Newsletter

April 2019 - August 2019

"Interoperability as a Service" – Connecting IoT infrastructures and smart objects

Editorial

Dear VICINITY partners & friends,

After the summer holidays we are approaching the final phase of the VICINITY project. This comes with some good news: our participation at IoT Week 2019 in Aarhus was a great success with two of the three hackathon winners being projects supported by VICINITY teams. The SPRINGER book on VICINITY is also growing although a lot more work is needed to complete it. The use cases are being evaluated and are being complemented with several adaptors beyond those from the Open Call winners.

However, such early success must remind us that there is still a lot to do! The usability and learning curve need to be improved - the book will help here and a further growing community will be grateful for this. We are now heading towards our next General Assembly in Faro, Portugal on 28th and 29th November and we are currently preparing all the items we will need to present VICINITY successfully to our final EC Review in Brussels. With this in mind, I hope you enjoy reading the vibrant news in this newsletter!

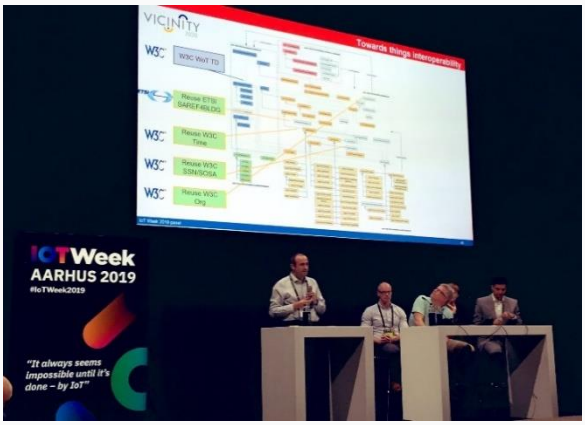
Prof. Dr. Christoph Grimm

Coordinator of VICINITY project

Technische Universität Kaiserslautern

Latest News

- The results of the VICINITY 2nd Open Call were announced, 15th April 2019.
- AAU presented a VICINITY lecture as part of PhD/Industrial AC Microgrid Course, 24th April 2019, Aalborg, Denmark.
- VICINITY is presented on National TV, Regional TV and Newsfeed of Broadcasting Union in Norway with a focus on smart parking, 6th May 2019, Norway.
- CERTH organized "CERTH Open Days" and presented VICINITY, 10th May 2019, Thessaloniki, Greece.
- Third party projects of the VICINITY 2nd Open Call began, 15th May 2019.
- OTE co-organised the 1st International Workshop on Security and Reliability of IoT Systems (SecRIoT), 29th - 31st May 2019, Santorini, Greece.
- OTE, CERTH, UNIKL, UPM, and AAU presented five VICINITY papers in SecRIoT workshop, 30 May 2019, Santorini, Greece.
- ENERC organised "Open Day at Solar EUSEVW" and presented VICINITY, 13rd June 2019, Portugal.
- ATOS and BVR presented "Open Awards - Application", 20th June 2019, Madrid, Spain.
- VICINITY actively participated in IoTWeek 2019 Aarhus. UPM, CERTH, UNIKL, BVR, CAL, ENERC, and Open Call partner - WearHealth presented VICINITY privacy and VICINITY was part of the IoTWeek hackathon in the LSPs Category Challenge, in particular focused on the Sustainability Development Goal 13 Climate Action, 17th-21st June 2019, Aarhus, Denmark.
- VICINITY partners held their 8th General Assembly Meeting, 24th - 25th June 2019, Aalborg, Denmark.
- ATOS and BVR organised a VICINITY webinar for the IoT Next Club members, 26th July, 2019.
- HITS presented during Arendalsuka 2019 (12nd - 17th August) at the ship M/S Sandnes where HITS presented one of the results from the pilot project in Tromsø, which have been named "P2P First Responder".



VICINITY collaborate with IoT NEXT Club

As result of the VICINITY Community building activities, we have established a close collaboration with the IoT Next Club. IoT NEXT is a club for SMEs in Europe that are forming part of the new IoT landscape. They connect hardware and service providers who want to share their knowledge and grow their IoT network with the IoT Large Scale Pilots. Further information can be found here. The VICINITY Consortium considers IoT Next club as an exceptional arena to promote the use of the VICINITY platform.
Several activities have been jointly planned as:

- Collaboration in communication activities (Newsletters, social media promotion, etc.)
- VICINITY Participation in the IoT Next Club
- VICINITY ad-hoc webinar for the IoT Next Club members

We envisage a fruitful collaboration during the next few months.

VICINITY partners co-organise SecRIoT workshop and present five VICINITY papers

In the context of the 15th International Conference on Distributed Computing in Sensor Systems (DCOSS 2019)VICINITY and the Hellenic Telecommunications Organisation co-organised SecRIoT, the 1st International Workshop on Security and Reliability of IoT Systems.

DCOSS is an IEEE conference with high international impact and visibility. The conference covered aspects of distributed computing in sensor systems such as high level abstractions and models, systematic design methodologies, signal and information processing, algorithms, analysis and applications.

More specifically, SecRIoT aimed to bring together researchers and professionals that are responsible for the secure design, deployment and operation of current and future IoT systems. VICINITY presented its results with 5 presentations over two sessions.

Ubiwhere - one of the VICINITY 2nd Open Call winners

Ubiwhere **- Background**

Since its inception, Ubiwhere has emerged as a company fully focused on R&I activities, operating in two distinct areas: (1) Telecommunications and Internet of the Future and (2) Smart Cities, developing state-of-the-art and creating valuable intellectual property, either internally or for its clients.

The company has been investing in increasing its technological capacity and in the differentiation of its products and services, betting on niches that present competitive advantages, but that requires a strong investment in the continuous technological development. To this end, Ubiwhere's entire development strategy is based on a strong focus on R&I of new products and services.

Continuous commitment to the quality of the products and services that the company makes available to the market was always one of the primary objectives. Therefore, the strategy of the founders led to the implementation of an Integrated Management System, namely through the certification of the IDI Management System 4457:2007, and the Quality Management System (ISO 9001: 2015). Ubiwhere has reinforced its commitment to CMMI-DEV and CMMI-SVC level 3 certifications in recent years.

