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AGEVOLT (Slovakia)

Product Name: MY EV Charger



Sector: Energy, Manufacturing, Services

Presentation:

„AgeVolt is bringing seamless and user-friendly electromobility to e_veryday life“.

AgeVolt is an innovative Slovak startup, founded in 2019 offering a comprehensive electromobility ecosystem, making EV charging convenient and accessible whilst achieving optimal energy distribution. We are creating a unique ecosystem consisting of Smart Electric Vehicle Chargers, Intelligent Energy Management System and Digital platform for worldwide stakeholders.

Pitch: The project lies in the innovation of the universal EV charger control unit (TRL 5) produced by Teco a.s., which is not equipped with suitable hardware and software (HW & SW) embedded solutions for new functionalities.

Challenge:

Approximately 80% of 1.45 million EV chargers worldwide in 2020 do not contain any Energy Management System (EMS); about 17% of EV chargers contain a static EMS with a fixed charge intensity and only about 3% of EV chargers are dynamically controlled. However, these solutions offer unified EMS for the entire EV chargers group. The low availability of EV chargers is due to the fact that they are not built as open, but as stations for individual charging, closed to a certain EV group (e.g., fleet company) or as a network of public EV chargers with closed charging conditions of different Charge Point Operators (CPOs).

Solution:

The project lies in the innovation of the universal EV charger control unit (TRL 5) produced by Teco a.s., which is not equipped with suitable hardware and software (HW & SW) embedded solutions for new functionalities. The implementation consists of 3 phases: 1. Innovation & Design, 2. Prototype production and testing, 3. Preparation for series production and sale, and will last 12 months, involving both partners in all phases.

The redesign of the control unit will consist of the preparation of an embedded innovative smart EV charger control unit (TRL8), one of the components of the AgeVolt E-mobility Ecosystem, which can be applied to our and other, new and existing EV chargers. Our solution also reflects the current unavailability of chips on the market in the form of using a micro controller that is available on the market (compatible micro controllers are manufactured by several manufacturers) and interchangeable. It also allows "multi-processor operation" in the form of the use of multiple controllers in one device, where each of them can perform a certain necessary part, interact with each other and complement each other without the need to create a bottleneck.

Consortium strength:

DigiFed project consortium strength stems from the strong technical expertise, the innovation potential and the natural connection of two stable partners – AgeVolt and Teco. This brings a synergy into cooperation and added value to the products and customers. The three partners have been cooperating in the development, production and sale of smart EV chargers since 2019. AgeVolt brings HW & SW SW and HW innovations, tested and produced in cooperation with Teco. Teco's feedback is an important factor and benefit in innovations tuning. Common sales channels bring new products to markets worldwide. The proven quality of cooperation is the base of project implementation, multiplied by BME's expertise in thermal design testing and Blumorpho's expertise in innovation management.

Business developpement:

The redesign of the control unit will bring innovative smart EV charger, one of the components of the AgeVolt E-mobility Ecosystem. The control unit can be installed to the EV chargers produced by AgeVolt and other producers. It enables to bring the new e-mobility services to the AgeVolt E-mobility Ecosystem customers and stakeholders. The sales channels of both partners will bring new products to markets worldwide. The primary focus is on the CEE region and other EU countries, followed by the closest non-EU countries, with the business development potential of more than 70 countries worldwide.

BINARÉ OY (Finland)

Product Name: IoT-sec-holistic



Sector: Energy, Health, ICT/AI, Industry 4.0, IoT, Manufacturing, Services, Transportation & Smart mobility, Cybersecurity

Presentation:

Binare is a cybersecurity deep-tech spin-off from the University of Jyväskylä JYU (Finland), and boasts more than a decade of research vision, experience and international peer acceptance. Our professional advisory services leverage on our unique feature rich SaaS platform and our team's top international expertise to offer cybersecurity services, such as penetration testing, detailed cybersecurity assessments and pre-certification readiness for IIoT/IoT/embedded devices, firmware and software.

Pitch: Next-gen automated platform for holistic (I) IoT security

Challenge:

The challenge this project focuses on is a clear one. Within the classic process for alert processing and security monitoring is not common to be lacking information. Some information could be crucial in order to take some decision in a split second. The idea is to give more context to Security Operations Centre (SOC) analysts to improve their decisions and the reaction time. For that purpose, this project will focus on feeding the most precise and useful information to avoid confusion and data overload for incident handling. The correct integration between both platforms involved may become challenging too but not as much as the precise section of the information to send.

Solution:

The solution provided by the project consist of the integration of different solutions. Working with both frameworks from each partners, an integration will be made.

- First, Binaré offers a cloud-based service with optional professional services that help your business to anticipate emerging cyberattacks. This is achieved using top-notch binary file analysis, locating unknown vulnerabilities in the firmware of countless devices.
- Second, the solution developed by Ikerlan is based on an open source SOC architecture with customized modules. Using that customization, we can integrate the best of both solutions to gain accuracy on threat detection. The final solution will include all the mentioned above.

Consortium strength:

Technology direction is the main driver for Binare's DigiFed application. With Ikerlan, they have found a technology partner that has proven experience and expertise in Industrial Internet of Things (IIoT) cybersecurity, can provide a complementary solution for experimentation and "demonstrator prototype" implementation, and can support the "demonstrator prototype" access to possible customers for running cybersecurity-focused Pilot Projects and Customer Success Stories. In this sense, Ikerlan Industrial Cybersecurity seems to be the perfect match from the list of DigiFed's Technology partners.

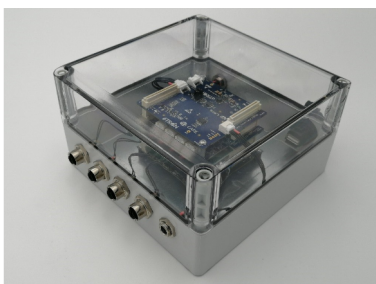
The synergy between the two partners is clear and is going to be used to achieve all the goals identified. Working on different technologies but both on cybersecurity, eases the communication and the collaboration comes naturally.

Business developpement:

First, the plan is to optimally benefit from both partners' existing customer bases and sales funnels to introduce and present an "IoT-sec-holistic" prototype/solution. Second, the plan is to use Trials for attracting a new customer base. We will also seek Pilot Project and Success Stories with strategic Industrial Partners/Players. Finally, we plan to optimally reuse (and establish new) partner networks to promote and commercialize the "IoT-sec-holistic" prototype/solution (and its related technologically-relevant outcomes). Our current Go To Market (GTM) is: we are in the process of finalizing partnership deals with several companies providing global solutions, among them: a company providing "(I)IoT device management and provisioning platform", a company providing "leading (I)IoT identity management solutions".

CATIE (France)

Product Name: 6TRON platform



Sector: ICT/AI, IoT

Presentation:

Our mission

CATIE (Centre Aquitain des Technologies de l'Information et Electroniques) is a non-profit association created in 2014 on the initiative of the Nouvelle-Aquitaine council and local companies. Our primary mission is to support and assist SMEs and other structures in their development projects and digital transformation. We are also involved in various research projects in the most promising fields of our technologies, in order to offer the most advanced support.

We support companies at various stages: proof of concept, consulting, assistance, expert advice and solutions, but also innovative vision and multidisciplinary analysis. CATIE helps to unlock all technological barriers the organizations that consult us may have. This allows them to adopt and integrate innovative technologies, acquire new knowledge, have access to additional resources, and increase their skills, i.e. striving for excellence and innovation.

Our commitments

We believe that digital technologies, which meet the current needs for progress, can also be ethical and responsible. We use them in design (eco-design, energy optimizations, responsible behavior inductions...), or in transfer towards companies for positive impact projects in order to reduce carbon footprint. It results from our status and our scientific approach, that we guarantee strong technical requirements and technical independence, ensuring optimal and sustainable solutions for our customers. These solutions are the dissemination of our research work, but also of specific designs, to offer companies objective technology tools to "unrisk" and accelerate their R&D. CATIE also supports structures towards regional actors in order to consider local solutions and develop a virtuous ecosystem.

