

State Aid for Broadband Development in the Czech Republic

David Valicek

*Head of Internet & Digital Infrastructure Development
Section of EU Funds
Ministry of Industry and Trade*



MINISTRY OF
INDUSTRY AND TRADE

David Valicek
Section of EU Funds



Agenda

1. Situation
2. Measures taken
3. Challenges
4. How to reach the goals



MINISTRY OF
INDUSTRY AND TRADE

David Valicek
Section of EU Funds



1. Situation

- Electronic communications market X municipality
- Progress in coverage

3. Measures taken

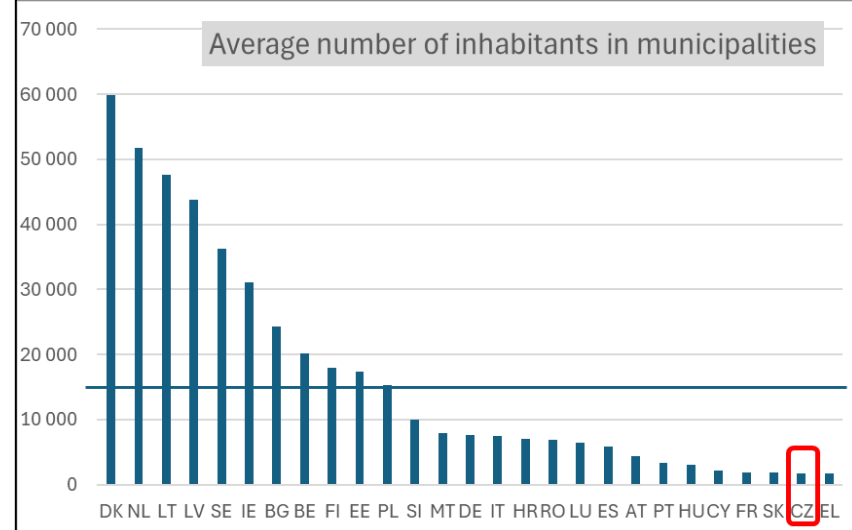
4. Challenges

5. How to reach the goals

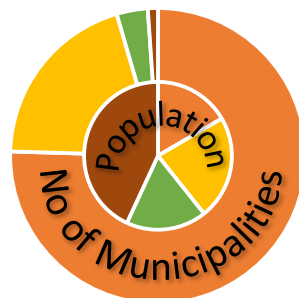


Municipalities (LAU)

➔ Many small municipalities in CZ
(Local Administrative Units)



Size group of municipalities		
Size group	Municipalities	Population
less than 1 000 inhab.	4 726	1 808 496
1 000 to 5 000 inhab.	1 254	2 475 602
5 000 to 20 000 inhab.	213	1 919 626
more than 20 000 inhab.	69	4 696 831
Total	6 262	10 900 555



< 1 k	Orange
1 – 5 k	Yellow
5 – 20 k	Green
5 – 20 k	Brown

Electronic communications – CZ market

➔ 1900 registered operators, doing business **1500**
(slowly decreasing)

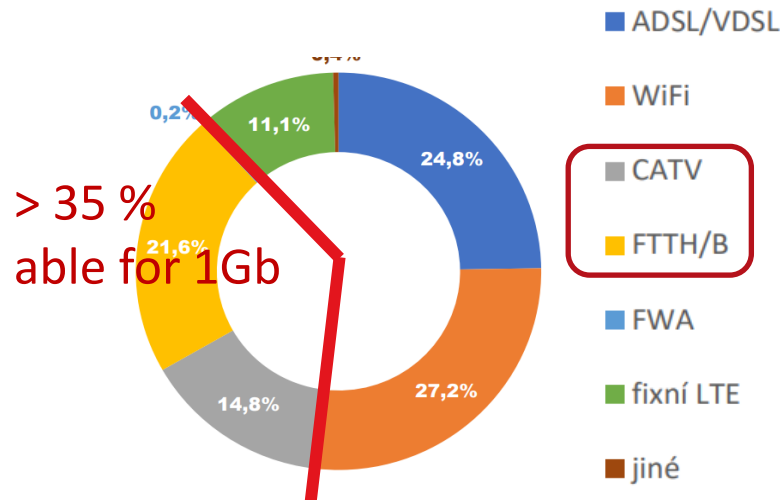
➔ Very concentrated:

➤ 4 biggest operators > $\frac{3}{4}$ of the market

➔ Share of subscriptions with technologies:

