SNS Call 3 Webinar – Wireless Communication and Signal Processing

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Scope/Orientations: *Topics to address any IMT existing frequency band or potential 6G*

- **Novel techniques for integrated sensing and communication** to maximize spectrum efficiency and minimize resources (hardware and energy).
- **ML empowered physical layer evolutions.** ML techniques to enhance or supplement traditional model-based approaches for optimizing the physical layer.
- **Cell-free and extreme exploitation of MIMO** (incl. reconfigurable surfaces) to maximize the capabilities of MIMO technologies. This could include channel modelling, ultra-massive MIMO systems and solutions to control electromagnetic exposure.
- **Functionalities and technologies for 6G RAN** system design include, waveforming, multiple access, advanced synchronization and enhanced non-orthogonal multiple-access schemes.
- **Seamless integration of multiple frequency bands** reuse of existing frequency bands via dynamic spectrum sharing and **optimal access** to new **6G frequency bands in the EU.**

Expected outcome:

- **Optimized radio physical layer solutions** via ML techniques which provide a more adaptable and flexible approach to real-time radio channel conditions/capacity.
- **Innovate 6G RAN design** by combining different physical layer functionalities and antenna concepts to meet 6G technical requirements (high-throughput, low latency, etc) .
- Development of **algorithms (incl. energy efficient) for massive MIMO systems** to increase radio channel capacity, better coverage and very high accuracy in positioning.
- Algorithms, software and hardware implementations, used for PoC and later trials systems.
- **Characterization of 6G spectrum candidate bands** and co-existence/sharing technologies and approaches with other systems.
- **Methods for an efficient and accessible radio spectrum use**, including combination of different frequency bands, energy efficiency, and minimization of EMF effects.
- Contributions to international **standardization**.

“Wirelss Communications” Project Portfolio

Project Number	Project Acronym	Project Duration	Project Total Costs	Project Requested EU Contribution
101192521	**MULTI-X**	30 months	8,479,892.50	7,999,603.00
101192080	**6G LEADER**	36 months	8,483,236.25	7,998,705.00

Expected TRL: 4-5