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Educational resilience citizen monitoring network – an innovative transfer of knowledge

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ReC-IMI



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Educational resilience citizen monitoring network project (proposal)
is based on **three** main premises urgently needed
to upgrade and technologically enhance
EU education, research AREA forming resilience zones

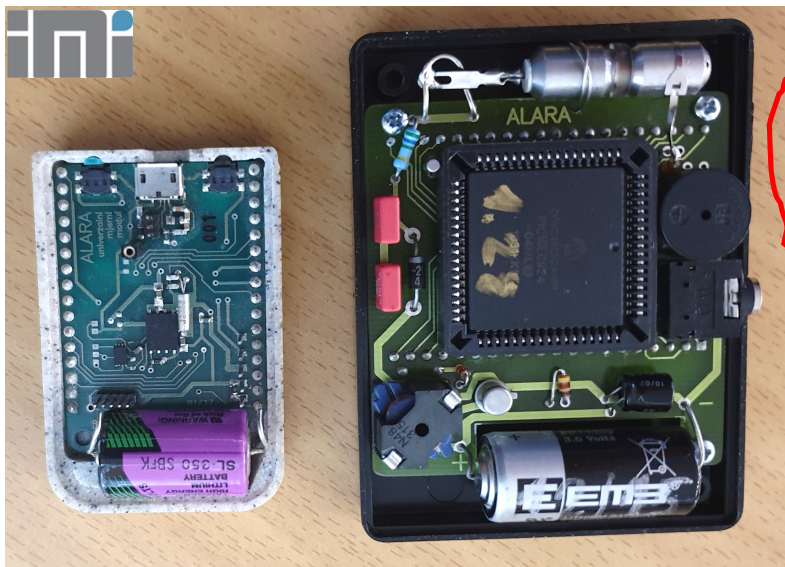
- possibly existing or brand new detector technology and IoT fast communication technology (for example LoRaWAN tech.)
- modern STEM (science, technology, engineering & mathematics) education paradigm in schools and universities
- introduction of reliable and controllable AI into education & research & decision making processes building up resilience „zones” in Radiation Protection with regard to „homeland” security and other modern threats



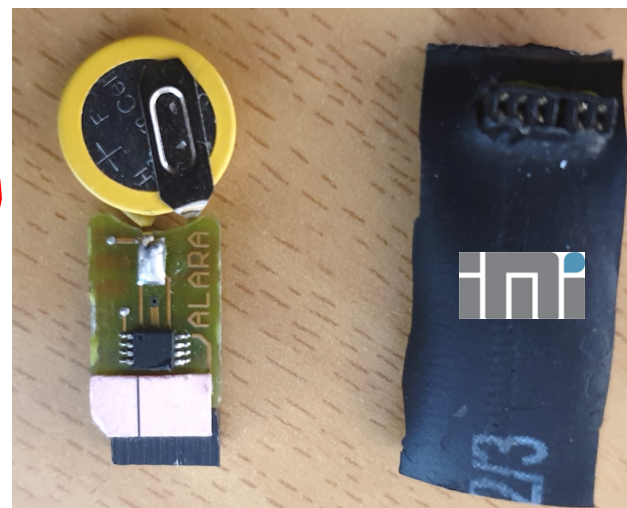
**CONTEMPORARY
RADIATION
PROTECTION TRENDS
IN EMF and UV -
NEW ELECTRONIC
PERSONAL
DOSIMETRY
DEVELOPMENTS
at
IMROH
upgrading educational
ICT infrastructures**

- do we need a new type
of digital *Active
Electronic Personal
Dosemeters (AEPD)*
to be used in medicine and
homeland security ?
a „mother” detector





