

European SME Expertise in 5G and Beyond



December 2022



USEFUL LINKS

Find the SME you need

www.networldeurope.eu/find-the-sme-you-need-new-page

NetworldEurope SME WG

www.networldeurope.eu/sme-wg/

NetworldEurope European Technology Platform

www.networldeurope.eu

5G Public-Private Partnership

www.5g-ppp.eu



JACQUES MAGEN
 AUSTRALO
 Chair of the NetworldEurope
 SME Working Group

I am extremely happy to present the 7th edition of the “SME brochure”. This is the first edition that lies in the context of the new Smart Networks and Services (SNS) Partnership Joint Undertaking, while the former 5G Public-Private Partnership (5G PPP) is progressively being completed. This marks a new stage for SMEs and more generally for the related ecosystem, which now encompasses not only telecommunications stakeholders, but also organisations working in vertical sectors (automotive, energy, health, etc.) and in complementary domains (IoT, AI, HPC, etc.). This means that SMEs from those vertical sectors and complementary domains are increasingly joining NetworldEurope and the SME Working Group (SME WG).

This is reflected in the number of members in the SME Working Group, that has been regularly increasing, providing also additional members to NetworldEurope. By October 2022, there are 235 members in the Group, including 208 SMEs. This represents an increase of 20% since the previous edition of this brochure, issued in June 2021.

Thanks to the effort of the SME WG, SNS includes a Key Performance Indicator (KPI) that mentions that a minimum of 20% participation from SMEs is expected in the initiative. This is similar to the objective that was set, and reached, in the 5G PPP. By the time of drafting this editorial, the first SNS call for proposals has been completed. Official results are not known yet, but it seems that this objective has not been reached.

The SME WG continues to work closely with the NetworldEurope Steering Board, as well as with the 6G Infrastructure Association (6G-IA). There are at this time 63 SMEs who have become members of 6G-IA, compared to a dozen the previous year. This represents a very significant increase, that demonstrates the strong interest of SMEs to participate in SNS projects. I can only hope that the subsequent SNS calls, as well as the open calls planned in several SNS projects, will see an increase in the participation of SMEs, to reach, and exceed, the KPI that was set.

This edition includes many revisions and updates. More than a dozen new SMEs are included, and 16 new success stories were submitted by SMEs. Such updates also appear on the “Find the SME you need”¹ web page, that displays in a synthetic manner both the expertise and skills of SMEs in 5G and beyond related technology, and their involvement in vertical sectors and in complementary domains.

¹ <https://www.networldeurope.eu/find-the-sme-you-need-new-page>



NICOLA CIULLI
 Nextworks
 Vice-chair of the SME
 Working Group

For one more year, I am happily supporting our SME WG Chair, Jacques Magen, in introducing this new edition of the “SME brochure”. The Smart Network and Services Joint Undertaking and the NetworldEurope ETP are now up and running, and the 5G Public-Private Partnership (5G PPP) is still having several projects to be completed. The latter has already demonstrated a big success for SMEs, with a share of participation exceeding the target value of 20%. The SNS JU has already selected the funded projects in its first call, and the participation of SMEs is at a promising level, not too far below the target value for the JU, with many years of SNS JU chances ahead of us. In this picture, SMEs are still strongly supporting the 6G community (large enterprises, academia and research institutions) in the definition of R&D work programmes and proposals.

Of course, we cannot hide that the sky is cloudy over the horizon, with several challenges for Europe and the whole world. While supply shortages/delays and the inflation have been with us already since last year, they are getting worse and worse, and the war and the potential recession are adding huge hurdles along the path. This probably requires an even stronger commitment by SMEs towards research and innovation, to try and be among the fittest and most resilient companies; those that can make it through these stormy waters. And it requires that this is done together, with a strong European collaboration.

The SME Working Group (WG) is currently gathering 235 members including almost 210 SMEs. About 350 SMEs are members of NetworldEurope, the European Technology Platform for telecommunications and related services and applications. Jacques Magen from AUSTRALO, and Nicola Ciulli from Nextworks, are respectively Chair and Vice-Chair of the SME WG. The current SME representatives in the 6G-IA Governing Board are Nicola Ciulli and David Kennedy (Eurescom). The SME WG is supported by the 6GStart Coordination and Support Action. If you wish to join the SME Working Group, please send a request to sme-wg-contact@networldeurope.eu.



RUI L. AGUIAR
NetworkEurope Steering
Board Chair

Network Europe, the (rebranded) European Technology Platform that collects the efforts of all entities interested in telecommunications and associated technologies, counts with more than three hundred very dynamic SMEs inside its constituency. SMEs have been an essential part on, and a key contributor to, the work we performed, and are increasingly important for the development of a competitive and innovative European ecosystem. The SME working group has been key in intertwining the realities of innovation in European context and the constraints of SMEs, actively working to facilitate this two-way street - a work clearly recognized inside all the stakeholders in the European Community. The group basic mandate of improving the interest of SMEs for European research, and promoting the advantages of collaborating with SMEs inside the research and innovation communities, remains essential as the new workprogramme will see its projects start, specially given the large amount of cascade funding that will be available in different projects. With the new Smart Networks and Services, novel opportunities will exist for SMEs, often in relations with other vertical markets.

Last year, by this same time, the world was living a phase change, with the reality of a pandemia hitting Europe. This year, almost unbelievably, the situation is even more dire, with a reorganization of our productive systems, and new supply chains being designed, putting large pressures in novel sustainable solutions. SMEs have the required flexibility to thrive in this environment, bringing (even localized) solutions to the problems being felt on their ecosystem. The flexibility and drive for innovation characteristic of so many European SMEs are essential for the development of these new solutions, swiftly coalescing technology with present opportunities in our challenging and moving environment. Now, as increasingly in a technological society, SMEs are a cornerstone for our development as a thriving and vibrant society.

In NetworkEurope we remain committed in fostering increased collaboration of SMEs inside European-funded research. Our activities will continue to be driven in order to facilitate an European positioning for our SMEs, leading to an increased reach of their innovative solutions and higher market impact.

Best of luck to all SMEs, keep in touch and contribute to the group! Your voice will be heard, and your impact in Europe will be felt!



COLIN WILLCOCK
Chairman of
the Board, 6G IA

On behalf of the 6G Smart Networks and Services Industry Association (6G-IA), I welcome the opportunity to write an introduction for this new version of the SME brochure. In our industry, SMEs play a key role as they offer the promise to contribute to future growth and opportunities. SMEs have the ability to bring new ideas to the market and the flexibility to experiment and eventually create valuable products.

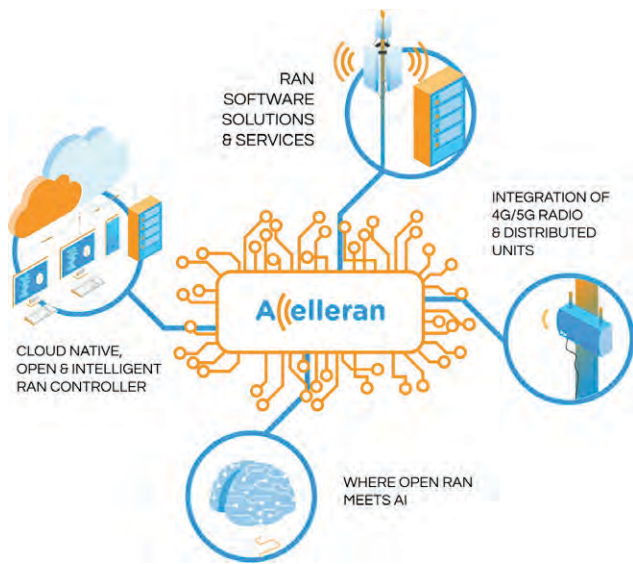
The 6G-IA is committed to the advancement of 5G and 6G in Europe. The 6G-IA represents the “private” side in the 5G Public Private Partnership (5G PPP) and the 6G Smart Networks and Services Joint Undertaking (SNS-JU). Both partnerships are joint initiative between the European Commission and the European ICT industry to create long-term research programs to bring technological leadership to Europe. In the context of these partnerships, the 6G-IA has been active to ensure a high SME participation. This is because, SMEs are recognized as the catalyst for innovation. Their ability for “out of the box” thinking and their agility to rapidly develop and test ideas in multiple sectors, have been important assets in the industrial digitization of the so-called vertical industries. Joining forces between SMEs and the key ICT companies has been one of the key factors driving the overall success of the 5G PPP programme.

Moving forward, the new SNS-JU partnership will ensure European leadership in the creation of the next generation network technologies and services. The above-mentioned abilities that SMEs will bring in this new Partnership will be of central importance to create novel services and technological breakthroughs. These will be eventually transformed into valuable solutions for vertical industries thus, creating new jobs and improving the everyday life of European citizens.



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Acelleran



YEAR ESTABLISHED

2013



NUMBER OF EMPLOYEES

25



MORE INFORMATION

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CONTACT

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EXPERTISE IN 5G IOT NGI SATELLITE COMMUNICATIONS MEDIA & CONTENT TRANSPORT & LOGISTICS MFG. ENERGY SMART CITIES PUBLIC SAFETY

BACKGROUND, EXPERTISE & SKILLS

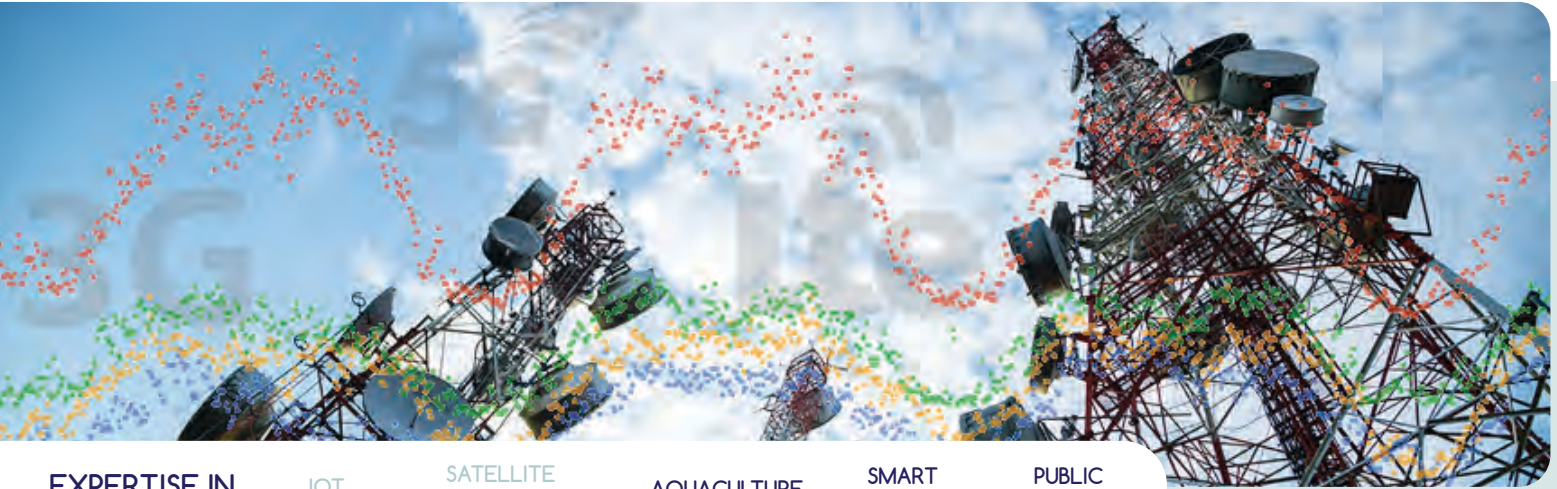
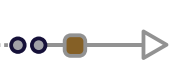
Accelleran provides Mobile RAN/vRAN software and 4G/5G Small Cell product solutions addressing the real-world challenges of increasing data volumes and 5G applications, calling for hyperdense networks. Accelleran's unique software architecture is genuinely independent from any hardware platform. Operators can leverage one software solution for integrated small cells and for disaggregated and virtualised RAN networks with slicing and edge capabilities. With a global Cellular Industry's leading design team, Accelleran is the technology choice for carrier grade, reliable, performant Small Cells and Radio Access Network software solutions for Fixed Wireless Access, Public Mobile, Private Network, Neutral Host or IoT/Vertical solution providers. Accelleran four core service activities are Consulting & Design, SW Engineering, Test & Integration and Research (7 H2020 5G related projects).

ACHIEVEMENTS & SUCCESS STORIES

Accelleran delivers across the globe carrier grade RAN/vRAN Software and Small Cell products in different architectures. From the versatile, robust, small, lightweight and outdoor integrated E1000 Series Small Cell in different band variants including CBRS, to the ORAN-aligned Cloud Native Virtualised dRAX Open Interface RAN Intelligence enabling AI/ML xApps in an open, scalable and interoperable RAN platform. Accelleran won the 2017 TechTour TOP EVC Final, the 2018 Small Cell Forum Award in the category Outstanding Innovation in Small Cell Technology/Architecture and the 2018 TEAC (TIP Ecosystem Acceleration Centre) UK Wave 2 program. Accelleran has successfully participated in Belgian 5GUARDS and UK 5GRuralFirst projects and currently participates in 5GCity, 5G-Enhance, UNICORE, 5G-CLARITY and 5G-COMPLETE European and joint EU/ Japan projects.

INTEREST FOR FUTURE R&D&I COOPERATION

Accelleran seeks European and International RIA, IA, FTI, MSCA... actions and in general any Research, Development and Innovation cooperation projects to underpin the future of mobile RAN/vRAN solutions enabling hyperconnected, ubiquitous, efficient and dense networks. 5G, IoT, Satellite Communications and Next Generation Internet are some of the areas we focus on to enable different vertical sectors such as Transport & Logistics, Manufacturing, Energy, Smart Cities and Public Safety with the networks of the future.



EXPERTISE IN

IOT

SATELLITE
COMMUNICATIONS

AQUACULTURE

SMART
CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

ACTA is an SME founded in October 2002 in Athens, Greece. Our expertise and experience is as provider and integrator of long-term performance analysis monitoring solutions as well as ad-hoc network measurements. Main focus is on Telecoms, IT, Electronics and EMF & EMC technologies, utilizing state-of-the-art instruments and solutions from leading manufacturers. ACTA is present in Southeast Europe. Typical customers are Telecom Operators, Integrators, Manufacturers, Utility companies, Universities, Research Laboratories, Enterprises. Solutions provided cover a wide range of technologies with focus on optical, mobile, radio and access networks. ACTA participates in Horizon2020 EU funded projects, 5G-TOURS, 5G-HEART and NESTOR holistic border surveillance Project, in partnership with SMEs, Universities and Telecom providers from France, Norway, Italy, UK, Netherlands, Germany and Greece.

ACHIEVEMENTS & SUCCESS STORIES

ACTA has provided to Telecom Operators in Greece transmission performance monitoring solutions, based on ACTA's KPI Management & Validation Platform and HW probes. Collected data help in Operations and Capacity Planning. Raw data, aggregated according to physical network medium, manufacturer, demographics. 5G network KPIs collected in 5G-HEART and 5G-TOURS projects. ACTA's EMF Observatory Application collects measurements from several types of ElectroMagnetic Field monitoring stations. It also manages the EMF monitoring network (alarms, configuration, integrity check). Solution currently deployed at the EMF Authority of Greece (<https://paratiritirioemf.eeae.gr>), the Romanian (ANCOM) and Paraguayan (CONATEL). EMF Observatory is further developed to support 5G frequencies. ACTA has deployed the TR-069 "0-touch provisioning" xDSL management platform, in three Greek Telecom Operators. Platforms are further developed.

INTEREST FOR FUTURE R&D&I COOPERATION

ACTA Ltd is interested in cooperating with other parties that focus on or need the use of high performing optical, mobile, radio and access networks. Special focus is on the technology areas of performance network monitoring, electromagnetic fields EMF monitoring & exposure and health, unified space and Earth communications, sensors, 5G - IoT, machine learning software and edge computing.



 YEAR ESTABLISHED
2012

 NUMBER OF EMPLOYEES
22

 MORE INFORMATION
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 CONTACT
info@app-art.gr



EXPERTISE IN 5G IOT MEDIA & CONTENT HEALTH ENERGY SMART CITIES

BACKGROUND, EXPERTISE & SKILLS

AppArt is a software development company, located in Athens, Greece, with activities focusing mainly in the design and development of Software Applications and Solutions targeted for Telecom Operators, Financial Organizations, Health and Energy Industry.

AppArt delivers both custom, as well as its own solutions. AppArt provides solutions in the areas of Big Data Analytics, implementing a plethora of Use Cases such as, Customer Experience Presentation, Network Performance Management, Digital Network Analytics, Customer Value Management, Enterprise Reporting etc. and in the areas of Mobile Applications creation and Web Development. AppArt provides its own platforms for Business Intelligence, Real Time Campaigns' Management and Next Generation Messaging business functions. AppArt team includes professionals with long market experience and technical expertise, providing the company with the advantage of being able to address business requirements in the most innovative ways.

ACHIEVEMENTS & SUCCESS STORIES

AppArt participates in two 5G-PPP projects, 5G-SOLUTIONS (<https://5gsolutionsproject.eu/>) and 5GMediaHUB (<https://www.5gmediahub.eu/>). Furthermore, in the context of its activities related to 5G, 6G & Smart Networks and Services technology, AppArt became a full member of the 6G Infrastructure Association (6G IA). Additionally, AppArt is a member of the consortium for FIDAL project, for which it will produce TaaS and will undertake the deployment of FIDAL solutions to all testbeds and large-scale infrastructures.

AppArt has also undertaken and implements the project 5G-DATA (<https://app-art.gr/5g-data/>), supported by Iceland, Liechtenstein and Norway grants through the EEA Financial Mechanism 2014-2021, in the frame of Programme «Business Innovation Greece».

Finally, AppArt is implementing the 5G-Traffic, a project co-financed by the European Regional Development Fund of EU and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH-CREATE - INNOVATE.

INTEREST FOR FUTURE R&D&I COOPERATION

AppArt has already experience in participating in H2020 actions, and is currently seeking for new, potential collaborations with other companies/enterprises and/or academic institutions within the frames of European projects, in order to expand further its activities in research and development within the 5G ecosystem.

AppArt is interested in activities related to requirements analysis, design of software solutions and solutions development, mainly in the Data Analytics area for data coming from various sources and to be utilized in different Use Cases of various industries. However AppArt is ready to welcome any other idea, or proposal within, but not limited only to, 5G area.



ARCTOS LABS



YEAR ESTABLISHED
2008



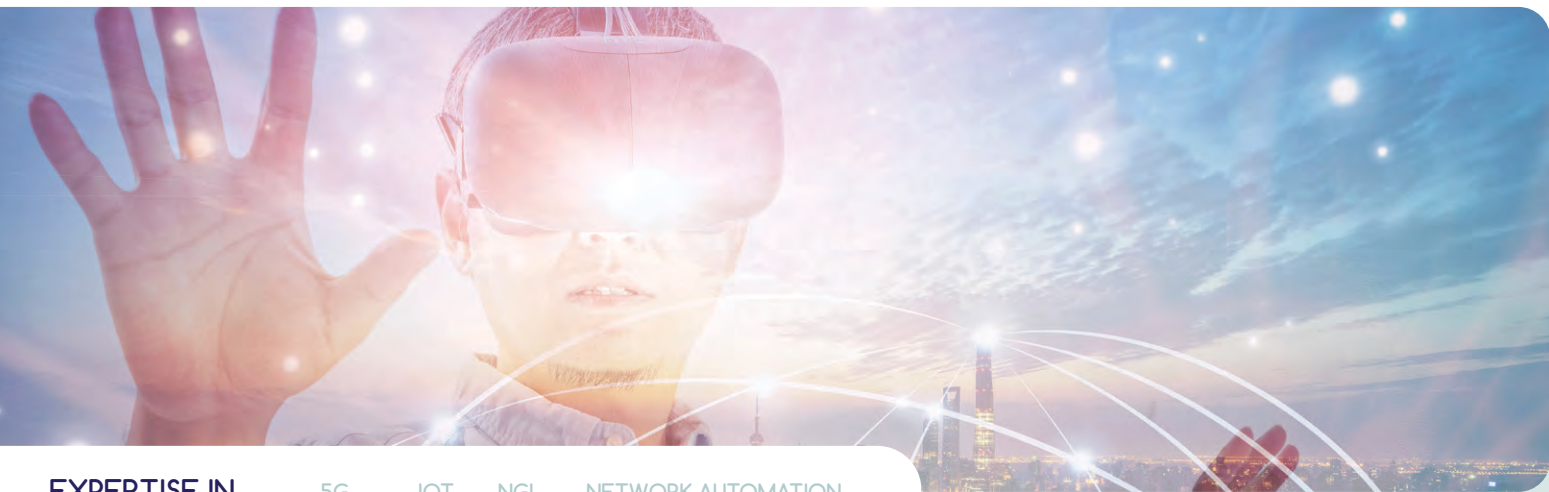
NUMBER OF EMPLOYEES
7



MORE INFORMATION
www.arctoslabs.com



CONTACT
mats.eriksson@arctoslabs.com



EXPERTISE IN

5G

IOT

NGI

NETWORK AUTOMATION

BACKGROUND, EXPERTISE & SKILLS

Arctos Labs is a company with strong R&D profile in 5G, edge and Cloud. We have been involved in several EU funded research projects as well as R&D for tier-1 suppliers. We are currently providing a unique workload placement optimization technology for distributed edge/fog scenarios.

ACHIEVEMENTS & SUCCESS STORIES

Our placement technology has been integrated into Open source MANO, the ETSI hosted MANO reference implementation.

INTEREST FOR FUTURE R&D&I COOPERATION

We are searching for projects that demonstrate the power of edge compute in new and emerging use cases as well as platform technologies that are built on an idea of high degree of automation.



YEAR ESTABLISHED

2008



NUMBER OF EMPLOYEES

36



MORE INFORMATION

www.ardictech.com



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EXPERTISE IN IOT

SERVICE
CLOUD

EDGE
COMPUTING

SMART
CITIES

HEALTH

TRANSPORT &
LOGISTICS

MANUFACTURING +

BACKGROUND, EXPERTISE & SKILLS

ARDIC, a software technology company that offers a wide range of solutions and services based on its proprietary end-to-end IoT Service Platform. It is a unique, distributed, scalable, and highly reliable IoT platform that comes with a rich feature set including on the fly customization of edge devices for deployment in diverse market segments. ARDIC enables the secure connection, configuration, data collection, computing, and control of Android devices from peripheral to the application level, through a built-in cloud agent.

ARDIC enables Android as industrial IoT Gateways, by customized Android OS on edge devices. Unique features of ARDIC's IoT Service Platform are multi-tenancy, secure network connectivity, usage statistics, mediation, and complex event processing as well as machine learning and artificial intelligence.

ACHIEVEMENTS & SUCCESS STORIES

ARDIC successfully completed 4 international projects, currently participating in 2 ongoing international projects.

Celtic+: Sigmona – SDN Concept in generalized mobile network architectures) (Comp.)

ITEA 2: Demwatch – Dementia Watch System with wearable devices (Comp.)

ITEA 3: Ewatch – Extensive Personal Monitoring & Watch Platform (Comp.)

ITEA 3: Prose – Proximity Services Framework (Ongoing)

Euripides: AR2SP4SPI – Automated responses to sensed pentane for smarter polyurethane industry (ongoing).

CelticNext: iCare4NextG – Integrated Care for Next Generation (ongoing.)

INTEREST FOR FUTURE R&D&I COOPERATION

ARDIC is willing to be a technology and platform provider partner for any partnership. A well-deserved reputation of devotion to responsibilities undertook ARDIC is ready to contribute with a solid and reliable platform providing machine learning and artificial intelligence features for big data.



YEAR ESTABLISHED

2014



NUMBER OF EMPLOYEES

4



MORE INFORMATION

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EXPERTISE IN

5G IOT

NGI

MEDIA &
CONTENT

SMART
CITIES

ENERGY

TRANSPORT &
LOGISTICS

MANUFACTURING



BACKGROUND, EXPERTISE & SKILLS

Arteevo Technologies specializes in developing secure decentralized solutions for ICT, telecom and cyber-physical applications. Key components in our solutions are distributed ledger technology (DLT), cryptographically ensured end-to-end security, confidentiality, decentralized identity management and artificial intelligence. We have developed advanced architectures for the incorporation of dedicated, ultrafast blockchain technology in SDN networks and 5G infrastructures, including the Mobile Edge.

Our other areas of expertise include industrial data and IoT platforms, digital privacy and automation of auditing of business process operations. We take a holistic approach to design of distributed systems that covers both technical and business aspects, including multi-party network governance, cross-provider accountability and end-to-end security.

ACHIEVEMENTS & SUCCESS STORIES

Arteevo has participated in one FP7 and three high profile H2020 IA and RIA projects in the areas of energy, online privacy and automation of industrial and communication business processes, two of these currently in progress, one of them a major PPP. The projects span the domains of energy, pharmaceutical industry, healthcare, social services and manufacturing.

INTEREST FOR FUTURE R&D&I COOPERATION

Arteevo is interested for future R&D&I cooperation in the following research areas: IoT, Cloud and embedded M2M applications, industrial automation, smart cities, smart mobility, health, energy, digital industry, telecom network automation, SDN, virtual networks etc.

We seek to team up with large international domain leaders in the telecom industry – network operators, infrastructure providers, virtualization service providers, edge network operators and developers of advanced telecom applications. We will also welcome opportunities of collaboration with technology SMEs that have complementary expertise.

Our primary interest in such partnerships is in creating novel real-world solutions based on synergies in the technology, market and operational expertise of the partners.



EXPERTISE IN 5G IOT NGI MEDIA & CONTENT MANUFACTURING HEALTH SMART CITIES +

BACKGROUND, EXPERTISE & SKILLS

AUSTRALO is a marketing agency specializing in growth hacking for research and innovation. Our mission is tied up to 3-Cs: CAPTURE + CREATE + CAPITALIZE on the potential of Science and Deep Tech to thrive in the Lab-to-Market gap.

We re-think traditional marketing to adapt it to the flux of disruptive ideas, driving visibility, sustainability and stakeholder take-in. Our full-stack Marketing Mix unleashes the potential of science and technology, providing digital marketing campaigns, innovation management plans and go-to-market exploitation roadmaps. We hold coordination responsibilities for Ecosystem Building, Dissemination, Communication and Innovation management.

Our team works closely with leading partners in the 5G/6G industry, entrepreneurship hubs, academia, digital transformation, Green Deal and healthcare, advocating for a trustworthy, fair and sustainable data-driven economy.

ACHIEVEMENTS & SUCCESS STORIES

With 10+ years of experience in European Commission funds, our team will start 2023 involved in 25 Horizon projects.

In 2022 we wrapped up COREnect, the European pathfinder project that brought together the smart networks, microelectronics and vertical domains to jointly design a core technology roadmap.



We are a full SME member of the 6G Infrastructure Association, participating in key projects to the SNS: 6GStart and SNS OPS – the CSAs that will facilitate the preparation activities of the European Smart Networks and Services Joint Undertaking. This work will maintain the European leadership achieved through the 5G PPP and carry it forward; PREDICT-6G – one of the first technical actions from SNS Stream B with a focus on System Architecture.

INTEREST FOR FUTURE R&D&I COOPERATION

Our values are rooted in collaboration principles. AUSTRALO is permanently seeking new partnerships, mostly centred on Research & Innovation initiatives. The ambition is to continue our involvement in Horizon Europe and SNS with the performance delivered so far (about 25% success rate). We are interested in participating as partners in consortia along with the most prominent industry, academia and non-profit institutions, both from emerging technology and vertical sectors.

Complementing our participation in Horizon grants, AUSTRALO offers professional services as external contractors for running projects, implementing activities such as website development, graphical material, content and promotional campaigns.



-  YEAR ESTABLISHED
1996
-  NUMBER OF EMPLOYEES
100
-  MORE INFORMATION
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EXPERTISE IN 5G IOT SATELLITE COMMUNICATIONS HEALTH SMART CITIES +

BACKGROUND, EXPERTISE & SKILLS

Azcom Technology is a leader in advanced wireless communication with two decades of experience. It provides a complete suite of software IPR and hardware platforms to build and deploy commercial and special purpose solutions for cellular communications, automotive, aerospace, home automation and mobile applications. Azcom provides highly specialized expertise in areas such as signal processing, algorithm design/simulation and DSP software development for multiple application types, including cellular networks, space and radar communication. The company has experience, competency, established processes and structure to execute complex projects and product development on a turn-key basis. Azcom offers a wide range of product engineering services across a wide range of development platforms and application domains. Azcom involvement in H2020 projects started in 2015.

ACHIEVEMENTS & SUCCESS STORIES

Azcom Technology has successfully participated in funded 5GPPP projects such as 5G NORMA and 5G CORAL. From all these collaborations Azcom developed a strategic 5G knowledge. In the first participation Azcom small cell was controlled by the innovative orchestrator proposed by the 5G NORMA project. Then Azcom 5G focus also involved the automotive field, through PoC realization both hardware and software of an On Board Unit, within the 5G CORAL project. The 5G CORAL demo allowed the connection of vehicles by means of a distributed network, leading to a quicker and distributed manner information exchange. Direct consequences were the optimization of the network response, then improving driver safety.

INTEREST FOR FUTURE R&D&I COOPERATION

Azcom Technology is interested in 5G services and gNB and RU developments, from the low PHY to the higher levels of the protocol stack. Azcom is interested in big tier client and also other small cell partner to help them in building a complete 5G solution. In addition our interest is in radar automotive, biomedical, vehicular communications solutions, home automation, space and satellite communications as well.





 YEAR ESTABLISHED
1991

 NUMBER OF EMPLOYEES
50

 MORE INFORMATION
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EXPERTISE IN 5G IOT NGI **SATELLITE COMMUNICATIONS** TELECOMMUNICATIONS EQUIPMENT MEDIA & CONTENT TRANSPORT & LOGISTICS HEALTH ENERGY +

BACKGROUND, EXPERTISE & SKILLS

BEIA Consult International is a SME performing research, design, production, distribution, sales, installation and service.

BEIA is one of the leading providers of telecommunications equipment and solutions in Romania and offers consultancy services for carrier grade infrastructure, communication solutions for PABX, voice mail, IVR, call centre, VoIP services.

BEIA has R&D expertise in Cloud and embedded M2M telemonitoring applications, developing IoT based platforms such as agriculture monitoring platform for monitoring ecological parameters, and systems for irrigation management.

BEIA provides managed services & system integration, IP-Wireless-SCADA, GPRS/CDMA communications with TCP/IP embedded, GPS applications, μ -controller programming, software development.

BEIA is certified ISO 9001, 14001, 18001 and 27001 and is a member of various professional organizations such as ARIES, PMI, IEEE, AHK, IPMA.

ACHIEVEMENTS & SUCCESS STORIES

The company's references include over 5,000 national and EU projects for IT and communications solutions, enterprise cloud communications and telemetry, energy, smart cities, public safety, radio networks, etc.

CitiSim - Smart City 3D Simulation and Monitoring Platform

COSIBAS - Cognitive services for IoT-based scenarios in the industrial domain

ESTABLISH - Environmental Sensing To Act for a Better quality of Life: Smart Health

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

SOLID-B5G - A Massive MIMO Enabled IoT Platform with Networking Slicing for Beyond 5G loV/V2X and Maritime Services

Power2SME - Aims to create a cloud system that will change SMEs' way of consuming energy

SWAM - Smart WAtER Management system for better environmental sustainability

Other projects (finished and ongoing H2020, ECSEL, MSCA, Eureka/Eurostars, ITEA, Celtic, Erasmus, ERA-Net, AAL, BBI, COST, etc.) can be found on BEIA sites.

INTEREST FOR FUTURE R&D&I COOPERATION

BEIA is interested for future R&D&I cooperation in the following research areas (not exclusive): IoT, Cloud and embedded M2M applications, agriculture, environment, smart cities, smart mobility, health and well-being, energy, digital industry, digital life, etc.

To develop our projects or to cooperate within other projects, we need partners to build a comprehensive "ecosystem", interdependent on one another.

1. Horizontal partners: to provide the unified, standards-based network infrastructure and contribute with technologies and experiences to create a complete solution.
2. Vertical Partners: to solve market-specific business problems and address particular use cases, to have the knowledge of specific business operational.
3. Geographic, from Europe and other continents: to understand local environments, laws (such as data privacy regulations), and to facilitate project deployments.



YEAR ESTABLISHED

2001



NUMBER OF EMPLOYEES

30



MORE INFORMATION

www.citypassenger.com



CONTACT

projects@citypassenger.com

EXPERTISE IN

5G

IOT

NGI

CYBERSECURITY

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

HEALTH

ENERGY

SMART
CITIES



BACKGROUND, EXPERTISE & SKILLS

Citypassenger has a strong expertise about highly configurable and scalable SD-WAN / LAN / WLAN systems for multi-tenants connectivity management. We supplies our own technologies such as user premise equipments (SRC, wireless access points), a programmable logical infrastructure and a centralized network supervision and control software tool. We also have high skills regarding Edge site-to-site and non-centric network slicing tunneling technologies.

ACHIEVEMENTS & SUCCESS STORIES

Citypassenger develops innovative products responding to the IT network needs emerging from a increasingly massive utilization and exchange of digital data. Our customers are ranging from SMEs to large companies and public bodies. The company has realized a global turnover of around € 1 million in 2021 with as clients more than 30 rural communities in France. Relying on its SaaS strategy and on its connectivity ecosystems, installed on more than 2000 customers sites.

INTEREST FOR FUTURE R&D&I COOPERATION

Our technological contribution can include topics like Edge Caching, Far Edge and Ubiquitous Computing, End-to-End Slicing and Wi-Fi / 6G convergence. Moreover we can bring a wide range of customers verticals applications, from automotive retail to territories connectivity.