Smart Lamppost

Smart Lamppost is a Portuguese consortium composed of other Portuguese Companies - Metalogalva (Pole manufacturer), and PROEF (System Integrator in the areas of Telecommunication and Energy). Together, the three companies have joined forces to design and implement new smart street urban furniture capable of tackling cities' most present issues: the ability to deploy new digital and multi-purpose infrastructure at scale, so as to tackle e-mobility and 5G needs (dense deployment of both EV chargers, and small cells, respectively, in a concealed and elegant manner).

drEVen overview

DrEVen is about incentivising EV charging to occur during peak PV energy production in a decentralized manner through Smart Contracts and DLTs (Distributed Ledger Technology), dynamically balancing smart grid operations.

drEVen - Project Description

Implementing the envisioned reward system in a multistakeholder environment where one has producers, distributors and consumers of energy may only be possible with DLTs and Smart Contracts. **DrEVen**, will make use of relevant environmental data from PV Solar Panels (producers) to leverage intelligent predictive analysis detecting optimal production periods in a timely manner, so that consumers who charge EVs during such periods are rewarded. Major tasks to build the solution shown in Figure 1 are:

1. **Solar farm (Enercoutim)** is providing data related to the farm.
2. A **VAS** from Enercountim will indicate whenever energy production is at its peak.
3. **Development and provision of a Device Adapter** exposing properties of the co-located EV Charging Station.
4. **Development and integration of VAS targeting MSPs** (Mobile Service Provider) which:
    - consumes data from Enercoutim's VAS related to optimal energy production,
    - acts as middleware between the CPO (Charging Point Operator) Platform and the benefits which may be provided by DLTs and Smart Contracts,
    - controls all users' charging transactions and billing, based on pricing influenced by external organisations such as Enercoutim.
5. Deployment of the neutral **CPO Platform at Cloud level**. Adaptations to this component will be developed to **interact asynchronously with MSP VAS**.
6. **Development of all Smart Contracts (SCs)**. These SCs will implement services such as escrow and time-locked multi-sig wallets, for proper and trustworthy processing of payments and pre-charging multi-party agreement on pricing.
7. **Adaptation of Mobile application** - The plan is to adapt this application as both a blockchain wallet to integrate with the developed Smart Contracts and as a OCPP client to initiate remote transactions.
8. Installation of a **Smart Lamppost with built-in EV Charger** at Enercoutim's facilities.

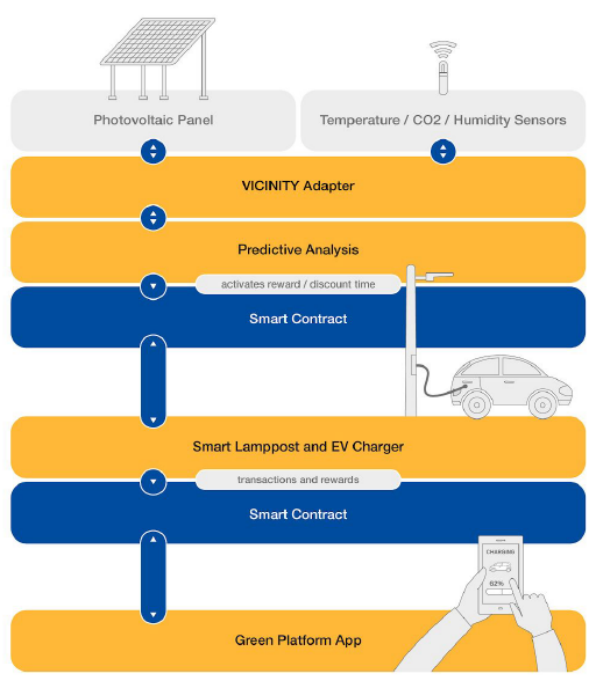


Figure 1 - Detailed high-level overview of DrEVen solution

The set of services and applications that need to be designed, implemented and validated are shown in Figure 2.

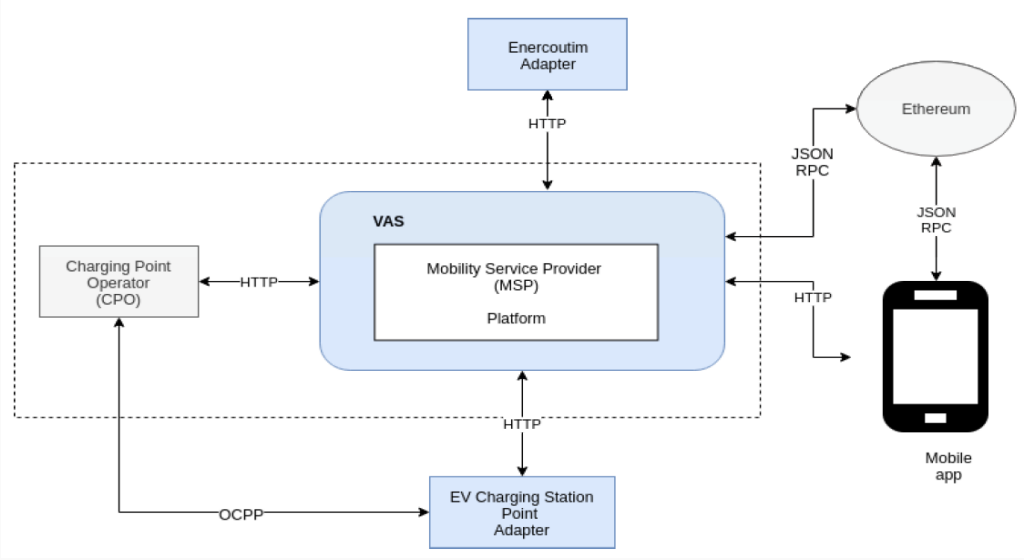


Figure 2 - drEVen - Initial Architecture

Smart Lamppost with EV Charging

The model of the EV charging stations to be installed in the pilot site of Martim Longo is shown in the Figure 3, inside a Smart Lamppost, as exhibited in Ubiwhere's booth for Smart City Expo 2018. Below, the EV Charger's features are also listed in Table 1.

EV Charger Features
Up to 22 kVA (3-phase)
Mode-3 Charging
Type-2 Socket (Mennekes)
OCPP Protocol compliant
RFID Reader
LED display

Table 1 - EV Charging Station summarised.

