



Republic of Poland

Office of Electronic Communications

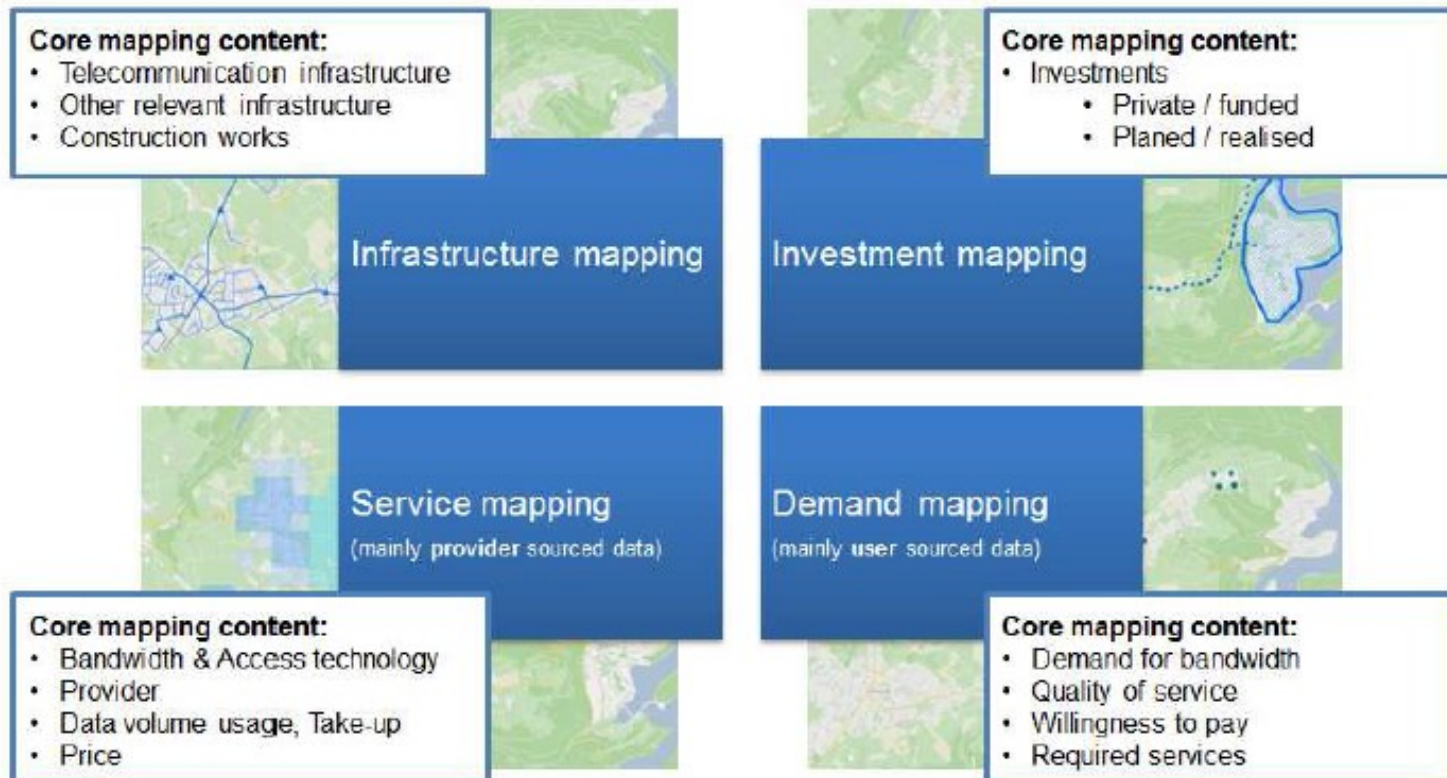
FROM PRACTICE TO STANDARDS – DIFFERENT APPROACHES TO INFRASTRUCTURE MAPPING

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Department of Data Management, UKE

ITU-EC-UKE Regional Conference for Europe
Broadband Services and Infrastructure Mapping
Warsaw, 11-12 April 2016



Categories of broadband mapping





International vs. National or Regional approaches - global data

Contracting Authority			Organisational Outfit		
	N	%		N	%
National Regulation Authority	17	55	Public authority	21	68
National Ministry	8	26	Private company	3	10
Regional Ministry	1	3	Voluntary Initiative	1	3
Private Company	1	3	Cooperation	4	13
Other	4	13	Other/No answer	2	6
Sum	31	100	Sum	31	100

Service Mapping		Infrastructure Mapping	
National level	Regional level	National level	Regional level
Favoured approach		Favoured approach	Sensible for sophisticated mappings
Demand mapping		Investment mapping	
National level	Regional level	National level	Regional level
Sensible for "QoS" scenario	Sensible for actual demand mapping (ad hoc)	Sensible for rolled out investments	Sensible for planned investments (ad hoc)

Wolfram

2011 @Copyright

Choose Service

---Select a City---

Herat

NBM National Broadband Map

How connected is my community?

