



Experience in 5G/6G & Security/Blockchain/IoT Projects

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Summary

1. Business Description

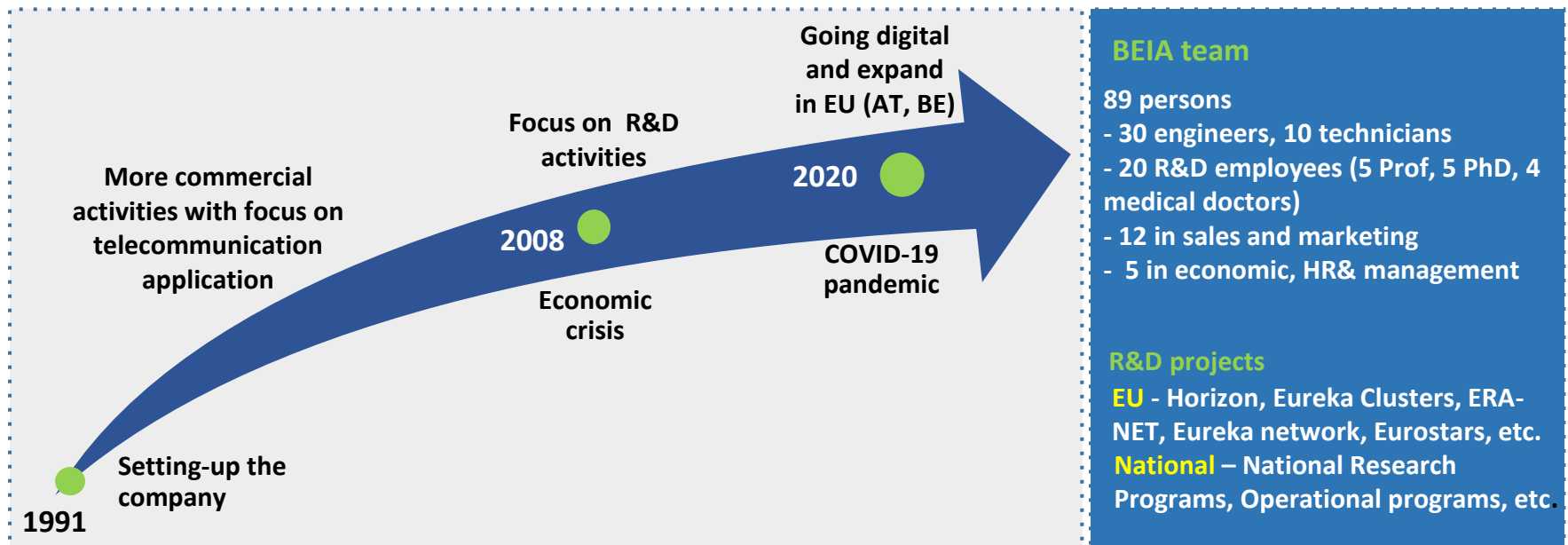
- General
- Short biography
- Partnerships

2. Research & Development projects

- Security
- 5G
- Blockchain



General Business Description



Business Description

- Our Mission is to support our clients' businesses through providing them with **best communication solutions at unbeatable prices**
- After more than 30 years in the IT & telecommunications business we have gained our clients' confidence and appreciation
- Satisfying most complex customer and user demands is our main goal



Business Description

- **Beia Consult International is one of the leading providers of telecommunications equipment and solutions in Romania**
- **More than 60 R&D Projects National and EU accomplished, 50 ongoing projects**
- **Beia is authorized partner for: Adcon / OTT, Alcatel-Nokia, Aspect, D-Research, Exalead / 3DS.com, Ericsson, InVision, Voxtron/Enghouse, Dialogic, Five9, Gigaset, Siemens, Unify/ATOS, Beyertone, Dasan Electron, FMT, Tiptel, Panasonic, Samsung, Schneider-Electric.**
- **More than 9,500 turn-key projects for telephone exchanges, local and corporate networks, advanced communications solutions**

Business Description

Project Consulting - Helping newcomers approach financing sources and submit projects:

- Romania's National Plan for Research, Development and Innovation (CEEX, PNCDI 2007-2013, PNCDI3 2014-2020)
- Structural Development Funds (POS-CCE, POC)
- EU- Framework Programme (FPx)
- Horizon 2020, Eureka Eurostars, Interreg, Erasmus, ERA-Net, COST, AAL, LIFE
- Private and other funding

Business Description

Financial management

- ERP tools: Zoho, ERP5, etc.
- Accounting templates (H2020): Excel, ENOVIA

Administrative management

- Conference call and web collaboration tools: Circuit.com, own PBX (ISDN/SIP/WebRTC) with encryption using Secuvoice, WebEx, GotoMeeting, Skype, etc.
- Document templates, sharing and versioning: ENOVIA, OwnCloud, GitLab, etc.

Dissemination management

- Social media engagement, analysis and dissemination tracker tools: Aspect.com, Netvibes.com
- CMS website (Drupal, WordPress, Wiki, etc.), logos, posters, mailing lists, brochures, conference papers, questionnaires, fairs, press releases, videos

R&D management

- Open source mobile applications
- M2M/IoT Sensor networks for real-time monitoring (transport traffic, infrastructure, seismic activity, radioactivity, tsunamis, marine/maritime activities, floods, air quality, etc.)
- E2E security (Blockchain, cybersecurity)
- 4G/5G LTE/WiMax & Satellite offloading
- Big data (Earth observation, WSN, social media)
- Cloud computing

Short Biography

- George Suciu Jr. :
 - graduated from the Faculty of Electronics, Telecommunications and Information Technology (ETTI) at the University “Politehnica” of Bucharest (UPB), Romania (www.upb.ro)
 - MBA in Informatics Project Management and IPR from the Faculty of Cybernetics, Statistics and Economic Informatics of the Academy of Economic Studies Bucharest (www.ase.ro)
 - Ph.D. / Researcher at Aalborg University, Denmark
 - R&D & Innovation Manager and Co-owner of BEIA Consult International (Romania), a research performing SME (www.beiaro.eu)
- George Suciu Sr.:
 - graduated from ETTI at UPB
 - MBA from TEMIC Institute of Canada
 - Researcher CS III and Electronic Engineer
 - General Manager and founder of BEIA Consult
- Specializations in project management, electronics and telecommunication, telemetry, ERP, cloud computing, M2M/IoT, Big Data acquisition, signal processing and blockchain.
- Experience in coordinating, participating and evaluating R&D projects (FP7, H2020, Eureka, COST, AAL, LIFE+, Interreg, etc.)
- More than 35 years activity in ICT.
- Founders of several start-ups