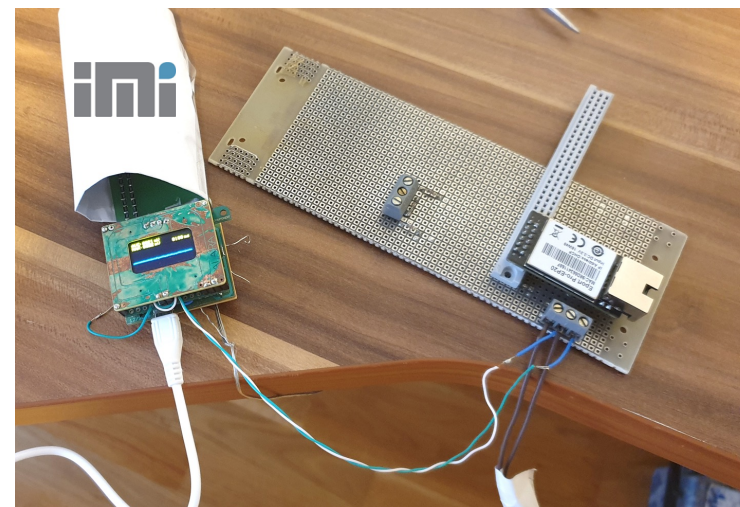
AEPD
Type
ALARA OD



IR-Temp
Type
ALARA IR



UV-Index
Type
ALARA UV



EMF-AD
Type
HajKom EMF AD



THE DOSIMETRY OF ELECTROMAGNETIC RADIATION IMPLEMENTATED into „e-SCHOOLS & e-UNIVERSITIES” initiatives – establishing a resilient system for developing **digitally mature** schools and digital **transformation** of high education (Pilot and Phase II projects)

https://ec.europa.eu/regional_policy/information-sources/publications/factsheets/2020/e-schools-project-bringing-croatian-schools-in-the-digital-era_en

<https://www.asoo.hr/en/projects-and-cooperation/project-archive/esf-projects/e-schools/>

<https://www.carnet.hr/projekt/e-sveucilista/>

<https://view.genially.com/66eacfb2becc045b9eb60257>



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The **digital maturity of schools and digital transformation infrastructure of Universities** is a concept which is becoming more and more significant within the modern educational system due to the increasing importance of technology usage and need for new type of competences.

Based on the strategic plans of the Ministry of Science, Education and Sports the Croatian Academic and Research Network (**CARNET**) developed a nationwide programme, „e-Schools: a comprehensive informatization of school operation processes and teaching processes aimed at the **creation of digitally mature schools** for the 21st century” and the „e-Universities” project with the aim of digital transformation of higher education in the Republic of Croatia (RH) by improving the **digital teaching infrastructure**, introducing digital teaching tools and strengthening digital competences of teachers for teaching in a digital environment.

As defined in the e-Schools programme, digitally mature schools* and Universities* educate on a **high level of integration of ICT in their life and work**. They use **systematised approach to ICT used** in educational planning, management and business processes. Such schools & Universities operate in a supportive environment, with adequate resources, including not only the financial ones, **but also adequate ICT equipment for classrooms, laboratories, employees and students**. That means systematical approach to development of the **digital competences of the educational staff and students**, whereas the former use ICT for improving their teaching styles, through which the teaching focuses on the students, for the development of **digital educational content** and for evaluating the students’ achievements, in accordance with the learning outcomes and educational objectives strengthening digital competences of teachers for teaching in a digital environment.

modern STEM teaching concept





unesco

UNESDOC
Digital Library



CARNET
knowledge connects

Establishing a system for developing digitally mature schools in Croatia

Case study by the UNESCO-Fazheng project on best practices in mobile learning



Approach: Top-down



Implementing organization:
CARNET



Year launched: 2015

Authors:

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Editors:

Fengchun Miao and Anett Domiter

Education
2030



e-Škole



e-Sveučilišta



Europska unija
Zajedno do fondova EU



EUROPSKI STRUKTURNI
I INVESTICIJSKI FONDOVI



Operativni program
KONKURENTNOST
I KOHEZIJA

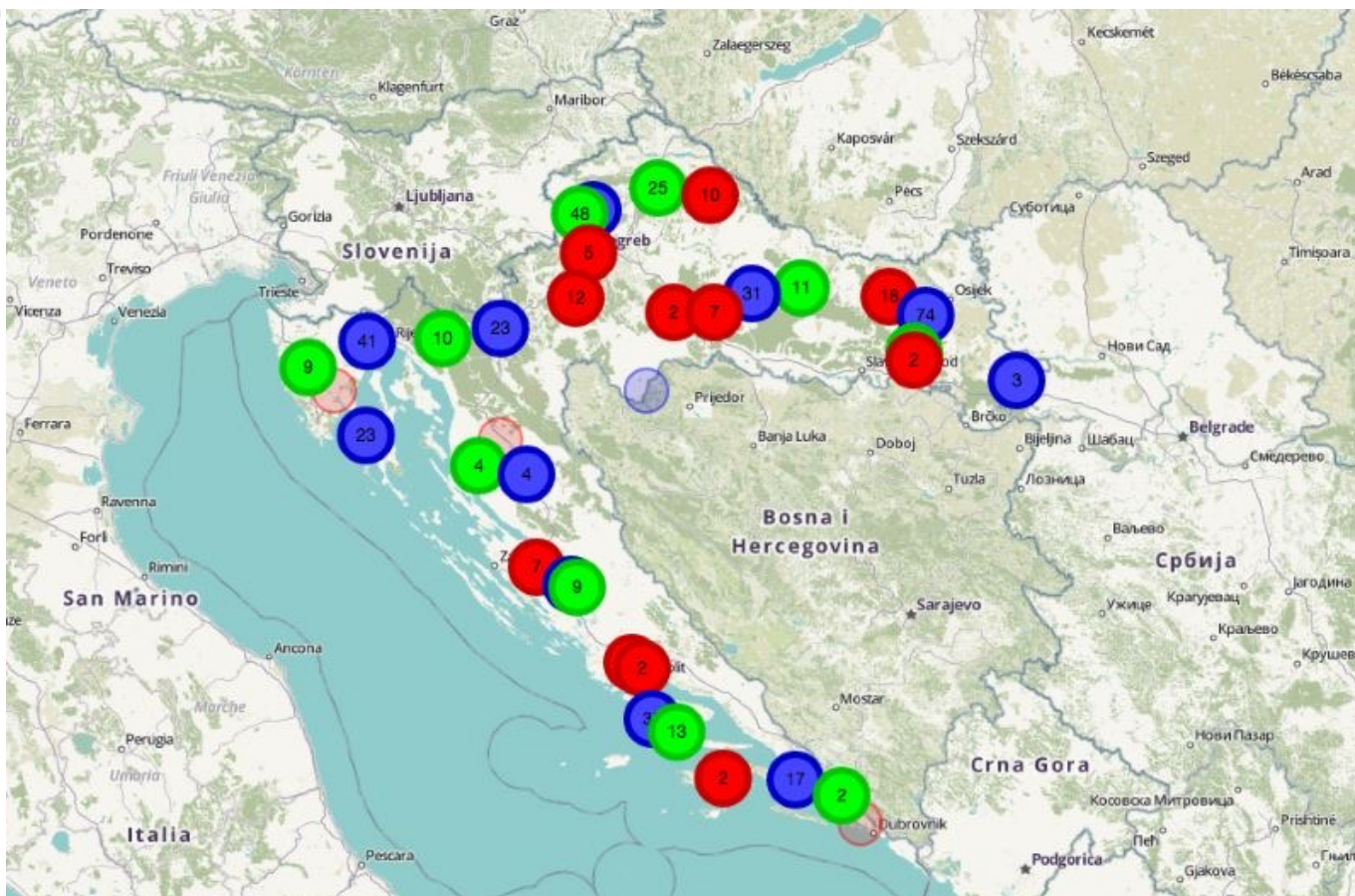


UČINKOVITI
LJUDSKI
POTENCIJALI



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Example : 151 selected schools for the three years of the pilot project (Phase I)



Results expected are:

- **completing equipping schools and regional education centres;**
- **wireless networks in all schools and Universities**

• creation and implementation of digital content repository, process informatisation system for school learning, organisational analytics system, digital education contents, and e-reading for mandatory school literature;

All Croatian School location are to be covered with fast Internet connections and WIRELESS networks + ICT

e-Schools: Development of digitally mature schools (Phase II)

