

# Call for Papers and Demos

Submission Deadlines: 15<sup>th</sup> of October 2025 (papers), 25<sup>th</sup> of October 2025 (demos)

Website: <https://jcns-symposium.org/>

Presented by:



The wireless community is currently exploring new technologies for 6G and beyond. Key pillars will very likely include integrated artificial intelligence (AI) and communications, ubiquitous connectivity, as well as integrated sensing and communications (ISAC). Hence, the integration of sensing functionality is emerging as a key feature of the 6G Radio Access Network (RAN), allowing to exploit the dense cell infrastructure for constructing a joint communication and sensing (JC&S) network wherein the two functionalities are jointly optimized and co-designed. As such, the future outdoor and indoor networks could image and measure the surrounding environment to enable advanced environment and location-aware services, ranging from PHY to application layers. While positioning is already implemented in 4G and 5G standards, it is anticipated that ISAC and more particularly JC&S will be at the heart of 6G and beyond systems. Indoor systems are following the same trend, the upcoming IEEE 802.11bf Wi-Fi sensing standard being a first step in this direction.

Apart from the cellular network and Wi-Fi applications, the need for optimization of energy and other resources, interference reduction will require several verticals to utilize JC&S/ISAC aligned with existing standards and upcoming standards. New developments are expected to increase communications and sensing performance as well, relying, among others, on wider bandwidths, more antennas, and higher carrier frequencies. Advances in theoretical understanding of the performance and limitations, new algorithmic solutions, including those based on machine learning, and novel hardware solution are needed to make that vision come true.

Despite having drawn huge attention from both academia and industry, many open problems remain to be investigated in JC&S. This symposium aims at bringing together researchers from academia and industry to identify and discuss major technical challenges, recent breakthroughs, and novel applications related to JC&S looking towards 6G deployments. Topics include but are not limited to:

## I. Fundamental Theoretical Limits and Trade-offs

- Fundamental information theoretical limits for JC&S
- Tradeoffs between communications and sensing

## 2. Signal Processing and Hardware Design for JC&S

- Signal processing for JC&S
- Delay-Doppler signal processing for JC&S
- Precoding / waveform / modulation / receiver design for JC&S
- RF front-end and antenna design for JC&S
- Full duplex / interference management techniques of JC&S
- Spectrum analysis and management of JC&S
- Fine range, Doppler, and angle estimation in wireless networks
- SLAM in wireless networks
- Integrated imaging and communication
- Joint communication and synthetic aperture radar (SAR)
- Multi-band JC&S (intra-band JC&S systems at 3GPP FR3, inter-band JC&S systems)
- Bistatic and multistatic JC&S systems (signal processing, synchronization)
- Millimeter wave / THz technologies for JC&S
- Chirp-based communication and sensing
- Hardware reuse and sharing for JC&S
- Innovative hardware designs addressing power consumption, size, and cost benefits for JC&S

## 3. Network Architecture, Transmission Protocols, and Cross-layer Design for JC&S

- Network architecture / transmission protocols / frame designs for JC&S
- Cross-layer JC&S system design
- Energy-efficient JC&S system design
- Integrated sensing, communication, and computing systems
- MIMO / Massive MIMO / intelligent reflecting surfaces (IRS) for JC&S
- JC&S with distributed MIMO or cell-free MIMO
- JC&S using existing networks/resources
- JC&S for highly mobile networks
- Standardization of JC&S

## 4. Innovative Use Cases, Applications, and Practical Implementations of JC&S

- Innovative use cases for JC&S
- Machine learning, network intelligence for JC&S
- AI- and/or digital twin-assisted JC&S
- Security and privacy issues for JC&S
- Wi-Fi sensing / positioning / detection for JC&S
- Human activity recognition and eHealth
- Experiments, demonstrations, and prototypes
- JC&S with robotics and non-terrestrial networks (NTN) (UAV, satellites, HAPs)

## Submission

### *Technical Paper Submission*

Papers outside the areas listed above, but related to the focus of the symposium, are also welcome. Note that papers discussing only communications or only sensing are considered out of scope. Manuscripts not exceeding 6 pages must be submitted through EDAS not later than **15.10.2025**. Submissions should be formatted according to the IEEE conference template. Manuscripts will be peer-reviewed according to the standard IEEE process. All accepted (**and presented**) papers will be published in the symposium proceedings and will be submitted for inclusion into IEEE Xplore subject to meeting IEEE Xplore's scope and quality requirements.

The authors are encouraged to indicate their preference among two options during the submission – oral or poster presentation.

### *Demo Paper Submission*

Manuscripts not exceeding two-pages must be submitted no later than **25.10.2025**. All submissions must follow the IEEE formatting guidelines. Please refer to the IEEE submission instructions for details. There is no need for double-blind submissions (names, affiliations, and email addresses are therefore required). Please be as specific as possible in describing what you will display or demonstrate for your demo. The demo session will be held in person, and at least one co-author of the accepted demo is required to present in the conference. If a demonstration requires special arrangements or additional equipment, please detail it in the submission. All additional equipment/needs are subject to budget approval. Abstracts of accepted demos will be included in the JC&S 2026 Proceedings. Accepted and presented abstracts will be submitted to IEEE Xplore®.

**Note that a physical demo at the conference venue will be a necessary requirement if the paper is accepted.** Technical demonstrations showing/presenting innovative and original research are solicited. In general, IEEE JC&S is interested in demonstrations of technology that validate important research ideas or showcase realistic applications. The demo research topics of interest include but are not limited to list shown above. For **assistance regarding transport and logistics of the demonstrators**, please contact Amr Haj-Omar (**Amr@emerson.com**).

**[Link: JC&S 2026 on EDAS](#)**