

ITUEvents

ITU regional workshop for Europe on “Mapping of terrestrial broadband infrastructure and services”

2-3 July 2019
Warsaw, Republic of Poland

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Organized within the framework of the ITU Regional
Initiative for Europe on broadband infrastructure,
broadcasting and spectrum management.

MAPPING TOOLS BROADBAND INFRASTRUCTURE QUALITY OF SERVICES ENABLING ENVIRONMENT INVESTMENT OPPORTUNITIES EMERGING TECHNOLOGIES



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Outcome Report

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1. INTRODUCTION

1.1 Background

ITU Regional Workshop for Europe on “Mapping of Terrestrial Broadband Infrastructure and Services” was held in Warsaw, Republic of Poland, from 2 to 3 July 2019. The Workshop, organized at the kind invitation of the Office of Electronic Communications of the Republic of Poland was conducted within the framework of the ITU Regional Initiative for Europe on Broadband Infrastructure, Broadcasting and Spectrum Management adopted by the ITU World Telecommunication Development Conference 2017 (WTDC-17). Among other objectives, the initiative aims to assist countries in mapping of ubiquitous infrastructure and services, foster harmonization of approaches across the region and take into account infrastructure-sharing approaches applied by countries.

Considering the ongoing digital integration process and the untapped opportunities in the region, special attention was dedicated to South Eastern European economies. The workshop provided the opportunity for National Regulatory Authorities (NRAs), both from Western Balkans and other European countries, to showcase their mapping systems and the challenges encountered. Officials engaged with one another and shared best practices, contributing to the overall success of the workshop.

The Sessions composing the workshop were:

- Session 1: Regional and Global Approaches for Mapping of Broadband Infrastructure and Services and Identifying Investment Opportunities in ICT Sector;
- Session 2: Examples of Mapping Tools from EU Member States;
- Session 3: Mapping Tools in South Eastern Europe (i);
- Session 4: Mapping Tools in South Eastern Europe (ii);
- Session 5: Mapping Infrastructure and identifying Investment Opportunities.

The main outcomes of the workshop are outlined in this report which is structured by presenting the key points emerged from each session.

1.2 Participation

The workshop targeted all stakeholders involved in the mapping of broadband infrastructure in Europe, with particular focus on South Eastern Europe. Almost 50 participants from 20 countries took part in the workshop including officials from National Regulatory Authorities (NRAs), Government Ministries, and delegates from Investment Banks and Civil society organisations.



Figure 1: Group photo with speakers and participants of the workshop

1.3 Documentation

The workshop was paperless. Relevant documentation, including the agenda, presentations and a background information are available on the event web page: <https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Pages/Events/2019/Mapping/ICT-Infrastructure.aspx>

1.4 Opening Address

The workshop opening address was conducted by Marcin Cichy, President of the Office of Electronic Communications (UKE), Republic of Poland, and Jarosław Ponder, Head of the ITU Office for Europe, ITU.

President Cichy presented Poland's mission to achieve modern telecommunications and postal services. He outlined the Office of Electronic Communications' (UKE) involvement in fields of consumer protection, regulation and infrastructure/services development to achieve the Country's goals and presented statistical data regarding network broadband network infrastructure in Poland. Mr Cichy then provided a comprehensive overview of UKE's mapping tool, illustrating its fundamental features, its advantages and main beneficiaries. He finally concluded by briefly illustrating Poland's expertise in twinning projects and by highlighting the importance of sharing data and best practices in the region.

Mr Ponder outlined the work carried out by the ITU Office for Europe with particular emphasis on the Regional Initiative for Europe on Broadband Infrastructure, Broadcasting and Spectrum Management adopted by the ITU World Telecommunication Development Conference 2017 (WTDC-17). While the primary focus of the initiative is to develop an enabling environment for 5G, fostering infrastructure investment and mapping is a core component of the mandate, together with cybersecurity. Mr Ponder remarked the importance of coordinating and sharing best practices on broadband mapping systems in order to bridge the digital divide observable in the European region. Considering the untapped potential and opportunities present in South Eastern Europe, he finally expressed his office commitment to continue and strengthen future work on this important topic in terms of collaborations and partnerships.