Partnerships

- Partners in Romanian R&D:
 - Research and Academia
 - University "POLITEHNICA" of Bucharest (www.upb.ro)
 - Constanta Maritime University (www.cmu-edu.eu)
 - Ovidius University of Constanta (www.univ-ovidius.ro)
 - Research Institute for Artificial Intelligence at the Romanian Academy (www.racai.ro)
 - Romanian Space Agency (www.rosa.ro)
 - National Institute for Research and Development in Electrical Engineering (www.icpe-ca.ro)
 - National Institute of Aerospace Research "ELIE CARAFOLI" (www.incas.ro)
 - National Institute for Research and Development in Informatics (www.ici.ro)
 - Institute for Research and Development in Automation (www.ipa.ro)
 - The Romanian Academy – "Stefan S. Nicolau" Institute of Virology (www.virology.ro)
 - University of Medicine and Pharmacy "Carol Davila" Bucharest (www.umfcd.ro)
 - University of Agronomic Sciences and Veterinary Medicine of Bucharest (www.usamv.ro)
 - Research and Development Institute for Industrializing and Marketing Horticulture Products "HORTING" (www.horting.ro)
 - National Institute for Research and Development in Microbiology and Immunology for the Military (www.cantacuzino.ro)
 - critical infrastructure operators "**CI**"
 - telecom, finance, food, energy (DSO, SG/RES/ESS, EV/PV, nuclear), water (ports, shipping), transport (metro/railway), chemical industry, RI, etc.
 - first responder organizations "**FRO**"
 - firefighters, ambulance, red cross, volunteer organizations, SMURD, forensic investigators, crime scene investigators, CERT/CSIRT, etc.
 - law enforcement agencies "**LEA**"
 - police, border guard, customs, environmental guard, coast guard, ports administration, STS, SPP, SRI, other authorities from the Ministry of Interior, Ministry of Defense, etc.
- Founding Member in the Directory Council of the German-Romanian Chamber of Industry and Commerce (AHK-Deutsch-Rumaenische Industrie- und Handelskammer) and member of other Chambers of Commerce
- Leader of NEM Romanian Mirror Group (www.nem-pt.ro) and ARTEMIS
- Member of Romanian Association for Electronic and Software Industry (ARIES), Electronic Innovation Cluster (ELINCLUS), MHTC, DRIFMAT, ICONIC, IND-AGRO-POL, ROHEALTH, H2ROMANIA, PROECO – CBRNE, EARSC, ITEA, Celtic, 5G-PPP, PATROMIL, PRO-NZEB, AIOTI, BDVA, 6G-IA, etc.

HORIZON-JU-SNS-2024

- **STREAM-B-01-01 System Architecture - Standardisation and Follow-up/PoCs**
 - Integration of multiple system segments and innovative business models
 - Innovative solutions for native and trustworthy AI for telecommunication and digital twinning frameworks
 - Algorithms, software and hardware implementations for heterogeneous time-critical edge/IoT 6G trials/PoC
 - Contributions to SDOs and international d&c
- **STREAM-B-01-02 Wireless Communication Technologies and Signal Processing – Standardisation and Follow-up/PoCs**
 - Energy efficient radio solutions by meeting 6G technical KPIs for UAV/USV/UUV use cases
 - Development of algorithms and energy efficient implementations for massive MIMO in harsh environment and very high accuracy in location and positioning trials/PoC
 - Contributions to SDOs and international d&c
- **STREAM-B-01-03 Communication Infrastructure Technologies and Devices – Standardisation and Follow-up/PoCs**
 - Advanced solutions and technologies for optical, terrestrial and NTN technologies (VLC, Li-Fi, FSO)
 - Development of low-power communication systems for multiparty edge/IoT systems
 - Contributions to SDOs and international d&c
- **STREAM-B-01-04 Reliable Services and Smart Security–Standardisation and Follow-up/PoCs**
 - security technologies for time-sensitive/time-critical and computation intensive IoT trials/PoC
 - Cyber-physical security for network time reference using blockchain
 - Contributions to SDOs and international d&c
- **STREAM-B-01-05 International Collaboration – EU-JP**
 - Previous R&D projects with Japan
- **STREAM-B-01-06 International Collaboration – EU-ROK**
 - Previous R&D projects with Korea
- **STREAM-B-01-07 Sustainability Lighthouse**
 - Carbon footprint analysis and evaluation of GHGs reductions
- **STREAM-B-01-08 Reliable AI for 6G Communications Systems and Services**
 - Production of data sets and validation methodologies
 - Development of solutions that will address the need for robust and trustworthy AI/ML
- **STREAM-CSA-01 SNS Operations and Output optimisation**
 - Experience in sustainability, policies, education, IP, contributions to SDOs and international d&c
- **STREAM-C-01-01 SNS Microelectronics Lighthouse**
 - Support integration of key 6G related Chips JU developments
- **STREAM-D-01-01 SNS Large Scale Trials and Pilots (LST&Ps) with Verticals**
 - Viable business models for innovative digital use cases on connected and automated mobility (CAM), Health, Smart Cities, Industry

