

ROADMAP FOR THE IMPLEMENTATION OF THE NATIONAL BROADBAND INFRASTRUCTURE FOR NEXT GENERATION ACCESS PLAN

Approved by the eGovernment Council Protocol №5

I. Introduction

The development of a dynamic and innovative digital economy will facilitate growth and productivity, allow the development of new services by generating additional social benefits and increase the number of jobs, all of which require an available ultra-high speed next generation internet access. In this regard, the construction of new broadband infrastructure for next generation access, the facilitation of the use of the radio spectrum, and the promotion of the intensive and efficient use of both form the basis of the priorities set out in the National broadband infrastructure for next generation access plan¹.

The Plan focuses on the construction of new broadband infrastructure for next-generation access in order to achieve the objectives set out in the Digital Agenda for Europe: 100% coverage of at least 30Mbps for the general population and access to speeds of 100 Mbps and above in for least 50 % of households by 2020.

II. Current state of affairs

This Roadmap was developed by an interagency working group in order to implement the priorities of the Plan. The working group was established by the Minister of Transport, Information Technology and Communications and consisted of experts from the Ministry, the Executive Agency "Electronic Communication Networks and Information Systems", the Ministry of Regional Development and Public Works, the Ministry of Environment and Water, the Ministry of Agriculture and Food, the "Road Infrastructure" Agency and other stakeholders. The development of the Roadmap was made possible only after achieving the necessary clarity regarding the available financial resources and sources of funding necessary to ensure the implementation of the National Plan, including RDP, GGOP, SESG OP, the state budget and others.

The Government held a number of meetings and conferences with the operators of the fixed and mobile networks after adopting the National broadband infrastructure for next generation access plan. The operators were asked to officially state their investment intentions regarding the construction of broadband infrastructure by 2020. Analyzing the submitted information made it clear that the majority of the large operators prioritized the construction of broadband Internet access through the introduction of 4G LTE technology in most "white" and "gray" area settlements. The total number of settlements with 4G coverage at this time is 34, which represents about 60% of the urban population – the regional cities, large resorts on the Bulgarian Black Sea coast, as well as other popular Bulgarian tourist destinations. In addition, experts of the IA ECNIS conducted a study at the municipal centers on any existing plans to build broadband infrastructure for next generation access. The

¹ PMC № 435 from 26.06.2014

information obtained was analyzed and used to create a database of the high-speed internet supply in Bulgaria, as well as to visualize the availability of broadband access in various areas using interactive maps².

In the short term - 2015-2016 - the efforts of the Bulgarian side will be directed at taking actions to reduce the costs and optimize the processes related to the deployment of high - speed broadband infrastructure, with measures in this regard already at play. The provisions of Directive 2014/61/EU on measures to reduce the cost of deploying high-speed electronic communications networks, will have been transposed into national law by 1 January 2016, while all the conditions for the application of the Directive will have been created by 1 July 2016. The Act is currently up for public discussion on the MTITC website³.

The accumulated experience in the area and the results of the public consultations showed the need for a separate law concerning the rules of constructing electronic communications infrastructure, which is already under development. This specialized law will include measures aimed at simplifying the rules and reducing the cost of building high - speed broadband infrastructure, modernizing outdated or irrelevant legal basis and coordinating long-standing efforts to improve the treatment of the construction sector. Bringing all the requirements under a separate law will help to underline the high priority of the sector and will ensure the visibility of one of the most dynamic and progressively developing parts of the economy. Furthermore, it will stimulate the private sector to invest in the construction of such infrastructure by shortening the return period of investments.

The next-generation broadband project⁴ implemented during the 2007-2013 period created a safe, secure and reliable broadband infrastructure for e-government needs, while at the same time provided the conditions for the development of broadband services for the citizens and businesses in the economically underdeveloped and remote areas of the country. Public ICT infrastructure built under the project funded by the Operational Programme "Regional Development 2007-2013" will be granted a concession to a private operator by a procedure that is already under way.