Figure 3 - Smart lamppost with built-in EV Charging Station

VizLore Labs Foundation (VLF) - one of the VICINITY 2nd Open Call winners

VizLore Labs Foundation (VLF) is a not-for-profit R&D organization focused on innovative projects in all IoT verticals. Their mission is to lead regional ICT technology-related innovation and seed an entrepreneurship culture. The team comprises six field experts in ICT and IoT systems, project management and business strategy development supported by six experienced and five junior developers. VLF deploys custom ICT solutions leveraging the following three pillars:

- Internet of Things,

- Blockchain Technology, and
- Data Engineering Solution.

VLF operates its own IoT data analytics and machine learning cloud platform extended to the IoT edge through our family of universal IoT controllers. The cloud platform and edge controllers are utilized in our R&D and commercial projects across Europe and the US in the domain of smart spaces (residential, commercial, city-wide), smart mobility, and in IoT projects focusing on food, water and energy. Smart actuation based on machine learning powered contextual awareness is at the basis of all our IoT services and applications. In the blockchain domain, VLF operates the ChainRider service which provides an ecosystem around public and private, permissioned blockchains comprising a set of tools and services which help to prototype pivot and build proprietary applications on the blockchain in a fast and simple manner.

BARTER - Blockchain-Assisted Real-time Transaction Execution and Repository framework - project description

BARTER is a blockchain framework built on top of open source projects Hyperledger Fabric, Dash and Bitcoin and proprietary VLF's ChainRider service. It is a micro-payment enabler service that can be exploited to support a range of use-cases that need a secure and scalable M2M micro-payment solution specifically designed for IoT ecosystems. Hyperledger Fabric is an open source enterprise-grade permissioned distributed ledger technology (DLT) platform. ChainRider offers an ecosystem of tools and services built around public and private blockchain which helps in prototyping and building proprietary applications on different blockchains. BARTER integrates all of the aforementioned solutions to provide a private blockchain infrastructure for blockchain-assisted micro-payments, private data storage and smart contracts management. BARTER is a decentralized private blockchain infrastructure with deployed smart contracts for automated micro-payments and data storage, allowing autonomous interaction between IoT ecosystem entities in carrying out everyday business workflows. Regulations, ethics, and business rules can be incorporated through smart contracts, which are stored on BARTER's Hyperledger blockchain and provide a REST API interface for integration with IoT devices in a secure manner. This increases the security of M2M transactions and enforces contract performance.

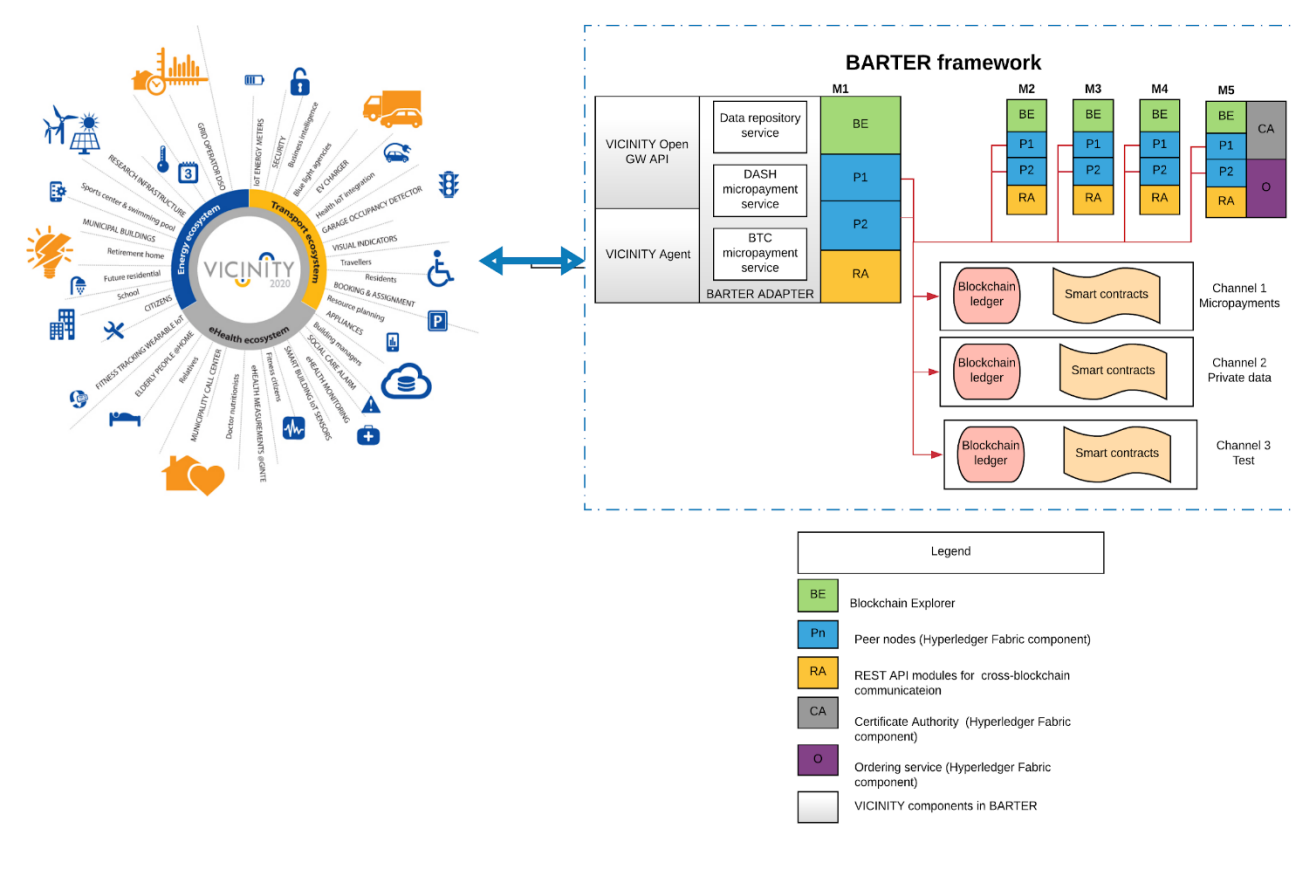


Figure 4 - BARTER architecture

Sensinov - one of the VICINITY 2nd Open Call winners

Sensinov was founded by the large research centre CNRS in Toulouse, France. Sensinov is an innovative start-up providing a cloud platform for IoT interoperability enabling massive deployments of IoT devices and applications independently from their underlying protocols and manufacturers. The Sensinov portfolio is focused on integrated data from buildings and smart cities markets and offers a range of interworking

possibilities. It also offers the level of openness needed to avoid customer lock-in to a specific technology or cloud provider. Leveraging open source implementations of oneM2M and NGSI-LD standards, both led by Sensinov, the platform offers seamless data integration and context information management and is designed to scale for massive IoT in various domains such as smart buildings, smart cities and factories of the future.