Security & 5G/6G Related R&D PROJECTS

- **CHRISS:** Critical infrastructure High accuracy and Robustness increase Integrated Synchronization Solutions (HORIZON CL4 EUSPA-2021-SPACE-02-52)
- **MOBILISE:** A novel and green mobile One Health laboratory for (re-) emerging infectious disease outbreaks (HORIZON EUROPE CL3)
- **FLEXI-CROSS:** Flexible and Improved Border-Crossing Experience for Passengers and Authorities (HORIZON EUROPE CL3)
- **RITHMS:** Research, Intelligence and Technology for Heritage and Market Security (HORIZON EUROPE CL3)
- **SOLID-B5G:** A Massive MIMO Enabled IoT Platform with Networking Slicing for Beyond 5G IoV/V2X and Maritime Services (EEA)
- **VITAL-5G:** Vertical Innovations in Transport And Logistics over 5G experimentation facilities (H2020 ICT-41)
- **SARWS/5G-SAFE-PLUS:** 5G Enabled Road Safety Services (Celtic)
- **FLEXNET/IMMINENCE:** Intelligent Management of next generation Mobile Networks and services (Celtic labelled)
- **NGI-UAV-AGRO:** Next Generation Internet based on 5G and UAV for precision agriculture (PED), 2020-2022;
- **FOR-FREIGHT:** Flexible, multi-modal and Robust FREIGHT Transport (HORIZON EUROPE CL5)
- **CyberSec2SME/SecureIT - CONTINUOUS CYBER SECURITY AUDIT** (H2020 open call)
- **CISSAN:** Collective intelligence supported by security aware nodes (Celtic)
- **COMET:** Communications Enabled, AI/ML based Digital Twins for Smart city Logistics and Last Mile applications (Celtic)
- **i2D-MSW:** intelligence to Drive | Move-Save-Win (Celtic)
- **AICom4Health:** AI-Powered Communication for Health Crisis Management (Celtic)
- **F4iTECH:** Federated AI Platform for Industrial Technologies (Celtic)
- **USWA:** Ultra Scalable Wireless Access (Celtic)
- **smarTravel:** Smart Travel Digital Ecosystem (Celtic)
- **DISTINGO:** RECONFIGURABLE SMART LOCKERS - DISTributeurs INTelliGents recOnfigurables (Celtic)

CHRISS



Critical infrastructure High accuracy and Robustness increase Integrated Synchronization Solutions

- Critical infrastructure, such as telecommunications networks, requires GNSS based time reference to enable their proper functioning over a large area.
 - Especially emerging telecommunications applications such as 5G/6G or Time Division Duplex require a highly accurate and secure timing distribution.
 - Failure of the time distribution service can lead to failure of critical infrastructure, resulting in blackouts or failure of the telecommunications network with damages exceeding the billion € for whole economies as well as severe safety and security risks for the general public.
 - From the very nature of the GNSS systems, they are vulnerable to external, independent, and arbitrary radio interferences, jamming and spoofing, so time synchronization may be interrupted or falsified, causing the real danger of time reference outage or alteration of the telecom network time reference.
 - Therefore, finding approaches for detecting and mitigating radio interferences, jamming, and spoofing attacks is a critical issue for the security of telecom networks.
- Moreover, critical infrastructure requires safety layers, ensuring protection and integrity in the communication between nodes and terminals in the network (e.g., time synchronisation at the base stations of the telecommunications networks).
 - The emerging technology of blockchain-based verification, identification and coding has been proven multiple times to be the future of information exchange applications.
- CHRISS will demonstrate first on the market, an integrated into one device, Galileo based timing distribution and synchronization solution enabling increased resilience to GNSS signals interference, jamming, spoofing and cyber-attack on fiber-optics distribution layer resulting in increased time distribution service availability, accuracy and reliability.



MOBILISE

A novel and green mobile One Health laboratory for (re-)emerging infectious disease outbreaks

- Mobile laboratories are becoming increasingly important in responses to remote outbreaks.
 - Due to climate change, rising temperatures and spreading arthropod vectors (mosquitoes, ticks), emerging arboviruses (Crimean-Congo haemorrhagic fever virus, West Nile Virus, Rift Valley fever, Dengue Fever,..) are finding their way into Europe and are becoming a major public health concern.
- Treating only humans whilst neglecting vectors complicates control efforts. Acknowledging the interdependence of environment, human and animal health, a One Health approach is crucial to manage zoonotic outbreaks.
 - To benchmark European mobile laboratory capacity we conducted an inventory: of 193 laboratories, 66% were civilian, 88% exclusively for human diagnostics, only 3% had BSL-4 level for (haemorrhagic) arbovirus handling, with 11% having an accredited quality management system.

FLEXI-CROSS



Flexible & Improved Border-Crossing Experience for Passengers & Authorities

- The FLEXI-cross project aims to increased security and reliability of EU border checks for people and goods, while enhancing and improving the border management capabilities
 - development, deployment and validation of a toolkit of innovative border-checking solutions, in real operational environments, addressing road, rail and port borders.
- The resulting flexibility and dynamicity of border check planning will offer novel capabilities such as dynamic deployment of check-points and support via mobile applications for border personnel
 - guaranteeing high level of security, privacy of personal data and protection of people's fundamental rights.

R&D Reference Projects

VITAL-5G - Vertical Innovations in Transport And Logistics over 5G experimentation facilities

The strategic objective of VITAL-5G is to create an open, virtualized and flexible experimentation facility comprised of an intelligent virtual platform, three distributed European 5G-testbeds and associated vertical infrastructure, to enable the testing and validation of Transport & Logistics (T&L) Network Applications (NetApps) in real-life conditions, utilizing 5G connectivity.

VITAL-5G's vision for NetApps will allow for the development of a strong sectoral T&L ecosystem of vertical stakeholders (internal and external), which will be facilitated via the collaborative open tools and open repository delivered by the project.



R&D Reference Projects

SOLID-B5G



A Massive MIMO Enabled IoT Platform with Networking Slicing for Beyond 5G IoV/V2X and Maritime Services

The main goal of the SOLID-B5G project is to perform cutting-edge research and develop breakthrough beyond state-of-the-art solutions in orchestration, management and control (OMC) of resources, in the context of network slicing and edge computing based on massive internet of things (IoT) enabled radio access network (RAN) and core network (CN) for beyond fifth generation (B5G) Internet of vehicles (IoV) and maritime applications.

More specifically, the project has the following four sub-objectives:

- To develop ultra-low latency massive multiple-input and multiple-output (MIMO) based concurrent transmission mechanisms for data collection in massive IoT;
- To develop advanced 5G slicing solutions with a focus on OMC of resources and dedicated services for IoV and maritime services;
- To develop decentralized decision-making mechanisms by introducing data processing capacity and intelligence to the edge (based on edge computing and machine learning (ML)-to-the-edge);
- To develop 5G network slicing methods, algorithms and protocols and implement a proof-of-concept standalone B5G testbed which showcases the orchestration of RAN and CN based on 5G network slicing and multi-access edge computing (MEC) procedures. Two use cases, i.e., IoV/vehicle-to everything (V2X) and satellite based maritime low-latency services will be the target. Extensive experiments will be performed based on the prototype.

