Madrid, Spain, August 31, 2018

A location system to drive future wireless innovation

There are many barriers to innovation in wireless communications. Inadequate documentation; uncooperative chipset manufacturers; widely varying hardware and software specifications; steep learning curves in the experimentation phase and difficulties in prototyping are among the biggest issues that hamper development.

WiSHFUL, a research project funded by the EU H2020 Future Internet Fire program, has addressed these challenges with the goal of stimulating greater wireless experimentation and innovation and providing control over disparate radio and network technologies, such as Wi-Fi and LTE, which share the same environment.

But effective innovation demands excellent experimentation – a requirement that has not always been possible given the complexity of the environment provided by competing wireless technologies. So, a further aim of WiSHFUL has been to provide the opportunity for experimenters to do so through an open call process. This has enabled them to use and extend the WiSHFUL architecture, whilst helping them to conduct wireless innovation tailored to meet the needs of specific sectors. The WiSHFUL findings have proven to be very relevant both for the academic research and the industrial innovation process.

IMDEA Networks Institute has collaborated since July 2017 as experimenter on this last but critical phase of the WiSHFUL project. The work was conducted by the Institute's Pervasive Wireless Systems Group, led by Dr. Domenico Giustiniano. A key deliverable of the group has been the integration of a positioning system, developed and used extensively by the group (*see 'Indoor Location Technology Has Become Simpler'*), and its experimental evaluation in the WiSHFUL testbed. Another has been the study of intelligent MAC resource allocation algorithms in challenging conditions, similar to industrial environments with many metallic surfaces, exploiting the context information provided by the location system (*see 'Location-aware MAC scheduling in Mobile and Dense Networks'*), and programming the experiments through the support of the software platform and hardware radios integrated in WiSHFUL.

The new system will enable the early experimental investigation of network applications that use real-time location data and other context information in challenging indoor environments to improve the efficiency of wireless networks. Those environments may include a mix of static and mobile devices in densely populated networks. Shopping malls, office buildings, industrial installations and even the home are all examples of environments where a multitude of devices using different technologies may be found.

Additional Resources:

Maurizio Rea, Domenico Garlisi, Héctor Cordobés de la Calle, Domenico Giustiniano (September 2018)
Location-aware MAC Scheduling in Industrial-like Environment **(Paper)** [PDF]
In: The 9th International Conference on Broadband Communications, Networks, and Systems (BROADNETS 2018), 19–20 September 2018, Faro, Portugal.

Maurizio Rea, Héctor Cordobés de la Calle, Domenico Giustiniano (Abril 2018)
TWINS: Time-of-flight based Wireless Indoor Navigation System **(Extended abstract)** [PDF]
In: Microsoft Indoor Localization Competition - The 17th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN 2018), 11-13 April 2018, Porto, Portugal.

Maurizio Rea, Héctor Cordobés de la Calle, Domenico Giustiniano, Domenico Garlisi, Pierluigi Gallo, Spilios Giannoulis, Ingrid Moerman (Octubre 2017)
Poster: Integration of WiFi ToF Positioning System in the Open, Flexible and Adaptive WiSHFUL Architecture **(Poster, peer-reviewed)** [PDF]
In: The 11th ACM Workshop on Wireless Network Testbeds, Experimental evaluation & CHaracterization (ACM WiNTECH 2017), 16-20 October 2017, Snowbird, Utah, USA.

Source(s): IMDEA Networks Institute
—END—

Traducción al español:
/noticias/2018/un-sistema-posicionamiento-impulsa-futura-innovacion-inalambrica
Original source:
news/2018/location-system-drive-future-wireless-innovation

About Us

IMDEA Networks Institute is a **research organization on computer and communication networks** whose multinational team is engaged in cutting-edge fundamental science and technology. As a growing, English-speaking institute located in Madrid, Spain, IMDEA Networks offers a unique opportunity for pioneering scientists to develop their ideas. IMDEA Networks has established itself internationally at the forefront in the **development of future network principles and technologies.** Our **team** of highly-reputed researchers is designing and creating today the networks of tomorrow.

Some keywords that define us: *5G, Big Data, blockchains and distributed ledgers, cloud computing, content-delivery networks, data analytics, energy-efficient networks, fog and edge computing, indoor positioning, Internet of Things (IoT), machine learning, millimeter-wave communication, mobile computing, network economics, network measurements, network security, networked systems, network protocols and algorithms, network virtualization (software defined networks – SDN and network function virtualization – NFV), privacy, social networks, underwater networks, vehicular networks, wireless networks and more...*