

Dynamically Reconfigurable Optical-Wireless Backhaul/Fronthaul with Cognitive Control Plane for Small Cells and Cloud-RANs (5G-XHaul)

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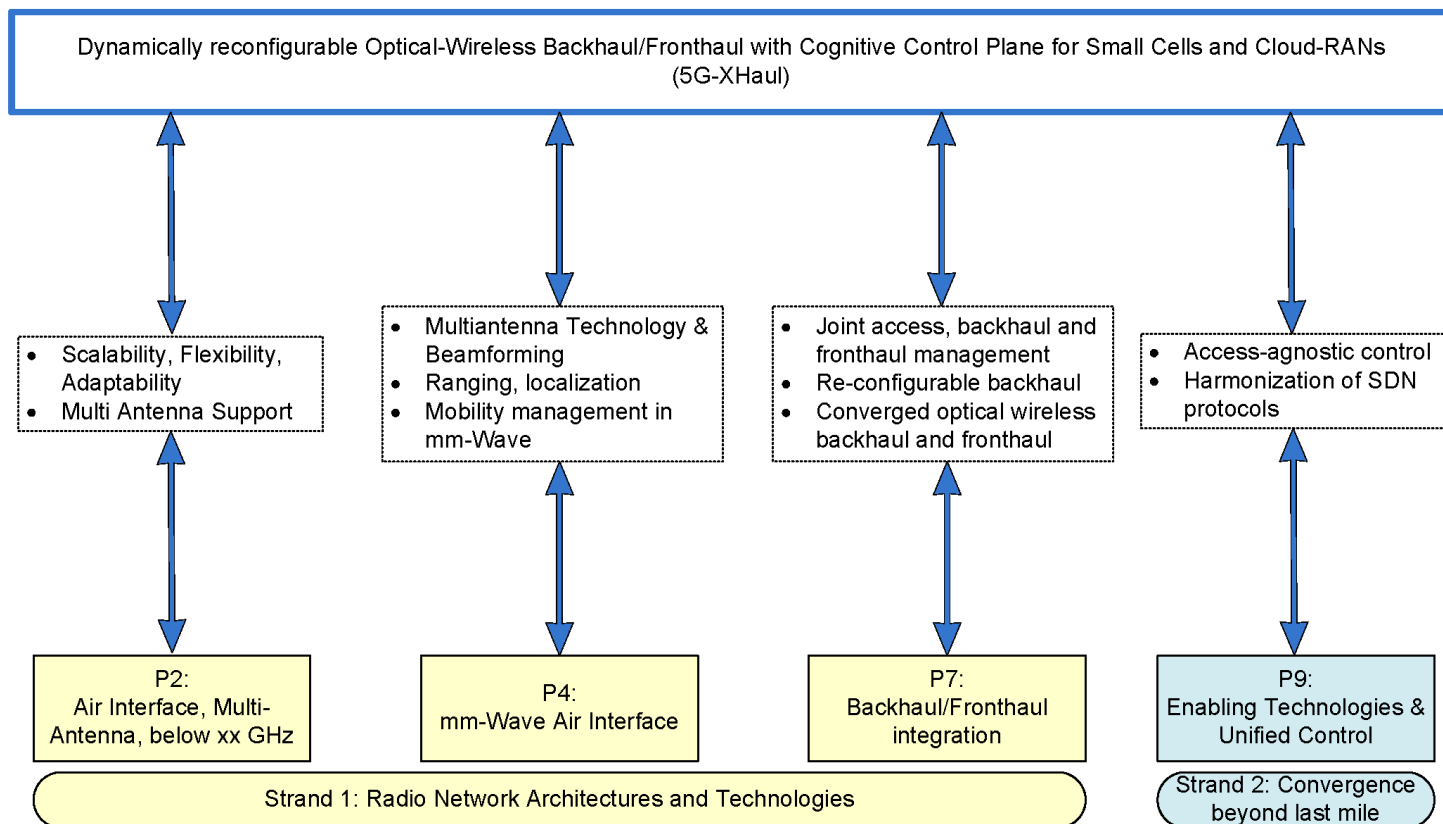
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- (10) *TES Electronic Solutions, Germany*
- (11) *University of Bristol, UK*
- (12) *University of Thessaly, Greece*