A unique RTO in France

CATIE is a Research and Technology Organization whose employees, mostly PhDs and engineers, come from industry and the academic world. Their experience and expertise cover a wide range of fields: mathematics, computer science, digital and analog electronics, ergonomics, physiology, psychology, cognitive sciences, etc. This multidisciplinary makes CATIE a unique RTO in France!



CEA - IRT NANOIEC (France)

Product Name: Secure platform for IoT SecWay - Sec IoT



Sector: ICT/AI, Industry 4.0, IoT, Manufacturing, Transportation & Smart mobility, Cybersecurity

Presentation:

CEA-LETI Cybersecurity platform identifies vulnerabilities in various devices such as integrated circuits, embedded systems or industrial equipment and designs innovative protections. Recognized by ANSSI, France's National Agency for the Security of Information Systems, it hosts one of three French hardware ITSEF centers for evaluating security in commercial products.

Our Cybersecurity platform is home to 100 experts who collaborate with over thirty industrial partners through bilateral contracts, collaborative projects, or common laboratories.

The platform offers two types of collaborations and services:

High-level security characterizations and evaluations for electronic systems and components (retro-engineering and physical modifications of components, implementation and exploitation of attacks using auxiliary channels and fault injections, software codes analysis, testing and implementations of communication protocol)

Securing components, systems, and their data using: new architectures for secure processors; hardware and software security functionalities for next generation components (random number generators, cryptography); resilience strategies for off-the-shelf components; and techniques for securing critical functions (AI, cryptography).



Pitch: CATIE, a digital technology transfer centre that brings the 6TRON platform and its expertise in embedded system design

Challenge:

Solutions to build an AIOT (Artificial Intelligence of Things) system of systems.

Hydro Zest

Building an IIoT solution with embedded AI enabling rapid and custom-made prototyping, design for scalability and industrialization

Solution:

We offer a complete IIoT solution with embedded AI enabling rapid and customizable prototyping, designed for scalability and industrialization. This solution is based on 6TRON, an environment for the development of professional solutions in the field of IIoT, developed for 4 years by CATIE and rewarded by French embedded professionals (2019 Embedded Technologies Trophy by Embedded France). Our approach allows to break away from hobbyist habits and solutions (Arduino, RaspberryPi, ...), to innovate (debugging tool, reusable and modular bricks, scalability) and to develop an easily industrialized prototype (methodology) with costs, efforts and delays reduction. The solution is adapted to locally analyse the behaviour of the MIV, but our approach offers a high degree of replicability to adapt it to other assets to build an IIoT family.

CATIE and Aguila Technologies will design and implement the IIoT solution to read, synchronize and record sensor data. The HydroZest project the CATIE offers a customized IIoT solution for GE use-case with embedded AI enabling rapid and customizable prototyping, designed for scalability and industrialization.** err:nestedtag **

Consortium strength:

6TRON platform is developed for 4 years by CATIE and its Cyber-Physical Systems teams specialized in embedded and robotic systems in areas such as industrial and consumer IoT. 6TRON has been rewarded by French embedded professionals (2019 Embedded Technologies Trophy by Embedded France). The Algorithms and Data team (CATIE) brings its knowledge in AI algorithms and in the latest data processing technologies. Aguila Technologies is specialized in communicating electronic systems (Machine to Machine) of small size, low energy consumption and have knowledge about engineering, prototype manufacturing and testing services to be able to quickly create complete solutions. They have a unique expertise in all stages of the life cycle of technological products.

Business developpement:

<https://6tron.io/homepage/#avantages>

Pitch: SecWay gateway for protecting sensitive data from end to end

Challenge:

CYBERSECURITY Secure gateway for IoT

IoT infrastructures are facing cyber risks from edge to cloud; from sensors and gateways to terminals and servers. There is a market need to secure these types of infrastructures and their data.

Today's secure platforms are too complex to implement and suffer from a lack of certain key functionalities, so enterprises rely on less effective software solutions against attacks.

Solution:

CEA-LETI and ST are working on a novel secure platform, easy to use and implement, that will provide a higher level of protection to your IoT infrastructure while fulfilling high performance levels.

This technology is based on CEA platform integrating STM32MP1 microprocessor based on the ARM TrustZone hardware isolation combined with STSAFE-TPM (Trusted Platform Module) certified CC EAL4+ and FIPS140-2 level 2; it enables a safe area of execution with a secure module providing secure key storage for long term keys and a cryptographic toolbox for companies who want to secure devices communication. The platform uses standard ST components and open-source frameworks.

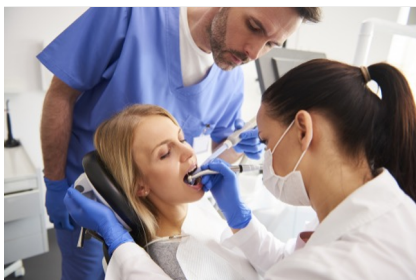
The CEA Generic experiment will focus on STM32MP1 trusted platform with two development axes:

- Establish the security bases for the Trusted platform (secure boot, first level of secure communications, trusted isolated environment...)
- Develop the Monitoring of the Trusted platform against intrusions and security vulnerabilities exploitation.



CHIFOR MEDDENT (Romania)

Product Name: DentalFEM



Sector: Health

Presentation:

CHIFOR MEDDENT provides 11 years' experience in the field of clinical dentistry and medical research and development, in particular, in digitizing dentalcare workflow, biomechanics of dental prosthesis, mainly implant-supported ones. Their workers and supporters are also recognised researchers in the field of dentistry, so they are used to deal with scientific research investigations and new techniques. Currently, the company is looking to extend its activity from clinical dentistry towards medical R&D of new technologies for diagnosis and treatment, especially using 3D virtual models.

Pitch: Mathematical modelling for optimised implantology procedures

Challenge:

Dental implant treatments have revolutionised dental care, but there is a need for data-driven planning tools for its interpretation and application during implant surgery, instead of procedures based only on experience in order to minimise failure rates. The macro-design of dental implants determines their stability and their capacity to withstand the functional loads.

DentalFEM aims to be the first software tool in the market for optimised implantology procedures based on mathematical methods. An accurate digital replica of the patient's oral cavity (digital twin) will be created and forces acting on implant, teeth and jawbone will be obtained by means of numerical simulations based on the Finite Element Method (FEM).

Different implant types and acting forces can be computationally tested. Hence, the result of an implant procedure will be no longer based only on intuition or experience of the dentist, but on quantitative and qualitative information based on physics and mathematics.

Solution:

DentalFEM software has integrated under a single tool all the stages needed to carry out a simulation of a patient specific dental implantology procedure:

- Anonymised cone-beam computed tomography (CBCT) scan of the patient is uploaded to our web platform
- Segmentation on relevant structures is carried out by means of Machine Learning
- Obtention of a 3D digital twin of patient's oral cavity
- The virtual oral cavity is discretised using a mesh
- Structural response of the implant-supported prosthetic tooth is obtained by solving solid mechanics equations with FEM
- The software produces data related to the mechanical performance of the implant placement (stress/strain, safety coefficient...). Results are analysed within our customised web viewer
- Different methodologies and implant designs can be tested computationally (virtual surgery) in order to find the optimum mechanical performance for this patient Real surgery can be trustily performed based on computational tests

Consortium strength:

INDOMINUS, with prior experience in the development of computational tools for the health industry guarantees all the skills needed for a successful technical development. In their facilities, they count with powerful workstations, the software needed, and their experts in the field of programming, solid mechanics modelling and machine learning are the key for the application experiment success.

Chifor's workers and supporters are recognised researchers in the field of dentistry, so they are used to deal with investigations and new techniques. Also, their connections in the implantology sector will boost our market launch based on an intense dissemination strategy.

