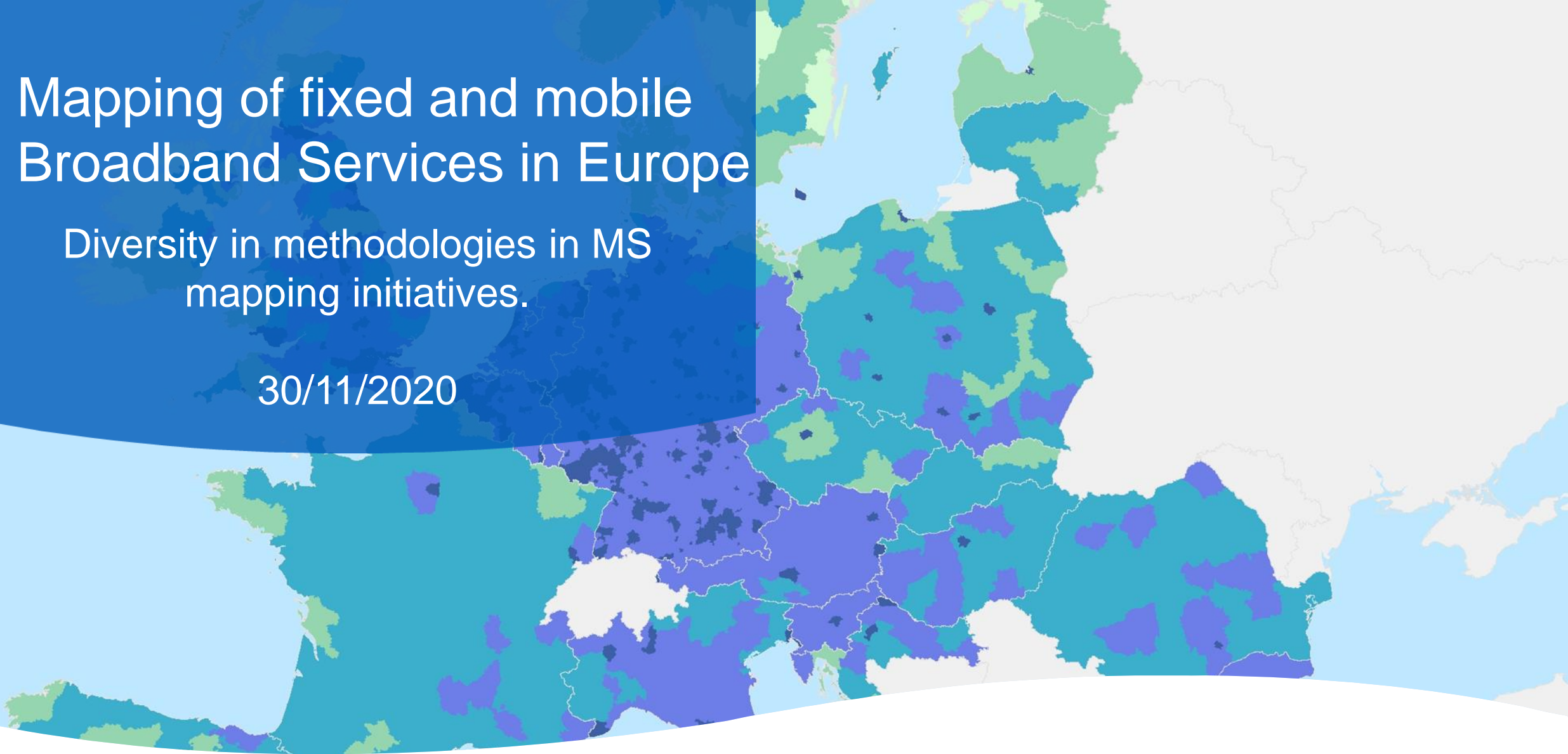


Mapping of fixed and mobile Broadband Services in Europe

Diversity in methodologies in MS
mapping initiatives.

