# ITU Regional Initiative for EUROPE

EUROPE

**ITU-UKE Workshop on Mapping of Terrestrial Broadband Infrastructure and Services**
*2-3 July 2019 / Warsaw, Poland*

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www.itu.int/en/ITU-D/Regional-Presence/EUROPE

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World Summit on the Information Society
Turning targets into action
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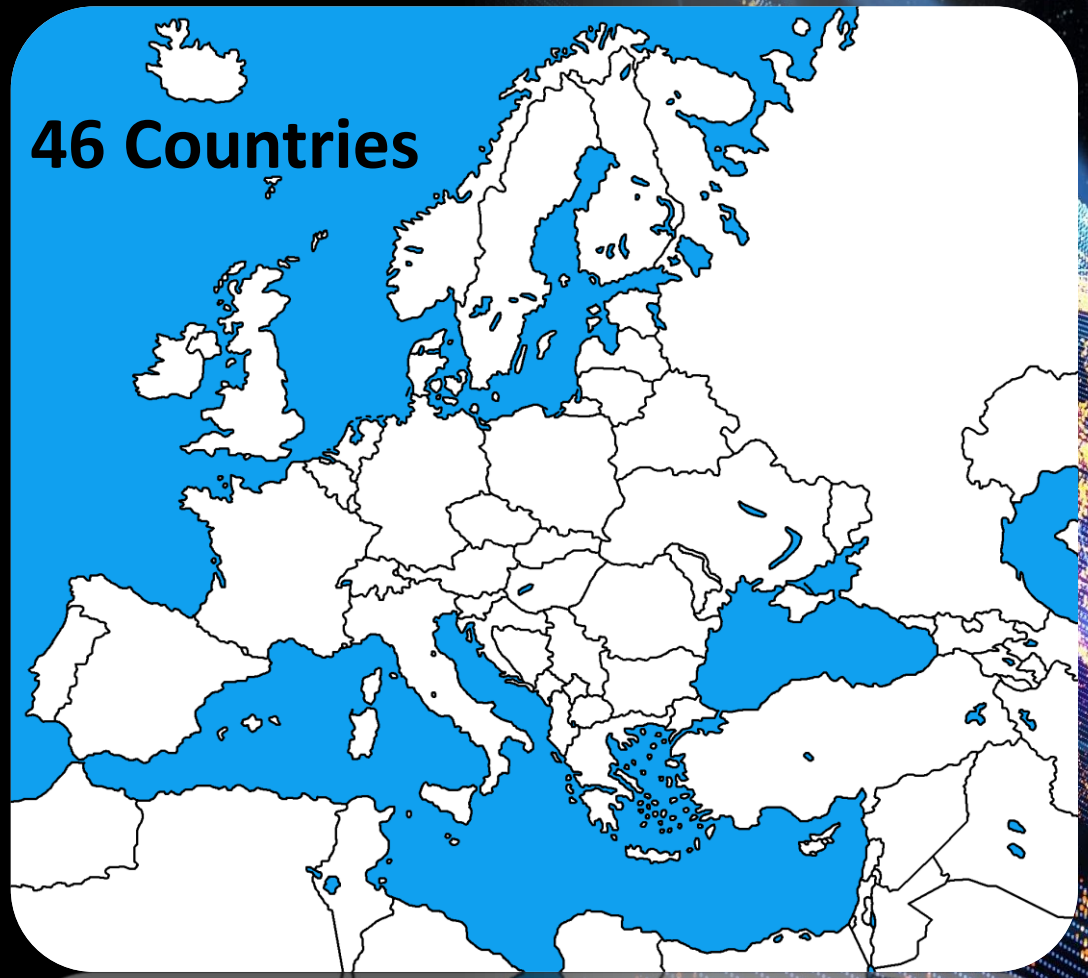
# EUROPE REGION

EUROPE



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# Regional Initiatives for Europe

