

# EMERG Plenary

24 – 25 July Nicosia, Cyprus



**EaPeReg**

Eastern Partnership Regulators  
for Electronic Communications





# Digital Regulation Network (DRN)

**Presentation on the progress of the ITU  
Digital Regulation Network (DRN) Initiative  
A collaborative network of networks**

# Digital Regulation Network (DRN)

## The Collaborative Network of Networks



**Dr Cosmas Luckyson Zavazava**  
Director, Telecommunication Development Bureau

“Only by accelerating collaboration among stakeholders and taking digital governance to the next level, we can harness the full potential of digital transformation. Let’s join forces with stakeholders across the board and make an impact on the future of all people, everywhere”

### Objective

The aim of the Network is to accelerate sustainable digital transformation through common approaches to collaborative digital policy, regulation and governance across economic sectors and across borders. The Network is enabled by Regulatory Associations (RAs) at the regional and global level by leveraging South-South, North-South and triangular cooperation.



# Digital Regulation Network (DRN) Community



## DRN Community Network

- ✓ Regional Regulatory Associations (RAs)
- ✓ National Regulatory Authorities (NRAs)
- ✓ Regional Economic Commissions (REC)
- ✓ Other Sectors Regulatory Authorities
- ✓ International Telecommunication Union (ITU)
- ✓ ...



## ITU Events and Resources

- ✓ Global Symposium for Regulators (GRS)
- ✓ GSR Regional Regulatory Associations meeting (RAs)
- ✓ Industry Advisory Group on Development Issues (IAGDI CRO)
- ✓ ITU Digital Regulation platform
- ✓ Regional Regulatory and Economic events
- ✓ ...



## Capacity Building and exchange of information

- ✓ ITU Study Groups
- ✓ ITU Academy
- ✓ ITU Academy Training Centers (ATCs)
- ✓ ...

# Workplan and identified priorities

1. The Workplan was prepared based on the discussion and inputs provided by the DRN Board Members during the First Board Meeting, and within the framework of the DRN three main pillars:
  - A. Capacity Development
  - B. Thought leadership
  - c. Regulatory experimentation and innovation
2. The Workplan was distributed to all the Regional Regulatory Associations and their members
3. The Workplan is available on the [DRN Website](#)

# Activity 1: Knowledge sharing and capacity building

- **Supporting the work of the Broadband mapping building block: EMERG-EaPeReg-ITU Europe Regional Office Joint Workshops on Strengthening Broadband Infrastructure and Services including mapping**

- [First EMERG-EaPeReg-ITU Joint Workshop](#)  
Hybrid – Budva, Montenegro, September, 2023
- [Second EMERG-EaPeReg-ITU Joint Workshop](#)  
Online – November, 2023
- [Third EMERG-EAPEREG-ITU Joint Workshop](#)  
Hybrid – Tbilisi, Georgia, November, 2023

- **EMERG-EaPeReg-ITU Europe Regional Office Joint Workshop Digital Regulation, 10 April -30 May 2024 – online.**

- Build Capacity of RAs on digital regulation through ITU Academy and by **sharing Digital Regulation Platform articles and materials** –[Guiding principles for ICT regulators to enhance cyber resilience](#)

Second ITU-EMERG-EaPeReg Joint Workshop

## Strengthening Broadband Infrastructure and Services

8 November 2023, 10:00-12:00 CET  
Online

Part of the Digital Regulation Network (DRN) Initiative

Digital transformation  
regulation



FREE



# Activity 2: Sharing experiences to learn from other Regional Regulatory Associations

## The America's Regional Regulatory Associations meeting (RAs) held during the [ITU Policy and Economic Colloquium for the Americas Region \(IPEC-23\)](#), San Jose, Costa Rica, 2023

- Participants included: COMTELCA, CTU, ECTEL, REGULATEL
- Discussion and definition of priorities for the coming year for the Americas Region
- Participation of RAs at the Regional Economic Dialogue (RED-AMS) – Special RA session on Opportunities and challenges to achieve digital transformation in the Americas Region
- RA Participation on the Business Planning for Infrastructure Development using 5G – Master Class
- RA Participation at the ITU-T Study Group 3 Regional Group for Latin America and the Caribbean (SG3RG-LAC) Meeting



# Activity 3: RAs participation in and contribute to ITU-D Study Groups work actively

## Information Session on DRN at ITU-D Study Group Meetings

- a. ITU-D Study Group 1 Enabling environment for meaningful connectivity
- b. ITU-D Study Group 2 Digital Transformation

**Aim – to encourage RA participation and contributions to ITU-D Study Group questions**





# Activity 4: Collaborative Regulation Interactive workshop with the active participation of Regulatory Associations at WSIS-24

## Key Issues discussed:

- Some of the critical questions that were addressed included the **significance of collaboration in advancing the national and regional transformation agenda**, defining success criteria, sharing examples and experiences of innovative collaborative regulatory projects.
- **Regulators are required to serve as enablers and facilitators**, and it is imperative that they share their experiences and innovations with other regulatory bodies.
- International cooperation with international organizations, knowledge exchange with other regulators, and **partnerships and collaboration with Regional Regulatory Associations (RAs) are essential for achieving digital transformation.**



# Past and future activities for RAs

- **Interactive Regional Regulatory Association (RAs) session at GSR-24.**
- RAs were encouraged to participate in the **Industry Advisory Group on Development Issues (IAGDI CRO)** at GSR-24 to promote dialogue with the industry.
- **Call for applications** to select new members for the Digital Regulation Network Initiative (DRN) Board.
- The process of selecting **new DRN Board members** and the announcement of the new Board will follow.
- RAs are encouraged to provide support for the dissemination of **GSR-24 best practice guidelines (BPG) outcome.**

