MULTIPLY 6G

Multidimensional wave and space-level optimization for energy efficient communications and sensing

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Co-funded by the European Union

6GSNS

C2 General

- **Project Duration (36 months)**

  01 June 2026 – 31 May 2029

- **Project Funding (€ 6,673,489.75)**

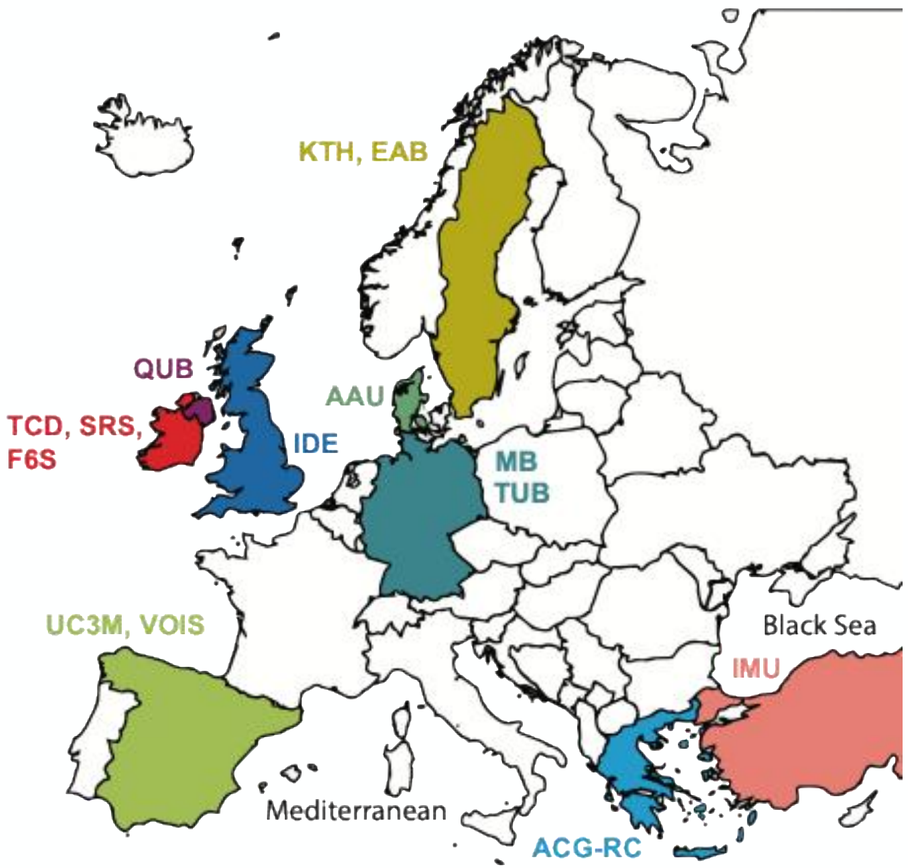
- **Project Consortium (14 partners)**
  - Coordinating Organization – Trinity College Dublin (TCD)

- **Project scope:** MULTIPLY-6G develops *waveform processing, MAC/RRM and O-RAN solutions* that apply seamlessly across both near-field and far-field regimes, ensuring broad relevance and *backward compatibility*.

  https://multiply-6g.eu

Consortium

Partners	Country
TCD (Coordinator)	IE
IMU	TY
TUB	DE
ACG-RC	GR
KTH	SE
UC3M	ES
AAU	DK
QUB	UK
VOIS	ES
MB	DE
IDE	GB
SRS	IE
F6S	IE
EAB	SE