30/11/2020





EUROPEAN BROADBAND MAPPING

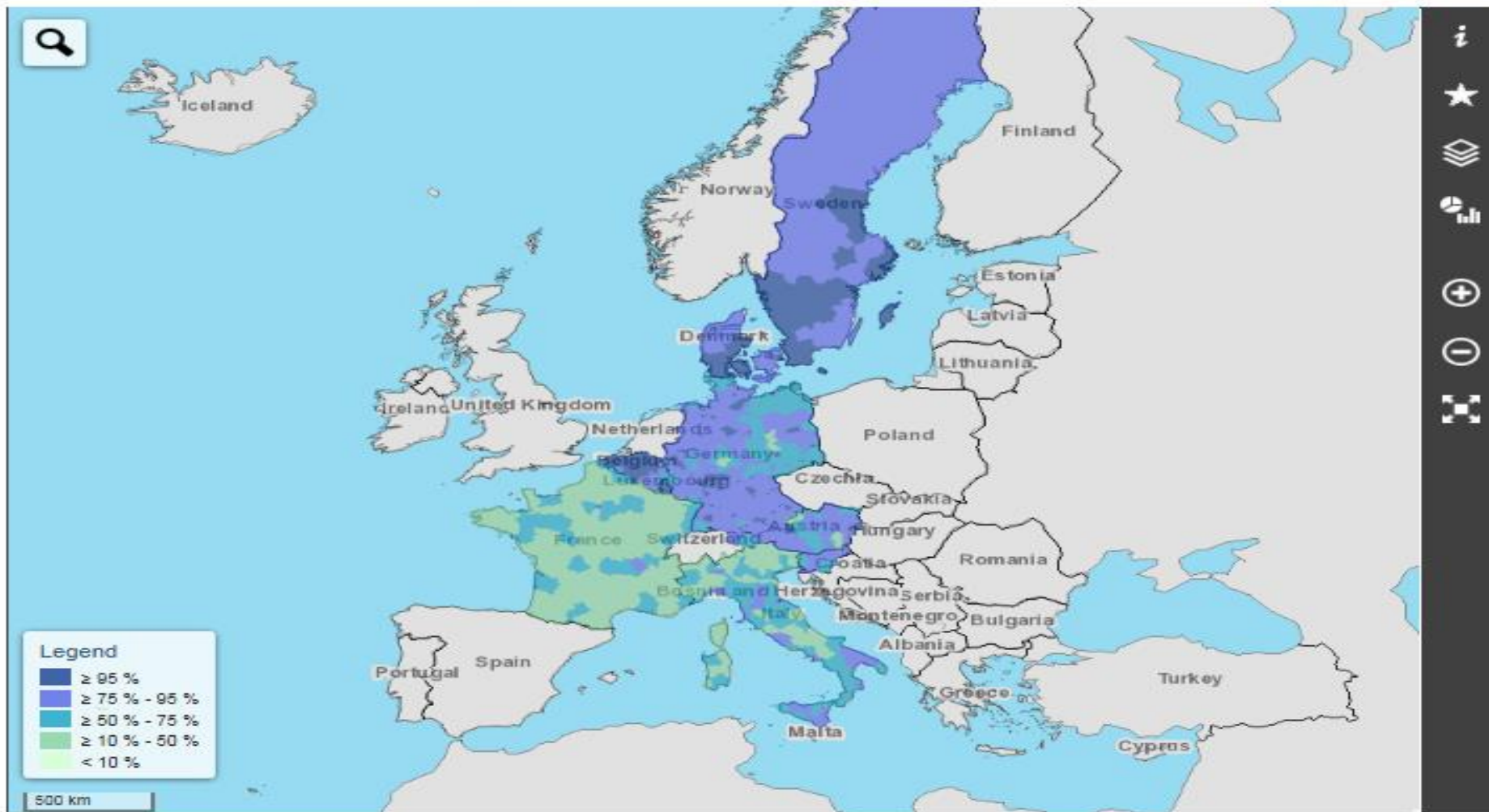
Quality of connectivity across Europe

> Home > Public map

Public map

Expert portal

Data collection portal



Leaflet | @Eurogeographics, European country names, Names of settlements in Europe(cities,towns)

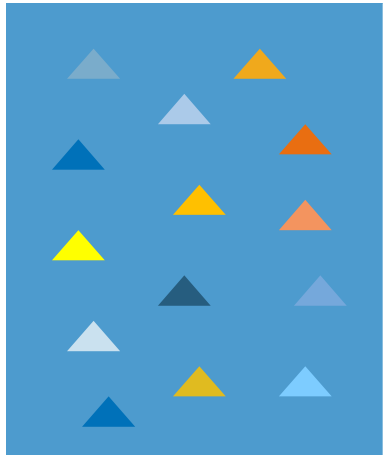
European Broadband Mapping portal – main challenges for the platform.