PROJECT TITLE

e-Schools: Development of digitally mature schools (Phase II) (e-Schools)

PROJECT KOORDINATOR

Croatian Academic and Research Network – CARNET

PROJECT DURATION

28 months (01.09.2020 – 31.12.2022)

WEB

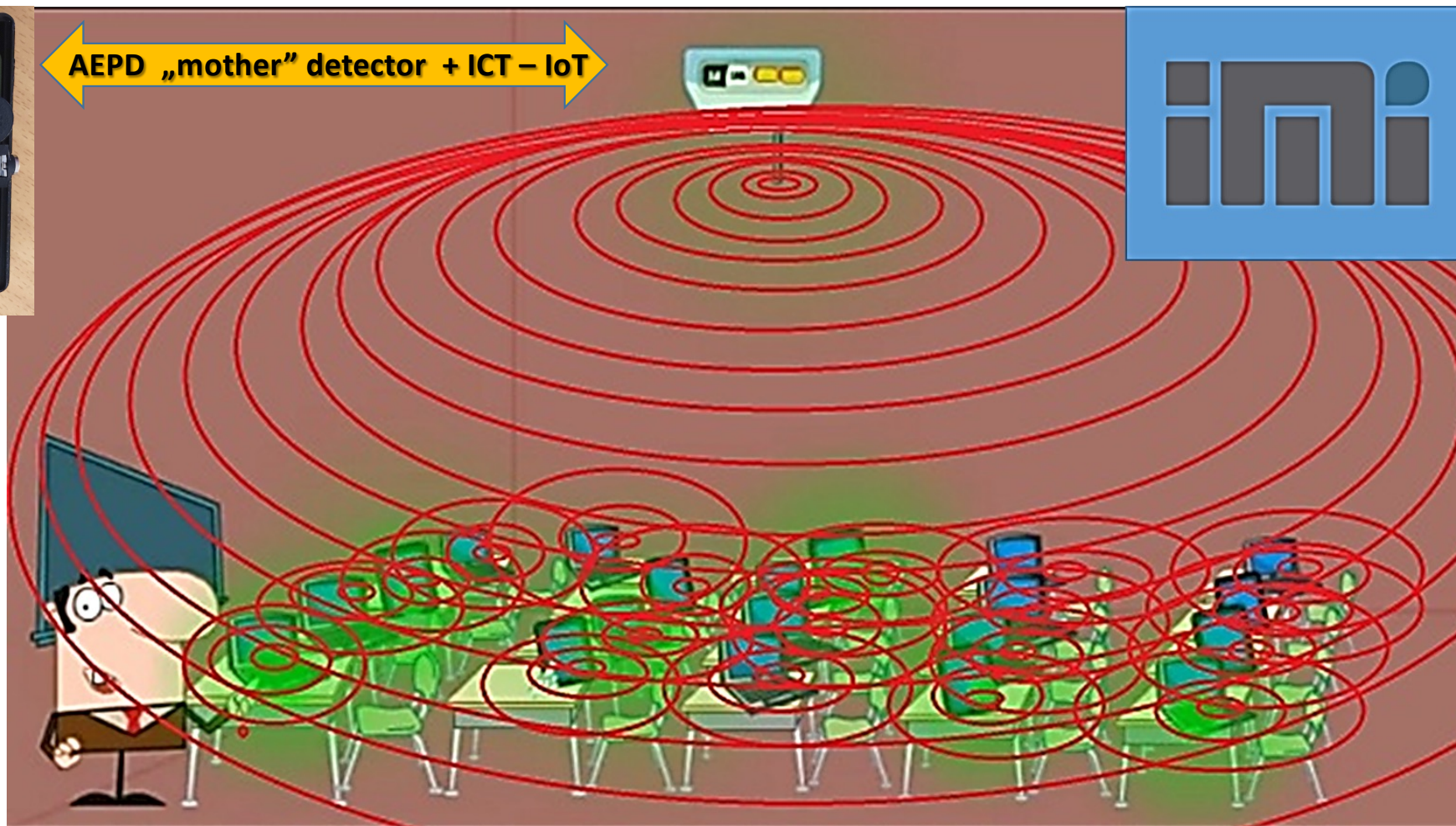
<https://www.fer.unizg.hr/lisp>

--- more than **2200** school and University locations country wide

AND NOW ! „CITIZEN” EDUCATIONAL MONITORING NETWORK



← AEPPD „mother” detector + ICT – IoT →



At least 2000 possible real time operational measurement locations all over the country