2. SESSION 1: REGIONAL AND GLOBAL APPROACHES FOR MAPPING OF BROADBAND INFRASTRUCTURE AND SERVICES AND IDENTIFYING INVESTMENT OPPORTUNITIES IN ICT SECTOR

The objective of this session was to examine regional and global approaches to mapping broadband infrastructure and how these may be deployed to create new opportunities and inform investment decisions.

Session moderator: Jarosław Ponder, Head of ITU Office for Europe, ITU.

- ITU recognised that ICTs perform a fundamental role in the context of fulfilling the Sustainable Development Goals and so mapping and gathering intelligence about its infrastructure is a critical issue for development and progress. Since 2012 ITU Interactive Transmission Maps have been building a global coverage of broadband infrastructure, gathering data from 482 Terrestrial operators, from 19,775 nodes across all continents, and covering 3.588.484 Km of cable routes. Gradually, these maps have been expanded (optical cable fibres, microwave links, submarine cables, satellite earth stations, internet exchange points) and integrated with other maps in overlays (e.g. population density);
- On a regional level, the European Commission is requiring member states to update their national broadband plans by September 2019. Member states will be required to provide an assessment on the investment gap based on recent mapping of existing private and public infrastructure and quality of service (QoS), and a consultation on planned investment;
- The Commission aims to aggregate measurements of quality of service (QoS) connectivity and quality of experience (QoE) connectivity as well as facilitate information exchange and benchmarking between member states. Under Art. 22 of the Electronic Communications Code, Member States are required to conduct geographical surveys of the reach of electronic communications networks by 21 December 2023;
- Guidelines on mapping broadband coverage are being discussed within BEREC EWG on Geographic Surveys and are due to be approved by mid-2020. Open issues include, among others, level of ambition/harmonisation, granularity of the data, publication and visualisation of the data and confidentiality;
- Eastern Partnership (EaP), a joint cooperation between the European Union and 6 post-Soviet states (Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine) aims to lead Eastern European countries towards developing their national broadband strategies by 2020.
- EaP advocates for independent National Regulatory Authorities (NRAs) for electronic communications, coordinated national spectrum strategies and harmonized roaming pricing/reduced roaming tariffs; EU4Digital Initiative seeks to provide a benchmarking studies and gap analyses, regulatory frameworks, support broadband mapping, enhance knowledge sharing and formulate/update Strategy & Implementation.
- According to the World Bank, broadband mapping can be approached from different perspectives, including infrastructure, investment, service and demand, but all types of broadband mapping follow the common process of data collection, processing and publication. To ensure successful broadband maps and their maintenance, stakeholder coordination is key. In the creation of a mapping system it is paramount to have a driving policy (national broadband plan), a legal basis (Infrastructure sharing law) which then can underpin mapping and define desired outcome depending on regulatory adjustments.
- According to the European Investment Bank there is significant underinvestment in the digital sector in Europe (384 bn€, 80% of which in rural and suburban areas) and economic growth is

constrained due to lack of very high capacity networks. Under this scenario, operators suffer to secure financing, governments are scaling back subsidies for FTTH, and the regulatory environment on FTTH remains uncertain. In order to achieve policy goals in the region, there is a foreseeable adjusted investment gap of 254bn€. Infrastructure mapping for broadband investment is important to the extent which it fosters information and information quality in order to support all stakeholders in their operations and ensure better channelling of investments.

- The Alliance for Affordable Internet (A4AI) held a short presentation showcasing how infrastructure mapping provides better information, thus fostering market conditions and participation, market competition and regulatory participation, which in turn provide greater affordability and access to broadband. Evidence shows that the average cost of mobile data as a percentage of average income has been decreasing substantially over the past 3 years. For this trend to continue, better understanding of the network is needed and so investment in mapping systems is highly recommended.