Outline

- Introduction and Consortium Members
- Project Objectives and Goals
- Project Timeline and Cooperation
- Upcoming events

Introduction

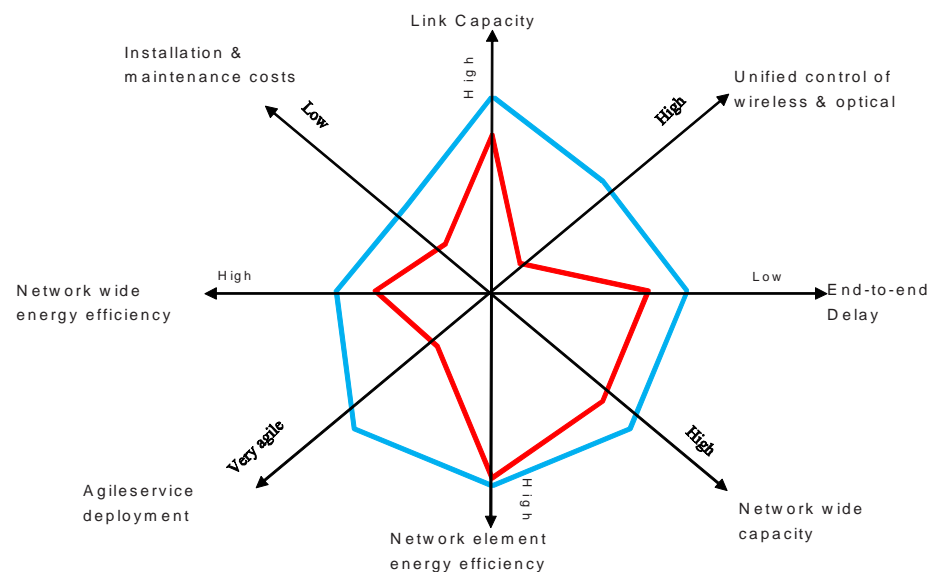
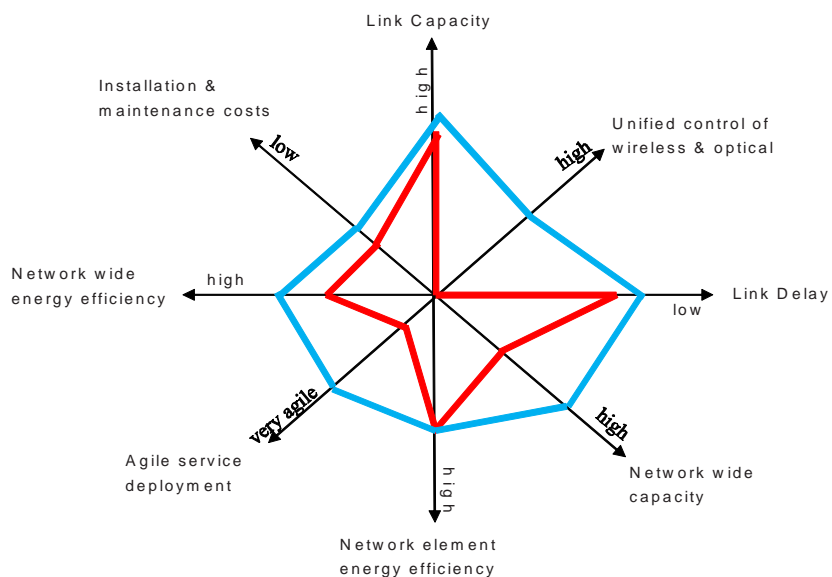
- Reconfigurable backhaul/fronthaul network, which aims to contribute to the 5G transport network.
- Able to transport legacy RANs as well as future 5G RANs
- Heterogeneous contributions, openness to collaboration with other projects



Introduction

- Main concepts:
 - Programmable optical and wireless network elements
 - SDN architecture, Control Plane logically centralized, Scalable
 - Cognitive Control Plane: Predict and adapt to spatio-temporal demand variations
- Wireless and ...

