



6G SNS



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Welcome to the MULTIX Newsletter!

Welcome to the third edition of the MultiX newsletter, covering our highly active third semester (January–June 2026)! The first half of 2026 has been a period of remarkable transition, taking our Integrated Sensing and Communication (ISAC) architectures "from lab to live deployments". Inside this edition, we showcase our prominent live demonstrations at Mobile World Congress (MWC), celebrate our strategic footprint at the EuCNC & 6G Summit 2026 in Málaga, and highlight real-world breakthroughs in quadruped robotics, digital twins, and contact-free health monitoring across our Open Labs. We also spotlight our technical leadership in European policy panels, standardization bodies, and top-tier scientific publications—including a prestigious Best Paper Award.

MultiX Newsletter #3: Shifting Gears to Active Experimental Validation

Period: January 2026 – June 2026 (Months 13-18)

Launched in January 2025, the MultiX-6G Project brings together a consortium of 17 partners from 7 European countries. As we cross our 18-month milestone, our consortium is moving at full speed, transforming foundational architectural designs into live, privacy-preserving perceptive network environments that bridge cutting-edge communication with physical sensing.



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Spotlight on WP1: Bringing 6G Technical Innovation with Societal and Economic Impact

During the first half of 2026, Work Package 1 (WP1) acted as the strategic orchestrator of the MultiX project, ensuring tight alignment between our high-level architectural visions and the technical developments unfolding across the consortium. Working in close synergy with WP2 (Architectural Design) and WP4 (Validation), WP1 successfully refined the project's evaluation framework. This collaborative effort has streamlined the validation of **Key Performance Indicators (KPIs)** and **Key Value Indicators (KVIs)** across all use cases, ensuring that architectural design, implementation, and validation activities move forward in perfect harmony.

Beyond technical synchronization, WP1 made significant strides in Task 1.2 (Impact Assessment), evaluating the broader footprint of MultiX through three essential lenses:

- **Techno-Economic Viability:** Partners progressed their contributions to the techno-economic evaluation, yielding the first concrete results necessary to analyze the deployment and operational aspects of MultiX solutions in future market landscapes.
- **Environmental & Societal Footprint:** By mapping out our pre-defined Key Values (KVs) and KVIs, WP1 identified exactly which social and environmental benefits can be effectively demonstrated and quantified within our upcoming Proof of Concepts (PoCs).

Through these efforts, WP1 ensures that the MultiX validation phase will generate robust, meaningful evidence of the project's benefits—proving that our 6G perceptive networks are not only technologically superior but also economically viable and socially responsible.

Events & Global Outreach

Bringing ISAC from Lab to Live Deployments on the World Stage

The first half of 2026 marked a pivotal milestone for MultiX as we transitioned from theoretical architectural designs to hands-on experimental validation, showcasing our breakthroughs to the global telecom community. We proudly demonstrated the world's first implementation of collaborative Wi-Fi and cellular sensing under an early 6G architecture. This revolutionary setup, developed within Work Package 2 (WP2) and aligned with our Proof of Concept 1 (PoC1 - Industrial Digital Twin), was featured at three of the most prestigious global and European telecommunications events:

- **Mobile World Congress (MWC 2026, Barcelona):** From March 2–5, our partner InterDigital hosted live demonstrations at Stand 5C51 (Hall 5). The showcase illustrated how fusing cellular (FR1) and Wi-Fi (FR2) technologies creates a unified, device-free tracking system that improves coverage continuity and eliminates physical blind spots in smart spaces.
- **IEEE ICC 2026 (Glasgow, UK):** In late May, the consortium brought this collaborative sensing demo to Booth 17 during the technical exhibition. The live demo gathered immense interest, showcasing how passive radio sensing reuses existing communication waveforms without relying on cameras or wearable devices to protect user privacy.
- **EuCNC & 6G Summit 2026 (Málaga, Spain):** From June 2–5, Málaga became the epicenter of European 6G research, where MultiX drove the technical dialogue from Booth 5-6 with live demos and research posters.
 - **Technical Leadership:** MultiX co-organized [Workshop 2](#) (focusing on European ISAC initiatives and physical layer enablers), actively participated in [Workshop 3](#) (rethinking test, measurement, and validation for 6G), and contributed to [Special Session 2](#) and the high-level panel "Connected Intelligence: when 6G and AI meet".
 - **Institutional Success:** We were honored by prestigious visits to our booth, including Oana Radu (our European Commission Project Officer) and the Spanish Secretary of Telecommunications and Digital Infrastructures, both of whom witnessed our live collaborative sensing setups and praised MultiX's scientific leadership.