# Past and future activities for RAs

- Build the Capacity of RAs on digital regulation through **ITU Academy** by proposing them relevant training material and by sharing **Digital Regulation Platform articles and materials**
  - Upcoming updated article on *Regulation of Non-Geostationary Orbit (NGSO) Satellite constellations*.
- Translation of the Digital Regulation training material in other languages – ongoing negotiation with ARCTEL-CPLP and the World Bank
- **Twinning activities among RAs** will be implemented at inter-regional level to share expertise and knowledge among RAs and their members.
- RAs will actively contribute to the consultation process for ITU future studies and resources – upcoming **the impact of digital transformation on the economy; An overview of digital service taxation; etc.**

# ITU Compendium on Broadband Mapping: Advancing Digital Connectivity

24 – 25 July Nicosia, Cyprus



International Telecommunication Union



Compendium of Case Studies on Broadband Mapping  
Systems Across the EMERG and EaPeReg Regions

Open Document  
May 2024  
V.1.0

# Introduction and Purpose

## Introduction

- The ITU Compendium on Broadband Mapping Systems was produced to advance global knowledge in broadband mapping systems.
- This project is a collaboration between ITU, EMERG, and EaPeReg, initiated during the Global Symposium for Regulators 2023 (GSR23).

## Significance

- Broadband infrastructure is crucial for socio-economic development.
- The ITU, along with EMERG and EaPeReg, organized workshops to strengthen broadband infrastructure and services.
- These workshops align with ITU's goal of achieving the UN Sustainable Development Goals and promote the exchange of expertise among member countries.





# Workshop Series and Methodology



First ITU-EMERG-EaPeReg Joint Workshop  
**Strengthening Broadband Infrastructure and Services**

28 September 2023  
8:00 - 9:30 CEST  
Budva, Montenegro



Second ITU-EMERG-EaPeReg Joint Workshop  
**Strengthening Broadband Infrastructure and Services**

8 November 2023, 10:00-12:00 CET  
Online

Part of the Digital Regulation Network (DRN) Initiative



Third ITU-EMERG-EaPeReg Joint Workshop  
**Strengthening Broadband Infrastructure and Services**

30 November 2023  
Tbilisi, Georgia  
10:30-13:20 GET

Part of the Digital Regulation Network (DRN) Initiative



Fourth ITU-EMERG-EaPeReg Joint Workshop  
**Strengthening Broadband Infrastructure and Services**

25 July 2024  
Nicosia, Cyprus (Hybrid)  
9:45 - 12:30 EEST/ 8:45 - 11:30 CEST

Part of the Digital Regulation Network (DRN) Initiative

## Workshop Series:

The compendium presents outcomes from three workshops, featuring case studies from ten countries: Montenegro, Moldova, Poland, Armenia, Italy, Latvia, France, Georgia, Portugal, and Romania.

These case studies highlight good practices, challenges, current trends, and future outlooks.

Aim: To serve as a resource for policymakers, regulators, and industry stakeholders, promoting harmonization and cooperation among regions.

## Methodology:

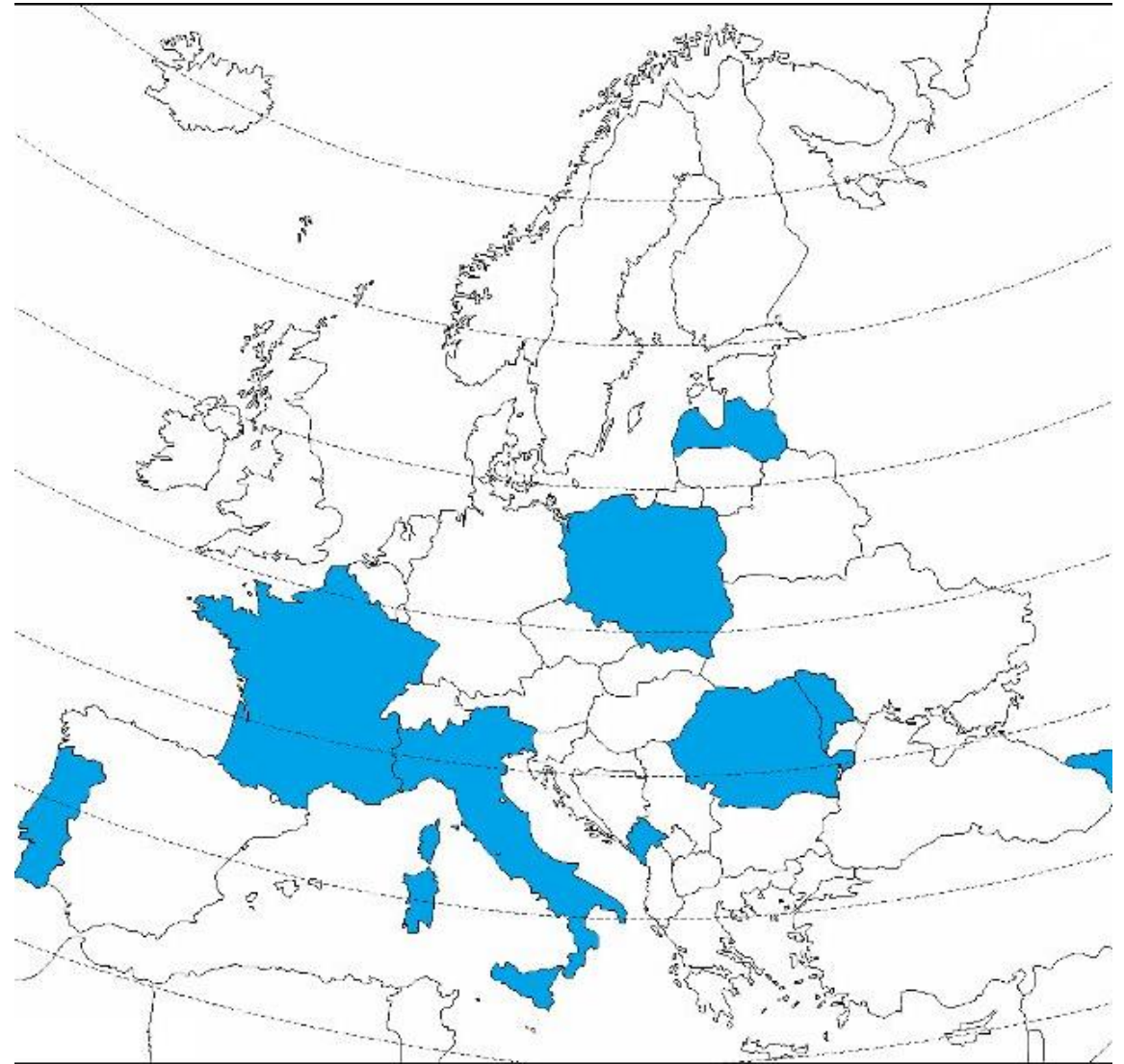
- Systematic data collection and analysis, including desk research, workshop presentations, email exchanges, and additional documentation.
- Workshops facilitated the exchange of experiences and best practices, which were documented and synthesized into case studies.



