5th Newsletter

February, 2017

Photo from 1st Horizon 2020 Future Internet Forum (H2020 FIF) meeting, Net Futures 2016, Brussels

FIF and ceFIMS-CONNECT ACTIVITIES

The 1st and 2nd meetings of the newly established Horizon 2020 Future Internet Forum of Member States and Associated Countries (H2020 FIF) were held in April and November, 2016. The inauguration meeting of the H2020 FIF, chaired by Mário Campolargo, Director Net Futures, was held on 21st April, 2016. The meeting concentrated on the finalization of the process of renewal of the FIF for the H2020 programme with an expanded scope, mandate, and working procedures. A reflection and assessment of the past successful work of the FIF, established in 2009, was carried out. The meeting also focused on the status of the FIWARE programme, including the results of the Open Service Platforms Working Group (OSP-WG) of FIF members set up following the 14th FIF meeting in October, 2015 and the launch of FIWARE Foundation. Also covered was the 5G-PPP status update and action plan and formation of a new FIF Working Group on 5G, with initial members from Luxembourg, Malta, Serbia, Ireland and Austria. Finally, the H2020 FIF meeting covered the European Cloud Initiative that comprises a European Open Science Cloud (EOSC) and a European Data Infrastructure (EDI), bringing together existing infrastructures and opening up scientific data across disciplines and across Member States.

The 2nd Meeting of the H2020 FIF of Member States and Associated Countries took place on 16th November, 2016 in Brussels, Belgium, chaired by Pearse O'Donohue, Acting Director of Directorate E, Future Networks, in DG Connect. The 2nd H2020 FIF meeting focused on 5G, Cloud Computing, Next Generation Internet (NGI) and Internet of Things (IoT). Four presentations and feedback sessions were followed by four parallel brainstorming working group sessions and two plenary presentations were held with presentations made about Turkey's 5G Activities and the Modernization of EU Copyright Rules.

CEFIMS-CONNECT FIF REPOSITORY DATABASE

The ceFIMS-CONNECT has developed and populated a repository database (RDB) for the former FIF and now H2020 FIF and it has quite an extensive number of nationally funded Future Internet (FI) related projects included. The entered projects have been primarily supplied by the FIF/H2020 FIF members themselves and some researched by project members with the country mapping information provided on the relevant government department and funding agencies within the MS/ACs related to FI topics.

The current statistics of the RDB system is outlined below (as of 28th February, 2017):

- Data sets entered from 40 MS/AC;
- Total number of Funding agencies currently in the RDB = 88
  - MS/AC funding agencies: 86
  - EU Commission: 2 (DG CONNECT and EIT Digital)
- Total number of projects currently in the RDB = 217
  - Nationally funded: 151
  - EU funded: 66 (from FIRE and 5G call)
- Total number of separate R&I organisations represented in RDB (including industry and research) = 866
  - Industry: 305
  - Research (including Academic and research centres): 561
  - Assoc. Countries and International organisations (Norway, Australia, Brazil, …) = 53

In going forward, we would greatly appreciate if these could be reviewed by the communities to check the following:

A. check the data we currently have for your country, by entering the system at http://www.cefims.eu/database/ and carrying out a search on your country. You will see a short description of the system and a link to reach it;

B. If we currently don't have information yet or incomplete information, can you please let us know and this information can be passed onto the H2020 FIF members, who have been instructed on how to sign up to be given the authority to upload new project data, if required.

CEFIMS-CONNECT MONITOR: NEWS FROM NATIONAL INITIATIVES

Since December, 2014, ceFIMS-CONNECT runs a Monitor service, which is an ongoing tool for Member States and Associated Countries to publish and share their national best practices, success stories and developments in the area of Future Internet and 5G, as well for European initiatives to share their news with national stakeholders, on a regular basis. If you would like to publish an item via the ceFIMS-CONNECT Monitor service, please email to the contacts given at the end of the newsletter. The Monitors are published in the publications section[1] of the site.

BELGIUM

PROXIMUS RUNS TESTS OF 5G INTERNET

by Alan Hope, November 2016.

As the EU expects at least one city in every country to be 5G ready by 2020, Proximus is testing the next generation of super-fast internet.

State-owned telecoms company Proximus has begun testing the next generation of super-fast mobile internet. The tests of the 5G system took place earlier this week in Antwerp, but the company has said it will concentrate in future on Brussels.

The new 5G offers speeds up to 100 times faster than the current 4G – as much as 70 GB a second – the equivalent of an entire high-definition film in a matter of seconds. The advance is needed, according to head of technology Geert Standaert, because of the enormous growth in demand for mobile internet.

Smartphones have become the norm as providers offer deep discounts in return for payment plans. And in the near future, with the so-called Internet of Things, apparatus like security cameras, home heating systems and self-driving cars will use the internet to communicate with each other.

But 5G is only in its early stages, a Proximus spokesperson emphasised. It is not expected to be widely available until 2020. “At that time, the EU wants every member state to have one city that is 5G-ready,” the spokesperson said. “In Belgium I see the logical choice falling on Brussels, the capital of Europe.”

[1] http://www.cefims.eu/publications/

IRELAND

BUILDING SMART CITIES WITH DUBLIN, IRELAND AS A SHOWPIECE

by Mr. Leo Clancy, Head of Technology, Consumer & Business Services at Industrial Development Authority (IDA) Ireland, February, 2017.