Workshop 2 Second Workshop on Integrated Sensing and Communications initiatives on the European research framework June 2, 9:00 - 12:30



Workshop 3 Rethinking Test, Measurement, and Validation for 6G Networks (SNS TMV Workshop) June 2, 9:00 -12:30



Panel Connected Intelligence: when 6G and AI meet June 3, 15:00 -16:30



Special Session 2 ISAC – Integrated Sensing and Communications Towards 6G June 3, 8:30 -10:00




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Visit us at multix-6g.eu





Málaga, Spain ▪ 2-5 June 2026



June 2-5
BOOTH 5-6

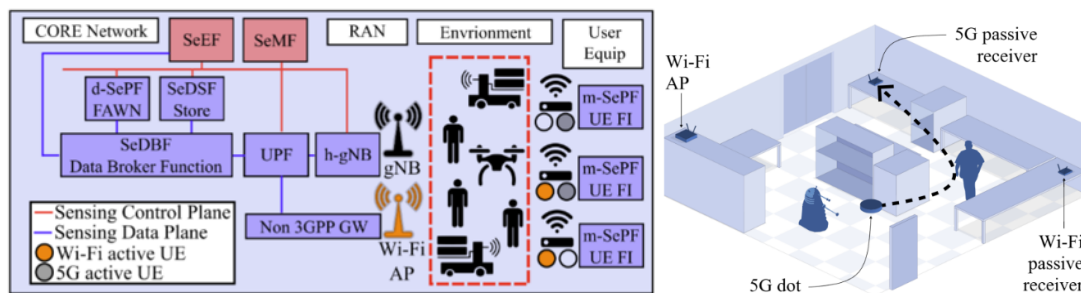
demos & posters

Spotlight on WP4: Open Labs in Action

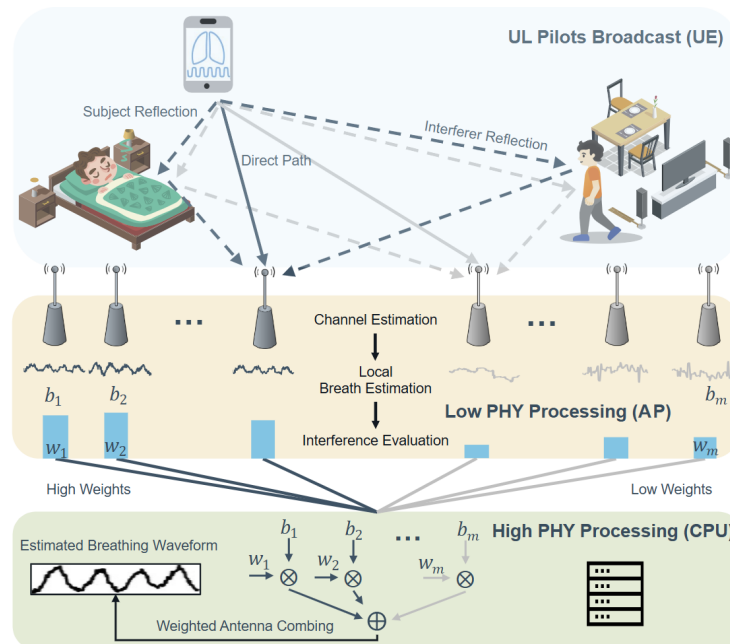
Open Labs in Action: Quadruped Robotics, Real-Time Digital Twins, and e-Health Platforms. Validating the Future of Perceptive Networks.

