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CBRNe Threat Detection and Monitoring System: Advanced Prototype

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Abstract:
Thales Italia has developed an advanced prototype of a CBRNe (Chemical, Biological, Radiological, Nuclear and explosives) Threat Detection & Monitoring System that features beacons embedding innovative smart sensors, integrating CMOS chip microsensors and exploiting Wideband Electrical Impedance Spectroscopy technology. Each beacon is in the form of lab-on-a-chip already inclusive of electronic acquisition and pre-processing of the signal coming from the sensors with high sensitivity and selectivity, high miniaturization and low unit costs. Through a Wireless Sensor Network (WSN) of beacons there will be significant reduction of false alarms while using the sensors on-the-field, with synchronous detection of CBRNe threats and with minimal training requirements. Automatic data transfer to a Command Centre equipped with ESTHER software will eventually lead to data fusion and real-time visualization of geo-referenced alarms for interactive decision-support in both detect-to-warn and detect-to-treat scenarios.

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Wireless sensor networks, Monitoring, Intelligent sensors, Containers, Microsensors, Prototypes

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wireless sensor networks, computerised monitoring, explosive detection, intelligent sensors, lab-on-a-chip, microsensors, military computing, national security, sensor fusion

INSPEC: Non-Controlled Indexing

CBRNe threat monitoring system, Thales Italia, CBRNe threat detection system, chemical-biological-radiological-nuclear-and-explosives, smart sensors, CMOS chip microsensors, wideband electrical impedance spectroscopy technology, lab-on-a-chip, wireless sensor network, WSN, automatic data transfer, ESTHER software, data fusion, real-time geo-referenced alarms visualization, detect-to-treat scenarios, detect-to-warn scenarios

Thales Italia has developed an advanced prototype of a CBRNe (Chemical, Biological, Radiological, Nuclear and explosives) Threat Detection & Monitoring System that features beacons embedding innovative smart sensors, integrating CMOS chip microsensors and exploiting Wideband Electrical Impedance Spectroscopy technology. Each beacon is in the form of lab-on-a-chip already inclusive of electronic acquisition and pre-processing of the signal coming from the sensors with high sensitivity and selectivity, high miniaturization and low unit costs. Through a Wireless Sensor Network (WSN) of beacons there will be significant reduction of false alarms while using the sensor on-the-field, with synchronous detection of CBRNe threats and with minimal training requirements Automatic data transfer to a Command Centre equipped with ESTHER software will eventually lead to data fusion and real-time visualization of geo-referenced alarms for interactive decision-support in both detect-to-warn and detect-to-treat scenarios.

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