IDA Ireland and Dublin City Council have signed an agreement with AT&T, the global supplier of entertainment, business, mobile and high speed internet and networking services, to collaborate and exchange information about Smart Cities' solutions. This initiative will foster an open dialogue of IoT best practices with Ireland and Dublin as a center piece, since they are fast developing into a leading IoT location.

This international collaboration with Ireland will offer many opportunities to explore other innovations on IoT-related development projects across the country, including the Dublin Docklands' IoT project.

"IDA Ireland welcomes AT&T's choice of Ireland as the company's first international location for global Smart Cities collaboration," said Martin Shanahan, CEO, IDA Ireland. "The availability of world class talent, excellent infrastructure and openness from industry, academia and government to collaborate, enables companies to deliver outstanding IoT products and services. Companies are discovering that Ireland is small enough to trial, yet big enough to prove their Internet of Things technologies and solutions."

"Being smarter will be a defining characteristic of tomorrow's leading cities. Dublin has the key ingredients and is exploiting them to be at the forefront of smart city developments leveraging our unique cluster of global technology companies, thriving start-ups and research centers," said Owen Keegan, Chief Executive, Dublin City Council. "Dublin City Council is delighted to collaborate with AT&T, one of the world's leading technology companies, to explore future smart city innovations[2]."

For a perspective on how Ireland is well placed for IoT developments, see https://tinyurl.com/lvgljgj.

[2] http://www.idaireland.com/newsroom/att-dublin/

CONNECT: Science Foundation Ireland Research Centre for Future Networks and Communications.

By Prof. Willie Donnelly, President of Waterford Institute of Technology.

A team from the SFI funded CONNECT Research Centre at Trinity College Dublin has won the Spectrum Challenge competition at IEEE International Symposium on Dynamic Spectrum Access Networks (DYSPAN), being held in Baltimore, Maryland, USA, on 6-9th March 2017.

The Spectrum Sharing Challenge is designed to demonstrate a radio protocol that can achieve high spectral efficiency in a dynamic environment.

The CONNECT team was composed of (left to right): Justin Tallon, Ahmed Selim, Francisco Paisana, and Andre Puschmann, Christian Blümm, , Pedro Alvarez, and Maicon Kist. Their contribution was entitled 'Context-Aware Cognitive Radio using Deep Learning'.

The CONNECT contribution drew on research work performed as part of Wishful (Wireless Software and Hardware platforms for Flexible and Unified radio and network controL), a Horizon 2020 funded project led at Trinity College by Prof Luiz DaSiva, and the deep learning research work of Dr Ahmed Selim.

In addition, the CONNECT Centre at Trinity College Dublin hosted a visit from Portugal's Minister for Science, Technology and Higher Education, Mr. Manuel Heitor; the Ambassador of Portugal to Ireland, H.E. Bernardo Futscher Pereira; and Professor Paulo Ferrão, National Director of the MIT-Portugal Program.

The delegation met Portuguese researchers at CONNECT, Dr Pedro Alvarez and Dr Francisco Paisana, along with CONNECT's International Funding Manager, Dr Raquel Harper, and listened to a presentation on CONNECT's research goals by Professor Linda Doyle.

More info:

https://connectcentre.ie/about/

Precision Dairy Smart Farm project.

By Prof. Willie Donnelly, President of Waterford Institute of Technology.

Precision Dairy is a research project jointly funded by Science Foundation Ireland and Teagasc, two leading research-funding agencies in Ireland, in order to advance the use of ICT and associated technologies in modern day farming. In particular, the project focuses on the use of the Internet of Things (IoT) as part of an on-farm Future Internet solution. This solution will ultimately form an integrated environment merging multitude of individual sensors located on a farm, the environment will allow farmer to conduct a continuous fine grained monitoring of the on-farm processes, while results of the monitoring process will be further used as inputs for the specialized decision support system, used by the farmer.

Decision support systems, part of the overall technological architecture of the Precision Dairy ecosystem will present the main interest for the farmer who is rather interested in receiving intelligent insight based on a particular sensory data than the data itself. Therefore, it is crucial for the integrated environment to ensure in-time delivery of this insight to the farmer. This is a significant challenge in view of the harsh environmental conditions and the lack of infrastructure, Internet connectivity that are typical to the farming environment. The Precision Dairy project aims to address this challenge through the use of Fog Computing technologies. In recognition of the central role of the cow in Dairy Farming as well as the relatively low speed of the farming processes (e.g. in comparison to other industries) the project adopts delay-tolerant technologies for sensory data collection and analysis. Thus, the project develops a novel Fog-enabled animal-wearable device. The device apart of conventional data collection functionality will host a set of data analytics services. The services will be configured on per-cow basis based on the historical sensory data available for the cow. Performance of those services will essentially support on-the-field analysis of the data in real time, forming an on-the-field extension of the decision support system. Results of the analysis, for example, may be brought to the attention of the farmer during milking when he is in the immediate vicinity of the animal, or used to segregate the animal from the rest of the herd using a virtual fence/automatic gate technology operating on the farm as part of the same integrated environment.