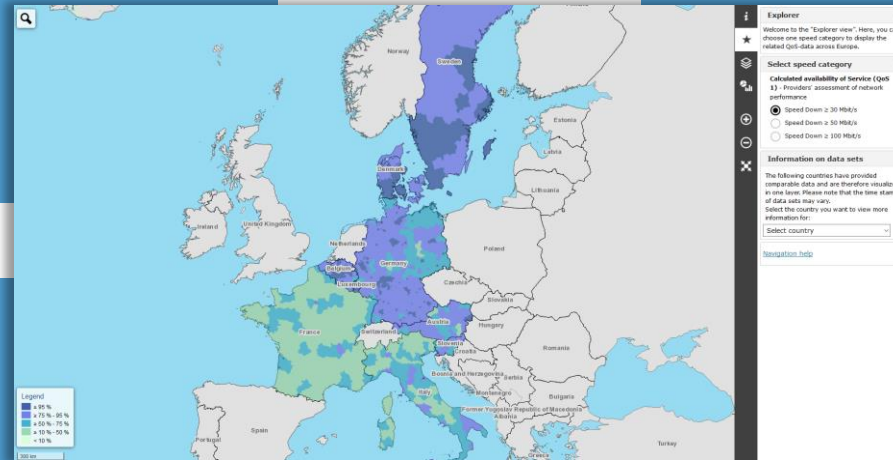
Heterogeneous mapping environments in member states

Different ways to collect data on Quality of Service

QoS 1
-
QoS 2
QoS 3



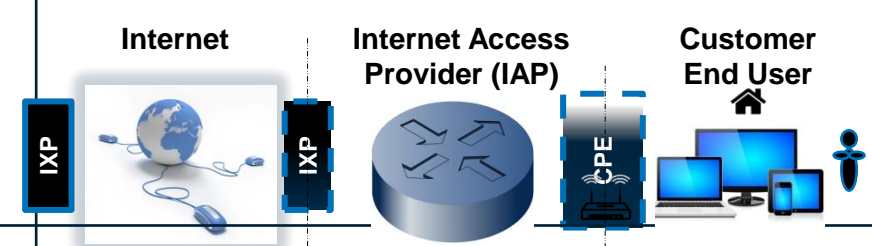
Diverse methodologies for mapping in member states



Large variety of attributes and metrics

DSL Median Upload
FTTH Jitter $\geq x$ Mbit/s
Latency Adresses
4G Download WiFi
Households Day peak

The EU-Broadband mapping project collects data on different Quality of Service (QoS) definitions



QoS-1: Theoretical

What: Predicted network performance / technical ability of existing infrastructure
Where: Between core network of the Internet Access Provider (IAP) and Network Termination Point (NTP), where end user's
How: Assessment / calculation by providers
Example: EC/DESI Coverage data on a country, regional and rural level for nine broadband access technologies

QoS-1



QoS-2: Practice optimal

What: Line qualification
Where: Between Internet Access Service (IAS) - from Internet Exchange Point (IXP) to Network Termination Point (NTP),
How: Measurement by providers or initiatives
 • Panel measurements through probes
Example: SamKnows, RIPE Atlas
Example: Initiative Netzqualität (by German NRA)

QoS-2



QoS-3: Practice experienced

What: Actual user's experience when using Internet Access Service (IAS)
Where: QoS triggered via the user terminal equipment (wired and wireless) Measurement including individual end user's environment
How: Measurements via online speed tests
Examples: Ookla, Akamai, Opensignal