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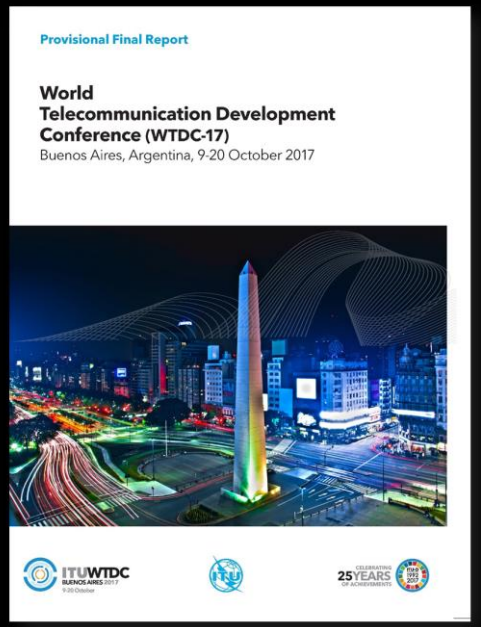


- Broadband infrastructure, broadcasting and spectrum management
- A citizen-centric approach to building services for national administrations
- Accessibility, affordability and skills development for all to ensure digital inclusion and sustainable development
- Enhancing trust and confidence in the use of information and communication technologies
- ICT-centric innovation ecosystems

# Implementation Framework

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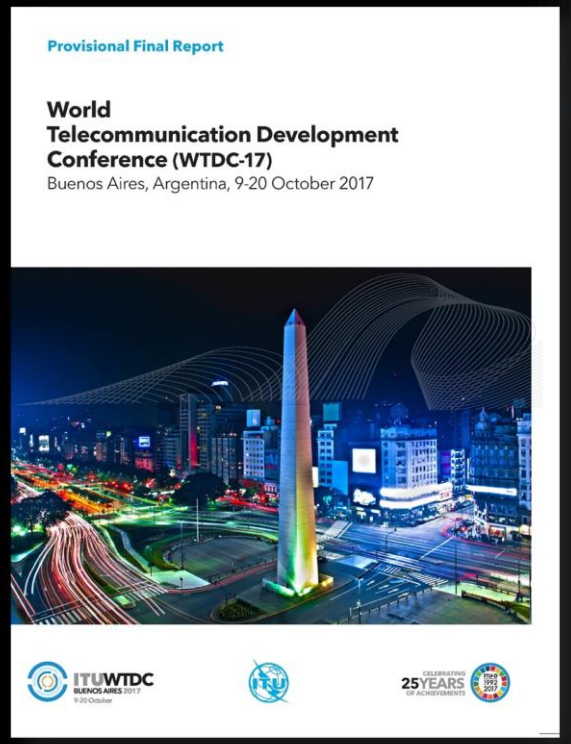

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# PRIORITIES 2018-2021

# EUROPE

- ICT Infrastructure
- Digitization e-Services
- Digital Inclusion
- Cybersecurity
- Innovation

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# INFRASTRUCTURE

To facilitate high-speed connectivity with resilient and synergistic infrastructure development, deployment and sharing, whilst ensuring a trusted and quality user experience.

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# INFRASTRUCTURE

## *EUR1: Broadband infrastructure, broadcasting and spectrum management*

**Expected results:** Assistance to the countries in need in the following

- Development of plans (national and regional) and feasibility studies for deployment of ubiquitous resilient high-speed connectivity, including 5G/IMT2020 and digital broadcasting deployment, with all relevant components including legislation, standards, organizational set-up, capacity building and cooperation mechanisms, as needed
- Sharing of guidelines on collaborative regulation between the telecommunication sector and other synergistic sectors such as energy, railway and transportation
- Assessment of dynamics, challenges and opportunities in respect of the roll-out of diverse broadband technologies across Europe in the context of the creation of ubiquitous resilient high-speed broadband infrastructure
- Sharing of best practices and case studies in cable TV, digital broadcasting, 5G experience, early use cases and trends in next-generation access network roll-out
- Mapping of the ubiquitous infrastructure and services, fostering harmonization of approaches across the region and taking into account infrastructure-sharing approaches applied by countries
- Establishment of quality-of-service systems and consumer-protection frameworks
- Development of plans for ICT for sustainable energy covering different types of ICT applications and innovations.