Type of Technology Available

Date as of: 08/2011

ASYMMETRIC XDSL SYMMETRIC XDSL OTHER COPPER WIRE

TERRESTRIAL FIXED WIRELESS-UNLICENSED TERRESTRIAL FIX

Layers and Legend

Base Layer

- BDO

Overlays

- Geographical names
- Cable connectors 2014
- Radio nodes 2014
- Access nodes 2014
- Distribution nodes 2014
- Backbone nodes 2014
- Cable relations 2014
- Optical fibre relations 2014
- Collocation points 2014
- Intervention areas 2014
- Radio lines 2014

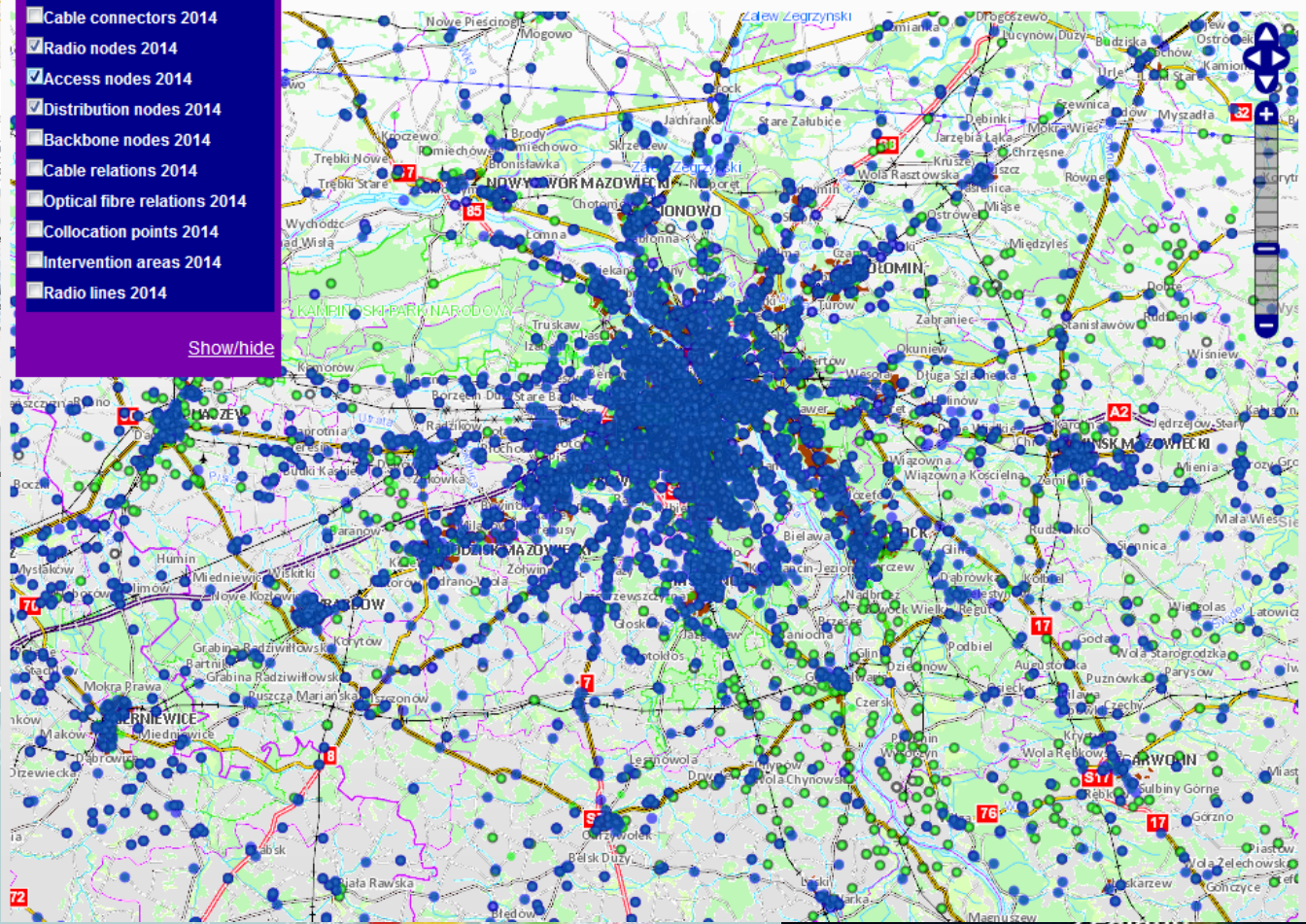
Show/hide

Search by coordinates ϕ λ Search

Search on the map

Key

- 0 - 0.5 Mbps
- 0.5 - 1 Mbps
- 1 - 2.5 Mbps
- 2.5 - 5 Mbps
- 5 - 7.5 Mbps
- 7.5 - 10 Mbps



Scale: 0 to 10000000 meters

2011 @Copyright





ITU Interactive Transmission Map TIES version



Committed to connecting the world

Welcome to the ITU Interactive Transmission Map. Select map layers below and navigate using the icons in the map window.

For help using this application please refer to the Sources & Help section below.

Alternatively, visit the [Public 2D version](#) of the Map or the public [Google Earth - 3D version](#)

Full details regarding data are available at [click here](#)

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DOWNLOAD DATA

Internet users per 100 people



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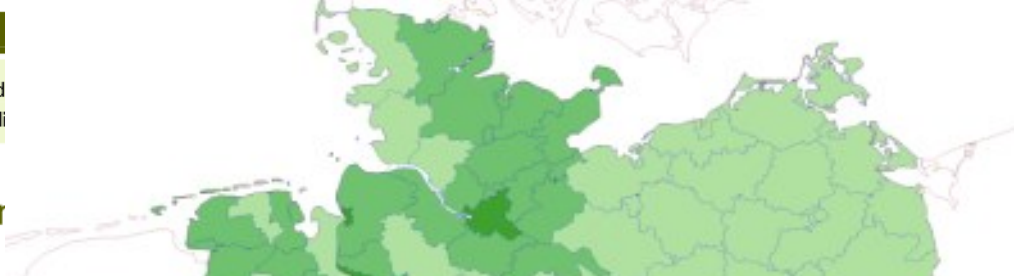
European experiences

data

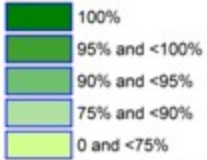
COVERAGE

Coverage refers to the proportion of household to the Internet or can get access with a slight d

