

Introduction

As Europe is still negotiating its path towards 5G deployment, 6G remains a land of endless possibilities. X-TREME 6G aims to harness those possibilities, and to contribute towards a networkcentric democratized and open 6G ecosystem able to release the current hyperscaler's market embrace, while empowering European Industry at large.

Project description

X-TREME 6G relies on a unique industry-led consortium to provide a foundational open microelectronics platform in Europe with the objective to create and design key disruptive next generation chiplets and chipsets for 6G use cases. The idea is to break-up the full potential of best-in-class Silicon BiCMOS, InP and heterogeneous 3D integration for high capacity radio access technologies such as wireless back-hauling at sub-TeraHertz frequencies, Joint Communication And Sensing, Non Terrestrial Networks and Network as a Sensor. Part of the SNS "Microelectronics LightHouse" visionary initiative, the proposal's ambition is to establish and maintain a sustainable open platform for the duration of the SNS program and beyond, to support 6G verticals.

In a nutshell, X-TREME 6G will provide tangible contributions towards an experimentation EU framework for 6G ; while dynamically supporting the emerging 6G ecosystem and evaluate additional 6G challenges and expectations.

SDG contributions



Start

01.01.2025

Duration

42 months

EU funding

EUR 9.9 M

Funding project

SNS JU

Topic

**telecommunications and
microelectronics**

Key words

**6G, telecommunications,
microelectronics,
chiplets, chipsets,
BiCMOS, InP, radio
frequencies, microwaves,
wireless back hauling,
JCAS, NaS, NTN, ML/
AI, Microelectronics
Lighthouse, Industry**

X-TREME 6G project has received fundings from the Smart Networks and Services Joint Undertaking (SNS JU) under the Horizon Europe research and innovation programme under Grant Agreement NO 101192681



**Co-funded by
the European Union**

6G SNS



Expected impact

- ▲ Validation/demonstration of 6G candidate microelectronics technologies and systems as part of a representative end-to-end 6G architecture.
- ▲ Exploitation of the results and momentum of the EC 5G Infrastructure PPP ICT-42 COREnect CSA project.
- ▲ Validation/demonstration of the performance of key 6G candidate HW solutions, technologies, components, and architectures operating across various frequency bands.
- ▲ Integration of key 6G related Chips JU developments
- ▲ Validation/demonstration of the feasibility of "better than 5G / 5G Advanced" KPIs, related indicatively to capacity, ubiquity, speed, latency, reliability, density of users, location accuracy, energy efficiency, security, service creation time, network management CAPEX/OPEX.

Expected Results

- ▲ SiGe HBT BiCMOS55x fabrication process
- ▲ InP HBT fabrication process
- ▲ Novel radio systems and components in the THz bands
- ▲ New radio interfaces, including LoS-MIMO and IBFD
- ▲ Efficient models designed for HW implementation in baseband applications
- ▲ Novel RISC-V processor architectures accommodating 6G BB functionality
- ▲ ML/AI algorithms for JCAS, SATCOM, NaS
- ▲ End-to-end data ingestion pipeline for NaS platform Open 6G testbeds for experimentation
- ▲ RF & mmW 3D Integration process at Pre-industrial maturity

Target groups

- ▲ Telecommunications system integrators and operators
- ▲ Semiconductor chip manufacturers and designers
- ▲ Tier 1 automotive OEMs for connectivity and radar components
- ▲ Optical fiber communications industry
- ▲ Satellite system or sub-system manufacturers

Consortium

ST Microelectronics, Nokia, III-V Lab, KIT, Fraunhofer IZM, CEA-Leti, DTU, Universite de Bordeaux IMS, University of Patras, p-NET, Orange, IMST, ETH Zurich, Argus Space, POLIMI, ABIMI

Contacts

COORDINATOR

Didier Belot

ST Microelectronics
didier.belot@st.com

COMMUNICATION AND DISSEMINATION MANAGER

Raphael Denneulin

ABIMI
denneulin@amires.eu

INNOVATION MANAGER

Mohand Achouche

Nokia
mohand.achouche@nokia.com

X-TREME 6G project has received fundings from the Smart Networks and Services Joint Undertaking (SNS JU) under the Horizon Europe research and innovation programme under Grant Agreement NO 101192681



Co-funded by
the European Union

6G SNS

WWW.X-TREME6G.EU



Website



LinkedIn