During this semester, MultiX successfully translated theoretical architectural enablers into tangible experimental breakthroughs across our specialized Open Labs. Our research partners have integrated the initial enablers of the MultiX Fusion Perceptive 6G-RAN architecture comprising the MultiX Perception System (MPS), the MP6R Controller and the Data Access and Security Hub (DASH) to showcase the future of autonomous systems and non-invasive healthcare:

- PoC 1 (Multi-layer Network Digital Twin for Industrial Manufacturing)** brought the MultiX vision of an intelligent, self-aware factory floor validating how a Multi-layer Network Digital Twin can let collaborative robots sense and adapt to a changing industrial environment in real time leveraging sensing information. Building on a reference scenario where a mobile robot must reroute around an unexpected obstacle to reach its stationary counterpart, the team integrated environmental and radio-awareness sensing, network-level adaptation, and Digital-Twin-driven path replanning into a working end-to-end pipeline. Early results are encouraging: the system already achieves high positioning accuracy in the large majority of cases, with sensing-to-result latency well under the target threshold.



- PoC 2 (Contact-free eHealth Monitoring at Home)** pushed forward the MultiX vision of contact-free, privacy-preserving health monitoring at home, showing how Integrated Sensing and Communication can turn an ordinary wireless link into a source of vital health insight without wearables or cameras. Across this period, the team realized the first integration and validation targeted for this use case: precise indoor localisation and motion tracking, respiration and vital-sign estimation, and human presence detection running alongside a high-speed data link, all converging into a single perception-and-service framework. The results show respiration estimates reaching a high correlation against reference measurements and human presence detected with high reliability. Moreover, initial results also show mmWave communication links sustaining a high throughput with zero packet loss while simultaneously tracking people in the room.



Beyond these PoC headline results, several partners drove specific advances within the two PoCs integrating MultiX technologies, summarized below.

- UC3M (PoC 1):** The Universidad Carlos III de Madrid (UC3M) demonstrated cutting-edge network-assisted navigation using a Unitree Go2 quadruped robot. Reusing 60 GHz mmWave communication signals (via MikroTik devices) to analyze Channel State Information (CSI) reflections, the system detects and classifies unrecognized obstacles (like a Turtlebot or a human) without relying on active robot cameras. An NVIDIA-powered AI Support Vector Machine (SVM) classifier runs on edge hardware to instantly update a real-time Digital Twin replica hosted in NVIDIA Isaac Sim, allowing the robot dog to dynamically recalculate its path and navigate safely.
- i2CAT (PoC 1 & PoC 2):** The i2CAT Research Centre demonstrated three major integration milestones: a Smart Sensor Selection, that dynamically activates the optimal subset of sensors on a mobile robot to maximize battery life without compromising tracking accuracy, the fusion of satellite data with 5G positioning for ultra-reliable, low-latency robot navigation and teleoperation, and a contact-free e-Health system that utilizes onboard radar and cameras to monitor vital signs safely and non-intrusively, even in total darkness.
- IMDEA Networks (WP4 - Experimental Platforms):** IMDEA released the technical design and video demonstration of HELIX, an experimental, real-time ISAC-ready platform. HELIX serves as a key hardware-software foundation for WP4 and will power the upcoming validation stages of our contact-free e-health monitoring setup (PoC 2).

If you want to know more, watch our videos on our YouTube Channel: [MultiX-6GProject](#).

MultiX Plenary Meetings

To maintain our technical momentum, the 17 European partners of the MultiX consortium gathered for two key plenary sessions during this semester:

- **Heidelberg Plenary Meeting** (In-Person): From February 10-12, [NEC Laboratories Europe](#) hosted the consortium in Heidelberg, Germany. These three days of face-to-face collaboration focused on technical deep dives into ISAC testbeds, hardware integration, and aligning our work packages to streamline the transition from theoretical models to experimental validation.
- **Mid-Year Online Plenary Meeting** (Virtual): In mid-June, fresh off our successful showcases at ICC and EuCNC, the consortium gathered virtually to turn community feedback into immediate research actions. The agenda focused on synchronizing our core architectural pillars (including the MultiX Perception System (MPS) and the DASH exposure platform) and refining our TRL 4-5 testbeds for both industrial manufacturing (PoC 1) and e-health (PoC 2).