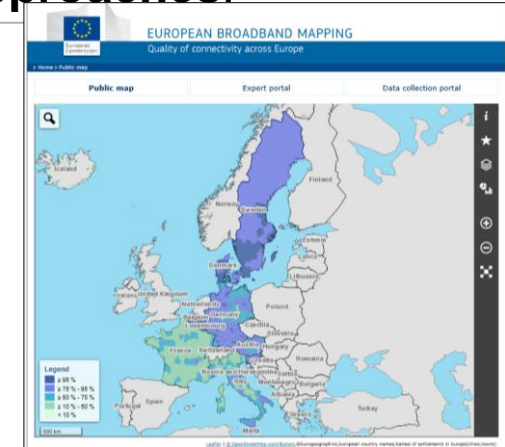
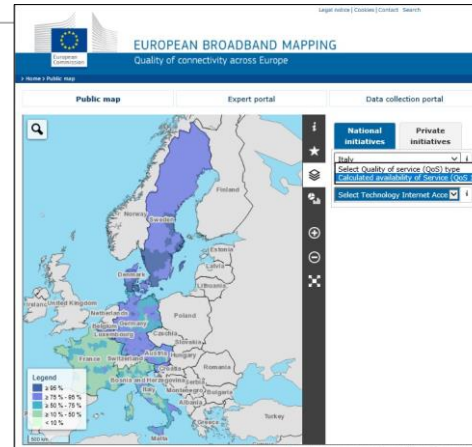
QoS-3



European Broadband Mapping portal – ensure comparability of data sets.

	Type of Data	Data Collection
Question	Which data is collected?	How is data collected?
Action	Identification of different data collection types.	Identification of different data collection methodologies.
Outcome	Outcome: Definition of Quality of Service types QoS 1, 2 & 3.	Definition of methodology groups with comparable approaches.

Visualization in the portal



 4 years stakeholder process with > 150 NRAs, Ministries & private initiatives

Ensure comparability – Introduction of Methodology Groups.

Methodology group	Aspect	Core issues of mapping approach
A	<ul style="list-style-type: none"> Method for determining quality of service Overlapping availabilities Market coverage ratio 	<ul style="list-style-type: none"> Data is based on Technical knowledge of network elements on exact location or calculations using exact locations of network elements Overlapping availabilities can be identified on small scale regions or more exact The data almost fully covers the market
B	<ul style="list-style-type: none"> Method for determining quality of service Overlapping availabilities Market coverage ratio 	<ul style="list-style-type: none"> Method for determining quality : Data is based on theoretical calculations on lower resolution Overlapping are calculated based on a theoretical approach on a higher level of resolution The data gives a decent overview of the market (The data is solely focused on large Internet Service Providers but still provides a decent overview due to the structure of the market.)

Major differentiation

Methodology group A
 Spatial level of collected data
 at least grid cells up to max
300 meter edge length

Methodology group B
 Spatial level of collected data
 lower resolved e.g. on
municipality level

European Broadband Mapping portal – different data collection methods.

Example data collection on different spatial resolutions.

Data collection NUTS 3



Data collection grid cells



Draft methodology

mapping of broadband coverage and quality of service

Article 22 of the new EU Code for electronic Communication

National regulatory and/or other competent authorities shall conduct a geographical survey of the reach of electronic communications networks capable of delivering broadband ('broadband networks') by 21 December .

BEREC's proposal is to use **address-level resolution** with exact geocoding for fixed networks and a 100x100 m grid (or polygons with equivalent resolution) for mobile networks. *2023 and shall update it at least every three years thereafter*

NRAs/OCAs may temporarily apply (at least) a **100x100 m grid**

Draft methodology mapping of broadband coverage and quality of service

The characterization is performed with definition of **households passed, download speed, upload speed and access technology**, as follows:

- Network provider code
- Technology code:
- Maximum Download speed class:
- Maximum Upload speed class:
- Expected Peak Time speed class (95% of the time criteria)
- Expected Peak Time speed class (95% of the time criteria)
- Number of premises passed by the operator at the address
- Determine if that network is VHCCN at the address considered

Draft methodology mapping of broadband coverage and quality of service

BEREC Guidelines:

- **1st phase on QS1: adopted in March 2020**
- **2nd Phase on Verificaiton to be adopted in December 2020**

Work on the Methodology

- **1st Draft November 2020**
- **Consultation with BCO Network and BEREC December 2020 -January 2021**
- **Testing phase: February-October 2021**
- **Final Methodology: December 2021**

European Broadband Mapping Project
For any further questions, please contact:

Technical Issues: Carlo Kammler (Project Manager)

TÜV Rheinland Consulting GmbH

carlo.kammler@de.tuv.com

Policy and regulatory issues: Guido Acchioni

EC DG CONNECT B5: Investments in High Capacity Networks

Guido.acchioni@ec.europa.eu