EDUCATIONAL PART OF the proposed **CITIZEN MONITORING NETWORK**

STEM – **learning detector packages** to be assembled and connected to an internal educational school HUB forming an internal IoT of environmental data for every school location based on IMROH „certified mother detector” assembly.

STEM – **learning detector packages** measured data obtained through the internal school ICT educational network, stored and used for education but regularly sent into a civil protection data hub too where it is processed by certified persons and publicly announced, if decided so, throughout the State SRUUK (Early Warning and Crisis Management System) which sends SMS warning messages directly to mobile devices in the threatened area



EMERGENCY part of proposed **CITIZEN MONITORING NETWORK**

Security and reliability of measured data

- **only one set of calibrated and certified „mother” detectors connected to each school location harmonized & separated with software firewall sending real time information into a country civil protection directorate (SRUUK) to be evaluated, validated, approved (HR112ALERT) and publicly released in real time throughout the mobile devices network, IF possible.**



Upozoren = spašen

<https://hr-alert.hr/portal>

<https://hr-alert.hr/portal-details/799>

SRUUK Alert is a service that allows authorities to send **alert messages directly to cell phones.**

Hoping our **CMN** to be incorporated into

European Early Warning and Information Systems

https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/european-early-warning-and-information-systems_en#facts--figures



some NEW AEPD ALARA properties of importance to CMN

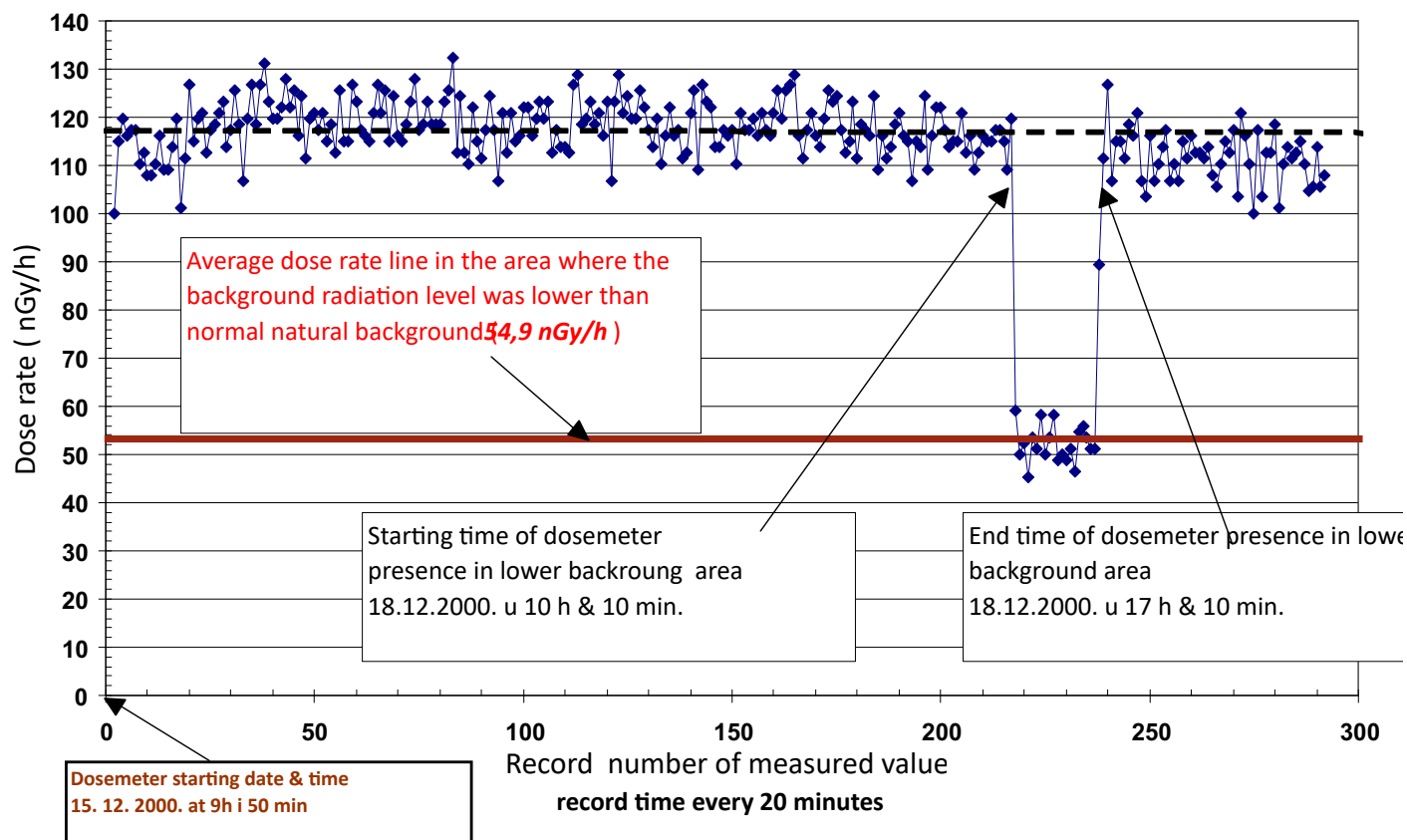
Even in the case of war or other hostile activities or natural disaster which can/could/or had destroyed/damaged the entire school building and infrastructure we hope that if AEPD remains NOT entirely CRUSHED it will continue to measure for at least 3 or more years of its battery life.