➤ with capability for 1 Gbps+ 35 %

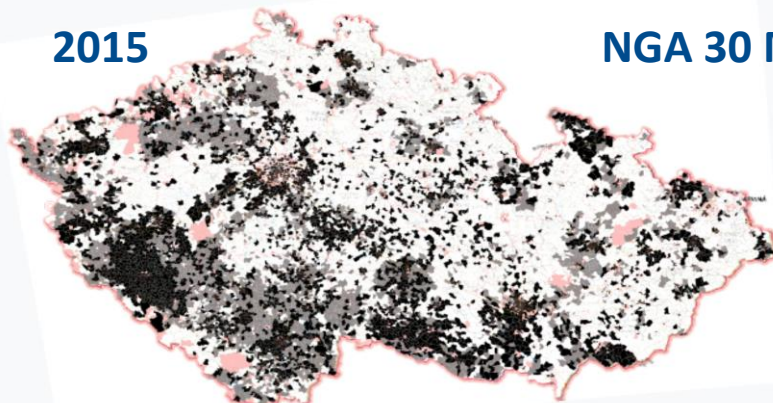
➤ effective usage of 1 Gbps+ 4 %





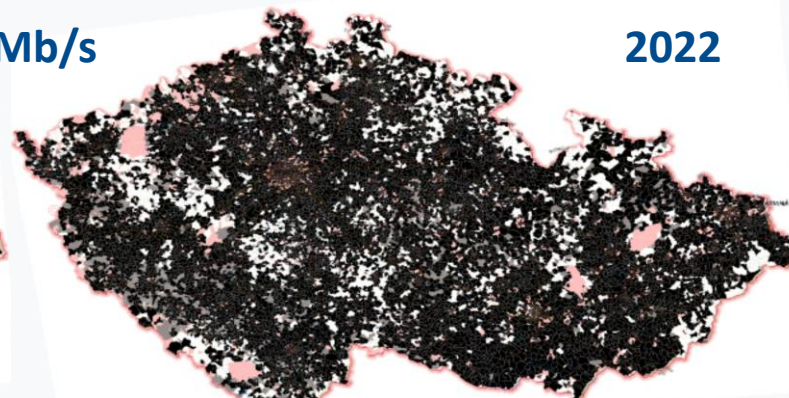
Coverage – CZ

2015

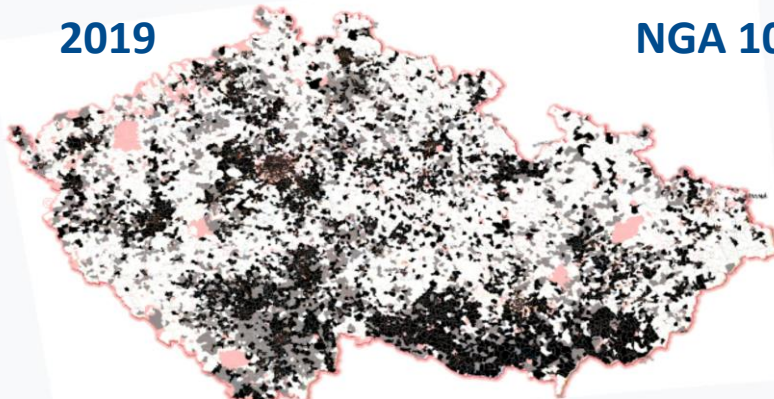


NGA 30 Mb/s

2022

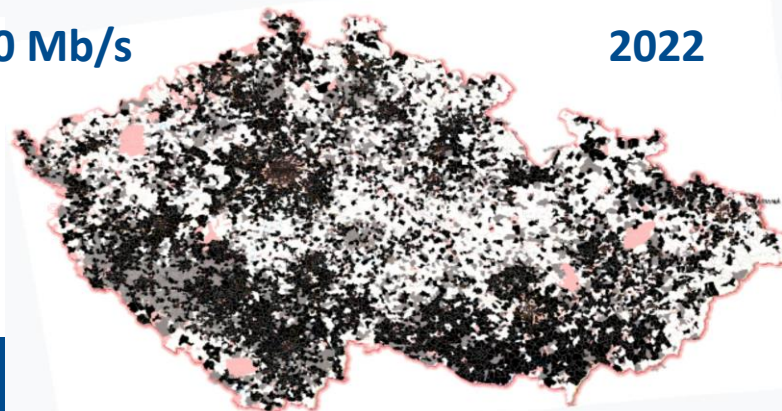


2019



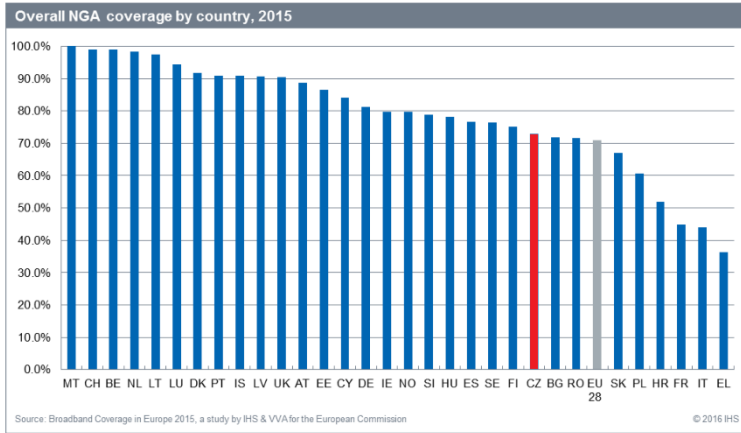
NGA 100 Mb/s

2022



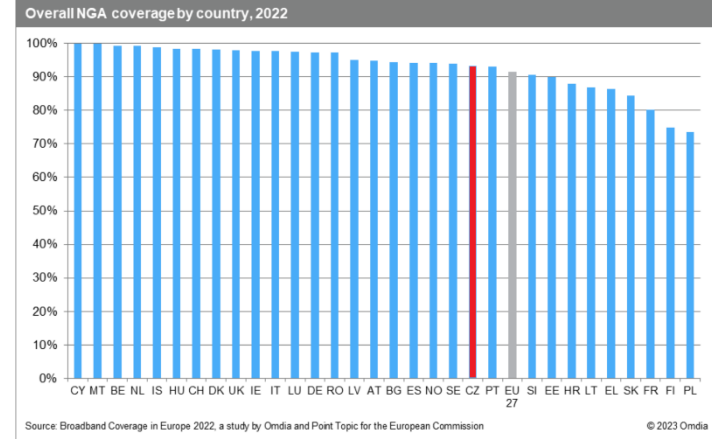
Coverage – EU

2015

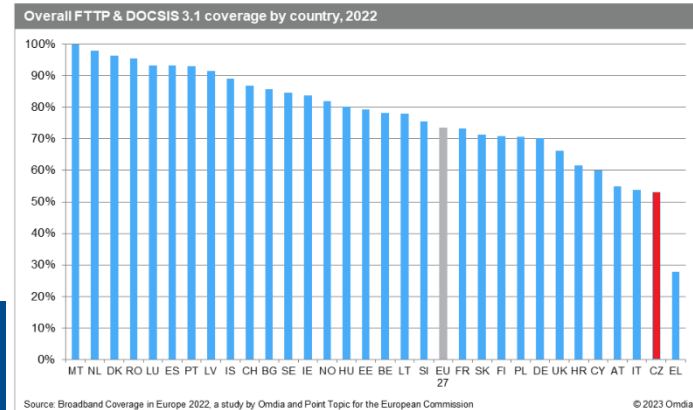


NGA

2022



VHCN



1. Situation

2. Measures taken

- Mapping and public consultation
- Subsidy programmes
- Non-subsidy measures

3. Challenges

4. How to reach the goals



- **Mapping and public consultation**



MINISTRY OF
INDUSTRY AND TRADE