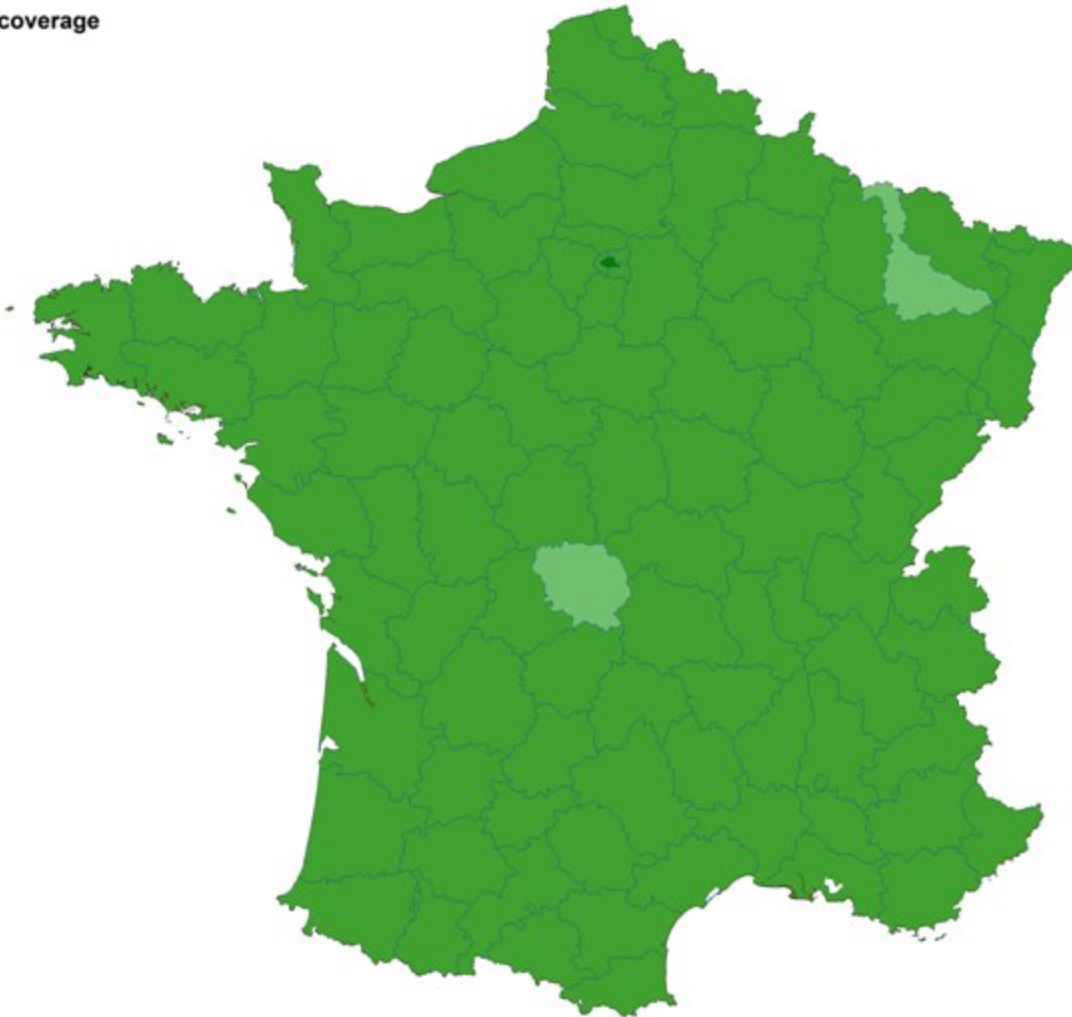
Coverage of 100 Mbps down



Total standard fixed coverage



Source: BCE 2012



Generation Access coverage



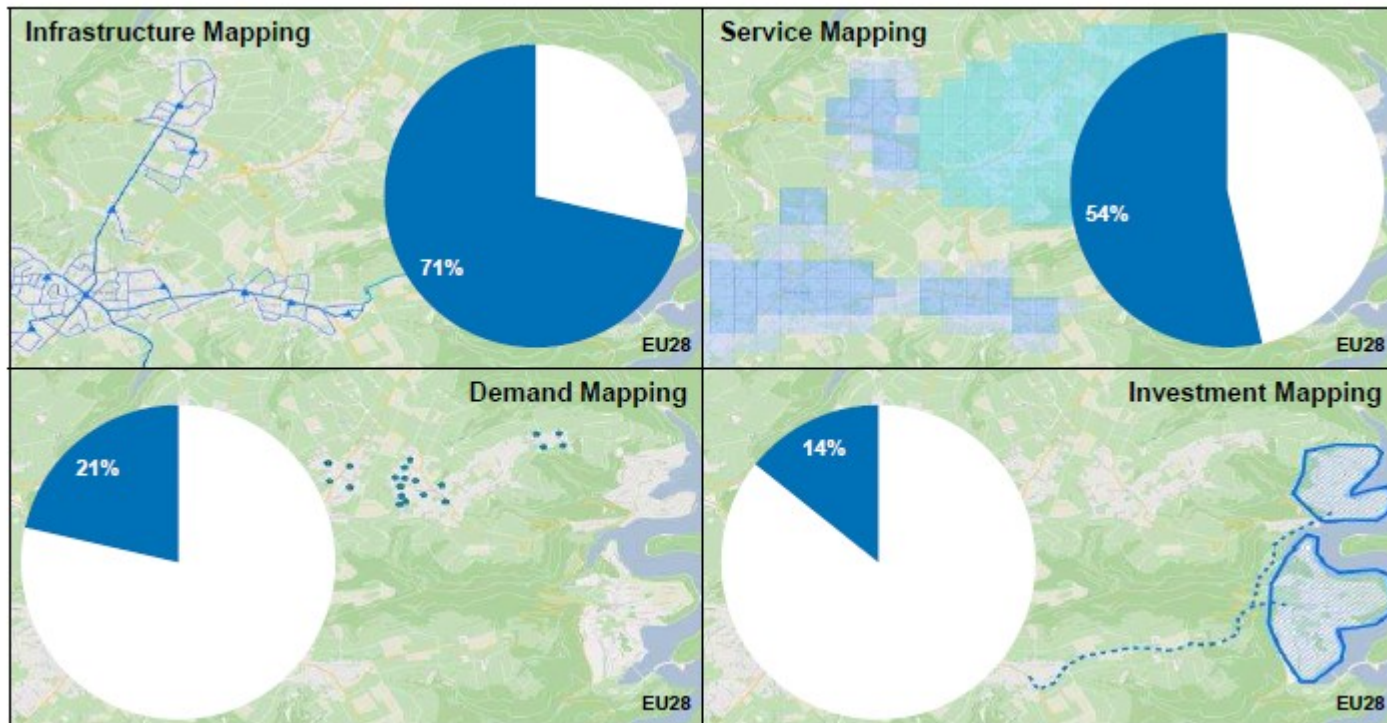
Source: BCE 2011



for the EU
T TRIS 7



EU data





Main objectives

Mapping initiatives aim to provide governments, national regulatory authorities, consumers, operators and industry with essential information on existing physical infrastructure. They also support investors in the planning and decision-making processes regarding broadband networks.

relevant information for anyone who needs them

- undeserved areas (using gap analyses techniques);
- areas for improvement;