More info:

http://www.tssg.org/projects/precision-dairy-2/

MALTA

Trials of 5G deployments in Malta
Review for the Grant of Right of Use of Spectrum for Test and Trial Purposes

As part of its efforts to further promote Malta as an ideal destination for the deployment of the latest high tech systems and solutions and in light of the strategic initiatives being proposed as part of the currently ongoing telecoms review, the Malta Communications Authority (MCA) has published for public consultation a set of proposed revisions to its test and trial framework to further facilitate the uptake of interested parties to carry out tests and trials for wireless technologies and services in Malta. This consultation request period will expire on the 2nd of December 2016.

Before delving into the details of the proposed changes, it is worth highlighting a few key metrics that describe the Maltese telecoms market with a focus on the mobile space. These metrics are testament to the maturity this market offers to any operator ensuring that whatever testing endeavour is carried out will be a very good representation of an actual, live operation in any European city.

As at the end of 2015:

- Number of mobile phone subscriptions: 557,583 (128% penetration rate)
- Number if outgoing mobile minutes: 767 million
- Proportion of post-paid subscriptions: 33%
- Number of users actively accessing mobile broadband services: 270,097
- Complete LTE cover
- LTE-A (4.5G) rollout in the 800 MHz band is expected around mid-2017
- ARPU per user: Eur181.28

Based on the above numbers and keeping in mind Malta's size, geographic location and population density, it is very evident that Malta can offer an ideal location for industry that can act as a test-bed for new various radio systems and applications in general, and 5G in particular.

It is worth pointing out Malta's role and legacy in such testing which dates back to 1989 when Vodafone UK established is first ever international presence outside the UK in Malta. Vodafone Malta Ltd. was thereafter used as a test-bed for a number of Vodafone initiatives over the years which initiatives were eventually deployed nation-wide and subsequently Europe wide and beyond.

The MCA offers two types of licenses, namely one that covers technology tests and another one which covers service trials involving third parties or the general public. These licenses offer stakeholders the opportunity to test and /or trial, on a non-commercial basis, a particular technology or service within a defined period and with a very advantageous license fee that offers industry a great value proposition. Said licenses include the appropriate provisions to support the research and

innovation developments expected from such initiatives whilst also ensuring efficient use of radio spectrum. It is pertinent to highlight that these licences are generally granted within a few days following receipt of a detailed request and payment of the relevant licence fees. These fees range between €100 and €600.

The 5G Action Plan for Europe as published by the European Commission on the 14th September 2016 and which establishes a clear roadmap for public and private investment on 5G infrastructure in the EU aims to promote the undertaking of preliminary trials under the 5G-PPP arrangement. This undertaking is targeted to take place from 2017 onwards with pre-commercial trials starting in 2018.

Fully commercial 5G services in Europe are then expected in 2020. The MCA wants to make sure that its test and trial licensing regime is readily available and adapted to the EU-wide 5G initiative in the event of any 5G trial carriage in Malta. The MCA will thus continue to operate and seek opportunities to promote the take-up of its test and trial licensing scheme in order to exploit Malta's unique potential in this field.

A brief overview of the test and trial license regime together with the proposed revisions follows.

The MCA's Test and Trial licensing regime:

- Offers test and trial licenses under the MCA act for the rights to use radio frequencies and for the installation of radio communications apparatus
- The current framework stipulates that test licenses can only be requested for testing innovative radio equipment and / or use of spectrum restricting communications to a specific site without the involvement of the general public
- Trial licenses may involve the general public providing stakeholders with a view of the technology's benefits, pitfalls and general feasibility
- Test and trial licenses include standard license conditions aimed to make efficient use of spectrum resources, limit exposure to electromagnetic fields and mitigate the likelihood of any undue interference with other networks or services
- Test licenses are issued for a maximum of one year
- Trial licenses are issues for an initial maximum term of one year and may be extended for a further year if requested by the tester and approved by the MCA
- All trials are to be carried out on a non-commercial, non-profit basis
- Very advantageous license fees of Eur100 per annum for test licenses and Eur600 per annum for trial spectrum licenses

The proposed revisions that were published for consultation aim to further ease and improve on the above terms to further help operators, technology providers, research institutions and other stakeholders to undertake tests and trials under a more flexible licensing arrangement.
The requirement to test only radio equipment that is considered "innovative" is being removed allowing a more inclusive test environment that may also include more conventional equipment

The requirement to limit testing in a pre-determined site will also be removed allowing testers a larger geographical test footprint on condition that the necessary measures are taken to mitigate any risks of harmful interference

The trial license's requirement to support the carriage of trials of innovative technologies is also being waived offering stakeholders a better picture of the technology they require to be assessed

Test licenses may be extended for a further year on request

The fees will remain as-is to ensure no particular cost barriers are put on stakeholders involved in 5G testing amongst others

We strongly encourage you and all stakeholders involved in the upcoming 5G rollout to review the proposed revisions and thus help provide industry with a great test bed for 5G.

More information: www.mca.org.mt

PORTUGAL

National Strategy for Digitization of the Economy

In January 2017 Portugal launched its national strategy for digitization of the economy. The strategy *Indústria 4.0* (i4.0) is based in six axes:

1) Qualification and Capacity Building of Human Resources

2) Technological Cooperation

3) Startup i4.0 (aligned with the national strategy for entrepreneurs)

4) Funding and Investment Support

5) Internationalisation

6) Regulations and Legal Adaptation.

The Portuguese Prime-minister recognized that «the digital revolution is based on knowledge, innovation and technological capacity, being a huge opportunity to generate more qualified, knowledgeable, better paid and more stable employment». The *i4.0* aims to attract and to retain highly qualified people to face the challenges imposed by the current digital revolution focusing on its opportunities. The qualification, empowerment and capacity building of citizens for the digital world, together with partnerships between businesses, universities and the public sector are at the core of this Strategy.

