



NeaPolis Innovation

TECHNOLOGY DAY 2023

Agenda

22 novembre, 09.00 - 16.00

Via Remo De Feo 1 | Arzano | 80022 (NA)



TECHNOLOGY DAY 2023

09.00 Registrazione e welcome coffee

09:30 - 09:40 **Neapolis Innovation: un esempio di Open Innovation - Stefania Campopiano, Università di Napoli Parthenope**

09.40 - 13.20 **Apertura dell'area espositiva**

10.00 - 10.40 "Soluzioni per la connettività Wireless" - Filippo Colaianni, STMicroelectronics

11.00 - 11:40 "Nuove sfide per la sensoristica: Analisi predittiva e Artificial Intelligence." - Antonio Cirone, STMicroelectronics

Area espositiva aziende

12.00 - 13.00 **Interviste in diretta agli espositori**

13.00 - 13.20 **Riconoscimenti ai migliori espositori e Conclusioni live su Instagram e Facebook**

Valeria Fascione – Regione Campania, Roberto Bez – Micron Semiconductor,

Vittorio Ciotola – Giovani Imprenditori Confindustria Campania, Lucio Colombo – STMicroelectronics

13.20 **Fine area espositiva – Light lunch**

14:10 – 14:20 "Innovazione, quali trends?" - Alessandro Cremonesi, STMicroelectronics

14:20 – 15:00 "Tecnologie Wide-Bandgap nell'elettronica di potenza, quali novità introducono?" - Andrea Merello, STMicroelectronics

15.00 **Break**

15.20 - 16.00 "Le ultime novità dei microcontrollori STM32 e STM32-RF" - Francesco Di Marco, STMicroelectronics

16.00 **Conclusione dei lavori**

Registrazioni:



<https://www.pepite.info/blog/neapolis-innovation-technology-day-2023/>

SCAN ME

Benvenuto agli Ospiti



OWNER

<https://ioutilize.me>



APPLICATION FIELDS

CleanTech, Smart cities, Industrial, Waste Management

KEY SELLING POINT

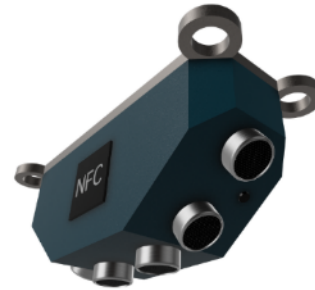
- Subscription service
- Easy to install and Modular
- R.A.R. – Resistant, Adaptive, Reliable
- High accuracy - 3D scan

STAKEHOLDERS

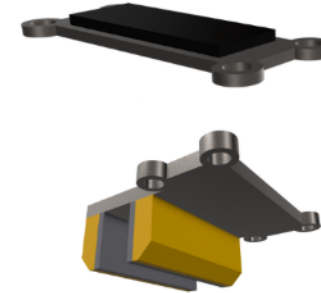
- Waste Management companies
- Container production companies
- Logistics

RAR designed sensors

Resistant



Adaptive



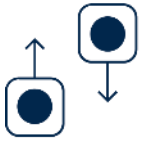
Reliable



ioutilize.me is an innovative startup that wants to **optimize the waste collection processes** through automation and data.

We use sensors to **3D scan** the inner content and use data to monitor container's **status**, **forecast** filling level and **optimize** vehicle's route.

We **reduce logistics costs by 30%**, decreasing CO2 levels and saving time for waste management companies.



Dropper

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www.discover.dropper.ai



APPLICATION FIELDS

People counting, smart buildings, smart cities

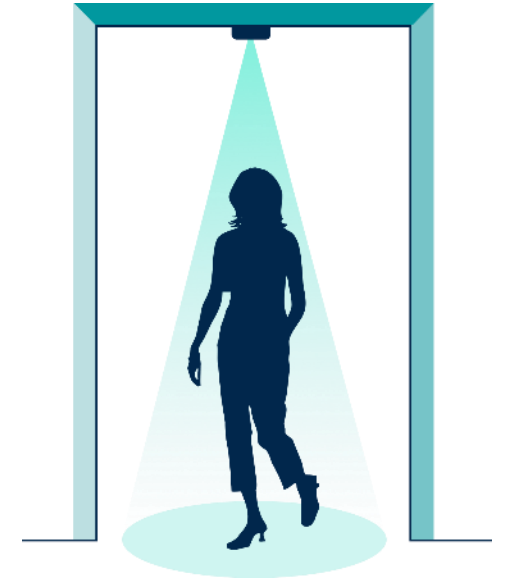
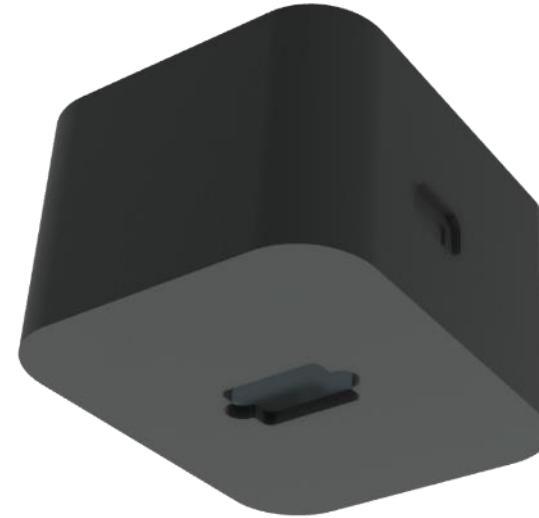
KEY SELLING POINT

- IoT sensors anonymous by design
- Customizable personal dashboard
- GDPR compliant
- 98% data accuracy

STAKEHOLDERS

- Corporate and coworking offices
- Retail stores
- Education buildings: Museums and Universities
- Private and public spaces for events
- Smart cities public administration

Time of Flight sensor



Dropper is an innovative startup specialized in solutions for people flow monitoring and space optimization with the support of artificial intelligence. The team has developed ToF sensors, based on Time of Flight technology, which can be used indoors, and which provide insight into the number of people within a given area. A customizable dashboard is offered along with the sensor in which you can view real-time data and obtain meaningful metrics, with the goal of maximizing the efficiency of environments.