- areas for future expansion and investment plans;
- areas where synergies may exist between the telecommunications sector and other utility sectors (e.g. for the deployment of smart grids, infrastructure sharing and common investment co-ordination to reduce costs)



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Infrastructure mapping system in Poland

Practical use



Status of Polish mapping



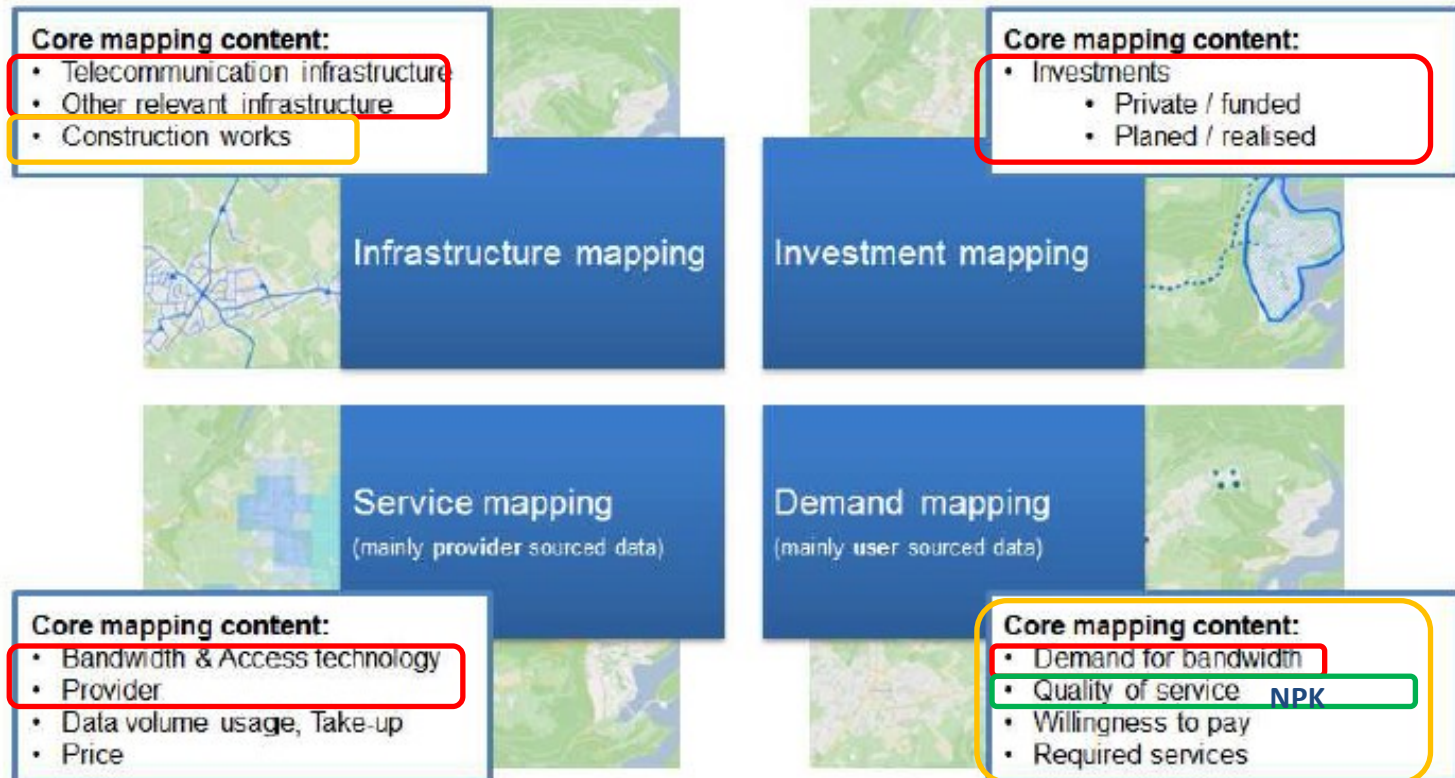
Under development



In test phase



Completed





**We have been collecting data
for 5 years.**

**We check data quality
and its logical correctness.**

**Data are representative
for the Polish telecom market.**

How to manage and use them?