Altogether, the Strategy *i4.0* comprises 60 specific private, public and private & public measures, and it is expected to have an impact on more than 50,000 companies with its activities in Portugal.

For more information:

http://www.industria4-0.cotec.pt

http://www.portugal.gov.pt/pt/pm/noticias/20170130-pm-economia-digital.aspx

http://www.portugal.gov.pt/pt/ministerios/meco/noticias/20170130-mecon-industria-4.aspx

Programa INTERFACE (INTERFACE Program)

The Portuguese Government launched in February 2017, *Programa INTERFACE in which* Innovation is considered a fundamental instrument for increasing the competitiveness of companies in the Portuguese economy. Aiming the valorisation of Portuguese products through innovation, productivity increase, value creation and incorporation of technology into the productive processes of national companies, the *Programa INTERFACE* intends to accelerate technology transfer from universities to enterprises, enhance the products certification, and increase the competitiveness of the Portuguese economy and companies in the national and international markets.

This Program consists in four major initiatives:

1) **Support the Technological Interface Centres** (CIT) - which aims to train CIT and companies, especially SMEs, in R&D and Innovation activities, enhancing the linkage of innovation system entities and facilitating their access to highly qualified human resources, promoting scientific and qualified employment and Knowledge;
2) **Competiveness Clusters** – in order to become a major driver of the benefits of agglomeration economies by making these collaborative platforms synonymous of industrial transformation and development of emerging industries;
3) **Collaborative Laboratories** – where the main objective is to define and implement R&D agendas aimed at the creation of economic and social value, including processes of internationalization of the national scientific and technological capacity in relevant areas of intervention and the stimulation of scientific employment;
4) **Supplier's Club** – to promote the integration and participation of Portuguese companies, especially SMEs, in international value chains, through cooperation with companies with a relevant role to ensure better access to markets, technologies and skills.

For more information:

http://www.programainterface.pt

http://www.portugal.gov.pt/pt/pm/noticias/20170223-pm-interface.aspx

http://www.portugal.gov.pt/pt/ministerios/mctes/noticias/20170223-mctes-interface.aspx

POLAND

Digital Innovation Hubs vs 5G and FI-PPP

On March 7th 2017 a Digital Innovation Hubs session was organized in Warsaw by the Polish National Contact Point. The event had strong 5G and Future Internet accents.

During the session Dr Max Lemke from the EC, Head of Unit Technologies and Systems for Digitising Industry, presented an overview vision and reasons why Digital Innovation Hubs are being built as well as signalled the growing need for addressing real industry needs in the coming collaborative initiatives. Furthermore, a number of domain-specific activities were presented, such as HPC4Poland (by Cezary Mazurek, PSNC) and IoT Hub (by Tomasz Urbanowicz) – the first two Digital Innovation Hubs in Poland. Finally, Orange (Tomasz Ośko) and the Warsaw University of Technology (Halina Tarasiuk) presented PL-LAB infrastructure and experimentally-driven research in Future Internet/5G networks resulting from the implementation of Polish national projects funded from the European Regional Development Fund and the European Union Framework Programme.

The PL-LAB national research network (pllab.pl) was presented together with the following laboratories: SDN, Network Virtualization, Information-Centric Networks, Cloud Computing, Wireless Networks, Internet of Things. The PL-LAB network is distributed with resources in 6 nodes: Warsaw (WUT, NIT), Poznan (PSNC), Gdansk (GUT), Wroclaw (PWR), Gliwice (SUT). The network is also connected to the Fed4FIRE European federation of experimental infrastructures, the Geant network and the FIWARE initiative.

MITSU

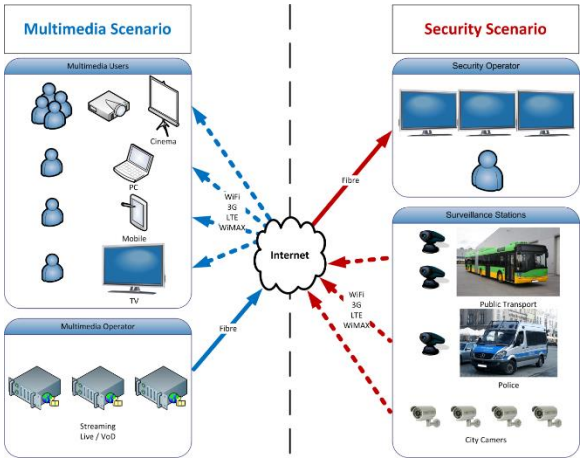
An interesting IoT security scenario has been tested in Poland, where monitoring cameras have been placed in different locations in the city of Poznan to validate the next generation multimedia delivery system, developed under the MITSU project.

Video streams from the cameras are sent to a monitoring centre. The system monitors the link state, the quality of the streams' content and can take the viewer's preferences into account in order to assign more bandwidth to a specific stream in order to increase its quality. Additionally, a mobile monitoring robot has been integrated with the platform, gaining the interest of public authorities.