The concept for the execution of the 2007-2013 programming period next generation broadband access project will be carried over into the 2014 - 2020 programming period. According to the preliminary data, the governmental and public institutions in over 191 Bulgarian municipalities, with a total population of over 2 million people, have no connection to the state backbone network⁵. Funding will be directed at providing connectivity for the municipal centers to the state backbone network in order to improve the access and use of electronic services for

² <u>https://www.mtitc.government.bg/page.php?category=619&id=8173</u>

³ https://www.mtitc.government.bg/page.php?category=188&id=8548

⁴ <u>https://esmis.government.bg/page.php?c=83</u>

⁵ https://www.mtitc.government.bg/upload/docs/2015-08/Spisak_Obshtinski_Centrove_Bez_Svarzanost_20082015.pdf

the citizens and businesses. In order to optimize the costs of the construction and operation of broadband electronic communications infrastructure, investment plans will be coordinated and synchronized in time, where possible, with other planned infrastructure investments - roads, water, etc.

The investment initiative to develop ultra-high-speed communications connectivity will be implemented in stages. In accordance with the RDP guidelines for funding the first subject of intervention will be settlements with a population of under 30 thousand residents, which are 182 out of the 191 municipal centers located in white and gray areas in terms of ultra-high-speed connectivity. A list of these settlements, along with the minimal costs for connecting them to the state backbone, can be found on the MTITC website⁶.

Settlements will be connected in three stages: 39 during the first stage; 34 during the second stage; 109 during the third stage. The preliminary prioritization was based on up-to-date data on the next generation broadband infrastructure, which included information on the availability and location of the private service provider infrastructure in the relevant regions. The settlements are grouped based on criteria such as costs for establishing connectivity, presence of public institutions and administrative departments, total population, population under a certain age, availability of schools, availability of medical facilities, economic activity, etc.

Investment projects in these areas related to the reconstruction of roads or the construction of infrastructure for the provision of utility services to businesses and the public (water, electricity, etc.) will be carried out in conjunction with communication connectivity projects by using the ongoing construction of passive infrastructure, which will in turn reduce the investment costs of the construction work.

Among all the 2014-2020 operational programs only the Rural Development Program (RDP) will be able to dedicate funds for the development of NGA broadband infrastructure in the amount of 30 mln. Euro. The Operational Program Good Governance (OPGG) however is open to funding the equipment necessary for launching the eGovernment Cloud and connecting all public institutions with it. This will allow the 30 mln. Euro RDP budget to be used entirely on building the passive NGA BB infrastructure. The RDP is able to further reduce the construction costs by combining them with the costs of road rehabilitation and other infrastructure projects, which are a priority of one of the operational program. Thus, the impact of the intended budget could be multiplied several times, which according to the feasibility studies of the IA ECNIS experts will be sufficient to cover the most of the costs of connecting all municipalities.

The intervention will be limited to the construction of broadband infrastructure in the scope of the "middle mile". The aim is to link remote locations so that Internet service providers can build their "last mile" at a price comparable to that of building the same infrastructure in major cities. After finishing construction, the infrastructure will be provided for use and maintenance to a private operator under certain limitations on

⁶ <u>https://www.mtitc.government.bg/upload/docs/2015-11/Spisak_ObshtCentrove_kam_DOM.pdf</u>

the provision of retail services and profit control to ensure fair and non-discriminatory terms to all local suppliers. A private operator will manage "the last / first mile" of the network and the state will intervene in the "last mile "only when it comes to the connectivity of public institutions. The network will be open and neutral.

This Business model corresponds to the open model of passive infrastructure. The state will retain ownership of the passive infrastructure, while the operator will manage its maintenance. The network will be open in its passive layer and competing suppliers of networks and services will have access to the physical connections. The experience gained within the previous project showed this business model to be the most suitable for implementation in the current conditions.