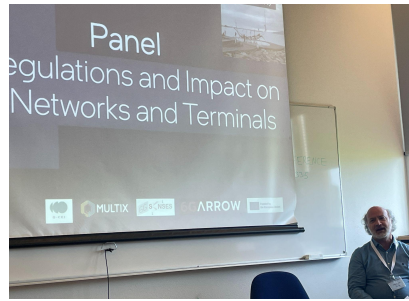


Regulatory & Research Spotlight:

Navigating EU Regulations in 6G: Aligning Engineering with European Legal Frameworks

Technical design does not happen in a vacuum. As 6G networks transition from theory to real-world deployment, understanding the complex European regulatory landscape is essential. To address this, Dr. Valerio Frascolla (Intel) organized and chaired the panel "[EU Regulations and Their Impact on 6G Networks and Terminals](#)" at the [6th International Workshop on Real-life Modeling in 5G/6G Networks and Beyond \(#REFRESH2026\)](#).

The workshop, held on June 22–24, 2026, in Reykjavik, Iceland, was co-organized by MultiX alongside sister EU-funded projects 6GARROW, O-CEI, and 6G-SENSES, as part of the [DCOSS-IoT 2026](#) conference.



During the session, attended by key industry and academic experts, Dr. Frascaola presented the direct impact of European regulations, including the AI Act, Data Act, Cybersecurity Act, and Cyber Resilience Act (CRA), on system design activities. This was followed by an open discussion featuring Dr. Fabian Götsch and Dr. Akis Kourtis, PhD as panelists, helping engineers and 6G technical experts bridge the gap between compliance and technological innovation.



Featured Scientific Publications

During this semester, the MultiX consortium partners have been incredibly active in disseminating technical breakthroughs at top-tier international journals and conferences. Our research spans Integrated Sensing and Communications (ISAC), Edge AI, O-RAN resource orchestration, and robotic navigation:

- **Best Paper Award!** J. Sanson, R. Shah, V. Frascaola, "[Human Presence Detection via Wi-Fi Range-Filtered Doppler Spectrum on Commodity Laptops](#)," in IEEE WiSense: 3rd International Workshop on Pervasive Wireless Sensing and Edge Computing (Wisense) at IEEE PerCOM 2026, Pisa, Italy.
- Jacopo Pegoraro, Gianmaria Ventura, Dario Tagliaferri, Andrea Bedin, Michele Rossi, Marco Mezzavilla, and Joerg Widmer, "[Toward multiband sensing in FR3: frequency anisotropy characterization and non-contiguous bands aggregation algorithms](#)," in Wireless Technology, 2026
- Langtian Qin, Ian Andrew Harshbarger, Leïla Nasraoui, Carla Fabiana Chiasserini, Marco Levorato, "[OMNIS: Semantic RAN Slicing via Dynamic Split Neural Networks](#)," in IEEE INFOCOM 2026
- Marco Palena, Jose A. Ayala-Romero, Andres Garcia-Saavedra, Carla Fabiana Chiasserini, "[SPIFF: Selective Preservation of Image Fidelity for Bandwidth-constrained Heterogeneous Networks](#)," in IEEE INFOCOM 2026
- Francesco Malandrino, Giacomo Di Giuseppe, Marco Levorato, Carla Fabiana Chiasserini, "[Achieving Machine Learning Dependability Through Model Switching and Compression](#)," in IEEE Transactions on Mobile Computing, 2026