Business developpement:

There's no solution in the market providing the structural response of an implant placement. Reductions of 40% in implants' acquisition and 35% less corrective dentistry appointments are envisaged by the use of DentalFEM. Two license fees will be available (On Demand/Unlimited), without imposing the use of a particular CBCT machine. Dental implants market is expected to reach €4.28 billion in 2024 meaning a 5% compound annual growth rate (CAGR). Dental software market will register a 8% CAGR reaching €3.4 billion by 2027. We forecast to obtain a market share around 0.27% by 2027, meaning a turnover of €9.3 million.

COTHERM (France)

Product Name: Touch & Heat



Sector: Energy, Manufacturing

Presentation:

Cotherm designs and produces thermal control solutions for equipment manufacturers and distributors in a large range of sectors such as heating, ventilation, food service, industrial equipment, pool & spa or energy management. With an international presence and a strong culture of partnership, Cotherm supports its customer with success for present and future needs for products offering comfort, performance, safety, energy savings that reduce environmental impact.

Pitch: Mobile contactless NFC solution for heaters configuration

Challenge:

The challenge is to make users program their Electric Radiators & Space Heaters which is done in less than 20% of the households. Using programs would save a lot of energy due to avoiding unnecessary heating in times no warmth is needed in the rooms.

Due to complicated controls on the heater thermostats, programming is not done a lot. The way how it is handled at the moment with LCD / Push button controls is very inconvenient, inefficient and complicated for users, and most of the time it requires following a user manual.

There are also remote-control applications available using Bluetooth or WiFi but as they require extra hardware (gateways) users are discouraged from using them. NFC is a much simpler and intuitive connection method that reduces technology and project complexity for integrators (wireless, security, mobiles, apps).

Solution:

With our approach, we use the same technology as mobile contactless payment, which since the spread of Covid-19 has become a worldwide accepted way of payment, well-known to most smartphone owners. Users can configure their heaters with their smartphone in three easy steps.

At first, they need to tap the phone to the NFC tag to collect the current settings of the heater. In the second step, users can adjust the settings in the app and at last, they have to tap again the NFC tag to transfer the new settings to the heater.

This is a convenient, easy and efficient programming method which works very intuitively.

Consortium strength:

The realisation of the project was made possible by the cascade funding provided by the DigiFed Consortium. Through regular monitoring meetings a smooth project flow was ensured and delays in the development were avoided.

Business developpement:

The turnover forecast is €3,100,000 for the participants over 3 years. IoTize will license the wireless modules and provide R&D services at the cost of €450,000. Cotherm will supply the electronic boards and R&D services for €850,000. Lucht LHZ will sell the final product of electric radiators to their customers for 1700 K EUR.



CYSEC (Switzerland)

Product Name: SEGWAY



Sector: ICT/AI, IoT

Presentation:

CYSEC was born in 2018 when Patrick Trinkler and Yacine Felk, two cybersecurity entrepreneurs, decided to focus on answering the biggest challenge: securing data-in-use.

Moving corporate data to the public cloud and process data in the edge is a major accelerator for business development. The more companies follow this strategic path, the more data in use—the point of least resistance— becomes a target for attack. Leveraging 20+ years of cybersecurity and cryptography experience, the founders worked with a team of experts to design and build a trailblazing confidential computing solution, CYSEC ARCA Trusted OS.



EDF HYDRO (France)

Product Name: ISYBOT



Sector: Energy

Presentation: N/C

Pitch: ISYmap miniaturized and autonomous robot for complex inspection

Challenge:

How can drones guarantee visual inspection in a confined, metallic, humid, and complex environment? (EDF)

EDF HYDRO seek to improve its turbines' inspection, reducing time and costs whilst enhancing inspection quality and predictive maintenance.

Solution:

To support EDF Hydro, ISY map will develop a miniaturized, lightweight and wireless inspection robot with an ultra-high-definition camera and strong mobility, it will be able to navigate inside small and complex environment. Multiple communication technologies will be embedded inside ISYBot in order to provide a resilient and reliable solution even in complex environment with heavy concrete or metallic structure. The targeted markets for ISYBot are industry (nuclear, chemical and hydro), civil security and military.

An innovative small robot able to navigate wirelessly in constrained environments. Resulting IP will be the mechanical drawings and an Android App.

The outline scope of the work is to provide a wireless robot prototype able to do visual inspection (4k) inside a pumped hydroelectric energy storage (PHES).

Consortium strength: N/C

Business development:

In the short term, the solution should allow inspection of some parts of the turbine that EDF Hydro have never seen before without equipment disassembly, whilst in the long term, the solution could help EDF Hydro create well-structure plans for maintenance of their groups.

EVERCAM (Ireland)

Product Name: StorAlge



Sector: Construction, ICT/AI, Industry 4.0

Presentation:

Evercam improves construction productivity by providing increased jobsite visibility and improving team communications. We offer cloud-based software connecting fixed position cameras with all stakeholders in the building process. Documenting the whole process allows you to solve disputes, reduce delays and retain the proof of work done. We have a dominant position in our home Irish market and market footholds on five continents. With a unique focus on the construction industry, we are developing innovative site analytics services applying AI, Computer Vision and BIM methodology.



Pitch: Transparency of Deliveries and Storage on Construction Sites: Smart Logistics Automated with Visual Evidence.

Challenge:

The StorAlge project focused on addressing the challenges of limited visibility and control over material delivery and storage on construction sites. Some of the specific issues included:

- Disinformation due to human errors during delivery control at the entry gate.
- Lack of visibility where materials were unloaded.
- They overloaded storage yards due to uncontrolled overstock.

All these factors prevent effective management of site logistics, contributing to construction waste accumulation, additional costs, and downtime.

Solution:

Evercam, together with partner SME ProperGate, worked on the development of a demonstrator prototype of a two-way integration between their proprietary systems, supporting users from the construction industry (logistics personnel, planners & schedulers, site management) in monitoring material deliveries and managing storage on construction sites. The proposed solution sought to enhance ProperGate smart logistics plans & delivery records with Evercam visual evidence to automate the repeatable operations on the construction site, decreasing the dependence on personnel on site.

Consortium strength:

Evercam brought to this project a construction camera system overlooking the entire site and extracting relevant details. The system provides construction teams with verification tools based on images and videos, improving their visibility of the site.

Evercam's strong development team leverages competencies in Machine Learning, Computer Vision and UX. Further expertise includes technical operations, camera installs, software interoperability and integrations.

Business developpement:

Integrations are now predicted to become the dominant business model in construction technology (ConTech). In line with this trend, Evercam worked together with ProperGate and will continue to collaborate with other ConTech leaders in developing a joint digital construction environment. We see strong potential to impact the construction industry with productivity advantages as this market urgently needs to improve efficiency to stay competitive and sustainable.

HUPI (France)

Product Name: Smart Ramp



Sector: Industry 4.0

Presentation:

HUPI is a technological company specialized in Cyber Physical Systems (CPS) and Artificial Intelligence (AI). With more than 40 clients, HUPI designs, develops and operates Virtual Assistants, mostly for the sectors of Industry, Energy/Water and Transport. HUPI's Virtual Assistants generate recommendations, in automatic and in real time, to help professionals, who have to make rapid and complex operational decisions. HUPI is a local company deeply involved in the economic development of the Basque Country. HUPI considers that the "economic development is an end and not a mean", and therefore complies with the local RSE charter "Lantegiak" that encourages "Territorial Reciprocity"



Pitch: Reduce the risk of non-deployment of bus access ramps for disabled people thanks to Artificial

Challenge:

Ensuring the highest standards of service is a primary objective for Donostiabus (DBUS), the bus operator of the city of Donostia (San Sebastian) in Spain. The second item of its "Service Charter" outlining DBUS commitment to its passengers is "Accessibility": ensuring normal access to its buses to people with reduced mobility. All the buses of DBUS fleet are equipped with an automated ramp being automatically deployed (from the bus to the sidewalk) when requested by a person in a wheelchair.

The ramp enables the disabled person to board on the bus by themselves. Unfortunately, for multiple reasons, this deployment can encounter technical issues, preventing the ramp from coming into the sidewalk, therefore preventing the person in the wheelchair to embark on the bus.