# INFRASTRUCTURE

## ITALY, November 2018

## UKRAINE, May 2018

## HUNGARY, July 2018

## LATVIA, July 2018

## MONTENEGRO, October 2018

## ATHENS, October 2018

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# INFRASTRUCTURE

- A series of seminars and workshops built the capacity of more than 1 100 stakeholders in the field of spectrum management and transition to digital broadcasting. This includes the following meetings:
  - Workshop on **The Future of Cable TV**, Geneva, Switzerland (25-26 January 2018)
  - Regional Seminar for Europe and CIS on **Digital Future Powered by 4G/5G**, Kiev, Ukraine (14-16 May 2018)
  - Regional Seminar for Europe and CIS on 5G Implementation in Europe and CIS: **Strategies and Policies Enabling New Growth Opportunities**, Budapest, Hungary (3-5 July 2018)
  - Regional Workshop for Europe and CIS on **"Broadband Development based on 4G and 5G Technologies"**, Almaty, Republic of Kazakhstan (17-18 September 2018)
  - Baltic Sea Region 5G Ecosystem Forum "**5G Technology**", Riga, Latvia (27-28 September 2018)
  - Regional Regulatory Forum for Europe on "**Evolving Regulatory Frameworks for Digital Future**", Budva, Montenegro (1-2 October 2018)
  - Forum on **"Towards 5G Enabled Gigabit Society"**, Athens, Greece (11-12 October 2018)
  - 3rd Annual CIS and CEE Spectrum Management Conference and ITU Workshop "**How to achieve interference free communication at the current technological stage**", Minsk, Belarus (08/04/2019 - 11/04/2019)

# INFRASTRUCTURE

## Additional 5G related meetings

- ITU-T Workshop on “5G, Health and EMF”
  5 December 2017, Warsaw, Poland
- Contribution to Europe’s 5G Ambition: Investing in 5G Enabler Infrastructure, 20 June 2018, European Parliament, Brussels)
- 2nd Annual CIS and Central and South-Eastern European Spectrum Management Conference and ITU Regional Workshop “Broadband Development based on 4G and 5G Technologies”
  17-20 September 2018, Almaty, Kazakhstan
- Conference on EMF and 5G, Warsaw, 6-7 December 2019

Dec 2018, WARSAW

June 2018, BRUSSELS

Sep 2018, KAZAKHSTAN

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# INFRASTRUCTURE

## UKRAINE, April 2019

## UKRAINE, May 2019

## ITU Headquarters, June 2019

## ALBANIA, June 2019

## POLAND, June 2019

## MONTENEGRO, September 2019

## UKRAINE, October 2018

## LATVIA, November 2019

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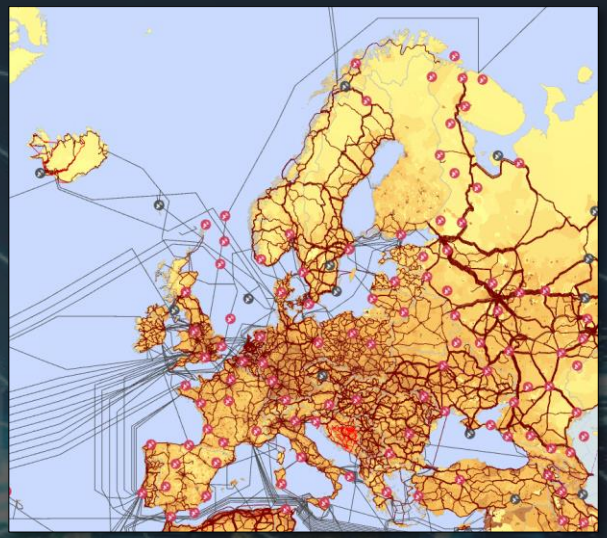
# INFRASTRUCTURE

- The following **publications** were made available in 2018:
  - The Future of Cable TV in Europe (2018) / The Future of Television (2019)
  - ICT for Sustainable Energy (2018)
  - Workshop reports (2018 and 2019)
- **Technical Assistance**
  - Albania: Update of the Broadband Policy
  - North Macedonia: Special Paper on ICT Infrastructure Development
- The Europe region part of the **ITU Broadband Map** was updated by reflecting the networks of several European operators.