- Francesco Malandrino, Gustavo De Veciana, Carla Fabiana Chiasserini, "[TIDE: Task-driven DNN Training and Splitting for Efficient Inference at the Mobile Edge](#)," in IEEE International Conference on Machine Learning for Communication and Networking (ICMLCN) 2026
- Arnau Romero, Carmen Delgado, Jana Baguer, Raúl Suárez, Xavier Costa-Pérez, "[Enhancing cellular-enabled collaborative robots planning through GNSS data for SAR scenarios](#)," in Computer Communications, 2026
- Rayón Roper, L., De Laet, J., Lemic, F., Sabater Nácher, P., Nisar Bhat, N., Abadal, S., Famaey, J., Alarcón, E., & Costa-Pérez, X., "[Towards Emotion Recognition with 3D Pointclouds Obtained from Facial Expression Images](#)," in IEEE Transactions on Affective Computing, 2026
- Neco Villegas, Juan Luis Herrera, Luis Diez, Domenico Scotece, Luca Foschini, Ramon Agüero, "[ISAC-Assisted DRL for Dynamic MAC Scheduler Reconfiguration in O-RAN](#)," in IEEE Open Journal of the Communications Society, 2026
- Neco Villegas, Ana Larrañaga-Zumeta, Luis Diez, Katerina Koutlia, Sandra Lagén, Ramón Agüero, "[Lyapunov-Based PDU Set-Aware Scheduling for XR Traffic in 5G-Advanced Networks](#)," in Proceedings of GLOBECOM 2025 (published early 2026)
- Fátima Khan, Óscar Gil, Luis Diez, Elena Serna, Ramón Agüero, "[On the delay of O-RAN Fronthaul: A methodology based on Generalized Jackson Networks](#)," in Proceedings of GLOBECOM 2025 (published early 2026)
- Muhammad Awais Jadoon, Sebastian Robitzsch, "[Architectural Enhancements for Efficient Sensing Data Utilization in 6G ISAC](#)," in IEEE ICC, WS21: 6GArch: The 5th Workshop on 6G Architecture, 2026
- Salil Sharma, Syed Waqas Haider Shah, Jesus O. Lacruz and Joerg Widmer, "[DFT-Based Spectral Precoding for Scalable Unique-Word OFDM](#)," in IEEE Communications Letters, 2026
- Y. Zhu, R. Shah, U. Parker, V. Frascolla, "[Interference Leakage Impact on Monostatic mmWave Sensing: OFDM vs FMCW Performance with Practical 40 dB Isolation at 60 GHz](#)," in EuCNC 2026, Málaga, Spain.
- Rafael Ruiz, Marco Canil, Jesus O. Lacruz, Joerg Widmer, "[Demo: ISAC Real-Time Experimentation Platform](#)," in The 24th ACM International Conference on Mobile Systems, Applications, and Services (MobiSys 2026)
- Y. Zhu, R. Shah, V. Frascolla, "[OFDM-Based mmWave Wi-Fi ISAC System Implementation for Monostatic Human Sensing](#)," in Proc. of the 20th European Conference on Antennas and Propagation (EuCAP) 2026, Dublin, Ireland
- P. Picazo-Martínez, C. Barroso-Fernández, A. Calvillo-Fernandez, M. Groshev, C. J. Bernardos, A. de la Oliva, A. Mourad, "[802.11bf Multiband Passive Sensing: Reusing Wi-Fi Signaling for Sensing](#)," in IEEE Internet of Things Journal, 2026.
- C. Barroso-Fernández, A. Zahir, P. Picazo-Martínez, A. de la Oliva, C. J. Bernardos, "[AI as a Service for Intelligent Mobile Networks: Extending Network Data Analytics Functions](#)," in IEEE Communications Standards Magazine, 2026.

