



BULGARIAN STRATEGY AND POLICY FOR 5G

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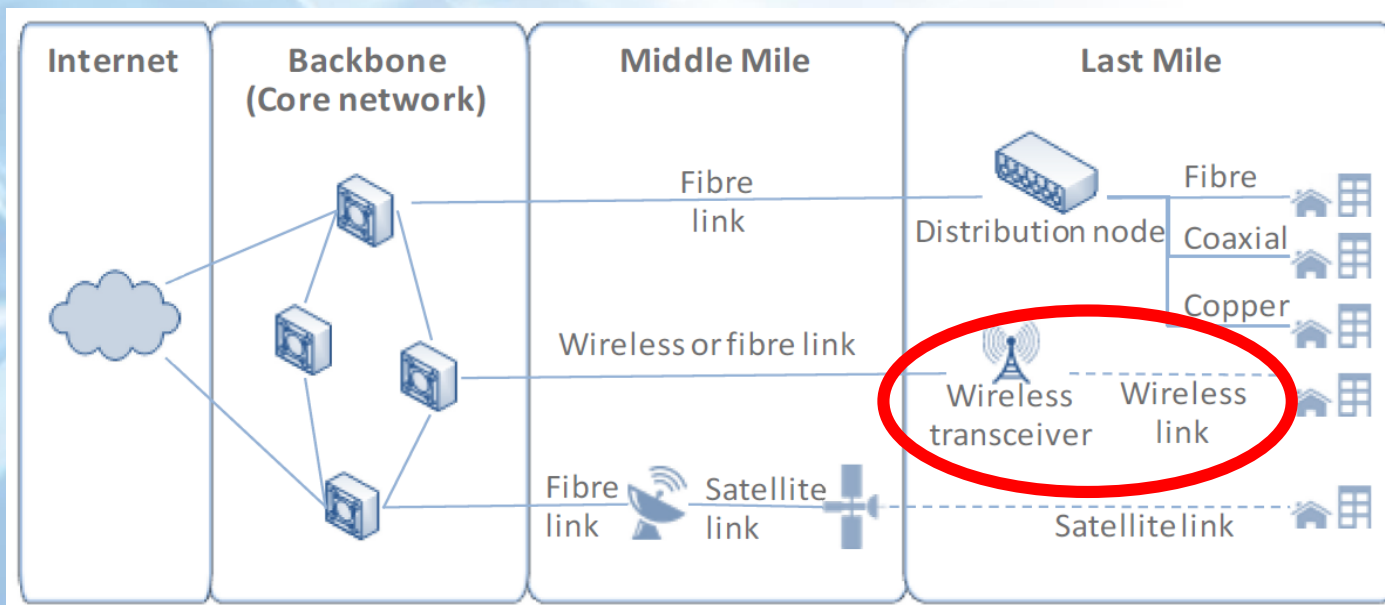


- **The strategy - a long-term plan of action aimed at achieving a certain goal**
- **The policy - actions aimed at achieving certain results**



NGA Strategy and 5G

First edition of the National Strategy for Broadband Development in the Republic of Bulgaria (2010-2013) - adopted November 2009





NGA Strategy and 5G

- **Updated National Strategy for Broadband Development in the Republic of Bulgaria (2012-2015) - adopted November 2012 with added activities in line with the amendments and new requirements in the European Union's documents by 2020**
- **National Plan for NGA Infrastructure (2014 – 2020)**
 - **Roadmap for NGA - adopted 2016**



NGA Strategy and 5G

Commission Communication: "5G for Europe: An Action Plan" and Commission Communication: "Connectivity for a Competitive Digital Single Market - Towards a European Gigabit Society" (14 September 2016) - requirements and deadlines:

- Gigabit connectivity by 2025**
- 5G connectivity to be available as a fully-fledged commercial service in at least one major city by the end of 2020**
- All urban areas and all major terrestrial transport paths should have uninterrupted 5G coverage by 2025**



NGA Strategy and 5G

**Updated NGA Strategy, NGA Plan and Road Map:
(To be published by the end of 2018)**

- **Building and updating of wireless access areas and communication infrastructure in schools / universities/ science institutes to apply new technologies**
- **Providing Internet access or deploying optical connectivity to educational and scientific organizations**
- **Achieving the full interoperability of the information systems in the state administration in compliance with the European and national acts**
- **Release of radio frequency spectrum for 5G**
- **Stimulating investment in the "last mile"**
- **Stimulate investment in electronic services and products**



The steps taken

- **NGA Project - Connected 29 municipalities and 24 small settlements**
- **Electronic Communications Networks and Physical Infrastructure Act (Directive 2014/61/EU) - improved conditions for the construction of electronic communications networks**



Policy - a flexible tool for the development of electronic communications

- **Developed on the ground of the Electronic Communications Act for a four-year period**
- **Having regard to ITU Recommendations and EU rules and requirements in the telecommunications field such as Directive 2002/21/EC (Framework Directive), Decision No 676/2002/EC (Radio Spectrum Decision)**
- **Approved by Government decision**



Policy - a flexible tool for the development of electronic communications

5G in Sectoral Electronic Communications Policy:

- **Actions for the development of wireless broadband communications in the 470-790 MHz band**
- **Release of frequencies for 5G in the 700 MHz and 800 MHz bands**
- **National Roadmap according to Decision (EU) 2017/899**
- **Collaboration with operators**



Policy - a flexible tool for the development of electronic communications

Difficulties and challenges as regards the deployment of 5G

- **Release of frequencies for 5G in the bands 700 MHz, 800 MHz and 3,6 GHz**
- **Difficulties concerning the roll-out of new networks in big cities - an obstacle to the "smart cities" building**
- **5G standards**
- **5G equipment on the market**



Policy - a flexible tool for the development of electronic communications

Release of frequencies for 5G

- **800 MHz - 2 x 10 MHz bands allocated in accordance with the harmonised technical conditions in Decision 2010/267/EC**
- **700 MHz - 2 x 20 MHz (703 - 723 MHz and 758 - 778 MHz) and 2x5 MHz (698 - 703 MHz and 753 - 758 MHz) for the PPDR, according to the allocation of frequency blocks in the Annex to Decision (EU) 2017/899 – available from 30.05.2020**
- **3,4 – 3,8 GHz (3,6 GHz band) – fully available in 2018**



Policy - a flexible tool for the development of electronic communications

Flexible networks - the basis for "smart cities"

- **Meeting representatives of Sofia Municipality and mobile operations – a possibility for the capital to become a "smart city"**
- **Electronic Communications Networks and Physical Infrastructure Act - enhanced opportunity for new electronic communications networks**



5G activities as a result of the policy

- **At the end of 2017, Vivacom demonstrated LoRa (Long Range) technology**
- **At the beginning of 2018 Mtel, part of the A1 Group, presented for the first time in Bulgaria a 5G technology as high speed test of 5G - reached a real speed more than 2 Gbps**
- **Vivacom upgraded its mobile network in five of the country's largest cities, introducing the next generation technology - 4.5G or LTE Advanced, which provides customers with higher speeds. The technology is Carrier Aggregation and generates faster internet up to 150 Mbps for download depending on the radio spectrum used**
- **At the beginning of the summer this year A1 has extended its 4.5G network coverage to consumers in all summer resorts on the Bulgarian Black Sea coast. Currently, the 4.5G network of A1 covers over 700 settlements out of a total of over 2000 that the 4G network of telecoms covers**



Thank you for attention!