YEAR ESTABLISHED

2005



NUMBER OF EMPLOYEES

200



MORE INFORMATION

www.ctech.com.tr



CONTACT

infotech@ctech.com.tr



EXPERTISE IN

5G

IOT

SATELLITE
COMMUNICATIONS

MEDIA &
CONTENT

MANUFACTURING

SMART
CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

C Tech Information Technologies Industry and Trade Inc. founded in 2005, operates in Defense, Aerospace and Satellite Technologies, Communication Systems, Cyber Security, Modeling and Simulation.

C Tech accomplishes its mission of developing innovative products and creating solutions for national and international markets with its knowledge and experience in information and communication technologies and with its experienced human resources.

C Tech has system engineering, electronic hardware design, digital design, communication system design, RF design, embedded and PC based software design and system development capabilities and integration and production capabilities comprised by these capabilities. C Tech offers products and solutions to various public, private and international stakeholders as the contractor of the projects.

ACHIEVEMENTS & SUCCESS STORIES

C Tech, a subsidiary of TUSAŞ, is one of the few private sector company with infrastructure in electronic design, software development and production under the Defence, Aerospace standards of our country, together with the subcontracting ecosystem. Our company is one of four company in the domestic communication development consortium of TÜRKSAT-6A which is the biggest R&D program and vision project of our country up to today within the scope of the design and production works of military and civil satellite communication systems that it conducts.

C Tech has ISO-9001: 2008 and CMMI Level-3 quality certifications, Production Permission Certificate issued by the Ministry of National Defence, National and NATO Facilities Safety Certifications. It is based on internationally accepted standards and approaches such as IEEE-12207 and MIL-STD-973.

INTEREST FOR FUTURE R&D&I COOPERATION

C Tech considers research and development as core business, actively taking part in European and international funded research projects since its incorporation.

C Tech is looking for international partners focused on R&D&I cooperation in the areas of emerging 5G technologies, Smart Technologies, AI and ML, telecommunications, satellite services, cyber security, V2X and IoT.



YEAR ESTABLISHED
2015



NUMBER OF EMPLOYEES
15



MORE INFORMATION
www.cumucore.com



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EXPERTISE IN

5G

IOT

MANUFACTURING

MEDIA &
CONTENT

SMART
CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

CUMUCORE specialized in design and implementation of 5G Core for Non-Public Networks (NPN) target to industry 4.0, mining, harbours or companies that require easy to use private mobile infrastructure to improve current wired or wireless networks (WIFI). CUMUCORE has added latest Rel 17 functionality such as network slicing, 5GLAN and TSN into compact easy to use GUI to operate own 5G SA.

ACHIEVEMENTS & SUCCESS STORIES

CUMUCORE has deployed recently private mobile networks for Point of Sales (PoP) in music events, festivals, etc with high reliable mobile connectivity for vending machines, sales points, etc. (<https://cumucore.com/blog/temporary-outdoor-wireless-connectivity-for-point-of-sales-terminals/>)

Even in more remote location like in the ISS space station CUMUCORE delivered private 5G with network slicing (<https://cumucore.com/blog/bringing-the-power-of-5g-to-space/>)

INTEREST FOR FUTURE R&D&I COOPERATION

We are looking for Radio companies with whom we could integrate our 5G SA packet core and application companies that would package their solution with our product.



YEAR ESTABLISHED

2017



NUMBER OF EMPLOYEES

12



MORE INFORMATION

www.cyberethicslab.com

CONTACT

eu-projects@cyberethicslab.com

EXPERTISE IN

IOT 5G ICT

ELECTRONICS

 PRIVACY
 ENHANCING
 TECHNOLOGIES

 NETWORK
 INFRASTRUCTURE

 SMART
 CITIES

 HEALTH
 ETHICS

 ENERGY
 PRIVACY

 MEDIA &
 CONTENT

 MANUFACTURING
 CYBERSECURITY


BACKGROUND, EXPERTISE & SKILLS

CyberEthics Lab. is an Italian SME with a holistic vision of innovation, generated by efficiency, scientific curiosity, and respect for human beings. CEL promotes innovation, ethical awareness and behaviour to build confidence and trust within the society. CEL leverages on the experience and knowledge of its multidisciplinary team (i.e. ICT, Law, Philosophy, Politics, Management); its members are active in different fields, such as numerous R&D activities in the context of inter-disciplinary EC Research projects (i.e. 5G-SOLUTIONS, PHOENIX, MES-COBRAD, PERSIST, IRIS, IMPULSE, BRIGHT) and University teaching. CEL has formulated its own methodology on ethical, societal and legal assessment. This is a relevant aspect and it is applied for the 5G technology solution assessment to ensure its future full acceptance and sustainability.

ACHIEVEMENTS & SUCCESS STORIES

In March 2022, based on the 5G-SOLUTIONS experience, CEL presented to the European Parliament the paper 'Privacy and security aspects of 5G technology'. CEL has also developed an innovative research and assessment methodology for the social acceptance of technologies, the "SAT", which also includes stakeholder engagement: in various European projects, including the 5G-PPP context, CEL is successfully adopting the best practices of the SAT methodology and promoting a new development mindset. With the Responsible Research & Innovation approach and the ethical, social and legal assessment methodology, CEL provides the areas of security, eHealth, and the core issues in the 5G-SOLUTIONS project with criteria to assess social acceptance and to promote an alignment of human progress with technological innovation.

INTEREST FOR FUTURE R&D&I COOPERATION

CEL's offering is mainly based on promoting innovation and new opportunities in the market, as well as creating ethics awareness and promoting ethical behaviour to build confidence and trust. In particular CEL's actions are also directed to promote a new development mindset with the inclusion of legal and ethics concerns in the design and implementation of new technologies, the identification of risks on individual fundamental rights and the issuance of recommendations aimed to make technologies compliant with ethical principles and the relevant legal framework. CEL aims to reach either European and international partners and one of its main strengths is its capacity to adapt and target its assistance depending on the concrete needs and situations.



YEAR ESTABLISHED

2018



NUMBER OF EMPLOYEES

6



MORE INFORMATION

www.digitaltwin.technology



CONTACT

info@digitaltwin.technology

EXPERTISE IN

5G

IOT

VR/AR

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

SMART
CITIES

BACKGROUND, EXPERTISE & SKILLS

DigitalTwin Technology is software solution provider for construction and ICT industry. We create digital twins of construction site and urban cities for real-time monitoring and operations. We generate simulation behaviour of those 3D model to predict any possible accidents to mitigate in advance. 5G technology, with its promises of immersive virtual reality, will be a data hungry generation of wireless communications. Arrival of 5G will mean we can push these capabilities away from the PC and into something called the edge cloud, so we only require the headset. This is our cloud AR/VR technology. Cloud VR/AR technology is set to be a disruptive form of immersive multimedia in a number of different ways.

ACHIEVEMENTS & SUCCESS STORIES

Tunnelware is a VaaS (Virtuality as a Service) for tunnel construction industry to manage the construction process while managing the data generated by various sensors and human interaction. With a focus on reducing cost and waste, and increasing productivity, the system will improve the construction process at every stage, delivering "faster builds to a higher quality with fewer defects and more sustainable tunnels.

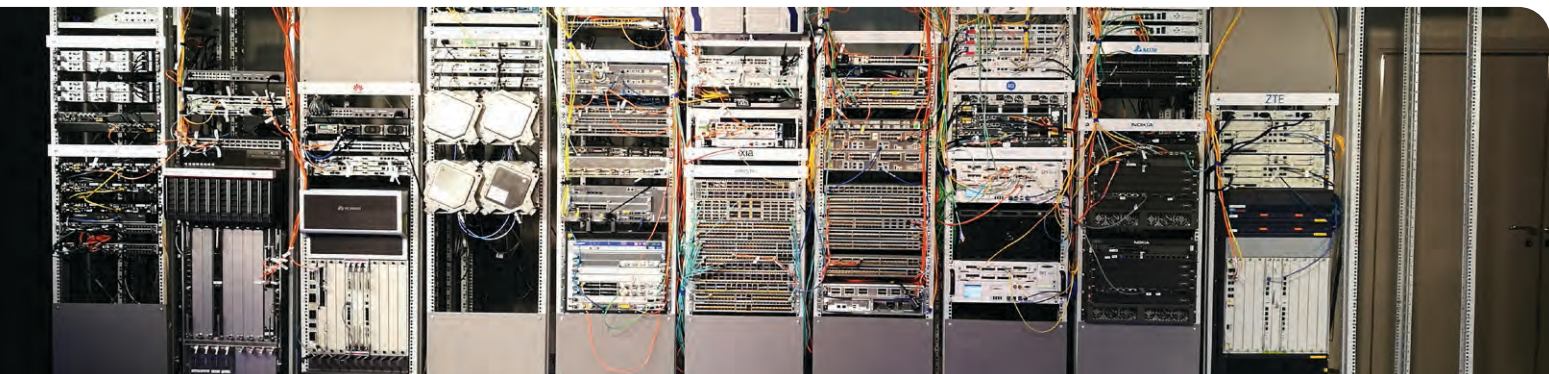
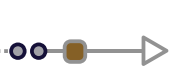
Cityware is a digital twin of your city to monitor the infrastructure on real-time, simulate the real situation in the virtual world. Completely under GDPR regulation with no video streaming.

INTEREST FOR FUTURE R&D&I COOPERATION

Engineers have been so preoccupied with designing and building the low-latency networks for these emerging applications that they've neglected the rest of our vast, tangled telecom networks. The result is that there is now a growing gap between the capabilities of the fixed and mobile sides of these networks. A big part of the problem is that the way data moves through our networks has been designed for efficiency on the mobile side. In the process our networks have become redundant and prone to clogging on the fixed side.

We are looking for partners in the area of networking who can help us taking this research to the next step. Partners can be from EU region or globally.





EXPERTISE IN

5G

IOT

NGI

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

MANUFACTURING

ENERGY

SMART
CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

EANTC (European Advanced Networking Test Center) is internationally recognized as one of the world's leading independent test centers for telecommunication technologies offering vendor-neutral consultancy and realistic, reproducible high-quality testing services. Customers include leading network equipment manufacturers, tier-1 service providers, large enterprises, and governments worldwide. EANTC's performance and scalability, interoperability, proof of concept, acceptance tests, and network audits cover established, and next-generation fixed and mobile network technologies. EANTC is Co-Editor of telecom testing standards in IETF, ETSI, and O-RAN Alliance. We develop new test methodologies for 5G networks and applications, especially focused on end-to-end (E2E) interoperability, scalability, and performance tests. They cover network infrastructure (SDN transport, slicing, telco cloud/NFV, edge computing) and network applications for a range of industry sectors.

ACHIEVEMENTS & SUCCESS STORIES

EANTC is currently involved in Open RAN (O-RAN) testing projects, including Open Fronthaul (FH) interoperability, enhanced Common Public Radio Interface (eCPRI), and O-RAN components (O-RU, O-DU, O-CU).

EANTC's Multi-Vendor MPLS SDN Interoperability Test is a well-established event beneficial for small and large vendors alike. EANTC, as an independent party, exhibits a tangible, lab-validated network showcasing mature and latest advances in different technology areas. The test will focus on EVPN, SR, SDN, and Clocking. The outcome will be a Test Report containing detailed descriptions of all use cases, test setups, and results.

EANTC is participating in the 5GASP Horizon 2020 European research project having a leading role in defining advanced test methodologies for complex 5G infrastructures comprising NFV, SDN, Slicing, RAN, and Network Applications. From the Innovation cluster 5G BERLIN, EANTC develops new test methods for 5G networks and applications focusing on E2E interoperability, scalability, and performance tests.

IETF/NetSecOPEN: EANTC co-created an independent, multi-vendor, multi-labs, and a multi-tool test program for NGFW, IDS, IPS, and UTM implementations.

The methodology has been prepared as an IETF standard edited by EANTC. The test suite is used for the evaluation and certification of network security products, and to provide guidelines for infrastructure testing.

INTEREST FOR FUTURE R&D&I COOPERATION

Following the evolution of the telecommunications and IT ecosystems, EANTC is interested in strengthening its know-how and position in several trending areas. Starting from the evolution of testing within the general scope of 6G, of particular interest is the collaboration with O-RAN developing partners and mobile operators for the testing and verification of the RAN Intelligent Controllers (RICs), xApps, rApps, and the use of Artificial Intelligence and Machine Learning.

EANTC has strong industry experience in interop and performance testing of SDN, NFV, 5G services, and applications and is interested in contributing testing, quality assurance, and lab setup/management expertise to research projects. We would like to contribute our extensive commercial telecom experience and a strong focus on realistic scenarios. We find projects exciting that help Europe to capture markets strongly (in TRL 7-8) or to create a technology leadership position (TRL 5-7).



eBOS

-  YEAR ESTABLISHED
2003
-  NUMBER OF EMPLOYEES
50
-  MORE INFORMATION
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-  CONTACT
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EXPERTISE IN

5G

NGI

IOT

AI/ML, GRAPH
ANALYTICS

SMART
CITIES

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

MANUFACTURING

BACKGROUND, EXPERTISE & SKILLS

eBOS is a well-established innovative client-focused software SME providing technological advanced e-business software solutions to enterprise customers around the world. Headquartered in Nicosia, Cyprus, eBOS closely collaborates with strategic partners worldwide. eBOS has a long history of engaging with international research and technology organisations, industrial leaders, universities, research organisations and SMEs to drive collaborative technological innovation and bring best-of-breed technologies to enterprise customers, which add real business value in the most challenging corporate environments. The development of WiseBOS product portfolio has equipped the company with core competencies which they deploy in R&D projects. The knowledge and innovation gained are then fused into their solutions and services. eBOS seeks to explore radically new solutions and technological breakthroughs.

ACHIEVEMENTS & SUCCESS STORIES

eBOS has a wide experience in the 5G-PPP, participating in eight projects, namely, 5G-SOLUTIONS (www.5gsolutionsproject.eu/), MonB5G (www.monb5g.eu/); 5G-ROUTES (www.5g-routes.eu/); 5G-ERA (<https://5g-era.eu/>); 5G-EPICENTRE (www.5gepicentre.eu/); VITAL-5G (www.vital5g.eu/); 5GMediaHUB (www.5gmediahub.eu/); and MARSAL (www.marsalproject.eu/). Through these projects, eBOS will develop multi-tenant front-end dashboards for KPIs visualisation, friendly to use intent-based APIs, novel AI/ML techniques for network slicing security threats and mitigations and blockchain-based cybersecurity solutions for 5G networks and beyond, thus advancing our knowledge and reinforce our understanding in 5G enabling technologies. eBOS plans to apply the results in their product portfolio for new innovative solutions, as well as contribute to the shaping of 5G enabling technologies, thus enabling Europe to maintain a leading and a decisive role in the field of 5G and beyond.

INTEREST FOR FUTURE R&D&I COOPERATION

eBOS has a long history of fostering collaborations in R&D&I projects with EU partners and is inherently open to new opportunities for collaborations with interested partners. In particular, eBOS is interested in further developing and exploiting its Research, Development and Innovation activities through collaboration with industrial leaders, renowned universities, research organisations and SMEs in 5G over a broad range of vertical sectors, including Next Generation Media and interactive technologies, Transport & Logistics, Cybersecurity, Next Generation Internet and IoT, Smart Agriculture, Manufacturing, PPDR, Smart Cities, Smart Mobility, etc.



EXPERTISE IN

5G

IOT

MEDIA &
CONTENT

MANUFACTURING

HEALTH

ENERGY

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

eCom Learning Solutions is an Microsoft Independent Software Vendor where we research and develop the next generation of online learning and assessment solutions. We have partnered in many EU research projects, and actively work with standard bodies. eCom's global cloud solutions are mobile first delivery mode, include VR authoring, online assessment, micro-credentialing, and learning & competency management. eCom's solutions are currently used globally on mobiles where latency is a big issue. Our solutions are built with the roll out of 5G in mind, and are currently end-cached to support bandwidth restrictions. Our clients are in Education, Oil & Gas, Engineering, Governments, Awarding bodies and Professional Institutes. https://www.ecomlearningsolutions.com/media/z5vbie3y/case-study_british-council-edge-ahead-with-digital-learning-solution.pdf

ACHIEVEMENTS & SUCCESS STORIES

eCom has many examples of award winning activities, these include. eAA – Innovation Award for eAssessment for use with IoT devices. eCom's Chair was the Secretary and contributed to the development of the recent standard IEEE 1484.20.2 – Recommended Practices for Defining Competencies, these activities are key to implementation of skills identification for systematic approaches using AI/ ML. .

5G. eCom has been awarded innovateUK funding in 2020-21 to develop a MVP for the real-time XR interface with educational Robot for training and assessment. (SUPERIOR) Further innovateUK funding has been successful to continue this research 2022-24 with our partner University of Glasgow, host of the 5G centre in Scotland. 5G and 6G is key to eCom success in the future.

INTEREST FOR FUTURE R&D&I COOPERATION

eCom are interested to work with teams on any 5G projects involving remote training via VR in the workplace, this could include XR integration with IoT, or Robotics.

eCom can offer free licenses for any demonstration sites.

IOT



YEAR ESTABLISHED

2010



NUMBER OF EMPLOYEES

15



MORE INFORMATION

www.eglobalmark.com



CONTACT

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EXPERTISE IN

5G

IOT

SATELLITE
COMMUNICATIONS

SMART
CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

Easy Global Market (EGM), first, specialises in validation, testing & interoperability today mainly in IoT and 5G areas. EGM stepped in the 5G area to provide NFV V&V methods for 5G within the H2020 5GTango project and IoT related 5G use cases (IoT slicing) in H2020 5GinFIRE project. Second, EGM provides scientific and engineering services for IoT market from sensors (HW) to data analytics using experience from about 24 international research projects. This applies to vertical fields, such as in Smart cities, Smart water Monitoring, Aquaculture and Agriculture where EGM is currently active within 10 running H2020 projects. In these fields EGM is exploring the use of 5G available technologies (e.g. NB-IOT) for developing devices or virtualized services (e.g. VNFs)

ACHIEVEMENTS & SUCCESS STORIES

On testing matters, EGM is working to provide a 5G NFV V&V platform. EGM has developed key devices to the Bioceanor start-up (www.bioceanor.com) that is supporting booming demand in Aquaculture digitalisation and where 5G is demanded. EGM deployed advanced autonomous sea buoys in Polynesia to help monitoring coral bleaching. EGM is now working more actively in agriculture digitalisation, on soil monitoring and is about to deliver a prototype in the beekeeping area to save bees depopulation. After a first successful product, EGM plans to deliver a low-cost water quality sensor. EGM is also working on virtualized services for smart cities thanks to the EU-Japan project fed4IoT

INTEREST FOR FUTURE R&D&I COOPERATION

We are looking for stakeholders in verticals which need key 5G devices or services exploiting our advanced expertise in IoT and virtualisation. We can work with a broad range of verticals with can be smart cities, automotive, agriculture, aquaculture, water networks, environment, public safety.

We can also develop for 5G-enabled verticals, solution to check KPI and to validate solutions with our V&V platform.





EXPERTISE IN

5G

IOT

SATELLITE
COMMUNICATIONS

TRANSPORT &
LOGISTICS

MANUFACTURING

SMART
CITIES

HEALTH

BACKGROUND, EXPERTISE & SKILLS

Eight Bells (8BELLS) is an independent Research and Consulting company specializing in selected parts of Information and Communication Technologies (ICT) as well as in modelling and analysis for businesses, based in Nicosia, Cyprus. The company was established in 2016 by ICT researchers and market analysts pursuing the application of their research expertise and innovations in the ICT related arena.

The main areas of research and technical expertise are customizable solutions that enhance modern communications relevant to the area of 5G Mobile Technology, Network Function Virtualization (NFV), and management solutions for Cloud infrastructures.

ACHIEVEMENTS & SUCCESS STORIES

Translating innovative ideas to products and services is one of our core values and our competitive advantage. We are an applied R&D company, implementing ideas and exploring new frontiers. A recognition of our efforts is our identification as “Key Innovator” in the framework of the EU Research Project “GUARD” (Horizon 2020) by EU Innovation Radar.

Our main achievements are:

- a) Leading SME in 5G domain.
- b) Participating in 2 CEF (Connecting Europe) Flagship Projects – autonomous vehicles & 5G.
- c) Our privately own 5G Mobile Station for Research use.
- d) Participating in 7 5G (H2020 5GPPP) Research Projects (6 of them being active):

- SMART5GRID
- 5G-INDUCE
- EVOLVED-5G
- AFFORDABLE5G
- 5GMED
- 5G-CARMEN
- 5G ESSENCE

- e) Participating in 1 6G Research Project: H2020 5GPPP AI@EDGE

INTEREST FOR FUTURE R&D&I COOPERATION

Since its founding, EIGHT BELLS has invested in Research & Development and achieved to climb at the forefront of specific sectors of ICT technology, implementing ideas and exploring new frontiers. Our analysts have a strong focus on R&D with a long track record in EU funded research initiatives. They have actively participated in (and coordinated) several R&D projects in the field of networking and telecommunications and have authored or co-authored over 80 papers in international refereed journals and conferences. Moreover, the company's portfolio includes system engineering and integration services, network design and implementation, R&D consultancy, as well as targeted and customized innovative solutions. Our future R&D&I Cooperation interest include: SOFTWARE NETWORKS, CYBERSECURITY, IoT AND SENSORS, OPTICAL NETWORKS, AI & SOFTWARE SOLUTIONS, SPACE - DEFENCE - SECURITY APPLICATIONS.



EXPERTISE IN

5G

IOT

SATELLITE
COMMUNICATIONS

NGI

TRANSPORT &
LOGISTICS

MANUFACTURING

SMART
CITIES

BACKGROUND, EXPERTISE & SKILLS

Epitomic is UK based design & engineering company targeting the Transport & Smart Infrastructure Sectors. The company has a headcount of 20 full-time and part-time employees based across Western Europe, India and Japan.

The company has experience in Electrical & Electronic Systems, Embedded & Cloud software, Industrial Design and the planning and creation of Services. Our focus is on building Connected & Autonomous Systems for Air, Marine and Surface Transport Vehicles and associated Infrastructure. Over the past six years, Epitomic has designed and manufactured more than twenty different products for our own brand in addition to product development work for other parties.

ACHIEVEMENTS & SUCCESS STORIES

The company has been successful in the design and launch of numerous products as well as in collaborating with numerous companies including Google, Sony and Jacobs.

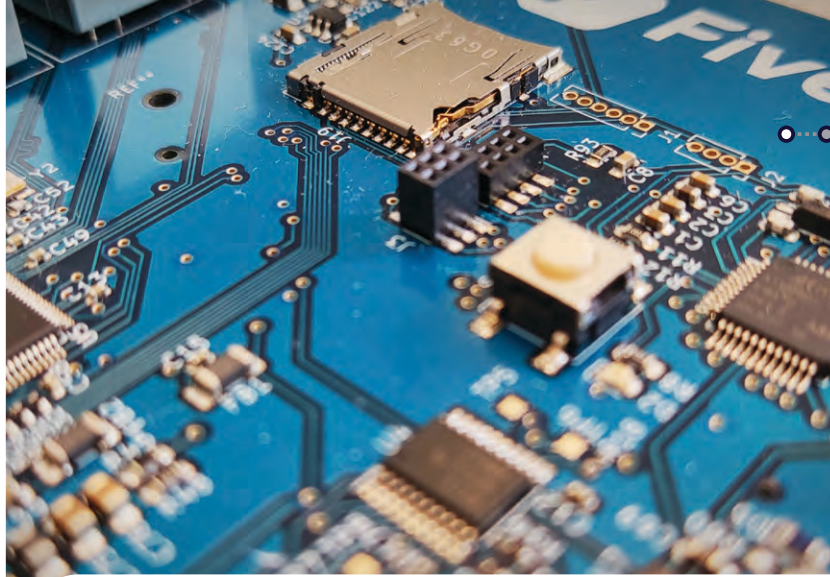
Epitomic recently led and delivered Project Alloyed (an Innovate UK funded project) together with sixteen consortium partners. The project delivered a number of positive outcomes in the area of Connected & Autonomous Vehicles including a flexible architecture for connecting Vehicles, Infrastructure & Cloud services. Project details can be found at <https://alloyed.epitomic.com/>.

In 2019, the company was awarded Horizon 2020 funding for the 5G-HEART project led by the Finnish technical research organisation, VTT. 5G-HEART will trial 5G use-cases across multiple vertical markets including Transport, Healthcare & Aquaculture. Project details can be found at <https://5gheart.org/>.

INTEREST FOR FUTURE R&D&I COOPERATION

The company is interested in collaborating with technology providers, local & regional authorities as well as other players within the Transport & Logistics ecosystem. This would include end users of services such as those in Healthcare, Construction and Regional & City operations.

Epitomic is currently delivering trials and development projects in Europe, Japan & India and would be interested in exploring other international markets for Connected & Autonomous Systems. These would include markets for autonomous systems leveraging drones, mass-market transport vehicles, pods as well as submersible and semi-submersible marine vehicles. Other areas of interest include organisations with an interest in Satellite Communications, Cellular telecommunications, HD Mapping & Cloud based services.



YEAR ESTABLISHED

2019



NUMBER OF EMPLOYEES

16



MORE INFORMATION

www.fivecomm.eu



CONTACT

contact@fivecomm.eu

EXPERTISE IN

5G

IOT

RADIO
NETWORK
PLANNING

4G/5G
USER
DEVICES

IOT
PLATFORM

IMMERSIVE
TELEPRESENCE

MEDIA &
CONTENT

TRANSPORT
& LOGISTICS

MANUFACTURING

HEALTH
ENERGY

SMART
CITIES



BACKGROUND, EXPERTISE & SKILLS

Fivecomm is a spin off from the iTEAM Research Institute of the Universitat Politècnica de València (UPV), focused on the use and implementation of 5G for industrial applications. Its aim is the innovation, design, development, production, integration, operation, and commercialization of systems, solutions and products that make use of 5G, either with public or private networks. Fivecomm product lines are: a) 5G and 4G user devices customized for different verticals including 5G connected radars, b) radio network planning, c) software platform for 5G use cases including NetApps for real-time multimedia, immersive telepresence and mobile robots control, and IoT customized data platforms. Fivecomm is or has been involved in six H2020 EU projects and participates in a Horizon Europe project (TARGET-X).

ACHIEVEMENTS & SUCCESS STORIES

Our main achievements in EU projects include the development and integration of 5G portable modems for professional video cameras (5G-RECORDS), our leading activities of a 5G network implementation for industrial scenarios (FUDGE-5G), 5G related system-level simulations of industrial environments (iGENIOUS), NetApp integration for gesture-based mobile robots' control (5G-INDUCE) and remote driving (5G-IANA).

Fivecomm has participated in the Spanish Digitalization Programme developing the first 5G SA devices for water meters, and supporting industry automation and critical infrastructure inspection using our 5G modem to connect cameras, sensors, and mobile robots.

At regional level, Fivecomm has showcased a berthing assistance application in Valencia with the first 5G SA private network in a Spanish port, and the first 5G connected radars in the market.

INTEREST FOR FUTURE R&D&I COOPERATION

Fivecomm is interested in creating future collaborations in the field of industry verticals at European and international level and welcomes proposals and ideas for new areas of collaboration in research and development. Fivecomm has a solid experience in 5G validation through trials but is also studying Beyond 5G and 6G topics such as V2X communications, Integrated Sensing and Communication (ISAC), Time Sensitive Networking (TSN) or cell-free massive MIMO. These and other topics can be approach by Fivecomm through simulation (we are experts in both system-level simulation and link-level simulation), analytical studies, prototypes and trials. Fivecomm is a reliable partner for project and technical management given its success in previous projects as use case or task leader.





 YEAR ESTABLISHED
2016

 NUMBER OF EMPLOYEES
10

 MORE INFORMATION
www.fogus.gr

 CONTACT
info@fogus.gr

EXPERTISE IN

5G

IOT

VR/AR

MEDIA &
CONTENT

SMART
CITIES

BACKGROUND, EXPERTISE & SKILLS

Fogus is a thriving SME in Greece that aims at integrating state-of-the-art technological advancements and cutting-edge research achievements, towards an immersive communication and computing experience. Founded by a group of industrial and academic experts covering a wide range of disciplines in the area of Information and Communication Technologies (ICT), Fogus exhibits strong research record and vast experience in managing and implementing ICT Research & Innovation actions. Holding experience that ranges from the design of mobile communication protocols to the development of custom-made software, Fogus undertakes: i) end-to-end set-up of network simulation and emulation environments for IoT and user-centric services, ii) development of network functions end protocols for access and transport network domains, ii) analysis of big data with expertise on mapping network and service performance parameters to user-experience metrics, iv) MEC-empowered service provisioning and integration for 5G.

ACHIEVEMENTS & SUCCESS STORIES

Fogus has active role in leading consortia and forums for 5G networks. Currently, the company participates in the 5GENESIS (<https://5genesis.eu/>) project. 5GENESIS is a large-scale 5G experimentation project that aims at validating 5G KPIs for various 5G use cases, in both controlled set-ups and large-scale events. This will be achieved by bringing together results from a considerable number of EU projects as well as the partners' internal R&D activities in order to realise an integrated End-to-end 5G Facility. Moreover, the company develops integrated services for user-centric digital content delivery in 5G mobile data networks that will be founded on the pillars of a) blockchain based wireless network resource sharing, b) QoE-enhanced video content delivery, c) software-defined networking and d) cache-enabled mobile data networks.

INTEREST FOR FUTURE R&D&I COOPERATION

Fogus research and development team has vast experience in participation to many European R&D projects in the past, including FP7 and H2020 actions, ICT, MSCA ITN, IAPP and RISE actions. The company is mainly interested in 5G and beyond research projects. Strategically, the company is looking for academic and industrial partners for potential collaborations in the following directions: i) exploitation of the last advancements in ICT sector to provide complete end-to-end solutions to vertical industries, ii) scientific research on innovative ideas for wireless mobile networking and service provisioning, and ii) participation in training and knowledge sharing activities, as explained in the MSCA work programme.





 YEAR ESTABLISHED
2014

 NUMBER OF EMPLOYEES
96

 MORE INFORMATION
www.fundingbox.com

 CONTACT
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EXPERTISE IN

5G

NGI

IOT

MANUFACTURING

SMART
CITIES

ENERGY

SMART
MOBILITY

BACKGROUND, EXPERTISE & SKILLS

FundingBox is a non-profit SME with hubs in Poland, Spain and Denmark specialised in the management of European innovation funding projects. The company acts a bridge between public funds and European innovators looking for support to turn their ideas into reality. The funding FundingBox distributes is targeted towards developing deep tech innovation and that includes innovation in the field of 5G.

By way of illustration, FundingBox is involved in Zero Swarm, an initiative that aims to develop a novel framework for the engineering of data-driven cyber-physical systems-of-systems (CPSoS) for the manufacturing domain based on 5G technologies. Another project that FundingBox takes part in is 5G Turbo that looks for early-stage startups solving urban mobility challenges with 5G technology.

ACHIEVEMENTS & SUCCESS STORIES

Since 2014, FundingBox has been responsible for managing cascade funding (officially called Financial Support for Third Parties (FSTP)) in 45 projects. The company has distributed over €137 million and has signed 1,109 agreements with innovators.

Over 732 startups and scaleups that participated in the cascade funding acceleration programmes where FundingBox was leading funding distribution have now raised €143 million of additional funding (which makes an average of €245,000 per entity) and have created 537 new jobs.

FundingBox also provides to scaleups a community of communities where entrepreneurs and innovators meet, interact and collaborate to grow their projects. Over 45,000 of them are now registered to ease cross-border interactions across ecosystems by building communities around innovative technologies. Besides, FundingBox is an active partner in the Digital Innovation Hubs (DIHs) strategy

promoted by the European Commission. As of August 2022, FundingBox was a partner of two of the newly selected EDIHs (one in Poland, Mazovia and the other one in Spain, Navarra) and service providers of many others across Europe. Finally, FundingBox is deploying a single open marketplace of funding opportunities and venture readiness services. This distributed platform aims to boost seamless cross-border deals and match European founders and private funding institutions in an open and trusted investment framework boosting cross-border investment opportunities.

INTEREST FOR FUTURE R&D&I COOPERATION

FundingBox is interested in international cooperation, across Europe and beyond, both as partner or coordinator of proposals with an open innovation approach willing to develop specific actions to engage with startups, deep tech organisations and early technology adopters.



YEAR ESTABLISHED

/



NUMBER OF EMPLOYEES

1-9



MORE INFORMATION

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CONTACT

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EXPERTISE IN

5G

IOT

SATELLITE
COMMUNICATIONS

MANUFACTURING

AGRICULTURE

SMART
CITIES

BACKGROUND, EXPERTISE & SKILLS

Gigasys Solutions Ltd is a start up on wireless technology consultation and collaborative project management, located in Guildford, Surrey, UK, with expertise on 5G and beyond 5G testbed implementation and innovative concepts and related R&D technical managements.

ACHIEVEMENTS & SUCCESS STORIES

Gigasys Solutions participation in national and European R&D projects, on 5G and beyond 5G technologies contributed on the project planning, development and validation of specific technology components related to 5G PHY/MAC and IoT networks, up to the network applications for related use cases addressing vertical areas such as agriculture and smart city applications.

INTEREST FOR FUTURE R&D&I COOPERATION

Gigasys Solutions is seeking to collaborate on 5G and beyond 5G research and innovation projects. We contribute to the technology development, proof-of-concept and validation with experience on R&D project planning and management.