The data memory is readable and the history of measured data is forensically recoverable (N + E mode of AEPD)

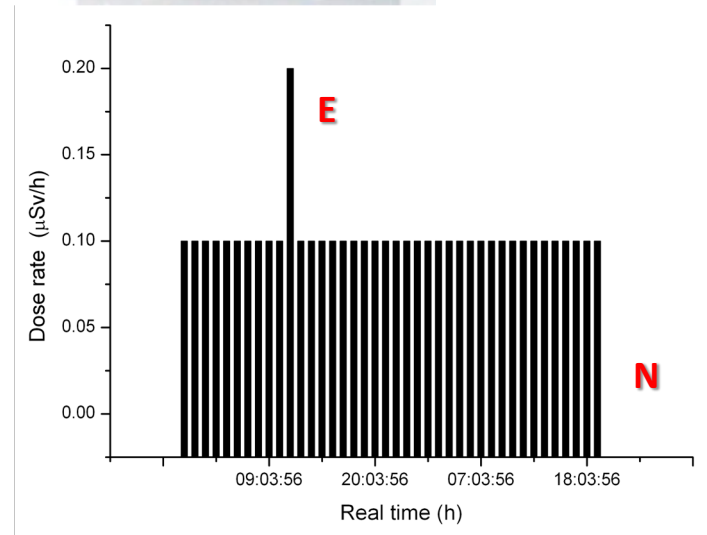
Hoping that stated above will NEVER happen



Dose rates measured by dosimeter ALARA , ser. No. 092



„mother”
AEPD
detector



(N + E mode of AEPD)



WHAT is 1G ???