... Optical enhancements



— Existing solution in the market
 — 5G-XHaul

Consortium Members

- Members

- IHP GmbH (Coordinator)



- ADVA Optical Networking



- Airrays GmbH



- Blu Wireless Technology



- COSMOTE



- Fundació Privada i2CAT, Internet I Innovació Digital a Catalunya



- Huawei Technologies Dusseldorf GmbH



- Technische Universität Dresden



- Telefónica I+D



- TES Electronic Solutions



- University of Bristol



- University of Thessaly



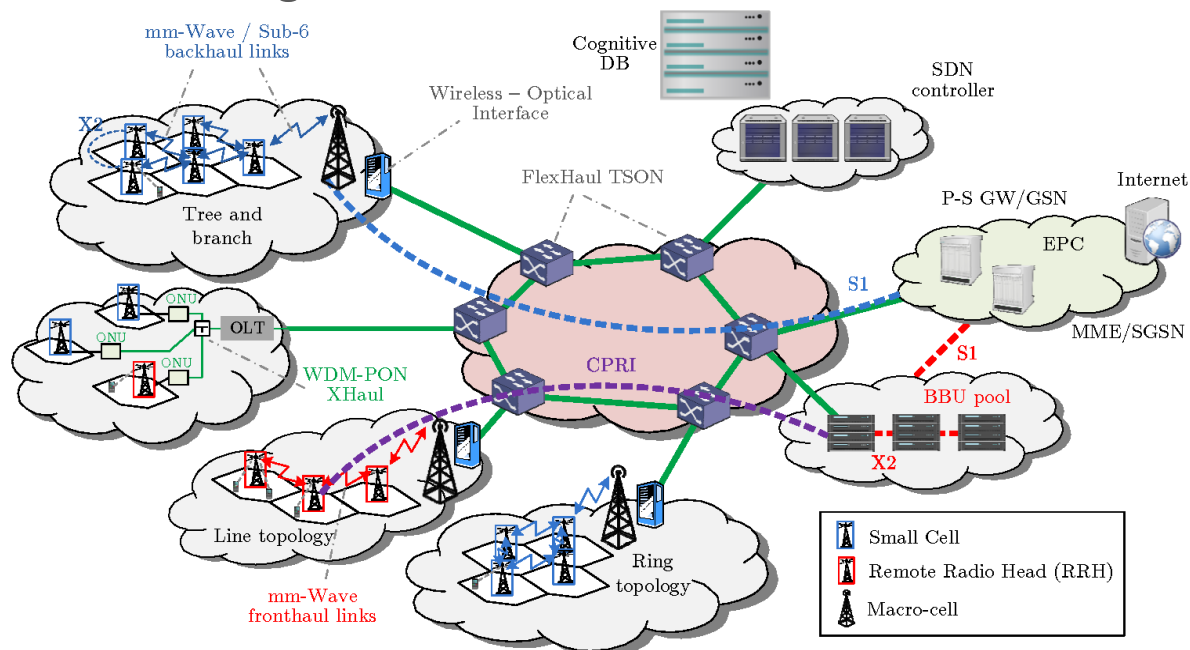
- Universities (3x), Research Institutes (2x), SMEs (2x), Operators (2x), Industry partners (3x)

- Support from:

- Mobile VCE: Requirements definition, Experts support
 - National Instruments Germany GmbH: Training & Consulting, (Pre-) Release Software