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<http://www.radiocontrolli.com>



APPLICATION FIELDS

- Wireless Module
- IoT Modules

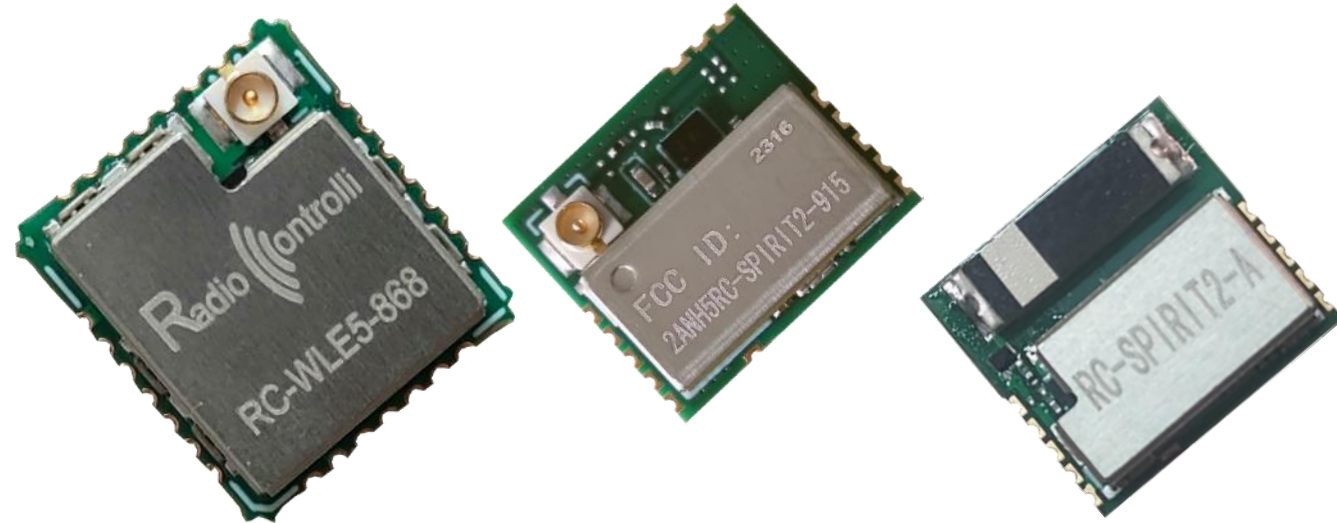
KEY SELLING POINT

- Time to market reduction
- Easy to use
- CE/FCC Certification
- Custom design

STAKEHOLDERS

- Home Automation
- IoT System
- Wireless Sensor Network
- System Integrator

IoT Modules



Lora Wireless Module STM32WLE5JC based

RC-WLE5-868 is an ultra low power long range device designed by RadioControlli. The module is based on STM32WLE5JC device from STMicroelectronics. Multiprotocol LPWAN 32bit Arm®Cortex® M4 MCUs, LoRa®, (G)FSK, (G)MSK, BPSK . The main applications of this module are Internet of Things devices and wireless sensor networks , especially battery powered low power consumption long range.

CORE : STM32WLE5JC
Operative Frequency bands : 868MHz.
Ready for use SMD mounting (13 x 14.5mm)
Metal shield.

Transceiver Modules S2LP based

Standard Version RC-S2LP-XXX

- Available at the frequency 433/868/915MHz
- CE/FCC Certified
- 868/915MHz versions available with Helical Antenna.

SPIRIT2 Version RC-SPIRIT2-XXX

- Available at the frequency 433/968MHz
- CE Certified
- Available versions with pad antenna.

(Pin to Pin compatible with SPSGRFC modules)

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<https://www.topview.it>



APPLICATION FIELDS

Autonomous operations, Industrial inspection, Agriculture, Delivery, Port surveillance, Platform interoperability, Airspace infringement.

KEY SELLING POINT

- Flight tracks' certification with legal value, feature currently not available on the market
- Use of GNSS Galileo OSNMA (Open Service Navigation Message Authentication) service and blockchain for enhanced data reliability
- Integration in European U-Space framework

STAKEHOLDERS

- Professional UAS Operators and their customers
- General Aviation pilots
- Authorities



certiflight

The Certiflight platform offers a digital service for the generation of certified reports of flight tracks and the flight logs of UAS and GA aircraft, especially for safety-critical and commercially valuable applications. The service will also be included in the USSP/UTM service provider's software. In addition, the recorded tracks may be useful for law enforcement, for instance sanctions for airspace infringement, as well as for possible accident or incident investigations.



The Guardian Bag

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Matteo Arnese Simone Cecere Vittoria La Rana
Luca Boiano Valeria De Falco Chiara Mercurio
Yuedan Cai Daniela Formisano

APPLICATION FIELDS

- IoT
- Everyday use
- Safety

KEY SELLING POINT

- Enhanced safety
- Easy to use
- Accessibility
- Power efficiency

STAKEHOLDERS

- Not yet available



Smart bag with integrated anti-theft system triggered by sensors programmed through the use of the STM32 NucleoG474RE with its related development environment.

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www.minervas.it
 info@minervas.it
 +39 3207504440



APPLICATION FIELDS

Smart & Future Mobility, Fuel/Energy reduction, CO2 reduction, Automotive, ADAS, Transportation, Long hauling, Fleet management systems, Urban Mobility, V2X, CCAM, CAV, Smart Roads

KEY SELLING POINT

- Up to 30% fuel/CO2 reduction (avg 15% per fleet)
- Plug-and-play installation
- Software integration in fleet-management systems
- On-Board-Unit (OBU)

STAKEHOLDERS

- Fleet managers / Truck drivers
- Fleet management system companies
- Transport and logistics Industry
- OEM manufacturers/resellers
- Insurance Companies
- Map providers
- Car-sharing/rental fleets



MinervaS is the university spin-off that offers innovative solutions in the energy and automotive sectors towards the reduction of CO2 and the on-board energy management. The product of MinervaS can be customised for vehicles with any propulsion (conventional, hybrid, electric or fuel cells). MinervaS provides a suite of integrated solutions for smart & future mobility, from driving advisors to fleet. As you drive, MinervaS processes V2X information about road elevation, payload, speed limits, traffic condition and vehicle characteristics to manage the speed in the most efficient way.

LESS FUEL, MORE BUSINESS - LESS EMISSION, MORE PLANET



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<https://www.sensorid.it>



APPLICATION FIELDS

Hotels, BnB apartments, rural houses, hostels.

KEY SELLING POINT

- Easy to use: turn on/off and change A/C temperature
- Battery powered: no need for an AC-plug nearby
- Long battery life: up to 9 months
- Universal: it works with any A/C brand

STAKEHOLDERS

- Vacation Rental sector
- Property managers
- BnB property owners
- Hostels



MODO is a smart remote-control designed for the vacation rental sector. It empowers the property owner with a real time control of the A/C machine and guarantees up to 65% of saving on the energy bill. At the same time it increases guests' comfort thanks to its clear design and UI.