YEAR ESTABLISHED

2018



NUMBER OF EMPLOYEES

2



MORE INFORMATION

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CONTACT

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EXPERTISE IN

5G

SATELLITE
COMMUNICATIONS

IOT

MEDIA &
CONTENT

SMART
CITIES

PUBLIC
SAFETY

AGRIFOOD

BACKGROUND, EXPERTISE & SKILLS

- Media. New mechanisms to broadcast content and provide personal TV. Assistant to ITU-D on supporting new advanced entertainment systems. Also, research analysis on new preferences of content viewers and comparison of efficiencies of different delivery platforms (satellite, cable, terrestrial over the air, OTT)
- Automotive. Designers and supporters of new solutions for Car2Car communications
- Public Safety. Involvement on the standardization processes for ICT solutions applicable to PPDR.
- Agri-food. From farm to the table. Development of innovative solutions for the olive and vinegars' plants while observing Compliance requirements

for environment, sustainability, climate change, tracing and efficient agri-food industries.

ACHIEVEMENTS & SUCCESS STORIES

Main areas of work have been the assessment of suitable spectrum for 5G and integration of satellite and terrestrial networks. HINN has conducted studies on the use of current available spectrum and future opportunities for 5G in share bands.

Development of management tools combining sensors and data processing of agri-food industries

INTEREST FOR FUTURE R&D&I COOPERATION

Widely involved in activities in Europe, Latin America and Africa. Assistance is regularly provided to Governments of Mexico, Colombia, Paraguay, Eq Guinea as well as ongoing activities in Africa. HINN interest in Morocco, Algeria, Tunisia, Egypt, Lebanon, Argentina, Chile, Brazil, Ecuador, Perú, Venezuela, Colombia, Panamá, Costa Rica, Honduras, Mexico.

Main technology areas are related to spectrum management and efficiency on the use of the spectrum through intelligent terminals capable to share the spectrum as well as development of 5G products for the agri-food industries



-  YEAR ESTABLISHED
1977
-  NUMBER OF EMPLOYEES
22
-  MORE INFORMATION
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-  CONTACT
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EXPERTISE IN

5G

IOT

MEDIA &
CONTENT

TRANSPORT
& LOGISTICS

SMART CITIES

HEALTH

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

IDATE is one of Europe's foremost ICT experts, specialising in telecom, media and internet markets, and in digital regional development. Since 1977, IDATE has delivered consultancy services, market intelligence solutions and networking opportunities to provide an in-depth understanding of the digital world and enhance clients' strategic decision-making. Our experts support our client on hundreds of consulting missions and market watch services.

Our teams conduct hundreds of studies and assignments each year and work in close and permanent contact with our customers. We master a broad spectrum of methodologies tailored to suit each assignment: interviews, B2B and B2C surveys, market models and forecasts, strategic analysis, prospective analysis.

ACHIEVEMENTS & SUCCESS STORIES

IDATE is at the core of the development of 5G in Europe; it has been contributing to 5G PPP projects since 2015.

IDATE was involved in quantitative analysis, forecasting and assessments in the RIA METIS-II 5G PPP project, whose key objectives were to develop the overall 5G radio access network design. IDATE has also been involved in several CSA 5G PPP projects since 2015 such as the closed Euro-5G, To-Euro-5G, Full5G and is currently contributing to the CSA 6GStart (May 2022-July 2024).

IDATE is also working with the Private Trials Stream within the 5G Trials Working Group led by 6G-IA.

In addition, IDATE managed the 5G Observatory ("5Gobservatory.eu) for three years between 2018 and 2021 for the DGConnect.

INTEREST FOR FUTURE R&D&I COOPERATION

We intend to accompany partners in analytics, insights, and intelligence, including demand analysis, quantitative modelling and forecasting in diverse verticals (Telecom including Fibre and 5G or 6G, IoT, Smart cities, PPDR, Health, Transport and logistics).



EXPERTISE IN 5G SATELLITE COMMUNICATIONS IOT RADAR ENERGY PUBLIC SAFETY MEDIA & CONTENT TRANSPORT & LOGISTICS HEALTH SMART CITIES

BACKGROUND, EXPERTISE & SKILLS

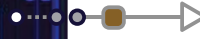
IMST GmbH is a SME leader in R&D for mobile communications, integrated circuits, RF-circuits and active antenna technology with over 25 years of experience. Multiband & reconfigurable antennas, RF components, radar sensors and base-band processing are the key business areas of IMST for all types of wireless and mobile communication applications. In addition, IMST develops the FDTD based 3D EM field solver EMPIRE XPU™ which is sold worldwide. IMST also offers a large selection of IoT products. Furthermore, IMST has a long and successful history with national and international public funded projects. The company maintains well-equipped laboratories for assembling and testing RF-circuits, antennas, wireless modules and communications systems, including RF measurement equipment and anechoic chambers.

ACHIEVEMENTS & SUCCESS STORIES

A large part of IMST's revenues come through development and (rapid) prototyping of complex RF systems for various customers and different applications. In this context, public funded projects serve to keep up with the rapid technological development, and, very important, to be highly innovative, especially in areas where industry is not willing to invest but on the other hand expect high-tech off-the-shelf solutions that are at the same time cost-effective and cutting-edge technology product solutions. For example, EMPIRE XPU™ is used worldwide by leading telecom/RF companies and IMST has developed the first CE-certified 24 GHz radar module "sR-1200e" and developer kit "DK-sR-1200e".

INTEREST FOR FUTURE R&D&I COOPERATION

IMST focuses on challenging 5G / 6G applications in mmW activities and innovative radar systems. Actively, IMST is involved in several nationally funded projects regarding LTCC-integrated antenna beamforming lens arrays in the sub-THz bands and reconfigurable intelligent antenna arrays. We are interested in broadening and deepening our radar expertise, particularly in the 24-24.25 GHz, 57-64 GHz, and 76-81 GHz bands for different applications. Furthermore, our focus is antenna systems for automotive, space and aviation applications. IMST cooperates strongly with universities and the industry, especially with OEMs or Tier1 suppliers.



YEAR ESTABLISHED

2014



NUMBER OF EMPLOYEES

18



MORE INFORMATION

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CONTACT

info@incelligent.net

EXPERTISE IN

5G

IOT

BIG DATA

ANALYTICS

SMART CITIES

FINTECH, PUBLIC SECTOR

BACKGROUND, EXPERTISE & SKILLS

Incelligent is a software SME with specialization in the area of Big Data and Analytics for the telecommunication sector and other verticals, including private and public sectors. Incelligent's core IP is a platform developed out of years of R&D in the areas of Big Data, Machine Learning (ML) and Artificial Intelligence (AI).

On top of this platform, Incelligent has packaged and commercialized RAN.ai, a suite of analytics-based use cases covering traffic predictions, mobile network/ spectrum/ capacity planning and optimization, but also improved customer experience, analytics-based marketing/ retail optimization, as well as various vertical applications. The target of the vertical (fintech/banking, public) sector products is overall risk minimization, customer satisfaction and optimization of the efficiency of the operations.

ACHIEVEMENTS & SUCCESS STORIES

By participating in 5G-PPP projects, Incelligent has enriched the solutions in its portfolio leveraging on the capabilities of 5G and its ecosystem, as well as conduct validation activities and showcases. Recently, Incelligent was recognized as one of the key innovators by the European Commission's Innovation Radar with respect to the platform developed within the LOCUS project, which was selected as a high-impact, technology-ready innovation.

Furthermore, Incelligent has launched RAN.ai, a suite of solutions on top of advanced big-data analytics and ML/AI for improving telecom RAN operations, deployed for a major operator in Greece. Other portfolio solutions cater to enhanced customer experience, credit risk minimization and risk-based marketing currently deployed for a major operator in the Middle East -among others.

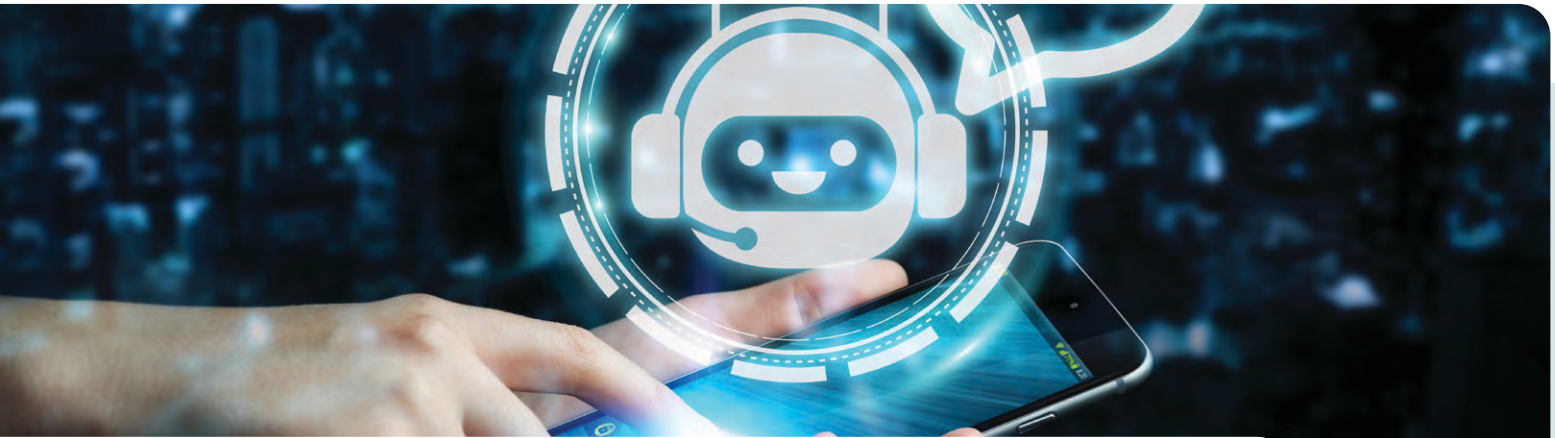
INTEREST FOR FUTURE R&D&I COOPERATION

Incelligent will continue to pursue research and development engagements towards B5G/6G, to maintain its competitive advantages. The company aims to further develop solutions for proactive resource and customer experience optimization in B5G/6G contexts, but also develop advanced services that monetize telecommunications and other relevant (e.g. positioning information, IoT sensor, etc.) data.

In addition, we are interested in expanding our solutions for other vertical sectors, especially in the areas of fintech, public sector applications, as well as smart venues.

Incelligent is an experienced partner, with an extrovert and cooperative mentality, in search for cooperation on research and products development, with an eye for applications with a worldwide potential.





EXPERTISE IN

5G IOT

CHATBOT
APPS

TRANSPORT &
LOGISTICS

HEALTH

PUBLIC
SAFETY

SMART
CITIES

BACKGROUND, EXPERTISE & SKILLS

INFOLYSIS P.C. is an innovative SME company, established in Athens, Greece, specialising on the design and development of chatbots, either as custom-made standalone applications or as subscribed-based services (Chatbot as a Service) via the privately owned chatbot platform. Chatbots are applications that simulate human conversation, based primarily on conversational flows, enriched with DL/ NLP technologies for more sophisticated solutions.

INFOLYSIS is committed to driving research results forward in order to expand chatbot applicability in novel ICT use-cases by experimenting with novel technologies, such as 5G, SDN/NFV at the network edge and container-based virtualization in IoT domains. An indicative example includes the INFOLYSIS IoT Virtual GW, which offers the provision of agile interoperability over heterogeneous IoT domains, along with a user friendly chatbot interface.

ACHIEVEMENTS & SUCCESS STORIES

In 2017, INFOLYSIS achieved to commercialise the first chatbot business solution over Viber in Greece, enabling food ordering via chatting. This pioneering solution created strong business cooperation with Viber, granting to INFOLYSIS the title of Viber Preferred Enabling Partner.

Since then, INFOLYSIS demonstrated its solutions to many events organised by Viber. Two events are standing out, the “Viber for Business Innovation Day” at SNFCC and the “Viber Chatbot event” at INNOVATHENS, where both the CEO of Viber Mr. Djamel Agaoua and the VP of Global Partnerships Mrs. Cristina Constandache were present, together with key-players from the Greek market.

Concerning R&D, INFOLYSIS successfully participates in two 5G-PPP/H2020 projects, 5GENESIS (www.5genesis.eu) and 5G!Drones (www.5gdrones.eu), which validate 5G applicability in real life use-cases.

INTEREST FOR FUTURE R&D&I COOPERATION

INFOLYSIS plans to further enhance chatbot characteristics and functionalities with DL/ NLP technologies for providing AI-driven chatbots to the Greek market and therefore there is a strong interest for building a cooperation with AI specialised companies.

Moreover, INFOLYSIS is looking for expanding chatbot applicability to new use-cases, such as improving citizen engagement in smart cities and to smart agriculture use-cases for simplifying continuous monitoring process.

Finally, INFOLYSIS also aims to expand its target market for the privately owned chatbot platform beyond the boundaries of Greece, targeting at popular Viber international chatbot markets in Europe, Russia and Asia, but also extending chatbot development over additional messaging platforms that are popular in specific countries, targeting at niche markets.



EXPERTISE IN

5G

IOT

NGI

SATELLITE
COMMUNICATIONS

TRANSPORT &
LOGISTICS

PUBLIC
SAFETY

CRITICAL
COMMUNICATIONS

MANUFACTURING

BACKGROUND, EXPERTISE & SKILLS

INTERNET INSTITUTE Ltd. (#ININ) is an innovation-intensive SME, highly specialised in 5G/6G Mobile technologies, Future Internet, Internet of Things, and WEB solutions and services, with a particular focus on test automation of network and services, quality assurance systems, and on Emergency Response tools and applications.

We address cloud-native applications, Network Apps, services and appliances for IoT-based remote sensing. Our industrial-grade portfolio (qMON and rMON systems) is customised for critical infrastructures and for public safety. We assure on-site intervention monitoring support with in-house developed iMON tools. Besides, we are experienced in design, deployment and operation of Non-Public 5G Networks, especially interested in those aimed at providing critical communications. We provide Portable 5G facility (<http://5gsafety.eu>), for testing, trainings and experimentation purposes.

ACHIEVEMENTS & SUCCESS STORIES

We are proud of our continuous cooperation with a number of global telco players, industrial plants, utility owners and public safety organisations, who help us in creating a realistic hands-on ecosystem for both innovative R&D pilots and for actual deployments facilitating day-to-day business operations. Our expertise has been recognised by several notable partners to whom we regularly provide trainings and consulting services.


Currently we are contributing to several Horizon 2020 projects (5G-LOGINNOV, Int5Gent, 5GASP, 5G-INDUCE, EVOLVED-5G, 5G-IANA) and to a Horizon Europe project (NEPHELE). Next to this, we are part of upcoming 6Green project funded under the Smart Networks and Services Joint Undertaking Programme, thus allowing us advancing our solutions from 5G to 6G.

INTEREST FOR FUTURE R&D&I COOPERATION

Our interests for the upcoming R&D&I cooperation are geared towards further advancements in 5G and 6G critical-communication systems, performance and quality monitoring, test automation systems, intelligent network orchestration, IoT ecosystem support, cloud-native applications and Network Apps development.

In particular: quality assurance of mobile, fixed and cloud-continuum systems, including 5G/6G related quality metrics development and validation, 5G/6G test automation, benchmarking and end-to-end KPIs validation; cybersecurity monitoring, quality monitoring and SLA assurance for network infrastructures and services; IoT services development, application cloudification, cloud-native applications and Network Apps development; R&I and piloting of resilient real-time critical infrastructures, and specialised 5G/6G deployments for public safety, manufacturing, logistics, intelligent transport, automotive, and utility verticals.



-  YEAR ESTABLISHED
1997
-  NUMBER OF EMPLOYEES
25
-  MORE INFORMATION
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EXPERTISE IN

5G

IOT

NGI

MEDIA &
CONTENT

SMART
CITIES

ENERGY

BACKGROUND, EXPERTISE & SKILLS

IQUADRAT has a focused business plan specifically intended on delivering a “new generation of research tools for system level evaluation of wireless integrated communication systems”. The company is involved in projects with large corporate clients, mobile operators and public authorities. Our R&D department is involved in many National and EU-funded research projects, and has extensive know-how in 5G Networks, IoT, simulation methodologies for Radio Access Networks (RAN), Software Defined Networking (SDN) and Demand Response algorithms for Smart Grids. Our key products include: i) an innovative end-to-end 5G platform that employs Network Function Virtualization in conjunction with Machine Learning algorithms that offer automated (zero-touch) network management and orchestration at the cloud/edge/RAN, ii) a suite of System Level Simulators (SLS) that 802.11, 802.15.4, and 4G LTE networks, iii) an SLS for Smart Grids that implements Demand Response algorithms, and iv) an IoT platform for Smart Building automation.

ACHIEVEMENTS & SUCCESS STORIES

Iquadrat is participating in a number of 5G-network related projects, such as the 5GPPP projects 5G-PHOS, MonB5G and 5GROUTES, the H2020 projects IoT SEMIOTICS, MARSAL, 5G-ERA, 5G EPICENTRE, 5G MEDIAHUB, and MSCA-ITNs 5G STEPFWD, SEMANTIC, MOTOR5G, and SPOTLIGHT. Iquadrat has gained extensive know-how in radio access technologies, network platforms, SDN, IoT and energy management methodologies for smart-grids. Key outcomes are i) our IoT platform for Smart Building automation that supports sensing of comfort related parameters (CO₂, humidity, lux, etc.) via our own custom battery operated IoT nodes and transmit data over BLE or 802.15.4, and multi- IoT gateway setups with cloud-based control via a centralized controller; ii) our 5G SDN/NFV platform that decouples the RAN Control & Data Plane, and consolidates the control plane into a single centralized controller, enabling easier coordination among base stations and offering real-time control.

INTEREST FOR FUTURE R&D&I COOPERATION

Iquadrat is interested in international cooperation in H2020 projects in ICT-related research and innovation, such as networking research for 5G and beyond, smart anything everywhere initiatives, tools for smart content in creative industries, etc.





EXPERTISE IN

5G

IOT

NGI

ENERGY

SMART CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

IS-Wireless develops algorithms, protocols, and tools for 4G and 5G mobile networks. We provide licensable software in the two following areas: i) Software-Defined RAN (SD-RAN) – a NFV-compatible, standard-compliant RAN protocols ready for 4G/5G, it allows mobile networks to support more users with better performance at lower cost ii) the 5GToolset - experimentation solutions for mobile networks supporting research and education on 4G and 5G (5G NR). Our ambition is to bring 4G and 5G innovation for every university and research lab worldwide at affordable prices.

ACHIEVEMENTS & SUCCESS STORIES

IS-Wireless has designed and develops innovative solutions for RAN virtualization like: the software-defined RAN (SD-RAN) – funded by the Public Authority in Poland; we have also developed the 5G Toolset – experimentation software for 4G/5G link and system level testing, and the unique solution called VNF Composition Framework (VCF) to support virtual RAN operation. Our radio resource management (RRM) solutions include among all 4G scheduler that has been integrated with the Eureka OpenAirInterface to support carrier aggregation under the umbrella of FP7 Solder. It has been upgraded to also support 5G and multi-RAT scheduling (based on LWA, LWIP coexistence protocols). IS-Wireless is proud member of the two industry fora: O-RAN Alliance (O-RAN) and the Telecom Infra Project (TIP).

INTEREST FOR FUTURE R&D&I COOPERATION

We are looking for partners willing to collaborate in: (i) development of 5G small cell protocols and radio resource management solutions for 4G/5G and cloud-RAN (ii) delivering cyber security solutions for 4G/5G small cells. We look forward to cooperate with different verticals (IoT/automotive, public safety, media) as we have our proprietary solutions for virtualized RAN that can be tailored and further adjusted per use-case (e.g. to complement existing products or solutions).



itti



YEAR ESTABLISHED

1996



NUMBER OF EMPLOYEES

80



MORE INFORMATION

www.itti.com.pl



CONTACT

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EXPERTISE IN

5G

IOT

NGI

SATELLITE
COMMUNICATIONS

MANUFACTURING

HEALTH

SMART
CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

The main competences of ITTI related to 5G are in PHY layer (channel coding, modulation, signal processing, synchronisation) and MAC layer (admission control, congestion control optimization), cognitive resource control and service adaptation (cross-layer, context driven, ML-based, QoE/QoS), network and cybersecurity (including ML techniques), test campaigns (e.g. video systems, mobile data services) and validation by means of system/link level simulators.

Our expertise covers eHealth, energy, and public safety vertical sectors. We developed Medstar.co solution that offers telecare support for remote patients. In the energy sector, we worked on optimal control for smart cities (e.g. light control, energy management). We also have extensive expertise in economic evaluation of PPDR networks and social media usage in crisis management within the public safety sector.

ACHIEVEMENTS & SUCCESS STORIES

ITTI has contributed to over 60 international R&D projects in the EC Framework Programmes (FP5, FP6, FP7, H2020), EDA programmes and ESA programmes.

In recent H2020 CAVICO (Context-Aware Video Controller for autonomous transport and security monitoring) project ITTI successfully tested in the 5GinFire testbed the developed system that is able to control the video streaming on the basis of measured QoS and QoE parameters. In another H2020 project – QoEST4CM (QoE Support for improved Crisis Management) we provided video streaming system, integrated with UAV in the RAWFIE testbed, enabling for adaptive change of video parameters depending on network conditions, and user requirements.

INTEREST FOR FUTURE R&D&I COOPERATION

Having a competent and experienced team of telecommunication engineers and software developers, ITTI is interested in collaboration with partners on development of innovative solutions for vertical sectors in the 5G ecosystem. In particular, we are interested in integrating novel technologies to our eHealth Medstar.co solution to enhance its functionality leveraging 5G capabilities. We are also seeking partners for collaboration on cybersecurity solutions for 5G networks. ITTI is also willing to involve in 6G research and technology development.





EXPERTISE IN

5G

IOT

SATELLITE
COMMUNICATIONS

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

BACKGROUND, EXPERTISE & SKILLS

JCP-Connect is a French SME with expertise in caching and edge computing for verticals as events, transport and smart cities. We provide portfolio of HW and SW edge computing solutions as well as caching as NFV for content delivery in virtualised environments.

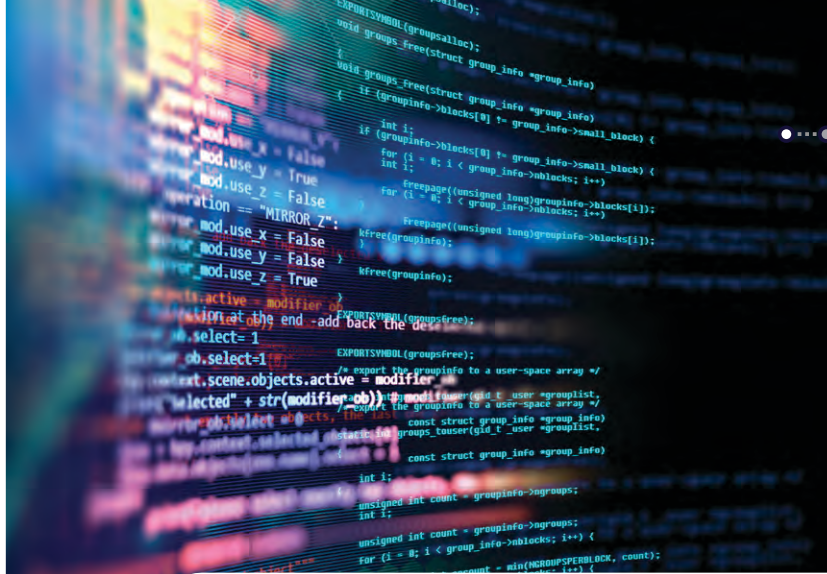
ACHIEVEMENTS & SUCCESS STORIES

Our involvement in numerous H2020 projects (including Beyond 5G and FTI calls) has helped us develop our edge computing and content delivery portfolio. Our gateway MoBCache, mounted on vehicles such as bus, trains, or drones, can collect and process sensor data from the surrounding environment in a secure manner. Our content delivery is currently implementing enhanced security features.

INTEREST FOR FUTURE R&D&I COOPERATION

We are interested to collaborate with telecoms, satellite operators, content and media providers, companies developing AI, etc. We are naturally open to European partners, but we would be happy to collaborate with partners from Africa, Latin America and Oceania as well.

We are interest in R&D collaborations in the following domains: Edge computing, MEC, caching, content security, intrusion detection, mobile IoT.



YEAR ESTABLISHED
2015



NUMBER OF EMPLOYEES
9



MORE INFORMATION
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EXPERTISE IN

5G

IOT

SATELLITE
COMMUNICATIONS

MEDIA & CONTENT

MANUFACTURING

HEALTH



BACKGROUND, EXPERTISE & SKILLS

High level ICT solutions, open source software development, agri-food experts, spectrum management, standardisation, spectrum sharing, licensing, international partnerships and digital cooperation.

ACHIEVEMENTS & SUCCESS STORIES

E-health project, COPD prototype: Design, development and evaluation with patients of a vibratory vest for electrostimulation for Respiratory Rehabilitation - Application in patients with chronic respiratory diseases.

Certiapp: It is a unique solution in the market adaptable for any existing certification body, whatever its scope and documentation, thanks to its complete assistants and its document manager.

HortoSaaS: cloud software developed with open source tools to track food traceability, from the field until the end customer consumes it. We can know at all times the processes through which the food passes in detail.

INTEREST FOR FUTURE R&D&I COOPERATION

- Seamless connectivity of 5G/6G networks with other local, regional or worldwide networks.
- Digital cooperation. Widely involved in activities in Europe, Latin America and Africa. Assistance is regularly provided to Governments of Mexico, Colombia, Paraguay, Eq Guinea as well as ongoing activities in Africa, like PRIDA project for introduction of wireless broadband services. KAAM interest in Morocco, Algeria, Tunisia, Egypt, Lebanon, Argentina, Chile, Brazil, Ecuador, Perú, Venezuela, Colombia, Panamá, Costa Rica, Honduras, Mexico.
- Spectrum sharing management and efficiency on the use of the spectrum through intelligent terminals capable to share the spectrum as well as development of 5G products for vertical industries (media, automotive, agriculture, energy, etc.)
- Open source software developers with new technologies, working with php and symphony in the back and with vuejs in the front, being our areas of implementation agriculture, renewable energies and e-health.





YEAR ESTABLISHED

1997



NUMBER OF EMPLOYEES

4



MORE INFORMATION

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CONTACT

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EXPERTISE IN

5G

IOT

HEALTH

SMART
CITIES

MEDIA &
CONTENT

MANUFACTURING

PUBLIC SAFETY

BACKGROUND, EXPERTISE & SKILLS

KOHS is specialized in development of technology in the fields of health care, ergonomics, occupational safety and health as well as social research and implementation of health and quality management since 1997.

A main focus of KOHS is given to technical research and development in the fields of risk ontology models, decision support, controlling of management processes (health, quality) and ergonomic interventions as well as blended learning processes / digital content.

A focus is also given to European wide knowledge exchange for optimising health structures and industrial development as well as standardisation (processes, interfaces). KOHS implements best practice regarding social risks such as inclusion, active aging, re-integration or diversity in health care and social systems at municipal and international level.

ACHIEVEMENTS & SUCCESS STORIES

KOHS offers the kohs.PIMEX.system (IoT/ IoST) for measurement and visualisation of health risks. The kohs.PIMEX.system is well used for risk assessment, working system design and for education in occupation health.

KOHS provides virtual learning spaces for education in health domains (focus: health care/mobile care) as well as in industrial settings. They allow synchronous and asynchronous learning, virtual learning, learning on the job as well as hybrid learning.

KOHS provides an IoT/sensor based technology for research on and development of cyber physical systems following the edge computing approach.

INTEREST FOR FUTURE R&D&I COOPERATION

KOHS is working on a new approach in health care enabling most demanded values for primary end-users: "Early care" and "Co-working on health" and secondary end-users: "Improved care", "Improved health of health care worker". A scaleable ICT infrastructure (sensing and early detection of risks and resources, AI based decision support) will be developed along with new processes addressing the changes in health care system to optimally support people to age healthy.

KOHS is looking for partnership in research and development in the field of early recognition/diagnostics, design of assessment models and control of implementation processes using sensor/ cyber physical systems. Further KOHS is looking for partnership with researchers and/or sensor manufacturers in any area of individual, environmental or organisational health risk.



Level7
Internet Service Provider

-  YEAR ESTABLISHED
2010
-  NUMBER OF EMPLOYEES
2
-  MORE INFORMATION
www.level7.it
-  CONTACT
info@level7.it

EXPERTISE IN

5G

IOT

NGI

SATELLITE
COMMUNICATIONS

MEDIA & CONTENT

SMART CITIES

PUBLIC
SAFETY

+

BACKGROUND, EXPERTISE & SKILLS

Level7 is a local telecom/ISP that since 2011 provides Internet access to customer via its proprietary wireless infrastructure. Recently, Level7 has also enhanced the coverage of the network and its offering thanks to commercial agreements with national wholesale providers for FTTH/ GPON multigigabit Internet access.

Level7 has extensive and proven experience in the SDN/NFV/5G-core technologies thanks to its R&D activities: Fed4FIRE+ Continuous open call (SD-WAN technologies), FLAME open call #2 and #4 (5G-core/SDN technologies), ORCA open call #2 (SDR Technologies for emergencies in indoor environment) SoftFIRE open call #1 (SDN technologies in DDoS scenarios) WiSHFUL Open Call #2 (SDR Technologies for disaster recovery). Recently, Level7 is also active in the cybersecurity use cases (SecurIT open call#1, Puzzle open call #1).

Level7 is also offering system integration in multiple verticals such as document management, smart cities, and broadcasting/media.

ACHIEVEMENTS & SUCCESS STORIES

Level7 is a very active member of the national association of the small and medium ISP (Assoprovider) and it has participated, on behalf of Assoprovider, at many national technical task forces.

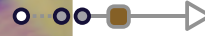
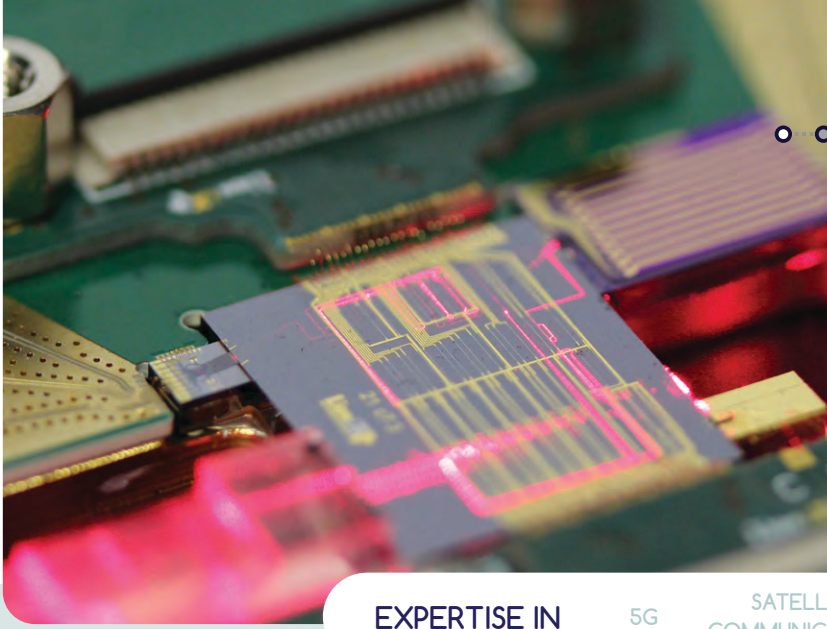
Thanks to the ICT-Flame project, Level7 has recently demoed a 5G-Core testbed in a rural environment, providing the infrastructure for 3rd parties that have demoed their experiments on the Level7 infrastructure.

INTEREST FOR FUTURE R&D&I COOPERATION

Level7 is interested in many telecom use cases such as 5G-6G, cybersecurity (e.g. DDoS protection), cloud, edge-cloud and NVF/SDN based services.

Level7 is focused at national level, as well as European and international level. Therefore, we are open to R&D cooperation in 5G/6G, IoT, AI/ML and cybersecurity with European companies, as well as USA/Japan and south America companies.





YEAR ESTABLISHED

2016



NUMBER OF EMPLOYEES

60



MORE INFORMATION

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CONTACT

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EXPERTISE IN

5G

SATELLITE
COMMUNICATIONS

TELECOM/
DATACOM

MANUFACTURING

HEALTH

BACKGROUND, EXPERTISE & SKILLS

LioniX International develops integrated microwave photonics (iMWP) solutions, in particular integrated photonic modules such as optical beamforming networks (OBFN). These enable ultra-high capacity broadband communications from flat-panel antennas for mmWave satellite, aeronautical and 5G terrestrial applications. The hybrid integration of our high-contrast, low-loss silicon nitride photonics platform TriPleX™ with Indium Phosphide (InP) technology provides small, robust, integrated modules with novel RF functions. Other examples of fabricated functions include tunable narrow-linewidth lasers, switches, filters, true-time-delay lines, WDM and more. We are a partner in H2020 projects PARALIA (multi-sensor fusion), SPRINTER (free-space optical and mmWave communications) and SNS JU projects TERA6G and FLEX-SCALE where our optical beam forming networks are enabling developments in the next generation of high-bandwidth, high-transmission-density flexible communication networks.

ACHIEVEMENTS & SUCCESS STORIES

We build customized solutions using Photonic Integrated Circuits (PICs) based on our proprietary waveguide technology (TriPleX™). We work with OEMs and System Integrators to support every stage of the development lifecycle, by vertical integration, in scalable production volumes. With a strong IP position to secure our technology leadership.

Three recognized Market Ready innovations have been developed under the H2020-5G-PHOS and BlueSPACE projects: i) "A Reconfigurable optical add-drop multiplexer (ROADM) design using Mach Zehnder Interferometer-based layout that simultaneously achieves 100 GHz channel spacing and low-losses", ii) "A Low loss and small footprint optical beamforming network (OBFN) design for wideband fast and continuous beamsteering," and iii) "A Low-loss and small footprint optical beamforming network (OBFN) design for wideband fast and continuous beamsteering".