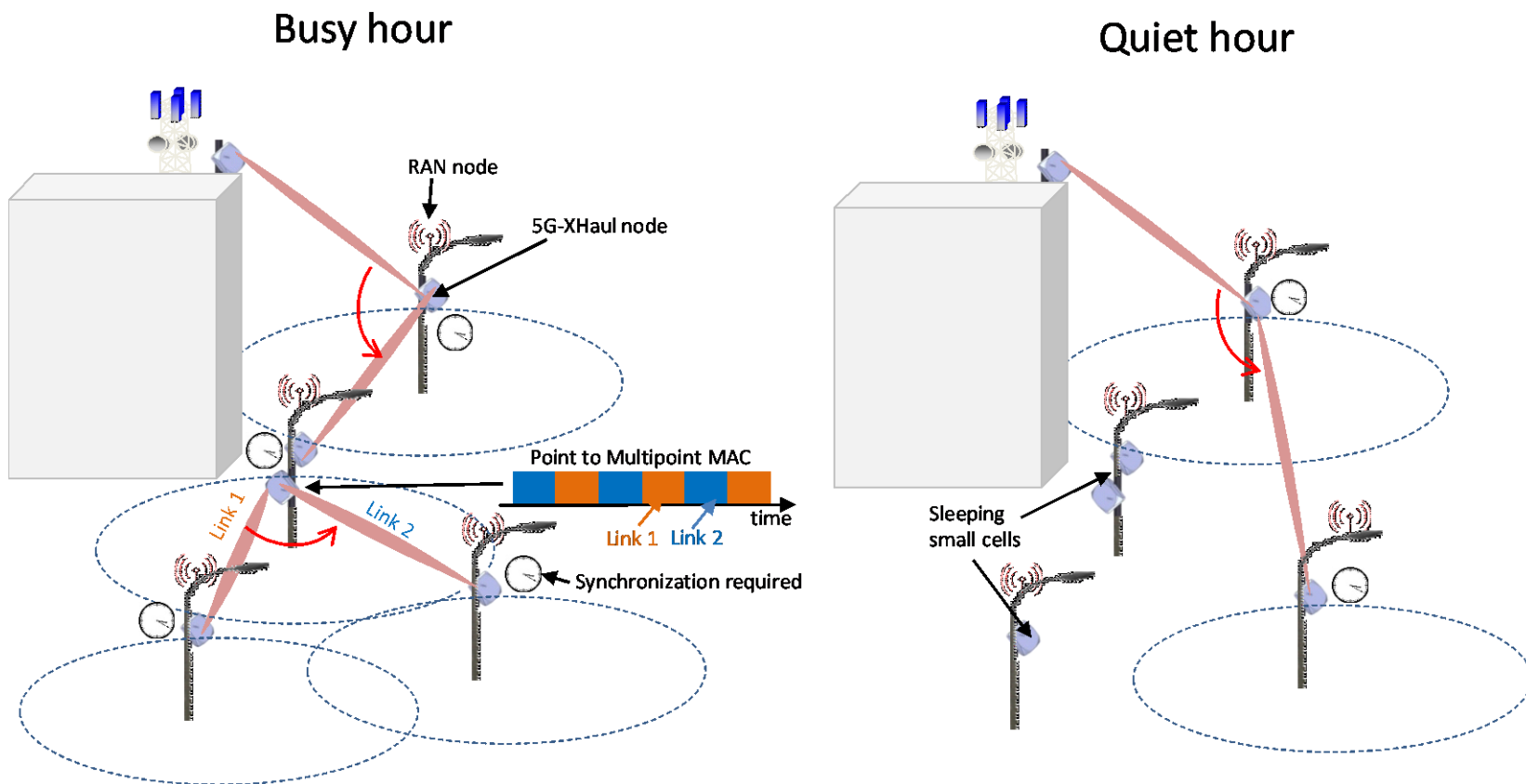
Project Objectives

- Design a flexible backhaul/fronthaul network for serving current and future RAN deployments in a dynamic, service oriented, and cost-effective way
- Enable seamless integration of future-proof technologies in the optical and wireless (Sub-6 GHz, mm-Wave) metro/access domains, through a converged software-based control plane
- Provide a self-consistent transport network design able to operate in a RAN agnostic way. Additionally, 5G-XHaul will make interfaces available to future RAN technologies