R&D Reference Projects

SARWS / 5G-SAFE+ - Real-time location-aware road weather services composed of multi-modal data

SARWS will expand the local data collection mechanisms from traditional road weather data sources to completely new ones. Instead of plain road weather stations and areal meteorological data, SARWS will exploit

- the roadside units (RSUs)
- combined roadside units
- road weather stations



SARWS

Real-time location-aware road weather services composed of multi-modal data



(RSU/RWS), vehicles data, road weather sensors and ultimately the mobile device data from each handheld device which participates to the traffic and is able to communicate.

NGI-UAV-AGRO



The main purpose of the project is to develop and implement a monitoring and prevention platform for precision agriculture Smart City and Smart Neighbourhood use-cases, platform designed using

- current **5G** specifications
- **UAVs** (Unmanned Aerial Vehicle)

The role of the platform resides in

- soil, air and crop monitoring
- communities that want to implement **urban farming** and/or precision agriculture in or close to residential areas,
- both safer food production and air quality improvement.





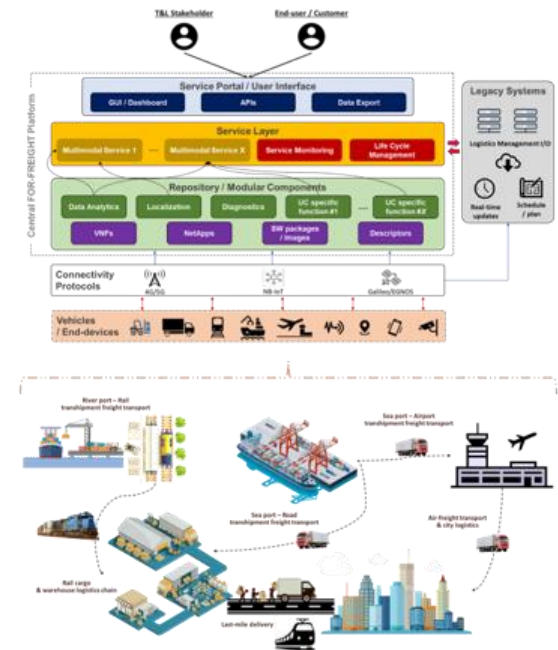
Flexible, multi-mOdal and Robust FREIGHT Transport

The FOR-FREIGHT project aims to:

- maximise the utilisation of multimodal freight transport capacity,
- achieve competitive sustainability with higher levels of efficiency and
- reduce the average cost of freight transport through the development of novel solutions and their integration with legacy logistics systems.

This will enable:

- more effective and sustainable management of goods and freight flows in airports, ports, inland terminals and various logistics nodes,
- taking into account the requirements of all involved stakeholders, and accounting for economic, environmental and social aspects.



Security & Blockchain Related R&D PROJECTS

➤ Energy

- **SealedGRID**: Scalable, trustEd, and interoperAble pLatform for sEcureD smart GRID
- **BENTRADE**: Blockchain Based Energy Distribution & Trade Platform
- **I-DELTA**: Interoperable Distributed Ledger Technology
- **MULTISCALE**: Research on the development of advanced materials and multiscale optimization by integrating nano-structured materials into advanced energy systems

➤ Smart Cities

- **SAFECARE**: SAFEGuard of Critical heAlth infrastructure
- **S4AllCities**: Smart Spaces Safety and Security for All Cities
- **STAMINA**: Demonstration of intelligent decision support for pandemic crisis prediction and management within and across European borders
- **DEFRAUDify**: Detect Fraudulent Activities in dark web and clear web to protect your business
- **SCRATCH**: SeCuRe and Agile Connected Things
- **ENTA**: Encrypted Network Traffic Analysis for Cyber Security
- **PARFAIT**: Personal dAta pRotection FRAmework for IoT

➤ Industry

- **ADMA Trans4MERS**: Advanced Manufacturing assistance and training for SME Transformation (H2020 INNOSUP CSA)
- **Arrowhead Tools**: Arrowhead Tools for Engineering of Digitalisation Solutions
- **EREMI**: Education for Resource Efficiency in Manufacturing Industries
- **UPSIM**: Unleash Potentials in Simulation
- **SWAM**: Smart WAtEr Management system for better environmental sustainability
- **PIMEO AI**: Pollution Identification, Mapping, and Ecosystem Observation with AI-powered water quality USV
- **MIHA**: An Affordable Humanoid Pla?orm for Research and Development (EIT Digital InnovationFactory)

➤ AGRI-FOOD

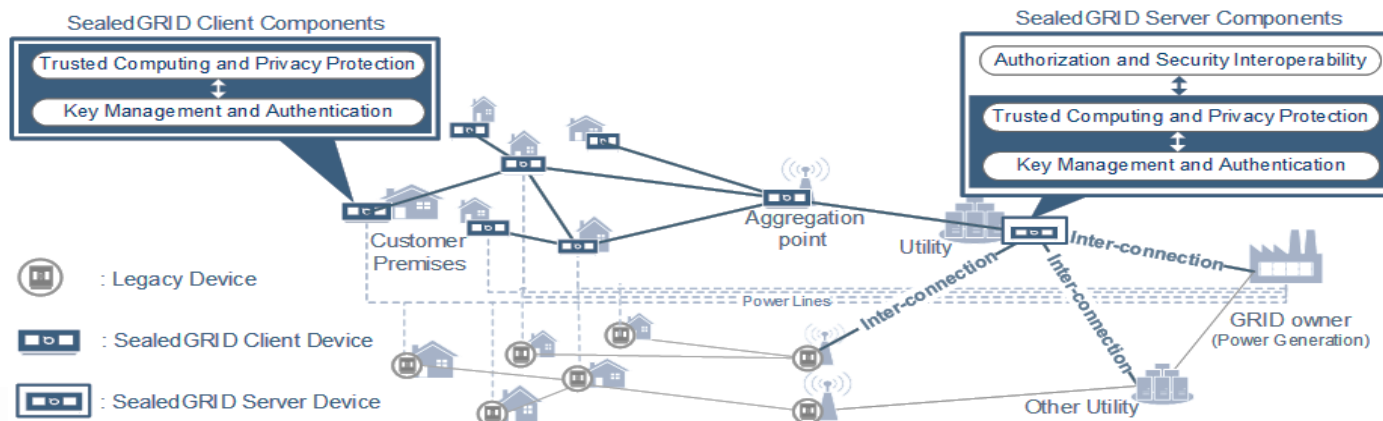
- **FarmSustainaBl**: Enabling Smart Livestock Farming Technologies for Environmental Sustainability using Blockchain
- **ADCATER / Food-Friend**: Advanced Digital Solutions for Professional Food and Nutrition Catering Service
- **DISAVIT**: Development of an Intelligent decision support System for smArt VITiculture
- **SMARTCHAIN**: Smart solutions for advancing supply systems in blue bioeconomy value chains (ERA-Net BlueBio)
- **SmartVIT/IoT-NGIN**: Smart Viticulture Management system for better environmental sustainability project (H2020 open call)