III. Roadmap for the implementation of the national broadband infrastructure for next generation access plan

This roadmap was developed to help carry out the National broadband infrastructure for next generation access plan effectively and contains the measures and actions necessary for the full implementation of the recommendations of the European commission concerning the preliminary conditions for access to EU funds. The actions set out in the Roadmap are structured in three main subsections:

1. Measures for the encouragement of deployment of infrastructure for ultra-high-speed next generation access.

Corresponds to the objective of encouraging investment and facilitating the deployment of broadband infrastructure for next generation access, which will enable the development and delivery of new, modern broadband services.

2. Measures for the efficient use of the radio spectrum.

The actions planned in this subsection will significantly increase the accessibility of new consumer products and technologies, and in particular high-speed mobile Internet services.

3. Measures for the stimulation of the supply and demand of services carried over broadband networks.

The purpose of this subsection is to help with the realization of the other two by increasing the supply and demand of broadband services by the administration, businesses and the citizens.

Each of these subsections is directly linked with the priorities of the National broadband infrastructure for next generation access plan as follows:

- Direction I, point 1 includes measures related to updating the data on next-generation broadband infrastructure and the development of a spatial database for the analysis of the existing and planned infrastructure. These measures are absolutely necessary for an analysis of the current status and planning of the investment process and thus support the implementation of all six Investment priorities of the National NGA Plan.
- Direction I, point 2 includes the development of a new legal framework aimed at simplifying the rules of the investment process and reducing the costs for the construction of the electronic communications infrastructure. This will help realize all six Investment priorities of the National NGA Plan by allowing for the optimization of the investment process and increasing the efficiency of the investments.
- Direction I, point 3 includes measures that relate to the provision of public and private financial resources for the construction of next generation broadband infrastructure in areas where there is no market interest.

These measures will cover the costs of the investment process in the aforementioned regions and will achieve the following effects:

- The application of new wireless technologies and approaches will be encouraged in order to ensure fast and ultra-broadband access in locations where the construction of FTTx networks is impractical or technologically impossible. Wireless technologies (fixed wireless broadband) based on new concepts for innovative spectrum sharing or new cellular infrastructure can be used to achieve high-speed access in such cases. Local operators and suppliers will be encouraged to provide access to the "Last mile" to all households, business entities and public institutions, and to offer speeds of up to 100+ Mb/s in these areas. This will in turn help realize Investment priority 3 of the National NGA plan.
- Achieving broadband connectivity in these settlements and securing next-generation access for local households will be financially secured. This will facilitate the implementation of **Investment Priority 4** of the National NGA plan.
- Achieving broadband connectivity of these settlements and securing next-generation access for local businesses will be financially secured. This will facilitate the implementation of **Investment Priority 5** of the National NGA plan.

- Achieving broadband connectivity of these settlements and securing next-generation access for local public institutions will be financially secured. This will facilitate the implementation of **Investment Priority 6** of the National NGA plan
- Direction I, point 4 includes measures that relate to the provision of connectivity to schools and other educational institutions as part of the implementation of the Strategy for the effective implementation of ICT in education and science of the Republic of Bulgaria. The measures set out in this section of the Roadmap will therefore help realize all six Investment priorities, especially Nº 3 and Nº 6, of the National NGA plan, which will in turn allow for the use of modern methods and approaches in the education of the younger generation.
- Direction I, point 5 includes measures related to providing incentives for private business involvement in various areas of the investment process, as follows:
 - Facilitating the investment process and reducing the investment costs, including the construction of physical infrastructure, which will allow local operators and suppliers to more easily provide their services. This will support the implementation of all **Investment priorities** of the National NGA Plan. Consequently additional private businesses will be attracted to invest and will in turn provide additional financial resources.
 - The measure will also encourage investing in the construction of the "Last mile" and in the development and delivery of electronic services to citizens and businesses, which will help with the implementation of all **Investment priorities** of the National NGA plan, especially №4, № 5 and № 6.
 - Successful practices will be examined and effective models for public-private partnerships will be developed, which will attract additional investment resources. This will support the implementation of all the **Investment priorities** of the National NGA Plan.
- Direction II, point 1 includes measures that are associated with the release of the radio frequency range that is particularly attractive for the development of LTE services in Bulgaria in the eyes of the business sector. This will help with the implementation of Investment priorities 2,3,4,5 and 6 of the National NGA plan.

