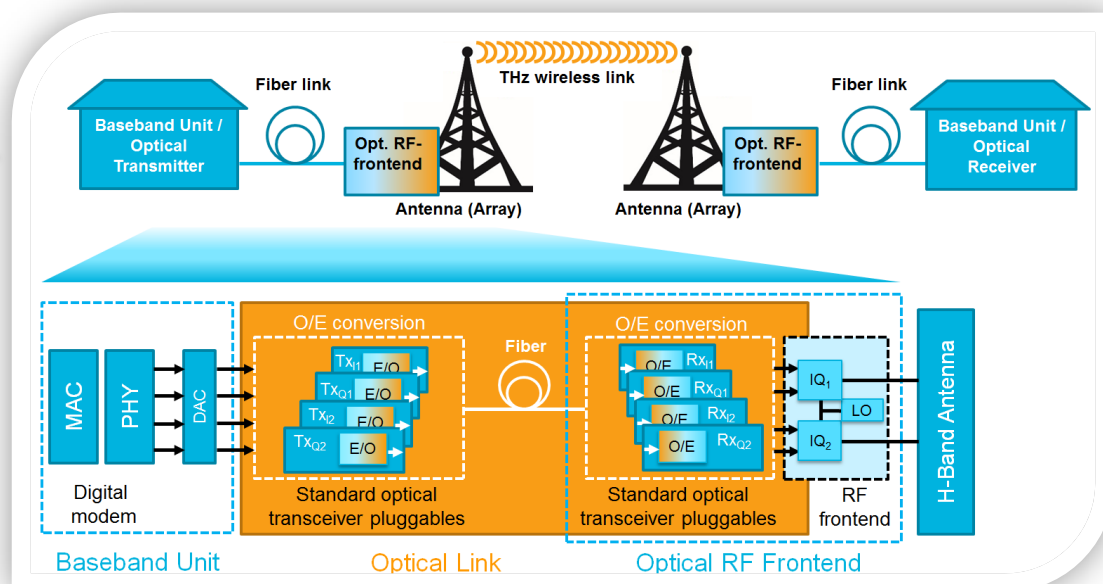# TERRANOVA

TeraBit Wireless Connectivity by TeraHertz Innovative Technologies

"Deliver optical network quality of experience in systems beyond 5G"

Concept

TERRANOVA envisions to extend the fiber-optic systems' Quality of Experience to wireless links.

- Reliable connectivity
- Tbps data rates
- Near 'zero latency'
- Frequencies > 275 GHz

Tbps capable devices and interfaces

THz wireless access and backhaul networks

E2E optimized THz system architecture

The consortium will employ breakthrough technology concepts for networks beyond 5G

- Baseband signal processing for the complete optical and wireless link
- THz wireless frontends and their integration with photonic components
- THz network information theory framework, caching techniques, channel & interference models
- Higher-order modulation schemes, pencil beam antenna arrays and multiple-access schemes

Applications

TERRANOVA will act as enabler for a vast range of future applications in beyond 5G systems. The usage scenarios can be categorized based on their critical performance metrics all with the common requirement of Tbps rate.

- THz wireless backhauling
- Picocell access networks
- Intelligent transport and industry 4.0
- Ultra-dense indoor/office applications
- Virtual presence & 3D printing

THz wireless access and backhaul links

Digital production and data centers

Ultra-dense applications
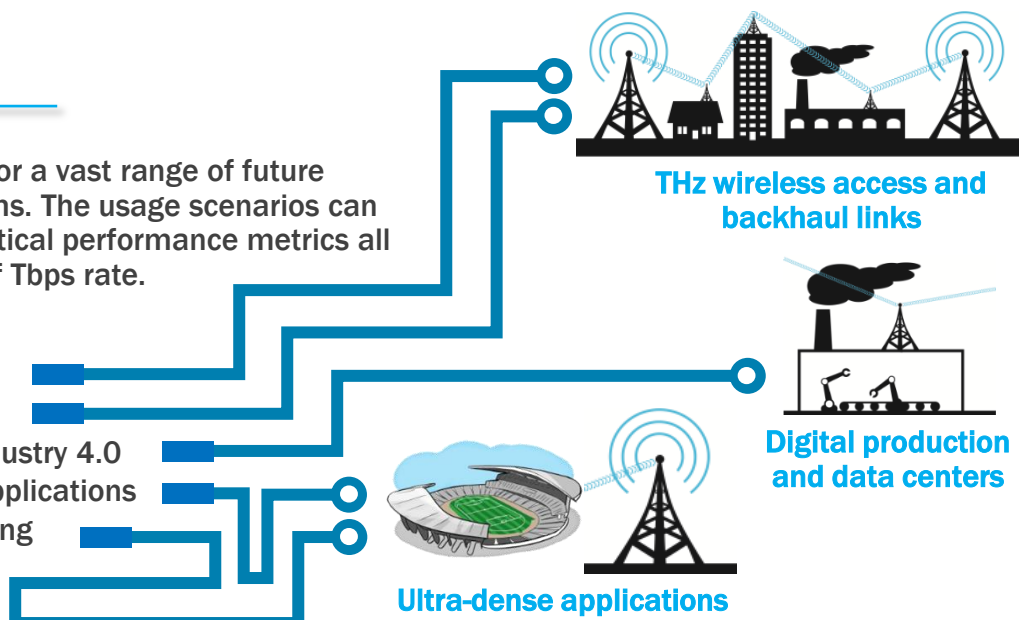
Tbps wireless connectivity
Co-design of signals, codes and protocols
Co-design of optical and THz wireless

Consortium

7 partners from 5 different EU countries with complementary skills in

- THz / photonic integrated circuit design and manufacture
- Baseband design and advanced digital signal processing
- Mobile / optical communication system design and modeling
- Information theoretical analysis and network resource management
- Application and business development

Project Figures

Project start:
1st July, 2017

Duration:
30 months

Total funding:
€2,996,775.00

Large Industry Partners:
Intracom Telecom & Altice Labs

Small/Medium Enterprises:
JCP Connect & PICAdvanced

Universities:
University of Piraeus & University of Oulu
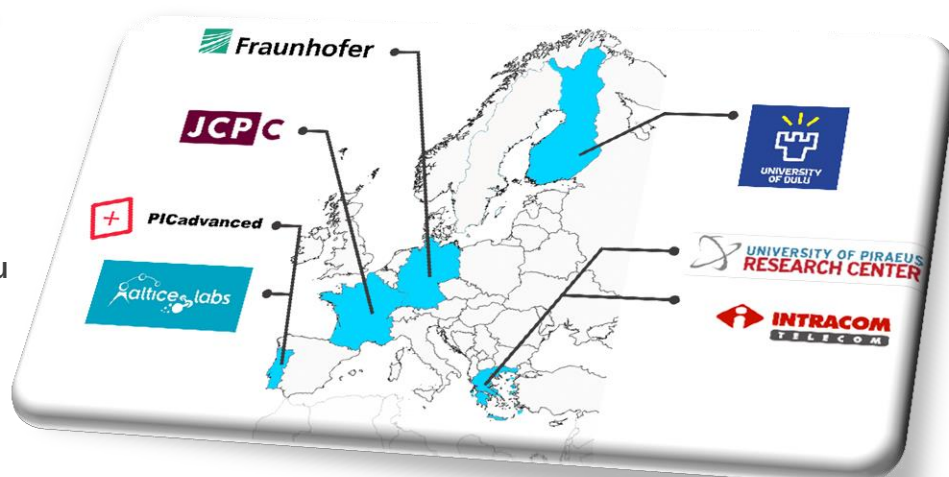
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