Solution:

DBUS and HUPI propose to develop a Cyber Physical Systems (CPS) device embedded/connected to the bus, called "Smart Ramp", and run "live experiments", by deploying this new device in 10 buses. Analyzing the data related to the behavior of each ramp, measured and provided continuously by the custom-made IOT device, "Smart Ramp" will be able to identify in real time, via Artificial Intelligence models, the early signals, representative of a risk of "short-term" failure in the deployment of the ramp.

The prediction of this "failure risk", continuously updated through Smart Ramp data collection, will enable DBUS to perform selected and targeted maintenance operations on the bus before the failures occur, and therefore significantly improve the service towards the disabled people.

Consortium strength:

HUPI acts as technology provider by developing the CPS device Smart Ramp" based on DBUS requests and specifications (accessibility ramp models deployed in DBUS fleet), continuously interacting with DBUS technical team. DBUS, the end-user, will make available 10 buses from his fleet to be equipped with the Smart Ramp device, allowing HUPI to conduct full-scale test campaigns and acquiring the necessary skills/competencies to further deploy the Smart Ramp device in all their buses and adapt their maintenance procedure.

Business developpement:

The "Smart Ramp" system would have a significant impact on several stakeholders: HUPI is already commercializing the "Virtual Assistant for Mobility Transition" with 3 modules as of now very advanced. The "Smart Ramp" system would be an additional feature to this product suite, both from a technological, market, positioning and distribution point of view.

The European Bus operator market includes around 300 000 buses (2017) and the mobility access is a key issue regarding service quality and competitiveness. By forestalling failure thanks to preventive maintenance, Smart Ramp system will participate to significantly improve the quality and thus provide a real competitive advantage to win contracts. Moreover, by reducing bus immobilization for repair, the "Smart Ramp" system will generate an economic saving estimated of 100M€+ for European bus operators.

Reduced mobility concerns around 2.5 million people in Spain and 3.5 million in France. Lack of accessibility is a common reason that discourages people with disabilities to find a job or do their daily activities. Accessibility is central for all public transportation policies.



INDOMINUS ADVANCED SOLUTIONS (Spain)

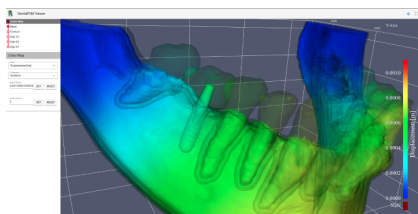
Product Name: DentalFEM



Sector: Health, ICT/AI, Services

Presentation:

INDOMINUS is a technical consulting firm based in Vigo (Spain). The team comprises multidisciplinary profiles with extensive experience in numerical simulation, machine learning, VR/AR and software development within R&D projects. They have wide experience managing projects in the framework of H2020. INDOMINUS is also experienced in carrying out innovation and funding strategy, feasibility studies, deliverable writing, and project management.



Pitch: Mathematical modelling for optimised implantology procedures

Challenge:

Dental implant treatments have revolutionised dental care and allow people with missing teeth to have secure, attractive, comfortable and fixed teeth. While dental implants are common tooth-replacement options, complications can occur (Figure 1). Mechanical failure of dental implantology is around 10%, but considering aesthetic failure it reaches 30%. Once it happens, replacement with another implant is an option, but restoration survival rates vary and have been reported to be in the range of 69% to 91%. According to American Academy of Implant Dentistry, more than 3 million people in US have already undergone one or more dental implant surgeries. This number is growing at an annual rate of 500,000. Worldwide, 30% people aged between 65-74 years have no natural teeth.

The macro-design of dental implants determines their stability and their capacity to withstand the functional loads. The length, diameter, shape, and design of the screw are influential factors in the bone-implant interface. In the long term, these features may even determine the implant's survival. Usually, dental practitioners rely on experience or in virtual 3D tools, but this approach is not answering the underlying mechanical problem

FEM (finite element method) is a computer-based numerical method to solve differential equations (describing the mechanical performance of a structure) that allows scientists to study jawbone and implant properties, and bone-implant interface as well as to understand how to improve implant design in order to function within physiological acceptable limits

Despite FEM has proved to be a useful tool in implantology, the wide range of scientific skills needed (physics, mathematics, computer science...) and the steeped learning curves of general-purpose simulation software, which is only available under expensive license fees, preclude the use of this approach in daily clinical practise (only being used in research within multidisciplinary teams). This is the real challenge: take in silico medicine from research to daily clinical practise

Solution:

DentalFEM aims to be the first software tool in the market for optimised implantology procedures based on mathematical methods. A digital replica of patient's oral cavity will be created and forces acting on implant, teeth and jawbone will be forecasted by means of numerical simulations based on finite element method. Different implant types and acting forces can be computationally tested. Implant procedures will be no longer based on intuition or experience of the dentist, but on quantitative and qualitative information based on physics. DentalFEM will be integrated in daily clinical practise for dentists, implant brands and CBCT scan manufacturers. This non-invasive method follows the in-silico medicine concept, one of the key technologies in medicine for the next years

The user has to care only about results and physiology and forget the engineering part of the process. Within this framework, patients' mechanical studies can be systematically analysed, as there is no human interaction in the modelling stage. Hence, different cases can be compared under the same scenario.

DentalFEM software has integrated under a single tool all the stages needed to carry out a simulation of a patient specific dental implantology procedure:

- Anonymised cone-beam computed tomography (CBCT) scan of the patient is uploaded to our web platform
- Segmentation on relevant structures is carried out by means of Machine Learning
- Obtention of a 3D digital twin of patient's oral cavity
- The virtual patient's oral cavity structures are discretised using a mesh
- Structural response of the implant-supported prosthetic tooth is obtained by solving solid mechanics equations with FEM
- The software produces data related to the mechanical performance of the implant placement (stress/strain, safety coefficient...). Results are analysed within our customised web viewer
- Different methodologies and implant designs can be tested computationally (virtual surgery) in order to find the optimum mechanical performance for this patient Real surgery can be trustly performed based on computational tests

INGELUX (France)

Product Name: lighting design and digital twining of luminaire

Sector: Construction, Energy, Services

Presentation:

Ingélux is an innovative lighting design company with scientific and sensitive approach of daylight and artificial light.

We create powerful and valuable ambiances using calibrated tools to ensure feasibility and coherence from concepts to final construction: daylight and artificial light numerical simulations, calculations, high-reliability images...

Ingélux is also involved in the coordination of international Research & Innovation programs around light, mastering the use of latest technologies in projects.

Pitch: assistance for digital twinning of LED luminaires

Challenge:

Predicting the behavior of a luminaire in harsh conditions (small volume ceiling, or installation on facade receiving direct sun over the day) is a challenge. Lifetime and performances of the product such as color shifting are necessary for the design of projects, but the corresponding informations are not available and lead to over-estimations of the size/power/consumption of the necessary fixtures.

Solution:

Digital twin of luminaires can predict the evolution of the luminaire's performances and the remaining lifetime depending on the user profile. Through different europeant projects such as Delphi4LED, AI-Twilight, and OLGA, Ingelux can assist in the construction of digital twin of luminaires in order to virtually operate the twin under given conditions.

Consortium strength:

The AI-Twilight european project consortium represents 26 partners over 9 european countries. Partners are academics, laboratories, industrials, manufacturers, lighting designers, operators, and final users like cities. OLGA european project represent more than 50 partners, with main participation of Group ADP (Aéroports de Paris).

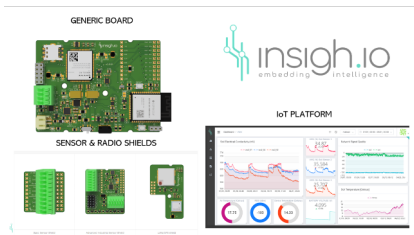
Business developpement:

Digital twining represents a major opportunity for the entire lighting market. It will help reducing the time to market, reduce the cost of development and the efforts for sampling. It will also increase the reliability of products, and will help proving the quality of european products and european lighting field.



INSIGHIO (Greece)

Product Name: insigh.io



Sector: IoT

Presentation:

INSIGHIO tackles one of the greatest challenges in today's new IoT projects, that is the inadequate testing at early stages and the capability to scale quickly.