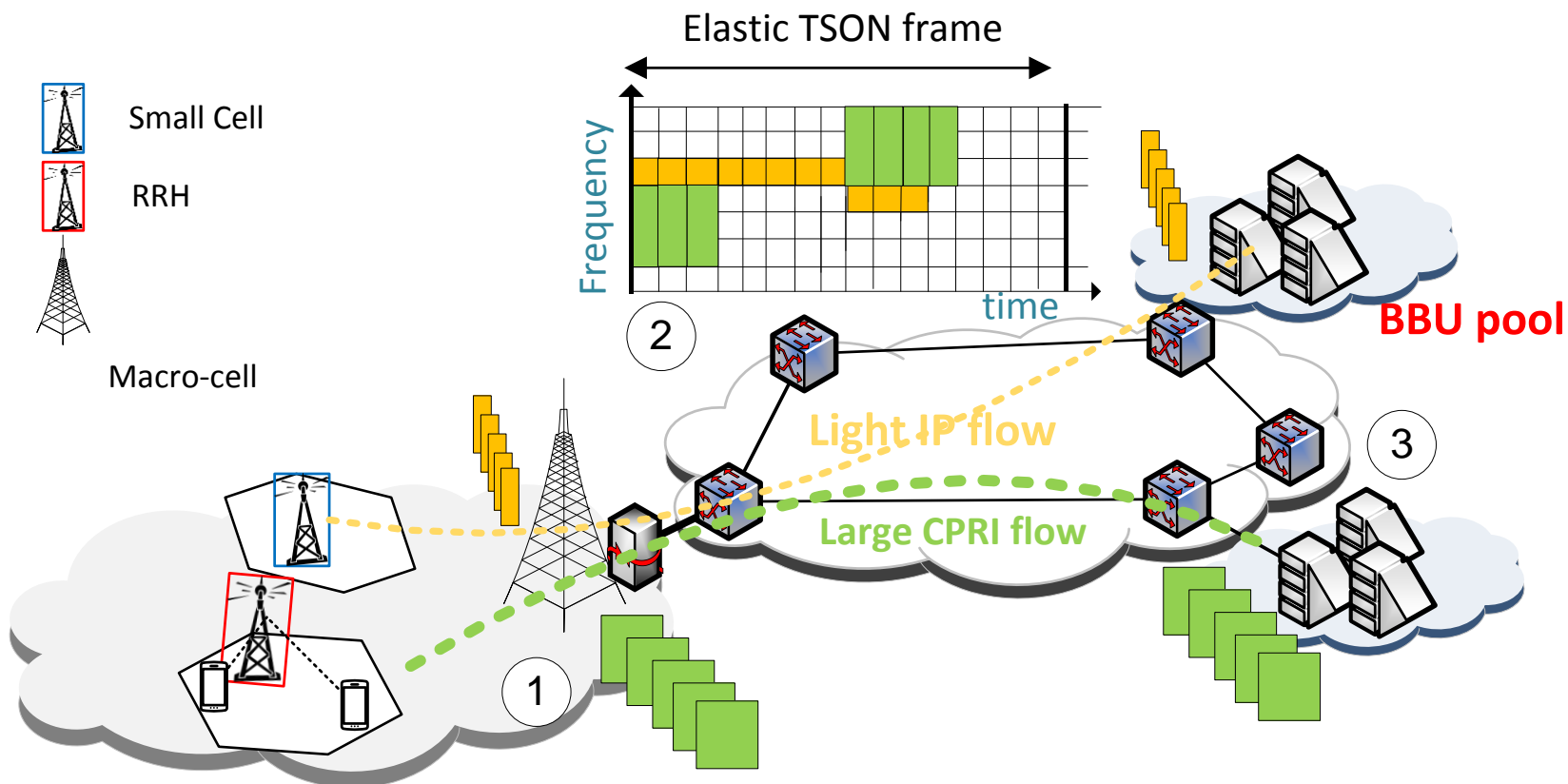
Technical Highlights (1/3)