R&D Reference Projects

Sealed GRID

Scalable, trustEd, and interoperAbLe
pLatform for sEcureD smart GRID

- Aims at bringing together experts from industry and academia from cross-sectorial research areas having complementary background with the long-term goal to design, analyze, and implement a **scalable, highly trusted and interoperable Smart Grid security platform**
 - builds on a realistic architectural image of industrial installations considering the special characteristics of energy infrastructures, their cyber and physical requirements
- **Objectives**
 - efficient operation of critical infrastructure, while preserving quality of service, for the ultimate benefit of customers
 - providing an integrated solution that will be applicable to existing systems
 - providing advanced security features in legacy equipment upgrading their capabilities for operation in modern computing environments
 - limiting the security risks for the expansion of remote energy distribution network management, towards the evolution of Smart Grid



R&D Reference Projects

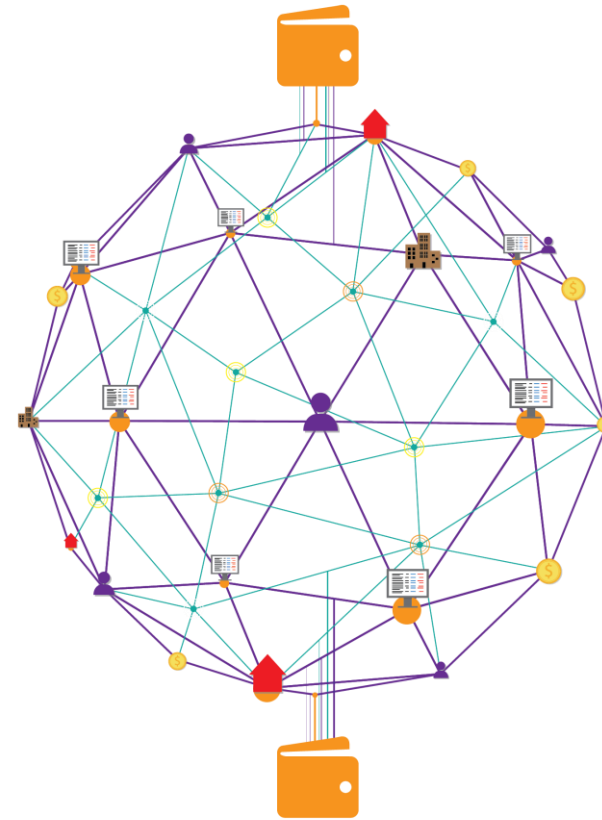
BENTRADE

Blockchain Based Energy Distribution & Trade Platform

As technological advancements come to life, new smart energy delivering services become available such as rooftop solar panels, wind turbines, and storage devices.

Triggered by new technologies, policy, regulation, and customer expectations are all contributing to a shifting paradigm such that traditional electricity utility businesses can no longer only rely on demand for the kWh commodity.

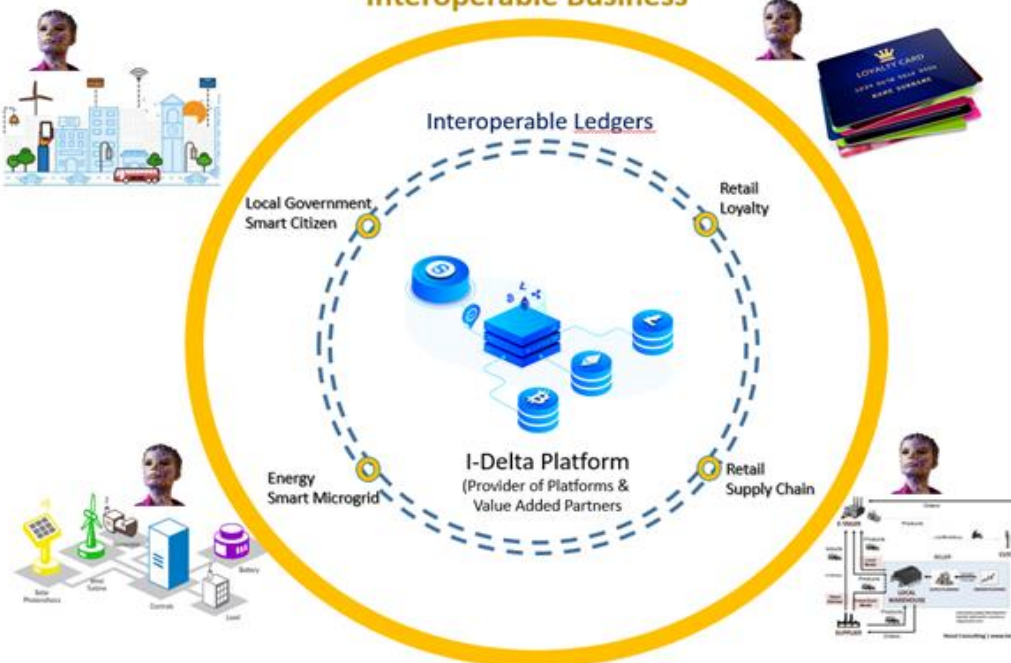
- Demand for electricity grows and become distributed, and centralized grid is too costly and sluggish for this need.
 - It is getting harder and more costly to predict and balance demand and supply
 - lacking visibility into millions of new consumer devices and distributed energy resources popping up at the grid edge.
- In near future utilities will have to serve many more customers, therefore, new expectations for local or green smart energy products, convenience or resiliency will arise.



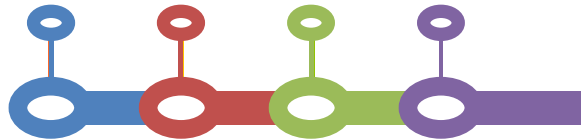
R&D Reference Projects

I-DELTA - Interoperable Distributed Ledger Technology

Interoperable Business



30 Partners 7 Countries ITEA 3 Call 5 Smart Communities



Project description

Distributed Ledger Technologies (DLT) will foster switching from the “Internet of information” era to the “Internet of Value” era, whereby decentralised and immutable contracts define business interactions and secure exchanges of information.