- Direction II, point 2 includes measures ensuring the efficient use of the spectrum in the frequency ranges intended for providing public electronic communications through terrestrial networks. These measures will help with the realization of Investment priority 3 of the National NGA plan.
- Direction II, point 3 and point 4 include measures that achieve maximum flexibility and efficiency in the use of the spectrum through the development and implementation of the most appropriate and simplified procedure for authorization. These measures will help with the realization of Investment priorities 2,3,4,5 and 6 of the National NGA plan.
- Direction III, point 1 and point 2 include measures that ensure the increase of the expertise of administration employees and the skills of businesses and citizens in the field of ICT. This will significantly increase the demand and consumption of next generation broadband access and the electronic services that require such access. These are accompanying measures that support the implementation of all the Investment priorities of the National NGA Plan.

List of Measures	Implementation period	Necessary financial resources	Relevant institutions
Subsection I Measures for the encouragement of deployment of infrastructure for ultra-high-speed nex 1. Creating a digital map of the planned and already existing infrastructure.	t generation acces	55	
1.1. Updating the data on next generation broadband, which includes information on the availability and geographical location of the regional operators' infrastructure.	accomplished	SB – within the approved budget	ΜΤΙΤϹ
1.2. Developing of a spatial database for the analysis of existing and planned infrastructure.	2014-2016	SB – within the approved budget	ΜΤΙΤϹ

2. Adopting an entirely new legal framework aimed at simplifying the rules of the investment process and reducing the cost of the construction of electronic communications infrastructure.

		-
2015-2016	SB – within the	мтітс
	approved budget	
		an interagency
		working group,
		established by the
		Minister of
		Transport,
		Information
		Technology and
		Communications,
		with Order № РД
		08-282 /
		02.06.2015
n areas where no	o market interest is prese	ent.

The concept for the execution of the 2007-2013 programming period next generation broadband access project will carry over into the 2014 - 2020 programming period. Funding will be directed at providing connectivity for the municipal centers to the state backbone network in order to improve the access and use of electronic services for the citizens and businesses.	2015-2020	60 mln. levs RDP / SB – within the approved budget	MTITC, MAF, ECNIS IA
 3.2. Further development of the state backbone network In order to insure the successful development of the eGovernment, maximum number of public institutions will be connected to the state backbone network. With funds from the national budget will be connected the 9 municipal centers which do not fall within the scope of the RDP. The Bulgarian government will also take steps to connect to the state backbone network other institutions - hospitals, police stations, places of detention and probation services, etc. 4. Providing connectivity to schools and other educational institutions as part of the im 	2015-2018	SB – within the approved budget	MTITC, ECNIS IA
Education and Science of the Republic of Bulgaria ⁷	plementation of	the strategy for the enect	live use of ict in the
4.1. Construction, extension and integration of a unified backbone network for the needs of education and science The development and integration of a backbone network connecting Regional inspectorates of education, universities and research centers will provide the necessary transport medium to Bulgarian and international electronic resources. This will be the first step towards the development of cloud technologies in education.	2014-2020	14 mln. levs SESG OP/ SB – within the approved budget	MES, EA ECNIS

