



New Code, New Challenges for the Gigabit Society

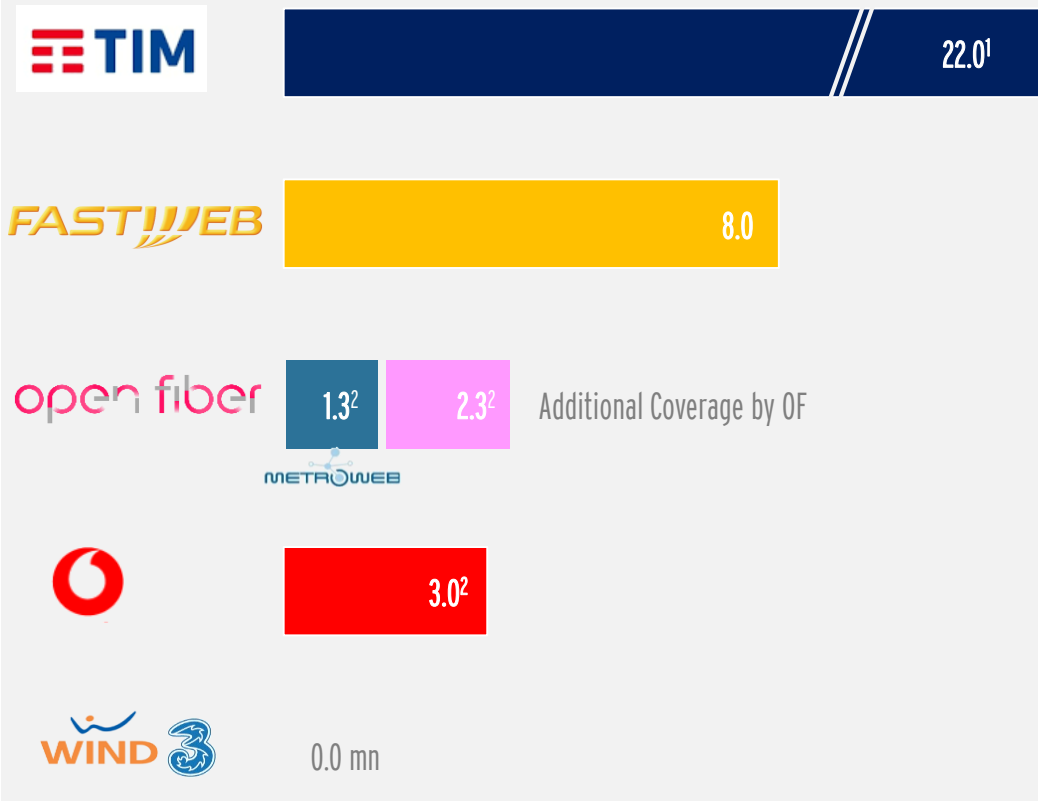
Florence, December 13th 2019

Filippo Tortu
Primatista italiano dei 100 m

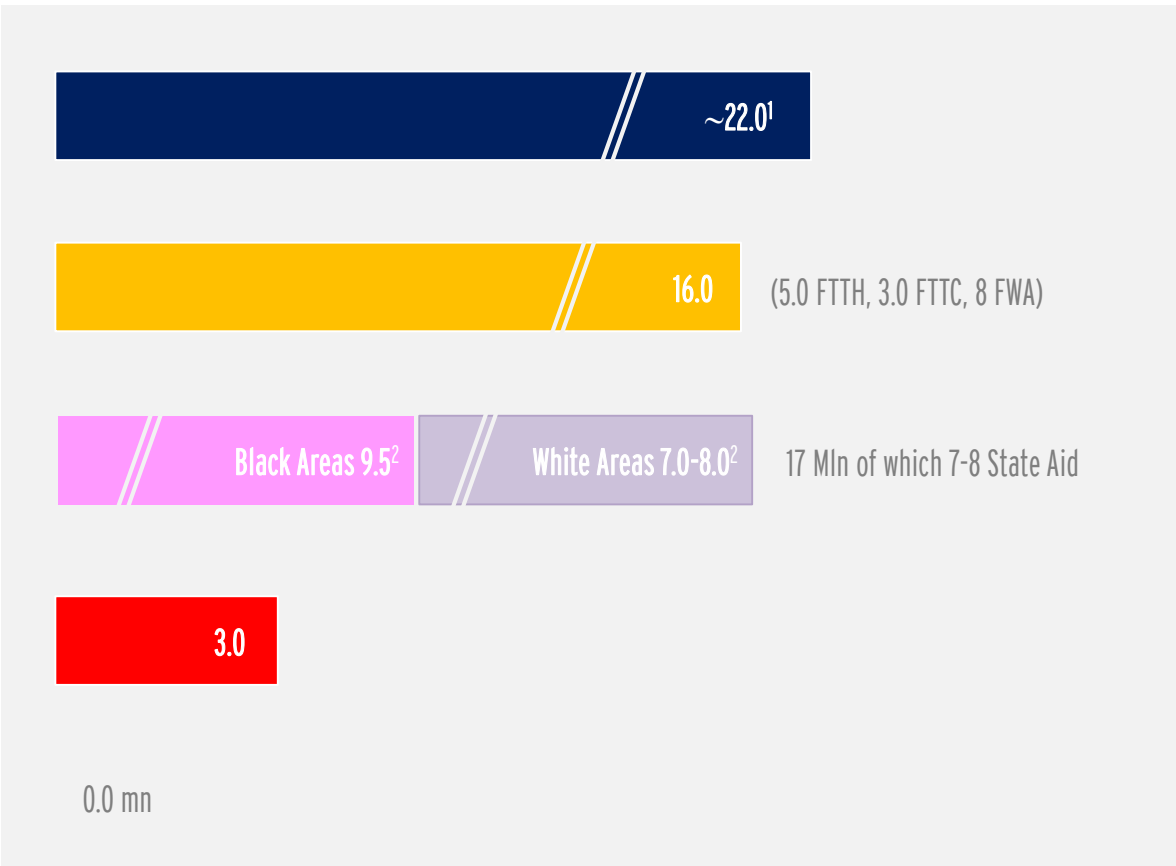
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NGA Coverage in Italy

NGN proprietary coverage 2018 (Families/Businesses, Millions)



Announced Additional NGA Coverage



Source: ¹TIM, Presentation FY 2018, ²Vodafone, Presentation 3Q 2019/2019

NEXT STEP OF FW'S NGA EXPANSION WILL BE 5G FWA

Fastweb has carried out first 5G Fixed Wireless Access trial in Italy and commercial deployment in 2019 in at least 3 cities