INTEREST FOR FUTURE R&D&I COOPERATION

We continue our developments in mmWave activities of an ultra-high capacity broadband satellite communications beamformers, supporting an innovative flatpanel aeronautical antennas system as part of the project AIDAN under the Public Private Partnership contract with ESA and VIASAT Antenna Systems S.A.

We see miniaturization requirements and high performance needs in a suite of applications, amongst those: quantum applications in cold-atom traps for positioning navigation, timing (PNT) and sensing. Moreover, the use of integrated photonics modules in high bandwidth (free-space) optical and quantum communication. Furthermore we have ongoing activities in biosensing and visible light applications and further development of novel heterogeneous platforms which require innovative fabrication and assembly methods such co-packaging of optics and electronics, micro-transfer printing and flip-chip integration.





-  YEAR ESTABLISHED
2006
-  NUMBER OF EMPLOYEES
250
-  MORE INFORMATION
www.liveu.tv
-  CONTACT
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EXPERTISE IN

5G

IOT

SATELLITE
COMMUNICATIONS

MEDIA & CONTENT

TRANSPORT &
LOGISTICS

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

LiveU is driving the live video revolution, providing live video streaming for TV, mobile, online and social media. Since the company invented cellular bonding, LiveU's portable live video transmission solutions have replaced traditional SNG trucks, offering far greater mobility and cost-effectiveness for global newsgathering, sports and events coverage. From backpacks to smartphones, and satellite/cellular hybrid to external antenna solutions, LiveU offers a complete range of devices for high-quality live video coverage, together with cloud-based management and video distribution. All LiveU products are 5G ready, designed to transmit effectively from the field over 5G networks. With 3,000+ customers in 130+ countries, LiveU's technology is used by global broadcasters, online media, sports organizations, public safety and autonomous vehicle manufacturers with teleoperation/remote-assisted driving.

ACHIEVEMENTS & SUCCESS STORIES

LiveU offers creative HEVC live video streaming solutions for global newsgathering and every type of sporting event, including the FIFA World Cup™, Winter and Summer Olympic Games, Super Bowl, US Collegiate Championships, IRONMAN and Absa Cape Epic mountain bike race (South Africa).

LiveU has been involved in a series of 5G tests worldwide, for example, teaming up with AT&T to trial 5G with its portable HEVC units for live news and sports broadcasts, and taking part in Vodafone's 5G Experience Day, delivering 4K feeds from the 4K camera and over the 5G network to test 5G potential.

LiveU is an active partner in successful EU collaboration projects, including: the 5GPPP research project, 5G-Xcast; 5G-Solutions (2019); 5G-Tour (2019); PrEstoCloud and others.

INTEREST FOR FUTURE R&D&I COOPERATION

LiveU is looking for EU Horizon 2020 and international collaboration projects in: autonomous vehicles and connected cars, media and broadcasting, 5G, trials, public safety, telemedicine, video compression and video delivery over low cost public internet and any other area that requires reliable high-quality real-time video from the field for monitoring and/or control. LiveU contributes real-time video and data delivery over multiple cellular networks, high quality video over the public internet, remote teleoperation of SAE L3, L4, L5 vehicles and more.





EXPERTISE IN

5G

IOT

SATELLITE
COMMUNICATIONS

TRANSPORT &
LOGISTICS

MANUFACTURING

ENERGY

SMART
CITIES

BACKGROUND, EXPERTISE & SKILLS

Magister Solutions is specialist in communication network simulation and emulation tools and services for modelling real world telecom (satellite and terrestrial) in detail. Services for telecommunication include network simulation environments, concept, algorithm and software development, machine learning expertise, testing and PoC development.

ACHIEVEMENTS & SUCCESS STORIES

Magister Solutions has developed several simulators modelling terrestrial and satellite networks in details. One of the latest developments is a novel simulation framework called Self-Organizing Simulator 3 (SonS3) that makes use of real network data to enable an accurate performance analysis of mobility related SON use cases. In addition to simulator development, we also developed an MRO algorithm which adapts dynamically the Cell Individual Offset (CIO), and a performance analysis within a realistic urban scenario. The proposed MRO algorithm leads to an overall reduction of more than 30% in mobility problems without causing a significant increase in the number of HOs.

INTEREST FOR FUTURE R&D&I COOPERATION

We are working as a R&D&I partner with companies that are developing wireless systems, providing telecom services or looking for expertise in telecommunication. These companies include Satcom vendors and operators, Telecom vendors and operators and companies in defence and aerospace sector.



-  YEAR ESTABLISHED
1996
-  NUMBER OF EMPLOYEES
28
-  MORE INFORMATION
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-  CONTACT
info@martel-innovate.com

EXPERTISE IN

5G IOT NGI SATELLITE COMMUNICATIONS QUANTUM COMPUTING CLOUD EDGE IOT MEDIA & CONTENT ENERGY SMART CITIES

BACKGROUND, EXPERTISE & SKILLS

Martel is a dynamic digital innovation agency with more than 25 years' experience empowering organisations, from novel ideas to technological implementation, media and market strategy. After delivering over 100 innovation projects, Martel has grown into a thriving organisation with offices in Switzerland and in the Netherlands. From management of European Commission funded projects and EU consulting, Martel's business has diversified to include R&D in several domains and a broad palette of media and training services. Martel offers support and guidance on securing funds, selected ICT domains, and strategic communication. Martel also delivers training on European funding mechanisms, media and communication for technology, and advanced topics in Cloud Computing, Edge Computing, Internet of Things, Artificial Intelligence and open-source Software Engineering.

ACHIEVEMENTS & SUCCESS STORIES

The proliferation of IoT, the deployment of 5G and the rise of 6G are unleashing the potential to transform public services, transportation, sustainability and infrastructures across smart city scenarios. Orchestra Cities (orchestracities.com) is a data-driven IoT solution allowing cities to collaboratively develop and share smart services using Open Source software, APIs and Data Models. Orchestra Cities was developed with the European cities of Antwerp and Helsinki, it has been trialled by Wolfsburg city and EKZ (Kanton Zurich water and electricity utility) and it's now piloted within the ARCADIAN IoT and Affordable 5G projects. It is modular and scalable, satisfying the needs of cities of different sizes. Orchestra Cities supports different data formats and enables the creation of visual dashboards.

INTEREST FOR FUTURE R&D&I COOPERATION

Martel is interested in developing and trialling Orchestra Cities in a variety of scenarios, to complement and extend the platform's current smart cities focus and explore other verticals, such as smart mobility, automotive, smart energy, sustainability and multi-media content scenarios. We are also looking to explore the behaviour of the Orchestra Cities platform combined with 6G technologies. In turn, this will allow the incorporation of 5G infrastructures and solutions in combination with advanced IoT, Cloud and AI. Our interest is in the convergence between IoT management solutions and 6G, including the usage of micro-services architectures. We are also looking to bring usage scenarios in the context of Electric Vehicle Charging Station Management, Parking Management, Air Quality Management and Waste Management.



YEAR ESTABLISHED

2001



NUMBER OF EMPLOYEES

38



MORE INFORMATION

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CONTACT

info@mbigroup.it

EXPERTISE IN

5G

IOT

SATELLITE
COMMUNICATIONS

MEDIA &
CONTENT

TRANSPORT
& LOGISTICS

ENERGY

SMART
CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

MBI has experience and interests in Business Analytics and Optimization, where MBI provides customized solutions for Risk Management, Business Intelligence and Optimization to mainly the Telco, Energy, Gas, Water companies and Satellite Communications and applications, where MBI closely collaborates with the satellite operators and SatCom ecosystem in a wide variety of innovative solutions in the area of hybrid satellite/terrestrial networks, entertainment, applications for mobile or automotive devices.

MBI Research and Development activities are mainly focused on advanced networking, optimization, signal processing, network planning and software defined radio technologies.

MBI has acquired a deep know-how on Software-Defined Radio and GPU technologies and more generally on software-based approach for the development of ground telecom components, both at hub and terminal side.

ACHIEVEMENTS & SUCCESS STORIES

MBI solution for seamless vertical handover has been adopted by some leading European enterprises.

MBI provides solutions for IoT networks via satellite used in multiple domains (agriculture, energy, public safety, etc).

MBI works with the main European satellite operators and the European Space Agency in the standardization, development and testing of highly efficient, energy saving and green communications protocols.

MBI realized the first software implementation of a complete testbed for the ETSI S-MIM protocol.

MBI is patenting its solution to measure rain fields using satellite receivers.

MBI is founding member of the 5G-MAG (Media Action Group) in which needs of the broadcast and media domains are analysed in order to provide 5G standardization bodies with requirements and specifications.

INTEREST FOR FUTURE R&D&I COOPERATION

MBI is willing to explore collaborations with partners whose intent is to integrate satellite communications in the 5G world, by applying virtualization and orchestration concepts to hybrid networks to be used for fixed and mobility applications.

MBI is also interested in bringing its large expertise on IoT via satellite in 5G networks.

Collaborations with satellite terminals manufacturers should be welcome.





YEAR ESTABLISHED

2004



NUMBER OF EMPLOYEES

10



MORE INFORMATION

www.montimage.com



CONTACT

contact@montimage.com



EXPERTISE IN

5G

IOT

NGI

CYBERSECURITY

ALL VERTICALS

(MONITORING AND SECURITY MANAGEMENT
SOLUTION APPLICABLE IN ALL VERTICAL SECTORS)

BACKGROUND, EXPERTISE & SKILLS

Montimage has proven reputation as experts, researchers and innovators in 4G/5G/IoT, cybersecurity, high-bandwidth and high-precision real-time monitoring of networks and business activity for operators and industry 4.0.

Montimage specialises in the development of tools for the analysis and management of networks. It provides flexible security and monitoring as-a-Service adapted for dynamic SDN/NFV/Cloud environments. Montimage's expertise covers the detection, prevention and mitigation of cybersecurity incidents in data and control planes from physical to application layers. Its solutions allow deploying and configuring monitoring agents to analyse behaviour using DPI and AI techniques.

Montimage's has deep knowledge of network and application protocols and behaviour. Its products are completely built in-house and, hence, are trustworthy and customizable for high throughput and complex systems.

ACHIEVEMENTS & SUCCESS STORIES

Montimage's solutions have been applied to improve the resiliency and trustworthiness of complex systems and adapted to different domains. The solutions can be extended to deal with proprietary protocols and analyse the behaviour and business activities of the different sectors.

Montimage has successfully deployed its solution in several research and industrial platforms (MONET in <https://www.softfire.eu/open-calls/third-open-call/>, <https://www.inspire-5gplus.eu/inspire-5gplus-participates-in-etsi-zsm-proof-of-concepts/>, Thales, DGA) to improve the security of IoT radio and/or 5G mobile communications. It will also deploy its security solutions in the 5G network deployment in Paris-Saclay (5GOpenRoad).

Montimage commercialises advanced solutions for creating instant 4G/5G networks for emergency situations, for providing extra bandwidth, and improving coverage. It has an ongoing collaboration with Cumucore Oy to commercialise portable 4G/5G secure mobile solutions.

INTEREST FOR FUTURE R&D&I COOPERATION

Montimage participates in many collaborative research projects that allow introducing innovative techniques into its products. For instance:

H2020 INSPIRE-5Gplus project where it builds advanced security solutions based on AI/ML for the detection and reaction to security breaches, and identification of root causes.

H2020 SANCUS project where it builds innovative Attack Configuration Engine and System Intelligent Defence solutions.

HORIZON-SNS EINSTEIN6G project on secure time sensitive networking.

MOSICO French ANR project investigating the assurance of 5G verticals latency requirements.

A notable result of these projects is its MMT security and performance monitoring framework and the 5greplay tool that has been developed to generate traffic and perform penetration, robustness and scalability tests. They are being exploited through an open-source project (<https://github.com/Montimage>, www.5Greplay.org).



NEARBY COMPUTING



YEAR ESTABLISHED

2018



NUMBER OF EMPLOYEES

20-30



MORE INFORMATION

www.nearbycomputing.com



CONTACT

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EXPERTISE IN

5G

IOT

NGI

MEDIA &
CONTENT

ENERGY

SMART
CITIES

PUBLIC
SAFETY

AUTOMOTIVE

BACKGROUND, EXPERTISE & SKILLS

Nearby Computing S.L. is a fast-growing start-up company founded in Barcelona (Spain) in 2018. NearbyOne Edge Orchestrator is the company's flagship product, bringing the first all-in-one virtualized platform for deploying, managing and automating hybrid, heterogeneous and distributed IT systems, networks and applications. In addition, Nearby Computing's state-of-the-art technology provides the capability of designing and executing innovative complex value-added end-to-end services. Our R&I department has ongoing collaborations with mobile network operators, important vertical players, large corporate partners and public authorities, while it is actively involved in several public-funded projects in various domains, including automotive, energy and private networks, among others.

ACHIEVEMENTS & SUCCESS STORIES

Nearby Computing participates in three EC-funded 5GPPP research projects (i.e., Affordable5G, Smart5Grid and 5GMED) on a diverse ecosystem of innovative use cases, including smart grid, automotive and affordable 5G private networks. Thanks to the agility and flexibility of our product, we can provide adaptive solutions according to the needs of the different projects, i.e., from the management of 5G-ready applications and services to complete end-to-end network orchestration solutions. Nearby Computing has won numerous awards for innovation in the Orchestration and Automation of network processes on 5G and Edge Computing. In contrast, it has been included in the exclusive Leaders Board of the Intel Network Builders (INB) Winners' Circle Awards, being the youngest company to become part of this select group.

INTEREST FOR FUTURE R&D&I COOPERATION

Cutting-edge research and innovation constitute the driving force for the development of Nearby Computing. To that end, we are open to expanding our partnership portfolio through new collaborations with industrial and academic partners. We are interested in a broad range of complementary disciplines, seeking partners with expertise in AI/ML solutions for network automation, 5G and beyond core network architecture, application software development, and verticals with innovative use cases. Our team members have extensive participation in national Spanish and European projects (e.g., IA, RIA, ERC grants, MSCA actions, etc.) and the experience to support research projects from the initial steps of the proposal phase to the actual execution of Proofs-of-Concept and large-scale pilots.





YEAR ESTABLISHED

2017



NUMBER OF EMPLOYEES

41



MORE INFORMATION

www.nemergent-solutions.com



CONTACT

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EXPERTISE IN

5G

IOT

MISSION CRITICAL
COMMUNICATIONS

TRANSPORT &
LOGISTICS

ENERGY

SMART
CITIES

PUBLIC
SAFETY

MFG.

HEALTH

BACKGROUND, EXPERTISE & SKILLS

Pioneers in the industry, the Spanish SME Nemergent leads the way towards more open Mission Critical Communications (MCS/MCX). Nemergent Solutions SL has significant expertise in designing and prototyping novel PPDR (e.g. Blue lights) and Public Transport (e.g. FRMCS communications) solutions over mobile broadband technologies, supporting mission critical communication. Nemergent's portfolio includes a complete and fully 3GPP standard MCPTT/MCS/MCX ecosystem made up of early implementations concerning MCX Application Servers (AS), MCPTT/MCS/MCX management servers and the Nemergent MCX Client for Android and Linux operating systems. The service-side components are designed as NFV, CNF or KNF components, fostering agile and flexible deployments in 5G/5G+/6G-alike setups. The innovation-driven nature of the company promotes the establishment of commercial links with different UE, IMS and EPC leading companies.

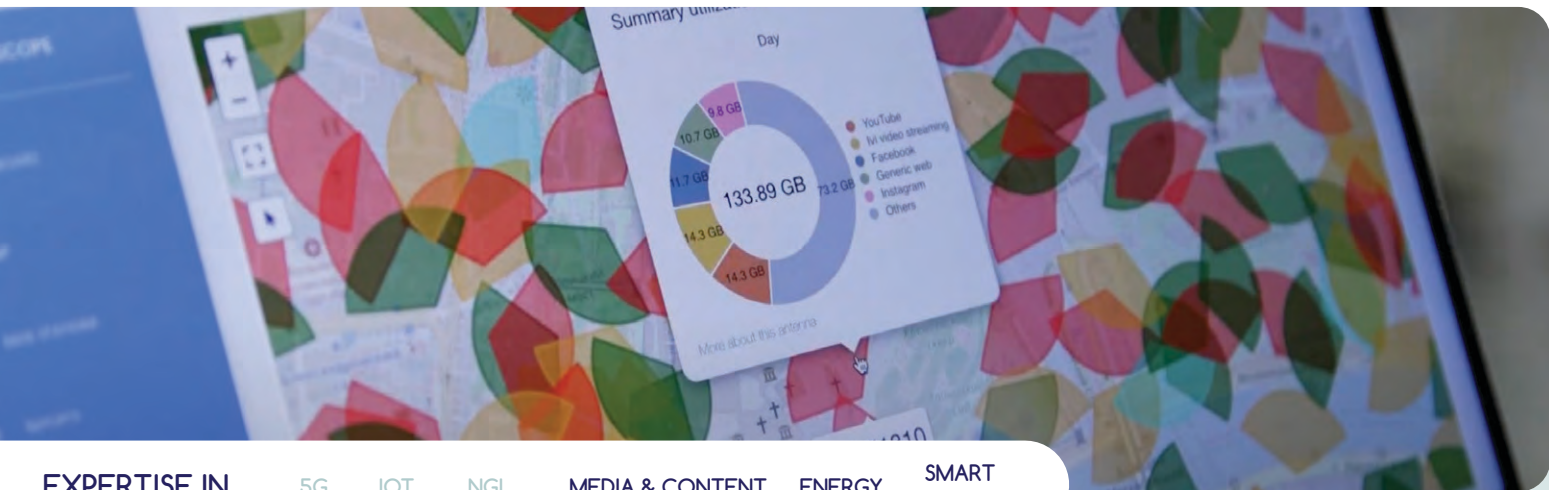
ACHIEVEMENTS & SUCCESS STORIES

Nemergent Solutions is involved in international R&D projects oriented to PPDR where it takes advantage of its best-of-breed products. The company was engaged in 5GPPP 5GENESIS project bringing the first real-world mission critical integration and use-cases over 5G and within the US market the US NIST/ PSCR MCS TaaSting to fulfil the needs of mission critical community for compliance testing (RAN5) based on TTCN-3 code specs. It has also finalized a OC2 project in Fed4FIRE+ and OC1 in INTER-IoT and it has also been involved in US NIST/ PSCR PSIAP achieving end-to-end mission critical communications according to 3GPP. Within H2020 the company has been involved in projects like 5GENESIS (ICT-17), Affordable5G (ICT-42) and 5G-EPICENTRE (ICT-41) among other international projects and collaboration.

INTEREST FOR FUTURE R&D&I COOPERATION

The R&D background shows the clear advocacy of the Nemergent Solutions to improve and adapt future MCS communications. The firm is devoted to adapt and adjust the current mission critical products towards 5G+/6G technology and operations and therefore, aims at collaborating with partners providing orchestrators, evolved MEC/ edge solutions, 5G+/6G Cores and evolved platforms allowing forthcoming features of 3GPP acting as validator of the end-to-end solution with MCX. Nemergent is willing integrate mission critical services with 5G MBS (Release 17-18). Additionally, the company wants to provide its expertise with MCDATA IP Connectivity feature. These International collaborations are intended not only to serve as an early adoption of 5G/5G+/6G operations, but also to assess the service-level KPIs of standardized mission critical products.





EXPERTISE IN

5G

IOT

NGI

MEDIA & CONTENT

ENERGY

SMART
CITIES

BACKGROUND, EXPERTISE & SKILLS

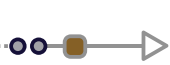
Net AI is a network intelligence company developing a deep traffic analytics platform that can drastically reduce CAPEX/OPEX/TCO for mobile operators and enable new high-margin revenue streams.

ACHIEVEMENTS & SUCCESS STORIES

Net AI has recently become a VMware partner and is planning pilot with a Fortune 500 system integrator. The company has packaged into an xApp its AI-driven forecasting engine and is showcasing that at PlugFest Fall 2022 in the i14y lab hosted by Deutsche Telekom.

INTEREST FOR FUTURE R&D&I COOPERATION

We are looking for mobile network operators and telco OEMs/system integrators who are interested in early access to our AI technology and want to engage with us on a technical trial.



YEAR ESTABLISHED

2020



NUMBER OF EMPLOYEES

10



MORE INFORMATION

www.neutroon.com



CONTACT

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EXPERTISE IN

5G

IOT

NGI

MANUFACTURING

ENERGY

SMART
CITIES

BACKGROUND, EXPERTISE & SKILLS

Neutroon builds a management and orchestration software for multi-RAT, multi-vendor, private wireless networks with end-to-end slicing capabilities. The aim of Neutroon is to drastically reduce CapEx and OpEx in comparison to incumbents and building an ecosystem of applications running alongside with the core network, to solve real-life problems, especially in the industrial domain, opening the market to SME and mid-caps.

Neutroon makes it really easy for its customer (system integrators, telco operators, and enterprise directly) to deploy and manage multiple private 5G/LTE/Wi-Fi networks from a single platform, supporting multiple protocols belonging to the cellular and non-cellular world. Neutroon can also providing an end-to-end slicing mechanism to segregate radio, transport, and computational resources to gives performance as much deterministic as possible.

ACHIEVEMENTS & SUCCESS STORIES

Despite being funded in 2020, Neutroon already got a lot of traction at international level. By closing agreements with partners from all around Europe, Neutroon is having relationships with industries, system integrators, mobile networks operators, and service providers. Among the partners of Neutroon there are companies of all size. The latest deployments and roll-outs of multi-RAT networks including 5G involved the set-up of a hybrid 5G+WiFi network for Augmented Reality and Immersive Reality applications, and the deployment of a large-scale demo site for industrial applications in Munich. Various applications related to safety, AR, and tracking, has been designed to work on an installation consisting of 3 different construction sites in London (UK).

INTEREST FOR FUTURE R&D&I COOPERATION

Neutroon is partnering with different actors of its value chain to build a consistent ecosystem of connectivity and applications to address several verticals spanning from the Industry to smart city, smart campuses, mobility, healthcare, and education. Neutroon has experience in public funded projects and is willing to participate in more projects bringing both use-case oriented and transversal partners.

The demo sites deployed by Neutroon are designed to collaborate with academia, universities, and R&D centers, to mutually benefitting from the innovation activities that can be carried-out jointly.



EXPERTISE IN

5G

IOT

NGI

SMART
FACTORIES

MEDIA &
CONTENT

MANUFACTURING

ENERGY

SMART
CITIES

TRANSPORT &
LOGISTICS

BACKGROUND, EXPERTISE & SKILLS

Nextworks has long-term experience in 5G control and orchestration technologies, built on top of solid know-how of ETSI NFV and MEC architectures. We have deep hands-on expertise with various NFV MANO tools (ETSI OSM, ONAP), SDN controllers (OpenDaylight, ONOS), VIMs (OpenStack), cloud native orchestration (Kubernetes). We developed solutions for IoT in smart homes and factories, AI-driven orchestration of Network Slices and vertical applications in cloud/edge 5G and 6G environments, both proprietary and open-source. We have strong involvement in SDOs, particularly at ETSI NFV, MEC, ZSM and ENI, where we are working in various specialist task forces, NFV Plugtests and Proof of Concepts. Our R&D and products target domains closely related to Media, Smart Cities, Transport, Smart Homes and Smart Factories.

ACHIEVEMENTS & SUCCESS STORIES

Our mission is to provide cutting-edge solutions and consultancy services tailored to customers' needs. In 5G PPP and SNS projects, Nextworks is developing strong assets of software prototypes for 5G/6G, SDN/NFV, MEC and IoT. This includes: 5G/6G Service Catalogue and Market Place, TIMEO (Transport Infrastructure and MEC Enabled Orchestrator), SEBASTIAN (Service Based Slice Translation, Integration and Automation), Network Monitoring and Security platforms, Experimentation platforms for vertical services and IoT platform for smart factories. Our prototypes are demonstrated at international events, like EuCNC, ICT, MWC, OFC. Our background translates into innovative IoT solutions and consultancy services: i) Specialized Training on NFV/MEC technologies; ii) Technical Project Management for 5G/6G trials; iii) Standards Development Support in ETSI and Interoperability and API conformance Plugtests.

INTEREST FOR FUTURE R&D&I COOPERATION

Despite the solid R&D in Software Networks of these years, work is still needed to realize the vision of Smart Networks for any Vertical service on top. Key challenges include aspects of network management over distributed network control systems; powerful abstractions and service orchestration in 5G/6G networks towards extreme edge resources; NTN integration; AI/ML solutions for closed-loop and zero-touch network automation; flexible operation of cloud-native edge applications; intent-based APIs and highly configurable policies to control resource and service lifecycles. To properly address these challenges, we seek for teaming with international experts on virtualization and control technologies (Networking Industry), service operation (Telcos), vertical business service offering (above all [Industrial-]IoT domain top players for our target products), and top-tier academia.



YEAR ESTABLISHED

2011



NUMBER OF EMPLOYEES

+70



MORE INFORMATION

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CONTACT

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EXPERTISE IN

5G

IOT

CLOUD-NATIVE
SOLUTIONS

MANUFACTURING

SMART
CITIES

HEALTH

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

ENERGY

BACKGROUND, EXPERTISE & SKILLS

ng-voice is a Germany-based telco software supplier with a global footprint that has collaboration and DevOps in its DNA. Committed to building the next generation of 100% software-based mobile networks, combining DevOps with telecommunications expertise, ng-voice is creating innovative mobile infrastructure solutions and making them accessible for service providers and enterprises of any size that want to deploy future-proof networks.

Our flagship product – our fully containerized and cloud-native IMS - is the first 100% containerized and Kubernetes-based fully-fledged IMS solution for VoLTE/ VoNR with under 25MB of container image size, allowing deployment on bare metal (private) and public cloud environments. With a high automation level and minimal resource footprint, it reduces overall TCO (Total Cost of Ownership) and optimizes the entire life-cycle management of the application.

ACHIEVEMENTS & SUCCESS STORIES

ng-voice has integrated its fully cloud-native IMS with clients in all three target segments: MNO, MVNO, and enterprises. It offers MNOs and MVNOs the opportunity to move to a more flexible infrastructure model, reducing costs, and improving the time-to-market of new features and services. ng-voice's solution also serves the enterprise market through solution provider partners for private networks where cloud-native voice solutions continue to be a key requirement.

INTEREST FOR FUTURE R&D&I COOPERATION

Partnerships are key to unlocking the full value of 100% software-based mobile networks. We are proud to work with innovative service providers, system integrators, and solution providers to deliver complete solutions to our customers. We are looking to grow our ecosystem of partners that join our mission to deliver future-proof mobile networks and unlock the full value of LTE/ 5G connectivity and cloud-nativity to our customers.



YEAR ESTABLISHED

2014



NUMBER OF EMPLOYEES

5-10



MORE INFORMATION

www.nouveauctomm.com



CONTACT

navnit.goel@nouveauctomm.com

EXPERTISE IN

5G

IOT

AI

WEBSITE DEVELOPMENT

CLOUD

TRANSPORT
& LOGISTICS

SMART
CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

We develop customized Data communication solutions helping customers to realize potential of existing Network, while providing innovative solutions in the field of unprecedented business and technological changes.

We Provide

- Innovations and products in wireless, IP and cloud networking, IoT, NFV and SDN
- R&D Consultancy and Test Services
- Customized solutions for Tactical Communication, public safety and other vertical markets

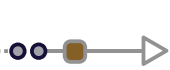
ACHIEVEMENTS & SUCCESS STORIES

1. Design and Development of Remote Environ Monitoring System
2. IoT Gateway with GPRS connectivity to cloud with optional Wi-Fi and 4G interface to cloud for remote solar power monitoring application
3. Prototype Trial in a small vineyard in Houston USA for LoRA based system for Smart Agriculture
4. Setup Website Design and Hosting Business

INTEREST FOR FUTURE R&D&I COOPERATION

We are looking for projects in Wireless 5G, IoT, Test Beds, R&D Services including Architecture, Software and Hardware Design and Testing. We are also looking for Business Development partners.





 YEAR ESTABLISHED
2022

 NUMBER OF EMPLOYEES
3

 MORE INFORMATION
www.oraxio.fr

 CONTACT
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EXPERTISE IN 5G IOT TELECOM/DATACOM QUALITY OF SERVICE SECURITY UNIFIED NETWORK MANUFACTURING PUBLIC SAFETY TRANSPORT & LOGISTICS ENERGY +

BACKGROUND, EXPERTISE & SKILLS

ORAXIO Telecom Solutions provides architecture services to Telecom infrastructure manufacturers. ORAXIO expertise and skills are built on the 20+ years of experience of each its founders. ORAXIO staff participated to several H2020 projects by providing the communication infrastructure. We are specialised in private network infrastructure (5G, 4G, TETRA) and we always look at how best to adapt the infrastructure to the specific use cases. Each use case has its specificities, and we adapt the solution so it is optimized for the use cases (UL vs DL, broadcast, radio coverage, type of traffic, etc.).

Another key skill is that we integrate and interconnect technologies in order to build unified networks.

ACHIEVEMENTS & SUCCESS STORIES

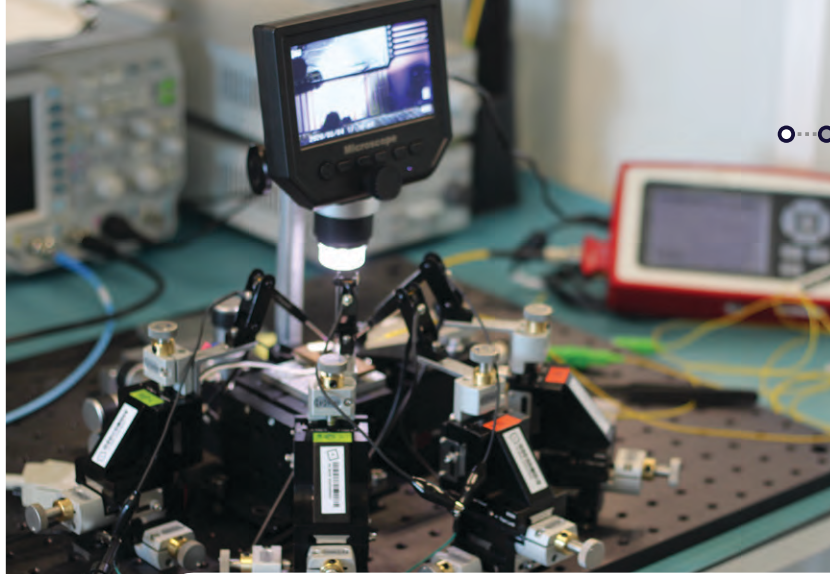
We delivered mobile multi technology telecommunications platforms to several verticals (medical, railways, works). These platforms were associating TETRA and 4G LTE in one single system. It was transparent for the users and features were developed specifically for the customers.

INTEREST FOR FUTURE R&D&I COOPERATION

We look at Mission Critical solutions or customized 5G infrastructure to fit with the verticals need.

On the 5G side, we are focussing on the RAN part.

We use MCPTT to interconnect technologies.



YEAR ESTABLISHED

2014



NUMBER OF EMPLOYEES

41



MORE INFORMATION

www.picadvanced.com



CONTACT

global@picadvanced.com

EXPERTISE IN

5G

SATELLITE
COMMUNICATIONS

PHOTONIC INTEGRATED
CIRCUITS

MANUFACTURING

SMART
CITIES

BACKGROUND, EXPERTISE & SKILLS

PICadvanced has a solid background on developing solutions for NG-PON2 transceivers (NGPON2 is the currently deployed PON standard technology that enables 10 Gbit/s symmetrical links for each wavelength) and providing innovative solutions based on photonic integrated circuits (PIC), including their optical interfaces and mechanical packaging.

PICadvanced has more than eight years of expertise in developing processes and solutions for optics using PICs, from design to packaging and integration into optoelectronic and telecommunication products.

The current objective of PICadvanced is to migrate its product's technology from using optical discrete components to PICs using PICadvanced's skills to deliver efficient co-packaging transceivers, which by providing broader bandwidth, faster speed of operation, improved energy-efficiency and robustness will enable to reach new telecommunication markets.

ACHIEVEMENTS & SUCCESS STORIES

PICadvanced is an R&D start-up company that developed the first cost-effective fully compliant ONU transceiver for NG-PON2 based on discrete optics, allowing PICadvanced to export made-in-Portugal technology to Tier 1 operators in the United States. Currently, its multi-disciplinary team comprises Engineers from electronics, software, optics, mechanics, and packaging, providing the company the ability to develop and manufacture its own solutions in Portugal.

Since its foundation, PICadvanced has a research department to develop new architectures for future PON technologies that have been published in papers and journals in the field of integrated optics and terahertz communications.

INTEREST FOR FUTURE R&D&I COOPERATION

PICadvanced has been involved in research into cutting-edge technologies. Its R&D team has experience in several national and European R&D projects pursuing to expand the state of the art of PON and 5G. For more information, visit www.picadvanced.com/#research

PICadvanced's R&D activities cover several topics: Design and testing of PICs, mechanical and electrical packaging of prototypes, testing of optical systems and series production.

PICadvanced aims to strengthen EU industry and the EU state of the art with unique and novel products for future wireless and access networks by collaborating on EU and national projects mainly (but not only) related to PON, telecommunications, PICs and 5G & 6G.

Moreover, PICadvanced is open to partnerships for end-products' series production. In this area, PICadvanced has several years of experience with the manufacturing of its NGPON2 transceivers.