Nowadays, seamless and continuous video delivery to users wherever they are and whatever network connection they are using is one of the major challenges for telecom operators and content providers. Market opportunities are pushing toward a very fast deployment of video solutions that are not interoperable and imply an increasing processing complexity. This often

causes a decreased quality of delivered video, especially over wireless networks. MITSU has developed a set of technologies that optimize video transmission over heterogeneous wireless networks. Consequently, thanks to MITSU end users can get better video quality.

The test-bed contained video encoders and DRM media storage deployed in a cloud environment. The end users received set-top-box devices allowing them to watch videos on their TVs. A monitoring system monitors both the cloud, wireless links and end users devices providing information that can be used to adapt the streaming parameters to optimize quality.



The main innovation of MITSU is the constant QoE monitoring at the end user's premises and introduction of content- and QoE-awareness to the system. This steps beyond the state-of-the-art, where only QoS information is gathered and used and allows for a novel approach to various decision processes, which can benefit from a more complete set of information. This is however not the only possibility, as various MITSU components can be used separately to introduce evolutionary improvements to existing solutions. Companies taking part in the project, besides introducing new products based on MITSU, have also improved some of their existing solutions. The project has also resulted in contributions to two Quality of Experience related standards and many scientific publications.

Smart agriculture in the Wielkopolska Region

Wielkopolska Region has boosted its efforts during the last years towards the development of a smart agriculture infrastructure in Wielkopolska region, and contributed in different projects and activities related to the agri-food sector at the national and EU level.

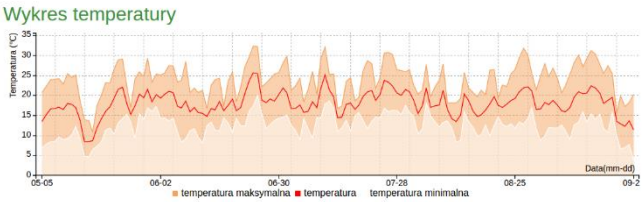
One of these projects was SmartAgriFood2 (SAF2), where PSNC supported SMEs from all over Europe during the development and implementation of smart services and applications for the agri-food sector based on the usage and application of FIWARE technologies. The project launched an open call for SMEs and received more than 150 applications. The proposed projects were evaluated with the support of an external panel of experts, both from the technical and business perspective, and 50 were finally selected to be funded. Each of these projects started the first phase of SAF2 milestone and mentoring programme, focused on the technical development of the applications. At the end of this phase, the applications as well as their business potential, were evaluated and a group of 18 SMEs were selected to be funded further and proceed to the second phase of the programme, focused on the trialing of the applications, and on the business development strategy of the SMEs. PSNC led the activities related to the supervision, coordination and support of the milestone and mentoring programme. This included: i) ensuring, in coordination with mentors, that the applications developed were built based on the latest advances in FIWARE; ii) monitoring the progress of each stage of the programme; iii) review and evaluate results of the SMEs at the end of each stage. During the project, PSNC collaborated closely with the Poznan University of Life Sciences (PULS), who was also a project partner. SAF2 concluded in September 2016, and was highly evaluated by the EU.

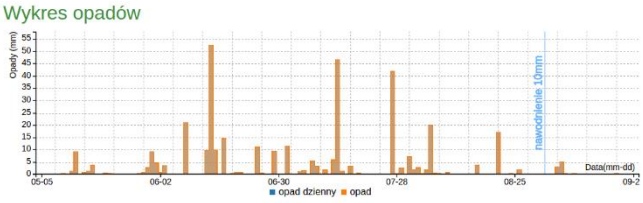
FOODIE
FARM-ORIENTED OPEN DATA IN EUROPE

Another project is FOODIE, which aimed at creating a cloud open platform for the management, discovery and integration of data relevant to the agri-food sector, in order to provide high-value applications and services supporting the planning and decision-making processes of different stakeholders' groups. FOODIE platform has been applied and demonstrated in different pilot scenarios across Europe, including Poland. PSNC was one of the key partners in FOODIE, and led the activities related to the service platform integration and its deployment in the cloud computing infrastructure, which was also provided by PSNC. PSNC was also responsible for the tasks related to application of semantic technologies, including semantic tagging and linked data generation. Besides, PSNC was responsible for the development of a domain specialized marketplace where relevant data, services and application in the sector can be discovered, published and commercialized.

Finally, PSNC was responsible for the implementation of the polish pilot, which was carried out in tight cooperation and collaboration with Wielkopolska Agricultural Advisory Center (WODR). The pilot was focused on the creation of a web-based Decision Support System (DSS) supporting the application of the general principles of integrated pest management by all professional users of plant protection products, obligatory for the EU member states since 1st January 2014. The DSS is particularly useful in determining the optimal terms of crop protection, and thus allows obtaining high efficiency of these treatments while reducing the use of chemical pesticides to a minimum.

Currently, there are five models implemented and tested: potato late blight, colorado potato beetle, Turnip moth on beet, Leaf Beetle on wheat, cercospora leaf spot on beets. The trialing and testing of DSS has been carried out in nine fields from seven different farms that are part of the network of demonstration farms built by WODR.





As part of the dissemination activities, PSNC presented these results in important conferences and events at the regional but also international level, including:

- XXIII Wielkopolska Agricultural Fair (Sielkink, Poland), in collaboration with WODR

- 18th edition of the International Agricultural Exhibition AGRO SHOW (Bednary, Poland), in collaboration with Industrial Institute of Agricultural Engineering (PIMR) and WODR
- Conference "Innovative methods of reducing pest populations and biodiversity of agricultural landscape" (Sielinko, Poland), in collaboration with WODR.
- FOODIE Hackathon (Prague, Czech Republic).