- Wireless domain: Programmable mm-Wave backhaul



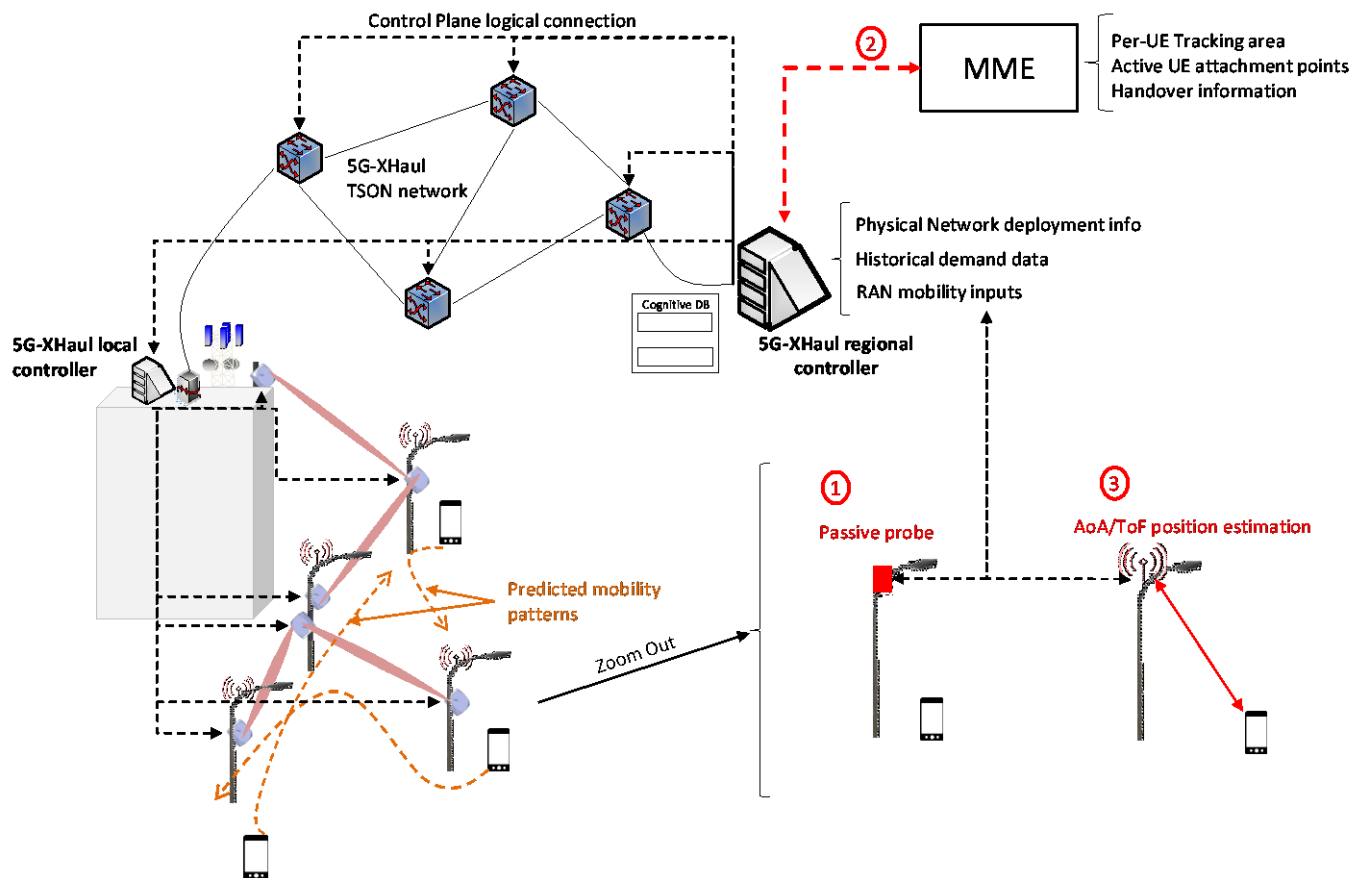
Technical Highlights (2/3)

- Optical domain: Elastic bandwidth allocation with Time Shared Optical Networks (TSON)