R&D&I

TESTING & VALIDATION

TRAINING

CONSULTING

EXPERTISE IN

5G

IOT

NGI

MANUFACTURING

SMART
CITIES

HEALTH

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

ENERGY

BACKGROUND, EXPERTISE & SKILLS

p-NET is a private company incorporated as a Competence Centre in the field of B5G smart networks and services. It involves 22 shareholders representing industrial and business sectors, research and academia, public authorities, consulting and entrepreneurship support companies. The main aim of the Competence Center is to support businesses, with emphasis on strengthening vertical value chains and sustainability, and promote innovation and entrepreneurship.

Its services are centered around knowledge and technology transfer and include research and development of business solutions, experimentation and pilot testing in advanced lab infrastructure and experimental facilities, upskilling and reskilling training on topics relevant to 5G, AI/ML, BD, IoT, DLT, as well as awareness and consulting services to public authorities, businesses and start-ups.

ACHIEVEMENTS & SUCCESS STORIES

p-NET is a young company that started its operation in December 2021. In parallel to its business organization and staffing efforts, p-NET managed the submission of 7 competitive HE proposals, capitalizing on the support and networks of its shareholders. Two proposals were retained for funding and the projects will kick-off in January 2023. The MetaCities project (HORIZON-WIDERA-2022-ACCESS-04) involves 21 partners from Greece, Cyprus, Bulgaria and Denmark, who will collaborate in creating an Excellence Hub for Future Cities and Regions in Southeast Europe. The FIDAL project (HORIZON-JU-SNS-2022) involves 20 partners who will collaborate to support Media & PPDR vertical industry players perform advanced technological and business validation of innovative and advanced applications, in large-scale field trials exploiting evolved 5G technologies.

INTEREST FOR FUTURE R&D&I COOPERATION

The area of telecommunication networks and services is characterized by a multidimensional paradigm shift, which affects the whole range of activity, from the way networks are developed, managed, and operated to the way new vertical applications, solutions and services are designed and implemented.

As R&D&I is a core activity of the Competence Centre, p-NET seeks to team up with academic institutions, industry and enterprises on a national, European and international level to: a./ advance the state of the art in relevant fields; b./ test, validate and demonstrate innovative technologies, solutions and applications; and c./ design and deliver relevant upskilling and reskilling training programs to professionals.

The envisaged R&D&I cooperation may be implemented in the context of EU and national framework programs or bilateral business agreements.



 YEAR ESTABLISHED
2012

 NUMBER OF EMPLOYEES
~35

 MORE INFORMATION
www.purelifi.com

 CONTACT
info@purelifi.com



EXPERTISE IN

5G

IOT

LIFI

MANUFACTURING

SMART
CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

pureLiFi is the global leader in LiFi technology. We are bringing to market the world's first commercial light antennas, which are the optoelectronic components that make LiFi possible in consumer electronics, lighting, and mobile devices.

LiFi is high speed wireless communications using light rather than radio frequencies. LiFi pushes wireless to new limits by offering gigabit speeds, ultra-low latency, high quality connections with military grade security.

Applications for LiFi range from gigabit smart homes, AR/VR, and LiFi enabled mobile phones to industrial manufacturing and defence applications. The pureLiFi team includes highly qualified, international light communication engineers and management experience in the mobile and semiconductor sectors exceeding 50 years.

ACHIEVEMENTS & SUCCESS STORIES

Named Scotland's most innovative company in 2020, pureLiFi has deployed LiFi in hundreds of countries worldwide covering dozens of use cases.

pureLiFi has lead commercialisation and miniaturisation of LiFi technology with the launch of the only Light Antenna on the market ready for integration into mobile devices, lighting, and consumer electronics in 2019.

pureLiFi are founding members of the Light Communications Alliance alongside industry leaders such as NOKIA, Du Telecommunications, and Liberty Global.

pureLiFi also chairs the IEEE 802.11bb Task Group which is developing the Global standard for LiFi, ensuring LiFi is integrated into every light and every device.

INTEREST FOR FUTURE R&D&I COOPERATION

Just as 4G and Wi-Fi make up our daily arsenal of wireless tools today - LiFi as a 5G technology will be another key internet-lifeline in everyone's pocket. The future for LiFi is integration into all of our devices, smartphones, tablets and wearable technology. We are interested to support today's most demanding use cases including but not limited to: Smart home, Device to device communication, Media & game streaming, Virtual, Augmented and Mixed Reality.

pureLiFi is currently involved on several EU Horizon 2020 projects (5G-CLARITY, ENLIGHT'EM, ALC, WORTECS) and will look for more H2020 and international collaboration projects in LiFi, 5G and beyond.



quobis :



YEAR ESTABLISHED

2006



NUMBER OF EMPLOYEES

51



MORE INFORMATION

www.quobis.com



CONTACT

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EXPERTISE IN

5G

IOT

NGI

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

HEALTH

SMART
CITIES

BACKGROUND, EXPERTISE & SKILLS

Quobis is an European leading company in voice interconnection expert services and well-known as one of the pioneers in the deployment of WebRTC technology after being involved in the release of the industry's first WebRTC Application Controller. Today, this element is part of the core network of different telcos worldwide. In addition, Quobis Communication Platform is helping enterprises from different industries such as telecommunications, BFSI or retail to quickly adopt the most advanced ways of communications such as video calling, instant messaging, VoIP, etc. for improving collaboration between office and deskless workers and creating a richer customer experience."

ACHIEVEMENTS & SUCCESS STORIES

Quobis is one of the partners involved in 5GTANGO project, a 5GPPP Phase2 Innovation Action that enables the flexible programmability of 5G networks with:

- a) an NFV-enabled Service Development Kit (SDK);
- b) a Store platform with advanced validation and verification mechanisms for VNFs/ Network Services qualification (including 3rd party contributions);
- c) a modular Service Platform with an innovative orchestrator in order to bridge the gap between business needs and network operational management systems.

The main role of Quobis in this project consists of the development and implementation of the communication suit pilot, that enables real-time videoconferences using media VNFs, application VNFs and platform VNFs for the 5GTANGO platform.

INTEREST FOR FUTURE R&D&I COOPERATION

Quobis has broad experience working on international projects not funded by public agencies as is a key partner for some of the larger network integrators and service providers that see Quobis as the reference partner for projects with special needs in UC.

Quobis is already cooperating in R&D&I projects with partners in Europe and Brasil. We are looking at strengthening those partnerships as well as opening up to new countries and new projects.





YEAR ESTABLISHED

2002



NUMBER OF EMPLOYEES

1-5



MORE INFORMATION

www.quotientassociates.com



CONTACT

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EXPERTISE IN 5G IOT NGI

SATELLITE
COMMUNICATIONS

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

SMART
CITIES

MFG. HEALTH

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

Quotient is an international strategy, technology, security and economics consultancy to the communications industry. The company specialises in all aspects of fixed and wireless communications, broadcasting, security, and spectrum regulation and management.

ACHIEVEMENTS & SUCCESS STORIES

We are used to both leading and participating in multidisciplinary projects. Our skills lie in 5G new technologies in both core and RAN, 5G network security and project management. We are currently serving as part of the technical design authority for UK Government (DCMS) testbeds and trials, which include the vertical sectors of Industrial Internet of Things, Smart Tourism, Connected and Autonomous Vehicles, Healthcare and Agriculture Technology. We also have an overarching security role across all projects, which are now all up and working.

INTEREST FOR FUTURE R&D&I COOPERATION

We are looking to be involved in any of the above in a technology; strategy; testbeds and trials; network or application security; and / or project management role.



realwireless.

independent wireless experts



YEAR ESTABLISHED

2006



NUMBER OF EMPLOYEES

15



MORE INFORMATION

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CONTACT

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EXPERTISE IN 5G IOT

SATELLITE
COMMUNICATIONS

NGI

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

MANUFACTURING

HEALTH

BACKGROUND, EXPERTISE & SKILLS

Real Wireless is the pre-eminent independent expert advisor in wireless technology, strategy & regulation worldwide. We bridge the technical and commercial gap between the wireless industry (operators, vendors and regulators) and users of wireless (venues, transportation, retail and the public sector) - indeed any organization which is serious about getting the best from wireless to the benefit of their business.

ACHIEVEMENTS & SUCCESS STORIES

A key partner in 5G-PPP projects in the specialist area of Techno-Economics. Having worked in the thought leading 5G-NORMA project on Cloudification of 5G we have published papers and deliver for clients in the area of TCO optimal evolution of networks based on evaluation of potential ROI. In 5G-MoNArch we developed capabilities to look at Socio-Economic value creation. Harnesses these two capabilities we now work in the 5G-TOURS project evaluating innovations and Use Cases across Health, Tourism and Transport sectors. We have developed analytic tools leveraging radio and architecture principles to develop quantitative analysis outcomes which inform our business, technical analysts.

INTEREST FOR FUTURE R&D&I COOPERATION

European and International clients and partners that would like to gain deep insight on the value propositions of emerging architectures, typically in TRL4/5 and below. We work with Engineering and Research teams on assessment of Innovations, Technology, Architectures and Economics of concepts. Our tooling and experienced consultant can rapidly assess TCO, ROI, QoE, KPI, KVI and other commercial and technical metrics and provide a solid independent evidenced basis for technical and business validation.





YEAR ESTABLISHED

2007



NUMBER OF EMPLOYEES

7



MORE INFORMATION

www.redmillcommunications.com



CONTACT

guy@redmillcommunications.com

EXPERTISE IN 5G IOT

SATELLITE
COMMUNICATIONS

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

SMART
CITIES

ENERGY

HEALTH

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

Redmill Marketing Associates (RMA) is a UK-based full-service B2B marketing agency, founded in 2007, that is dedicated to providing telecoms and technology companies with the support and strategic input they need to meet their growth objectives.

We have deep experience and expertise of mobile communications and networks and, in particular, 5G evolution and market development. Our expertise spans infrastructure, applications and services, backed by a clear understanding of market context and trends.

Our customer portfolio covers: smart technology, IoT, SaaS, mobile networks, 5G evolution, network planning / analysis, AI and ML, as well as OSS and BSS. We provide our customers with a focused and responsive service that acts as a seamless extension of their own marketing resources.

ACHIEVEMENTS & SUCCESS STORIES

We work with leaders and innovators from our industry, including Tambora Systems, Telecom26, CROSS Network Intelligence, InfoVista, Polystar, Digitalk, Spirent / Mobilethink, Gintel, 5G Briefing, and others.

We are proud of our continuous support for customers over more than a decade, providing strategic input and marketing services to reach growth targets, M&A goals, market penetration and expansion targets, and to plan new sales and lead generation channels.

Tambora Systems: transforming an innovative startup into a fast-growing and relevant entrant offering orchestration of dynamic network slicing to control latency and QoS for LTE / 5G applications.

Polystar: supporting an established provider of Service Assurance, CEM, Data Monetisation, and 5G Network Load Testing tools with strategic marketing input and content creation.

INTEREST FOR FUTURE R&D&I COOPERATION

RMA is dedicated to fostering new partnerships with SMEs in order to help them reach new markets, define successful market strategies, and to provide market analysis to identify growth opportunities.

In particular, we are interested in delivering marketing projects in the following areas: 5G, IoT, Smart Technologies, AI and ML, B2B and VAS solutions for operators, NGN OSS / BSS, Core Network functions, EPC, IMS and more.





YEAR ESTABLISHED

2018 in Dublin (Ireland) and
2019 in Athens (Greece)



MORE INFORMATION

www.rfsat.com



CONTACT

rtd@rfsat.com



NUMBER OF EMPLOYEES

10+



EXPERTISE IN

5G IOT NGI

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

SMART
CITIES

ENERGY

HEALTH

PUBLIC
SAFETY

SMART

PRECISION AND
SUSTAINABLE
AGRICULTURE



BACKGROUND, EXPERTISE & SKILLS

RFSAT is a private non-profit research-performing SME organization with offices in Dublin (Ireland), and Athens (Greece). Its activities focus on applied research and technological development through national and international research funding, industrial consultancy and commercial exploitation of research results in the telecommunications industry. Main focus areas include networked audio-visual media processing and communication for e.g. unmanned and autonomous (aerial) surveillance, cyber-physical resilience including intrusion detection and prevention, multi-spectral and 3D surveillance/modelling for large areas, structures and tangible objects (e.g. for Cultural Heritage and Environmental protection, Security and Crisis Management etc), Machine Learning and Artificial Cognitive Intelligence (AI) for situation awareness, Mixed-Reality systems for serious gaming applications, e-Health and tele-assistance including Ambient Assisted Living (AAL) to address needs of ageing population, ultra-low-power wireless embedded sensing and control, immersive user interfaces, integrated Information Management Systems (IMS), hybrid indoor/outdoor (A/D GNSS and Galileo, wireless, cellular, inertial and mobile) positioning and localization, GIS and Location Based Services (LBS), Smart Energy/Grid and critical infrastructure protection for Smart Cities and other related

technological areas. RFSAT is expert in networking and telecommunications technologies, including 5G mobile communications, from high-level algorithmic design to efficient low-level hardware and implementation and VLSI fabrication on silicon, and cyber security.

ACHIEVEMENTS & SUCCESS STORIES

Our company motto is anthropocentric and social orientation in our research directions, having resulted in our technologies from FP7-StrokeBack project integrated in stroke rehabilitation products from Meytec (Germany), our 3D scanning techniques along with algorithms detecting degradation of Cultural Heritage objects from H2020-SCAN4RECO project integrated into automated system of Ormylia (Greece), while our innovative solutions combining ignition detection on autonomous UAS platforms from FP7-AF3 project have been successfully demonstrated by ELBIT Systems for fighting wild forest fires. Precision 3D scanning and modelling from H2020-SVAN4RECO have been adopted by restoration units of cultural heritage in Italy and Greece. Results from H2020-ARCH project are currently adopted by a number of EU cities as part of the project's solution portfolio for better understanding of impact of climate change on cultural areas. Ongoing H2020-AgriBIT project has already produced an innovative GNSS receiver featuring sub-centimetre accuracy with Precision

Agriculture in mind, but also seamlessly applicable to nearly any consumer application.

INTEREST FOR FUTURE R&D&I COOPERATION

RFSAT invests in funded research under European programs (FP7, Horizon/2020, COST etc.) in areas of Information and Communication Technologies, Cyber-Physical Security, Environment, Space, Transport and Health. RFSAT is an active member of Networked Media (NEM) and NetWorld2020 European Technology Platforms (ETP), Integrated Mission Groups for Security (IMG-S), ENISA Network and Information Security (NIS), European Connected Health Alliance (ECHAAlliance), European Alliance for Innovation (EAI), Infrastructure for Spatial Information in Europe (INSPIRE), and other European alliances, platforms and professional organizations. RFSAT allies as SME stakeholder with several ongoing projects funded under Horizon 2020 and COST programs with various past activities in FP6 and FP7. Its contribution areas have been in Smart Energy and IT critical infrastructure protection with applications areas of Smart Energy, Environment, Climate Change, as well as Precision Agriculture, social network analytics, vulnerability analysis and validation, interoperability of surveillance systems and other similar areas.



-  YEAR ESTABLISHED
2015
-  NUMBER OF EMPLOYEES
15
-  MORE INFORMATION
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-  CONTACT
Isreakl@runel.net

EXPERTISE IN

5G IOT

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

SMART
CITIES

MFG.

ENERGY

HEALTH

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

RunEL, led by Dr. Zion Hadad, consist of a highly experienced team of Mobile Communication experts that pioneered the OFDMA Radio Access Technology [RAN] back in the early 2000's which today is the base line solution for: 4th Generation LTE and WiMAX, 5G cellular Network and next generation WiFi Standards. Today, RunEL tackles global challenges put forward by modern communication and technologies enabling mission-critical tasks like V2X communication, remote surgery, AR/VR and more, by allowing Ultra Reliable Low Latency Communication (URLLC).

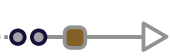
ACHIEVEMENTS & SUCCESS STORIES

RunEL was a main contributor to the world first demonstration of a 5G link over Visible Light spectral band. The test was performed as part of the IoRL consortium under the European Union Horizon 2020 project and included additional innovations, such as the PHY layer split, that later become an industry trend backed by the Open RAN (ORAN) Associations. RunEL's contribution to this successful demonstration was recognized by the European Union Innovation Radar that awarded RunEL the "Key Innovator" title.

INTEREST FOR FUTURE R&D&I COOPERATION

RunEL is an active member and in the 3GPP standard and ORAN Alliance, TIP and several 5G/6G Research consortiums, WIN (by the Government of Israel) and IoRL, 5 Genesis, Affordable 5G and 6G Brains (by the Horizon-2020 Project) in which the company is collaborating with numerous companies and research institutes in the development and promotion of 5G generic technologies.

RunEL is looking to partner with large operators, OEMs and organizations promoting investment and deployment of 5G in the field. RunEL focuses on all regions of the world, with an emphasis on US, Europe and Eastern Asia.



YEAR ESTABLISHED

2003



NUMBER OF EMPLOYEES

249



MORE INFORMATION

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CONTACT

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EXPERTISE IN

5G IOT

AERONAUTICS

SATELLITE
COMMUNICATIONS

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

SMART
CITIES

ENERGY

HEALTH



BACKGROUND, EXPERTISE & SKILLS

Sequans is a world leading developer and provider of 5G/4G Cellular IoT chips and modules, and the only provider focused entirely on IoT.

For massive IoT, Sequans provides a comprehensive product portfolio based on its flagship Monarch LTE-M1/NB-IoT and Calliope LTE Cat 1 chip platforms, featuring industry-leading low power consumption, large set of integrated functionalities, and global deployment capability.

For broadband and critical IoT, Sequans offers a product portfolio based on its Cassiopeia LTE Cat 4/Cat 6 4G and high-end Taurus 5G NR chip platforms, optimized for low-cost residential, enterprise, and industrial applications.

Our expertise and years of experience in cellular IoT makes us uniquely able to help our customers and research partners through the various business and technical deployment challenges of cellular.

ACHIEVEMENTS & SUCCESS STORIES

Sequans is 100% focused on 5G/4G cellular IoT with a comprehensive portfolio of chips and modules delivering the advanced capabilities necessary to enable success in IoT on a massive scale. Sequans' solutions are certified by leading operators worldwide and are found inside utility meters, trackers, sensors, alarm systems, and wearables in numerous industries. Key features include industry-leading low power consumption, integrated SIM for high level security, global deployment capability, and other advanced features. Sequans currently participates in iGENIOUS (next-generation IoT solutions for the universal supply chain) H2020 EU research project, and leads the work package on the next generation IoT device layer. Sequans will also be participating in Hexa-X-II Horizon Europe EU research project, the second phase of the EC's 6G flagship initiative.

INTEREST FOR FUTURE R&D&I COOPERATION

Sequans has a strong culture in innovation and 15 years long expertise in wireless communications, mastering chipsets and modules design and integration in complex environment. Sequans is interested in R&D&I cooperation that will help us consolidate the transition from 4G to 5G, enter high potential vertical markets (e.g. Satellite, Drones), plan transition from 5G to 6G, and to prepare the future platforms for internal development.

We are looking to share our cellular IoT expertise and solutions to pave the way for 5G and 6G technologies integrated in product, either on the SW roadmap or to be integrated in a next generation chipset. Sequans can also drive contributions to standards specifications developed in 3GPP groups as well as help create new study and work items.



SEVEN
Solutions



YEAR ESTABLISHED

2006



NUMBER OF EMPLOYEES

41



MORE INFORMATION

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EXPERTISE IN

IoT

ENERGY

SMART CITIES

FINANCIAL

BACKGROUND, EXPERTISE & SKILLS

Seven Solutions, worldwide leaders in the White Rabbit (IEEE 1588 high-accuracy profile) timing technology. It is a private held leading company in accurate sub-nanosecond time transfer and frequency distribution for reliable industrial and scientific applications. Our timing solutions have been validated during the last 9 years and we offer currently the best interoperable, dependable and ultra-accurate time transfer and synchronization approach in the market (nanosecond accuracy, deterministic, dependable and scalable).

Seven Solutions provides solutions capable of distributing time and frequency over metro and long-haul 5G links in both back-haul and front-haul:

- Ultra-accurate Time and Frequency Transfer (phase transfer using IEEE 1588 High-Accuracy Profile)
- Reliable GNSS Timing Solution with integrated accurate Time Transfer capability over optical fiber (backup system)
- High bandwidth & latency bounded Ethernet communications
- Deterministic data delivery based for Time-Aware Applications

ACHIEVEMENTS & SUCCESS STORIES

Currently collaborating with Tier 1 technology partners towards the standard eCPRI. Validating our solution with Deutsche Telekom for the visibility network.

INTEREST FOR FUTURE R&D&I COOPERATION

We are interested in collaborating in ICT-related H2020 calls related to telecom, satellite services, 5G, IoT, smart cities and energy. Cooperation with international partners from different sectors to setup pilots and PoCs.



EXPERTISE IN

5G

IOT

NGI

MANUFACTURING

SMART
CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

Siklu is a provider of wireless connectivity solutions based on mmWave technology. Siklu's products include both point-to-point solutions with data rates as high as 10Gbps for backhaul/fronthaul applications and point-to-multi-point solutions that may be used for broadband fixed access applications or small-cell backhaul applications. Siklu has intellectual property in the RFIC and mmWave beamsteering antenna. This allows Siklu to design mmWave remote radio heads compatible with 5G standards. In addition to our hardware portfolio Siklu leads the mmWave industry with a suite of SaaS applications including automated complex network design tools, ROI calculators and management systems.

ACHIEVEMENTS & SUCCESS STORIES

Siklu focuses on Gigabit Wireless Access (GWA) and Smart Cities as well as cellular front haul and backhaul. By the end of 2018 we had networks deployed in over 150 Smart Cities around the world. Currently the largest mmWave market is the US, where Siklu has roughly 60% market share for 60, 70/80GHz systems. From a product perspective in 2018 we launched our 10Gbps product with the longest range in the market, a new small size Terminal Unit for outdoor deployment that is just slightly bigger than a typical smart phone, and our automated network design tool WiNDE.

INTEREST FOR FUTURE R&D&I COOPERATION

Siklu has been intensively involved in R&D and innovation cooperation projects. It has participated in FP-7 projects BunGee and IPHOBAC-NG, as well as in H2020 projects RAPID, and currently participates in the projects 5G-PHOS and THoR. Siklu is also involved with other research consortia and collaborates on research with partners from both industry and academy. Siklu cooperation interests include mmWave radio and antenna technology, high-speed modem technology, mmWave beamsteering antennas, 5G RRH, mmWave/fiber integration and other ideas that may be exploited in our target markets.



SOLIDSHIELD

LIGHT & EASY TOOLS FOR NETWORK SOFTWARE SECURITY
Software Security, Trust and Liability



YEAR ESTABLISHED

2003



NUMBER OF EMPLOYEES

3



MORE INFORMATION

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CONTACT

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EXPERTISE IN

5G

IOT

MEDIA &
CONTENT

DEFENSE
SECTOR

BACKGROUND, EXPERTISE & SKILLS

We deliver automated protections for software binaries to ensure their authentication, confidentiality, integrity, execution control or use right enforcement. Originated from the video game Digital Right Management domain, our technology has expanded with dedicated solutions for the defence and the telecom sectors. For the latter we have developed an automated SECaaS model that anyone can use from software vendor to telecom operator. Our special flavor is to harden software without any required source level changes or provisions on the infrastructure be required.

ACHIEVEMENTS & SUCCESS STORIES

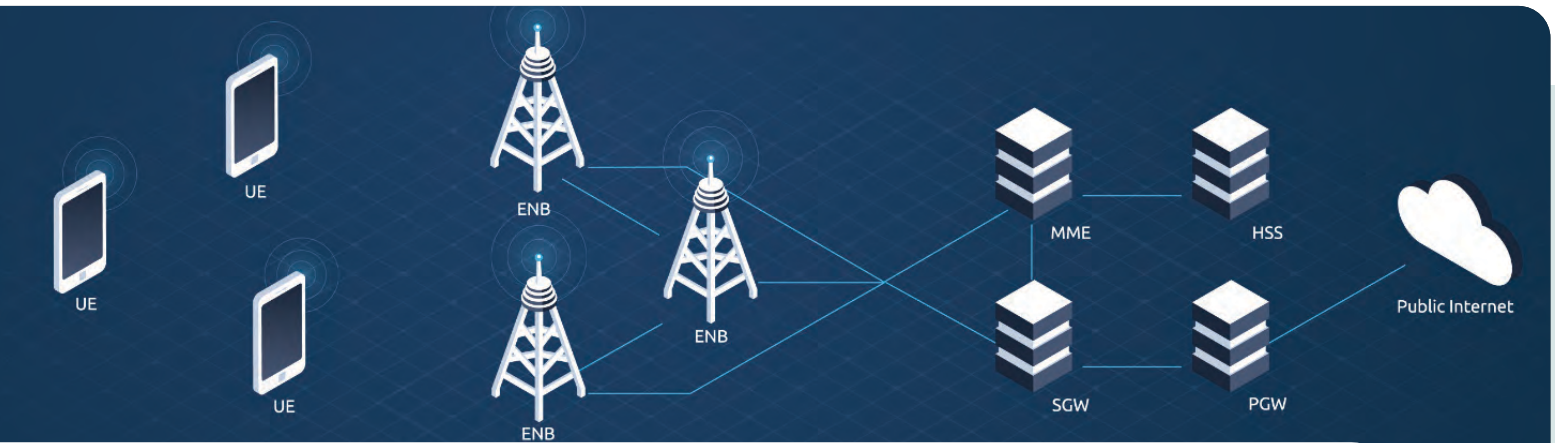
Beside defense government-backed or customer financed projects, we have been selected in two SDN collaborative projects (Sendate Tandem and Inspire-5Gplus). In these projects, our main achievements are several developments of our all-in-one automatic software SECaaS solution while preserving the software stringent performance requirement. On both projects, we have improved our solution to deliver utmost security to virtual security functions, including by leveraging Intel's SGX technology automatically (as a result of Inspire-5Gplus). In Inspire-5Gplus, we are now exploring the deep monitoring concept, well fitted for telecom inter-connected software to deliver inalterable evidences of the instance functioning states during their execution.

INTEREST FOR FUTURE R&D&I COOPERATION

We view the following challenges for the close future of software defined networks and IoT:

- Moving from security trade-offs to rock solid evidences and security on demand.
- Data zoning: Defining a practical solution and/or methodology to ensure that a user data is only resident inside an approved boundary.
- Benefits of applying AI-ML to enhance software security. Conversely, apply ad hoc and measured software security for elevate trust and resilience on AIML based solutions.

We are looking for any partners willing to consider disruptive paths for today and tomorrow's un-answered or unexplored needs and develop altogether scalable and automated technologies.



EXPERTISE IN 5G IOT NGI **SATELLITE COMMUNICATIONS** **MEDIA & CONTENT** **TRANSPORT & LOGISTICS** **SMART CITIES** **PUBLIC SAFETY**

BACKGROUND, EXPERTISE & SKILLS

Software Radio Systems (SRS) is the team behind the popular srsLTE project (www.srslte.com). Providing a complete open-source end-to-end mobile network implementation, srsLTE is used by leading mobile wireless researchers around the world and is the enabling SDR platform behind 5 of the 6 most recent coordinated vulnerability disclosures listed on the GMSA mobile security hall of fame.

Commercially, SRS builds upon the proven srsLTE platform to provide customized, high-performance 4G and 5G mobile network solutions including IoT and V2X. Customer successes include operational air-to-ground broadband networks, launched and active LEO satellite systems, advanced 5G field-test solutions and deployed mobile wireless sensor and analytic networks.

ACHIEVEMENTS & SUCCESS STORIES

SRS is involved in international R&D projects which focus on novel applications of mobile wireless technology. The company is engaged in the 5GPPP 5GVINNI project where it contributes SDR components for 5G, building upon its proven srsLTE platform. In the US, the company has successfully completed a 2-year project with NIST/PSCR under the Department of Commerce. The OpenFirst project provides an end-to-end reference network implementation for research, prototyping, test and validation of LTE technologies for public safety communication. SRS works with the European Space Agency on projects related to multimedia delivery over hybrid satellite/terrestrial networks and efficient satellite backhaul of IoT traffic. The company is a regular MWC exhibitor and works globally with Tier 1 mobile operators and OEMs.

INTEREST FOR FUTURE R&D&I COOPERATION

SRS is looking for international partners focused on RDI cooperation in the areas of emerging 5G technologies, cyber-security, V2X and IoT. We have extensive experience in working directly with RDI partners to accelerate proof-of-concept and shrink time-to-market and we regularly engage in projects under NIST, ESA, H2020 and others.



-  YEAR ESTABLISHED
2017
-  NUMBER OF EMPLOYEES
45
-  MORE INFORMATION
www.suite5.eu
-  CONTACT
contact@suite5.eu

EXPERTISE IN

5G IOT AI ANALYTICS EXPLAINABILITY TRANSPORT & LOGISTICS MFG. HEALTH ENERGY SMART CITIES PUBLIC SAFETY

BACKGROUND, EXPERTISE & SKILLS

Suite5 Data Intelligence Solutions is a data analytics and software house with a strong focus on R&D and Innovation projects. Suite5 participates in such activities as an analytics and intelligence provider, working on topics such as big data, data management and insights generation, in various verticals. In more detail, the company works on analytics solutions that are able to provide descriptive and prescriptive analytics, which are based both on structured and unstructured data and are coming out of hardware and software sensors. The company participates in such attempts in the 5G sector (MATILDA project), as well as in other sectors such as Aviation (ICARUS project), Manufacturing (EOSC-hub project, UPTIME project), Cybersecurity (FutureTPM project) and Energy (FLEXCoop project).

ACHIEVEMENTS & SUCCESS STORIES

In MATILDA Suite5 worked on the development of policy models for applications that run on top of SDNs, and in the area of Analytics that are able to the behaviour of systems in 5G ecosystems. Those two combined are in a position assist decision making towards network placement, deployment and reconfiguration and could help to generate new insights about 5G applications and new policies for optimum utilisation of resources.

INTEREST FOR FUTURE R&D&I COOPERATION

Suite5 is highly interested in joint ventures which have R&D and Innovation interest in any vertical that either is in need of advanced data insights and analytics, or expects to benefit from the application of data technologies to traditional functions towards using data intelligence and softwarisation to explore value that is not exploited yet.





YEAR ESTABLISHED

2014



NUMBER OF EMPLOYEES

7



MORE INFORMATION

www.superradio.no



CONTACT

kun@superradio.no



EXPERTISE IN

5G IOT

TRANSPORT &
LOGISTICS

MARITIME
SECTORS

BACKGROUND, EXPERTISE & SKILLS

Super Radio AS, a high-tech startup founded in 2014 in Oslo, is the maritime 5G pioneer for ocean digitalization and autonomous ship. It provides professional maritime land-based broadband solutions, radio channel measurement/channel sounding solutions and related consultant services.

ACHIEVEMENTS & SUCCESS STORIES

Since 2016, Super Radio AS is leading the world's first 5G Maritime communication project "LTE, WIFI and 5G Massive MIMO Communications in Maritime Propagation Environments (MAMIME)" funded by the Norwegian Research council. In 2017, World's first maritime 5G massive MIMO channel measurement campaign with a research vessel for autonomous operations was successfully performed in MAMIME project in Trondheimfjord. In 2019, it become the 5G test solution provider for the small-version yara birkeland, which is the world's first fully electric and autonomous container ship.

INTEREST FOR FUTURE R&D&I COOPERATION

Our interests for future R&D&I cooperation include: Massive MIMO, Land-based maritime communications, Ocean digitalization, smart/autonomous shipping, and radio channel sounding. We are actively looking for partners in telecom and maritime sectors like ISP, manufactures, shipping companies and maritime infrastructure owners,



IS> SYNDESIS



YEAR ESTABLISHED

2012



NUMBER OF EMPLOYEES

5



MORE INFORMATION

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CONTACT

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EXPERTISE IN

5G

IOT

NGI

SECURITY AND
QT

HEALTH

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

Syndesis Ltd co-founders are members of the research team of NCSR Demokritos / IIT (www.demokritos.gr). The company as NCSRs' Spin Off Company owns proprietary technology IPRs and continues to invest in R&D activities, further developing innovative technologies for secure and trustworthiness cloud based healthcare services. Syndesis Ltd is conducting cutting-edge research and is developing proprietary technology. It is continuously enhance its services, integrating state of the art technologies like PQC, intelligent recommenders, secure techniques and modules, IoT applications and decentralized computing. Syndesis is experimenting with advanced Infrastructures to support hosting, 5G applications, exploitation of Quantum technologies and big data analysis to support security.

ACHIEVEMENTS & SUCCESS STORIES

Syndesis Ltd research team together with the research team of the of the NCSR D have been active in European R&D projects (www.usefil.eu, profound.eu.com, www.cip-reaal.eu, www.concorde-project.eu and others) developing cloud platforms (clinic.iwelli.com). Running sites in Municipalities of Oraikastro, Hrakleia in West Macedonia, in Novo Selo in North Macedonia and in South Bulgaria have adopted the technologies and the Fhir EHRs we are experimenting with (<https://remotecare2020.eu/>, <https://healthnet-project.eu/>). Syndesis Ltd experimented with NGI applications where through the Fed4Fire infrastructure (SDHS project) it setup of the experiment with three Nodes in the Tengu platform for two experiments. The iWelli.com ecosystem (www.iwelli.com, clinic.iwelli.com, med.iwelli.com, mydata.iwelli.com) for Health and Well-Being consist of web platform, IoT Smart devices, 5G mobile applications (<https://play.google.com/store/search?q=iwelli>), and AI algorithms.