- A **twinning programme** between Hungary and Albania led to an exchange of best practices in the field of spectrum management, in addition to development of the new spectrum strategy and policy in Albania.
- The above mentioned activities have been supplemented by a series of trainings delivered by the Europe region network of **ITU centres of excellence** that built capacity of more than 600 participants in field of broadband, Internet governance, cybersecurity and next generation networks.

# INFRASTRUCTURE Mapping

# MAPPING of INFRASTRUCTURE

- National Mapping Systems in 46 countries of Europe Region
- Diverse level of development
  - Active
  - Partially active
  - Under construction
  - Unknown
- Technical country assistance by relevant stakeholders
- Possible project targeting group of non-EU countries

# INFRASTRUCTURE

## Global Broadband Map: Broadband Transmission Capacity Indicators

1: **Transmission network length (Route kilometres)**

2: **Node locations**

3: **Equipment type of terrestrial transmission network**

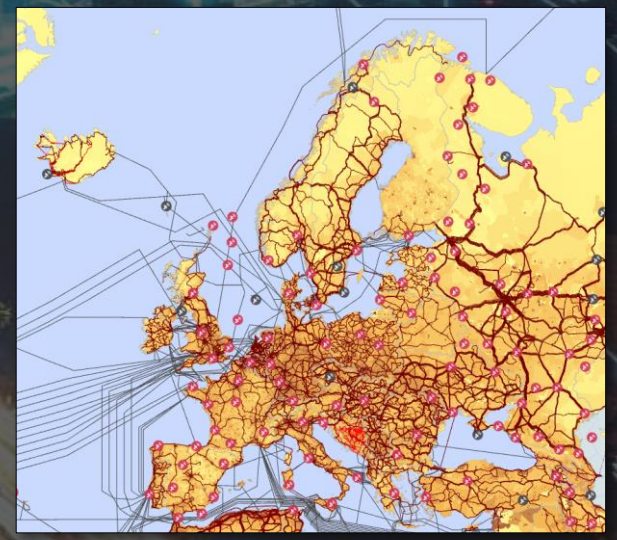
4: **Network capacity (bit rate)**

5: **Number of optical fibres within the cable**

6: **Operational status of the transmission network**

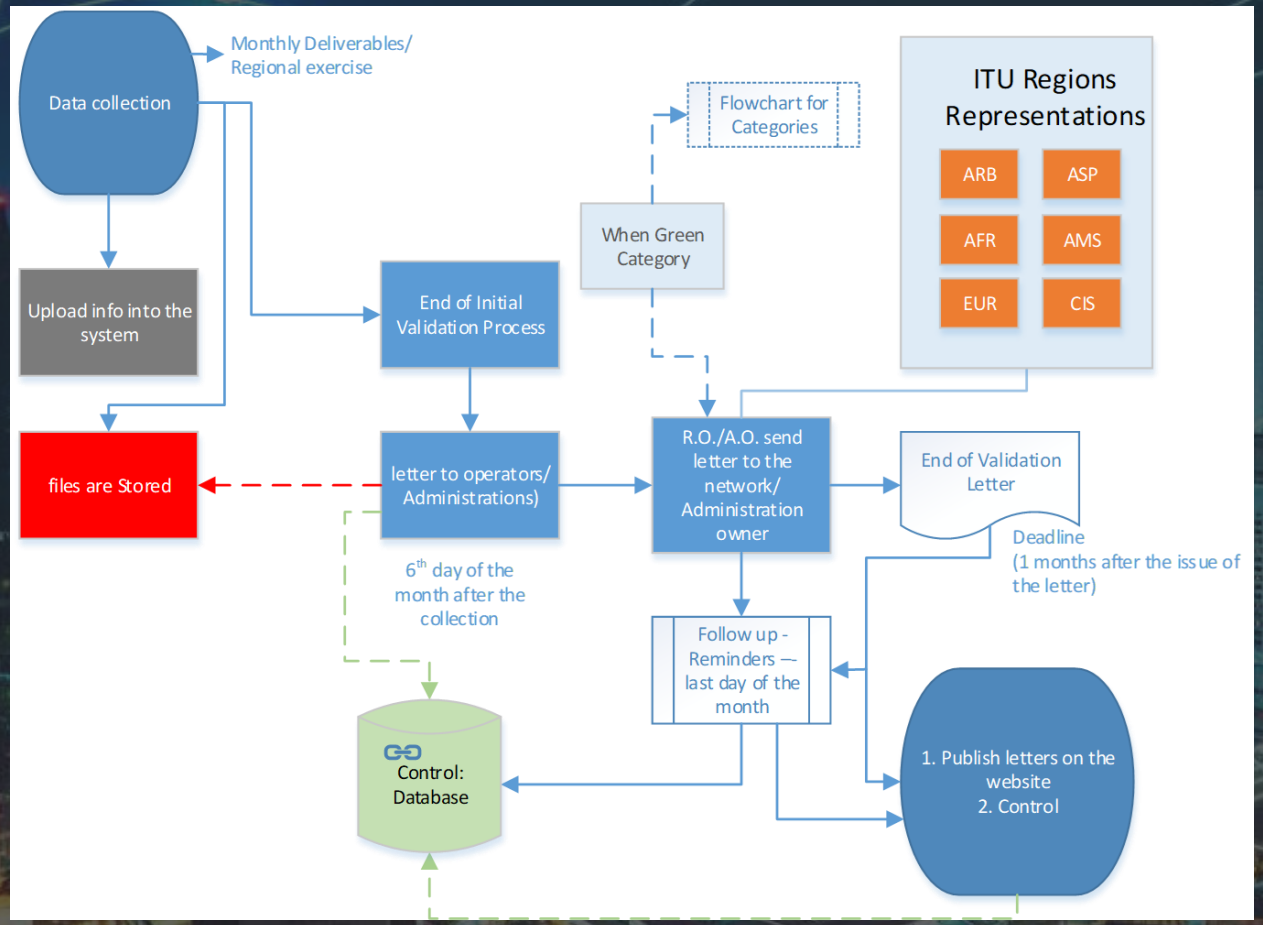
7a: **Percentage of population within reach of transmission networks**

7b: **Percentage of area within reach of transmission networks**



# INFRASTRUCTURE

- Europe in Global Broadband Map




The objective of the Validation Process is to engage network operators and administrations to verify the accuracy and integrity of the data, whilst it remains protected behind TIES.

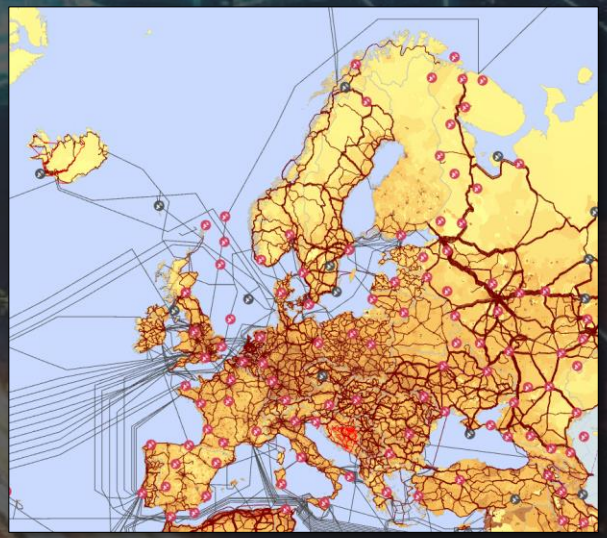
As the lines are verified, their status will progress from either RED, AMBER or GREEN through to light blue for PUBLIC (**After final clearance**).