⁷ <u>http://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=904</u>

<i>4.3.</i> Subsidizing Internet access or building long - term optical connectivity to educational and scientific organizations.	2014-2020	14, 5 mln. lev SESG OP/ SB – within the approved budget	MES
5. Stimulating private investments		1 1	
Considering the pace of technological developments and the users' needs, building and modernization of broadband infrastructure has emerged as a dynamic process requiring significant investment. The following measures are intended to stimulate such investments:			
5.1. Stimulating the investments in physical infrastructure The implementation of measure 2 of this roadmap will lead to the limitation of some of the activities associated with the high costs or cost sharing in the construction of physical infrastructure, which would contribute to reaching greater efficiency in the deployment of networks, which in turn would result in more and better quality services for the consumers.	2015-2020	SB – within the approved budget	ΜΤΙΤϹ
 5.2. Stimulating the investments in the "last mile" Building the "middle mile" will remove the serious investment barrier in areas with no market interest, which will encourage local service providers to focus their efforts on nvesting in technology solutions for the "last mile". The aim is to have at least two ISPs in each municipality offering at least 30 Mbps real download speed from international websites. 	2015-2020	Within the fulfillment of Measure 3	MTITC, EA ECNIS
5.3. Stimulating the investments in networks covering remote areas and those near optical network paths. The aim will be to double the investments of private Internet providers outside of the municipal centers via a high-speed wireless link and optical routes.	2015-2020	Within the fulfillment of Measure 3	MTITC, EA ECNIS
5.4. Stimulating the investments in electronic services and products	2015-2020	Within the fulfillment of Measure 3	MTITC, EA ECNIS

 814-822 MHz (the 64th TV channel) is currently being used for military purposes. At the same time this is the most attractive resource for the development of LTE services in Bulgaria from the business' perspective. There have been a number of analyses, proposals and plans, but so far the frequency has not been released. Bulgaria has repeatedly informed the European Commission of the problem, and has also notified the relevant authorities of the use of the frequency for military purposes until such time that the systems come out of commission. 2. Ensuring the efficient use of the radio spectrum in the frequency bands intended for p networks Currently the entire frequency resource in the 900 MHz band is allocated to the use of wireless broadband services. There is a free resource in the following frequency bands: 	providing public e accomplished	electronic communications t SB – 5 820 000 levs – in accordance with	through terrestria
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frequency (790-862 MHz) called "digital dividend", which with the exception of frequency		approved budget	WITTE
One of the main challenges in Bulgaria continues to be the release of the 800 MHz		SB – within the	MTITC
Subsection II Measures for the efficient use of the radio spectrum. 1. Harmonization of the conditions for the use of the radio spectrum in the frequen	ncy hands 790-86	52 MHz 1900-1920 MHz and	d 2010-2025 MH
partnership with local Internet service providers or to become ISPs themselves.			
local and national level will be encouraged to invest in different business models of			
Municipalities and other public institutions will be provided with high-speed connectivity, while the IT companies involved in the development of e-Governance at the		of Measure 3	EA ECNIS
5.5. Stimulating the investments in various business partnership models	2015-2020	Within the fulfillment	MTITC,
services of cable providers who work with HD IPTV and interactive services in real time.			
provided in small community centers with those in the regional cities. An example are the			
earning, telemedicine etc. The aim is to equalize the quality and accessibility of the services			

The National Security Service completed the release of the 2,5-2,69 GHz frequency range, intended for wireless broadband, including LTE, in four big cities - Sofia, Varna, Burgas and Blagoevgrad, at the end of 2014. It will become available to the whole country on 31 August 2015. The CRC has already launched a consultation procedure to release the frequency range for the use of wireless services. ⁸ 3. Developing incentives for the business, including regulatory ones, with the intent o		effective use of the free	spectrum
The implementation of the first program on the policy of the radio spectrum in the EU, laid down on March 14 th 2012 with Decision № 243/2012/EC establishing a multiannual radio spectrum policy programme, will continue until 2018. The program is aimed at implementing the most appropriate and streamlined system for granting authorization in a way that achieves maximum flexibility and efficiency in the use of the spectrum. The system for granting authorization will be based on objective, transparent, non-discriminatory and proportionate criteria that provide the electronic communications enterprises with a radio spectrum harmonized to the greatest extent with the EU, as well as promoting the secondary trading of rights for its use. The selection procedures for granting the rights of use of the radio spectrum will adhere to the EU requirements of promoting competition and investment in the use of the radio spectrum as a public good, while at the same time ensuring the coexistence of new and existing services and the efficient use of the networks, devices and applications.	2015-2018	SB – within the approved budget	MTITC, CRC
4. Updating the state policy on the planning and allocation of the radio spectrum The state policy on radio spectrum management will be updated at the national level in order to adhere to the goals of the Updated policy on electronic communications of the		SB – within the approved budget	MTITC, CRC
Republic of Bulgaria - 2015-2018 ⁹ , and to the decisions made at the World radio conference to the ITU, which will be held in 2015.		approved budget	
Subsection III Measures for the stimulation of the supply and demand of services carr	ied over broadba	nd networks.	