3. SESSION 2: EXAMPLES OF MAPPING TOOLS FROM EU MEMBER STATES

The objective of this session was to showcase and share best practices of mapping tools from European Union Member States as a way to understand the current status of well-established mapping systems.

Session moderator: Wojciech Berezowski, Head of International Organizations Unit, Department of Foreign Affairs, the Office of Electronic Communications (UKE), Republic of Poland

- In around 9 years of experience, the Office of Electronic Communications of the Republic of Poland (UKE) has been able to develop a comprehensive infrastructure and telecommunication services inventory from scratch. This comprises fixed and wireless networks, telecommunications hubs, transmission systems, points of contact, co-location buildings, buildings within network coverage and provided services. The system makes use of a variety of internal and external databases to integrate backbone, distribution and access data. Data is made available via a single information point in order to facilitate access.
- Since 2012, Slovenia has been active in mapping of network termination points through the Agency for Communication Networks and Services of the Republic of Slovenia (AKOS) in cooperation with the Information Society Directorate. In 2015 AKOS launched mapping project on its own adopting an open source approach. AKOS maps network termination points, fixed and mobile broadband coverage as well as current investments in planned construction. AKOS plans to invest in analysing the data, improve user interface and add new datasets.
- France has a strong regulatory framework which emphasizes the role of investment in fixed networks and requires operators to share data with ARCEP (Autorité de Régulation des Communications Électroniques et des Postes). This data gathering exercise helps better sharing of information across stakeholders and a greater control on operators' obligation. ARCEP has two main projects in place, carte fibre which focuses on FttH mapping based on trimestral collection, and 'ma connexion internet', which aims to map all fixed broadband services. Regarding the latter, complexities remain in crossing data from multiple inputs, building addresses repository, analysing copper network performance.

4. SESSION 3: MAPPING TOOLS IN SOUTH EASTERN EUROPE (I)

The objective of this session was to provide an opportunity for South Eastern European administrators/regulators to present the status of their mapping solutions and the work planned for the near future.

Session moderator: Vladimir Daigele, Programme Officer, Telecommunication Networks and Spectrum Management Division (TND), Telecommunication Development Bureau, ITU

- In 2016, Electronic and Postal Communications Authority (AKEP) of Albania has cooperated in a twinning project for upgrading broadband mapping with ITU and AKOS (Slovenia) and with UKE (Poland) on 'Mobile QoS Monitoring'. Data from the old systems was imported in the new model, an ATLAS to which all operators were given access. The new system encompassing 200 service providers and 3 operators, offers a controllable way to navigate the dataset, which comprises of data from antenna basements, radio transmitters, optic fibres and passive infrastructure.
- Based on the framework provided by EU regulations, the Communications Regulatory Agency (RAK) of Bosnia and Herzegovina has created two geoportals integrating spatial data and data from the operators obtained through an annual survey, thus enabling the visualisation of digital maps. Planned future activities include the adoption of a broadband strategy and implementation of the EU Electronic Communications Code.
- Georgia has adopted a National Broadband Development Strategy to be implemented between 2019 and 2025 and the objectives of which are to reach 99% 4G coverage, 1 Gbps for institutional entities, and access to 100 Mbps broadband for all households. The country is currently experimenting with Community Network pilot projects which are providing testing for future activities.
- The Regulatory Authority of Electronic and Postal Communications of Kosovo (ARKEP) has a Electronic Atlas in place, an interactive multi-layer map containing geographic location data as well as data from elements of the public infrastructure of electronic communications in the Country. ARKEP also has an app called Nettetst that is able to measure QoS reliably. Main constraints for broadband development are lack of financing, municipality cooperation, and low economic development.
- The Odessa Academy presented the "BroadbandCalculator.online", an automated system for choosing the most promising solution for building broadband access networks. The project was developed under the ITU CIS Region Initiative for Broadband and made available to the public in 2018. The calculations are based on hundreds of parameters from national network data, reinforcing the importance of quality ICT broadband data made available to decision makers. As countries are diving into mapping their investment opportunities in order to estimate the necessary commitments, using GIS system and proven algorithms, like the one developed in this project, are going to be investigated in further ITU tool development and assistances.