- Z. Zhao, D. Brevi, M. Levorato, F. Malandrino, C. Pastrone, C. F. Chiasserini, "[ADEx: Adaptive Early Exit DNNs for Inference Robustness to Popularity Drift](#)," in IFIP NETWORKING (Submitted for publication), 2026.
- C. Barroso-Fernández, A. Calvillo-Fernández, A. de la Oliva, C. J. Bernardos, "[FAWN: A MultiEncoder Fusion-Attention Wave Network for Integrated Sensing and Communication Indoor Scene Inference](#)," in IEEE Wireless Communications Magazine, 2026.
- F. Malandrino, G. De Veciana, C. F. Chiasserini, "[TIDE: Task-driven DNN Training and Splitting for Efficient Inference at the Mobile Edge](#)," in IEEE International Conference on Machine Learning for Communication and Networking (ICMLCN) 2026.
- Gianmaria Ventura, Michele Rossi, Jacopo Pegoraro, "[AsyMov: Integrated Sensing and Communications with Asynchronous Moving Devices](#)," in IEEE Transactions on Wireless Communications, 2026
- Y. Zhu, R. Shah, M. Pinaroc, V. Frascolla, "[AI-Driven Human Wi-Fi Sensing with Hierarchical Architecture and Breathing Detection](#)," in IEEE WiSense 2026, Pisa, Italy.
- J. Sanson, R. Shah, Y. Zhu, R. Rosales, V. Frascolla, "[Wird-gest: gesture recognition in the real world using active range-doppler Wi-Fi sensing COTS hardware](#)," in IEEE International Conference on Communications (ICC) 2026, Glasgow, UK
- J. Sanson, R. Shah, M. Pinaroc, C. Tanriover, V. Frascolla, "[LiveSense: A Real-Time Wi-Fi Sensing Platform for Range-Doppler on COTS Laptop](#)," in IEEE International Conference on Pervasive Computing and Communications (PerCOM) 2026, Pisa, Italydf
- Zaman Bhalli, Michele Rossi, Joerg Widmer, Marco Canil, "[Estimating Target Doppler in Unsynchronized Multistatic ISAC Deployments with Mobile Nodes](#)," 2026.

★ Shaping the European 6G Landscape

Driving Standards and Industrial Synergies: Landmark White Papers and Strategic Roadmaps

MultiX's influence goes far beyond physical testbeds, actively steering the conceptual and standard-ready architecture of future European networks:

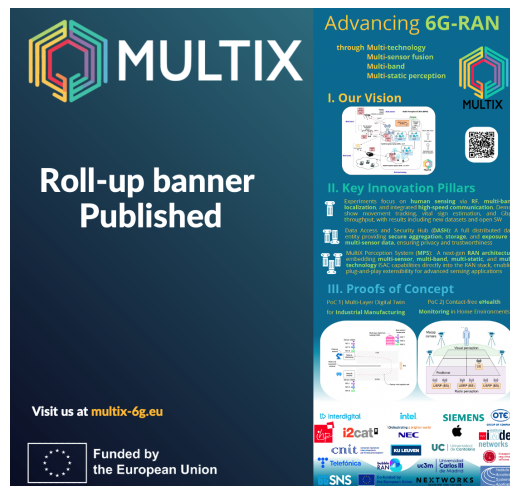
- **SNS JU 6G Architecture White Paper:** MultiX consortium partners (including UC3M, NEC Laboratories Europe, InterDigital, and others) served as core editors and contributors to the landmark Smart Networks and Services Joint Undertaking (SNS JU) Working Group white paper: "[Towards 6G Architecture: Key Concepts, Challenges, and Building Blocks](#)". The document establishes the system blueprints, AI-driven communications, and native Integrated Sensing and Communication (ISAC) paradigms that will define next-generation networks heading into the 2030s.
- **SNS-6G-IA & 5G-ACIA Roadmap:** We are driving vertical synergies for smart manufacturing. In collaboration with the 5G-ACIA, MultiX contributed to the development of a joint strategic roadmap and white paper, integrating ISAC/JCAS requirements directly into the SNS WP2026 draft for experimental infrastructure.



Multimedia & Outreach

Spreading the MultiX Vision Across Channels

- **The MultiX Podcast:** In collaboration with the SNS CO-OP, we launched a dedicated podcast episode titled "**Challenges and promises of Integrated Sensing and Communications (ISAC) for 6G: from lab to live deployments**". Available on [Spotify](#) and major social media platforms, the episode dives into multi-sensor fusion, technical deployment hurdles, and our roadmap for transforming wireless networks into distributed sensing platforms.
- **New Visual Identity:** In May, the consortium rolled out the new official MultiX roll-up banner, enhancing our visual identity and physical presence at international conferences and industrial workshops.



Stay Connected!

Don't miss any updates on our journey to redefine 6G. Follow us on your preferred platform:

- **Website:** <https://multix-6g.eu/>
- **LinkedIn:** [MultiX-6G](#)
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- **Mastodon:** [@MultiX6GProject](#)
- **Bluesky:** [@multix-6gproject.bsky.social](#)
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