F2I-VAS (Fault detection and Isolation for IoT field devices in smart buildings - Value Added Service) - project description

IoT devices and sensors can generate incorrect measurements which can be attributed to software and hardware issues. Ensuring accurate datasets through fault monitoring and isolation is crucial for operational IoT deployments. As an example, if an IoT system is used to perform predictive maintenance of a smart building, the collected IoT datasets must accurately reflect the status of the monitored system. Continually monitoring and isolating faults is an important feature in IoT.

Sensinov will develope and validate a VAS for fault detection in a smart building environment using machine learning service based on determining trend vectors and comparing these with longer term historical data using VICINITY cloud nodes. Sensinov has already developed operational machine learning modules for predictive maintenance based on the IBM Watson suite. This suggests maintenance actions such as physical replacement, battery replacement or putting the device into quarantine (either through deactivation or through ignoring the generated datasets) until e.g. a software upgrade is provided (eventually for all devices running the same software).

Sensinov will integrate a smart building environment where data coming from sensors are published using NGSI-LD context data model, instantiating SAREF for building ontology. An adapter will be developed that translates between NGSI-LD API and the VICINITY Thing Description.

The advantages of this solution are:

- Fault detection as a service providing insights to dashboard application of smart building operators.
- Preventing incipient faults from becoming more serious conditions.
- Extending the VICINITY adaptors catalog with NGSI-LD and SAREF for building adapter.
- Integration of BIM model through SAREF for building ontology.

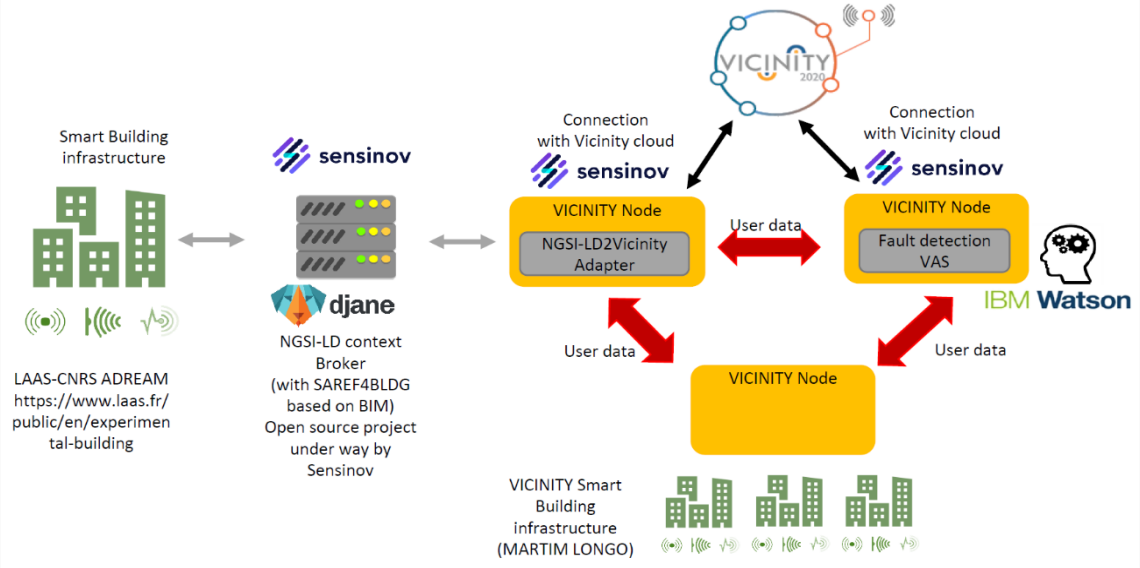


Figure 5 - F2I-VAS architecture

Nissatech - one of the VICINITY 2nd Open Call winners

Nissatech is a ten-year old, innovation-driven SME with strong international cooperation and vision to become a European leader in developing AI-driven systems that resolve complex industrial problems (focusing on so called unknown unknowns) through combining data-driven and model-based processing. The main objective is to develop their own technological building blocks through an efficient implementation of cutting-edge research used to resolve challenging real-world problems in different domains.

Nissatech develops cutting edge software technologies leveraging from big data, complex event processing, and advanced mobile/edge processing for different sectors/domains such as: manufacturing, transportation, healthcare, fitness. Nissatech offers different solutions in this field, including D2Lab (Data Diagnostic Laboratory), a solution-as-a-service embracing the Industry 4.0 paradigm. Such a new generation big data analytics platform will analyse past experiences in various real-time contexts to make accurate future

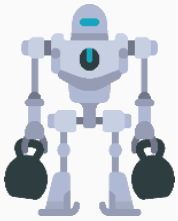
predictions. Nissatech solutions provide to their customers a new prospective for process optimization, predictive maintenance and quality assurance unleashing new business opportunities.

The application domains range from wearables-based eHealth (remote patient monitoring), through IoT-driven intelligent transportation to Cyber-Physical Production systems (flexible manufacturing), with the main focus being on creating dynamically responsive systems that can sense and respond timely (or even ahead of time).

One of the most innovative products is Smart4Fit (smart4.fit), a wearables-based system for monitoring and analytics in fitness, that uses modern wearable and mobile technologies, fog computing architecture and fitness data analytics in order to monitor and control indoor training (incl. large groups) in real-time and manage the improvement of the trainees according to the expected dynamics. The conceptual paradigm is based on the Personal Fitness Twin, a digital replica, learned from data, of the trainee behaviour/performances in a fitness training.

Nissatech participates actively in the work of industry-oriented communities, currently working intensively in Big Data domain (BDVA member).