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<https://www.sensorid.it>



APPLICATION FIELDS

Smart cities, waste management

KEY SELLING POINT

- Low cost
- Easy to use
- Remote open system, full IoT
- Real Time
- Dedicated cloud software

STAKEHOLDERS

- Municipalities
- Waste management companies



EcoIoT makes the waste management process simple. The hardware allows the authentication and the access of the user via NFC, QR code, smartcard and the dedicated webapp. The access data is sent in real time and the dedicated front-end software allows a complete control of the waste management process.

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<https://www.hwasrl.it>



APPLICATION FIELDS

Indoor navigation in airports hub, malls, healthcare facilities, smart homes, and AR environments.

Ideal for tracking, safety, and interactive experiences.

KEY SELLING POINT

- High precision up to 1 cm
- Ultrasonic Signal based
- Privacy preserving
- Indoor use

STAKEHOLDERS

- Health Care Facilities
- Airports Hub
- Augmented Reality Developers

UltraSonic Navigator



High-precision indoor positioning system up to 1 cm accuracy, leveraging ultrasonic technology for real-time 3D navigation and mapping. Designed for diverse indoor environments, it ensures user privacy with no external data transmission. Ideal for retail, healthcare, and AR-based applications. Its discreet, efficient design seamlessly integrates into any setting, enhancing user experience in malls, hospitals, and smart homes, making it a versatile tool for various applications.

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<https://www.netcomgroup.eu/>

<https://www.borgo40.eu/c-mobility/>



APPLICATION FIELDS

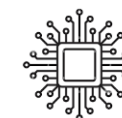
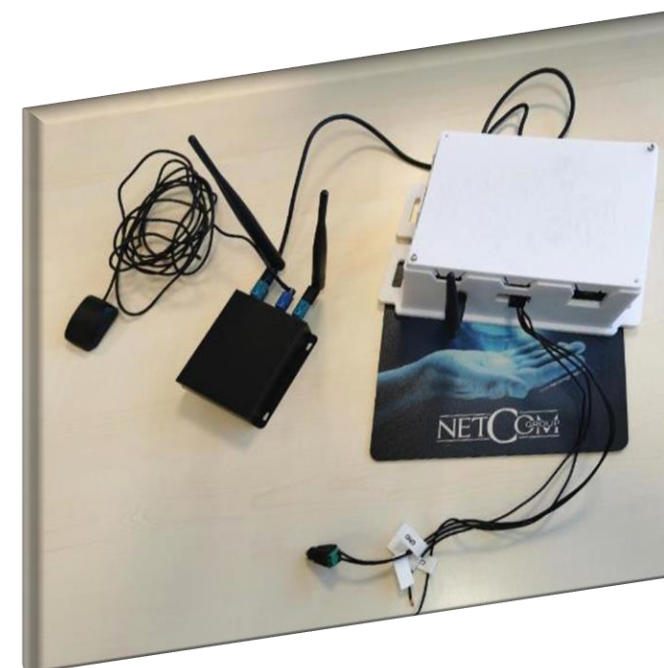
Smart cities, IoT applications, V2V, V2I and V2C

KEY SELLING POINT

- Scalable resources
- User-friendly SDK
- Modular

STAKEHOLDERS

- Automotive market
- Insurance companies
- Transport companies



I-OBU device is a solution that transforms a generic vehicle into an IoT device. It uses smart cities protocols devoted to V2X (e.g. C-V2X, DSRC). Furthermore, the I-OBU is characterized by various communication channels such as CAN, BLE, Wi-Fi, LoRa, 5G-LTE, MQTT, LAN, I2C, SPI, UART, GPIO.





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cogitoprediction.com



APPLICATION FIELDS

Smart industries, naval logistics, submersible pumps, Industry 4.0

KEY SELLING POINT

- Safety
- Non invasive
- Maintenance efficiency

STAKEHOLDERS

- Control System Designer
- Industry
- Logistics
- Aqueducts and sewer management companies



Cassandra aims to predict electrical motor failures by means of powerline signals.

Cassandra observes the power signals of the electric motors and is able to prevent safety hazards such as fires, short circuits, downtime, etc. The device is composed by multiple sensors for the three-phase power supply sampling and several peripherals for managing the acquired data.

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<https://www.linkedin.com/in/poc-a-l-i-c-e-actuators-based-on-light-sensitive-composite-6a2aa1297>



APPLICATION FIELDS

Smart materials, Actuators, Photomobile resin for 3D printing, Microfluidics, Optical devices, Robotics, Small Solar Tracker.

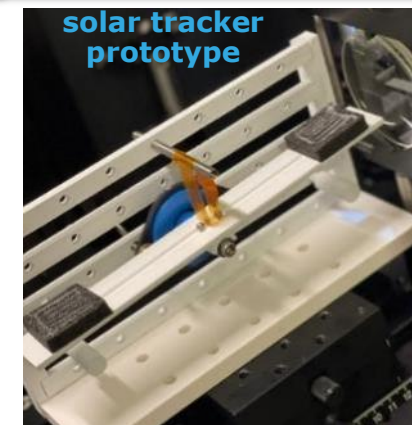
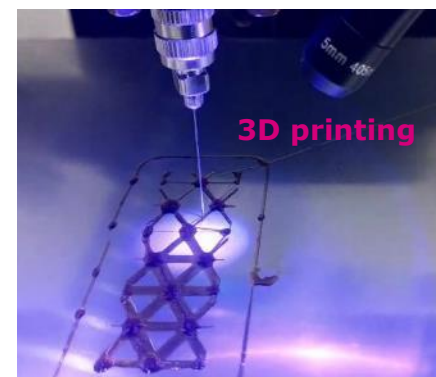
KEY SELLING POINT

- Innovative and High-Performance Technology
- Precise and easy to use
- Eco friendly
- Multifunctional

STAKEHOLDERS

- SGR EUREKA!
- Electronics Industry
- Medical, Energy and Lighting Industries
- Robotics Industry

Innovative Photo-polymers



The **POC A.L.I.C.E.** or *Actuators based on light-sensitive composites* aims at the **development of innovative materials** through **3D/4D printing processes** and uses them as **actuators** in the field of photovoltaics, concentrated solar power, thermodynamic solar power and in other applications such as optical deflectors, micro-optical valves and optical switches.