The project has recently concluded in February 2017.

PSNC is also participating in a recently started project called DATABio.

The goal of this project is to deploy a state of the art, interoperable big data platform “on top of the existing partners’ infrastructure, which would enable users with different profiles (agriculture, fishery, forest practitioners, insurance, banks, public bodies and decision makers) to benefit from the underlying High Processing capacities to explore new methods, build new innovative services and to interconnect to other user communities. PSNC is one of the key providers of this big data platform, and participates in the tasks related to the agriculture pilots. In particular, PSNC participates in the arable precision farming sub-pilots, supporting the representation and integration of data and their publication as linked data, application of big data analytics, and potentially involving polish stakeholders to trial the pilot results.

PSNC has been involved in other activities with relevant stakeholders in the region, including

- Planning and proposing the establishment of a digital innovation hub in agriculture in collaboration with Wielkopolska Agricultural Advisory Center (WODR), and the Industrial Institute of Agricultural Engineering (PIMR)
- Planning and proposing the implementation of the decision support system (from FOODIE) at the national level, including extensions and management of related data, with the leadership of WODR
- Planning and proposing the implementation of pilots for improving organic fertilisers consumption, along with better soil management, with the leadership of Poznan University of Life Sciences (PULS).

Last but not least PSNC is involved also in the ePSU Mobile project, as a follow up of the collaboration with WODR. As an extension of the Decision Support System (mentioned in the context of the FOODIE project), PSNC develops the mobile tools for the farmers including the "virtual farm" and decision support functionalities.

SPAIN

Fostering 5G technologies

In December 2015, the Ministry of Industry, Energy and Tourism, the Region of Madrid, Telefonica I+D, IMDEA Networks Foundation, Ericsson Spain and AMETIC signed a framework agreement on fostering 5G technologies in Spain.

During 2016, AEESD programme (reference call for ICT projects in Spain, launched by the Ministry of Industry) has been open to several key topics, including 5G. On the 29th September, 5TONIC, AMETIC and the Ministry organized an event in Madrid on "5G communications: challenges and opportunities in key verticals". The aim of this event was not only to address technology, but also to align Spanish and European strategies as well as to involve user sectors. In particular, some of the speakers were M. Eric Gaudillat (DG Connect), M. David del Val (5TONIC Chairman), high level representatives from Telefonica, Ericsson, Carlos III University, the Ministry and AMETIC. It also counted with representatives from v manufacturing, tourism and health and emergencies verticals, as potential 5G users.

"5G communications: challenges and opportunities in key verticals" opening speakers

"5G communications: challenges and opportunities in key verticals" room overview.

This event was organized under the framework agreement on fostering 5G technologies in Spain mentioned above.

5TONIC: 5G open R&I laboratory and ecosystem

By Luis Ignacio Vicente. March 15, 2017

One of the highlighted initiatives in Spain is 5TONIC, an open research and innovation laboratory and ecosystem focusing on 5G technologies. 5TONIC started its activity in November 2015, with Telefonica and IMDEA Networks Institute as founding members, and including today key actors in 5G as Ericsson, Intel, Commscope, University Carlos III of Madrid, Cohere Technologies and Artesym Embedded Technologies.

The Spanish Administration, through the Secretary of State for the Information Society and the Digital Agenda, recognizes the value of this private initiative and both share the objective of making Spain a reference in 5G technologies. Key 5TONIC members and the Ministry, together with other institutions, have signed an agreement to boost 5G technologies in Spain.

5TONIC is strongly aligned with the Advanced 5G Network Infrastructure for Future Internet Public-Private Partnership (5G PPP) within the Horizon 2020 program and also focus on boosting the

entrepreneurial environment around 5G by means of its open innovation laboratory concept and specific actions as the first 5G startup competition launched in October 2016.

Considering the academic activities related with 5G:

- 5TONIC is performing advanced collaborative research in the area of NFV/SDN
  - In connection with European initiatives within the H2020 framework
- 5TONIC is hosting open-source and standard bodies events
  - The ONF demo of micro-wave link SDN-based control
  - The ETSI Open Source Mano project meeting
  - The First ETSI NFV Plugtest
  - Conversations with the Open Daylight project for a performance evaluation
- 5TONIC is launching leading educational events
  - First Master Program on NFV/SDN technologies
- 5TONIC is one of the main testbeds for the 5G PPP belonging to the H2020 program
  - Base for several proposals for 5G demonstrators in Europe and beyond
  - With a key role at the 5G Strategy promoted by European Commission

Also, 5TONIC is promoting trials with verticals industries in order to test the features more interesting for the future customer of new networks.

More info: https://www.5tonic.org/

Luis Ignacio Vicente. Return on Innovation Manager. Telefonica

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NEWS FROM JOINT EUROPEAN INITIATIVES

Next Generation Initiative (NGI)

The open consultation for the Next Generation Initiative (NGI) was held between 10th November 2016 and 9th January 2017. 449 people took part and provided their views both on technologies and values that are relevant for the Internet of the future.

Please read more about the results in the Final report of the Next Generation Internet Consultation by downloading the report here[3].