INTEREST FOR FUTURE R&D&I COOPERATION

Syndesis LTD provides intelligent and secure services targeting mainly healthcare e-services. Within the realm of its activities Syndesis has developed the iWelli.com ecosystem of secure cloud-based solutions to help doctors, nurses and care teams to monitor their patients' health deterioration and to help patients to monitor their health status while away from healthcare premises. Syndesis is experimenting in implementing AI and beyond state of the art secure techniques to protect privacy of cloud based and 5G medical services. Within this realm Syndesis Ltd is looking for partners to cooperate and set up pilot trials and research infrastructures (NGI and 5G and well as utilising QC technologies) to experiment with the with secure channels to transfer health care big datasets.



TechNarts



YEAR ESTABLISHED
2007



NUMBER OF EMPLOYEES
14



MORE INFORMATION
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CONTACT
horizon@technarts.com

EXPERTISE IN

5G

IOT

NGI

TRANSPORT &
LOGISTICS

HEALTH

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

TechNarts Informatics (TechNarts) is an SME founded in 2007 in Ankara, Turkey. Our expertise is developing large-scaled, robust, trustworthy software applications to solve complex and inextricable problems of enterprises. Our focus is on telecom, health and transport sectors as well as government and non-profits.

TechNarts's network operations support system STAR, is a highly effective solution for Telcos and in use for 10+ years, processing millions of network performance data annually with complex and learned algorithms, provides real-time intelligence about the network's current state end-to-end manner and generates automated reports with big data analytics. It provides critical value to operators by reducing service outage risks and increasing operational efficiency.

The main activities of TechNarts are analysing, design, software development and integration.

ACHIEVEMENTS & SUCCESS STORIES

TechNarts is the developer and implementer of the first successful, country-wide and full-cycle pharmaceutical traceability system in the world.

Another flagship solution is STAR which is operational in one of the telecom operators in Turkey for more than 10 years. STAR integrates multiple network technologies and layers such as SDH, DWDM, Radiolink, IP/MPLS and mobile (LTE/3G/4G/5G) and interprets the data gathered from 50K network devices in daily base.

TechNarts received 3 Seal of Excellence certifications from SME Instrument program and completed several R&D projects realized with the national funding programs.

TechNarts currently works on the new upgrade that will solve 5G networks. In addition, TechNarts is a member of Communication Technologies Clustering in Turkey and participates its "End-to-End 5G" project.

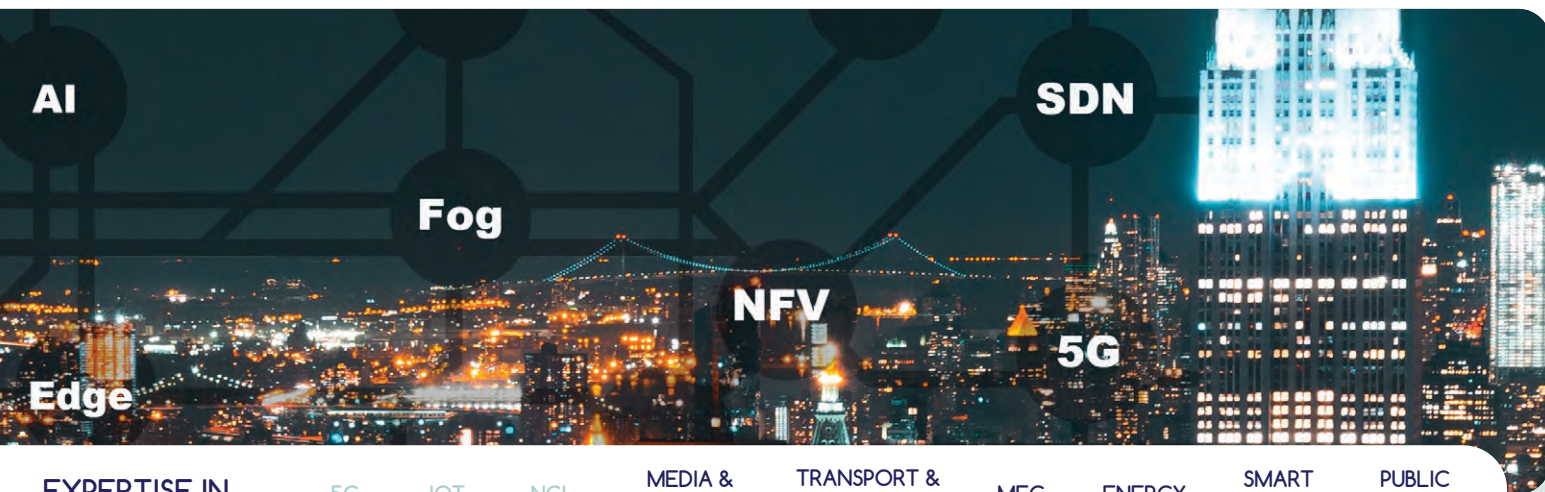
INTEREST FOR FUTURE R&D&I COOPERATION

TechNarts is seeking for collaboration with SMEs, startups, telecom operators, integrators, industry partners as well as academic institutions to carry out R&D&I activities.

Our focus is particularly on processing network performance data through ML and AI applications, Zero-Touch-Network management, IoT and 5G networks.

We look for partners from Telco sector as well as from other verticals such as mobility and transport, smart energy/utilities, health, automotive.





EXPERTISE IN

5G

IOT

NGI

MEDIA &
CONTENT

TRANSPORT &
LOGISTICS

MFG.

ENERGY

SMART
CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

Telcaria is an SME providing 4G, 5G and other wireless technologies' connectivity through private networks in Spain and Germany. We accompany enterprises through their path to 4G/5G/IoT, edge and digitalization in the assessment, strategy planning, development/reengineering of software solutions, benchmarking analysis and deployment. Additionally, Telcaria provides advanced services to network operators and equipment manufacturers worldwide, partnering with network operators to redesign their products towards NFV/SDN based network infrastructure and cloud-computing applications.

Telcaria is headquartered in Madrid, Spain, and has collaborations with the 5TONIC laboratory as well as top Universities worldwide. We are currently working in three H2020 EU research projects: 5G EVE, 5GROWTH and 5G-DIVE.

ACHIEVEMENTS & SUCCESS STORIES

Telcaria has participated in EU/FP7 NetIDE and two 5G-network-related projects: EU/H2020 SUPERFLUIDITY, 5G-CORAL (shortlisted in the Glotel Award for 'Best 5G innovation' and CSI Award for 'Best 5G project and innovation' in collaboration with Taiwanese partners) and 5G-EVE, and is an active partner in 5GROWTH and 5G-DIVE.

As an advanced network service virtualization and digitalization SME, Telcaria has benefited from the technology advances generated from the previously mentioned projects acquiring the know-how for applying technologic achievements for rapid prototyping, design, validation, and direct deployment of 4G, 5G and other wireless technologies in private networks, Edge computing platforms and advanced multi-domain monitoring platforms. Additionally, Telcaria has disseminated its results in mayor events and public demonstrations such as EuCNC, DES and MWC.

INTEREST FOR FUTURE R&D&I COOPERATION

Telcaria research and development team has experience in participation in multiple European R&D projects such as, FP7 and H2020. Telcaria is looking to partner with verticals, vendors, academic and industrial partners, interested in future R&D&I cooperation in beyond 5G, private networks, AI, Big Data, NFV, Edge Computing, SDN, distributed datacentre platforms, SLA assurance, network & service management and network intelligence platforms. We are actively searching for new partnerships and collaborations which can further enhance Telcaria product line or in the design of third-party enhanced systems, providing solutions for operators and enterprises worldwide.



EXPERTISE IN

IOT

NGI

TRANSPORT &
LOGISTICS

SMART
CITIES

MANUFACTURING

HEALTH

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

Tree Technology is an R&D-performing company providing information and communication technology solutions based on Big Data and Artificial Intelligence. Tree helps optimizing processes and business operations in several sectors using advanced ICT, integrating emerging technologies as part of the Smart Data ecosystem. In particular in 5G, Tree Technology is active in accompanying industrial partners such as telecommunication operators in their digital transformation, contributing with our knowledge in advanced AI and Big Data technologies. In addition to that, Artificial Intelligence-based solutions for cybersecurity in the 5G telco infrastructure are also offered by the company.

ACHIEVEMENTS & SUCCESS STORIES

Tree Technology operates in several vertical sectors, such as Telecommunications, Health, Transport, Finance, Insurance, Industry, Public Safety, or Security. Tree Technology accompanies industrial partners in their digital transformation and business optimisation, contributing with expert knowledge in advanced smart data technologies such as Big Data, Data Science and Computer Vision. In particular, Tree Technology helps to exploit data to add value to business, with the aid of real time data processing, data mining and automated and deep learning strategies (artificial intelligence).

INTEREST FOR FUTURE R&D&I COOPERATION

Our R&D activity provides us with knowledge and differential capabilities, based on advanced technologies aligned with worldwide innovation priorities, allowing us to develop competitive advantages. Tree Technology is very active in cooperative R&D initiatives, both publicly and privately funded. In example, Tree Technology actively participates in international R&D projects, strongly performing in the European R&D programme Horizon 2020 in different areas, both as a partner and as a leader. We are open and interested in collaboration in R&D wherever our expertise can add value. Our core activity is in the area of Artificial Intelligence and Big Data, so we are interested to collaborate with partners and initiatives demanding these competencies.



-  **YEAR ESTABLISHED**
2007
-  **NUMBER OF EMPLOYEES**
17
-  **MORE INFORMATION**
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-  **CONTACT**
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falcala@tst-sistemas.es

EXPERTISE IN

5G

IOT

TRANSPORT &
LOGISTICS

ENERGY

SMART
CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

TST participated in the Flex5Gware project (<http://www.flex5gware.eu/>), focused on flexible and efficient HW and SW platforms for 5G network elements and devices, addressing increased capacity, reduced energy footprint, as well as scalability, modularity and reconfigurability. Research was demonstrated on proof-of-concept implementations. TST participated on a PoC for testing the reconfiguration of the radio behaviour according to different optimization criteria, allowing for instance multi-cell dynamic resource allocations and switching across different radio access technologies according to the link quality. Furthermore, TST's participation in the FLEXNET project makes the company contribute to the development of flexible networks, focusing in IoT use cases. IoT is a growing market, and also an essential part of the future evolution of 5G networks.

ACHIEVEMENTS & SUCCESS STORIES

TST provides IoT custom solutions on the smart cities, industry (IIoT and Industry 4.0) and precision farming domains. TST support companies to transform their ideas into innovative, profitable and feasible market solutions, with main focus on Smart City, Agri-food and Energy Efficiency business areas: some examples are environmental sensing, level sensors for urban waste management, water control for precision farming and real time location systems.

TST has a broad experience in R&D projects, being involved in 20+ EU funded research projects related to IoT, smart services and future networks (from diverse programmes such as ICTFP7, ICT-CIP, ICT-H2020, EUJ-H2020, ECSEL, CELTIC, EUROSTARS or PENTA). TST's research activity has been recognized by the Spanish Ministry of Economy and Competitiveness, which awarded the company the official "Innovative SME" seal.

INTEREST FOR FUTURE R&D&I COOPERATION

TST relies on a highly experienced team of telecommunication and electronics engineers with more than 15 years of research in wireless communications, sensor networks and IoT platforms. The company's goal is to create cutting-edge and competitive products and services, helping the clients to reduce operating costs.

Thus, TST looks forward to continue working with other potential partners coming from both industry and academia, in R&D and innovation activities, offering it's experience in IoT hardware design and development, smart sensing and system integration. The way forward for TST includes the involvement in initiatives related to 5G, Software Defined Networks and edge and fog computing, retorting to its expertise and know-how in the IoT and networks fields.





YEAR ESTABLISHED
2005



NUMBER OF EMPLOYEES
30



MORE INFORMATION
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EXPERTISE IN

5G

IOT

AI

SECURITY

MEDIA &
CONTENT

MANUFACTURING

SMART
CITIES

ENERGY

HEALTH

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

UBITECH is active in a series of 5G PPP projects, focusing mainly on the design and development of software development kits and intelligent orchestration mechanisms for network applications. UBITECH is the technical coordinator of the MATILDA H2020 5G PPP project targeting at the provision of a novel holistic framework for enabling vertical industries to take advantage of a 5G ecosystem. UBITECH has developed various application and network services orchestration mechanisms, taking into account the separation of concerns among vertical application and NFV orchestrators, as well as end to end slice management mechanisms. UBITECH has also invested on the design and development of a 5G analytics engine exploiting novel AI technologies, providing resource and elasticity efficiency profiling of 5G services.

ACHIEVEMENTS & SUCCESS STORIES

UBITECH has developed a set of intelligent orchestration mechanisms (e.g. rules-based policy management framework for NFVOs as well as vertical application orchestrators, big data analytics techniques for network services and applications profiling) and introduced them in existing orchestrators, such as the SONATA NFVO as well as the inhouse developed orchestrator, known as Maestro (<https://themaestro.ubitech.eu/>). UBITECH has also significantly contributed towards the design and implementation of OSS northbound APIs, targeting at interconnection of vertical application orchestrators with telecom operators' network management systems.

INTEREST FOR FUTURE R&D&I COOPERATION

UBITECH is highly interested in establishing R&D and Innovation cooperation in the framework of research and development projects regarding the evolution of intelligent orchestration and slice management mechanisms, as well as collaborations with telecom operators and vendors towards the design of OSS-oriented functions and APIs, as well as the development of targeted AI mechanisms for resource and elasticity efficiency profiling of network services and applications.



ubiwhere



YEAR ESTABLISHED

2007



NUMBER OF EMPLOYEES

80



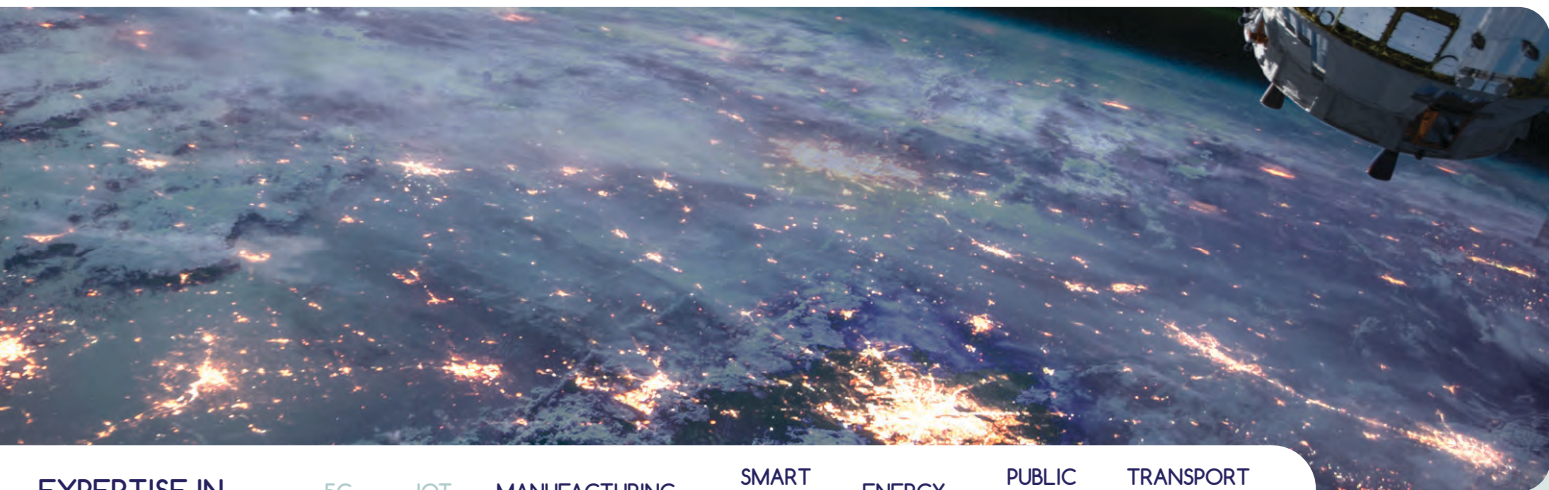
MORE INFORMATION

www.ubiwhere.com



CONTACT

hello@ubiwhere.com



EXPERTISE IN

5G

IOT

MANUFACTURING

SMART
CITIES

ENERGY

PUBLIC
SAFETY

TRANSPORT
& LOGISTICS

BACKGROUND, EXPERTISE & SKILLS

Ubiwhere is a software company focused on the research and development of innovative technological solutions, oriented to the areas of Smart Cities, Telecommunications and Future Internet. The diversified team is one of the pillars of the company's success, being prepared to face the greatest challenges of the market, namely the technology-based ones.

Ubiwhere cooperates with a broad technological network at national and international level, which values and recognizes the company's large-scale contribution in its creative and innovative projects in several areas. We have the desire to change the World, which is why we create, design and implement solutions that aim to improve people's quality of life.

ACHIEVEMENTS & SUCCESS STORIES

Ubiwhere has relevant experience with 5G PPP projects both from phase 1 and phase 3. Projects like 5GCity, Sonata and Selfnet were extremely important and the basis to projects like 5GZorro, Affordable5G, Smart5Grid along with some of Ubiwhere's flagship products such as The Urban Platform, Smart Parking, Payt and UNICLE. The knowledge and experience that these successful projects brought enabled the creation of demos such as GoGreen, FranchetAI, POSER and SPINE.

Ubiwhere believes that the results and achievements of its projects potentialize incredible products and demos that can be adapted to our motto: Suiting the future - From Idea to Product.

INTEREST FOR FUTURE R&D&I COOPERATION

Ubiwhere believes that partners are extremely important to achieve great results. Therefore, collaboration and cooperation with partners that share the same intent to innovate is in our DNA. We search for cooperation mostly for R&I projects, particularly Horizon Europe, SNS, Digital Europe and CEF, therefore, if you are interested in smart cities, 5G, Edge Computing, AI, blockchain or wish to participate as an industrial partner in any of these types of challenges, we challenge you to get to know Ubiwhere. We may be your perfect fit!



YEAR ESTABLISHED

2017



NUMBER OF EMPLOYEES

5



MORE INFORMATION

www.urbanhawk.space



CONTACT

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EXPERTISE IN

5G IOT

SATELLITE
COMMUNICATIONS

MEDIA &
CONTENT

TRANSPORT
& LOGISTICS

SMART
CITIES

BACKGROUND, EXPERTISE & SKILLS

We are a Bristol based startup into smart city relevant data driven solutions. We excel in commercialising early concepts. Currently, as partner in the 5G-Victori consortium, we are trialling our Future Mobility solutions with multiple rail operators across cities of Europe. Our technical skills are focused on real-time large data processing in HPC, AI, 3D mapping and visualisation. We develop our own data platform that we deploy throughout commercial use cases.

ACHIEVEMENTS & SUCCESS STORIES

From zero to post revenue in 18 months with clients in insurance, logistics, and marine. Finalised the Sea Traffic Management European project in 2019.

INTEREST FOR FUTURE R&D&I COOPERATION

We are interested to join Smart City and IoT related projects, that are trialled through telecom like in 5G, or in operation management like in rail, marine ports, or other transport operations. Wherever we can marry state of the art data technology of current and next generations with commercial applications.





EXPERTISE IN 5G IOT SMART CITIES ENERGY PUBLIC SAFETY TRANSPORT & LOGISTICS MANUFACTURING HEALTH

BACKGROUND, EXPERTISE & SKILLS

Vertical M2M has a strong expertise in telecom software and PaaS architectures, and advanced skills in telecommunications, supporting many different telecom protocols through an agnostic approach.

With a 12+ year - experience in IoT, we also bring a complete framework and sets of tools for secured IoT applications over 5G networks, all based on a containerized Kubernetes architecture.

ACHIEVEMENTS & SUCCESS STORIES

As a telecom software vendor dedicated to IoT, we invest a wide part of our resources in R&D. and were involved in several R&D 5G projects, among which the NGPaaS project (H2020 5G-PPP - ngpaas.eu), led by NOKIA, rated "exceptional achievements" by the EC, or the SCORPION project, providing IoT infrastructure to support these projects through our solution, CommonSense IoT Platform®.

Over the past 12 years, we also deployed many IoT projects, with a particular focus on the following markets through mostly white-label solutions:

- energy: smartwater and renewable energy monitoring solutions for Utilities
- smartcities: smartmetering solutions, streetlighting services, building management,...
- manufacturing/industry: predictive maintenance, process monitoring and smartfactory, putting together combinations of heterogeneous secured IoT systems.

INTEREST FOR FUTURE R&D&I COOPERATION

We are particularly interested in any collaborative research related to IoT over 5G networks (massive IoT, mission critical IoT, vertical IoT or Edge Cloud IoT) and bring contributions either at the IaaS or the PaaS levels.

We also have a strong interest in 5G applications for the energy, smartcity, public safety or industry/smartfactory areas and are eager to be part of PoCs or large-scale experiments applied to these markets.



-  YEAR ESTABLISHED
2006
-  NUMBER OF EMPLOYEES
7
-  MORE INFORMATION
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EXPERTISE IN

5G IOT

NGI

AI

MEDIA &
CONTENT

HEALTH

ENERGY

SMART
CITIES

PUBLIC
SAFETY

BACKGROUND, EXPERTISE & SKILLS

VISIONA is a cutting-edge Information Technology SME that has actively participated in several open calls from the research and innovation EU programmes, like the H2020 5G-PPP Phase-1 5G-Crosshaul and Phase-2 NRG5 projects. VISIONA team counts on with expertise in designing big systems and managing projects of big magnitude, in designing network elements and network services for NFV and SDN, planning and operation of networks based on these technologies. Strong background in virtualization of functions that lead to 5G-ready innovative and smart environments.

VISIONA is specialized in groundbreaking media and artificial intelligence technologies as machine vision and deep learning. This makes of VISIONA a suitable partner for any vertical demanding such expertise (from media to smart cities and energy related contexts, among others).

ACHIEVEMENTS & SUCCESS STORIES

Artificial intelligence for machine vision is the core of all the solutions developed by VISIONA which aim to address the needs of different verticals.

For instance, VISIONA's approach to the preventive maintenance of critical energy infrastructures is able to detect, from an autopilot drone, different changes in the target zones in order to predict possible dangerous conditions on the environment or in the structures. Image processing and deep learning techniques are exploited by VISIONA for: (1) people and vehicle detection system in critical locations, (2) change recognition system on UAV imagery and (3) abnormal hot points through thermal image.

VISIONA also counts on with a portfolio of innovative solutions for parking monitoring and management, advanced surveillance of public and crowded spaces, and QoE/QoS tools for video quality assessment among other.

INTEREST FOR FUTURE R&D&I COOPERATION

VISIONA is seeking EU partners interested in collaborating with our SME to identify synergies so that we could work together on the creation of innovative solutions and the design strategies for exploitation of cooperation results in order to achieve maximum impact of 5G-related technologies after experimentation. VISIONA is open to start any kind of project related to artificial intelligence in any vertical as the technology has a wide range of applications.



 YEAR ESTABLISHED
2004

 NUMBER OF EMPLOYEES
5

 MORE INFORMATION
www.westaquila.com

 CONTACT
info@westaquila.com



EXPERTISE IN

5G

IOT

HEALTH

ENERGY

SMART
CITIES

BACKGROUND, EXPERTISE & SKILLS

Born as a start-up company at the University of L'Aquila, WEST Aquila Srl has been conducting R&D-related business in Italy since 2004, and nowadays it has matured into a high-technology and well-established SME and is one of a handful of companies with a continuous presence in this field in L'Aquila over the last years. The R&D activities include energy savings, healthcare, mobility, safety, and emergency management for wireless networks of embedded systems/IoT.

The Italian Ministry of Economic Development has chosen the city of L'Aquila as one out of five cities in Italy where some tests and experiments for 5G technologies took place along several directions, well aligned with the main WEST's R&D activities.

ACHIEVEMENTS & SUCCESS STORIES

WEST is a key technological partner in several projects on the European and National levels.

On the EU level, two Marie Curie ITNs, Greenet (energy-efficient wireless networks), and AQUASENSE (IoT technologies for water quality monitoring), and several Marie Curie IAPPs/RISEs, WSN4QoL (WSNs/IoT to improve the Quality of Life), SmartNRG (energy distribution and management for smart cities), CASPER and OPTIMIST (QoE optimization of multimedia applications for mobile users in 4G/5G networks), and SALSETH (wireless detection of saliva's biomarkers through edible sensors).

On the National level, among others, UbiCare and CASA+ (monitoring aged people and patients remotely from their homes).

In the field of Structural Health Monitoring, WEST has an IoT-based solution to monitor buildings and infrastructures in a fully data-driven approach.

INTEREST FOR FUTURE R&D&I COOPERATION

WEST is a highly dynamic and innovative company, which aims at bridging the gap between the academic and industry sectors. In this light, in any projects it is involved in, it envisions the possibility of exploiting cutting-edge technologies in multiple application domains. As an R&D company, WEST is always strongly interested in fostering new cooperation to study, analyze, and prototype solutions in the field of wirelessly interconnected and networked embedded systems.



YEAR ESTABLISHED

2012



NUMBER OF EMPLOYEES

150



MORE INFORMATION

www.wings-ict-solutions.eu



CONTACT

info@wings-ict-solutions.eu

EXPERTISE IN

5G

IOT

NGI

MEDIA &
CONTENT

TRANSPORT
& LOGISTICS

SMART
CITIES

HEALTH

ENERGY

PUBLIC
SAFETY +

BACKGROUND, EXPERTISE & SKILLS

WINGS ICT Solutions develops solutions (hardware and software) for verticals, related to the: (1) Environment; (2) Utilities and infrastructures; (3) Production and manufacturing (4) Service sectors. The solutions rely on: (1) IoT technologies; (2) Advanced networks, backend, cloud and big data; (3) Artificial Intelligence and decision support systems; (4) Visualization. WINGS has developed and constantly updates the products: (1) AIRWINGS (air quality); (2) ARTEMIS (utilities); (3) WINGSPARK (parking and transport infrastructures in general); (4) AQUAWINGS (aquaculture); (5) AGNES (agriculture / food safety); (6) STARLIT (health); (7) WINGSChariot (Logistics, Industry 4.0). Moreover, WINGS works on tools for intent-based networking, diagnostics, orchestration, simulation. WINGS' collaborations are built in the EU and beyond, on 5G/6G and on verticals, for always ensuring sustainability and trustworthiness.

ACHIEVEMENTS & SUCCESS STORIES

Environment: AIRWINGS is installed in Alonissos and Volos, Greece, as an intelligent fire detection system (5G-EVE).

Utilities: ARTEMIS. WINGS was awarded with the first prize, in the competition of "Athens Water Supply and Sewerage Company" (5G-EVE).

Transportation: WINGS was awarded with the Silver best City Awards 2022, for the deployment of WINGSPARK in Lamia, Greece (5G-TOURS).

Food security:

- AQUAWINGS (aquaculture) was installed for video streaming and managing the aquatic ecosystem (Epidaurus, Greece) (5G-Heart, UNITED).
- AGNES (food safety): New installations were realised in a cotton field (Larissa, Greece) (5G-Heart, SOILGUARD, DITECT).

WINGSChariot: New projects are beginning in beer industry, fish transfer. (VITAL-5G, AI-PRISM).

Health: STARLIT. Developed strategic partnerships towards commercial exploitation (5G-Heart, TRIALSNET).

INTEREST FOR FUTURE R&D&I COOPERATION

WINGS aims at further developing its international R&I activities through cooperation with industrial and academic partners in 5G/6G and in diverse vertical sectors, related to the environment (air quality, land & water resources), utilities & infrastructures (energy/water/gas, transportation/parking, smart buildings, production (aquaculture, food-safety, agriculture, Industry 4.0, Industrial IoT, logistics) health/wellness, security/defence.

WINGS develops Digital Twin technologies, exploiting its high commandment of technologies.

WINGS develops novel systems/components on intent-based networking, application/network performance diagnostics, intelligent orchestration, system level simulation. WINGS has significant volume and high quality of human resources specialized in software, hardware, optimization techniques, machine learning, IoT, AI, AR/VR, cloud and big data platforms. There are extensive skills for project and technical management, work package leadership, systems design, development, and validation.



EXPERTISE IN

5G

IOT

NGI

MEDIA &
CONTENT

PUBLIC
SAFETY

SMART
CITIES

MANUFACTURING

BACKGROUND, EXPERTISE & SKILLS

Zeetta Networks simplifies network operations and improves the efficiency of a 5G network with intelligence and automation. Zeetta offers a multi-domain orchestration technology based on 5G network splicing™ and slicing. Network slicing is the ability to define and provide prioritised, partitioned and protected subnetworks to ensure that business and time-critical systems can run over shared infrastructure without interference. Network splicing™ is a unique concept developed by Zeetta that allows network slices to be joined in sequence to extend reach for the provision of a seamless, continuous service. These technologies will play an important role in manufacturing applications, particularly where assets must be tracked across multiple sites, geographic locations and indoor and outdoor environments. The company has received a number of industry awards including GSMA's GLOMO Award, TMF's Excellence Award and 5G World Award. In 2019 Zeetta Networks was recognised as a "Gartner Cool Vendor".

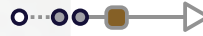
ACHIEVEMENTS & SUCCESS STORIES

Zeetta Networks currently participates to three 5GPPP projects: MetroHaul, 5G-PICTURE and 5G-VICTORI.

Earlier in the year, Zeetta Networks announced as the lead partner for the €10m 5G-ENCODE project that will deliver a private 5G network at the National Composites Centre (NCC) in the Southwest of England. This is the UK Government's biggest investment in 5G for manufacturing to date and part of their Industrial 5G Testbeds and Trials Programme. The project consortium consists of 11 partners including Telefonica, Toshiba, Siemens and Solvay. The 5G-ENCODE project will explore new business models and value propositions for enterprise private 5G networks in an industrial environment and test new 5G technologies such as network splicing and slicing in a real operating setting.

INTEREST FOR FUTURE R&D&I COOPERATION

Zeetta will be interested in working together with other European and international partners organisations in a wide variety of collaborative project focusing on private 5G networks, industrial 5G networks and applications and network orchestration and automation where the company's patent-protected network splicing and slicing technology can be used to optimise the performance of the network.



ZENITHWINGS



YEAR ESTABLISHED

2013



NUMBER OF EMPLOYEES

9



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EXPERTISE IN

IOT NGI

TRANSPORT &
LOGISTICS

MANUFACTURING

HEALTH

BACKGROUND, EXPERTISE & SKILLS

Zenithwings (ZW) was founded in May 2013 to focus on the development and delivery of software solutions for High Precision Agriculture and Industry 4.0.

ZW operates directly in the sectors mentioned before, as a software integrator, with relevant experience in data analytics, artificial intelligence, visualisation and blockchain.

ZW's current focus is to establish a 5G-compliant sustainability-as-a-service solution, leveraging digital transformation of businesses in different market segments, including: Food & Beverage (fisheries, winemakers), Consumer Goods (textiles, shoes, porcelain and crystals) and Materials (cork, paper) industries.

ACHIEVEMENTS & SUCCESS STORIES

Zenithwings currently takes part in different R&I projects, all aligned with our vision of Sustainability. SmartAgriChain (agrifood sector) and SmartBlueChain (blue economy) are oriented towards creating web-based solutions linking the potential of blockchain technology to the supply chain management, modernising the current chain with security warranties, transparency, traceability and product tracking in all phases.

Operator 4.0, a project with the MIT, intends to approach Industry 4.0 holistically, gathering and crossing quantitative and qualitative data to build a richer picture of the workers' wellbeing and enabling better predictive models.

Currently we are also developing the digital transformation strategy of ERT, from the automobile industry, with a 5G-enabled ecosystem of applications for the Industry 5.0.

INTEREST FOR FUTURE R&D&I COOPERATION

Zenithwings is actively looking for new opportunities to explore R&I partnerships, exploring synergies with relevant players from academia, and with private and public operators.

Taking into consideration the challenges and opportunities brought by the Green Deal, which also impacts the 5G deployment strategy, we can act as a relevant player to accomplish these goals in a wide range of industries.

By focusing on sustainability, we also look forward to being involved in R&I projects that are committed to increase the efficiency of 5G deployments, namely with the EC objective of reaching 10.000 climate neutral highly secure nodes until 2030.

Our close relation with the customer, and experience developing cutting-edge technology are crucial for creating a real impact.



SME SUCCESS STORIES



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Accelleran participation in several national and European RIA and IA H2020 5G-focused projects enabled the different consortia involved to leverage on Accelleran's RAN/vRAN Software Solutions and Small Cell products to enable new 5G architectural paradigms (virtualisation, slicing, edge computing,...) and advances required in future networks. The participation of Accelleran in some of these projects also distilled into the launch of Accelleran ORAN-aligned Cloud Native Virtualised dRAX Open Interface RAN Intelligence enabling AI/ML xApps in an open, scalable and interoperable RAN platform. Beside the pilot deployments where operators are currently evaluating the use of Accelleran dRAX Open Interface RAN Intelligence to enable the new 5G paradigms, one of the most important reference deployment cases for dRAX, focused on the Smart Cities vertical, is the Distributed Cloud and Radio Platform for 5G Neutral Hosts envisaged by the H2020 5GCity project, with deployments in Barcelona, Bristol and Lucca. 5GCity has designed, developed, deployed and is demonstrating, in operational conditions, a distributed cloud and radio platform for municipalities and infrastructure owners acting as 5G neutral hosts.

The following are some of the projects where Accelleran has participated and is participating with its RAN/vRAN Software Solutions and Small Cell products:

- 5GUARDS: Flanders (Belgium) based imec.ICON collaborative project involving the major Flemish universities

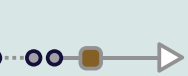
and industry partners (SMEs, big infrastructure provider and big mobile operator). The goal of the 5GUARDS project was to investigate, evaluate and demonstrate how various services with diverse requirements could be simultaneously supported by the future 5G network based on the concept of network slicing. 5GUARDS envisioned three building blocks will contribute to the realization of services with diverse requirements: core slicing, RAN slicing and dynamic software reconfiguration.

