PRESS

October 6, 2021

New VDE position paper: Joint communications & sensing as the key technology for the 6G rollout

- **Future applications such as fully autonomous driving and assistive robotics require huge volumes of data**
- **Joint communications & sensing uses signals from base stations and enables radars to run alongside as "Sensing as a Service"**
- **With the technical feasibility confirmed and funding in place, it is now time to start the outreach work**

Whether you are using a domestic robot at home, a robot assistant in the care sector or autonomous driving in urban areas, all participants in these sorts of scenarios must be able to map their environment in 3D and communicate with each other so that they can operate safely and avoid accidents. Today's radar spectrum is not nearly sufficient, especially as the number of components involved is bound to rise continuously. Various technologies designed to tackle this challenge are currently under discussion. Whereas ISAC (integrated sensing & communication) focuses on dedicated infrastructures for mobile networks and sensor technology, JC & S (joint communications & sensing) is designed to use the mobile network directly for radar functions.

VDE's assessment:

JC & S is the key to the future

With its new position paper "Joint Communications & Sensing", VDE is taking a clear stance and has provided a detailed outline of why JC & S should be considered a significant technology for key German and European industries. "Whether you are considering vehicular communication systems and traffic safety in the automotive industry or the precise localization of unmanned transportation units in the logistics sector – we need an efficient, reliable solution, which we certainly have with JC & S," explains Prof. Hans Dieter Schotten, member of the supervisory board of the Association for Electrical, Electronic & Information Technologies (VDE).

VDE Association for Electrical, Electronic & Information Technologies
Editor in Chief Head of Brand, Marketing and Communication: Thomas M. Koller
Stresemannallee 15
D-60596 Frankfurt am Main
www.vde.com
service@vde.com

When the sensor technology hitches a ride:

Efficient use of infrastructure and frequency spectrum

The clever thing about joint communications & sensing is that it uses signals that are sent from the base stations anyway. Prof. Gerhard Fettweis, Professor for Telecommunications at TU Dresden and co-author of the position paper, explains, “If we introduce an extremely small interval when a radio signal is transmitted from A to B, we can create a radar image from the resulting echo. This is only possible with 6G, and the first projects show that the approach works.” Also, sensor signal packages for radar functions can be integrated into data signals, where the sensor function hitches a ride on the radio signal, so to speak. A key factor is that JC & S is very light on resources – it uses existing infrastructure and, because it shares the radio signals, the technology is very efficient in terms of the frequency spectrum.

Critical issues:

Electromagnetic radiation and protecting privacy

New technologies always face critical questions that have to be addressed before they are accepted by broad segments of society. As soon as you work with millimeter-wave frequency bands, one possible sensitive issue is electromagnetic signal exposure. Prof. Schotten addresses this: “We are aware of these concerns and, in places where there is a high density of signals – such as on industrial sites – we can take measures to reduce signal exposure.”

Another issue that applies to all artificial intelligence, sensor and data capture applications is protecting privacy. It is still not clear how detailed the imaging process will be and whether anonymization procedures should be deployed. However, as the mobile carriers are the ones who obtain the data and make it available to third parties via interfaces, they will be able to use their experience in handling sensitive information. Prof. Schotten sums it up as follows. “We have a technology that has proven its feasibility and the funding is in place – for the rollout, we now need the acceptance of the manufacturers, regulators and other stakeholders throughout society.”

About VDE:

VDE, one of the largest technology organizations in Europe, has been regarded as a synonym for innovation and technological progress for more than 125 years. VDE is the only organization in the world that combines science, standardization, testing, certification and application consulting under one umbrella. The VDE mark has been synonymous with the highest safety standards and consumer protection for 100 years. Our passion is the advancement of technology, the next generation of engineers and technologists, and lifelong learning and career development “on the job”. Within the VDE network, 2,000 employees at over 60 locations worldwide, more than 100,000 honorary experts and 1,500 companies are dedicated to ensuring a future worth living: networked, digital, electrical. We shape the e-dialistic future.

The headquarters of the VDE (Association for Electrical, Electronic & Information Technologies) is in Frankfurt am Main. For more information, visit www.vde.com.

Press contact: Melanie Unseld, Tel. +49 69 6308-461, melanie.unseld@vde.com