With our proposition, we aim at disrupting the way businesses adopt new IoT technologies and benefit from their usage. We embed affordable IoT capabilities, in a totally transparent way and with a clear value proposition, built around our **insigh.io technology stack**.

Our technology is application-agnostic, with emphasis placed on use-cases requiring low-end processing, ultra-low energy consumption, calling for unattended monitoring and actuation in remote environments with no prior power, computing and connectivity infrastructure. Exemplary applications of our product can be found in:

- Precision Agriculture & Apiculture
- Environmental monitoring
- Recycling management
- Industrial processes monitoring

We stand out in the competition, as we provide in a unique way such a tightly integrated hardware, firmware and cloud solution, which is plug-and-play and easily deployed in the field in a matter of minutes, without prior expertise, while keeping the cost low enough for initial investment.

Pitch: Accelerate IoT adoption from conception to final product with a unique hardware and software technology stack

Challenge:

- Unlike traditional ICT technologies, the IoT ecosystem involves different types of actors from a highly disparate environment
- Developing an IoT solution from scratch requires a complex set of technology and business development skills, time and resources
- Failing or very simplified Proof-of-Concepts discourage companies from investing in IoT and delaying the technology uptake in a vicious cycle

Solution:

We simplify new IoT projects development with insigh.io, a novel technology stack, including:

- The in-house designed generic IoT hardware board, an autonomous plug-and-play node with numerous sensor interfaces and connectivity options, ready to be tailored to different verticals.
- The board can host pre-integrated add-on boards for specific sensor and additional radio support.
- The nodes comes with either pre-installed deploy-ready firmware or open-source codebase that can be modified to host any possible application, with zero or low-code development.
- The IoT platform, an end-to-end software suite mainly responsible for managing and collecting data from remote IoT devices.

Consortium strength:

The insigh.io founding team consists of 3 technology experts with collectively more than 40 years of professional experience, who have joined forces towards accelerating IoT adoption and bringing to life radical new IoT ideas, from concept exploration to prototyping and full-scale deployment. The team brings to the table a set of diverse skills and competences.

Business development:

insigh.io current business revolves around 3 commercial offerings, provided in standalone or bundle form:

- The insigh.io board (hardware)
- Access to the insigh.io platform for device management and data access, for which a "freemium" subscription model is adopted.
- The "fast-track PoC" service, which includes a technical feasibility study, a design stage, a few (normally up to 3) hardware prototypes, access to the IoT platform for initial data provisioning, and a roadmap for full-scale deployment

We are also offering Engineering/Consulting services related to IoT hardware design (electronics design & production), and Software support (firmware and software development)

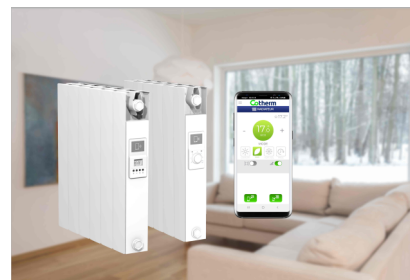
And we are keen on participating in R&D projects funded by local or EU programmes (such as GSRI, Horizon 2020/Europe), which allow for mobilizing resources to extend the current product portfolio, increase visibility and build new partnerships.

Main company achievements so far:

- 6 companies are now using our products (insigh.io boards/platform and consulting services), covering the following areas: precision agriculture, smart apiculture, air-quality monitoring, and smart recycling.
- 500 boards have been deployed so far, with more than 5 million data points in 4 countries collected.

IOTIZE (France)

Product Name: Touch & Heat



Sector: IoT

Presentation:

IoTize offers manufacturers of appliances and industrial equipment a global, turn-key solution to pilot their electronic systems from smartphone apps or from the Cloud. With this solution, our customers create next-generation connected products using wireless interfaces that include NFC, Bluetooth, Wi-Fi, LoRa, or LTE in a way that is reliable, secure and immediate.

Pitch: Mobile contactless NFC solution for heaters configuration

Challenge:

The challenge for the **Touch&Heat project consortium** was to get users to program their Electric Radiators & Space Heaters, which is done in less than 20% of the households. Using programs would save a lot of energy due to avoiding unnecessary heating in times no warmth is needed in the rooms.

Due to complicated controls on the heater thermostats, programming is not done a lot. The way how it is handled at the moment with LCD / Push button controls is very inconvenient, inefficient and complicated for users, and most of the time it requires following a user manual.

There are also remote-control applications available using Bluetooth or WiFi but as they require extra hardware (gateways) users are discouraged from using them. NFC is a much simpler and intuitive connection method that reduces technology and project complexity for integrators (wireless, security, mobiles, apps).

Solution:

With our approach, we use the same technology as mobile contactless payment, which since the spread of Covid-19 has become a worldwide accepted way of payment, well-known to most smartphone owners. Users can configure their heaters with their smartphone in three easy steps.

At first, they need to tap the phone to the NFC tag to collect the current settings of the heater. In the second step, users can adjust the settings in the app and at last, they have to tap again the NFC tag to transfer the new settings to the heater.

This is a convenient, easy and efficient programming method which works very intuitively.

Consortium strength:

The realisation of the project was made possible by the cascade funding provided by the DigiFed Consortium. Through regular monitoring meetings a smooth project flow was ensured and delays in the development were avoided.

Business development:

The turnover forecast is €3,100,000 for the participants over 3 years. IoTize will license the wireless modules and provide R&D services at the cost of €450,000. Cotherm will supply the electronic boards and R&D services for €850,000. Lucht LHZ will sell the final product of electric radiators to their customers for 1700 K EUR.

ISYMAP (France)

Product Name: ISYBOT



Sector: Energy, Industry 4.0, IoT

Presentation:

ISYmap is a start-up founded in 2016 focused on developing, manufacturing, and commercializing innovative systems to measure and map severe areas. ISYmap expertise is around the conception and realization of embedded systems for remote and wireless measurements. They develop small and smart sensors and the associated software to get data and analyze information in real time. Their aim is to get data everywhere and their main markets are nuclear, defense and security.

Pitch: ISYmap miniaturized and autonomous robot for complex inspection

Challenge:

How can drones guarantee visual inspection in a confined, metallic, humid, and complex environment? (EDF)

EDF HYDRO seek to improve its turbines' inspection, reducing time and costs whilst enhancing inspection quality and predictive maintenance.

Solution:

To support EDF Hydro, ISYmap has developed a miniaturized, lightweight and wireless inspection robot with an ultra-high-definition camera and strong mobility, it is able to navigate inside small and complex environment. Multiple communication technologies are embedded inside ISYBot in order to provide a resilient and reliable solution even in complex environment with heavy concrete or metallic structure. The targeted markets for ISYBot are industry (nuclear, chemical and hydro), civil security and military.

An innovative small robot able to navigate wirelessly in constrained environments.

The outline scope of the work was to provide a wireless robot prototype able to do visual inspection (4k) inside a pumped hydroelectric energy storage (PHES).

Consortium strength:

ISYBot was developed by ISYmap only.

Business developpement:

In the short term, the solution should allow inspection of some parts of the turbine that EDF Hydro have never seen before without equipment disassembly, whilst in the long term, the solution could help EDF Hydro create well-structure plans for maintenance of their groups.

KOYRÉ (Italy)

Product Name: SensorSAIL



Sector: IoT

Presentation:

IF YOU DON'T MEASURE IT, YOU DON'T IMPROVE IT

Pitch: SENSORize yachting SAILS through IoT enabled fabric

Challenge:

Until now on flexible objects, such as sails or light wings / foils, it was not possible to measure tensions, pressures and other parameters in real operating conditions but only in the laboratory. This meant that the information and data necessary for the development and use of these complex systems were not available to manufacturers and users.