I-DELTA aims to create an interoperable DLT based platform enhanced by AI, integrating with existing IT systems such as ERP and IoT applications.

Existing security technologies are based on encryption and a third-party authority. This isn't suitable to an IoT environment, where the IoT devices are restricted. In **I-DELTA**, the performance of providing security in the distributed way will be evaluated.

R&D Reference Projects

SAFE CARE

Integrated cyber-physical security for health services

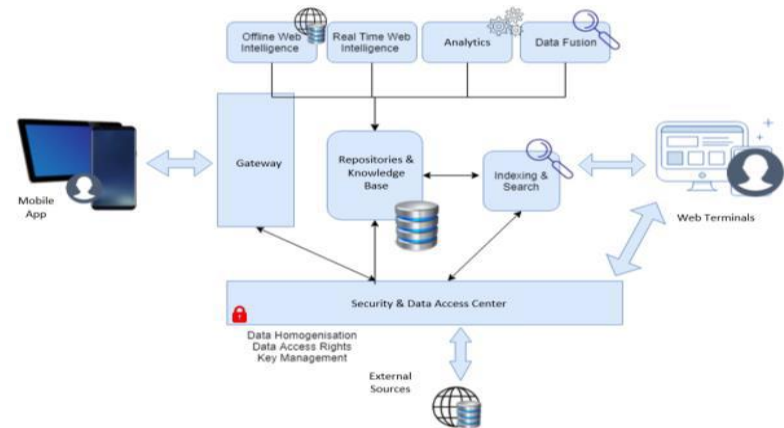


- Aims to provide solutions that will improve physical and cyber security in a seamless and cost-effective way
- Promotes new technologies and novel approaches to enhance threat prevention, threat detection, incident response and mitigation of impacts
- Sharing best practices between security and health actors, industrialists and university scientists.
- Analysis and learning by focusing on health services infrastructure
 - SafeCare works towards creating a protection system, which covers threat prevention, response and mitigation of impacts across infrastructures.
- Decision Support: Since threats cannot be analyzed solely as physical or cyber => develop an integrated approach to fight such combination of threats.
 - SafeCare will deliver high quality & innovative solutions in system security to support healthcare stakeholders take decisions.
- Collect information on the heterogeneous sources of new threats.
- Raising awareness => create a protection system which covers threat detection and mitigation of impacts across infrastructures and populations.
- Disseminate the results and best practices throughout the health user communities to enhance awareness on how to handle multi-faced threats.

R&D Reference Projects



S4AllCities - Smart Spaces Safety and Security for All Cities (H2020 INFRA02)



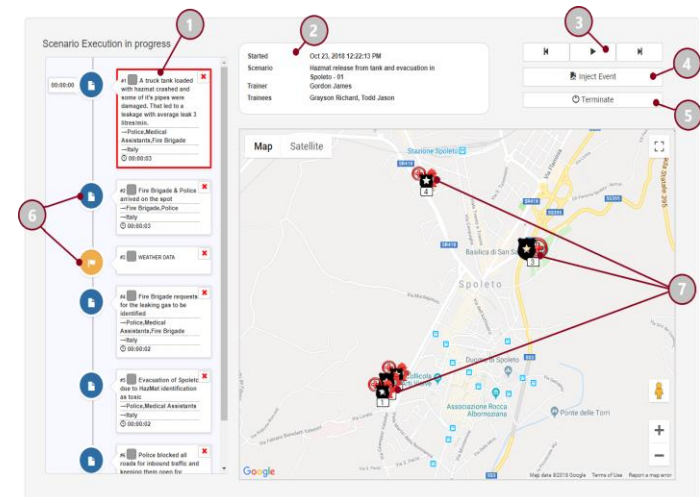
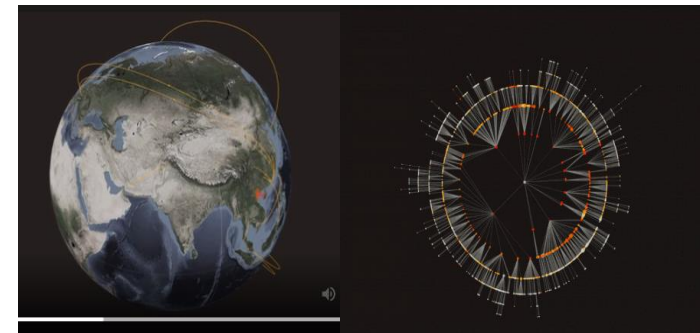
S4AllCities integrates advanced technological and organizational solutions in a market oriented unified Cyber – Physical Security Management framework, aiming at raising the resilience of cities' infrastructures, services, ICT systems, IoT and fostering intelligence and information sharing among city's security stakeholders

- Three pilot cases enable **S4ALLCITIES** System of Systems to deploy and validate its intelligent components and functionalities on actual environment, ensuring the delivery of solutions and services in line with smart cities emerging requirements, focused on
 - risk-based open smart spaces security management;
 - cyber security shielding; suspicious activity and behaviour tracking;
 - identification of unattended objects;
 - real-time estimation of cyber-physical risks in multiple locations and measures activation for effective crisis management
- **S4ALLCITIES** smart components, integrated within 3 Digital Twin Systems, will demonstrate their technological advances in tackling terrorist attacks with high risk for mass casualties, within the complex environment of open crowded spaces.

STAMINA: Demonstration of intelligent decision support for pandemic crisis prediction and management within and across European borders (H2020 DRS05)

STAMINA develops an intelligent decision support toolset for pandemic prediction and management and demonstrates its use by practitioners at national and regional levels within and across EU borders. The **STAMINA** toolset enables national planners and first responders to anticipate and respond to the the “known-unknowns” in their daily effort to enhance health security. Main functionality of the toolset includes:

- Real-time web and social media analytics aiming at public trust monitoring and flagging possible disease outbreaks
- POCT and smart wearable diagnostic devices for first line screening
- Predictive modeling of pandemic outbreak and its impact, along with decision-making support in implementing mitigation strategies,
- Early Warning System
- Crisis management tool defining the roles and actions of key actors during crisis management
- Scenario Generation tool for creation of training scenarios
- Common Operational Picture as the main interface of the solution enabling timely and coordinated response



R&D Reference Projects

DEFRAUDify Detect Fraudulent Activities in dark web and clear web to protect your business

DEFRAUDify will provide a set of interoperable technologies ranging from fraud detection and crawling, data semantics and analytics, and data presentation and contextualization to enable organizations to deploy Anti-Fraud Operation Centers for the prevention and timely neutralization of fraudulent criminal activities.