Gap analysis for the optimal use of EU funds

Assumption:

Ensure that all households will have access to Internet bandwidth of at least 30 Mb/s.

Calculate how much it will cost to build the missing NGA networks.

Problem to solve:

How to use the EU funds efficiently?



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Monitoring of the National Broadband Plan

**Polish equivalent
of Broadband Achievement Index**



Broadband Infrastructure Availability Index

$$WDIS_P^{BO} = \frac{\sum_i^{BO} LM_P^{BO}}{\sum_i^{BO} LM^{BO}}$$

Broadband Service Availability Index

$$WPUS_P^{BO} = \frac{\sum_i^{BO} LU_P^{BO}}{\sum_i^{BO} LM^{BO}}$$

Broadband Infrastructure Competition Index

$$WKIS_P^{BO} = \frac{\sum^{BO} LM_P^{BO}}{LM_2^{BO}}$$

Broadband Digital Inclusion Index

$$WSIC_P^{BO} = D_{BO}^2(x) = \int_0^x F_P^{BO}(y) d(y)$$

Legend for BIAI

BIAI with a specific bandwidth P (given throughput) in the study area (BO) for residential buildings

LM_P^{BO} the number of dwellings with access to broadband infrastructure with a declared level of throughput

LM^{BO} number of dwellings and residential building in the study area (BO)

i succeeding building

$$P_{SIP}^{BO} = \frac{(Y_{SIP}^{BO} - Y_{SIP}^{min})}{(Y_{SIP}^{max} - Y_{SIP}^{min})}$$



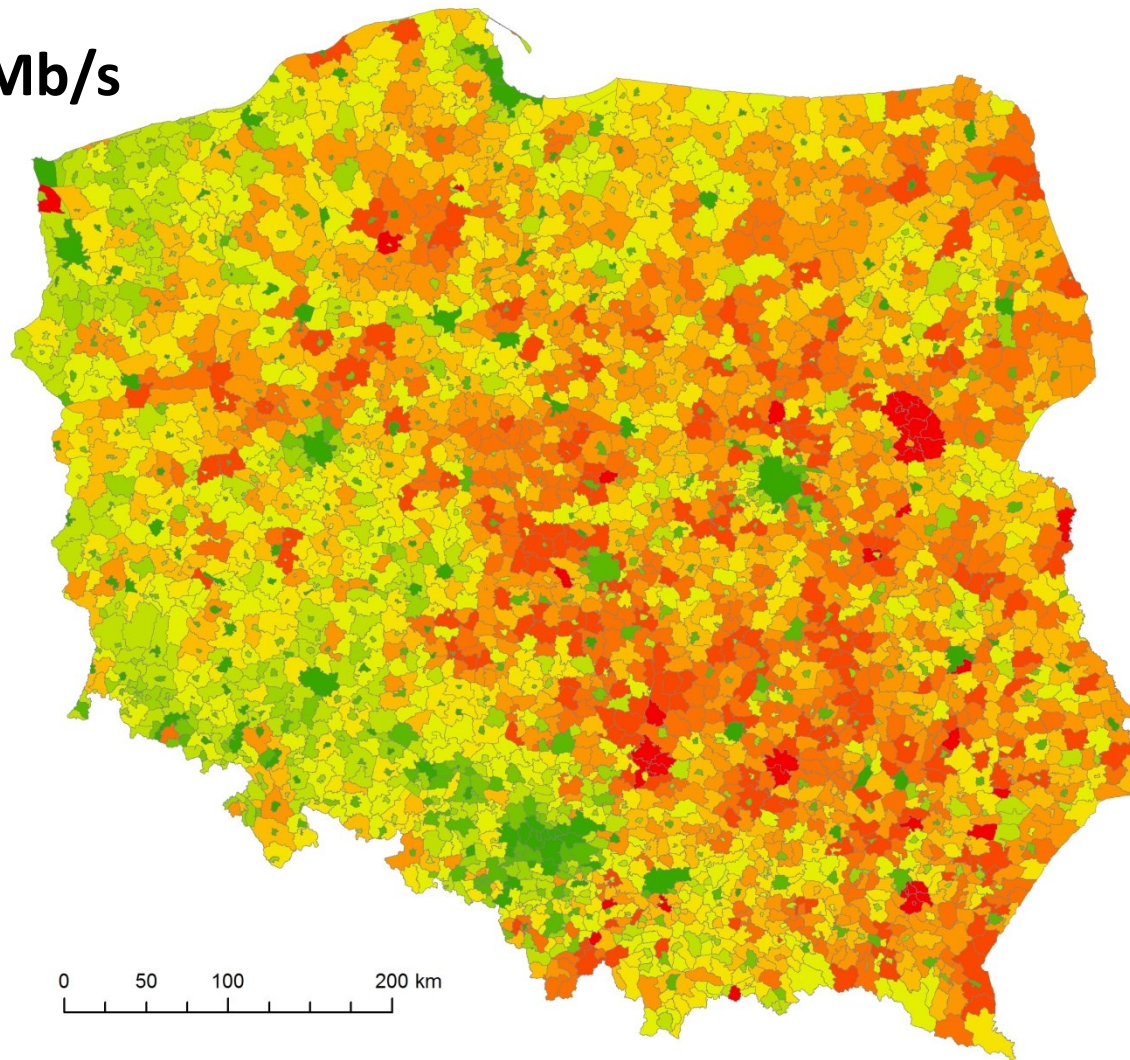
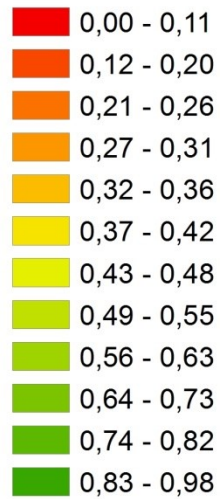
BAI