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<https://www.linkedin.com/in/poc-a-l-i-c-e-actuators-based-on-light-sensitive-composite-6a2aa1297>



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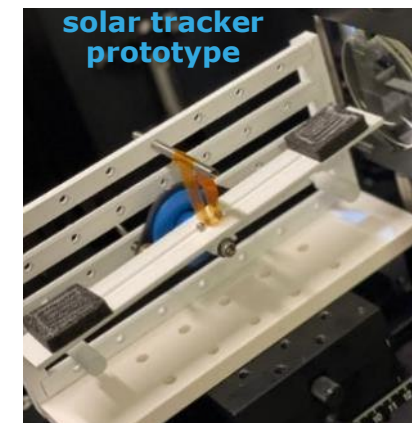
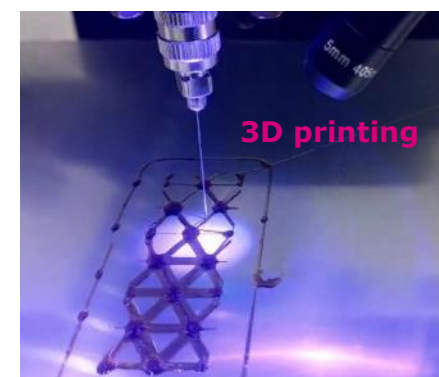
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Miasin

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Giovanni Spera <https://github.com/gSpera>

MITLab – CeSMA

University of Naples Federico II



APPLICATION FIELDS

Smart city, campus, industry, exhibition fair

KEY SELLING POINT

- Easy installation
- Tailored solutions
- Expandable over time

STAKEHOLDERS

- Industry
- University



Miasin

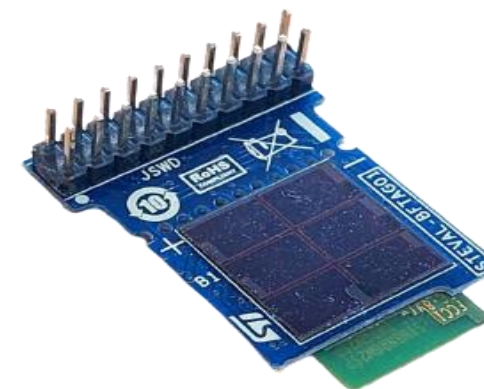
Miasin

Da Giovanni Spera

Stazione Ricevente



La stazione ricevente acquisisce e analizza i segnali nel dominio della frequenza, mostrandone lo spettro. Tramite l'oscilloscopio invece possiamo analizzare segnali nel dominio de tempo.



Miasin, which is an Armenian word for "together", collects data from many little Bluetooth low energy tags. Each tag can collect some information thanks to the sensors it can be equipped with. The data can be used for many use-cases like environmental analysis, estimating the position of a robot in a warehouse, a person at an exhibition fair, or also predicting imminent breakdown of an industrial machinery.

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.DIEM



VITALITY

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Students of University of Salerno – DIEM

<https://www.diem.unisa.it>
<http://mivia.unisa.it>



APPLICATION FIELDS

- Personal health and wellness monitoring
- Clinical support and remote patient care
- Innovative clinical technologies for healthcare advancements

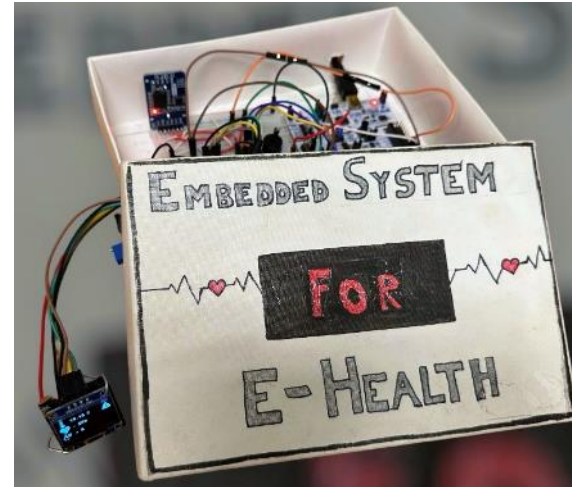
simple

KEY SELLING POINT

- Multiple functionalities combined in a compact embedded system
- Low cost and user friendly
- Modular and adaptable to specific applications
- Open to new upgrades (e.g. based on machine learning approaches)

STAKEHOLDERS

- End users interested in their health monitoring
- Healthcare experts, for patients monitoring
- Sport organizations, for the monitoring of their athletes
- Researchers, for studies related to digital medicine



MAIN COMPONENTS



Board: STM32F401RE



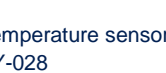
SEN-15219 Pulse Oximeter



Real-Time Clock DS1307



OLED display SSD1306



Temperature sensor KY-028



VITALITY is a device able to monitor the heart rate, the SpO₂ and the body temperature.

It sends alerts for parameters outside standard ranges and provides detailed reports for further insights into health status.

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www.optomake.it

www.opiware.it



APPLICATION FIELDS

VR/AR and MR Applications

Optoelectronic Devices in the medical, civil and aerospace fields

Environmental monitoring devices

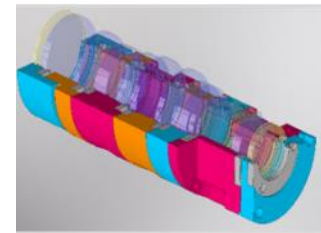
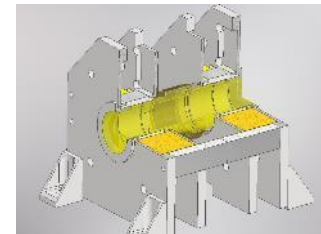
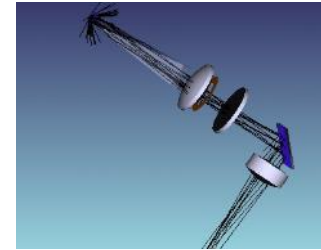
KEY SELLING POINT

- Optomechanical design
- Prototyping and manufacturing
- Customization on demand
- Innovative training
- Competitive costs

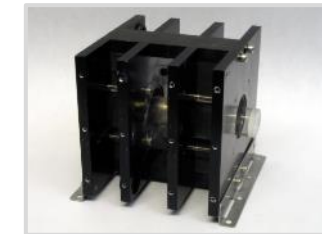
STAKEHOLDERS

- Medical and aerospace industries
- Educational institutions
- Public administration
- Law enforcement and public utilities

Design



Devices



VR/AR Applications



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<https://www.teoresigroup.com/>