⁸ <u>http://crc.bg/section.php?id=1813&lang=bg</u>

⁹ <u>https://www.mtitc.government.bg/page.php?category=466&id=3650</u>

1.1. Raising the qualifications of the employees of the central administration	accomplished	1.92 mln. levs	MTITC
The "Raising the qualifications of the employees of the central administration by improving their knowledge and practical skills to manage IT software projects in accordance with modern methodologies." project is currently being implemented. The project aims to improve the efficiency of administrations in the implementation of development activities, management, coordination and monitoring of programs and software projects in the field of information technologies.	trained 359 central government officials	ΑСΟΡ	
1.2. Knowledge management. The training of administration employees throughout their whole career with the aim of maintaining their knowledge and skills in the context of the established e-Governance tools. This measure is aimed at increasing the administrative capacity and efficiency of work through knowledge management as part of the measures set out in the roadmap for the implementation of the Strategy for development of e-Governance in the Republic of Bulgaria for the period 2014 - 2020 ¹⁰ .	2014-2019	7 mln. levs GGOP	MTITC
2. Increasing the digital competence of the population and encouraging the use of elec	ctronic services		
2.1. Training and complementary qualification in ICT skills, including advanced ICT courses (system administrator etc.) and the encouragement of students talented in ICT. The goal of this measure is to create the conditions for the lifelong education of the majority of the economically active population and to develop the system of training and retraining of people that have lost their job after structural changes in the economy.	2014-2020	8,3 mln. levs SESG OP/ SB – within the approved budget	MES
2.2. Creating and funding a center for training, certification and testing of ICT skills, incl. online.	2014-2020	8 mil .levs SESG OP/ SB – within the approved budget	MES

¹⁰ <u>https://www.mtitc.government.bg/upload/docs/2014-06/Patna_Karta_30042014.pdf</u>

This measure aims to deploy a large-scale system, tasked with increasing the information and computer literacy of the population, updating or adopting standards for training and certification, and at creating courses for people with special educational needs.			
 2.3. Developing programs and conducting specialized training for individuals and businesses. Increasing the digital competence of citizens and businesses using e-services. 	2014-2018	6 mln. levs GGOP	MTITC
2.4. Developing alternative access channels (eg. mobile terminals) and ensuring public access (in post offices, libraries, etc.). This measure aims to Increase the use of e-services through improvements in accessibility, increase consumer awareness, while and at the same time reduce the cost of administrative services. It will encourage the administration to give access to their services from the public access points (information terminals). The use of e-services will be increased by raising the number of access points and improving the skills of their users.	2014-2016	7 mln. levs GGOP	MTITC

Glossary of the used abbreviations:

1. MTITC - Ministry of Transport, Information Technologies and Communications

2. MAF - Ministry of Agriculture and Food

3. MES - Ministry of Education and Science

4. ECNIS IA - Executive Agency "Electronic Communication Networks and Information

Systems "

5. CRC - Commission for Communications Regulation

6. SB - State budget

7. GGOP - "Good Governance" operational Programme

8. ACOP - "Administrative Capacity" operational Programme

9. SESG OP - "Science and education for smart growth" operational Programme

10. RDP - Rural Development Program

11. EC – European Commission

12. EU – European Union