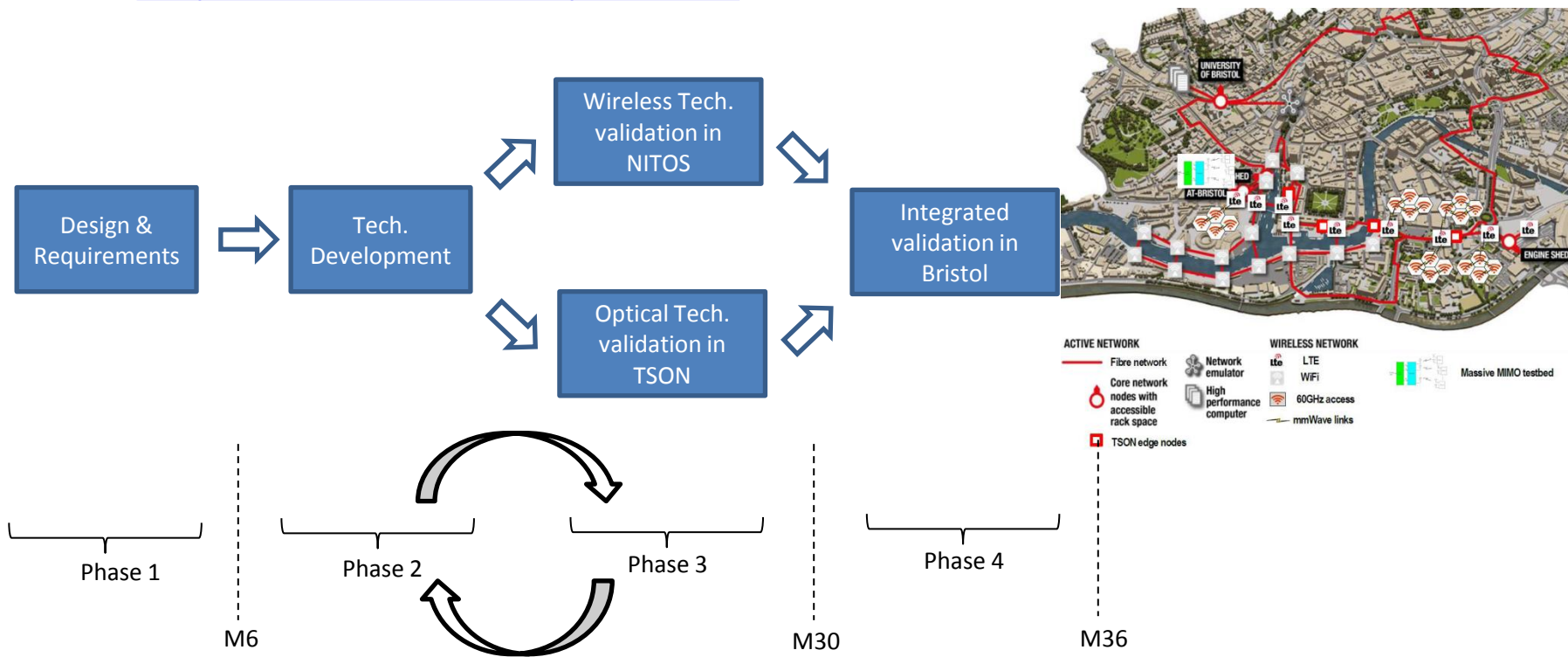
Technical Highlights (3/3)

- Cognitive Control plane:
 - Estimate spatio-temporal demand variations and allocate resources accordingly.
 - Advances interfaces between RAN and transport.