APPLICATION FIELDS

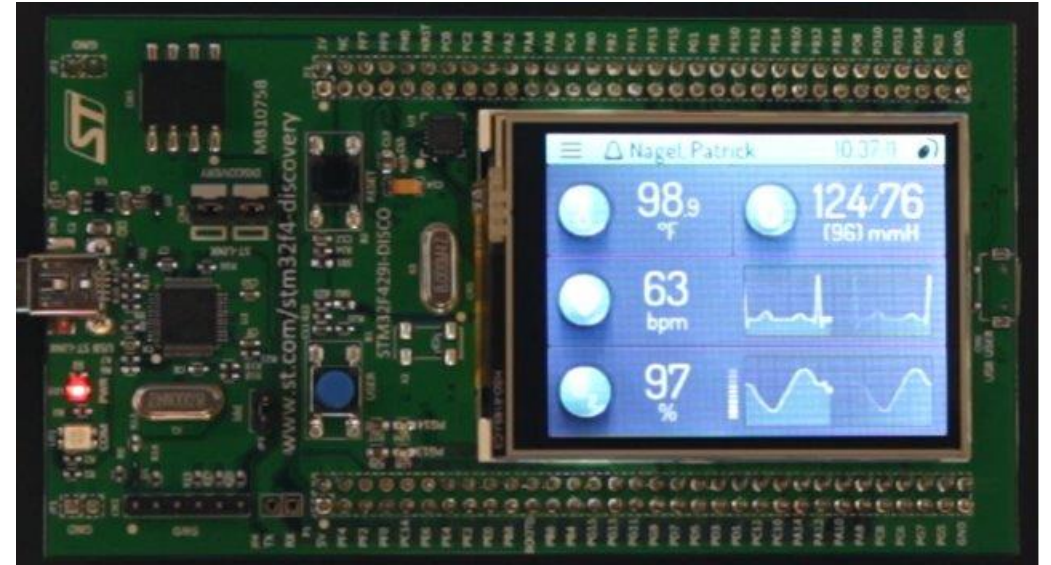
Automotive, biomedical, HMI, Railway

KEY SELLING POINT

- Transversal approach
- Test panel for validation
- HMI
- Gesture
- Predictive maintenance

STAKEHOLDERS

- Electronic vendors
- Automotive market
- Biomedical market
- Railway market
- Industry



The products perform navigation functions in the interface using gestures.

HMI functions developed in model base design do not depend on the HW but are built only subsequently for the target.

HW with sensors for the collection of signals for the purpose of predictive maintenance.

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<https://www.epowering.it>



APPLICATION FIELDS

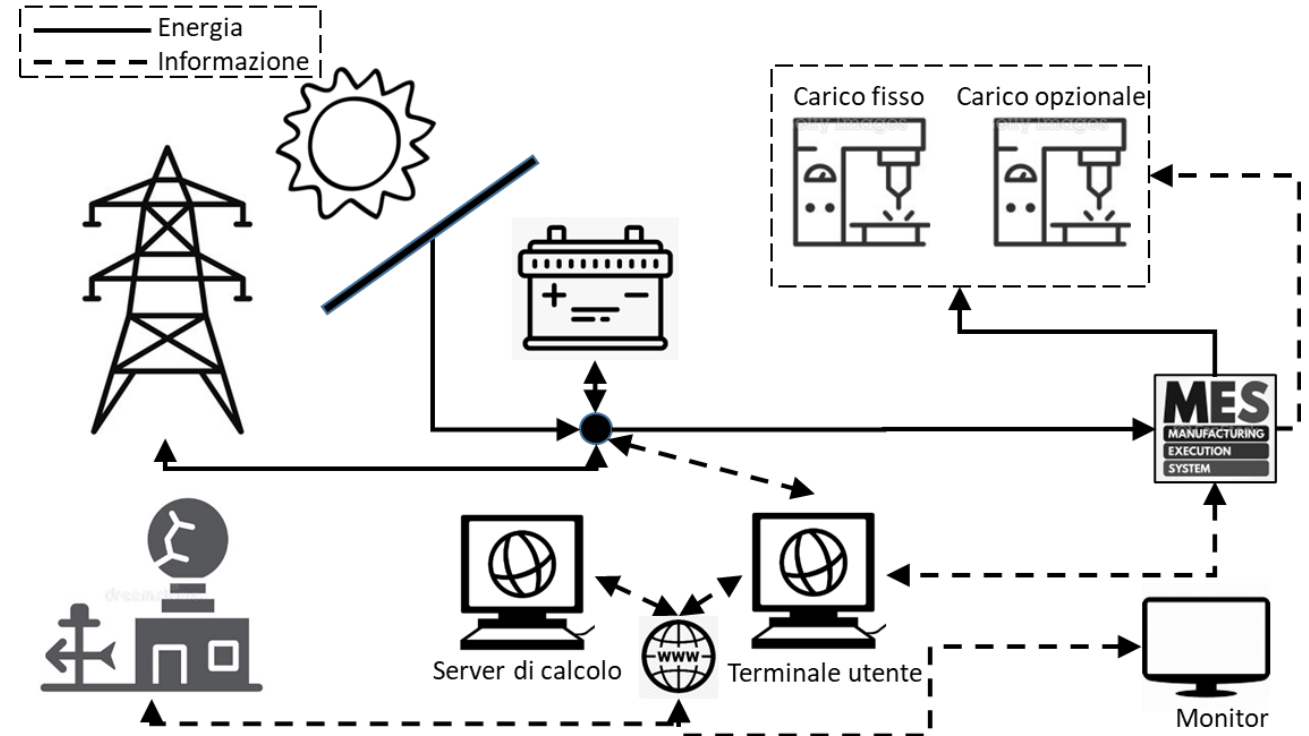
Smart energy, smart home, smart cities, industry 4.0

KEY SELLING POINT

- Energy optimization
- Sustainability
- Emissions reduction
- Smart automotive charging stations

STAKEHOLDERS

- Industry
- Automotive charging infrastructure
- Energy communities



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www.codeandgears.com



APPLICATION FIELDS

- Livestock farming and management.
- Animal welfare and health monitoring.
- Data-driven decision making in farming operations.
- Integration of technology in traditional farms.

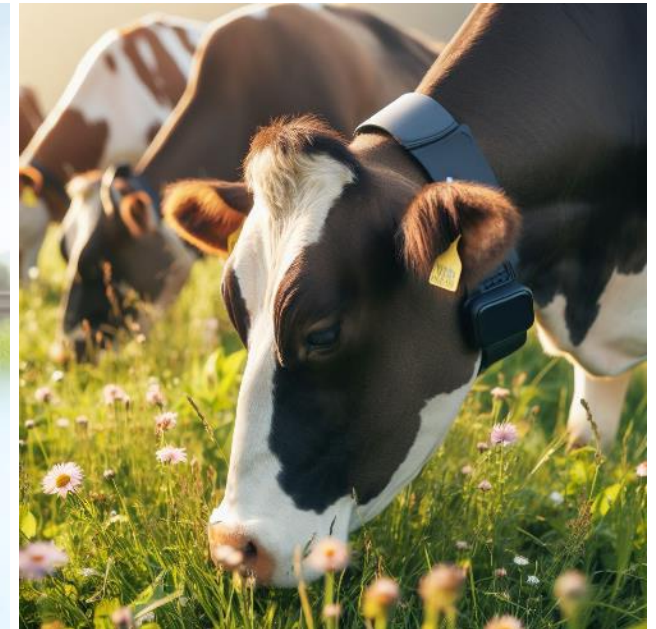
KEY SELLING POINT

- Remote monitoring of animal activity status.
- Environmental condition monitoring for livestock.
- Improved animal welfare and health monitoring.
- Evaluation of factors influencing milk quality.
- Enhanced productivity and efficiency in milk production.
- Real-time alerts and notifications for farmers.