- 5GRuralFirst: 5G RuralFirst is a co-innovation project led by Cisco and a consortium of other partners from across business, government and academia. Its first goal is to create rural test-beds and trials for 5G wireless and mobile connectivity across three main sites in the Orkney Islands, Shropshire and Somerset.
- 5GCity: 5G-PPP Phase 2 project (call H2020-ICT-2016-2) in which Accelleran is participating with the goal of enabling a distributed cloud radio platform for neutral hosts. To do so, 5GCity's main aim is to build and deploy a common, multi-tenant, open platform that extends the (centralized) cloud model to the extreme edge of the network, with a demonstration in three different cities (Barcelona, Bristol and Lucca), and thus advance the state of the art to solve the main open research challenges in the 5G-based edge virtualization domain, including the neutral host perspective

in dense deployment environments such as cities. Accelleran's dRAX Open Interface RAN Intelligence with Neutral Host and Network slicing functionality is used in 5GCity virtualized platform together with with Accelleran Small Cells in different bands.

- 5G-Enhance: joint EU H.2020 (call H2020-EUJ-2018) and Japanese research project looking at testbed development for advanced 5G topics like eMBB in dense urban areas with high mobility. Establishing long-term research collaboration between EU/Japan research institutes, Accelleran's small cell technologies are being leveraged for infrastructure deployments.
- UNICORE: (call H2020-ICT-2018-2) with the ICT focus on lightweight Unikernel VMs. These software technologies will be vital for VNF IaaS deployments allowing quick deployment and high scalability in the future VNF IaaS networks. Accelleran participates with the migration of dRAX Open Interface RAN Intelligence from Kubernetes Docker containers or Openstack VMs frameworks towards lightweight Unikernel VMs.
- 5GClarity: (H2020-ICT-2018-2020 call): 5G multi WAT system with 4G, 5G-NR, WiFi and LiFi technology.
- 5GComplete: (H2020-ICT-2018-2020 call): 5G framework for secure computing nodes.



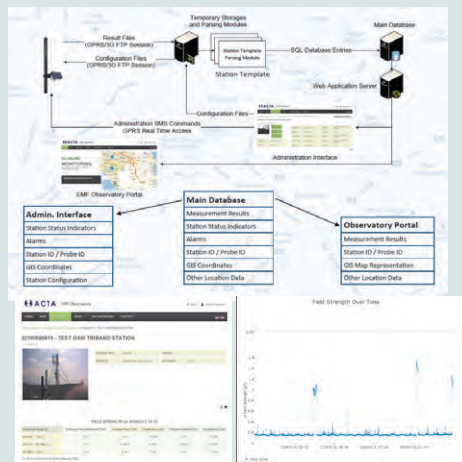


ACTA has been very successful in providing telecoms solutions, such as “zero-touch provisioning” xDSL CPE management platforms, in three Greek Telecom Operators. In addition, ACTA has developed an innovative Web Application which collects EMF (ElectroMagnetic Field) measurement results from compatible Narda EMF Stations, stores and presents these results through an intuitive web interface. The solution is currently deployed at the Greek EMF Authority as well as Romania, Paraguay Authorities.

ACTA is also a member in two R&D EU projects (H2020 Horizon). The projects implement 5G network solutions for a variety of Verticals as customers.

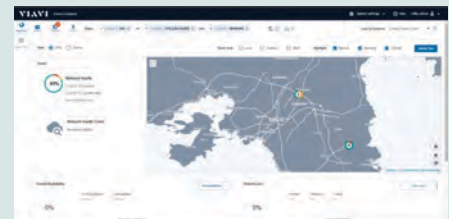
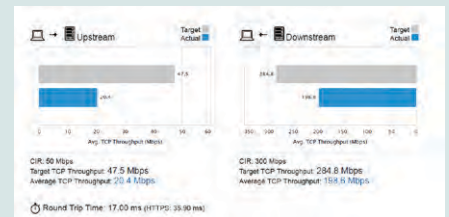
- 5G HEART - <https://5gheart.org/>
- 5G TOURS - <https://5gtours.eu/>

As a result of these projects, ACTA has installed network monitoring probes and a cloud-based Management system. This allows for measuring the 5G network performance KPIs, such as Throughput, Latency, Jitter, Loss, Availability, Reliability, end-to-end as well as in segments of the network (Radio vs. Core, Physical vs. Service Layer, E2E vs. Segments of interest to the Operator).



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MORE INFORMATION

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Arteevo delivers industrial, telecom and business process automation solutions based on Distributed Ledger Technology and Artificial Intelligence. Specializing in business-oriented DLT networks, Arteevo uses its deep expertise in the field to architect highly secure decentralized automation solutions for telecom networks, manufacturing, healthcare, energy, IT service management and more.

Arteevo has initiated several projects by putting forward innovative solution concepts. For example:

H2020 PharmaLedger project – Blockchain platform for healthcare and pharmaceutical industry, in partnership with 12 largest global pharmaceutical companies. We initiated the technological concept and the public part of this public-private partnership consortium, created the blockchain platform architecture that was adopted by the project, and are playing a key role in the implementation of the architecture and the multi-party governance model for this decentralized business network.

H2020 WeldGalaxy project – Decentralized data platform for the European welding industry. Arteevo is playing a key role in the design and implementation of the DLT-based architecture of the platform, and has developed several key innovations – including automated confidential tender offer process over DLT, DLT-based standards certification process management, and more.

H2020 OPERANDO project – we initiated this project by creating a concept of automated Privacy Authorities that enforce online privacy of consumers through technological means. The project created two strains of solutions – for consumer using private web services (B2C), and for Government to Citizen (G2C) services. The solution allowed citizens to control their identities and anonymity in using the web-based services, while enabling the service providers to comply with difficult to implement GDPR requirements.

FP7 ASPIS project – we initiated this project by proposing a highly innovative solar energy solution based on diurnal collection of sunlight by dynamic, computerized lens arrays. The project involved specialists in solar panel manufacturing, lens manufacturers, and several partners specializing in embedded ICT. It resulted in the development of highly efficient distributed solar energy solution.

Cooperation on SDN network security using embedded DLT, artificial intelligence and remote integrity attestation. Arteevo has partnered with leading European telecom operators, research institutes and technology SMEs to create and advanced technological and business concept of Beyond 5G network infrastructure security.





Azcom Technology is a leader company in advanced wireless communication, with two decades of experience in the wireless Telecom market. We developed a complete suite of software IPRs and hardware platforms to build and deploy commercial and special purpose solutions for cellular communications, automotive, aerospace, home automation and mobile applications. Our business includes both products and services. The most recent product of our wireless portfolio is a LTE/NB-IoT small cell, customizable for different solution, such as providing private LTE/NB-IoT deployments, and available also in NIB configuration along with our Core Network EPC. Azcom Technology offers also services, from turnkey solutions to the optimization of third party software for a wide range of clients and in different areas from industrial 4.0 to automotive to home automation. This year Azcom is engaged in development for its first Open RAN compliant product.

Azcom involvements in H2020 framework started in 2015, when Azcom joined the 5GPPP Phase 1 5G Novel Radio Multiservice adaptive network Architecture (NORMA) project (<http://www.it.uc3m.es/wml/5gnorma/>). 5G NORMA aimed to develop a novel mobile network architecture that provides the necessary adaptability in a resource efficient way able to handle fluctuations in traffic demand resulting from heterogeneous and dynamically changing service portfolios and to changing local contexts. In the contest of 5G NORMA

Azcom have developed the Native Multi-Service Architecture Proof of Concept (PoC), showing the support of service flexibility using the decomposition of mobile network functions and their allocation to the edge cloud or central cloud, based on the service requirements. In this demo Azcom small cell functionality has been extended to support the control commands received from an external orchestrator. This work opened Azcom small cell product to the new frontier introduced in the 3GPP Release 15 standard including the implementation of Distributed Unit (DU) and Radio Unit (RU), also enabling software defined mobile network control.

Azcom focus is not limited only to the 5G mobile infrastructure, and in the 5GPPP Phase 2 Azcom joined the 5G Convergent Virtualised Radio Access Network Living at the Edge (CORAL) project (<http://5g-coral.eu/>). 5G CORAL aims to deliver a convergent 5G multi-RAT access through an integrated virtualized edge and fog solution that is flexible and scalable, where Edge Data Centre (DC) are smaller data centres than clouds, located typically closer to the connectivity nodes and Fog Computing Devices (CD) provide computing, storage and/or networking capabilities on terminals or a near-terminal infrastructure nodes and access point. Consequently, new delay sensitive services can be provided. Azcom contributed to the Connected Car PoC, where 5G CORAL technologies, functions application and services, can be run on the vehicles, in the On Board Unit (OBU) and

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on the Road Side Unit (RSU). Compared to a legacy architecture where all the application and services are placed beyond the core network, this configuration leads to a quicker and distributed manner information exchange, resulting in an optimization of the network response, improving driver safety.

Azcom designed and developed the OBU and integrated the RSU with all the required 5G CORAL vehicular applications, services and network functions, exploiting also an innovative multi-RAT approach. The importance of the OBU has been grown since it is also used as the basic block of the implementation carried on by Azcom in the European C-ROADS project (<https://www.c-roads.eu/platform.html>) which aims to implement and test, in real traffic conditions, cooperative systems based on V2X technologies and involve technology partners.

Azcom next steps are focusing in the direction of an implementation of ORAN interface, and renewed interest in H2020 and Horizon Europe projects to adjust the Azcom future vision and direction.





CyberEthicsLab.

Responsible Research and Innovation



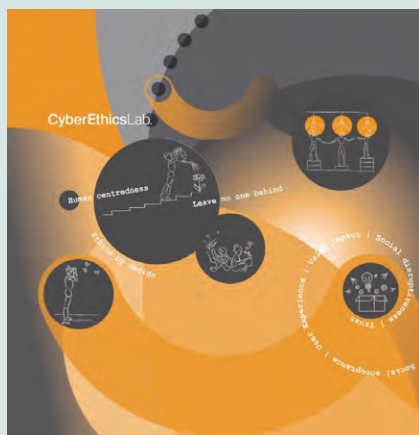
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CyberEthics Lab. (CEL), with its own RRI approach (Responsible Research & Innovation) and holistic assessment framework (integrating ethics, societal and regulatory perspectives), has provided many R&D projects and customers with qualitative and quantitative tools and methods to ensure compliance with the EU regulatory and ethics framework, as well as to evaluate the social acceptance of disruptive technologies, not only in terms of usability, but also for enabling a suitable alignment of human values and technological innovation.

This RRI approach is experienced in the context of the 5G-SOLUTIONS project where CEL has defined and tested its own social acceptance of 5G technology methodology, extending the holistic assessment

framework. This experience is providing research and development team with useful insights to build and deploy socially acceptable and sustainable 5G-based solutions. In doing so, the 5G-SOLUTIONS project is particularly standing out within other 5G-PPP projects because it combines the technological and business validation process with a social acceptance study, and it is applied to four different verticals, i.e. Factories of the Future, Smart Energy, Smart Cities and Ports, Media & Entertainment.

For these purposes, CEL has developed an innovative research and assessment methodology for the Social Acceptance of Technologies, the "SAT", which includes the engagement of all the stakeholders, from developers to users, and aims to support them in integrating psychological, economic, legal, ethical and political values from the very beginning of the design process of new products and systems. In fact, since ethics and society cannot be kept separated, it is necessary for the social acceptance of technologies to embrace both individual values and desires as well as decisions taken at the broadest societal level. The SAT is organised around four conceptual 'bubbles', which correspond to four fundamental areas of evaluation: "User-Experience", "Social Disruptiveness", "Value Impact" and "Trust". In various European projects, including the 5G-PPP context, CEL is successfully adopting the best practices of the SAT methodology and promoting a new development mindset.



In June 2021, based on the 5G-SOLUTIONS experience, CEL was invited to perform an in-depth study and the results of this activity were presented to the European Parliament (November 2021), and finally the paper Privacy and security aspects of 5G technology was published (March 2022).

Moreover, in September 2021, CEL presented the paper Business Value and Social Acceptance for the Validation of 5G technology to the IEEE MeditCom 2021 Conference.

The 5G-SOLUTIONS experience, together with the two relevant papers, represent a key milestone for CyberEthics Lab. improving its capabilities to provide consultancy services in the context of 5G as well, and to provide policy makers with detailed documentation of challenges and relative policy brief.



eBOS



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eBOS Technologies Ltd is an innovative software powerhouse SME providing technological advanced e-business software solutions to enterprise customers around the world. Headquartered in Cyprus, eBOS has a long history of engaging with international research and technology organisations, industrial leaders, universities, research organisations and SMEs to drive collaborative technological innovation and bring best-of-breed technologies to its enterprise customers and the wider community.

With an increasingly comprehensive portfolio of software solutions, investments in Research and Development are crucial to eBOS. The development of eBOS product portfolio as a specialist software powerhouse has equipped us with core competencies which we deploy in R&D projects. The knowledge and innovation gained from our participation to such projects are then fused into our solutions and services. Our activities not only seek to improve existing systems to keep them competitive, but also explore radically new solutions and technological breakthroughs. Our aim is to identify new and emerging technologies and leverage them to deliver cutting-edge, robust and cost-effective engineering solutions.

Our core areas of expertise include intelligent front-end dashboards and APIs development, advanced big-data analytics, Artificial Intelligence/Machine

Learning, cybersecurity, quality assurance and data management, risk assessment and compliance, covering a wide range of application domains, including 5G, NFV/SDN, digital security, security of industrial IoT and others. Our expertise has been extended in the context of 5G-SOLUTIONS (<https://www.5gsolutionsproject.eu/>) and MonB5G (<https://www.monb5g.eu/>) 5G-PPP projects, including a recently funded ICT-53 project on 5G for connected and automated mobility (5G-ROUTES). We apply our expertise to different vertical domains, including Factories of the Future, Smart Energy, Smart Cities and Ports, Media & Entertainment, Transport & Logistics, Autonomous Mobility, etc.

eBOS is the Quality Assurance & Risk Manager in 5G-SOLUTIONS with the responsibility of organising and supervising quality review/peer reviews for all deliverables including the implementation of the quality management plan. eBOS is also engaged in the design and development of the technological enablers, and in particular of the front-end dashboard of the innovative smart KPI visualisation system for facilitating the near real-time analysis, presentation, benchmarking and performance validation of reference 5G network KPIs against predefined target values. eBOS also leads the design and the development of intent-based APIs for stimulating innovation and fostering the development, portability and provisioning of

new innovative applications by SMEs.

eBOS has the role of the Dissemination and Communications Manager in MonB5G and is also currently working on the design of the MonB5G security framework, the development of AI-driven security algorithms to provide novel mechanisms for mitigation of network slicing threats, the integration and testing of all components and the proof-of-concept experimentation.

In 5G-ROUTES, eBOS will undertake the role of the Innovation Manager leading the relevant innovation, data management and IPR activities, and will leverage its expertise in front-end dashboards to design and develop the tenant web portal for facilitating access to the platform including the presentation of the results from the field trials.

eBOS is also actively participating in a number of 5G-PP Working Groups, including Test, Measurement and KPIs validation WG, the Trials WG, Software Networks WG, Vision & Societal Challenges WG and NetWorld2020 SME WG.



EIGHT BELLS LTD (8BELLS) participates in the H2020 EU research project “GUARD: A cybersecurity framework to GUArantee Reliability and trust for Digital service chains”. More specifically, 8BELLS implements a Deep Packet Inspection (DPI) framework as part of the GUARD embedded monitoring, inspection, and enforcement tools. Furthermore, 8BELLS implements APIs for retrieving information about data traffic monitoring and to configure/program properly the inspection engine.

In general, GUARD aims to develop an open and extensible platform for advanced assurance and protection of trustworthy and reliable business chains spanning multiple administrative domains and heterogeneous infrastructures. It aspires to fill the technological and procedural gap between legacy cybersecurity models and novel computing and networking paradigms, by developing an innovative platform for the protection of digital business chains that encompasses two main dimensions: service integrity and data sovereignty. The project fosters the integration of security capabilities into each digital component and orchestrates them to improve visibility over vulnerabilities, attacks, and private data. Validation and stakeholder engagement is assessed in industrial and medical use cases.

In this context, European Commission's Innovation Radar has analysed the innovations developed in the project.

Details of this innovation, and how it was categorised by the analysis, are as follows:


- Innovation Title: Larger data set and improved correlation;
- Market Maturity of the Innovation: Exploring (based on a method [described in this paper](#));
- Market Creation Potential of the innovation: Addresses needs of existing markets (based on a method [described in this paper](#));


In this analysis Innovation Radar also identified the following project partner(s) - including our organization - in the project as a 'Key Innovator' in the development of this innovation:

- EIGHT BELLS LTD
- AIT Austrian Institute of Technology GmbH
- CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LE TELECOMUNICAZIONI

In the near future, the above information about this innovation will be published on the European Commission's Innovation Radar platform. The information will be accessible to the public via this platform, joining the 6300+ EU-funded innovations already showcased on the platform.

The Innovation Radar platform builds on the information and data gathered by independent experts involved in reviewing

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Thanks to 5G-PPP projects such as FUDGE-5G, Fivecomm has developed the 5G BROAD router designed for connecting user devices to 5G networks through Ethernet or USB. It comes with an open operative system based on OpenWRT that permits any user to configure it and make changes in an easy manner. It has been integrated in the framework of several projects into multiple networks with different vendors, with NSA and SA, low-band and mid-band, being these projects the main testing framework for the product.



Figure 1. 5G BROAD device developed at Fivecomm.

In the 5G-RECORDS project, Fivecomm went one step further and provided a portable 5G-connected device attachable to professional video cameras for media production scenarios. The whole solution is formed by our 5G module, an NVIDIA Jetson Xavier as encoder, and an SDI video capture card, all enclosed in an ad hoc 3D printed case plugged to the camera. The device was successfully demonstrated in the wireless studio final trials in June 2022, proving its potential.

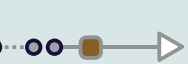


Figure 2. 5G portable device for professional video cameras, used in the 5G-RECORDS trials.

Fivecomm developed, in the framework of the Spanish Digitalization Programme, the first 5G SA devices for connecting water meters. The 5G devices read pulses generated by the meters and translate them to data integrated into the IoT platform of the water management company. These devices are the basis of the Fivecomm product called 5G LITE, capable of connecting different smart or industrial sensors through configurable I2C, SPI, analog and digital interfaces. The device offers low power consumption, light weight, small form factor and high performance. A variant of this device is the 4G NARROW, which instead of 5G supports LTE NarrowBand IoT (NB-IoT) and CAT-M configurations, and low power wide area (LPWA) technologies.



Figure 3. The 5G-LITE device (left) connected to a water meter (right) in a trial.



Fivecomm also enhanced the capacities of its second product line, a Radio Network Planning tool, in the same regional framework, in a project conducted in the Valencia Port, working closely with multiple port players. In that project, the logistics data related to the container terminal of a main shipping company were integrated into our tool. This integration allows us to capture the changes in the planned area (height and position of container stacks) in a digital twin with a 3D model used to perform detailed ray tracing channel modelling. The consideration of the dynamicity of the scenarios allows us to provide accurate and updated estimations of the network performance in the area under study.



Figure 4. 5G coverage study in a container terminal with the Fivecomm planning tool.

Finally, our third main line of products is a software platform for 5G use cases including NetApps that have been developed, further enhanced, and integrated in the context of several 5G-PPP projects. A good example of this integration is the 5G-INDUCE project. In this project, we performed a trial to show the great potential of 5G network slicing through the development, integration, and validation of an AI-based human gesture recognition NetApp for controlling robots. The proof-of-concept showed end-to-end orchestration for full slicing life cycle support and radio resources partitioning, offering a key differential user experience to customers. A similar use case has been validated in the context of INGENIOUS, an EU-IoT project where we integrated the use of haptic gloves and VR glasses for controlling larger AGVs that usually operate outdoors. A third great example of our successful integration of NetApps into our software platform (and in other platforms for end-to-end orchestration) is the 5G-IANA project. In this case, we are currently developing an end-to-end application for remote driving with 360 lidar and ML video-based object detection.



MORE INFORMATION

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Figure 5. Fivecomm software platform used in the context of 5G-INDUCE for remote control of AGVs.



Incelligent is a company based in Athens, Greece, founded in 2014 by highly experienced telecom business professionals and R&D engineers. Currently, its workforce consists of highly competent software engineers/ developers, machine learning engineers and big data scientists.

Incelligent's core IP is a platform that has been developed out of years of R&D in the areas of Big Data, Machine Learning (ML) and Artificial Intelligence (AI). By following best practices in data-driven development (DataOps), Incelligent has managed to systematically incorporate the latest advances in Big Data, ML/AI -related technologies in its product research and development processes, resulting into a diverse product portfolio that includes out-of-the box and production-ready, AI/ML-based solutions, tailor-made for the Telecommunications, Banking and Public sectors.

Incelligent is currently involved in two 5G-PPP projects, namely LOCUS (<http://www.locus-project.eu/>) and VITAL-5G (<https://www.vital5g.eu/>) and has previously participated in the MATILDA and 5G-PHOS projects, thus offering its personnel the opportunity to enhance their competencies with respect to the 5G ecosystem. Through its involvement in 5G PPP projects, Incelligent aims to enhance its engagements in the Telecommunications sector and other vertical sectors, and expand its portfolio of solutions, adding new enhanced software modules/ functionalities.

Recently, Incelligent was recognized as one of the key innovators by the European Commission's Innovation Radar with respect to the platform developed within the LOCUS project, which was selected as a high-impact, technology-ready innovation. Furthermore, Incelligent is now able to exploit the positioning/location-centric principles, concepts, technologies and know-how acquired within LOCUS for extending its platform's set of APIs/services and eventually supported vertical applications. By combining fine-grained location/positioning information and Incelligent's advanced traffic and mobility prediction mechanisms, the new functionalities and insights yielded are exploitable by current products and potentially can be used in fine-tuning network resource allocation, as well as for enabling other vertical and 3rd-party services.

As a matter of fact, Incelligent is already offering services and products implementing location-based analytics use cases in one of its telco operator customers through its RAN.ai suite of AI/ML-based solutions for improving telecom operations/services. This mainly involves various mechanisms for ingestion and appropriate geo-tagging and enrichment of data, cell classification through geospatial correlations, mobility patterns and trajectories identification and so on, with the purpose of supporting subscriber mobility and marketing-oriented use cases.



MORE INFORMATION

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Last but not least, Incelligent is currently exploring the potential for exploitation along with other innovators within the consortium related to the aforementioned innovation and possible avenues for exploitation.

In addition to the above, within the VITAL-5G project, Incelligent's work expands upon its product/service offerings to other relevant vertical sectors of interest, namely Customs, and delivers advanced data ingestion and ML/AI capabilities dedicated to the needs of the verticals in question.

On the whole, Incelligent has managed to enrich the supported functionalities/ solutions in its portfolio, perform validation activities and showcases, collaborate with large vendors and operators, further improve the company's position in the research field and global market, and -most of all- deliver contributions, which assist in the overall shaping of the 5G world.



MORE INFORMATION

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CONTACT

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The Company InnoRoute (Munich, Germany) has achieved business success with a new routing concept and their router platform TrustNode. A feasibility study conducted within a SMEINST Phase 1 project allowed us to verify the concept and to become partner in two 5G PPP projects:

1. CHARISMA: optimization of TrustNode platform for ultralow latency.
2. SELFNET: optimization of TrustNode platform for modularity and extension to SDN (Software Defined Networking).

Thanks to ultralow latency and SDN support, we were able to enter the Industry 4.0 business. Today, major players from Automotive and Industrial segment use the TrustNode as evaluation and prototyping platform for TSN (Time Sensitive Networking, IEEE Ethernet). We got contracts to develop further TSN functionality for the TrustNode. Modularity of our platform allowed us to do this fast and at low cost.

At the research side, the combination of TSN and SDN became a technology trend. Being the only supplier for both in one device made the company a welcomed partner in German research projects for Industry 4.0. We were partner in TreuFunk and are associated partner in FlexSi-Pro and TACNET4.0.

Next step planned by InnoRoute is to offer a low latency networking service.



InnoRoute's TrustNode



IQUADRAT R&D has a focused business plan specifically intended on delivering a “new generation of research tools for system level evaluation of wireless integrated communication systems”. The company’s R&D department is involved in many National and EU-funded research projects, and has extensive know-how in Network Function Virtualization (NFV) technologies, Zero-touch automation at the network layer using state-of-the-art machine learning algorithms for network status prediction, IoT Networking, simulation methodologies for Radio Access Networks, Software Defined Networking (SDN) and Demand Response algorithms for the Smart Grid.

Under the framework of the 5G-PPP project 5G-PHOS, IQUADRAT has developed a software that enables SDN-based dynamic network resource management for 5G fronthaul configurations that optimizes the fronthaul’s grade of service and power consumption by adjusting the functional splitting according to the fronthaul load levels. The developed software has been tested by considering the 5G-PHOS converged optical-wireless network architecture, which proved that our product can provide useful insights for the development of resource management techniques adapted to fronthaul architectures with virtualization and dynamic functional splitting capabilities.



MORE INFORMATION

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IS-Wireless (SME, Poland) has successfully contributed to the 5G Essence project where the company is working on a centralized radio resource management for the cloud-RAN solutions in the two-tier cloud networks (especially multi-RAT scheduling for 4G and 5G networks). Moreover IS-Wireless is currently together with the Thales (France), ORION (Greece) and other partners working on planning the public safety showcase for demonstrating the benefits of 5G mission critical applications in coexistence with centralized RAN. The final demonstration of the 5G Essence as regards “mission critical” will be presented during the B-APCO

conference (in UK) on 13-14 November 2019, shortly before the project finalizes. IS-Wireless is working on the delivery of a complete software defined (SD) RAN solution to be showcased next year.



MORE INFORMATION

www.is-wireless.com

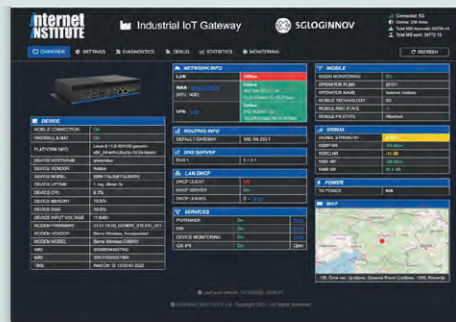


CONTACT

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INTERNET INSTITUTE Ltd. (ININ) has successfully developed and verified Industrial IoT Gateway, an appliance which assures secure, resilient and QoS guaranteed 5G connectivity for IoT devices such as various environmental sensors, industrial sensors, cameras, etc. The appliance has been developed within 5G-LOGINNOV project (<https://5g-loginnov.eu/>), co-funded by the European Union under grant agreement No. 957400. Since 5G-LOGINNOV project primarily addresses ports and logistics domain, the appliance has been tailored for specific requirements of the domain, however, for further development and improvements of the solution to suit other industry verticals and novel FOG concepts as well, the Industrial IoT GW already facilitates R&D&I activities in multiple EU co-funded projects: 5G-INDUCE-5G (<https://www.5g-induce.eu/>, GA No. 101016941), EVOLVED-5G (<https://evolved-5g.eu/>, GA No. 101016608), and NEPHELE (GA No. 101070487).



-  MORE INFORMATION
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In the context of the European Commission's aim to make EU-funded innovations from high-quality projects visible and accessible to the public, our product has been analysed by the European Commission's Innovation Radar and categorized as follows:

- Innovation Title: Improved Industrial IoT System for specific needs of the ports and logistics domain;
- Market Maturity of the Innovation: Business Ready (more details on this categorization are provided here);
- Market Creation Potential of the innovation: Noteworthy (more details on this categorisation are provided here);
- Key Innovator: INTERNET INSTITUTE, COMMUNICATIONS SOLUTIONS AND CONSULTING LTD.

Further details regarding the innovation are also available at: <https://www.innoradar.eu/innovation/46608>



MORE INFORMATION

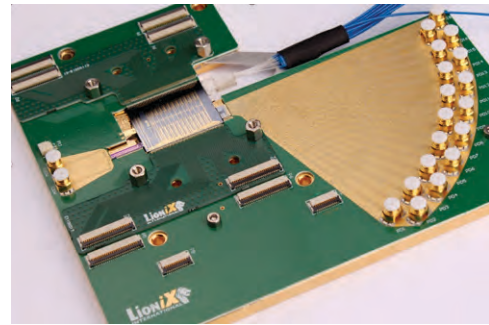
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LioniX International has successfully prototyped a twenty-to-one optical beamforming module for the ESA Aidan Project. The modules will be incorporated into high-capacity phased array antennas by antenna manufacturer and project partner Viasat. This next development phase is underway following a successful test flight in May 2021. The next-generation beamforming modules, highlighted at the test flight by the Netherlands Space Office, use stress-optic tuning to enable power-efficient broadband beamsteering.



20:1 optical beamforming module from the AIDAN project with direct RF connectivity (transmit module pictured only).



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MARTEL NAMED “KEY INNOVATOR” BY THE EC’S INNOVATION RADAR

The European Commission’s Innovation Radar has named Martel a ‘Key Innovator’ thanks to the company’s contribution to the Open Source MANO (OSM) enhancement for flexible cloud-native service deployments, developed within the Affordable5G project.

Open Source MANO (OSM) is an Open Source community-driven management and orchestration platform for Virtualized Network Functions (VNFs). OSM is being used in the ongoing Horizon 2020 Affordable5G project as an orchestrator for Cloud to Edge, 5G centric services.

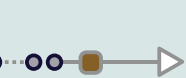
Within Affordable5G, Martel has been working alongside the OSM developers to develop a new feature, supporting the dynamic placement of Kubernetes

network functions across the cloud-edge in OSM managed NFV Infrastructures. By working directly with the OSM open source community, Martel ensures that this feature becomes part of the official OSM releases, thus ensuring its long-term availability and support. This means providing a useful feature for both the Affordable5G consortium partners and the large ETSI OSM community as a whole. For this work, The European Commission’s Innovation Radar has named Martel a ‘Key Innovator’.

The result announced by the European Commission’s Innovation Radar comes after a thorough analysis from independent experts involved in reviewing ongoing Research and Innovation projects funded by the EC. Their analysis recognised that the OSM enhancement addresses the needs of existing markets, placing it in the Radar’s “Exploring” market maturity category: this

includes innovations actively exploring value creation opportunities, considered as ‘getting things started’. The Radar defines such innovations as being in the early phases of technological readiness, but already showing high commitment levels from the organisations developing them.

Martel is a strong believer of community-driven open source approaches and, despite the intense efforts required to reach consensus in the community, we believe that making process compliant and community-driven contributions to open source is key to support innovation in EU companies, and to provide a sustainable pathway for European projects outcomes as we showed with Affordable5G.



Montimage is a French SME created in 2004. It provides a complete network monitoring and security management framework (MMT) for 4G/5G based on intelligent distributed monitoring agents and application for providing: fine-grained and configurable network visibility; security and performance monitoring based on Deep Packet/Flow Inspection and Machine Learning; automated management and control; and, customizable dashboards to define new collected statistics and configure new views or customize a large list of predefined ones.

Montimage is innovation leader in the H2020 INSPIRE-5Gplus project, participates in the H2020 SANCUS project dedicated to Beyond 5G network security, in the HORIZON-SNS EINSTEIN6G project on time sensitive networking, in the H2020 AI4CYBER project on the use of AI for cyberdefense, and in H2020 SPATIAL on trustworthy and explainable AI. It also participates in ANR-MOSAICO project with Orange focusing on secure low-latency for 5G applications. It also participate in the French 5GOpenRoad project to deploy its tools in the "plateau de Saclay" to showcase innovative services taking advantage of 5G in the fields of connected/autonomous vehicles, industry 4.0, and connected health.

Montimage is member of 6G-IA, NetworkEurope SME Working Group, ENISA's Enterprise Security Working Group, and the French Systematic regional cluster's CoPil Digital Infrastructures & IoT.

Montimage collaborates with several SMEs (e.g., Cumucore Oy in Finland), Industrials (e.g., Orange, Thales, Nokia in France, Telefonica in Spain) and Agencies (e.g., ENISA in Greece, Ministère des Armées in France).

With Cumucore it has developed a solution combining their 5G core and Montimage's security management framework (MMT now open-source) to obtain a highly secure elastic and automated 5G core network box (described in page 3 and 4).

It has also developed an open-source solution, 5GReplay (www.5GReplay.org, launched in October 2021), that allows replaying 5G network traffic and performing scalability, performance and robustness tests of the different 5G network elements (described in the next page).

Contact information

Partnership plan:

Integration of Network Core and Monitoring solutions within your system

Set-up of Proof of Concepts

Deployment and operation of Network Core and Monitoring solutions

Acknowledgements

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Direction Générale des Entreprises and Systematic Paris Region Cluster

Horizon 2020 EU research Program

Agence Nationale de la Recherche



MORE INFORMATION

www.montimage.com



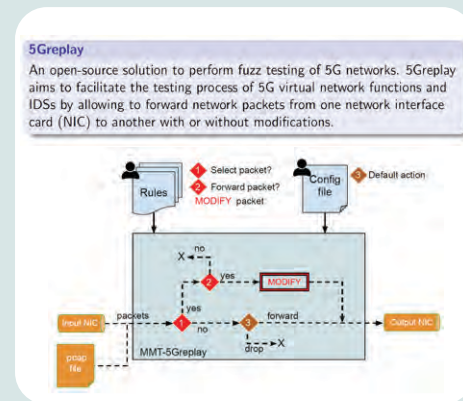
CONTACT

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5G REPLAY

To overcome the lack of solutions (TCPReplay and Scapy are not 5G-oriented) to formally create or modify existing 5G network protocol packets and inject them into a network, making it easy to test the network functions.