The IoT Sensorsail product covers this gap, it will allow to detect these data in real time and in operating conditions with a wireless data transmission to local and cloud analysis systems. Until now it was not possible to measure tensions, vibrations, and pressures on flexible objects (sails or light foils) in real operating conditions but only in the laboratory. For example, in these days you are witnessing famous world-class regattas in which the sails do not have efficient measurement systems to regulate their operation although the boats are full of sensors of all kinds: a bit like not having the tachometer on the engine in motorsport: how know whether to "push" or "brake". Koyré today has solved the problem: with IoT SENSORSAIL it will be possible to have these parameters to manage adjustments and safety directly.

Solution:

The Sensorsail project stems from the possibility of integrating and developing existing technologies related to innovative textile sensors developed in Italy and currently used in the medical world with microsensors, wireless communication technologies, as-a-service availability of data collection and analysis platforms with sophisticated functions of deep learning. The definition of the mathematical-engineering models of data interpretation completes the Sensorsail solution.

Consortium strength:

Koyré has already developed a POC-Proof of Concept starting from existing technologies and developed a first software for connection to central systems; it has also filed the patent application at national, EU and US level.

On the other hand DigiFed partner, STm, has the hardware and software technologies, at the microprocessor level, detection sensors and wireless transmission technologies to create the optimized prototype needed.

DigiFed allows both to develop the prototype part and to support the development of the business model and the dissemination of results.

Business developpement:

The SENSORSAIL project is addressing boats and equipment manufacturers in the nautical sector and users of medium / high range vessels. The yachting market has a global value of 45 billion euros with a good CAGR (5.6% in 2019-2025). The market for traditional sensors is also growing. The Sensorsail product is entirely new in this sector and Koyré works with market leaders to develop this new product and market (sensorized sails and foils).



MY DIGITAL BUILDINGS (France)

Product Name: My Digital Buildings



Sector: Industry 4.0

Presentation:

My Digital Buildings simplifies the creation of buildings' digital twins and the exploitation of their spatial data to all building actors. By combining the most suitable scanning technologies for each kind of project, we generate different types of data :

- 3D data (point clouds, 3D models), a set of panoramic pictures georeferenced within the 3D and additional captured data such as 3D IR. Then, we can produce 2D floor plans representing the building footprint, generated semi-automatically from the 3D data. The exploitation of the data allows us to deliver two types of digital twins. One as a CAD format (3D modelization made using the point cloud dataset), the other one as a "Google Street View" format (assembling all the panoramic pictures) available on our secure web platform.

Pitch: My Digital Buildings simplifies the creation of buildings' digital twins and the exploitation of their spatial data to all building actors.

Challenge: N/C

Consortium strength: N/C

Solution:

Business developpement: N/C

Reality capture and data processing for 3D and building assets.

NGS NEW GENERATION SENSORS (Italy)

Product Name: TrackOne



Sector: AgriTech & Foodtech, IoT, Transportation & Smart mobility

Presentation:

Complete and personalized IoT solutions

New Generation Sensors S.r.l. is an Italian innovative SME established in 2015 with a strong expertise in the development of advanced wireless systems following the Internet of Things vision. Particularly, it has developed in these years hardware and software solutions capable to collect added value data from the field exploiting proprietary hardware, thus to collect, store, visualize and process at the remote side (Cloud). The company has a significant network of collaborating developers. This has allowed the company to operate with a small core team and simultaneously keep a high degree of business flexibility served with a wide range of expert capacities and a high-quality product. The main domains of application where NGS is active are essentially two: 1. Smart Factory, having realized the PlantOne system in charge of democratizing predictive maintenance for small-medium sized machineries in manufacturing SMEs. 2. Smart Logistics, having realized TrackOne a solution capable to track and trace goods in both last mile and cargo logistics, thus enabling the complete visibility of the supply chain.



Pitch: Smart TRACKing and monitoring system of goods for secure and optimised supply chain and LOGistics management

Challenge:

TRACKLOG project (click [HERE](#) to see our wonderful cartoon) aims at realising and E2E solution capable to collect data and information related goods to evaluate the production end logistics services quality, supported by circular economy features. The project foresees the development of an E2E application for the tracking and monitoring of the goods in the last mile logistics. In this scenario, the solution will be used to monitor the transaction between a company and its satellite activities and sub-contractors. The involved companies can monitor the evolution of the supply chain, thus improving its internal organisation and consequently its efficiency and productivity.

Solution:

Why are you tracking trucks and containers, and not goods?

Nowadays, the track and trace solutions usually monitor pieces of iron (container, trucks), without having the knowledge of the goods consolidated on those.

We propose an innovative IoT solution capable to identify, characterise, track, trace and monitor your goods from the sender facility toward the receiver. In fact, we have implemented the smart pallet that allows to provide an identity to improved granularity logistic units, specialising the monitoring purposes: a pallet of wine bottles and a pallet of paper need different parameter to be considered.

TrackOne is capable to enable the visibility of the whole supply chain, considering both first/last mile logistics leg, as well as cargo.

TrackOne with its specialised monitoring can be essential for guaranteeing an improved security on transporting perishable goods (e.g., fruit and food), enabling a trusted and standardised data sharing with all the stakeholders involved in the supply chain, thus improving customer satisfaction

Consortium strength:

NGS is an Italian company with the expertise of developing complete IoT solutions from the field toward the Cloud. It has a multidisciplinary team and has participated to several EU projects. The TRACKLog project aims at improving the T&T&M solution developed by NGS in the ICONET project, introducing cyber-security features.

In fact, CEA will support NGS in the definition of the security paradigms for managing and dispatching the data in the IoT data collection subsystem located in the premise. CEA will adapt its background "trusted IoT platform" that will be the base to implement the NGS Secure Gateway.

This secure gateway will in particular manage secure communication with the IoT devices, guaranteeing the confidentiality of the information exchanged, as well as its secure management.

Business developpement:

The solution proposes to:

- Enhance the visibility within warehouse, transportation, and associated logistics processes, such as order processing, financial transactions, shipping, and dispatching & picking. It helps drive more effective business decisions by identifying the crucial bottlenecks and hence, facilitates in critical decision-making.
- Realise companies' digitalisation, documents' dematerialization and the circular economy functionalities, thus supporting the green new deal guidelines envisioned by the EU.



OLIVEEX (Greece)

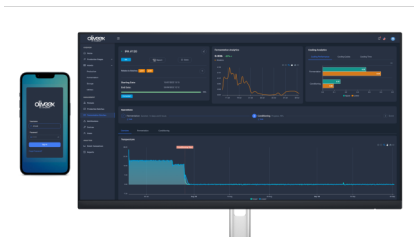
Product Name: Oliveex IoT Platform



Sector: Industry 4.0, IoT

Presentation:

Oliveex is a Greek IoT Startup offering Industrial Internet-of-Things solutions mainly targeted at the food and beverage industry. Oliveex's offering is a digital transformation platform available with minimum requirements. The platform includes plugins that connect the current industrial equipment with the Cloud and transform it into IoT.



Pitch: A full digital transformation with no hardware cost and a software-only solution.

Challenge:

Currently, a major industry problem is the lack of technology that can provide real-time analysis and actionable insights directly from raw production data. Even in big enterprises with increased technology adoption, data collection is inefficient, manual, and in most cases based on spreadsheets leading to poor data analysis processes. The reason for that is the complexity of the existing equipment. Each of them requires its own management suite without the ability of data combination with others subsystems.

Solution:

Oliveex offers a software-only solution that transforms any industrial setup into Internet-of-Things. The software integrates into industrial automation setups using widely used data transfer protocols, collects their data, and forwards them to the cloud. The platform focuses on the digital transformation of industrial enterprises by combining and filtering the large volume of data generated daily into actionable insights and alerts. Specifically, it combines data from different production subsystems to evaluate the production operations and their efficiency. The platform includes the following core features:

- Live data: Data from every industrial asset and sensor are available remotely in real-time for extensive monitoring.
- Digital Traceability: The collected data are classified using Machine Learning models and are stored under a "digital file" for its industrial operation or batch without the need for user input. The platform identifies in real-time exactly what the end-user is doing and stores data of every batch for further analysis.
- AI-Engine: After analyzing the collected data, the platform exports actionable insights that include equipment performance, certain operation efficiency, equipment failure alerts, and more. Using the insights, the user can act in a proactive way, identifying production threats or weaknesses and proceed to actions that improve quality or prevent production downtime.