STAKEHOLDERS

- Livestock farmers and Dairy industry and milk producers.
- Animal welfare organizations.
- Research institutions and universities.
- Veterinary.
- Investors and venture capitalists in agri-tech.

The Farm Angel



The Farm Angel is an intelligent collar for buffaloes and cattle designed to remotely monitor the activity and health of animals in the wild or on farm, as well as the environmental conditions in which they find themselves. It also allows you to evaluate the factors that influence the quality of the milk produced by animals, transforming a traditional farm into a modern and connected one. The heart of the smart collar is the small STM32F303 central board, ideal for wearable devices.

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<https://uninacorse.com>



APPLICATION FIELDS

Automotive, automation, Innovation Technology

KEY SELLING POINT

- Driverless system
- Carbon fiber aerodynamic kit
- Engine optimized through test bench calibration
- ST PCB

STAKEHOLDERS

- Automotive industries
- Mechanical industries
- Electronics industries
- Companies in the automotive supply chain



Gaiola is the racing car prototype designed and built by the students of the UniNa Corse association - the racing team of the University of Naples Federico II. The prototype is powered by a combustion engine and is equipped with a fully autonomous driving system.

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<https://www.paidea.it/>



APPLICATION FIELDS

Educational

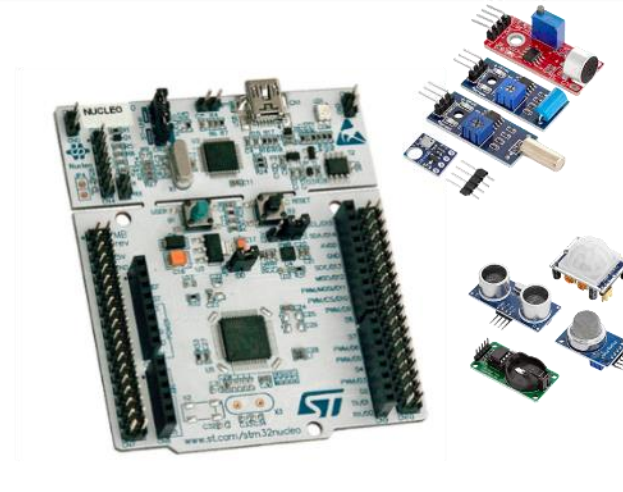
KEY SELLING POINT

- Professional technologies
- School-friendly
- New teaching methodology

STAKEHOLDERS

- Schools
- Vocational, educational and training companies

Smart Object Kit



- Educational gamification with Augmented Reality and Virtual Reality
- Training kits for coding microcontrollers

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<https://www.bluenetita.com>



APPLICATION FIELDS

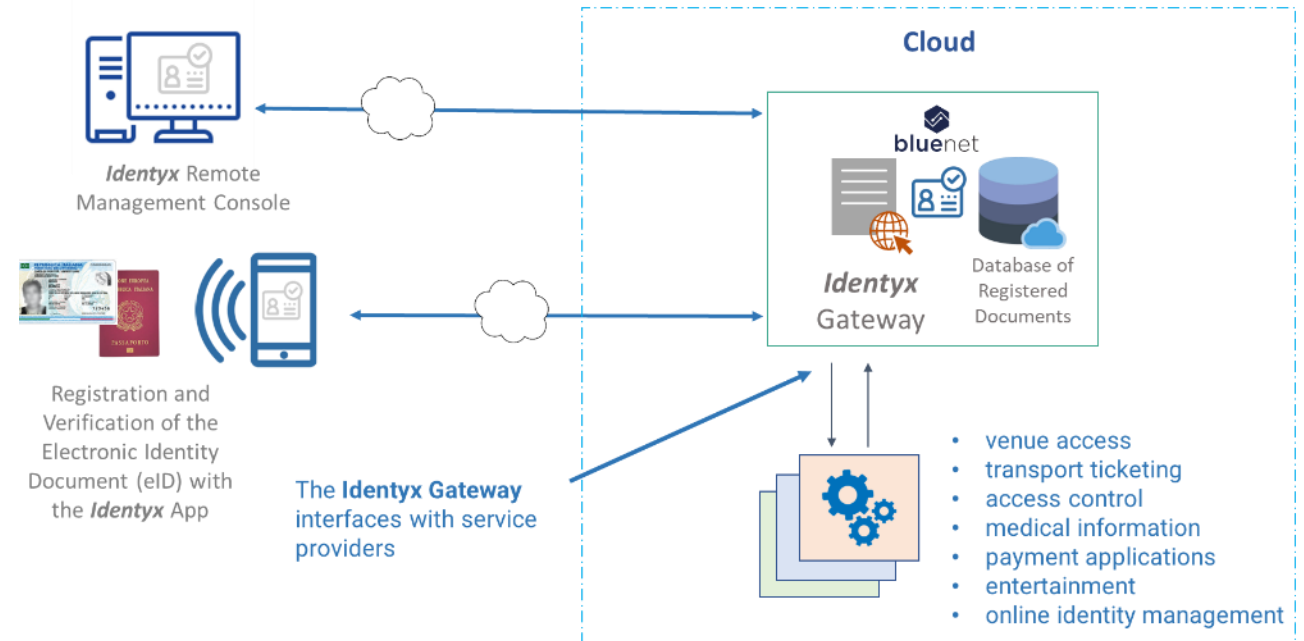
- Ticketing for entertainment venues and transportation
- Access control
- Payment applications

KEY SELLING POINT

- Green solution (i.e. no ticket printing)
- Secure
- Flexible (can be used with various service providers)
- Doesn't require the installation of yet another App

STAKEHOLDERS

- Theaters
- Transportation companies
- Citizens
- Service providers
- Public administrations



Identyx is a cloud-based system which allows access to services by using the Electronic Identity Document (**eID**) as an authentication token. This turns the **eID** into a secure key to various applications such as transportation, payment and ticketing.