$$WDUS_P^{BO} = \sum P_{SIP}^{BO}$$



at least 2 Mb/s

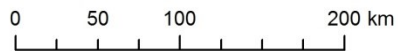
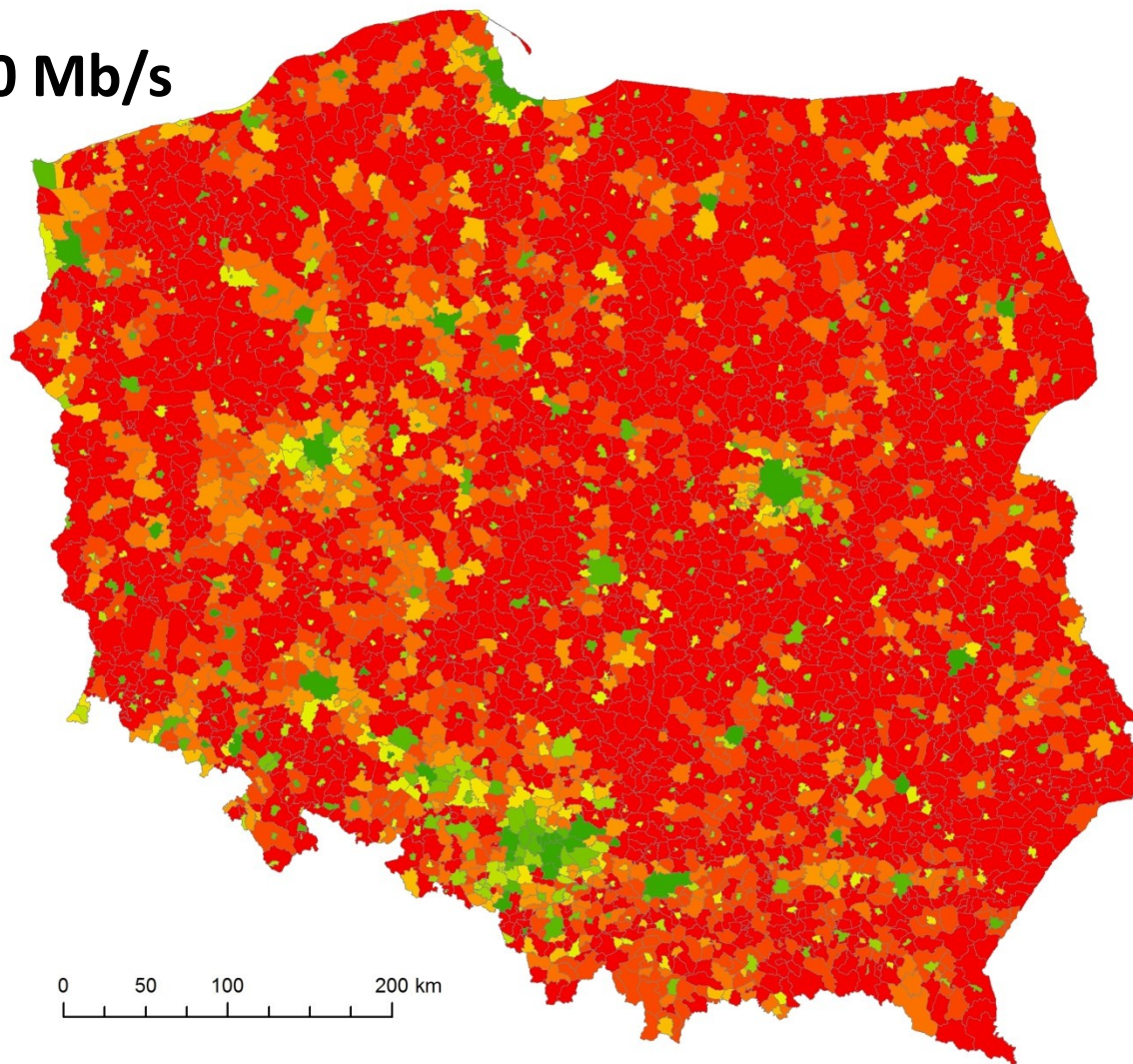
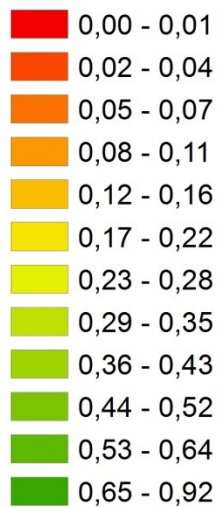
WDUSG2