# The Series of Case Studies: The Countries Included in the ITU Compendium

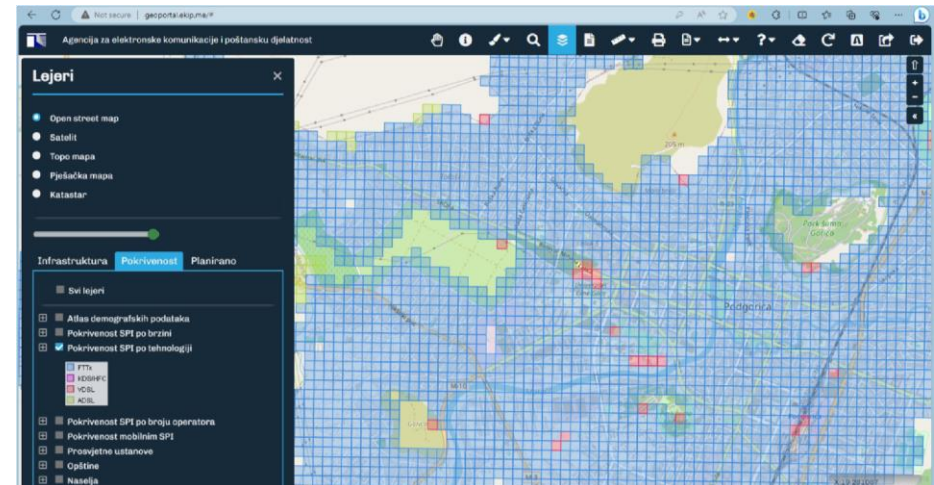
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- 1. Montenegro
- 2. Moldova      Onsite, in Montenegro
- 3. Poland
  
- 4. Armenia
- 5. Italy      Online
- 6. Latvia
- 7. France
  
- 8. Georgia
- 9. Portugal      Onsite, in Georgia
- 10. Romania



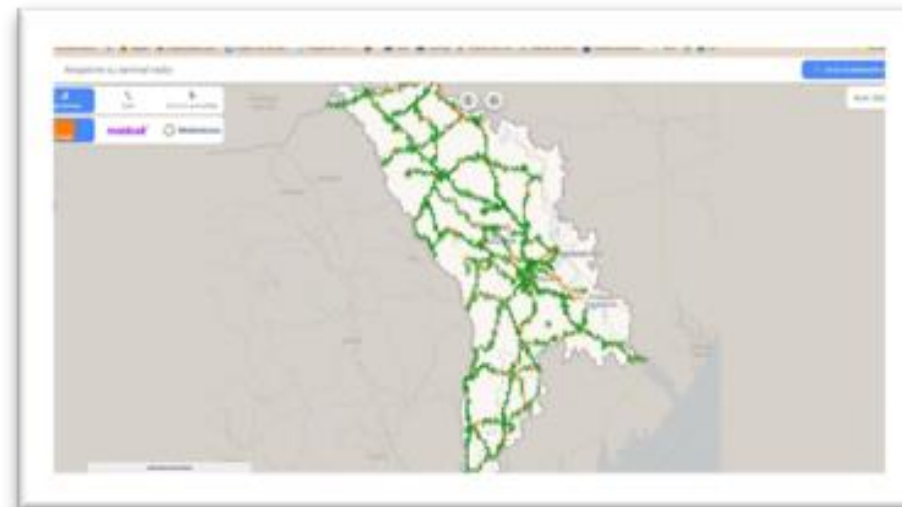
# Case Study 1: Montenegro

- Main objectives
  - Enhance digital infrastructure
  - Identify coverage gaps
  - Facilitate investments
  - Reduce deployment costs
- Key features
  - Infrastructure mapping (antenna poles, buildings, ducts, air cables)
  - GIS technology
  - Interactive maps
  - Public access portals
- Challenges
  - Data accuracy
  - Consistency with real-world situations
  - Technological updates
- Future steps
  - Enhanced Geoportal functionalities
  - Improved data control tools
  - Additional monitoring capabilities



