

Press release

Wireless microsystems

Tiny UWB modules to enable accurate location awareness for more secure connected devices

Neuchatel, July 30, 2014 – The ALBIREO project was launched this month by CSEM along with SMEs 3db Access and Insight SiP. They are joining forces to develop miniaturized ultra-wideband (UWB) technologies for enabling precise positioning between connected devices. Location awareness offers enhanced security for applications such as building access and mobile payments.

Short-range connectivity technologies such as Bluetooth are widely deployed and experience rapid market growth. Whereas they allow “plug-and-play” data exchange among connected objects, they suffer from poor distance measurement capability. Establishing accurate location awareness is thus not possible, which poses a significant threat to the security of the communication. *“The benefit of location-awareness is secure and convenient access control to assets such as vehicles or buildings”,* says Boris Danev, CEO of 3db Access. *“It is crucial to ensure that a transmitting device is in a precisely known range in order to secure a transaction with the desired receiver and not link to some unauthorized device situated at a larger distance.”*

The ALBIREO project aims at leveraging Impulse-Radio Ultra-Wideband (IR-UWB) technology into miniature wireless modules that allow accurate measurement of the distance between communicating devices, thereby enabling reliable distance-bounding communication protocols. IR-UWB is being investigated worldwide for realizing high-datarate links, and interest has risen recently for exploiting the wide available bandwidth (above 500 MHz in the 6-9 GHz bands) to perform accurate distance measurement. *“This unique aspect of UWB combined with ultra-low-power integrated radios makes it an attractive technology for providing secure communication among connected devices and ultimately internet of things”,* emphasizes Vincent Peiris, Head of the RF and IC group of CSEM. *“Furthermore, the project is aligned with our mission to support SMEs with innovative technology transfer.”*

Concretely, the ALBIREO project will develop IR-UWB microchips, which in turn will be embedded into modules with integrated antennas, tiny enough to fit in the next generation of keyless access cards and tags. The principal challenge is to realize miniaturized IR-UWB modules with ultra-low-power consumption powered by tiny coin-cell batteries. *“To tackle the miniaturization challenge, Insight SiP plans to deploy its System-in-Package expertise and integrated miniature antenna technologies for enabling miniaturized UWB radio systems for next generation tags and electronic keys”* says Michel Beghin, CEO of Insight SiP.

The Euro 1.6 million ALBIREO project is co-funded by the EU Eurostars program. It is launched this month with a duration of 26 months.

Additional information

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About CSEM

CSEM – technologies that make the difference

CSEM, founded in 1984, is a private research and development center specializing in microtechnology, nanotechnology, microelectronics, system engineering, photovoltaics and communications technologies. Over 400 highly qualified and specialized employees from various scientific and technical disciplines work for CSEM in Neuchâtel, Zurich, Muttenz, Alpnach and Landquart.

Further information is available at www.csem.ch

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About 3db Access

3db Access – www.3db-access.com – based in Zurich, Switzerland, is an ETH spin-off that specializes in secure access control solutions for cars, buildings, secure industrial processes and payment systems.

About Insight SiP

Insight SiP – www.insightsip.com – based in Sophia Antipolis, France, specializes in the design of RF System-in-Package. Its customers are major accounts and SMEs working in radio communication, the mainstream/professional electronics industry, cellular telephony and small communicating objects. Insight SiP is member of the Secured Communicating Solutions (SCS) World Competitiveness Cluster.

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