In the last 2 months, the European Commission has organized two webinars (25th January, 2017 and 7th March, 2017) in relation to the call for ICT-41-2017: Next Generation Internet (full info can be found on page 101 at the work programme[4]. The closing date for ICT-41-2017 is 25th Apr 2017.

ICT-41-2017 has three objectives, each with a Coordination and Support Action expected and combination of all three budgets is 2M euros. The call sub-topics include:

a) Identification of research topics: Design, build and apply a methodology to identify continuously those key future technologies that will support an Internet model more open and more inclusive in 10 years from now.
b) Dynamic and continuous consultation: Build an open, dynamic and continuous consultation process which engages all relevant stakeholders in a long-term and multi-disciplinary fashion.
c) A programme shape for of a Next Generation Internet initiative: This initiative will mobilise the best researchers and focus on a continuous scouting of developments with the potential to change the way the Internet is operated, often by an opportunistic and multidisciplinary combination of advances.

The presentations and live stream for the 7th March 2017 Info Session on ICT-41-2017: Next Generation Internet can be found at Futurium[5].

[3] https://ec.europa.eu/futurium/en/system/files/ged/ec_ngi_final_report_1.pdf
[4] http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-leit-ict_en.pdf#page=101
[5] https://ec.europa.eu/futurium/en/content/presentations-7-march-2017-info-session-ict-41-2017-next-generation-internet

Cloud Computing Consultation

In 2016, the European Commission (DG CONNECT, Unit "Cloud and Software") consulted with a large number of interested stakeholders on the future research and innovation challenges in the area of Cloud Computing to be addressed in the forthcoming H2020 LEIT ICT Work Programme 2018-2020. The Consultation was open from 5 September to 10 October 2016 and interested stakeholders from industry, research centres, academia, SMEs and users, were invited to contribute.

A post-Consultation workshop[6] was held in Brussels on Monday, 7 November 2016, in order to discuss the input received during the consultation phase.

One of the goals of this workshop was to bring together existing and new stakeholders with the aim of focusing the Work Programme in order to maximise its impact on European competitiveness and economic growth. You can download the final Consultation report here[7].

The contributions submitted during the Consultation phase can be accessed here[8].

The reports listed below were intended to trigger the discussions. Respondents were invited to comment on any aspects of these reports or to put forward new ideas/suggestions for research and innovation topics in the area.

- Policy context: European Cloud Initiative Communication[9]
- Report from the industry workshop – 4 February 2016[10]
- Challenges for trustworthy (multi-)Cloud-based services in the Digital Single Market[11]
- New Approaches for Infrastructure Services[12]
- Inter-cloud Challenges, Expectations and Issues Cluster Position Paper[13]
- Beyond Cloud Computing: Towards Complete Computing - HolaCloud report[14]

The WP 2018-2020 Call for Proposals is expected to be published by the end of 2017. Hence, new projects are likely to be launched before the end of 2018. These projects are likely to run for 2 or 3 years. Therefore, the Work Programme is expected to focus on infrastructures, services, technologies and innovation ripe for commercial deployment beyond 2021 i.e. in 5/6 years' time.

[6] https://ec.europa.eu/digital-single-market/en/news/consultation-cloud-computing-research-innovation-challenges-wp-2018-2020
[7] https://ec.europa.eu/digital-single-market/en/news/consultation-cloud-computing-research-innovation-challenges-wp-2018-2020
[8] http://ec.europa.eu/digital-single-market/events/cf/public-consultation-on-cloud-computing-research-innovation-challenges-for-wp-2018-2020/stream-items.cfm?id=369
[9] http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=15266
[10] http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=16840
[11] http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=16836
[12] http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=16838
[13] http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=16839
[14] http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=16837

IoT Week

The annual IoT Week 2017 will take place 6-9th June 2017 in Geneva, at the Geneva International Conference Centre (CICG[15]). The IoT Week is the leading conference on IoT research and emerging technologies. It is organized under the umbrella of the IoT Forum to promote international dialogue and cooperation for IoT innovation, as well as to discuss technical, societal and market issues related to the Internet of Things. The last editions attracted about 500 participants specialized in the IoT domain, including research centres, research projects, large industries, SMEs, developers, standards development organizations and policy makers, including the European Commission.

It will explore new territories of the Internet of Things (IoT), including:

- Emerging IoT Researches and Technologies

The IoT Week will present emerging technologies and solutions related to the Internet of Things with pioneering research projects, SMEs and industries. It will also discuss the recent developments in the IoT standardization landscape.

- IoT and Sustainable Development

The IoT Week will work in close cooperation with the International Telecommunication Union (ITU) and other international organizations from the UN system to discuss how the Internet of Things can contribute to achieve the 17 Sustainable Development Goals (SDGs) adopted by the UN. It will review and discuss these SDGs to pave the way to new cooperation links between the IoT community and the UN system. The IoT Week 2017 will conclude its work by the adoption of an "International Declaration on the Internet of Things for Sustainable Development"

- IoT Security and Privacy

The IoT Week will organize dedicated sessions on IoT Security and Privacy. It will review emerging technologies and challenges, including, the adaptation to the new European Data Protection Regulation.

- IoT Business, Finance, and Industry 4.0

The IoT Week will discuss emerging trends in the IoT market, including industry 4.0, finance, investment strategies and business models. It will also include a track for IoT start-up pitches.

Dates

6th June 2017: Preparatory meetings and workshops

7th – 9th June 2017: IoT Forum 2017 – Main programme.

