use BAT for community purposes, to be better prepared for radiological risks.

Inclusive approaches for the governance of radiological risk situations and design of transdisciplinary activities, education, joint actions in radiological protection.

// RADIATION IN EVERYDAY LIFE

Any increased level of radiation above natural background will carry some risk of harm to health.

// SiPM SCINTILLATOR KIT

RadiZcan

Allow citizens to get inside radiation detection tech and to make it more accessible to both citizens and researchers (from different disciplines) in order to start new CS

Innovative scincillator technology: NaI(Tl) / LySo / Plastic with SiPM.

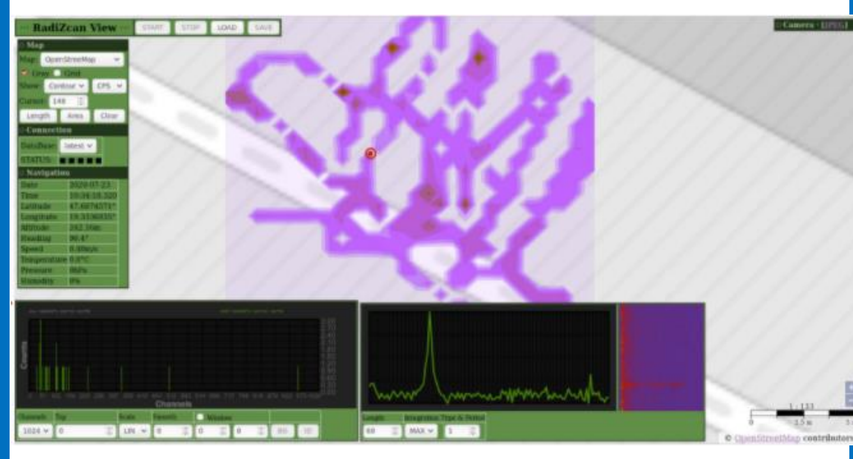
To measure intensities in count rates (to estimate hazardous levels of exposure) and to study radioactive sources and the daily exposure.

Every-day source of radioactivity and detect gamma. Ranges: 20keV to 2 MeV; 0.01µSv/h to 100µSv/h.

Radon measurement.

Connection: USB, serial, Bluetooth, WiFi: LoRA and NB-IoT via small external module.

// PLATFORM



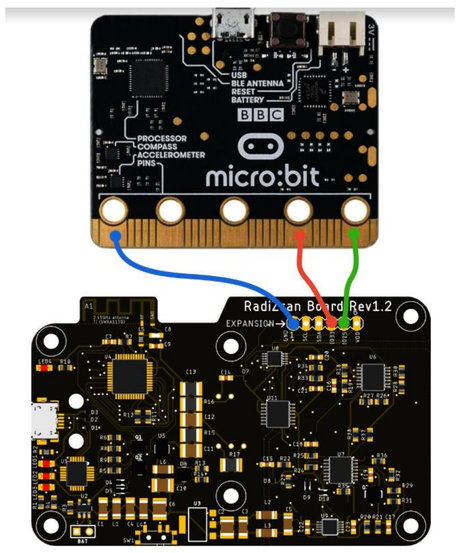
CRYDET EST 1994 Scintillation crystals and detectors

DIY SCIENCE LAB

// TEACHING DEVICES AND MATERIALS

Gamma:bit: Sensor development for Micro:Bit. Launching educational Citizen Science (CS) activities focusing on radiation protection/detection issues which based on a radiation detection toolkit powered by the micro: bit. By measuring their own exposure children get a better insight on natural / every-day sources of radioactivity. Primary and secondary school children themselves are able to generate and share data. Develpment MakeCode and Python programming extension.

Robo:kit: Designing of a radiation monitoring DIY robot and the experimental setup for supporting undergraduate and post-graduate education.



// CO-DESIGN AND ACTION DESIGN

Placing the sensor technology for hazard monitoring and emergency management applications into the hands of citizens through engaging them in co-creation experiments. During these events, a maker's approach could be applied that means we can coach, mentor and guide people to explore sense-making technology and to make experiments collaboratively and may develop products/prototypes in a short amount of time.