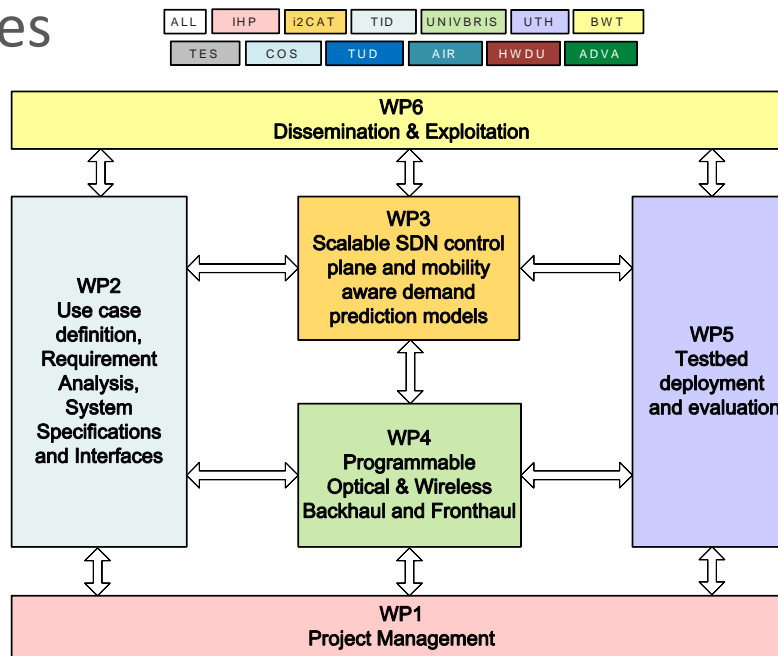
Project Goals

- Integrated demonstrator of 5G-XHaul architecture in a wireless optical testbed in the city of Bristol
- Bristol 5G city testbed with 5G-XHaul extensions (<http://www.bristolisopen.com>)

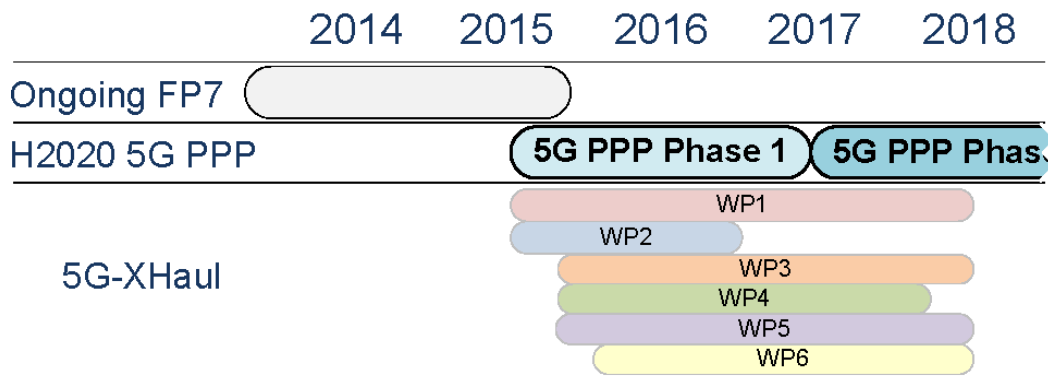


Project WPs and Timeline

- List of Workpackages



- 5G-XHaul within H2020 timeline



Inter-project cooperation

- Current Association Working Groups and Joint Activities structure:

WG 5G Vision and Societal Challenges

• Facilitator: Jean-Sebastian Bedo



WG 5G Architecture

• Facilitator: Simone Redana



WG 5G Pre-standards

• Facilitator: Magnus Madfors



WG Software Networks (SDN,NFV)

• Facilitator: Josep Martrat



WG SME support

• Facilitator: Jacques Magen



WG 5G Spectrum

• Facilitator: Terje Tjelta



Joint Activity:

Community building and Public Relations

Facilitator: Jacques Magen



Joint Activity:

5G International cooperation

• Facilitator: Werner Mohr



Joint Activity:

5G-PPP KPI monitoring and management

• Facilitator: Ingrid van der Voorde



Upcoming events

- ... upcoming dates
 - Project start: **July, 1st**
 - Organization of the Kick-Off Telco: **July 22nd**
 - Organization of the Kick-Off Meeting: **Early September 2015**
- Future expectations
 - Organization of technical workshops: optical/wireless demonstrations
 - Definition of a strategy regarding 5G-XHaul future impacts and project continuation (**~2,5 years**)