# Case Study 2: Moldova

- Main objectives
  - Identify coverage gaps
  - Suitable investment areas
  - Avoid financial duplications
  - Ensure efficient use of existing infrastructure
- Key features
  - Interactive and statistical maps
  - Detailed data on network coverage and technology
  - User-generated data
- Challenges
  - Data accuracy
  - Dynamic technological landscape
  - Funding and infrastructure deployment
- Future steps
  - Data validation mechanisms
  - Public-private collaboration
  - Regular updates
  - Awareness campaigns
  - Policy Review



# Case Study 3: Poland

- Main objectives
  - Data analysis
  - Report generation
  - Advanced search functionalities
  - Enhanced data granularity
- Key features
  - Comprehensive platform
  - Mobile networks mapping
  - 4G/5G network throughput measurements
  - User-friendly dashboards
  - Detailed data tables
- Challenges
  - Data sourcing
  - Balancing mapping performance
  - Maintaining reliable open data
- Future steps
  - Improved data validation
  - Automated data gathering
  - Enhanced data control tools
  - Technological updates



# Case Study 4: Armenia

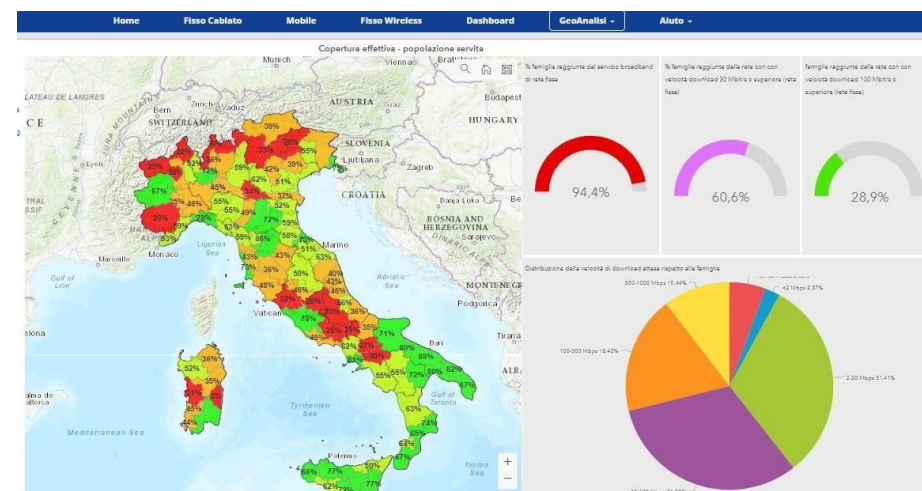
- Main objectives
  - Enhance visibility and accessibility of high-speed internet
  - Inform policy decisions
  - Bridge the digital divide
- Key features
  - Interactive maps
  - Detailed analysis of network coverage
  - Technology types
  - Service speeds
- Challenges
  - Data accuracy
  - Dynamic technological landscape
  - Funding and infrastructure deployment
- Future steps
  - Data validation mechanisms
  - Public private collaboration
  - Regular updates
  - Awareness campaigns
  - Policy review





# Case Study 5: Italy

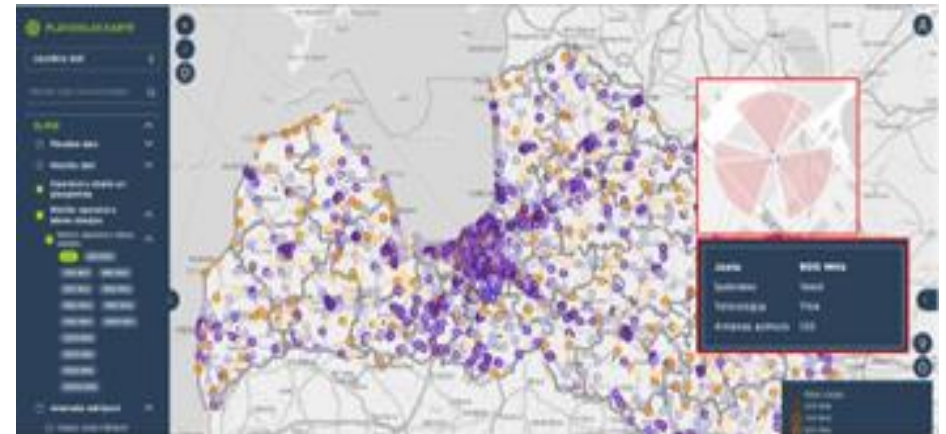
- Main objectives
  - Provide detailed broadband service information
  - Enhance digital infrastructure
  - Support strategic planning and policy-making
- Key features
  - Interactive maps
  - High-resolution GIS analysis
  - Public access portals
  - Comprehensive data on broadband technologies and speeds
- Challenges
  - Data accuracy
  - Continuous updates
  - Geographic diversity
- Future steps
  - Enhanced data validation
  - Regular system updates
  - Public engagement
  - Strengthened public-private collaboration
  - Periodic regulatory reviews