5. SESSION 4: MAPPING TOOLS IN SOUTH EASTERN EUROPE (II)

The objective of this session was to provide an opportunity for South Eastern European administrators/regulators to present the status of their mapping solutions and the work planned for the near future.

Session moderator: Agnieszka Gładysz, Director, Department of Strategy and Market Analysis, Office of Electronic Communications (UKE), Poland

- Montenegro’s Agency for Electronic Communications and Postal Services (EKIP) has regulations and mapping system in place and is discussing a new law with measures to reduce costs of deploying high speed electronic communications networks. The map built upon a geo-referenced databased and access is provided through a web portal, with access changing depending on whether the use is a designer, an operator or institutions. The map includes ducts, antenna poles, buildings/facilities and network termination points. Within the “Strategy for Development of Information Society 2020”, EKIP will develop broadband mapping to comprise new electronic communications and integrate data with data from other sources (e.g. demographic data).
- The Agency for Electronic Communications (AEC) in North Macedonia has a legal framework in place and a tool, the Web GIS collector, enabling the collection of data for newly built electronic communications. The portal can be used for different purposes by geodetic companies (investment), operators (deployments) and AEC employees who validate data and approve projects. Moreover, AEC integrates data with SPI and is therefore able to provide a comprehensive map of broadband coverage.
- In Serbia, the Regulatory Agency for Electronic Communications and Postal Services (RATEL) has since 2016 developed a database (built on GIS tools) which is detailed, geo-referenced and structured and comprises cables, antennas and other equipment, as mandated by the current regulatory framework. Future plans include an extension of mapping to include all electronic communications infrastructure, an integration with other sectors (e.g. power distribution), new guidelines for infrastructure sharing and an open data approach.

6. SESSION 5: MAPPING INFRASTRUCTURE AND IDENTIFYING INVESTMENT OPPORTUNITIES

The objective of this session was to identify ways and best practices on how mapping tools may help identifying investment opportunities and facilitate closing the investment gap expected by the market in the coming years.

Session moderator: Istvan Bozsoki, Head of Telecommunication Networks and Spectrum Management Division (TND), Telecommunication Development Bureau, ITU

- In Poland, the Office of Electronic Communications of the Republic of Poland (UKE) verifies mapping data and shares it together with information on spatial planning in order to facilitate business decision regarding investment. The infrastructure planning process includes inventory (to identify white spots), public consultation (to receive feedback on the mapping), a grid & network analysis (to identify the better investment strategy) and, finally, a competition (to find co-financing partners). Similar process is done for services investment.
- Broadband Calculator Software provides a new way of driving investment decisions by pooling information from users, administrators, operators, design engineers and system administrators. It has been successfully deployed in Tajikistan.
- At the ITU level, ITU Interactive transmission maps are being expanded beyond traditional features, with new overlays, the possibility to access via mobile and new dashboards. Information will be provided at the node and cable levels, with the possibility to filter, select and synthesize summaries of data at the country and regional levels. Further expansions plan are considered in research, interface, communication strategy, fundraising, reports and assessment studies and network planning and investment analysis tools.

7. CLOSING SESSION: KEY TAKEAWAYS

- Europe region has a various and diverse levels of implementation of broadband mapping systems. Systems may differ, among other factors, in architecture, scope, integration with other data, degree of openness and coverage.
- Some countries in Europe Region, particularly from South Eastern Europe, expressed the need for assistance for establishing/strengthening their broadband infrastructure mapping systems.
- ITU interactive mapping tool was recognized as a good platform to gather and display broadband infrastructure data at global, regional and country level. The need to strengthen the European dataset of the abovementioned mapping tool was identified as a priority action.
- It was recommended that additional work should be done at the Europe region level to help administrations develop mapping tools and strengthen the dataset on Europe within the ITU global mapping tool.
- Participants recognized the need for coordination of assistance in the Europe region (expert assistance, twinning projects, financing, partnerships).