MyBigFitnessTwin - project description



Wearables are everywhere but their adoption is still not achieving their full potential. Based on various analyses, the problem is that a wearable provides interesting personal data, but this data should be put in a bigger context, to get a “bigger” value for the user. For example, the current heart rate from the smartwatch should be interpreted in the context of the task at hand and the local environment, in order to understand when (and why) it is intensively increasing. This is especially relevant for an intensive physical activity (e.g. fitness training), like in a sport club, where various information silos (personal wearable, equipment, environment) are relevant for enabling a more efficient training, but not integrated for analysing the effects of the training (in the best case there are some monitors in clubs just displaying the data). Using the VICINITY concept of interoperability as a service, this proposal is paving the way for a new generation of fitness monitoring and analytics services which enable improving performances of a trainee, based on the advanced real-time analytics on the data integrated from various information silos (wearables, embedded

systems, sensors, CMS software) in a sport club. This ambitious vision is based on our current industrial and research experience:

- Nissatech provides of a fitness monitoring system (Smart4Fit) that is based on the most advanced mobile and wearables technologies. This will be used as a basis for integration with VICINITY interoperability services, in order to smoothly connect information silos in a fitness club;
- Nissatech is a data analytics company which has developed special methods for analysing real-time fitness data to understand the current performances of a trainee, and inform them if the performance is deviating (like a virtual personal coach), based on the original concept of Personal Fitness Twin.

The system will be tested in Nissatech fitness club, and if successful, exploited in tens of partner clubs.

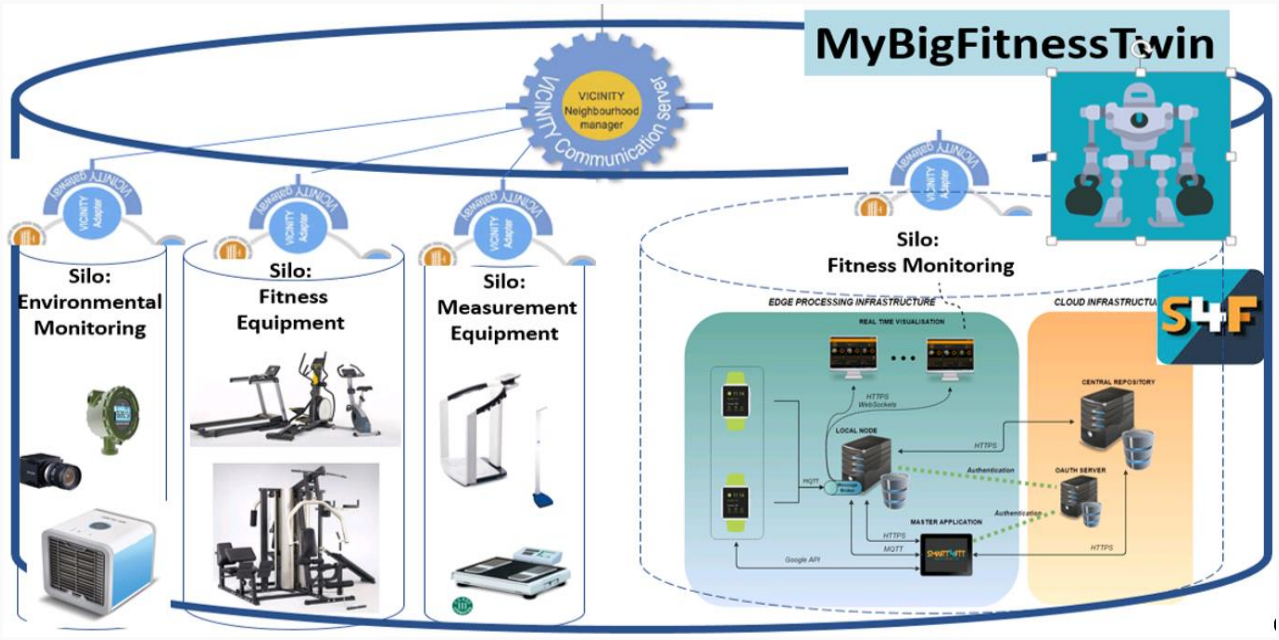


Figure 6 - MyBigFitnessTwin architecture

Interview with João Guerra - an IoT Next Club coordinator

Please highlight here the most relevant parts of your CV.

Since I graduated, I have worked in different sectors and in different types of companies, in order to gain industrial experience.

Since my college days, I was always very curious about the creation of businesses and I decided to join an entrepreneurial organization in order to help the entrepreneurial ecosystem of the city of Porto, while helping students to develop their own business ideas. Over almost 3 years, the main focus was on holding events to foster the development and creation of business ideas, as well as continuing mentoring for a wide range of young entrepreneurs.

After college, I decided to embrace another professional path, starting a two-year period at Deloitte with the aim of gathering more detailed and extensive knowledge about certain sectors and industries.

After my master's degree in Madrid, which I started after my experience at Deloitte, I decided to start a new phase of my professional career, with the aim of developing my skills and abilities in Digital Consultancy, which is why I am at BluSpecs and, in this specific case, coordinating the IoT Next Club.

Currently, you are the Coordinator in the IoT Next Club. Could you explain us what are the IoT Next Club main objectives?

As coordinator of the IoT Next Club, the main objectives of the club are to:

- join start-ups and SME’s whose business is based on IoT solutions;
- be the reference point for all IoT companies;
- foster synergies between all members;
- enhance partnerships and obtain funding opportunities;
- develop a series of activities with the objective of providing members with a set of knowledge that can be useful to their companies, such as Webinars or Showcases.

What are the main challenges that SMEs are finding in the IoT sector?

The main challenges are access to financing opportunities, mainly due to the increasing number of competitors operating in the same sector, which also represents at the same time an opportunity, as companies are obliged to constantly develop their product, both in terms of hardware and software in order to meet the expectations of their customers.

At the same time, there are some challenges related to regulation, as it varies from region to region and can therefore have different impacts on SMEs. However, some governments are still reluctant to incorporate certain sectors into their economy.

Have you identified synergies between the IoT Next Club and the VICINITY project? Have you identified some collaboration opportunities?

Taking into account the project itself and the opportunities that this brings, I think that the synergies between both entities can have a great impact on the community, especially because the VICINITY project started in 2016 and it will end on December this year, contrary of the IoT Next Club, which only started in late 2018. Thus, it will be interesting to make a retrospective analysis in order to understand the advances and setbacks made over these four years and certainly that our club will benefit greatly from the knowledge and experience acquired over these three and a half years.

In terms of current synergies, IoT Next Club integrates 7 Large Scale Pilots, with different objectives and whose SME's present different and avant-garde solutions. In this sense, besides the continuous promotion, the IoT Next Club can be extremely interesting for the SME's of the VICINITY project in order to extract information considered important for the progress of their business activity and, with this, further promote the business, since we have SME's from almost every country in Europe, with different backgrounds, with different ideas to conduct their activity and, therefore, with valuable insights for the SME's of the VICINITY project, especially if we are talking about scaling the business or developing the product to different countries, having a large number of SME's integrated in our Club help your SME's to have a clearer view about the further steps.