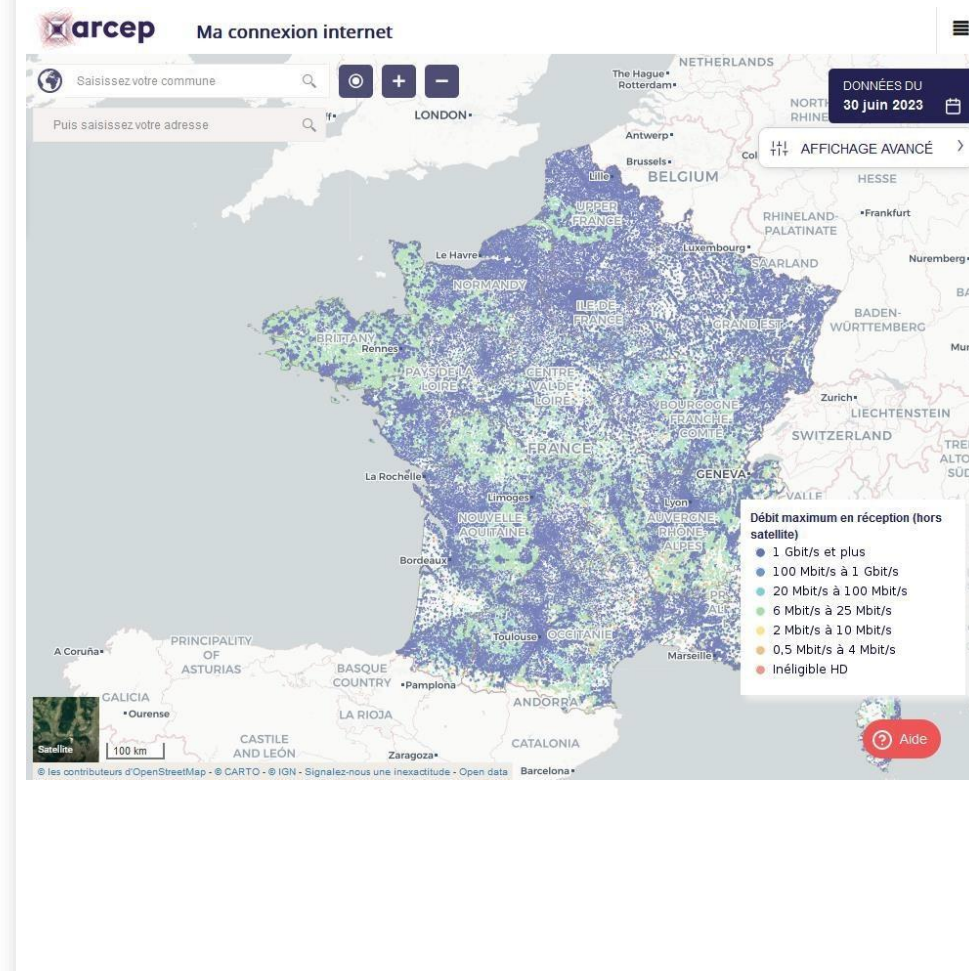
# Case Study 6: Latvia

- Main objectives
  - Advance digital transformation
  - Consolidate broadband data
  - Publicize broadband activity
  - Identify unserved areas
  - Comply with European gigabit society goals by 2025
- Key features
  - Interactive map
  - Address-level speed map
  - Statistical coverage by administrative strata
  - Detailed analytics
  - Identification of white, grey, and black areas
- Challenges
  - Data accuracy
  - Harmonizing data formats
  - Establishing automated data gathering
- Future steps
  - Automated data gathering
  - Enhanced data validation
  - Strengthened collaboration with data providers
  - Public awareness campaigns
  - Regular system updates



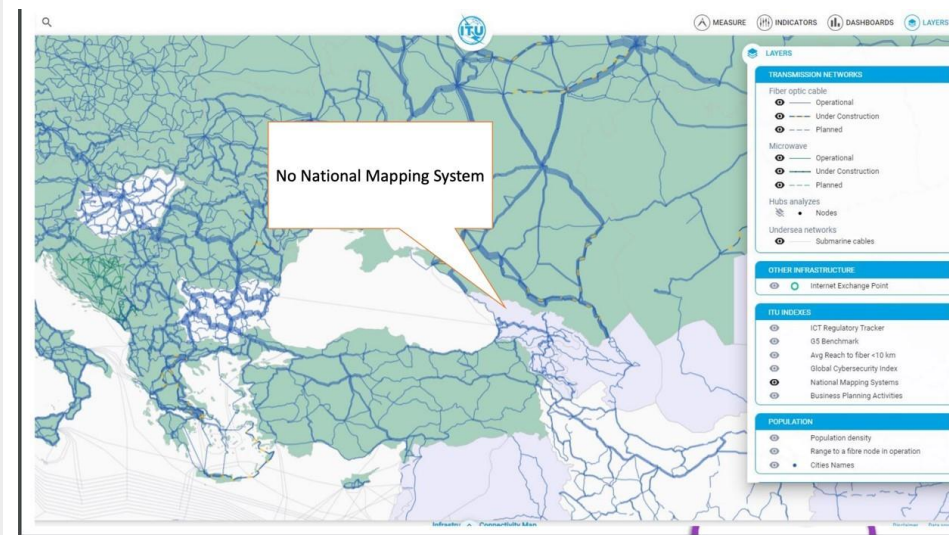
# Case Study 7: France

- Main objectives
  - Advance digital transformation
  - Achieve full broadband coverage
  - Generalize FttH technology
  - Phase out copper network
  - Focus on user-oriented data
- Key features
  - Interactive map
  - Address-level speed map
  - Statistical coverage by administrative strata
  - Detailed analytics
  - Identification of white, grey, and black areas
- Challenges
  - Data accuracy
  - Data formats
  - Automatic data gathering
- Future steps
  - Automated data gathering
  - Enhanced data validation
  - Strengthened collaboration
  - Public awareness campaigns
  - Technological upgrades



