



# **Public Consultation on the BEREC Work Programme 2018**

## **EOLO SpA response**



## INTRODUCTION

EOLO welcomes the draft BEREC Work Programme 2018 for its forward-looking character, and thanks BEREC for giving stakeholders the possibility to contribute to refining the Work Programme prior to its final adoption.

Regarding to the third priority (i.e. “Enabling 5G and promoting innovation in network technologies”), EOLO would like to observe that the 5G debate has been completely focused on mobile technology. We fully agree that 5G will be one of the pillars of the “gigabit society” and EU considers fundamental this new paradigm for economic growth and maintenance of global competitiveness. Nevertheless, it is extremely important to highlight that 5G can’t simply be assumed as an upgrade of the mobile networks (i.e. LTE 4G), but must be evaluated as a new paradigm of wireless networks for mobile, nomadic or stationary users, hence including Fixed Wireless Access networks.

Furthermore, EOLO would like to underline the contribution that Fixed Wireless Access (FWA) technology could provide to promote and deploy 5G in those areas (i.e. white areas) where the cost of deploying fiber-based solutions and small cells is neither commercially nor technically feasible.

## ENABLING 5G IN RURAL AND SEMI-RURAL AREAS THROUGH FWA TECHNOLOGY

According to the current literature, the term “5G” generally implies the next major phase of cellular radio communications technology for mobile, nomadic or stationary users<sup>1</sup>. In fact, 5G technology will represent more than a mobile broadband evolution, but will become a core of convergence between different broadband access systems, either wireless or wireline, fixed or mobile.

In the 5GPPP document “View on 5G Architecture”, it is underlined that 5G is a framework that will integrate existing technologies and will support an extremely heterogeneous environment of fixed and mobile networks. The architecture of the 5G networks will be substantially different compared to previous generations and will have to guarantee the expected operating and performance requirements for high capacity networks, especially latency, coverage and reliability.

In this context, EOLO would like to emphasize that even Fixed Wireless Access falls into 5G paradigm and represents the most suitable technology for providing 5G performances in non-dense areas (i.e. rural areas). As a matter of fact, from USA to Asia, 5G FWA represents a technology on which the biggest TLC operators and suppliers are investing and launching different trials.

Hereafter, we would like to briefly list some 5G FWA case studies at worldwide level:

- USA: in 2017, Verizon has started 11 5G FWA trials, using millimeter waves, to develop a fixed wireless product that will deliver a competitive advantage and near-term return on investment; in the pre-commercial phase it has reached “*multigigabit throughputs at radio distances of up to 1,500 feet*”. AT&T is collaborating with more than a dozen global technology companies around 5G standards in order to test 5G FWA using mmWave spectrum.

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<sup>1</sup> *European Leadership in 5G*, Directorate General for Internal Policies, December 2016



- Canada: since the end of 2016, Telus and Huawei have begun a trial on Fixed Wireless Access technologies for 5G services. They achieved a significant breakthrough with the successful completion of a 5G wireless connection using the global 3GPP technology standards platform. The successful pilot demonstrates the potential for 5G technology to deliver Wireless-to-the-Premise (WTTx) connectivity with speeds and reliability necessary to power the smart homes and businesses of tomorrow.
- Japan: Softbank and Ericsson announced a trial for 5G services with FWA technology. The trial is set to take place in Japan's urban areas in order to bring forward standard-based deployments of 5G. Moreover, Huawei and NTT DoCoMo have successfully tested FWA technology for 5G;
- UK: In 2017, Arqiva has launched 5G FWA trial in partnership with Samsung in order to demonstrate the stability of the FWA service, and its potential as a fast-to-market and cost-effective alternative to fibre for connectivity to homes and businesses. The showcase consists of a series of six stations that include an overview of FWA technology and how it works, examples of 5G use cases, demonstrations of 4K UHD and Virtual Reality (VR) content streaming, and a look at possible applications of 5G in the future. The aim of these trials is to show that *"5G FWA is a tremendous opportunity to allow a much greater number of households to access ultra-fast broadband"*;
- Ireland: Imagine and Huawei have created a partnership to offer 5G FWA services up to 200 Mbps; Imagine has affirmed that *"Imagine network will overcome the significant challenges that have impeded the delivery of future proofed high-speed broadband services and meet the government objective"*. Being the Ireland a country with a huge contrast between urban and rural areas in term of network infrastructure, the aim of the trials is to remove the digital divide between urban and rural areas;
- Spain: Mimosa<sup>2</sup> and Aeromax<sup>3</sup> have announced the implementation of a 5G fixed wireless access network on the 5 GHz unlicensed spectrum. Mimosa is working with WISP Aeromax to deploy access, backhaul and client solutions to deliver a new service billed as *"fiber over the air"*. For rural deployments, Mimosa connects access points to towers.

OVUM, in its report *"5G Fixed Wireless Access – Providing fiber speeds over the air while also helping pave the way for full 5G mobility"* has declared that 5G FWA offer to telecommunications operators two principal advantages:

- it allows to offer subscribers fiber-like services,
- it prepares for fully mobile 5G services, at both the RAN and network core levels.

Moreover, AnalysysMason in its report *"5G Fixed–Wireless: the investment case for operators"* has emphasised the economic benefit of 5G FWA, explaining that 5G will not replace existing fixed NGA. The commercial case for competitive 5G FWA will work best where the costs of customer connections or first-hop aggregation for fibre are too high.

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<sup>2</sup> Mimosa Networks develop and commercialize "Hybrid Fiber-Wireless" technologies

<sup>3</sup> Marin Telecom operator is the owner of the Aeromax Broadband Wireless Access (BWA) network



In light of the above-mentioned case studies and reports, EOLO underlines that FWA represents the best ultra-broadband technology for providing 5G services in rural areas, that is “Rural 5G”. In fact, FWA operators can offer fiber-like connectivity, with much lower deployment and maintenance costs and times. This entails a high degree of flexibility and scalability in the network roll-out, making the FWA solution the most suitable for under-served areas.

Furthermore, focusing exclusively on mobile technology, there is a high risk that we will fall back into a new 5G digital divide. Indeed, according to the 5G Action Plan, 5G deployment is only foreseen on urban areas and major terrestrial transport paths. Hence, even in the most optimistic hypothesis of 5G investments in all urban areas and major terrestrial transport, less than 20% of the population would be covered by 5G services within the next 10-15 years.

## CONCLUSIONS

Taking in account all the previous observations on the potentiality of FWA technology and its role within the 5G strategy, EOLO calls on BEREC to promote net neutrality for enabling 5G, by fostering the development of 5G wireless networks, whether mobile and fixed, and promoting FWA as the best candidate technology for “rural 5G”.

## EOLO

EOLO is an Italian WISP that 10 years ago has started one of the most extended fixed wireless networks at worldwide level (fully independent from the Italian incumbent “Telecom Italia”). Today, EOLO network counts more than 260.000 customers and covers 13 Central and Northern Italian Regions with ultra-broadband services up to 30 Mbps in download to residential users and up to 1 Gbps to business customers. EOLO core business is focused in sub-urban and rural areas, where FWA technology has a key role in reducing the BB and UBB digital divide.



Figure 1: EOLO's UBB Coverage



By the end of 2017, EOLO will launch UBB services up to 100 Mbps in download thanks to the deployment of its new EOLO Wave-G network based on licensed frequencies at 26 GHz and 28 GHz.

EOLO's technology allows to supply UBB connectivity services through radio spectrum, without requiring deployment of ducts and cables for the so called "last mile". This assures highly reduced time and cost of deployment compared to wired networks.