Registration

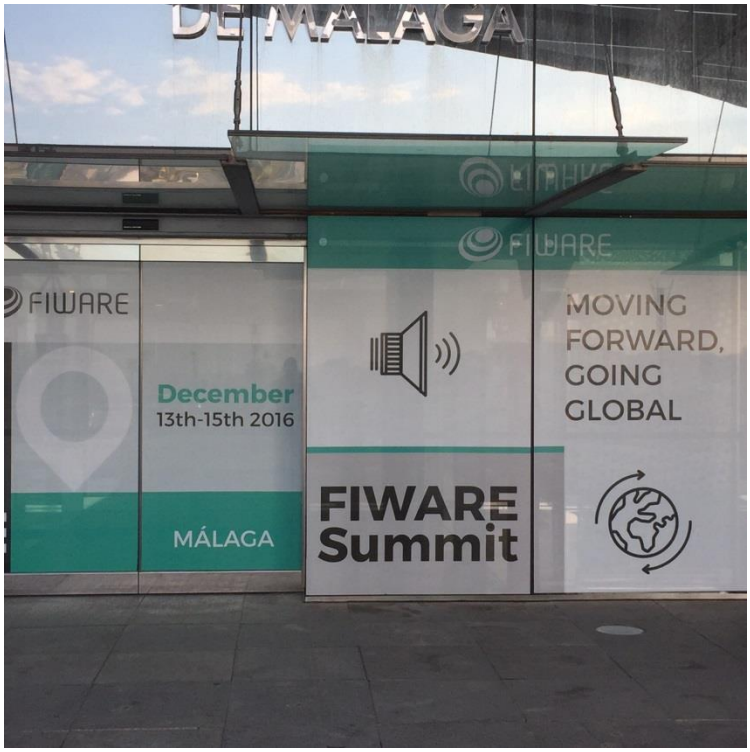
Please register at http://iot-week.eu/registration-2017/. **Note: early bird registration finishes end of March 2017.**

[15] http://www.cicg.ch/en/access-map/

FIWARE

Since the last newsletter, the FIWARE programme has held two major events.

The first annual FIWARE Summit was held on 13-15th December, 2016 in Málaga, Spain, and it kick-started a new stage for the open community of developers, users, companies, cities, accelerators, researchers, public authorities and non-profit organizations in a 3-day event.



The theme of the Summit was "FIWARE is Moving Forward, Going Global; Together, we build FIWARE!"

This was the first event of the newly established FIWARE Foundation, which was formally registered on October 28th, 2016, with headquarters in Berlin, aimed at supporting the continued growth of FIWARE, the open source platform called to become the de-facto standard for development of IoT-enabled smart services.

The FIWARE Open Day[16] was held on 7th March, 2017 in Brussels, as a venue to promote the global ambition of FIWARE and Launchpad of the FIWARE Business Ecosystem with the FIWARE Foundation as the main central actor driving the FIWARE open platform technology and ecosystem forward. The Open Day was a success and a great occasion to meet both the people that has been supporting FIWARE since its very beginning and the ones that are called to join in and enrich human organization that the open community has become.The FIWARE Open Day was a great opportunity to learn, engage and join our ecosystem, making companies, institutions and contributors very visible in a key initiative of DG CONNECT and the European Commission.

[16] http://www.fiwareopenday.com/

MIND THESE DATES !

A number of important Future Internet and 5G related events planned in the coming months:

H2020 FIF Meeting No. 3, 27 April 2017
Brussels, Belgium
Invitation only

TNC17 Terena Conference, 29 May – 2 Jun 2017
Linz, Austria
https://tnc17.geant.org/

The Internet of Things Week 2017, 6-9 June 2017
Geneva, Switzerland
www.iot-week.eu

EuCNC 2017, 12-15th June 2017
Oulu, Finland
http://www.eucnc.eu/

Digital Assembly 2017, 15-16 June 2017
Valletta, Malta
https://ec.europa.eu/digital-single-market/en/digital-assembly-2017-valletta

5th International Workshop on Cloud Technologies and Energy Efficiency in Mobile Communication Networks (CLEEN 2017), organized by Flex5Gware project, 22 June 2017
Turin, Italy
http://www.flex5gware.eu/cleen2017

Digital Innovation Networks Forum 2017 (Co-located with the Net Futures 2017), 27 June 2017 (from 13:30-17:30)
Hotel REGUS - Brussels IT Tower
https://www.ict-fire.eu/event/digital-innovation-networks-forum/

Net Futures 2017, 28-29 June 2017
Brussels, Belgium
http://netfuturesconference.eu/

ISWCS 2017 – 14th International Symposium on Wireless Communication Systems, 28-31 August, 2017, Bologna, Italy
http://iswcs2017.org

ICT Proposers Day, 9-10 Nov 2017
Budapest, Hungary
https://ec.europa.eu/digital-single-market/en/news/ict-proposers-day-2017

ceFIMS-CONNECT (www.cefims.eu) is a project funded by the European Commission within Netfutures Directorate (E), Experimental Platforms Unit (E4) .

The ceFIMS-CONNECT Monitor is an ongoing tool for Member States and Associated Countries to publish and share their national best practices, success stories and developments in the area of Future Internet and 5G, as well for European initiatives to share their news with national stakeholders, on a regular basis.

If you would like to publish an item via the ceFIMS-CONNECT Monitor, please email to the contacts below:

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