What would you recommend to the SMEs participating in the IoT Next Club about VICINITY?

VICINITY gives the SME's in IoT Next Club an opportunity to connect and network with other IoT Infrastructures in an easy way. Most start-ups/SMEs do not get off the ground by themselves - they require support and assistance from their peers. VICINITY can do a great job of expanding the SME network and bridging the gap of interoperability.

What advantages can IoT Next Club bring to the VICINITY SMEs?

IoT Next Club brings a network of 130+ SME's with experience in the European IoT Industry. We are comprised of SME's focusing on wide varieties of applications of the IoT community and work to build solutions for a smarter tomorrow. Further, we provide information on funding opportunities, acceleration programs, pilot opportunities, as mentioned before, a very deep understanding about different markets which can be very useful for SME's of VICINITY.

What is your area of interest in VICINITY and how do you think you can contribute to the project?

VICINITY has aroused considerable interest in the first approach mainly because it mitigates some of the problems related to interoperability.
Thus, with the creation of the virtual neighbourhood, it helps all users to be connected and to find fast and effective solutions to everyday problems, especially focused on the examples of shared parking or assisted living support.
IoT Next Club has a lot of members focused on incorporating IoT technology into the medical field. A diverse group of SMEs focused on the same goal could be of great assistance to the VICINITY mission of improving health at home. Further, we have many SMEs that specialize in data collection and processing. Within the eHealth industry, lots of data will be captured and transformed to form solutions, which will require the skills from both sectors.

What is, in your opinion, the ultimate goal expected to be achieved with help of VICINITY solution?
VICINITY is working to connect and grow companies that have ideas on how to incorporate IoT to tackle challenges of everyday life. All of the five use cases are geared towards helping individuals maximize productivity in their daily lives with the assist of technology. To do that will take years of research, development, collaboration and analytics. VICINITY, with the collaboration of IoT Next Club and our network, the solutions of tomorrow will be achievable, especially with the expertise and knowledge from all the members of VICINITY.

eHealth at Home Installations

The hardware and software installation phases of the eHealth at Home use case were implemented based on the agreed, common methodology and plans. All pilot sites, have to install and deliver their solution as described and test them in real environment which includes stakeholders as operators and users. The presence of real-life stakeholders greatly enhances the chances of further exploitation both locally and through worldwide dissemination of results.
The Pilea-Hortiatis Pilot Site demonstrates two large-scale eHealth use cases. A large number of different IoT infrastructures had to be deployed in order to show the potential of VICINITY in smart city applications.

Assisted Living for elderly people is presented in summary in Figure 7. A total of 34 elderly citizens' homes are currently participating in the use case and are supervised by the municipal doctor. Two more health professionals are expected to participate in the use case starting in April 2019 until the end of the project in December 2019.

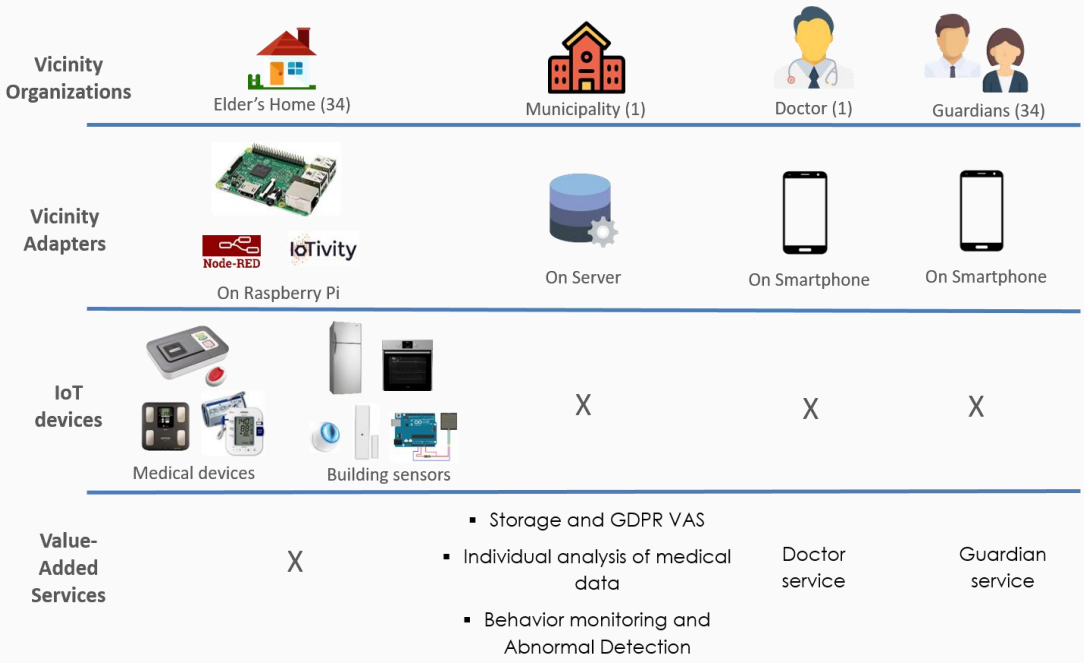


Figure 7 - Assisted Living for elderly people

Health Improvement for middle-aged citizens is presented in summary in Figure 8. A total of 50 middle-aged citizens are participating in this use case, which are supervised and examined bi-weekly by the municipal dietician.