Consortium strength:

The R&D team is comprised of members with high-level academic backgrounds and specializations, with a strong knowledge in Internet-of-Things, Cloud Computing, Data Analytics, and Machine Learning. Oliveex has received several distinctions and has been funded by the European Institute of Innovation and Technology.

Business development:

Oliveex is a VC-backed venture. In April 2022 Oliveex raised a pre-seed funding led by the Greek Venture Capital TECS Capital with the European Institute of Innovation and Technology (EIT Digital) participating. The company's commercial traction has started in Greece with several pilot installations/Proofs-of-Concept, some of them with key players of the Food & Beverages, and recently have proceeded to the initial partnerships with food manufacturing companies that will enhance the distribution network.

PANORAMIC DIGITAL HEALTH (France)

Product Name: Panoramic Platform



Sector: Health, IoT, Digital Health

Presentation:

Panoramic Digital Health is a SME, based in Grenoble, France, that has developed innovative wearable sensor technology.

- Hardware developed in partnership with ST Microelectronics, one of Europe's largest microelectronics companies in their "innovation booster"
- Manufactured in Europe
- First product now undergoing clinical validation

Our aim is to transform traditional wearable sensor applications through enhancing meaningfulness to patients by integrating environmental context.

Our lead application is chronic fatigue.



Pitch: Panoramic Digital Health's vision is to transform wearables for health, by producing more clinically meaningful output from secure and usable devices.

Challenge:

Fatigue causes diminished quality of life, and is distressing for sufferers as well as loved ones. It has impact on every aspect of a sufferer's daily life: getting out of bed, walking up and down stairs, preparing food, working, shopping, socializing, etc.

Panoramic Digital Health focuses on chronic fatigue caused by long COVID, cancer treatment, heart failure or multiplesclerosis. Many people suffer from chronic fatigue but 90% of them are not diagnosed.

Today, the mechanisms and nature of fatigue remain poorly understood and we lack objective measures and effective treatments.

Solution:

Panoramic Digital Health has developed the Panoramic Wearable, an innovative technology to collect data about an individual's activities and behaviours with environmental context. Our initial product comprises a bracelet containing motion sensors, and bluetooth beacons containing environmental sensors. A particularly innovative aspect of our solution is that it can collect the wearable data with environmental context with a battery life of several weeks.

- Physical activity derived measures

- Epoch level data (supports Activity.Py open-source algorithms)
- Raw sensor data (configurable data rate) e.g.: mobility, sit-to-stand, cadence, turning

- Environmental context to control variability

- Measure mobility in defined location (e.g.: living room) or within defined environmental temperature
- Measure Parkinson's tremor only in specific locations (e.g.: living room and bedroom)

- Combination measures with tag data

- Frequency of room transitions / time in rooms

Measures being put in fatigue studies:

- Total activity (step count)
- Total sleep time
- Sleep efficiency
- Time taken and energy use to get out of bed
- Number of room transitions per day
- Time spent and energy use in living areas per day (Bedroom, Living room, Kitchen)
- Average daily time Climbing stairs
- Cadence for walking in living room
- Period of immobility following movement within the home

To ensure trust of patients and healthcare professionals, we focus on cybersecurity and preserving privacy. Our platform supports machine learning "on the edge" to help achieve best-in-class battery life.

Consortium strength:

Digifed enabled us to increase our understanding of cybersecurity challenges in connected devices and identify technology approaches to incorporate into future products.

Business development:

Primary Target Market : Clinical Trials

- Get compelling patient data to validate the technology
- Work on regulatory barriers (clinical trials and medical devices)
- Easy to use for patients and healthcare professionals
- Trust in data (privacy, cybersecurity)

Secondary target market : self-management of fatigue.

In 10 years, more than 70% of clinical trials use electronic devices for research.



PROPERGATE (Poland)

Product Name: AE STorAlge



Sector: Construction, Industry 4.0

Presentation:

ProperGate is a smart logistics collaboration platform for automating material management on complex construction projects. ProperGate helps project stakeholders optimising their time and budget with respect to material and equipment management, system reduce also the risk of delay and waste due to low efficiency of the old-style workflows. The platform enables effective management of processes traditionally characterised by disorder and unpredictability. ProperGate has experience on multiple projects in Poland and UAE.



Pitch: Transparency of Deliveries and Storage on Construction Sites: Smart Logistics Automated with Visual Evidence

Challenge:

The proposed project addresses the problem of limited visibility and control over material delivery and storage on construction sites. Some of the specific issues include:

- Disinformation due to human errors during delivery control at the entry gate.
- Lack of visibility where materials were unloaded.
- Overloaded storage yards due to uncontrolled overstock.

All these factors prevent effective management of site logistics, contributing to construction waste accumulation, additional costs and downtime.

Solution:

ProperGate and Evercam aim to develop a demonstrator prototype of a two-way integration between their proprietary systems, supporting users from the construction industry (logistics personnel, planners & schedulers, site management) in monitoring material deliveries and managing storage on construction sites. The proposed solution will enhance ProperGate smart logistics plans & delivery records with Evercam visual evidence. The developed workflows will automate the repeatable operations on the construction site, decreasing the dependence on personnel on site.

Consortium strength:

Evercam brings to this project a construction camera system overlooking the entire site and extracting relevant details. The system provides construction teams with verification tools based on images and videos, improving their visibility of the site. Evercam's strong development team leverages competencies in Machine Learning, Computer Vision and UX.

ProperGate has vast experience in developing configurable solutions for processing and exchanging data related to deliveries and materials on the construction site. This partner's hands-on experience with project stakeholders and suppliers will be invaluable for the project to be fully aligned with the industry needs. ProperGate has experienced team of developers, that will be working on two-way system integrations building structural alignments between the two complementary products.

Business developpement:

There is a strong potential to impact the construction industry with productivity advantages as this market urgently needs to improve efficiency to stay competitive and sustainable. The proposed solution fits well with Evercam and ProperGate portfolios, as it enhances the usefulness of their respective systems. By harnessing the potential of currently available and breakthrough technologies, project partners will bring much-needed analytics and automation to the current delivery & logistics workflows, improving transparency and efficiency on site. In this way, we will make up for some of the productivity gap that the industry suffers from today.

PROVA NOR (Romania)

Product Name: N/C



Sector: ICT/AI, Industry 4.0, IoT

Presentation:

a:nor was established in 2015 as an innovative StartUp providing IT Consulting Services
Our focus is on Digitalization of SMEs
Based on knowledge of experienced IT consultants, a:nor brings expertise to companies by linking business requirements with IT solutions
New line of business – Edge Computing
Focus on OpenSource technologies

Pitch: N/C

Challenge: N/C

Solution: N/C

Consortium strength: N/C

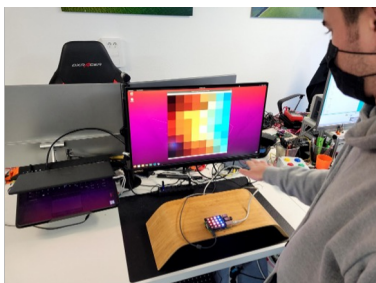
Business developpement: N/C



SC ROBOTICS (Spain)

Product Name: NTOUCH 2.0

sc robotics



Sector: ICT/AI, IoT

Presentation:

SC Robotics is a young Spanish company specialized in the design, development and manufacture of customized integrated electronic devices. The core of its know-how is based around intelligent, low power and remotely connected sensors in the agrotech industry, offering a broad portfolio of devices that can cover many different user needs.

A solar powered datalogger for crops and farms with all kinds of needs and sizes, or a smart bung for wine and liquor are recent examples. Since it was created, it has participated in many R&D projects to improve their own products or explore new ideas and markets.

