



## TITLE OF INVENTION:

# THE INTELLIGENT DETECTOR FOR RADIOACTIVE PARTICLES SPREAD OVER LARGE GEOGRAPHICAL AREAS

TECHNICAL PHYSICS, Iasi, RO

<sup>2</sup>GHEORGHE ASACHI TECHN. PANTILIMONESCU<sup>1</sup>, C. BUZEA<sup>2</sup>, M. MAGDICI<sup>2</sup>, A. SAPCALIU<sup>3</sup>, V. SAVU<sup>3</sup>, D. TĂPĂLOAGĂ<sup>4</sup>, L. BĂDIC<sup>5</sup>

<sup>1</sup>THE NATIONAL INSTITUTE OF RESEARCH AND DEVELOPMENT FOR ICAI UNIVERSITY OF IASI, Iasi, RO

<sup>3</sup>BANEASA-BUCHAREST SERICULTURE RESEARCH STATION, Bucharest, RO

<sup>4</sup>UNIVERSITY OF AGRONOMIC SCIENCES AND VETERINARY MEDICINE BUCHAREST, Bucharest, RO

<sup>5</sup>SPIRU HARET UNIVERSITY, Bucharest, RO

**Summary of the invention:** The present invention relates to a intelligent detector for radioactive particles spread over large geographical areas.

**Applicability domain:** Energy, Environment , Climatic Changes, Defense, Beekeeping, Embedded Computer, Machine Learning, Useful insects.

## Description of the Invention:

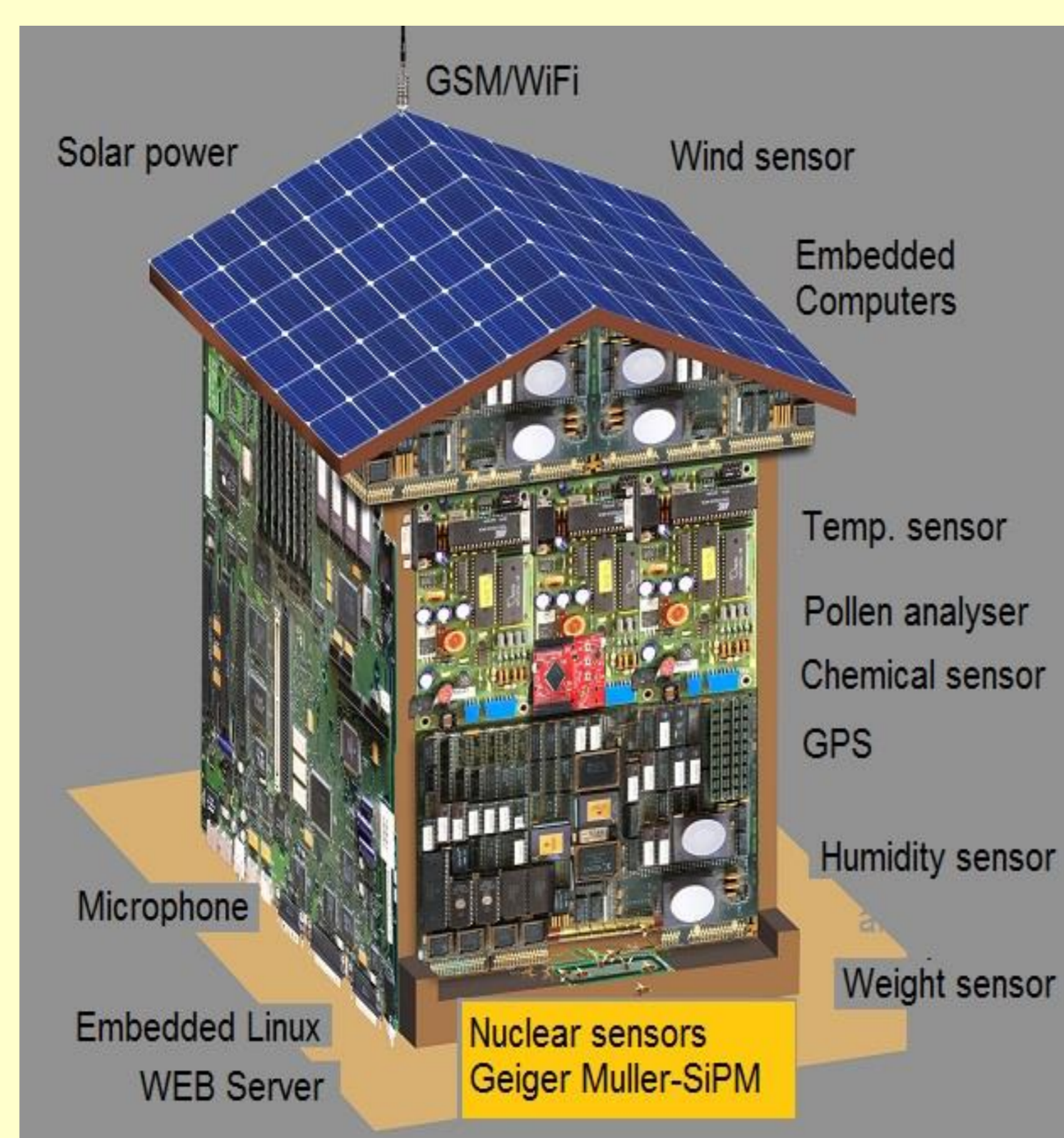
The intelligent detector for radioactive particles spread over large geographical areas refers to a method and a system for real-time detection of the presence of radioactive particles in the environment, interconnecting the universe of bees with their self-organizing capabilities as a carrier and transporter of radioactive particles with the universe of computers which processes information on their presence and nature and sends alert messages in case of radioactive contamination.

Local computer network is based on Embedded Linux Machine with ARM processors. It contains a local computer network with ionizing radiation sensors (GM and SiPM), a weather micro-station module used to estimate the direction of movement of radioactive particles, a GPS module used to obtain information on the geographical location of the detector, a GSM module used to transmit alert messages in case of radioactive danger, a photovoltaic power supply module used to ensure energy autonomy.

The Layens hive is for successful overwintering and rapid spring colony buildup even in the cold climates in Romania. As environment bioindicator, bees are an excellent/robust sensor. Computer network is based on Embedded Linux Machine with ARM processors.

The project has been expanded with educational facilities to help researchers/teachers and students from Romania to participate at IAEA Research Activities or UNESCO-Guerlain program. The project has been expanded with educational facilities to help researchers/teachers and students from Romania to participate at IAEA Research Activities or UNESCO-Guerlain program.

This work was supported by a grant of the Romanian Ministry of Research and Innovation, CCCDI – UEFISCDI, project number 471/2020, within PNCDI III.



Smart hive architecture

**Patent/ patent application:**  
OSIM RO A/00627 / 7.10.2019

**Research project number:**  
UEFISCDI no. 471 / 2020

Contact: pantilimonescu@yahoo.com