Performance

Download speeds up to **1 Gbps** with a maximum distance of 500 meters



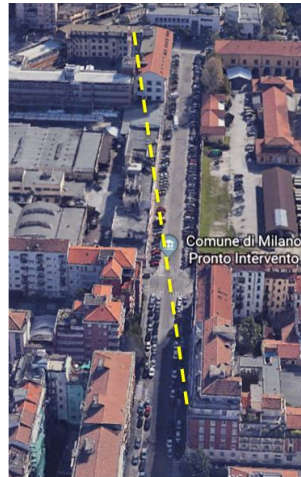
Deployment

Flexibility and speed of deployment by limiting need for civil works



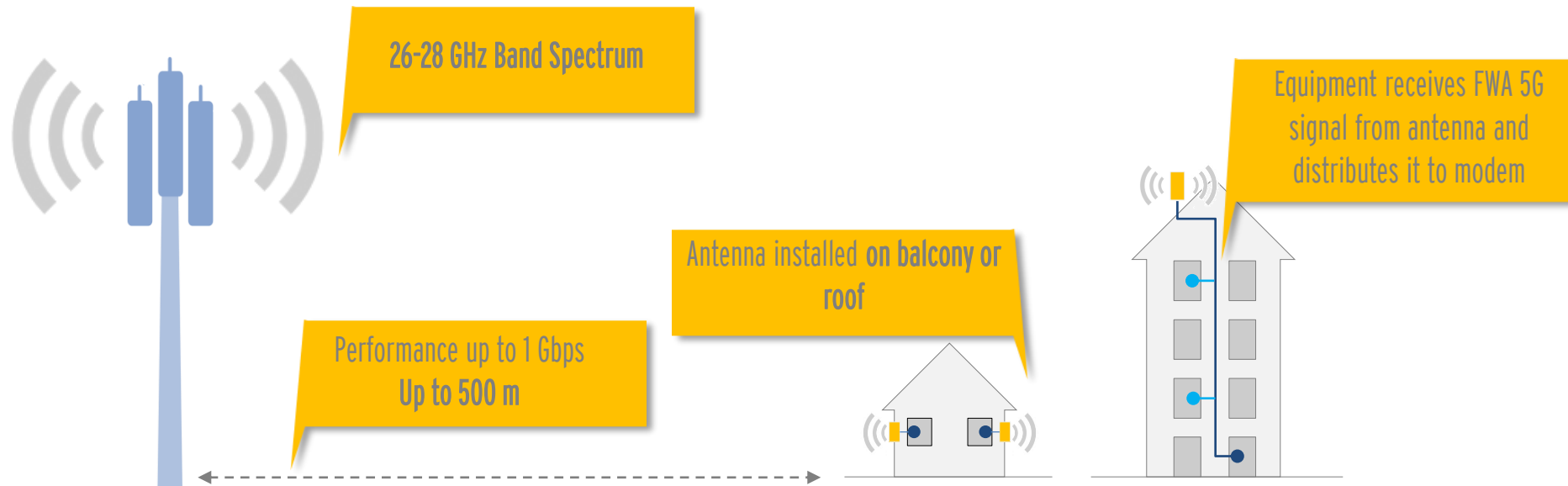
Installation

A single receiving equipment installed on the balcony or roof according to type of building



...WITH FIRST USE CASE OF 5G: FIXED WIRELESS ACCESS...

Fixed Wireless Access is the first significant application of 5G, a flexible and more efficient alternative to FTTH which allows the provision of speeds up to 1 Gbps



To obtain **UBB** performance **up to 1 Gbps** 26-28 GHz 5G millimetric spectrum is required

Fastweb has participated in 5G auction in 2018 and has acquired 200 MHz @ 26 GHz



DESPITE BEING MORE FLEXIBLE AND QUICKER IN TERMS OF DEPLOYMENT, 5G FWA IS FULLY COMPARABLE TO FTTH IN TERMS OF PERFORMANCE

KPI	FFTH GPON	5G FWA	4G FWA
LATENCY (ms)	5	5	25
PEAK DATA RATE (Gbps) ¹	>1	>1	0.1
UPSTREAM DATA RATE (Mbps)	200	200	10
TIME-TO-DEPLOY (months)	6/12	2/3	2/3
INVESTMENTS PER CUSTOMER (100%=GPON) ²	100%	<50%	40%



High-capacity spectrum, limited nr. of customers in the antenna’s range and innovative technical features³ make 5G FWA the ideal UBB technology for small/medium cities

¹Peak data rate consider short-term evolutions of GPON allowing to overcome current peak rate of 1 Gbps ²Customer-driven and access network Capex per nr. of households passed ³Massive MIMO, Beamforming, Carrier Aggregation

...AND THAT IS ALREADY A COMMERCIAL SERVICE IN ADVANCED MARKETS

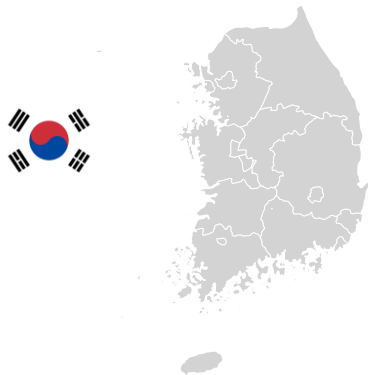
5G Fixed Wireless Access will be the first real use case for 5G



- ✓ Commercial service launched in october 2018 on millimetric band in 4 cities