Politecnico di Bari



DEI DIPARTIMENTO DI INGEGNERIA ELETTRICA E DELL'INFORMAZIONE

Politecnico di Bari Dipartimento di Ingegneria Elettrica e dell'Informazione (DEI) ETLC Lab Research Group

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- Politecnico di Bari : <http://www.poliba.it>
- Dipartimento di Ingegneria Elettrica e dell'Informazione: <http://dei.poliba.it>
- ETLC Lab: <https://etlclab.poliba.it>

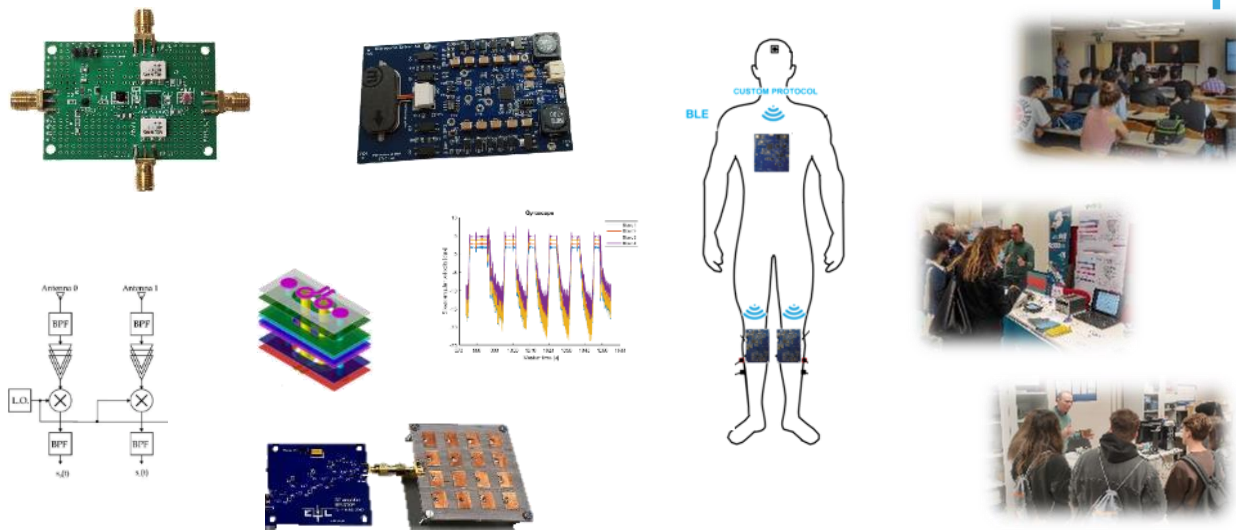


APPLICATION FIELDS

- RF electronics
- Embedded and Digital Systems design
- Internet of Medical Things (IoMT)
- Positioning and navigation systems
- Industry 4.0

STAKEHOLDERS

- Universities
- Research centers
- Industrial spin-offs from universities (technology transfer)



The Electronics for Telecommunications Laboratory (**ETLC Lab**) is a research and didactic laboratory of **Politecnico di Bari**, at the **Department of Electrical and Information Engineering**. The focus is put on the study, designing, deployment and test of innovative electronic systems for telecommunications operating at **high frequencies**.

Main research fields involve **RF electronic systems**, **Internet of Things (IoT)** and **Internet of Medical Things (IoMT)**, indoor and outdoor **navigation** systems and **Industry 4.0**.

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NucleoHero

OWNER

Team 14 – Neapolis Innovation Summer Campus

<https://www.neapolisinnovation.info/>



APPLICATION FIELDS

Videogame arcade

KEY SELLING POINT

- Low cost
- Fun and Interactive

STAKEHOLDERS

- Gamers

NucleoHero



At the heart of our design, the microcontroller handles the entire game logic, which includes generating musical notes, moving the notes along the 'musical carpet', and calculating scores. The notes move in perfect synchrony with the music, and the player's task is to press the buttons in time with the notes.

NeaPolis Innovation

TECHNOLOGY DAY

22.11.2023

OWNER

Raffele del Gaudio, Luigi Fienga, Benito Cervone, Emaunele Barbato, Simona Borrasso, Vincenzo D'Anza, Emanuele Coppetta, Vittorio Imbimbo

QR
Code

APPLICATION FIELDS

Connectivity and Gaming

KEY SELLING POINT

- Multiplayer
- RF Technology
- Fun with Friends

STAKEHOLDERS

- St Microelectronics



The project is a remake of the classic game Tic Tac Toe. It's possible to play in two ways, Local Multiplayer using two joysticks or Remote Multiplayer using RF technology with two devices.

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<https://www.nalug.tech>



APPLICATION FIELDS

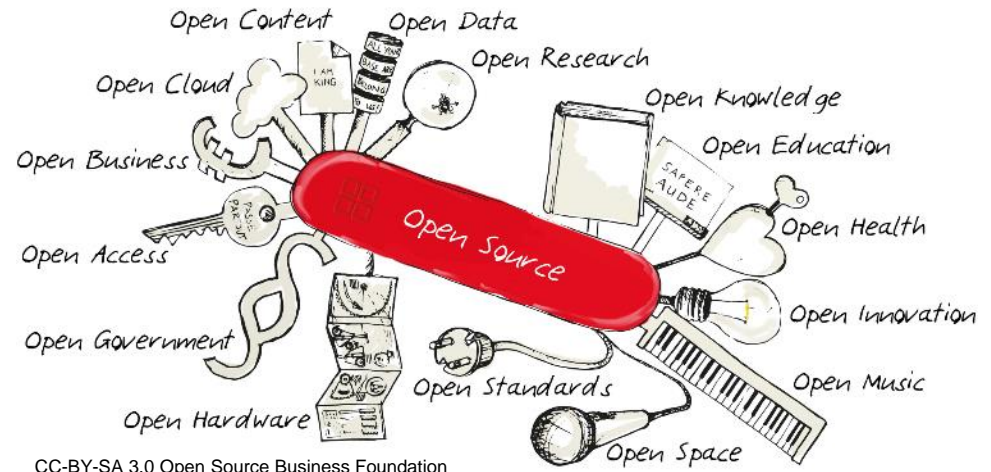
Computer Software and Hardware, Electronics, Food and Beverages, Digital Content, Medicine, Science and Engineering, Robotics, Arts, Education, Innovation, Media and many others

KEY SELLING POINT

- No cost or low cost
- Free/Libre Open Source
- Robust community-driven support
- Publicly accessible
- Secure and stable

STAKEHOLDERS

- Academic community
- Researchers
- ICT Specialists
- Students
- Enthusiasts and supporters



CC-BY-SA 3.0 Open Source Business Foundation



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www.dambrosrobotics.it



APPLICATION FIELDS

- Archaeology and Artifact Detection.
- Exploration and Surveying.
- Search and Rescue.
- Industrial Inspections.