5GReplay's main architecture: Incoming network packets are filtered according to predefined defined rules that determine which packets are to be modified, forwarded or dropped before being sent to the output NIC.



5GReplay's main architecture: Incoming network packets are filtered according to predefined defined rules that determine which packets are to be modified, forwarded or dropped before being sent to the output NIC.



MORE INFORMATION

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ELASTIC & AUTOMATED CORE NETWORK BOX



Network core:

- Flexible, agile, scalable 4G and 5G-ready core;
- Reduce high upfront investments in the core;
- Pay as you grow based on actual used capacity;
- Reduce OPEX due to better automation and more optimized network;
- Integrated with software-defined networking and network function virtualization;
- Improve operator ARPU by enabling personalized services to their customers;
- Fast deployment in 5 minutes;
- IoT ready network infrastructure (slicing, efficiency);
- Reliable and robust core for emergency and safety networks;
- Future proof with extensions to become 5G core.

Integration with optimized services; caching, content delivery, IPTV and OTT services:

- Traffic savings in packet core of up to 40%;
- End-to-end latency reduced by 60%.

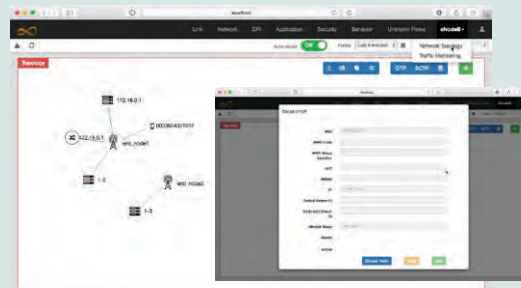


Network monitoring:

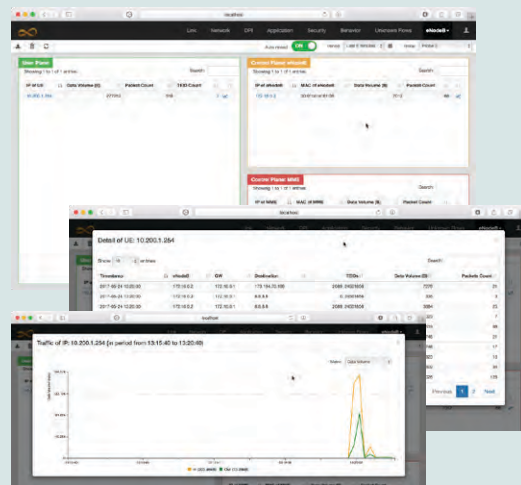
- Intelligent distributed monitoring agents;
- Fine-grained and configurable network visibility;
- Security and performance monitoring based on DPI and machine learning;
- Automated management and control;
- Customizable dashboards to define new collected statistics and configure new views or customize a large list of predefined ones;
- Dynamically updated topology; information, statistics, configuration of e/gNodeBs, MMEs and UEs.

Selection of dashboards:

- 1) Dynamically updated topology and configuration of network elements:



- 2) Detailed information and statistics of eNodeBs, MMEs and UEs:





MORE INFORMATION

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Nearby Computing (NBC) participates in the H2020 (5GPPP) research project "Affordable5G: High-tech and affordable 5G network roll-out to every corner". Affordable5G aims at creating a 5G network that will deliver a complete, disaggregated and affordable solution covering the needs of private and enterprise networks through technical innovation that span across all parts of the 5G network including Radio Access, Edge, 5G Core and Orchestration.

Product in the project

In the context of Affordable5G, NBC is offering their flagship cutting-edge NearbyOne Edge Orchestrator to provide network and service orchestration in one of the Affordable5G experimental pilots. The NearbyOne solution is composed of two main elements (see Figure 1):

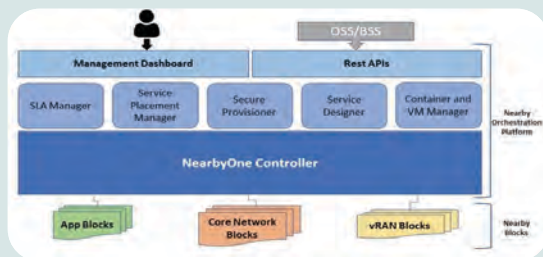


Figure 1 NearbyOne Architecture

- The Nearby Orchestration Platform, which is the main component of the solution, runs in a central location and oversees the performance of all tasks related to the orchestration of applications and infrastructure.
- The Nearby Blocks, which are distributed components that encapsulate logic and code for different application and virtual network functions (VNF) specific functionalities.

VNFs and Applications, as deployed in the NearbyOne solution, are encapsulated into Nearby Blocks to address ecosystems that require inter-application communication and accurate placement decisions, that typically implies advanced tuning of their execution platform. The NearbyOne orchestrator component continuously monitors the telemetry of the platform (processors, memory, accelerators) and the VNF/ Application Blocks. Through the telemetry collection interfaces, the orchestration layer has access to all the resources consumed by the blocks, the map of available resources, as well as the high level KPI metrics for each application. When a new Application or VNF block is deployed, the orchestration layer observes the available resources and allocates the necessary resources to it. All this information is made available to the orchestrator for the enforcement of automated service placement decisions. More specifically, three components (part of SLA Manager and Service Placement Manager) are responsible for enforcing placement policies:

- SLA monitoring: collects all telemetry

information generated at the infrastructure, network and chassis levels, and models the end-to-end KPIs observed at the service level.

- Policies: description of the expected behaviours for the different components of a service when some of the SLA are not met.
- Placement Engine: makes decisions about service location based on the inputs of the SLA monitoring component and according to the policies component.

Distinction

Our work on zero-touch network and service management has been singled out by European Commission's Innovation Radar, which has analysed and highlighted our end-to-end intelligent orchestration and slice management (carried out jointly with the project partners Acceleran and i2CAT) as "key innovation" that addresses needs of existing markets. The Innovation Radar platform builds on the information and data gathered by independent experts involved in reviewing ongoing research and innovation projects funded by the European Commission. These experts also provide an independent view regarding the innovations in the projects and their market potential.

Our organisation's inclusion in this initiative could open up new opportunities for collaboration with business or academic organisations and trigger interest from potential customers or investors in our innovations. Above all, it will demonstrate to a global audience the innovative work NBC is active in delivering.



5G-EPICENTRE PARTNERS NEMERGENT SOLUTIONS, ATHONET AND ONE SOURCE

The success story involves 3 SMEs from 5G-EPICENTRE and an academic partner providing a 5G testing platform. The joint work is devoted to Public Protection and Disaster Relief (PPDR) NetApps and associated capabilities. Especially on 5G Quality of Service (QoS) management as an enabler for advanced service operations, usability of the 5G capabilities, and adjustment of networks for PPDR needs. More precisely, PPDR-oriented NetApps with the 5G network within the framework of Mission Critical Communications (MCX) and the associated QoS.

Thanks to the direct interaction between MCX NetApps and the 5G Core Network (5GC), it is possible to guarantee the QoS conditions required for this type of solutions both for default traffic and specific traffic, via direct and dynamic requests to the 5GC's Policy Control Function (PCF) or Network Exposure Function (NEF). The 5G network, by handling the required QoS for MCX, demonstrates its capability to be a key enabler for future communication solutions in the PPDR ecosystem. This work constitutes

an important step towards securing mission-critical network conditions in 5G and fosters the transition of PPDR communication solutions to new use cases and business models in commercial mobile broadband networks.

Among the involved partners (including Airbus, with its own MCX solution), Malaga experimentation platform is used, which provides a 5G private network located at the University of Malaga (Spain) enabling the main data center available for the deployment of the NetApps including a native Kubernetes (K8s) multi-master deployment. Among the SMEs, the 5GC SA mode is provided by Athonet, the 3GPP standards-aligned MCX NetApp linked with the 5GC's PCF as a unique AFis provided by Nemergent Solutions and the situational awareness Mobitrust platform associated with the NEF is provided by One Source.



MORE INFORMATION

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In the context of its activities across several 5G PPP projects, Nextworks has developed a strong asset of software prototypes for an advanced NFV MANO framework targeting 5G infrastructures and integrating innovative features for 5G telcos, service providers and vertical industries. The core of Nextworks service management and orchestration framework is built around the 5G Apps & Service Catalogue, TIMEO (Transport Infrastructure and MEC Enabled Orchestrator), SEBASTIAN (Service Based Slice Translation, Integration and Automation), the Plug & Play control of virtualized functions for 5G, and the 5GCity Software Development Kit. On top of these service management and orchestration framework, Nextworks has developed, in the context of the 5G-MEDIA project, a 5G media use case for UHD media content distribution over virtualized Content Delivery Networks (CDNs), which integrates and enhances open source CDN solutions with Nextworks' SmartHome Symphony product.

- The 5G Apps & Service Catalogue, started as part of the SELFNET project (5G PPP Phase 1) and further advanced in 5G-MEDIA (5G PPP Phase 2), is a generalized catalogue of descriptors that allows service customers to bring their own VNFs and services into the 5G management and orchestration layer, with unified ETSI NFV standard format where applicable (aligned to the latest best of breed ETSI SOL specifications) and MANO specific translation towards ETSI OSM and other NFV-MANO stacks. It started as part as research activity and prototype in the SELFNET project and further advanced to a consolidated catalogue solution in 5G-MEDIA project. Further extensions are planned in 5G EVE project (5G PPP Phase 3) to support onboarding and exchange of slice, service and function descriptors from multiple domains.
- TIMEO is an enhanced NFV Orchestrator originally developed in the context of 5G-Crosshaul project (5G PPP Phase 1) and further extended in blueSPACE project (5G PPP Phase 2). It is an ETSI NFV compliant NFVO which implements the ETSI IFA interfaces and information models for service and VNF/MEC apps package lifecycle management. It extends the NFV MANO models with mechanisms to support advanced resource allocation strategies for transport network (SDN based) and network+IT, can interface to packet and optical network controllers via Transport API, can manage power states for network and computing devices and is able to handle management and monitoring of both VNFs and PNFs.
- SEBASTIAN is a tool for service-driven slice management and orchestration, implemented as part of Nextworks activities in 5G-TRANSFORMER (5G PPP Phase 2) and extended in SliceNet (5G PPP Phase 2) and 5G EVE (5G PPP Phase 3). It allows modelling and instantiation of vertical-driven services in 5G network slices, with multi-slice arbitration mechanisms. Key features of SEBASTIAN are the automated translation

from business/service to network slice requirements; the slice arbitration for efficient service sharing, re-usability and composition; multi-tenancy with service isolation and SLAs management.

- The Plug & Play control framework, developed in the SliceNet project (5G PPP Phase 2), allows to deploy customized slice control instances for verticals in the form of isolated control environments where customized control logic can be plugged to build a truly tailored slice control at runtime. These functions have been designed from the beginning around the principles of modularity, flexibility and open interfaces, in order to simplify and fasten the introduction of novel features, algorithms and even platform components. In this sense, Nextworks assets are designed and prototyped to provide an extensible and integrated framework to foster and stimulate the research in the network slicing and NFV area, providing an agile platform to quickly and efficiently develop, integrate and experimentally validate innovative features in an ETSI NFV compliant environment.
- The 5GCity Software Development Kit is a toolkit that allows wiring, in an arbitrary sequence, a pre-defined set of abstract functions defining the logical service chain of the Vertical service, generating the corresponding network service and virtual network function templates with all the complexity required by the NFV-MANO layer. The 5GCity SDK abstracts infrastructure's low-level details and automatically translates functional components and business requirements into descriptors of virtual computing and networking resources for the operational service. In the 5GCity project, the SDK module is planned to be used in the three city-wide pilots of Barcelona (ES), Bristol (UK) and Lucca (IT) to design the various network service and experimentation scenarios of the Neutral Host, Media industry use cases (immersive media and collaborative media), and waste management through video analytics.

The open and modular nature of the 5G Apps & Service Catalogue, TIMEO, SEBASTIAN, Plug & Play control and 5GCity SDK is key facilitator of an intense collaboration of Nextworks team with other researchers in 5G PPP, who can easily contribute to the evolution of the frameworks in their specific area of expertise. For example, the collaboration with academic partners allows to introduce new resource allocation algorithms, while the possibility to easily integrate new drivers for NFV domains opens opportunities to interact with multi-technology infrastructure providers. These collaborations create multi-faceted value chains that continuously encourage to investigate new research directions.

This set of assets allows Nextworks researchers to early introduce innovative functionalities for the management of 5G infrastructures and the orchestration of 5G services, often anticipating the major themes and trends of the

research. Starting from 5G PPP Phase 1, Nextworks has already developed solutions for the joint orchestration of cloud and network resources, as part of a wider strategy for energy efficient service deployments, with a demonstration at the 5G Global Event 2nd in November 2016. In this particular case, TIMEO orchestrated the automated configuration of the fronthaul/backhaul network in the service lifecycle management (as further demonstrated at EuCNC conference in June 2017); the capability was further extended in the blueSPACE project to cover also optical-based transport networks (public demonstration at ECOC 2018 conference), a topic which is still attracting strong interest of network vendors and potential customer. Similarly, Nextworks started very early to design solutions for sharing and composition of network services in NFV frameworks, which constitutes the baseline enabler for the efficient management of network slices in shared and multi-tenancy environments. Relying on these concepts, SEBASTIAN already integrates basic mechanisms for service-driven management, composition and sharing of network slices (as demonstrated in EuCNC 2018, ECOC 2018, ICT 2018 and OFC 2019 conferences), with the objective of efficiently arbitrating the execution of multi-tenant and concurrent vertical services requesting network slices. This topic is expected to draw much attention during 5G PPP phase 3, when several 5G services will run in live trials. Here, Nextworks has already demonstrated a realistic 5G media use case that enables Media Service Providers to build flexible and adaptable media distribution service chains, made up of virtualized functions, and deliver UHD media contents while users are moving in a geographically distributed 5G networks, as successfully demonstrated at the Mobile World Congress 2019.

Deeply involved in the development of the main research areas in network slicing and orchestration for 5G, Nextworks is in a strong position to successfully propose highly innovative solutions to its customers, above all in the consultancy market. In this area, the development and demonstration activities performed over the 5G Apps & Service Catalogue, TIMEO, SEBASTIAN and the Plug & Play control platforms, already integrated with a 5G media vertical use case for UHD media content distribution over vCDNs, are key references and success stories to present the company expertise to potential customers, thus increasing competitiveness and differentiation from competitors. If that's true that today many companies are offering integration services around several of the orchestration platforms developed in mainstream open source projects, it is a fact that not so many are able to go beyond what is available there in terms of features and functionalities. Moreover, most of the potential customers in this area are developing their own proprietary MANO solutions, requesting specialized skills to enhance them and introduce innovative concepts. Nextworks' PoCs in public exhibitions are excellent opportunities to present new ideas developed by the company, demonstrating their technical feasibility and potential benefits.



As part of INSPIRE-5Gplus collaborative project and its numerous occasions to exchange views with its academics and industry (notably telco operators), Solidshield has broadened its windows, providing its solution with off-core functionalities.

One key evolution piles up over its stand-alone “harden-and-Forget” software security a continuous remote monitoring capacity. In short, the protected software execution becomes constantly monitored at a central utility, whatever security hardening measures be already in place. This remote monitoring perfectly fits with any telecom industry software never isolated from the rest of the network.

Bringing a remote monitoring capacity through the transmission of immutable heartbeats related to various software security properties is aligned with 6G IA 's SNS vision. The core benefit of our progressed solution is to bring at a central point several insights of the functioning states (e.g., integrity, geolocation) of each deployed software and of their execution environment, without requiring any source level change on the monitored software or on the infrastructure elements (e.g., kernel). Last, in practice, software hardening and deep monitoring techniques do not oppose but aggregate security and are setup in one run of our SECaaS solution.



MORE INFORMATION

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Progress made during INSPIRE-5Gplus by Solidshield:

Deep monitoring (heartbeat) of each instance of the protected instances (Shielded)



MORE INFORMATION

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Synthesis' success stories concern the development of innovative systems within the framework of international cooperation projects.

Via these activities vertical solutions that utilize advanced wireless technologies are under development.

Synthesis' main successful stories concern the vertical areas of cybersecurity, edge computing and healthcare services.

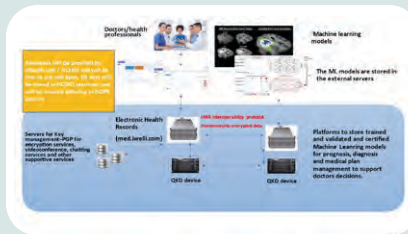
In the area of the cybersecurity sector, Synthesis¹ together with NCSR² are participating in the OPENQKD³ project / QKD4IntelligentHealth pilot, with the aim to set up a real-world use case applying Quantum Key Distribution technology to demonstrate the secure data transfer of encrypted EHR datasets to remote servers for analysis with AI algorithms.

Synthesis is developing the Qsafely.eu system that is a plug and play tool able to secure the exchange and storage of medical data over the cloud in the post quantum world

Qsafely tool, contributes to the development of quantum-safe systems by establishing a robust and modular hybrid security framework for increasing the security over the cloud for medical data.

Qsafely aims to protect confidential data through the development of new security measures, including homomorphism encryption, PQC cryptography or QKD technology (where available), key distribution

and secret share scheme which will divide the medical datasets amongst several cloud service providers.



Qsafely.eu : Communicate safely in the post quantum world

For the edge computing sector, Synthesis is participating in the VEDLIOT project / Edge4iwelli⁴ pilot aiming to develop edge computing solutions to support smart home care and independent living. Synthesis is developing these functionalities.

Edge4iwelli addresses the challenges of integrating edge computing systems in a smart home environment to generate home care services for health and wellbeing. Within the realm of the project, Synthesis embeds in the existing iwelli IoT care package (eg. www.iwelli.com/, <https://clinic.iwelli.com/>) edge computing systems and some more advanced AI modules and we will create a more secure and more efficient IoT care platform for proofs-of-concept in edge computing, optimization, and machine learning in home contexts.



A Smart Health Mirror will utilize Edge Computing, RGB and IR cameras to monitor unobtrusively vital signs, motions and activity

Synthesis offerings in healthcare domain have been also enhanced via the developments through the realm of the running projects Gatekeeper⁵ and Pharaon⁶. Through these project the iwelli IoT ecosystem of solutions for digital health and wellness have been enhanced with artificial intelligence algorithms to analyse cardiograms online and with smart FHIR Electronic Health Records that are able to “understand” the profile of the patient and support doctors' decision.

Synthesis horizontal solutions for the healthcare domain (collection of data, secure transmission, storage and analysis of the data) are preparing the Healthcare sector for the Post-Quantum Era.

¹ <https://synthesis.eu>

² <https://www.demokritos.gr>

³ <https://openqkd.eu>

⁴ <https://vedliot.eu/project/edge4iwelli>

⁵ <https://www.gatekeeper-project.eu>

⁶ <https://www.pharaon.eu>



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Telcaria is an SME providing advanced services to network operators and equipment manufacturers worldwide. We partner with network operators to redesign their products towards NFV/SDN based network infrastructure and cloud-computing applications. We collaborate with the IMDEA Networks and top Universities in the area: UC3M, UPM, and UAH. This critical mass of networking expertise located in very close proximity creates many synergies, having the members of these institutions a history of fruitful collaboration between them. The company is currently working in three H2020 EU (5GEVE, 5GROWTH, and 5G-DIVE), collaborates as an expert in the Master of SDN&NFV technologies offered by UC3M and is currently actively developing and commercially distributing Alviu, its SD-WAN solution.

Telcaria has participated in EU/FP7 NetIDE and two other 5G network-related projects: EU/H2020 SUPERFLUIDITY and 5G-CORAL (shortlisted in the Glotel Award for 'Best 5G innovation' and CSI Award for 'Best 5G project and innovation' in collaboration with Taiwanese partners), and is an active partner in 5G-EVE, 5GROWTH and 5G-DIVE. As an advanced network service virtualization SME, Telcaria has benefited from the technology advances generated from the previously mentioned projects acquiring the know-how for applying technologic achievements for rapid prototyping, design, validation, and direct deployment of Edge and Fog distributed computing platforms, advanced

multi-domain monitoring platforms, innovations in orchestration mechanisms to assist offloading and roaming scenarios among others. Additionally, Telcaria has disseminated its results in major events and public demonstrations such as EuCNC.

Recently Telcaria successfully concluded EU/H2020 5G-CORAL, leading the SD-WAN PoC which demonstrates how the SD-WAN enables the federation of resources across different administrative domains while maintaining the service uninterrupted and guaranteeing a certain level of QoE at the Edge/Fog, enabling seamless migration between radio access technologies across domains by leveraging in roaming and offloading capabilities. This PoC has had a positive impact by improving latency, bandwidth and jitter by moving applications closer to the end-users, allowing service providers to serve more users in the same area due to the increased capacity and reduced latency of the Edge and Fog, contributing to reduce the bottlenecks caused when application traffic moves from user's terminal to the cloud.

In the wake of 5G PPP projects, Telcaria has motivated current employees to develop their professional careers to pursue a Ph.D. and has been able to hire new employees.





Founded in 2007, in Aveiro, Portugal, Ubiwhere is a high-tech SME that builds innovative, user centred software solutions with two core areas of application: Smart Cities and Telecommunications.

Our background on 5G deployments and our expertise on the development of 5G network service orchestration platforms, MEC orchestration services and 5g services based on NFV and SDN technologies, have allowed us to take part and lead diverse RDI projects addressing the 5th generation network. More recently, and leveraged by the need of both our Telecommunication and Smart City deployments and RDI projects, Ubiwhere has been focusing on Artificial Intelligence, Cyber Security and Blockchain. Such know-how drove our involvement in remarkable joint initiatives carried out by the EU, tackling challenges of the Europe of the future, namely 5G-PPP, 5G-IA, BDVA, AIOTI, ERTICO and EIP-SCC IMET and boosted our contribution to prominent standardization entities such as ETSI.

Ubiwhere has been participating in the 5G-PPP program through Phase 1, Phase 2 and Phase 3. This participation has fostered Ubiwhere's position as an active part of the 5G ecosystem while opening doors to the creation of innovative solutions with great business potential. Listed below, are the products which were created or affected by Ubiwhere's participation in the 5G-PPP program.

- Smartlamppost (<https://smartlamppost.com/>) is a clean solution that leverages on urban furniture to elegantly provide 5G network deployment, EV-charging stations and edge computing capabilities, among other plug-and-play functionalities, targeting municipalities but also other vertical businesses (such as MNOs). Its modularity, offers a flexible and cost-effective way of tackling current e-mobility and 5G communication barriers.
- The Urban Platform (<https://urbanplatform.ubiwhere.com/>) was created from Ubiwhere's vision of a holistic perspective of the smart urban environment for cities actively looking to contribute back to those who manage it and their inhabitants, providing a global and integrated view. Supporting centralised collection and processing of data from heterogeneous sources and city systems, while providing the seamless integration and standardisation of different kinds of communication protocols and standards, the Urban Platform helps the city with correlation of information for knowledge extraction, forecasting, reporting and impact assessment, as well as to meet the Sustainable Development Goals (SDGs) by taking into account the Sustainable Cities and Communities Indicators from ISO 37120 and 37122, among other indicators.
- Unicle (<https://unicle.io>) has been created out of Ubiwhere's approach to V2X and its convergence with 5G technologies. Knowing the ever-growing relevance of 5G in this domain, Ubiwhere has been capitalising its knowledge on ETSI MEC and the C-ITS stack to create an Edge Computing framework focused on the deployment and management of V2X-oriented

leveraging Edge Computing and 5G radio technology (such as C-V2X). The goal is to position such product as a complementary feature of Smartlamppost: besides being able to equip such urban furniture with dedicated V2X radio components and Edge Computing elements, Unicle provides now Service Providers from the Mobility space, Mobile Network Operators and the Automotive Industry with a platform which effectively allows them to deploy VNFs and or Linux Containers which will run co-located with the radio elements, providing access to the user plane via the local breakout and, thus, providing much reduced latency which are key for CCAM (Cooperative and Connected Automated Mobility) services and applications.

- NFVal tool is a software tool able to allow Network Service programmer to validate both VNF and NS packages (supporting different Orchestrators) and in case an incompatibility is detected, allow its fast identification by identifying its root cause. The tool performs three kinds of validation:
- Syntax validation: The service descriptor and corresponding function descriptors are syntactically validated against the scheme templates specified by data model of the targeted Orchestrator
- Integrity validation: The validation of integrity verifies the overall structure of descriptors through the inspection of references and identifiers both within and outside the individual descriptors
- Topology validation: This tool provides a set of mechanisms to validate and aid the development of the network connectivity logic identifying potential loops/cycles, unlinked nodes and potential network bottlenecks

Below a list of the 5G-PPP projects as well as its main contribution for the previously mentioned products:

- SELFNET (<https://selfnet-5g.eu/>): SELFNET project enabled Ubiwhere to define and understand the lifecycle of a Service Orchestration framework with Self-Healing, Self-Optimization and Self-Protection capabilities. Smartlamppost product vision was born at the end of SELFNET project leveraging on its architecture as well as on its monitoring and self action capabilities for the edge computing and orchestration framework.
- SONATA (<https://www.sonata-nfv.eu/>): In the context of SONATA, Ubiwhere's contribution was mainly focused on the SDK for Service development component. NFVal tool first version was created in the context of SONATA (supporting only SONATA MANO) and later evolved by Ubiwhere's R&I department to support other NFV MANO orchestrators (latest version of NFVal presented to ETSI for integration in OSM). Additionally, Smartlamppost's platform targeting Service Providers (a relevant stakeholder in the broader 5G multi-stakeholder ecosystem) shares SONATA's vision of an SDK for the development

and deployment of Network Services in a MANO Orchestration framework.

- 5GCity (<https://www.5gcity.eu/>): This phase 2 project shares the vision of Smartlamppost product in the fact that both projects envision the usage of urban furniture across a city to provide network and computational resources to third parties. Smartlamppost edge orchestration framework was considerably boosted by Ubiwhere's participation in the project and critical to Smartlamppost's path to market. Additionally, this project allowed Ubiwhere to establish important partnerships and co-creation activities with other partners of the project - namely, Accelleran, a Small Cell vendor, with whom Ubiwhere has already performed commercial activities in the scope of Smartlamppost through 4G media trials in Portugal, following also the Neutral Hosting approach. Having in mind the Edge Computing capabilities of our Smartlamppost and alignment with the project's goal of having different Service Providers from different verticals deploying numerous applications leveraging 5G, Ubiwhere has contributed with a V2X use case which led to a new product called Unicle (<https://unicle.io>) (currently in BETA). Having contributed also with the front-facing multi-tenant web platform of the project, the technologies applied in the scope of this platform greatly influenced the development of our Urban Platform, which has already been also deployed in the city of Barcelona (one of 5GCity's targeted cities for trials).
- 5GZorro (<https://5gzorro.eu/>): With this Phase 3 5G-PPP project started in November 2019, Ubiwhere intends to continue its commitment to create a multi-stakeholder 5G marketplace, aligned with Smartlamppost's dedicated Marketplace app (<https://smartlamppost.com>). Through blockchain and Smart contracts technology, Ubiwhere hopes to design the new set of shared business logic and SLAs as Smart Contracts and benchmark 5GZorro's findings when applying such set of rules in the telecom space: Mobile Network Operators, Site Owners, Spectrum Regulators and, finally, Service Providers. With this convergence of 5G technology and DLTs (Distributed Ledger Technologies), Ubiwhere hopes to enhance the existing Smartlamppost Marketplace with a new trustless layer, effectively providing all of these entities with built-in protection mechanisms - as example, guarantying a certain SLA based on different monitored parameters which, if verified, may reflect positively or negatively in the billing process (automated P2P payments, through blockchain technology).

As a final remark, Ubiwhere is always seeking for strategic partners that can provide strategic value to both its research activities but also to its commercial endeavours. Ubiwhere is already paving the 5G market with the outcomes of the research it performed in the 5G-PPP program and expects to follow this row in the immediate future.



5G capabilities allow us to implement VNFs to deliver computer vision services through the network by deploying them around the network. More precisely, for our use case, the deployment should be done in the edge as we need to lower the delay to the minimum to increase drone autopilot reaction. The drone is piloted by a VNF, having a manual, automatic and remote flight control. The computer vision results, done from another VNF, may change the drone path depending on the detection and drone flight mode.

Visiona's approach to the preventive maintenance aims to detect, from an autopilot drone, different changes in the target zones in order to predict possible dangerous conditions on the environment or in the structures.

Regarding the artificial intelligence applied to vision, Visiona developed three systems:

- People and vehicle detection system in critical locations.
- Change recognition system on UAV imagery.
- Abnormal hot points through thermal image.

Our target with the first implementation is to analyse infrastructures and detect elements that could imply a risk, such a person or a vehicle in a forbidden and hazardous zone.

The second one is focused on finding environmental changes in areas close to key

infrastructures. To do so, the system needs to have a record of the initial status of the area to have a reference to compare with.

The third one, based on thermal image, implements an alert system for the hot points of the, in our case, dehydration chimneys of the gas plant. This can be applied to any other case.

All implementations are based on images obtained from Unmanned Aerial Vehicles (UAV). As a result, image processing techniques are a crucial part of the developments. More precisely, Deep Learning techniques applied to this field such as Convolutional Neural Networks. This technique is the base of most of the cutting-edge implementations of deep learning based on images.

Different challenges are going to be addressed with our approach. First, the use of drone imagery is a demanding task for the detection system, due to the reduced size of the relevant objects related to the complete image. Subsequently, the development of an implementation robust to lighting variations, environmental conditions and other factors produced by the different scenarios is one of our main goals.

Related to the change detection system, the capability of adaptation is a crucial factor for the viability of the algorithm. The main variation between this approach and



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the deepest learning methods for image processing is that we need to have a previous reference to compare with. As a result, the development process has a different perspective from the standard designing of deep learning models for computer vision.

To complement the explained above, Visiona's quality probe may be deployed in the different nodes of the network to analyse the QoS and QoE of the video that the operator is receiving remotely. The quality probe can detect no video (video is cut), freezing, packet loss, colour errors or audio defects. It has also the feature of demanding a new network path in case one of those failures are detected in the video, if in the edge the video is correct, of course.





The WINGS success stories are related to the engagement in international cooperations, including H2020 and 5G-PPP projects. Through these activities, and especially, 5G-PPP, vertical solutions that leverage on advanced wireless technologies have been conceived, while contributions have been made for the development and validation of various technology components. WINGS has success stories in all the main vertical areas that it addresses: environment, utilities & infrastructures, production systems, service sectors.

AIRWINGS. Environment and Citizen Protection / Air quality management.

In the area of environment, AIRWINGS was enhanced 5G-EVE¹ project. As a result, WINGS is deploying its air quality monitoring solution at the forests of Volos city and Alonissos island, in Central Greece. WINGS ICT Solutions was awarded contracts, following respective tenders, for delivering early fire detection systems in the forests of Volos and Alonissos, in Greece. The intelligent fire detection system will be installed by WINGS, in execution of these contracts, in selected spots of the forests of Alonissos and Volos. The system will deliver early warnings regarding the emergence of fires, based on advanced IoT (including cameras) and telecommunications technologies, and based on AI (Artificial Intelligence) powered algorithms. Sensing information (images and other) will be processed, analyzed and evaluated for detecting hazardous phenomena. Alert to control centers and authorities will be issued.



Figure 1: Article on AIRWINGS deployments in Volos and Alonissos (in Greek)

ARTEMIS. WINGS awarded with the first prize, in the competition of the “Athens Water Supply and Sewerage Company” (EYDAP).

In the area of utilities & infrastructures, WINGS has further developed its water management solution by developing algorithms that can accurately predict and indicate faulty / defective water meters, engaged in the respective smart gateways which were also validated, in the context of the 5G-EVE project. As an outcome, we are proud and honored to have been awarded with the first prize, in the competition of the “Athens Water Supply and Sewerage Company” (EYDAP), which was administered in conjunction with MITEF (MIT Enterprise Forum) and HCAP (Hellenic Corporation of Assets and Participations).



Figure 2: The First Prize Award Ceremony from the Athens Water Supply and Sewerage Company

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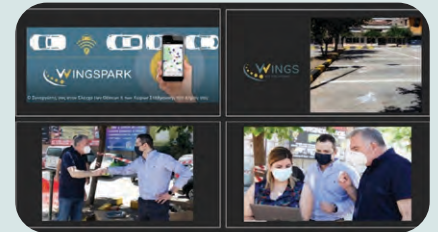


Figure 3: WINGS Smart Parking device deployment in Lamia, Central Greece

WINGSPARK converts the Space of the Old Municipal Market of Lamia to a Modern Parking Lot.

In the area of utilities & infrastructures, WINGSPARK was enhanced in the context of 5G-TOURS². As a result, WINGS deployed its smart parking solution at a municipality in Central Greece. The WINGSPARK solution provides the means for effective real-time monitoring and management of on-street parking slots, municipal as well as private parking lots. WINGSPARK now improves the convenience and efficiency for the citizens of Lamia, by converting the Space of the Old Municipal Market to a Modern Parking Lot. The system will monitor the parking infrastructure, in order to enable the acquisition of insights, the realization of predictions, and the derivation of parking instructions / policies. In this way there will be the minimization of crucial factors, like delays and the environmental impact, in conjunction with the optimization of the accessibility of the market and of the experience of the visitors. The WINGS platform relies on AI-powered knowledge generation mechanisms and on a set of parking sensors, capable of operating with NB-IoT and other protocols of the 5G family. At a next phase drivers will be provided with an application to direct them to the parking spot.

¹ H2020-ICT-2018-20 5G-EVE, <https://www.5g-eve.eu/>
² H2020-ICT-2018-20 5G-TOURS, <https://5gtours.eu/>

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