- ✓ Performance of at least 300 Mbps and up to 1 Gbps



- ✓ Commercial service launched in december 2018 in 12 cities
- ✓ Hotspot mobile



- ✓ FWA 5G services for business segment business launched by main 3 operators in december 2018
- ✓ Commercial launch for consumer segment with national coverage announced by end 2019



CONCLUSIONS:

The term “very high capacity network” is defined in the EECC as: “an electronic communications network which consists wholly of optical fibre elements at least up to the distribution point at the serving location or an electronic communications network which is capable of delivering, under usual peak-time conditions, similar network performance in terms of available downlink and uplink bandwidth, resilience, error-related parameters, and latency and its variation” (Art. 2(2)).

Recital (13) further clarifies that “in the case of fixed-line connection, this corresponds to network performance equivalent to what is achievable by an optical fibre installation up to a multi-dwelling building, considered as the serving location” and “in the case of wireless connection, this corresponds to network performance similar to what is achievable based on an optical fibre installation up to the base station, considered as the serving location.”



Explicit the **inclusion of 5G FWA** as a Very High Capacity Network in **BEREC guidelines** as a key to sustain infrastructure-based competition and guarantee ubiquitous UBB access



Include 5G and 5G FWA in the future **EU broadband funding** plan for digital connectivity infrastructure, in order to further strengthen the ecosystem of the **Digital Single Market**





FIBER IN THE AIR Thank you

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