For a detailed description : https://www.itu.int/itu-d/tnd-map/validation/

# INFRASTRUCTURE

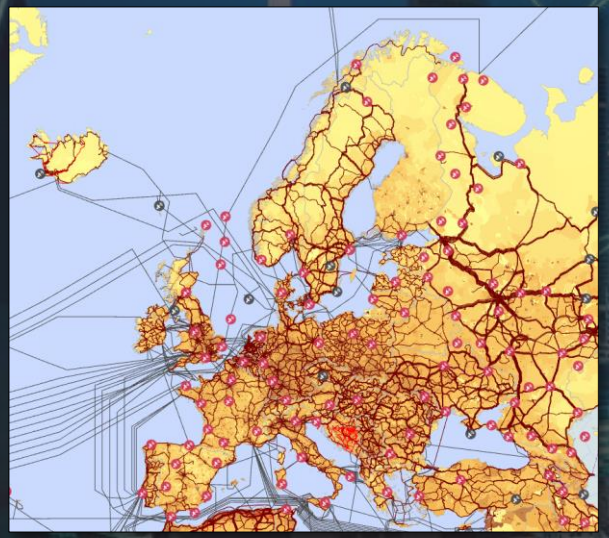
## Global Broadband Map: Data Structure – Sample

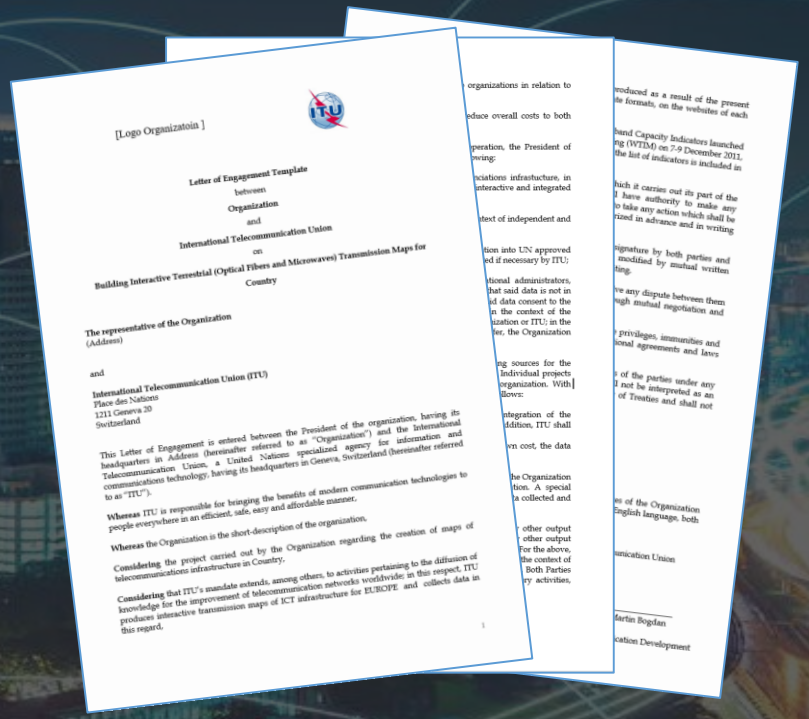
| COUNTRY | TYPE_INF | STATUS | CAPACITY | FIBRES | VALIDITY | NOTES | DISTANCE |
|---|---|---|---|---|---|---|---|
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 93.50 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 49.45 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 75.38 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 168.88 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 118.91 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 171.91 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 142.00 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 123.47 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 87.78 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 34.32 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 133.62 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 246.96 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 69.41 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 315.05 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 161.57 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 164.29 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 57.41 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 228.04 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 94.67 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 76.51 |
| Canada | Fibre Operational | Operational | 0 | 0 | 3 | | 82.14 |



# MAPPING of INFRASTRUCTURE

- Europe in Global Broadband Map





[Logo Organizatoin ]

**Letter of Engagement Template**

between

**Organization**

and

**International Telecommunication Union**

on

**Building Interactive Terrestrial (Optical Fibers and Microwaves) Transmission Maps for Country**

**The representative of the Organization**
(Address)

and

**International Telecommunication Union (ITU)**
Place des Nations
1211 Geneva 20
Switzerland

This Letter of Engagement is entered between the President of the organization, having its headquarters in Address (hereinafter referred to as "Organization") and the International Telecommunication Union, a United Nations specialized agency for information and communications technology, having its headquarters in Geneva, Switzerland (hereinafter referred to as "ITU").