Pitch: Bringing touchless control to industry 4.0

Challenge:

Industry has widely adopted touchscreen displays; however, this is not the best solution in all scenarios. This is, for instance the case of harsh or hazardous environments, which involve operations that may require gloves due to sanitary or safety reasons. NTOUCH 2.0 team is in touch with end-users who are exploring other kinds of Human Machine Interfaces (HMI) because nothing in the market fits their needs.

Our research and past experience have led us to consider the usage of gesture recognition devices for these interactions. How will manufacturing operators react to a gesture recognition device? Will it be useful in their day-to-day operations? Will it be safer?

Solution:

The Ntouch 2.0 team is developing a device that can recognize gestures using embedded Machine Learning. Thanks to innovative Time-of-Flight sensors and state-of-the-art algorithms, we can detect gestures under any environmental conditions and even while wearing gloves. We can detect two types of gestures: dynamic (e.g., swipe or dial) and static (e.g., finger count). In the former, a continuous stream of data is being processed in real time, while in the latter, we are capturing a small depth "map".

Consortium strength:

Despite being an ambitious project, SC Robotics' expertise in hardware development, together with Edge Impulse's know-how in embedded Machine Learning (also called TinyML) ensure the technical viability of the project. Both companies have many years of experience participating in innovation programs while being very close to industry-leading players. Our ultimate goal is always to develop something that is going to be used. Apart from project coordination, our DigiFed partners, BME, is assisting us in entering the market by giving us valuable feedback and recommendations from a potential user point of view.

Business development:

NTOUCH 2.0 is intended to be sold integrated with other devices or as an attachable peripheral device. Our primary target customers will be Original Equipment Manufacturers (OEMs) of Industrial Control Panels and Technology Integrators. We also plan to sell it to companies willing to upgrade their current control infrastructure.

TECO A.S. (Czech Republic)

Product Name: C-EV-2505

TECO
Advanced Automation



Sector: Energy, Industry 4.0, Manufacturing, Transportation & Smart mobility

Presentation:

Control systems development and manufacturing for:

- industry automation,
- building automation,
- energy management,
- HVAC manufacturers / heat pumps, heat recovery units, ...)
- EV car chargers manufacturers.

Pitch: 2023

Challenge:

Central module for EV charging, customizable, easy to use in any EV chargers platform for dynamic charging and full energy management solution of the network.

Solution:

47 years of experience in development, manufacturing and sales of control systems to 70 countries worldwide. Top quality products with extremely long life cycle of product, technical support, compatibility of generations.

Free programmable PLC based open control systems for any automation task.

Consortium strength:

Strong experiences of industrial controllers development and manufacturing + new software challenge and platform.

Business development: N/C



UNIVERSAL DOCTOR (Spain)

Product Name: DigiBreath



Sector: Health

Presentation:

UniversalDoctor is a digital global health company co-creating innovative technology solutions to improve health outcomes worldwide. UniversalDoctor has worked with multilateral institutions, including the World Health Organization, governments and healthcare institutions in over two dozen countries to co-create and deploy 50+ digital health solutions including clinical decision-support tools, mobile data collection systems, remote patient monitoring platforms, physical rehabilitation tools, and more, across different healthcare verticals. UniversalDoctor has launched a specialized spin-off called Universal Health Digital Access (UhdA) to leverage its experience and expertise in implementing multi-component evidence-based health solutions customized specifically for and with the end-users to address their unique needs and contexts, with the aim of democratizing access to digital healthcare.



Pitch: Digitalized Breathing Recovery Exercises And Tracking for Homecare

Challenge:

The impact of Covid-19 on personal health, society and organisations is exerting pressure on health systems. Despite recovering from the acute disease, many patients continue to experience debilitating long-term effects. Post-Covid Syndrome (PCS) (a.k.a. Long-COVID) affects up to 28% of patients and is an emerging public health priority, as it limits the patient everyday activities. The most affected organs are the lungs with over 80% of patients having respiratory symptoms, which can result in severe chronic respiratory diseases. Manual counting of the respiratory rate by a nurse observing a patient's chest movement is still the industry standard in many health centres. Clinicians and patients face the same issue as there is a lack of home monitoring for respiratory impairments.

Solution:

DigiBreath combines the monitoring of respiratory impairments through iBrev's novel wearable device with digitised recovery exercises. Guided breathing exercises are proven to rehabilitate lung function in patients with pulmonary diseases and are recommended for Covid-19 recovery by the WHO. The aim of the wearable-based digital health companion is to provide a holistic approach for navigating PCS recovery at home and supporting clinicians to detect & predict pulmonary complications by analyzing respiratory patterns in real-time. When fully developed DigiBreath can accompany patients from diagnosis to full recovery while taking into consideration personal physical and psychological parameters.

Consortium strength:

DigiBreath follows an interdisciplinary approach with two international partners along the value chain. The project team combines experts in wearable development, medical expertise, and digital health software development. iBrev brings its respiratory and wearable development expertise to the project and focuses on business development. UniversalDoctor uses its experience from digital and healthcare domains to support the cross-sector healthcare tool by leading the clinical, and digital health aspects of the development. Two teams complement each other concerning technology, healthcare and commercialisation. DigiFed supports the project through continual monitoring and innovation management training.

Business development:

The project outcomes have the potential to support a rising number of Long-COVID patients (EU primary market). In addition, support is also offered to patients with respiratory diseases, such as COPD and Asthma. The key outcome is seen in reduced healthcare costs and creating a major shift towards preventive and personalised treatment, even beyond COVID-19.

ZEKAT (France)

Product Name: EGOS



Sector: IoT

Presentation:

Lucio is a ZeKat Group tech firm that addresses industrial scale IoT field data collection. As sustainable technology's implementations enthusiasts, our team brings reusable components and expertise in multi-connectivity and in secure data transmission.

Our software components-based framework enables to run an application on independent hardware architectures. Quality of service in data transmission makes success for Industrial IoT. Lucio multi-connectivity solution selects the best protocol for each data transmission.

Pitch: Secured Industrial Tracker Development Kit

Challenge:

The goal of the EGOS project is to design a Secured Development Kit as a tool for developers providing the adequate flexibility on Hardware and Software. The aim of the Application Experiment is to be able to test and write an exhaustive requirements specification and then to accelerate the industrialization and the tool kit proposition into the market.

Tracking solutions are facing three main challenges:

- To be able to have a "one size fits all" solution that seems very difficult for industrial deployment but important and possible for prototyping.
- To have security integrated in IoT communication
- To manage different networks and radio protocol to be able to communicate all around the world. Connectivity is an issue, as more than 75% of IoT device projects comes with difficulties of connection.

During this project we answered those different challenges.

Solution:

The solution is a secured SDK that allows all the IoT developers to design, test and industrialize a secured IoT device in less than 6 months and with integrated security and the management of multi-connectivity. One of the main focuses was to integrate and combine various technical solutions: the hardware from STMicroelectronics like the new STM32WL System on Chip, the associated drivers, the network management layer SCAP-LTP (2 patents), the multi-connectivity (1 patent) and EGOS middleware. This integration is fulfilled and operational.

Tracking is working well and can adapt to the environment with Indoor and Outdoor capability.

Multi-connectivity capability to make IoT roaming and to be able to switch between LPWAN networks (Private, public, ...), is creating great opportunities to save battery consumption and to decrease total cost of ownership. Frugal cybersecurity for data transmission over LPWAN IoT networks is a success as it permit keep the initial advantages of such Low Data rates networks.

Consortium strength:

DigiFed Consortium strength was mainly the complementarity between a component manufacturer which was able to provide the hardware and the associated low-level drivers, and eRTOSgener and its Reusable Software Components-based Framework thought to run an application regardless of the underlying H/W architecture. It was strengthened by three patents: two patents on LPWAN roaming with cybersecurity for data transmission and one Patent on Multi-Connectivity. It was also complete with BlueMorpho inputs on the market analysis and various technical discussions with CEA about cybersecurity

Business development:

We offer DEV KIT, trainings and premium supports by our specialists.

Our solutions are available under License agreements.

eRTOSgener startup will be demonstrating the solution with the CES show in 2022. eRTOSgener is a co-founder of IOL project, a great opportunity to address Internet of Logistic