at least 30 Mb/s

WDUSG30





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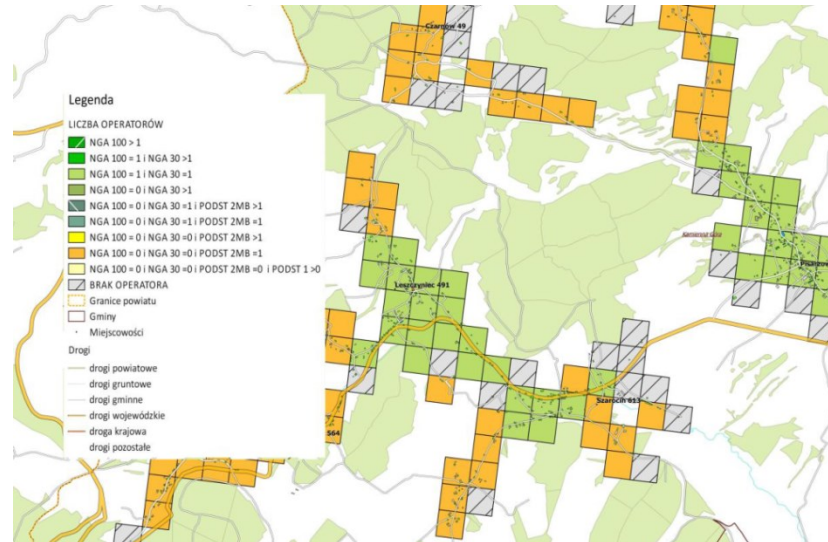
On demand indexes and analyses