**Whereas** ITU is responsible for bringing the benefits of modern communication technologies to people everywhere in an efficient, safe, easy and affordable manner,

**Whereas** the Organization is the short-description of the organization,

**Considering** the project carried out by the Organization regarding the creation of maps of telecommunications infrastructure in Country,

**Considering that** ITU's mandate extends, among others, to activities pertaining to the diffusion of knowledge for the improvement of telecommunication networks worldwide; in this respect, ITU produces interactive transmission maps of ICT infrastructure for EUROPE and collects data in this regard,

STATUS OF DATA PER COUNTRY

LETTER OF ENGAGEMENT

DATA TRANSFER TO GLOBAL MAP

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# Next Steps

- Towards **mapping / investment opportunities maps** for non-EU countries of Europe region
  - Stocktaking of the mapping tools
  - Gap analysis
  - Harmonization of approaches of non-EU countries
  - Consultations at the ITU Regional Regulatory Forum for Europe, 30 September – 1 October
  - Technical assistance to the countries
- Invitation to the European countries to provide information to the Global Terrestrial Transmission Map

# Thank You!!!

EURregion@itu.int

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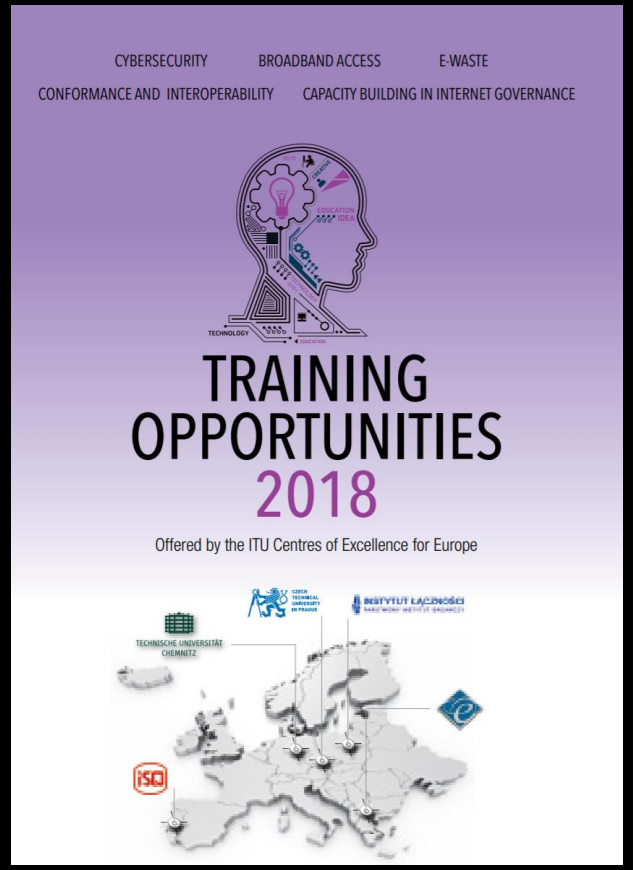
# ITU Centres of Excellence

# EUROPE




STRATEGIC ASPECTS FOR INTERNET GOVERNANCE AND INNOVATIONS [5-12 February]

LEGAL AND REGULATORY BARRIERS TO THE INTRODUCTION OF CLOUD SERVICES IN THE EU [5-12 March]

WIRELESS ACCESS TECHNOLOGIES TO INTERNET NETWORK [2-9 April]

FIBER OPTIC SPLICING AND INSTALLATION [23-25 May]

FUTURE BROADBAND INTERNET ACCESS [29 May – 25 June]

CYBER SECURITY AWARENESS FOR SMES [04 June]

SOFTWARE CONFORMANCE TESTING AND AUDIT [27–28 June]

INTERNATIONAL SUMMER SCHOOL ON CYBERSECURITY [09–13 July]

SECURITY AND QOS IN INTERNET NETWORK [24 September–01 October]

