Scope & Orientations:

The focus of this Strand is on techniques to improve the performance of radio links and systems for 6G communications.

- New physical layer technologies up to millimeter wave

- Extreme exploitation of MIMO technologies up to millimeter wave range

- Human-friendly Radio systems

- Spectrum Re-farming and Reutilisation

- Seamless integration of multiple frequency bands

- Machine learning empowered physical layer evolutions

- Optimal usage of wireless edge caching

- Novel techniques for integrated sensing and communication

Expected outcome:

- Wireless technologies and systems capable to meet expected 6G radio capabilities

- Innovative RAN solutions

- Support of new higher efficiency mobile communications (e.g., free cell networking, massive MIMO)

- Applicability and validation of innovative AI/ML based architectures

- Solutions enabling new wireless applications

- Solutions to optimize sustainability aspects (e.g., energy efficiency)

Project Number	Project Acronym	Project Duration	Project Total Costs	Project Requested EU Contribution
101139130	6G-DISAC	36	4,231,312.00	3,999,728.25
101139232	6G-GOALS	36	3,296,619.50	3,174,154.88
101139176	6G-MUSICAL	36	2,983,405.00	2,858,120.00
101139282	6G-SENSES	30	3,810,062.50	3,627,081.00
101139161	INSTINCT	36	4,170,082.50	3,999,552.76
101139291	iSEE-6G	36	4,221,373.75	3,999,523.76
	Total		22,712,855.20	21,658,160.60

Expected TRL: 2-4

Scope & Orientations:

- Improved efficiency and cost-effectiveness across diverse frequency ranges, supporting wideband transceivers, massive MIMO, and reconfigurable surfaces.

- Development of beamforming solutions and multi-user technologies, including THz antenna systems to overcome high path loss and meet performance requirements.

- Innovations in antenna and packaging technologies, integrating on-chip antennas, meta-materials, and human-friendly radio systems for enhanced performance and compatibility.

Expected outcome:

- Increased capabilities of European microelectronics industry to provide solutions for communication networks and devices.

- Available solutions for devices at various levels of the device data processing chain.

- Availability of validated hardware solutions that may be used in the context of the 6G standardisation with strong partnership between the microelectronics and communication industrial actors.

- Availability of open solutions that may support further innovation at any level, from the end devices to core 6G network components.

- Availability of solutions that will offer significant energy reduction for 6G communication systems.

- Availability of detailed technology and subsystem characterisation.

Project Number	Project Acronym	Project Duration	Project Total Costs	Project Requested EU Contribution
101139155	6G-REFERENCE	36	4,778,464.50	4,653,960.30
101139167	FirstTo6G	42	5,373,340.00	4,999,894.00
101139117	TeraGreen	48	5,200,599.50	4,990,648.88
	Total		15,352,404.00	14,644,503.18

Expected TRL: 2-4

Scope & Orientations:

- Joint efforts on advancing next-gen wireless, including 6G, powered by AI. AI application spans from radio aspects to higher layers such as intelligent network functions and user support.

- Establishing a comprehensive framework for AI usage in 6G telecom, covering methodologies, use cases, data management, and benchmarking. It addresses various AI applications and business contexts, evaluating key 6G metrics and validating techniques.

- Ensuring availability of compliant datasets to enhance human-centric and societal acceptance. Contributions focus on improving datasets, tools, and algorithms for efficient AI solutions, with opportunities for EU-US stakeholder collaboration and validation over experimental platforms.

Expected outcome:

- EU-US research cooperation on selected critical 6G technologies and architectures exploring AI, paving the way towards global validation, adoption and standardisation of intelligent approaches, notably in the context of key 6G KPIs.

- A widely accepted framework for meaningful evaluation of proposed AI/ML-powered solutions for 6G networks.

- Technology validation in platforms where appropriate.

- Joint progress towards AI large scale applicability in 6G networks and standardization opportunities supported by availability of common data sets and learning sequences provided in an open manner.

Project Number	Project Acronym	Project Duration	Project Total Costs	Project Requested EU Contribution
101139194	6G-XCEL	36	3,123,785.00	2,994,474.25

Expected TRL: 2-5