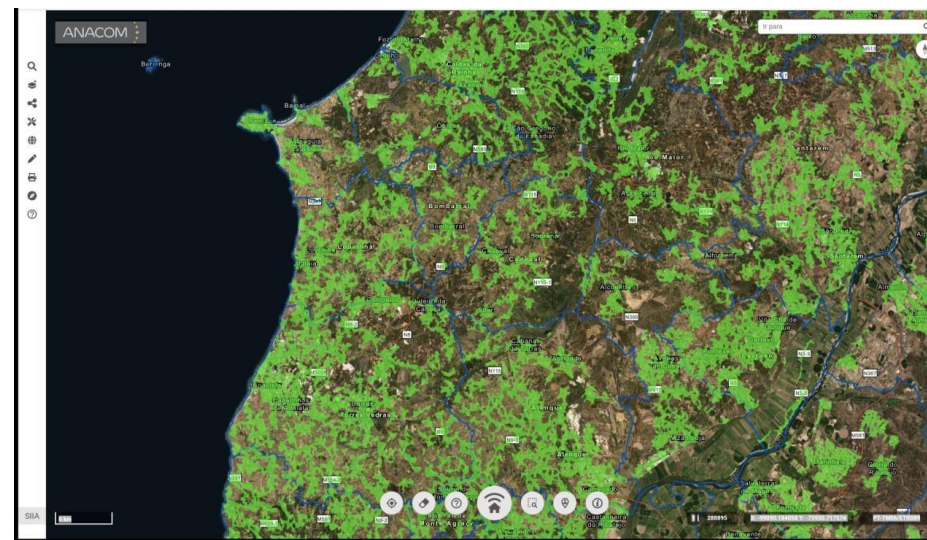
# Case Study 8: Georgia

- Main objectives
  - Centralize broadband data
  - Publicize broadband availability
  - Identify unserved areas
  - Comply with EU Association Agreement
- Key features
  - Multi-tiered architecture
  - Interactive maps
  - Integration of passive and active infrastructure data
  - International collaboration for development
- Challenges
  - Data accuracy
  - Identifying experienced GIS developers
  - Quality data collection from telecom operators
  - Stakeholder collaboration
- Future steps
  - Automated data gathering
  - Enhanced data validation
  - Public-private partnerships
  - Community engagement
  - Regular system updates



# Case Study 9: Portugal

- Main objectives
  - Inform citizens, businesses, state entities
  - Align with European gigabit society goals
  - Provide comprehensive broadband coverage data
- Key features
  - Granular data collection at the address level
  - Integration with INE database
  - Interactive maps
  - Performance metrics visualization
- Challenges
  - Data availability across operators
  - Address database inconsistencies
  - Data integration challenges
- Future steps
  - Enhanced data validation
  - Public-private partnerships
  - Community engagement
  - Adapt to emerging technologies





# Case Study 10: Romania

- Main objectives
  - Comprehensive broadband coverage
  - Adherence to EU directives
  - Informed regulatory decisions
- Key features
  - Interactive maps
  - Color-coded layers
  - Performance metrics
  - Trend analysis
- Challenges
  - Data accuracy and completeness
  - Data sharing and collaboration
  - Bridging digital divide
  - Embracing emerging technologies
- Future steps
  - Enhanced data validation
  - Public-private partnerships
  - Community engagement
  - Adapt to emerging technologies



# Macro Areas Identified in the Compendium on the Good Practices in Broadband Mapping

1. Establishment of reliable address databases
2. Formulation of robust policy and regulatory frameworks
3. Fostering collaboration and partnerships
4. Standardizing data collection methodologies
5. Addressing legal and privacy considerations
6. Employing advanced visualization techniques





# Good practices: Address Database

**Importance:** Ensures comprehensive coverage and data consistency.

**Implementation:** Use GIS data from cadastral systems for precise geographical coordinates.

## Key Criteria:

- **Geographical Precision:** High (e.g., using GIS data from cadastral systems)
- **Data Consistency:** High (e.g., standardized format for address data)
- **Update Frequency:** High (e.g., regular updates from municipal records)

Criteria	Importance	Implementation example
Geographical Precision	High	Using GIS data from cadastral systems
Data Consistency	High	Standardized format for address data
Update Frequency	High	Regular updates from municipal records

# Good practices: Policy and Regulatory Framework

- **Importance:** Defines objectives, roles, and legal mandates.
- **Key Elements:**
- **Objectives:** Identify coverage gaps, inform policy, guide investments (e.g., EU Digital Agenda)
- **Roles and Responsibilities:** Clear delineation among stakeholders (e.g., Romanian Electronic Communications Law)
- **Legal Mandates:** Legislative support for data sharing and compliance (e.g., European Electronic Communications Code)

Framework Element	Description	Example
Objectives	Define specific goals (e.g., identifying coverage gaps)	EU Digital Agenda
Roles and responsibilities	Clear delineation among government agencies, operators, etc.	Romanian Electronic Communications Law
Legal Mandates	Legislative support for data sharing and compliance	European Electronic Communications Code

# Collaboration and Partnerships

- **Importance:** Enhances accuracy and comprehensiveness.
- **Stakeholder Collaboration Model:**
- **Government Agencies:** Policy-making, funding, oversight (e.g., EU Digital Agenda)
- **Regulatory Bodies:** Data standards, compliance enforcement (e.g., ANACOM in Portugal)
- **Telecommunication Operators:** Data provision, infrastructure deployment (e.g., public-private partnerships in Italy)
- **Community Organizations:** Crowdsourced data collection, public awareness (e.g., local initiatives in Georgia)