Do not forget to wrap the smile coming
from
CROATIA

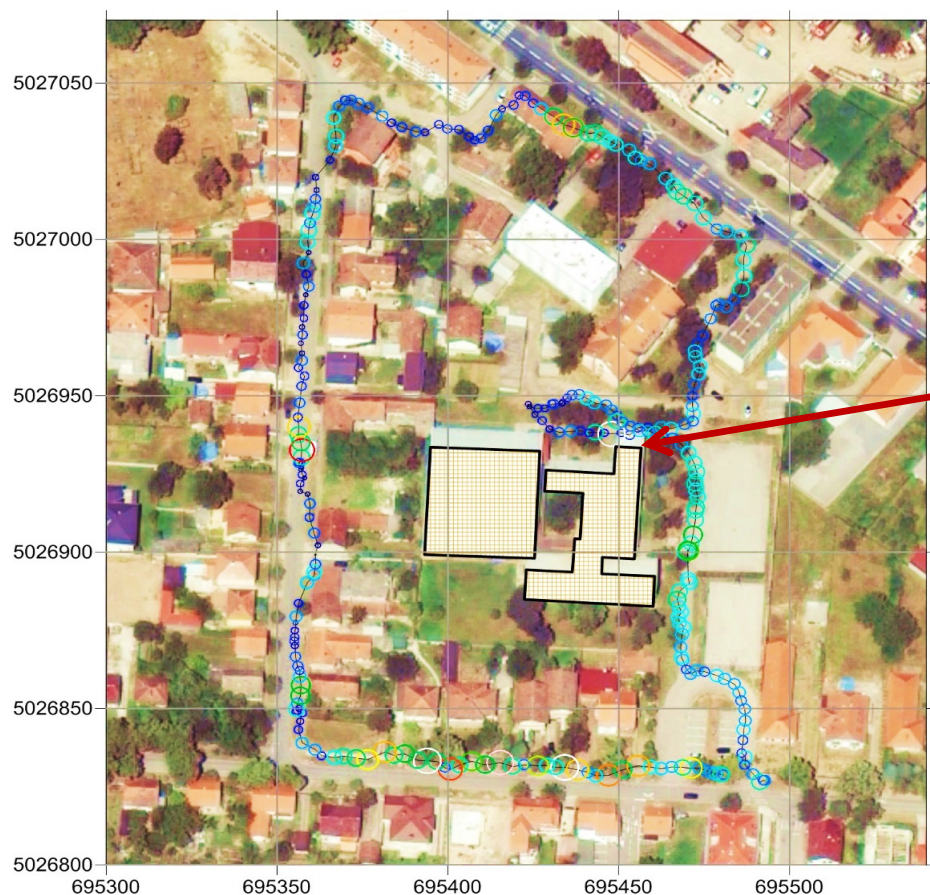
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Web of life - radiation



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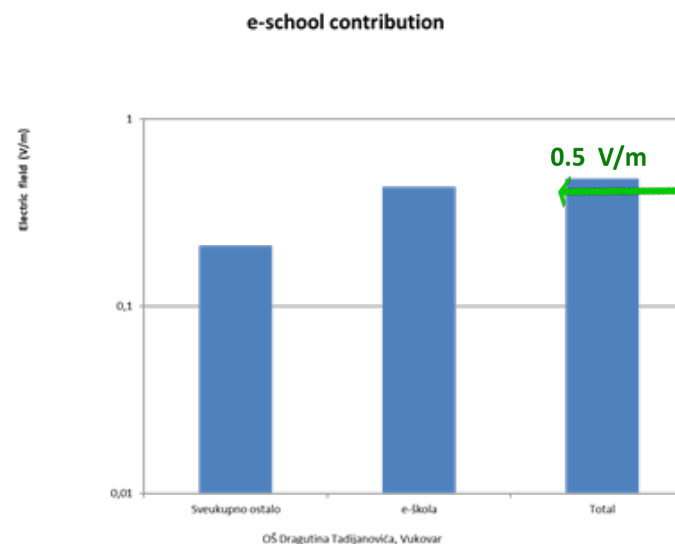


Relevant „real” measurements of EMF exposure which were performed throughout the building outdoor environment



A relevant “dosimetric quantity” to characterize exposure to Wi-Fi electromagnetic fields is used to evaluate so called „personal” occupational exposure burden from WiFi while beeing in classroom or, even, working from home.

Reference electric field during trace type of measurements throughout the educational building dedicated (and „empty”) classroom environment



A relevant “dosimetric quantity” to characterize exposure to Wi-Fi EMF in classrooms was „developed” & evaluated during the Pilot project of e-schools in Croatia