DEFRAUDify aims to develop tools that help private businesses to detect fraudulent behaviour on the internet. These tools are partly based on existing tools that have been developed for Law Enforcement, including dark web scrapers and crawlers, AI enhanced tools for automatic or semi-automatic analysis of the large amounts of textual content. They will be adapted to become relevant for private businesses as well.

20 Partn
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**Safety
and
Security**

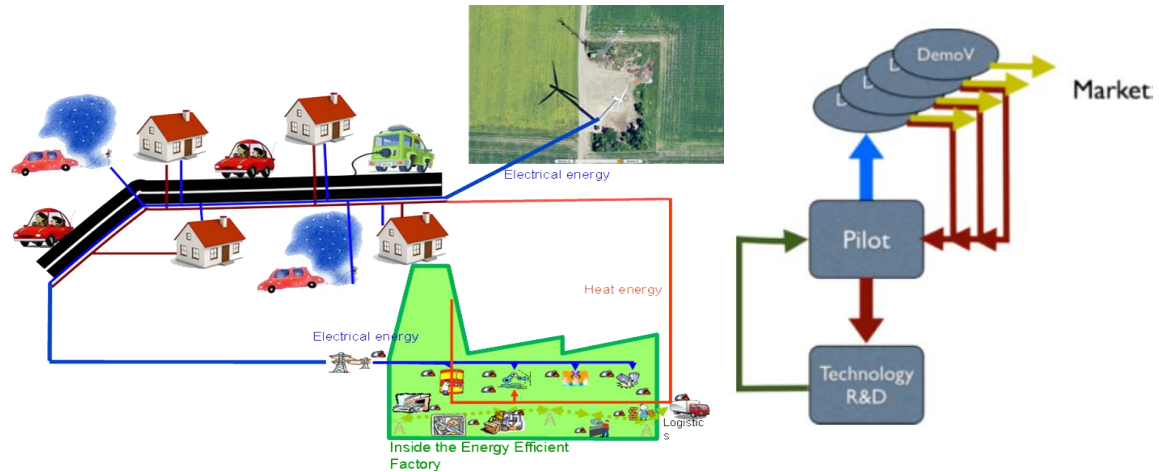


R&D Reference Projects



Arrowhead-Tools

The Arrowhead Tools project aims for digitalisation and automation solutions for the European industry, which will close the gaps that hinder the IT/OT integration by introducing new technologies in an open source platform for the design and run-time engineering of IoT and System of Systems.



UPSIM



Unleash Potentials in Simulation

Nowadays, simulation is used for design-space exploration, virtual testing, or predictive maintenance to support early-stage product decisions – and most importantly, real testing is used to assure product quality and certification.

UPSIM aims to enable companies to safely collaborate with simulations in a repeatable, reliable, and robust manner and implement simulation in a Credible Digital Twin setting as a strategic capability to become an essential factor in quality, cost, time-to-market, and overall competitiveness.

R&D Reference Projects

EREMI - Education for Resource Efficiency in Manufacturing Industries

The EREMI team aims to develop and validate together an advanced higher education program, incl. Life Long Learning, on the interdisciplinary topic of:

- resource efficiency in manufacturing industries
- overall system optimization of low or not digitalized physical infrastructure
- applying IoT technologies, towards sufficiently educated professionals on this economically, politically and technically crucial and highly relevant topic
- for the rapidly developing industries and economies of intensively economically and industrially transforming countries – Bulgaria, North Macedonia and Romania.



R&D Reference Projects



SWAM wants to support Sustainable Development Goals (SDGs) and the implementation of EU initiatives (IEP Water) by providing a robust, smart, effective and tailored water management system.

SWAM addresses the need to develop the market of digital services for water management stakeholders with those expected impacts:

- improve the decision making and performance of water infrastructures,
- enhance interoperability and real-time data accuracy
- reduce costs for water utilities and monitoring.

SWAM will offer different tailored versions of its platform to suit better the needs of different target clients, e.g. water suppliers, utilities, water intensive agriculture. Other revenues may come from derived concepts: software use licenses, probes sales or rental, or services provision.

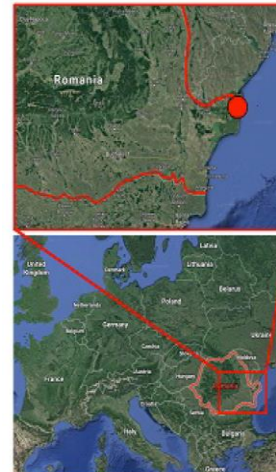
SWAM will offer an innovative end-to-end solution from *Smart Probe* to *Smart Visualization* and by considering ground-breaking aspects:

- multi-protocol for IoT connectivity,
- cybersecurity and traceability by design using *blockchain*
- a valuable tool for water management encompassing quality monitoring, safe and security aspects, decision support and cost-efficiency management

R&D Reference Projects

PIMEO AI - Pollution Identification, Mapping, and Ecosystem Observation with AI-powered water quality USV

- development and operational use in multiple representative environments of an artificial intelligence (AI) powered unmanned surface vehicle (USV) that is capable to perform complete suites of water quality measurements in all types of sensitive aquatic ecosystems.
- PIMEO AI USV will be a next-generation advanced analysis tool for studying sensitive ecosystems, identifying pollution sources, and mapping their environmental impact.
- fill an important market need for comprehensive water quality USVs, the market today being highly limited and aimed primarily at hydrology research.



The Danube delta at Sulina, Romania. The Danube delta nature preserve is a UNESCO World Heritage site, shelter to thousands of species of birds and fish.