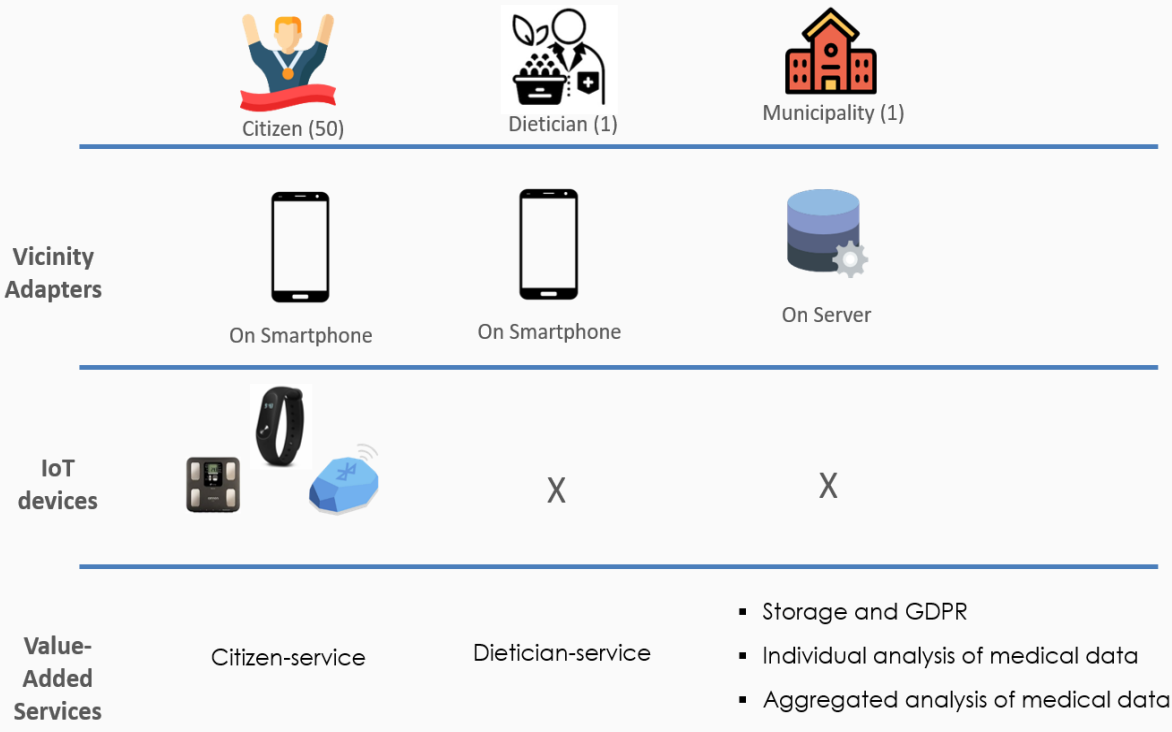


Figure 8 - Health Improvement for middle-aged citizens

Installation Phase

The installation phase included several activities:

- Visits to the elderly citizens homes by the technical personnel responsible for the installations together with the health professionals. We have deployed VICINITY infrastructure in two types of houses. House Type 1 includes medical devices, while House Type 2 mainly includes building sensors and smart appliances. Figure 9 presents a House Type 1 installation of a panic button to an elderly citizen's home;
    - 24 House Type 1 homes were equipped with medical devices
    - 9 House Type 2 homes were equipped with building sensors
    - 1 House Type 2 home was equipped with building sensors and Gorenje smart appliances
- Visits to 10 sport centres for the deployment of Beacon sensors and the promotion of the programme. These included placement of posters and face-to-face meetings with the citizens who regularly exercise at the municipal facilities. These visits have helped in the recruitment procedure, conducted by the dietician and other pilot representatives (Figure 10, Figure 11);
- Delivery of activity trackers and training on their usage by the MPH dietician and the technical team;

- Training of health professionals on the usage of the health mobile apps;
- Deployment of VASs and VICINITY Components on the MPH Server.
- A lawyer was hired by the MPH for preparing the consent and delivery forms to be signed by all participants and all the steps of the procedure to be in compliance with GDPR rules.
- Test measurements were taken in all cases of equipment delivery to verify that everything works as expected.

The procedure included communication between the technical personnel, the health care professional and the elderly or middle-aged citizens, in order to arrange specific dates for the visits regarding actual installation. During the visits, the technical personnel installed and tested the respective hardware and demonstrated its usage to both citizens and health professionals. Prior to this, a meeting between the health professional and the citizen was held, in order to inform the citizen about the health program and the impact it would have to his/her life.