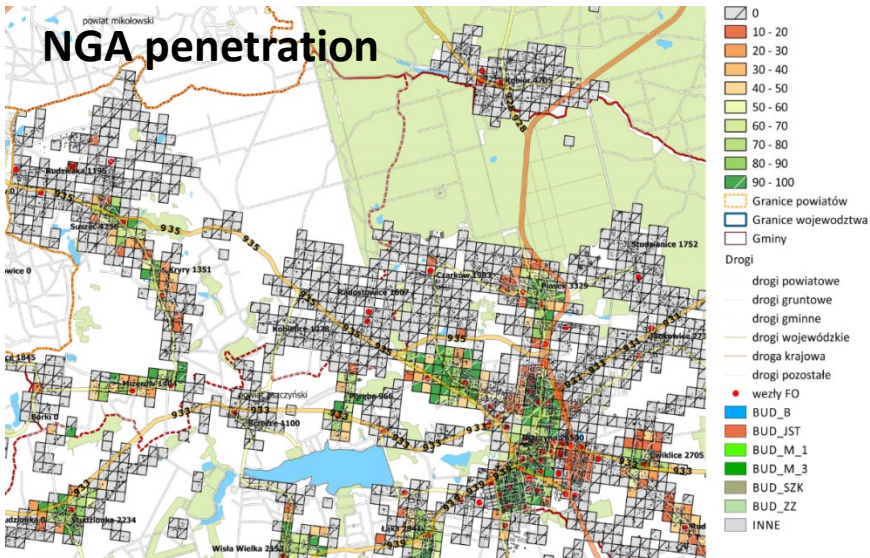
Building density



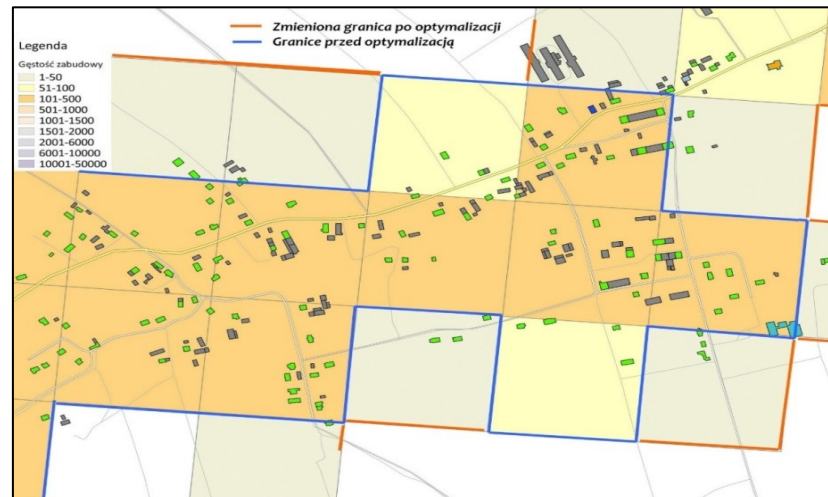
The number of operators



NGA penetration



Designation of the area to build a network





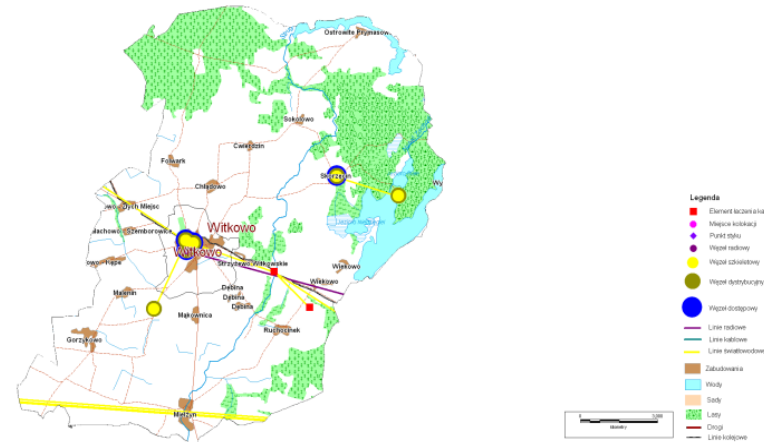
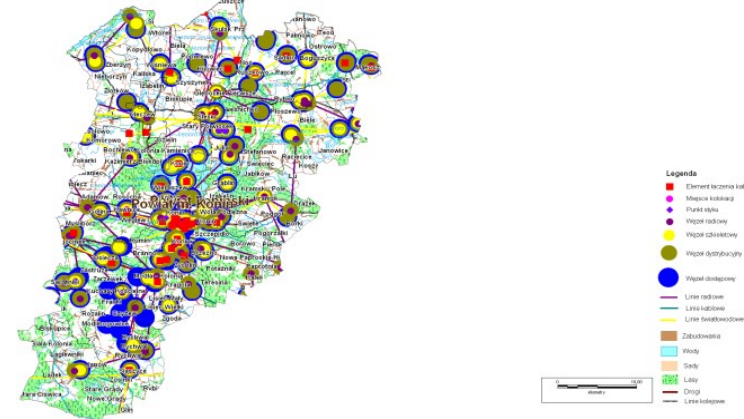
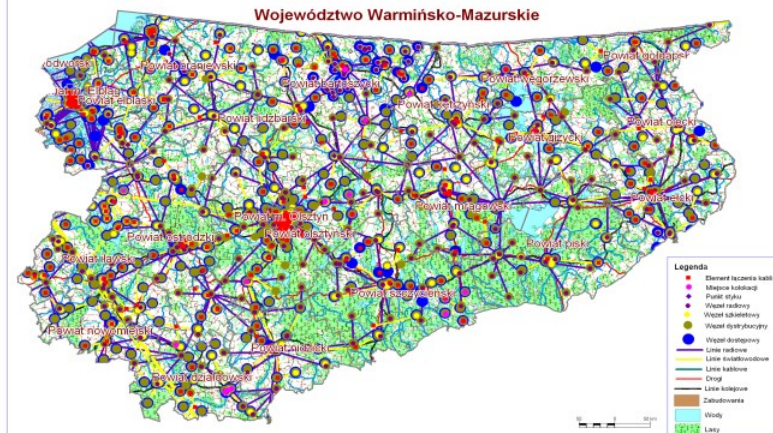
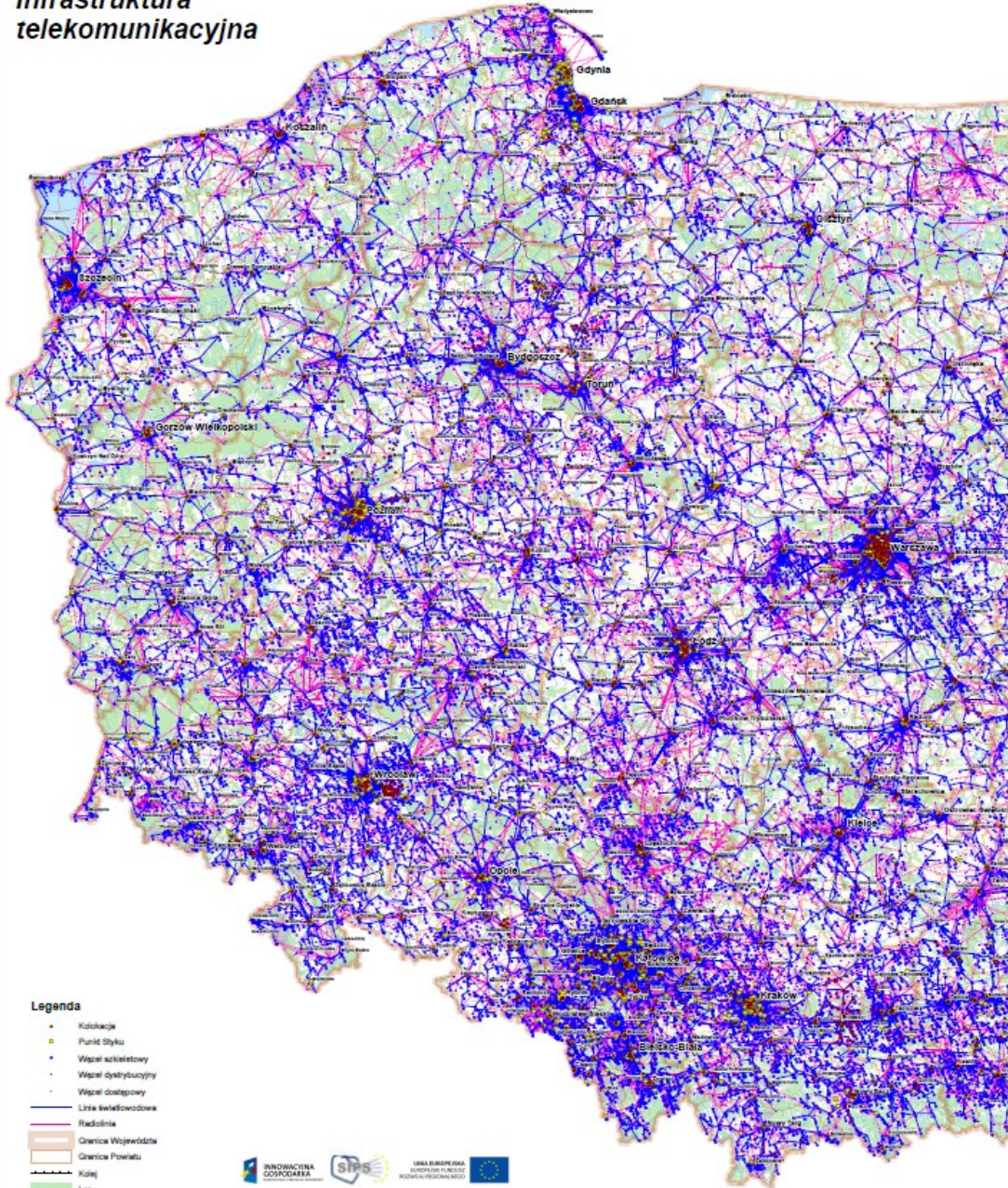
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Final results

POLSKA

Infrastruktura telekomunikacyjna





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Thank you for your attention

Marek Ostanek

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