INTRODUCTION TO CYBER SECURITY FOR LIFECYCLE OF THE NEW MILLENNIUM [01 October]

BROADBAND ACCESS [October]

NETWORK AND IT SECURITY [October]

TECHNICAL, BUSINESS AND REGULATORY ASPECTS OF 5G NETWORK [25–26 October]

FIBER OPTIC SPLICING AND INSTALLATION [24–26 October]

NEXT GENERATION MOBILE BROADBAND [20 November – 17 December]

CE MARK FOR TELECOMMUNICATION, ACHIEVING COMPLIANCE FROM THE DIRECTIVES TO THE TEST LAB [21-23 November]

| NO | TRAINING COURSE TOPIC | COE | DATES | VENUE | TRAINING FEE | TYPE OF TRAINING |
|---|---|---|---|---|---|---|
| 1 | Strategic Aspects for Internet Governance and Innovations | NIT | 4-11 March | Online | 150 USD | Online |
| 2 | Wireless Access Technologies to Internet Network | NIT | 8-15 April | Online | 150 USD | Online |
| 3 | Cybersecurity Techniques | ISS | May-December | Online: Self-paced | 250 USD | Online |
| 4 | Governing Cyber Security at the National Level: Best practices and lessons learned | NRD CS | 7-10 May | Vilnius, Lithuania | 800 USD | Face-to-face |
| 5 | Building broadband telemedicine networks and providing e-health services at the local, regional and national levels | ONAT | 16-17 May | Odessa, Ukraine | 150 USD | Face-to-face |
| 7 | Legal and regulatory barriers to the introduction of cloud services in the EU | NIT | 20-27 May | Online | 150 USD | Online |
| 6 | Features of 5G technology implementation at the local (some towns), regional (district, region) and national level | ONAT | 23-24 May | Odessa, Ukraine | 150 USD | Face-to-face |
| 8 | NGN Evolution, Future Networks and Ultra-broadband Internet | FEEIT | 28 May – 24 June | Online | 150 USD | Online |
| 9 | Cyber Incident Response (Self-Paced Course) | ISS | June-December | Online: Self-paced | 250 USD | Online |
| 10 | CODATA/RDA Research Data Science Summer School | ICTP | 12-16 August | Trieste, Italy | 500 USD | Face-to-face |
| 11 | CODATA/RDA Advanced Workshop on IoT and Big-Data Analytics | ICTP | 19-23 August | Trieste Italy | 500 USD | Face-to-face |
| 12 | Security and QoS in Internet Network | NIT | 26 August-2 September | Online | 150 USD | Online |
| 13 | Technical Aspects of Wireless Solutions for the Internet of Things (IoT) | ICTP | 2-4 September | Trieste, Italy | 500 USD | Face-to-face |
| 14 | Incident Response Practice: Hands-on scenario-based training | NRD CS | 17-20 September | Vilnius, Lithuania | 800 USD | Face-to-face |
| 15 | Technical, business and regulatory aspects of 5G Networks | NIT | 30 September 7 October | Online | 150 USD | Online |
| 16 | Automation of broadband networks designing. Selecting the most appropriate solutions to build network | ONAT | October | Ashgabat, Turkmenistan | Free (in Russian) | Face-to-face |
| 17 | QoS Technologies and Regulation for Fixed and Mobile | NIT | 24-25 October | Warsaw, Poland | 500 USD | Face-to-face |
| 18 | IoT Entrepreneurship | ICTP | 6-8 November | Trieste, Italy | 500 USD | Face-to-face |
| 19 | The use of adaptive technologies to transmit video over radio channels | ONAT | 7-8 November | Odessa, Ukraine | Free (in Russian) | Face-to-face |
| 20 | CODATA/RDA/ICTP/TWAS Research Data Science Summer School in West Africa | ICTP | 18-22 November | Nigeria | 300 USD | Face-to-face |
| 21 | Wireless and Mobile Ultra-broadband: LTE-A PRO, WLAN, and 5G NR | FEEIT | 19 November 16 December | Online | 150 USD | Online |

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