Stakeholder Group	Role in Broadband Mapping	Example Initiatives
Government Agencies	<u>Policy-making</u> , funding, and oversight	EU Digital Agenda
Regulatory Bodies	Data collection standards, compliance enforcement	ANACOM in Portugal
Telecommunication Operators	Data provision, infrastructure deployment	Public-private partnerships in Italy
Community Organizations	Crowdsourced data collection, public awareness	Local initiatives in Georgia

# Good practices: Data Collection and Standardization

**Importance:** Ensures consistency and reliability.

- **Standardization Examples:**
- **Speed:** Measurement of download/upload speeds (e.g., FCC Form 477 Data)
- **Technology Type:** Types of broadband technology (e.g., ITU Standards)
- **Coverage:** Geographic extent of service (e.g., GIS-based mapping)
- **Data Source:** Integration of ISP and crowdsourced data

Data Parameter	Description	Standardization Example
Speed	Measurement of download and upload speeds	FCC Form 477 Data
Technology Type	Types of broadband technology (e.g., fiber, DSL, cable)	ITU Standards
Coverage	Geographic extent of broadband service	GIS-based mapping
Data Source	Origin of data (e.g., ISP reports, surveys, crowdsourcing)	Integration of ISP and crowdsourced data

# Good practices: Legal and Privacy Considerations

**Importance:** Protects sensitive information.

## Mitigation Strategies:

- **Data Sensitivity:** Anonymization and aggregation (e.g., GDPR compliance)
- **Access Control:** Restricted access (e.g., role-based controls)
- **Data Protection:** Encryption and secure storage (e.g., ISO/IEC 27001 standards)

Privacy Concern	Mitigation Strategy	Example Protocols
Data Sensitivity	Anonymization and aggregation of personal data	GDPR compliance in the EU
Access Control	Restricted access to sensitive data	Role-based access controls
Data Protection	Encryption and secure storage of data	ISO/IEC 27001 standards



# Good practices: Visualization of Broadband Coverage

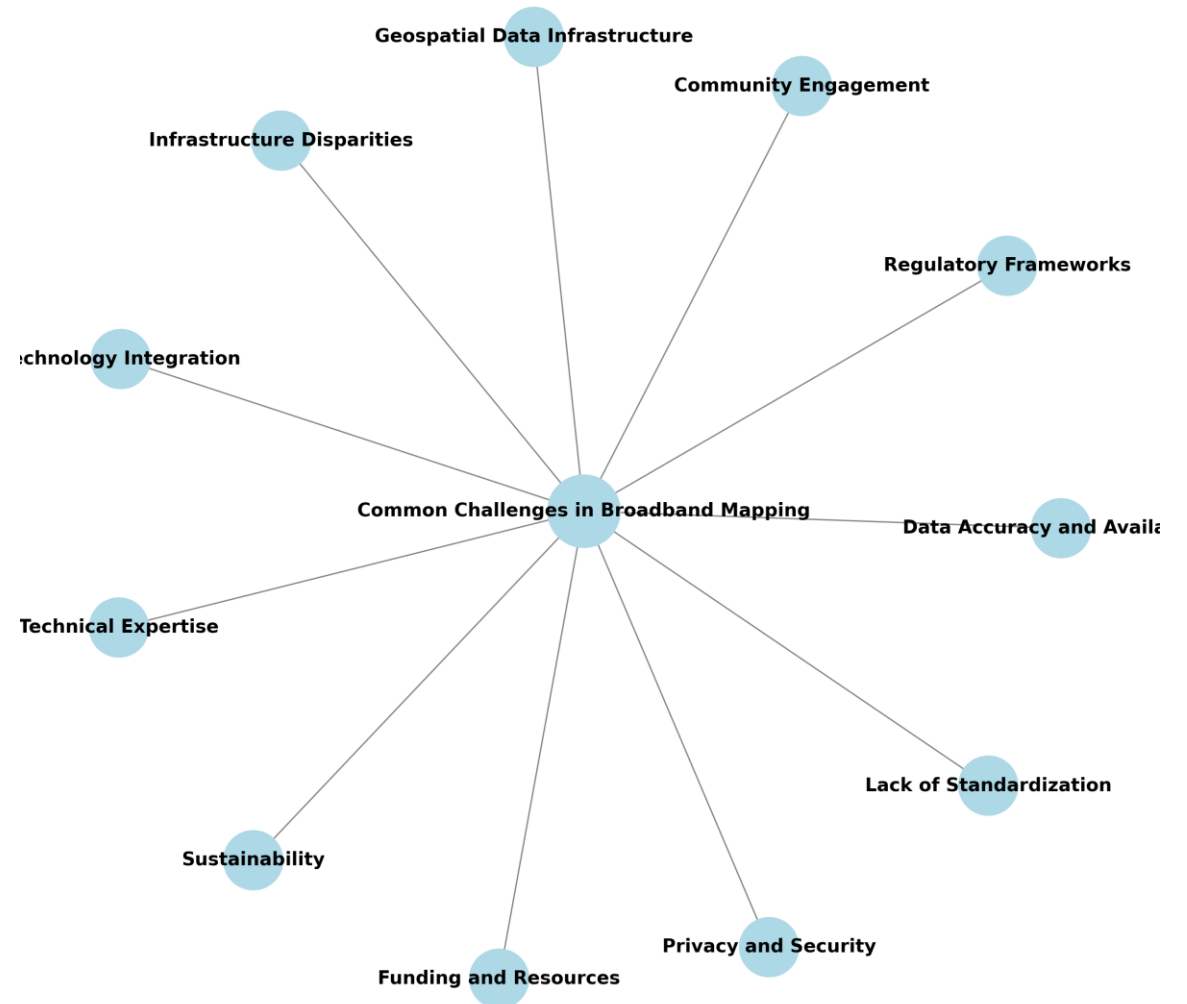
## Techniques:

- **Interactive Maps:** Zoomable maps, address-level detail
- **Color-Coded Layers:** Different service availability (e.g., fiber, DSL, wireless)
- **Performance Metrics:** Download/upload speeds, latency
- **Heatmaps:** Visual representation of speed variations
- **Public Access Portals:** User-friendly interface, public access
- **Geospatial Analysis Tools:** Detailed geospatial data visualization
- **Dashboards:** Aggregated displays of performance metrics
- **3D Mapping:** Realistic, interactive models

Visualization Technique	Description	Example Features
Interactive Maps	Web-based maps that allow users to explore broadband coverage at various geographic scales.	Zoomable maps, address-level detail
Color-Coded Layers	Layers on maps color-coded to indicate different levels of service availability and performance.	Distinguishes fiber, DSL, wireless
Performance Metrics	Displays metrics such as download/upload speeds, latency, and reliability indicators.	Speed test results, latency measures
Heatmaps	Visual representation of broadband speed or signal strength variations across areas.	High-density areas, coverage gaps
Trend Analysis Tools	Features for analyzing temporal trends in coverage and performance data.	Year-over-year comparisons
Public Access Portals	Websites or applications providing open access to broadband coverage data.	User-friendly interface, public access
Geospatial Analysis Tools	Utilizes GIS technology to map broadband availability, speeds, and technology types.	Detailed geospatial data visualization
Dashboards	Aggregated displays of various broadband performance metrics and coverage data.	Charts, graphs, summary statistics
3D Mapping	Advanced visualization showing terrain, building heights, and broadband infrastructure in 3D.	Realistic, interactive 3D models

# Macro Areas of Key Common Challenges in Broadband Mapping

1. Data Accuracy and Availability
2. Geospatial Data Infrastructure
3. Infrastructure Disparities
4. Regulatory Frameworks
5. Lack of Standardization
6. Privacy and Security
7. Technical Expertise
8. Funding and Resources
9. Community Engagement
10. Technology Integration
11. Sustainability



# Common Challenges in Broadband Mapping

## Data Accuracy and Availability

- **Challenge:** Ensuring accurate and up-to-date data from ISPs and other sources.
- **Example:** Montenegro's EKIP uses meticulous data control and cross-referencing to address inaccuracies.

## Geospatial Data Infrastructure

- **Challenge:** Integrating geolocation, census, and infrastructure data into a unified system.
- **Example:** Portugal integrates operator data with the INE database to overcome data integration challenges.

## Infrastructure Disparities

- **Challenge:** Addressing differences in broadband infrastructure between urban and rural areas.
- **Example:** Romania maps both urban and rural areas to bridge digital divides.

# Common Challenges in Broadband Mapping

## Regulatory Frameworks

- Harmonizing regulations and ensuring legal clarity for data collection.
- Lack of Standardization
- Establishing industry standards for consistent data interpretation.

## Privacy and Security

- Balancing detailed mapping needs with user data protection.
- Example: Portugal's Decree-Law nr 40/2022 ensures data protection while offering comprehensive broadband coverage information.

## Technical Expertise

- Building local capacity and expertise in mapping systems.
- Example: Georgia's challenge in finding experienced GIS developers highlights the need for technical expertise.

# Common Challenges in Broadband Mapping

## Funding and Resources

- Securing financial and human resources for mapping initiatives.
- Example: International cooperation and programs, such as ITU guidelines, can facilitate resource assessment.

## Community Engagement

- Engaging local communities in data collection efforts.
- Example: Italy's public awareness campaigns emphasize the importance of community involvement.

## Technology Integration

- Ensuring seamless interoperability and data exchange between different systems.
- Example: Portugal's advanced GIS tools and Python scripts demonstrate successful technology integration.

## Sustainability

- Ensuring long-term support and investment in mapping systems.
- Developing strategies for maintaining and updating mapping data over time is crucial.

# Conclusions and Outlooks

## 1. Finalization and Feedback

- The report is finalized but remains open for updates
- We will circulate it to EMERG and EaPeReg for feedback

## 2. Continuation of Joint Workshops

- Invite EMERG and EaPeReg to continue joint workshops
- Aim to expand the compendium through these workshops
- **Specialized Training for Technical Personnel**
- In collaboration with EMERG, OCECPR, and Rhode & Schwarz
- Targeted training for EMERG and EaPeReg NRAs

## 3. Leveraging ITU's Sandboxing Initiatives

- Foster innovation in digital transformation through ITU's sandboxing
- Create a safe space for experimentation and development
- Enhance the digital capabilities of our region
- [Parameter Table](#)



# Upcoming Workshop

- ITU-EaPeReg-EMERG fifth workshop
- 9 October 2024
- Nicosia, Cyprus

Fifth ITU-EMERG-EaPeReg Joint Workshop

## Strengthening Broadband Infrastructure and Services

9 October 2024  
Nicosia, Cyprus (Hybrid)

Part of the Digital Regulation Network (DRN) Initiative