Figure 9 - House Type 1 installation of panic button and elder training

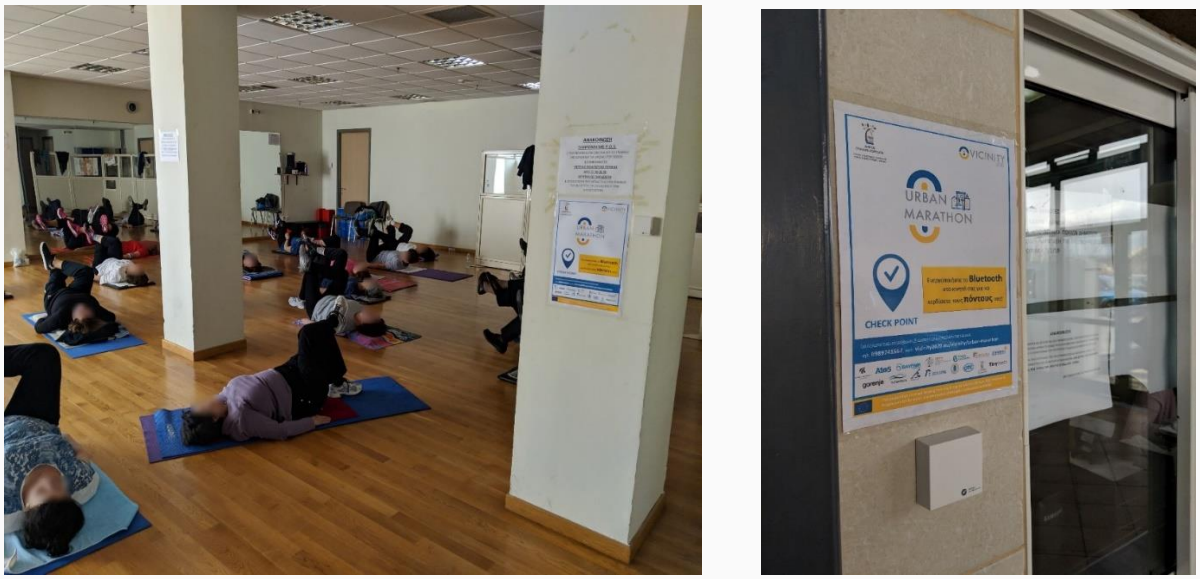


Figure 10 - Municipal Sport Centres installations

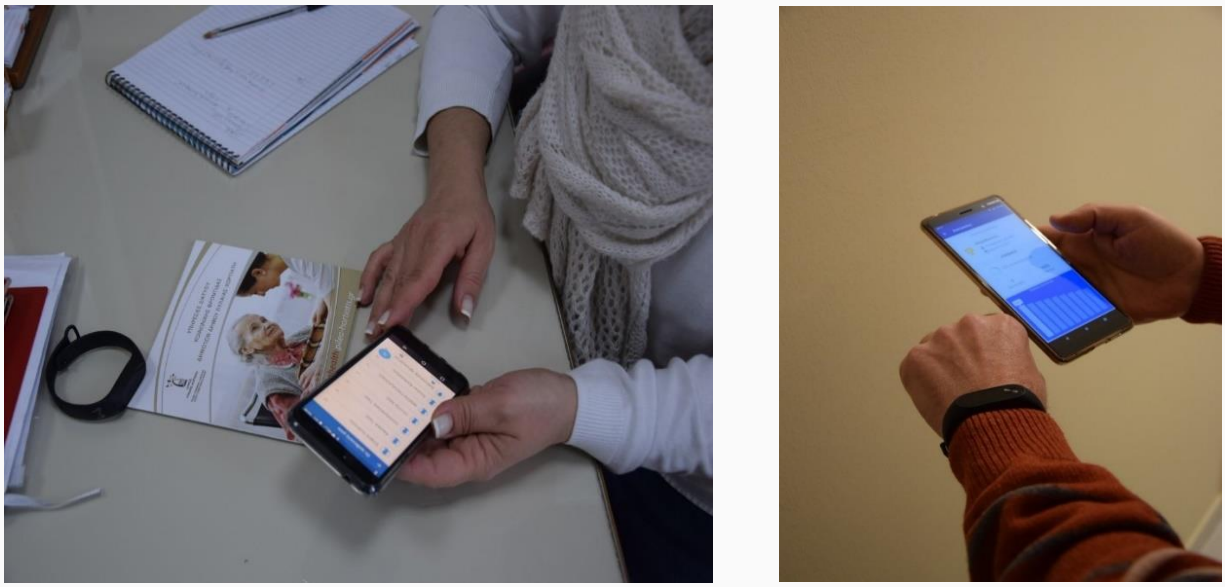


Figure 11 - Dietician and users training on application

Tromsø pilot creates insight and business opportunities

During the testing conducted at the Tromsø pilot site a number of stakeholders have provided insight in how to deploy VICINITY services and what to expect. We would therefore like to extend our thanks to Tromsø municipality and all the people at Tromsø municipality Care centre services for all their valuable input and time. The same applies to the citizens in demo site Teaterkvarteret and the board of Teaterkvarteret which offered us parking space and apartments for testing purposes, as well as involvement in both demonstrations and in media coverage.

This has allowed us to adapt both how VICINITY can be integrated, what functionality should be offered by apps, as well as valuable experience that will be applied to upcoming exploitation activities. One of the results is that HITS is now planning to promote two new solutions based on the VICINITY service. The first solution is P2P parking platform, a back-end solution that ties together parking related ecosystems with various value-added services for triggering events and interaction with smart devices. The second solution is called P2P First Responder is a mobile app for care takers and other health assistants that need to respond quickly to critical situations that have been reported from smart devices and behavioural analysis from apartments that are subscribing to the P2P-FR service.

Figure 12 - Draft of P2P First Responder logo

Currently the P2P Parking platform is undergoing rigid testing of API and business logic. The user interface of the mobile app is being updated accordingly, and support for open APIs alongside integration with other upcoming ecosystems is undergoing Q&A. Sensor operability and encryption methods have undergone rigid testing and stakeholder feedback has been taken into account. With the current integration of message distribution platform, the P2P Parking service will be able to instantly reach out to a number of different platform, turning it into a very versatile solution.

Open Call winners such as SaMMY and ThinkInside have offered new perspectives and opportunities on how to extend the P2P parking platform into new markets. Short and long term contracts will now be more flexible in respect to what aspects of infrastructure they will cover; be it by road, sea or rail. But most importantly, priority booking and priority parking will now be taken to a whole new level with support for online journal and alert systems!
We are all very excited to see what is in store for VICINITY and the results of the pilot in the future.

Oslo Pilot Site – Buildings

Oslo Pilot Site has implemented VICINITY and two use cases in a newly renovated office building, located in Moss. The solution using different sensors for registration of usage of rooms, have been in production and used by the stakeholders for several months. A lot of new improvements for the solution; Predictive Operations, have been developed in collaboration with the stakeholder Den Lille Hjelperen. New sensors from Vitir have been installed and works together with already installed devices. Oslo Pilot Site has also implemented a VAS for CO_2measurement using devices from Vitir by expanding VICINITY adapter. By easily combining different devices and infrastructures, Oslo Pilot Site has proven the advantage of using VICINITY to optimize maintenance of a building.

Evaluation of the semantic model in real life scenarios

The VICINITY interoperability approach relies on the VICINITY ontologies that will be exploited throughout the VICINITY infrastructure. Over the past few months, such ontologies have been evaluated in order to check their technical quality regarding the following criteria: (1) the model, (2) the ontological requirements, (3) the pilot data and (4) the conformance with IoT standards. With this, it could be checked that there are no inconsistencies nor modelling errors, that all the requirements asked by the domain experts are satisfied, that the ontologies cover some ontological commitments of a set of well-known IoT standards and that the data is used in VICINITY relying on such ontologies.
From the evaluation, it could be concluded that the VICINITY ontologies are correctly modelled, and that it covers all the requirements given by the partners. Moreover, the VICINITY ontology has partial conformance with some well-known standards. Regarding the pilot data, the evaluation advocates that pilots are correctly using the ontology, although some parts should be used more; such as those parts that refer to the

contextual data, or the mappings. More details regarding the evaluation could be found in the VICINITY ontology portal: http://vicinity.iot.linkeddata.es.

Milestones

- Pilot installations were completed at the end of March 2019.
- Third party projects of the VICINITY 2nd Open Call began, 15th May 2019.

FB Informatik · Design of Cyber-Physical Systems · TU Kaiserslautern
Postfach 3049 · Gottlieb Daimler Straße · 67663 Kaiserslautern
E-mail: post@vicinity2020.eu · Tel: +49 631 205 3283

This project has received funding from the European Union's Horizon 2020 Framework Programme for Research and Innovation under grant agreement no 688467.

You receive this newsletter as a registered stakeholder in the Horizon2020 project VICINITY.

VICINITY adheres to Article 13 of Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector, and sending unsolicited email (spam).

Unsubscribe by send a message to subscribe@vicinity2020.eu