Special Edition: First public demonstration of VICINITY

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

Editorial

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First public demonstration

We are all very excited about being able to present these news; Friday, 1st of September represented a milestone for VICINITY2020. We did for the first time publically demonstrate that we have a working version of Interoperability as a Service. Giant leaps always starts with small steps.

One of the key elements of VICINITY is the ability to cross boundaries between devices, allowing them to share data regardless of physical location, brand or functionality. This is exactly what happened on this grey and rainy Friday.

We proved that devices from different sources and disciplines were able to interact via VICINITY. But there is an *"one more thing"*: we also demonstrated the capability of VICINITY to ensure privacy. No data has to be sent to the cloud. Users keep control of their data and its use – this will become more important in the future with the upcoming General Data Protection Regulation (GDPR) legislation. VICINITY will continue to be improved and expanded upon, but this is well worth celebrating. We are all looking forward to the next results!

Read on to learn what others are saying about the results.

The demonstration

The demonstration was initiated from the Microgrid lab at Aalborg University (AAU) in Denmark. The microgrid architecture they have set up gathers power generated from energy sources like wind power and solar panels. Excess energy is temporarily stored in battery cells. This allows for a more predictable availability of sustainable energy. Therefore it is important manage the power through real time measurement combined with energy production and consummation forecast.
A simulated peak in power consumption in Denmark caused for a value-added service to be triggered in Greece. A request for load scheduling was received, and a notification was sent to make devices turn off or reduce their power consumption. These devices were distributed all over Europe, and were constituted of units placed at Things at the living test lab Smart House at CERTH in Greece, smart appliances (smart oven of Gorenje) and ZigBee lamps in Kaiserslautern.

Experts give positive feedback

The demonstration involved a number of participants and was conducted in the presence of experts. They were tasked with reviewing the current results of the project, and represented Horizon 2020, the European Commission's research and innovation framework programme.

The feedback was unanimously positive:

- "…the project has made a good progress, especially impressive in technical terms. The main challenge addressed by the project lays in interoperability, which shall allow connecting different IoT "islands" to foster cooperation between smaller and bigger stakeholders in IoT domain. This approach could become a real alternative to the current standard practice of vendor lock in.
- The project seems to be well on track with major work being done on architecture with solid use-cases (based on detailed technical and user requirements). It is worth to point that one of the demonstrators is already up and running.
- The overall technical quality since the check is very good with particular valuable contribution from Bravenir, Infosys and CERTH and active support from the other partners. With excellent technical progress shown, the main challege of the project lays now in the exploitation."

Reactions from key personnel

Key personnel in the research and development activities comes from institutions and companies spread around Europe. They were asked to share some of their thoughts with us;

Viktor Oravec, bAvenir: responsible for VICINITY Architecture design and Cloud component as well as the VICINITY Open Interoperability Gateway API in Slovakia

There was a lot of work with preparing the prototype demonstration. We are naturally very glad everything went as smoothly as it did.
We are still in the middle of implementing the next key modules, but the plan is to a wide variety of IoT platforms devices and services to integrate in the VICINITY. It is equally important to improve on the administrative software, so it is hard to decide where to set up the next demonstration. It will most likely involve one of the living labs.
We would like for more test locations to be integrated – currently we are working on integration of building efficiency value-added service which will be used in Oslo Pilot-site, but it is still a bit too early to involve more people. We will however tell people when we are ready to roll out more tests and are ready for more complex testing.

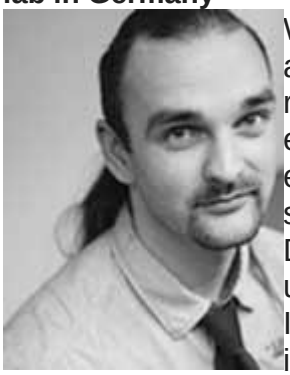
Thanasis Tryferidis, CERTH: responsible for VICINITY Value-Added services design and implementation and manager of the Smart House living test lab in Greece

We have been working towards this goal from the early beginning of the project, putting intensive work during the past few months, once the first prototype components have been starting to be integrated to form the first integrated prototype. Therefore, seeing the early results of different parts of the envisioned VICINITY architecture smoothly working together feels extremely rewarding.
There are several pilot sites and test labs with different kind of complexity and interoperability challenges waiting for VICINITY2020 to be set up at their locations. The focus now is on the design and implementation of the cross-domain value-added services, in order to further promote the business modelling aspects behind VICINITY platform, built on top of all the different IoT sensors and other smart devices identified on the pilot locations.
We hope to be able soon to demonstrate and share some of our enthusiasm with the involved stakeholders. We do now plan to continue the development of the VICINITY2020 extended functionalities and value-added services. If we keep to the schedule, the plan is to move on to on-site deployment in early 2018.

Yajuan Guan, Aalborg University: responsible for microgrid test lab in Denmark and implementation of the experimental microgrid platform

Just like the other participants, we felt elated and relieved when we could successful demonstrate a working version of VICINITY2020 – even at such an early stage.
What we see today, is the need to maintain a stable power supply. Balancing power consumption is a central element. But the most important thing is to create a solid foundation for sustainable energy sources. By using real time information and generating forecast of power consumption, it is possible to switch between different power sources. These sources might be solar power, wind power, excess energy from plus houses – or batteries that are activated in case of power surges.
What VICINITY proved, was that such events could use the VICINITY cloud service to distributed business logic and manage power consuming devices across the European ecosystem. This worked out beyond our expectations, and proved that the VICINITY gateway opens for a number of new kinds of value added services that was previously not viable – or even possible.

Christopher Heinz, University of Kaiserslautern: researcher and responsible for the test lab in Germany



We finally proved that VICINITY is more than just words, diagrams and documents. It works! I also think VICINITY is going into the right direction. We do not want to introduce new standards to an ecosystem that is already flooded with standards for each and every problem out there. Instead we are relying on available standards and middleware already available and properly tested.
During the Demo itself we showed the VICINITY approach being used in combination with different middleware options such as IoTivity, LinkSmart, Kura, etc… We also demonstrated how easy it is to join the VICINITY which is setting the bar for other approaches and solutions. Although we prepared for this very moment over the last weeks and months, in an early stage like this, having so many components connected with each other always brings in some problems. We were all very tense when the demo scenario went down. And even more relieved when everything worked out nice and clean in the end.

Sašo Vinkovič, Gorenje Group Slovenia: embedded systems, software architectures and protocols

A lot of new opportunities arise from integration of new value-added services across diciplines, We are exited with regards to what new appliances and solutions we can offer the market in the future.
During the demo, we connected Gorenjes own cloud infrastructure (GCP – Gorenje Cloud Platform) to the VICINITY platform. This gave us an opportunity to demonstrate the Open VICINITY Gateway API alongside the VICINITY Agent. These services bridged the gap between the microgrid testlab in Denmark, and our testlab in Slovenia. We exchanged messages between our cloud platform and the VICINITY platform using the VICINITY Adapter.
There is a vast potential for not only household appliances, but all kind of connected appliances. But regardless of the potential, it is the consumer that decides in the end. We do therefore also put a lot of emphasis on increasing the reliability and efficiency of appliances, especially in terms of security and privacy. This will also be important in a certification process. VICINITY opens for the inclusion of even more new connected features, and has the potential to influence many decisions and opportunities in the time to come. We plan on keeping in front with technology and explore new ways of delivering products and new services to our customers. And VICINITY may very well become an important tool to achieve those goals.

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