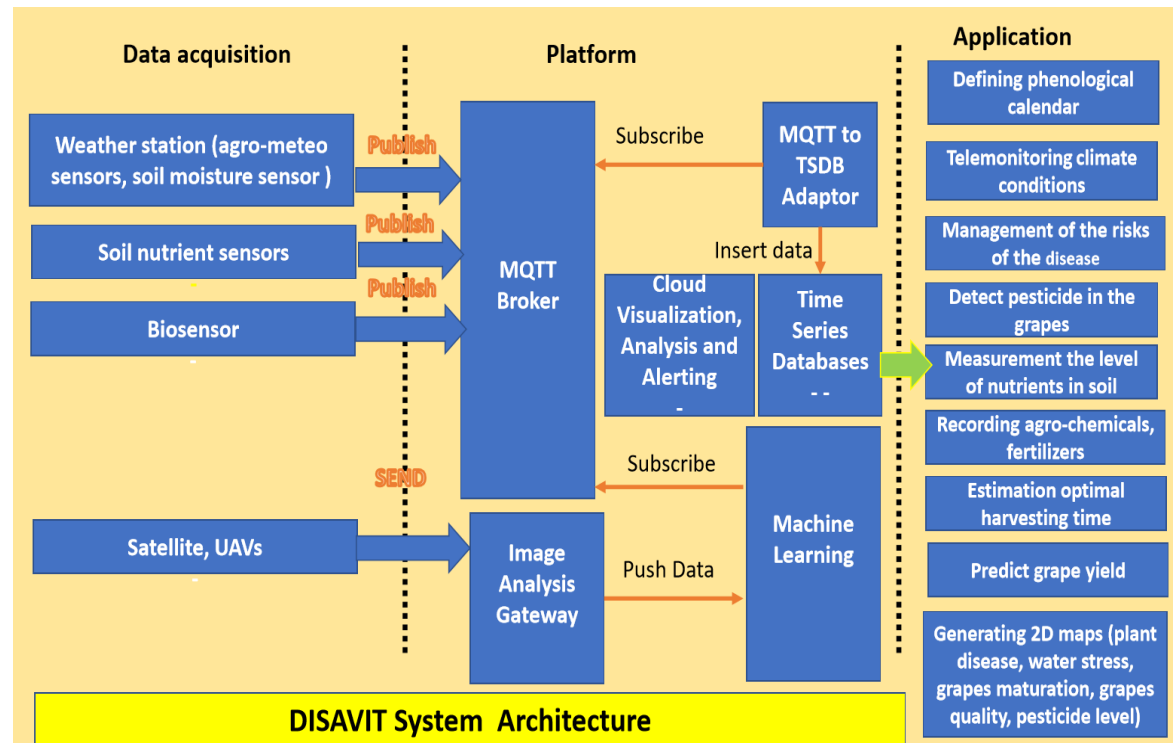


R&D Reference Projects



DISAVIT - Development of an Intelligent decision support System for smArt VITiculture (Eureka E*) - proposes a novel product for better environmental sustainability addressing a new market featured by emerging technologies.

DISAVIT will deliver a **LOW COST, EASY TO USE, FAST REACTIVE** innovative IoT end-to-end solution for Smart Viticulture covering all phenological stages and most relevant strategical and operational applications for vineyards: plant health, pesticide detection, resources efficiency, grape quality and maturation and global production.



R&D Reference Projects



FarmSustainaBI - Enabling Smart Livestock Farming Technologies for Environmental Sustainability using Blockchain

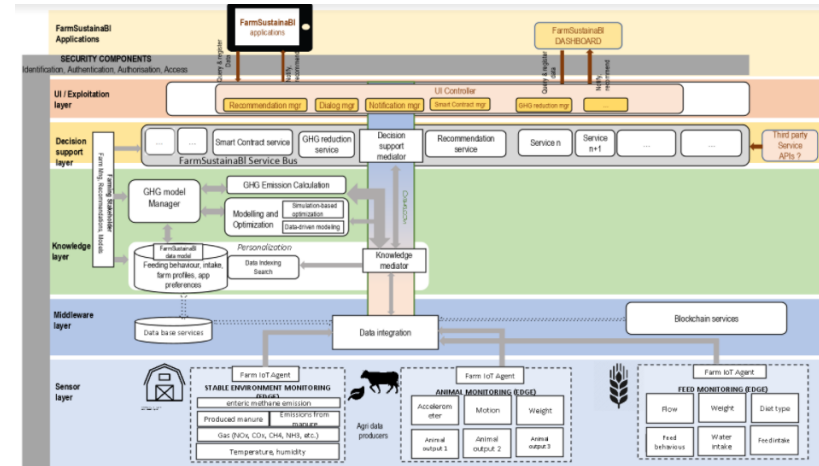
The main objective of the project is to apply a holistic approach for decreasing the GHG emissions derived from intensive livestock farming by optimizing the livestock production.

For doing this, the consortium will monitor

- the animal feed,
- the animal behaviour and characteristics,
- the stable environment.

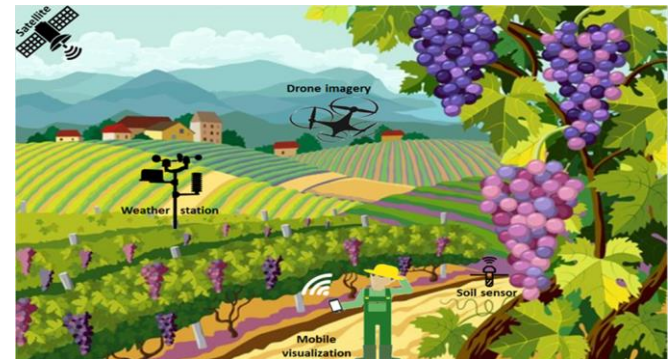
Specifically, IoT devices are installed in the farm for monitoring key parameters:

- I) the stable environment (temperature, humidity, gas sensors (NO_x, CO_x, CH₄, NH₃, etc.),
- II) the animal (accelerometer, motion sensor, weight sensor, etc.),
- III) the feed (flow sensor, weight sensor, humidity sensor etc.).



SmartViT (IoT-NGIN)

Smart Viticulture Management system for better environmental sustainability project



The aims of the project are:

- Deployment of advanced analytical engine – AI techniques and Blockchain technologies for data processing, modeling and security
- Usage of drone devices – continuous measurement on the fields about the condition of the vines and the grapes
- Development of appropriate web and mobile interfaces – viewing information from sensors and making recommendations to growers
- The implementation of an intelligent system for vineyard – integrate the necessary sensors for precision viticulture

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