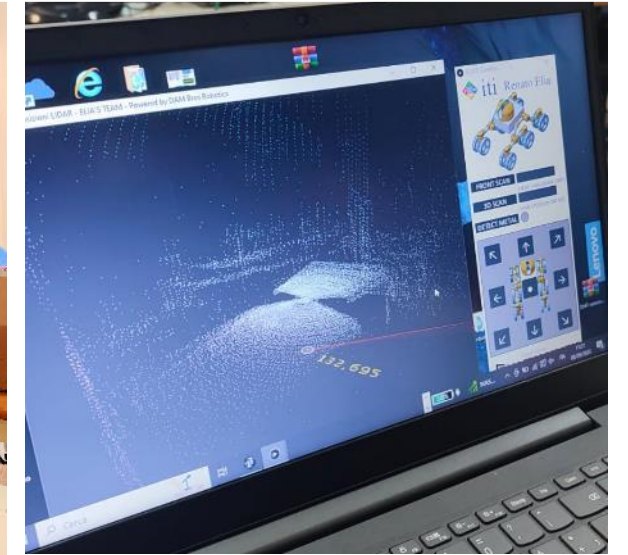
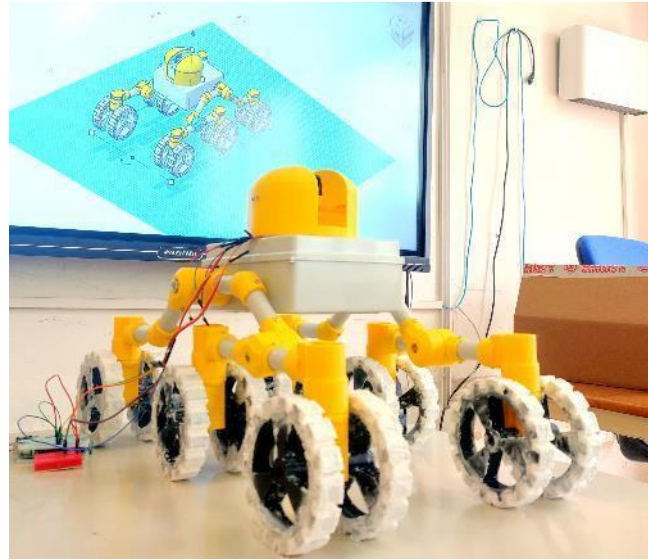
KEY SELLING POINT

- Affordable alternative to conventional 3D scanning systems.
- Enables exploration of inaccessible environments.
- Acquires 3D coordinates while navigating.
- Identifies artifacts and potential paths for exploration.

STAKEHOLDERS

- Organizations for the protection of cultural heritage.
- Construction companies.
- Industrial inspection and maintenance companies.
- Educational institutions.
- Archeology enthusiasts.

Elios, the explorer robot for DIY archaeology



Elios is a mobile robot that allows you to explore the surrounding environment with a much cheaper technology than conventional 3D scanning systems. It was designed for the exploration of spaces not easily accessible to humans, except by digging operations. While navigating, the robot acquires the 3D coordinates of points in space, revealing whether there are artifacts or paths to explore. The robot was developed by DAM Bros Robotics during a PCTO course at the Renato Elia Technical Institute in Campania and took part in the Italian Robotics Championships.

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https://github.com/LuDotCom/ST_PARKING



APPLICATION FIELDS

- Smart cities
- Traffic management
- Power and energy

KEY SELLING POINT

- Automotive
- Energy saving
- Traffic Reduction

STAKEHOLDERS

- Automotive market
- Cities

ST-PARK



The project in question is a parking lot equipped with:

- 1) automatic operation of the entrance/exit barrier due to the presence of proximity sensors
- 2) brightness sensor that allows the street lights to be operated only in the presence of motor vehicles
- 3) external display visible at the entrance that allows to display the number of available spaces , the motor vehicles that can access them

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STM32-Based Projects

Electronic Students UniNA

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Corsi di studio triennale e magistrale in
Ingegneria Elettronica - UniNA

<http://www.ingegneria-elettronica.unina.it/>



APPLICATION FIELDS

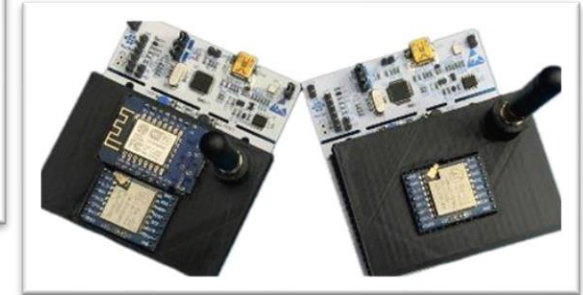
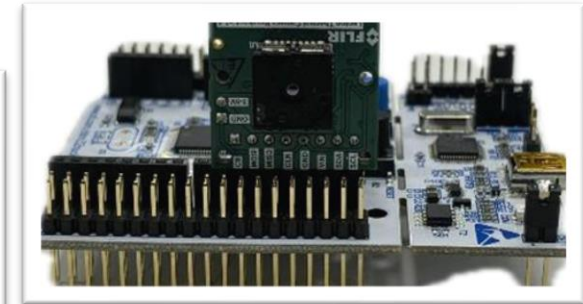
Electronics for Health, IoT, Artificial Intelligence, Edge-Computing, Infrared Thermal Camera Module, Diagnostic, Prevention and Research.

KEY SELLING POINT

- Energy Efficient
- Modular
- Low cost
- Open to user's needs and interests

STAKEHOLDERS

- Universities & Research Centres
- Industry
- IR Thermal Camera Market
- Medical, Energy and PV fields



Miocardial Infraction Detection: the system can acquire an ECG signal and process it in real-time using EDGE-AI algorithms.

Emotional State Detection: the system captures videos through the thermal camera and processes them in real-time, extracting temperature vectors and analyzing them in real-time using EDGE-AI algorithms to classify the emotional state as either happiness or sadness.

Temperature Long Range (LoRa): the system is made up by a transmitter and a LoRa receiver. The transmitter acquires data from the temperature sensor and sends it to the receiver thanks to the LoRa module. The receiver gets data through the LoRa module and uploads it to the IOT server through the WiFi module.

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Up-coming events

ARTIFICIAL INTELLIGENCE @ THE DEEP EDGE Training Hands-on

31 GENNAIO
1-2 FEBBRAIO

- Seminario e laboratorio hands-on con esempi passo per passo utilizzando Nucleo-F401RE (posti limitati).
- Dall' 11 gennaio è possibile registrarsi sul sito: www.pepite.info

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