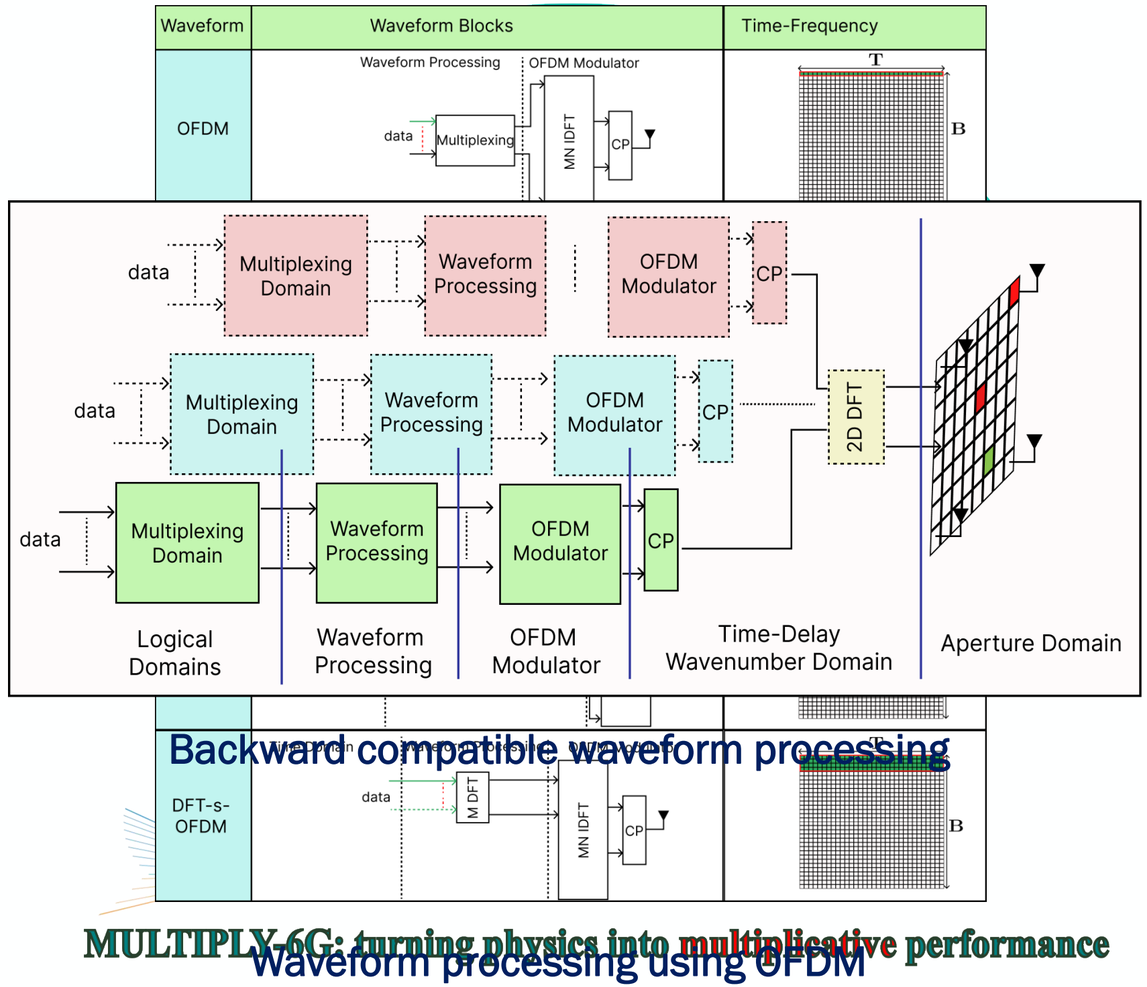
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MULTIPLY-6G: Mission

- To unlock multiplicative gains in
  - Energy efficiency
  - Spectral efficiency
  - Communication capacity
  - Millimetre-level sensing resolution

Combining spatial degrees of freedom and waveform degrees of freedom



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MULTIPLY-6G Goals

- **Multi-dimensional waveform Processing**
  Backward-compatible waveform processing techniques built on existing 5G-NR
- **Energy-efficient XL-MIMO & ISAC**
  Near-field channel estimation, multi-beam focusing, passive/distributed ISAC and secure spatial multiplexing
- **Low-complexity antenna hardware**
  Metasurface, fluid-antenna and CAP-MIMO
- **AI-native MAC/RRM mechanisms**
  Multidimensional scheduling, joint code-angle random access, interference management and cell/network energy-saving mechanisms
- **O-RAN-enabled software & control**
  Integration of waveform, MIMO, MAC/RRM and ISAC functions into O-RAN architecture
- **Algorithms, software and hardware**
  Modular testbeds and simulation toolbox

Scenarios and Use Cases

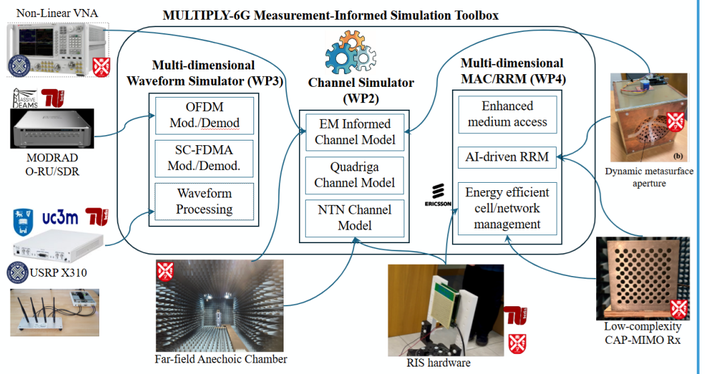
Scenario type

Outdoor · Mobility · Indoor · Static

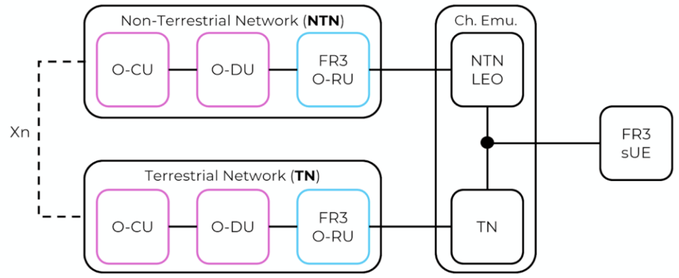
- **UC1** Urban Air-Taxi Corridor
- **UC2** Immersive XR Arena
- **UC3** Autonomous Urban Intersection
- **UC4** Energy-Aware Smart Factory
- **UC5** Hybrid TN/NTN Rural Coverage
- **UC6** Rapid-Deployment Disaster Cell

System Validation and PoC

- **Measurement-Informed Simulation Toolbox**



- **TN–NTN Coexistence in FR1/FR3**



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