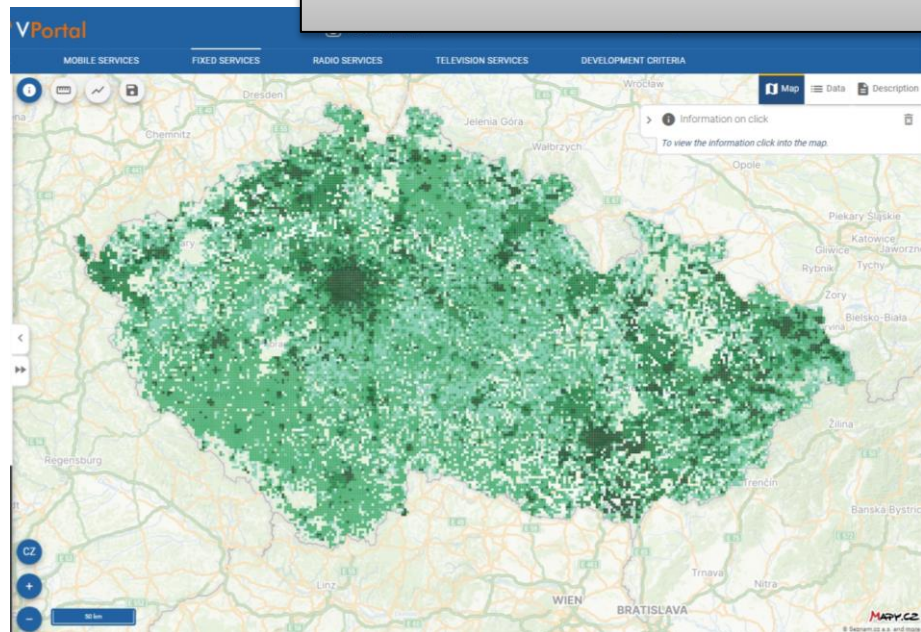
David Valicek
Section of EU Funds



Mapping

- ➔ ISPs give every year data on coverage (geographic data collection)
 - ▶ Mobile services
 - ▶ Fixed services down to the level of address point
- ➔ Presented on <https://vportal.ctu.gov.cz>
- ➔ Basic verification mechanism

Part of broadband atlas



- ➔ Detailed info who offers what services where – public provides feedback

All providers

Internet connections

Validity on: 31.12.2023

Value

Speed

Number of providers

Technology type

VHCN

Effective - Download

Effective - Upload

Maximum - Download

Maximum - Upload

Area

50x50 m

ZSJ

Municipalities

ORP

Districts

Filter

2023

2022

2023

Speed

2

10

30

100

300

1000

Points

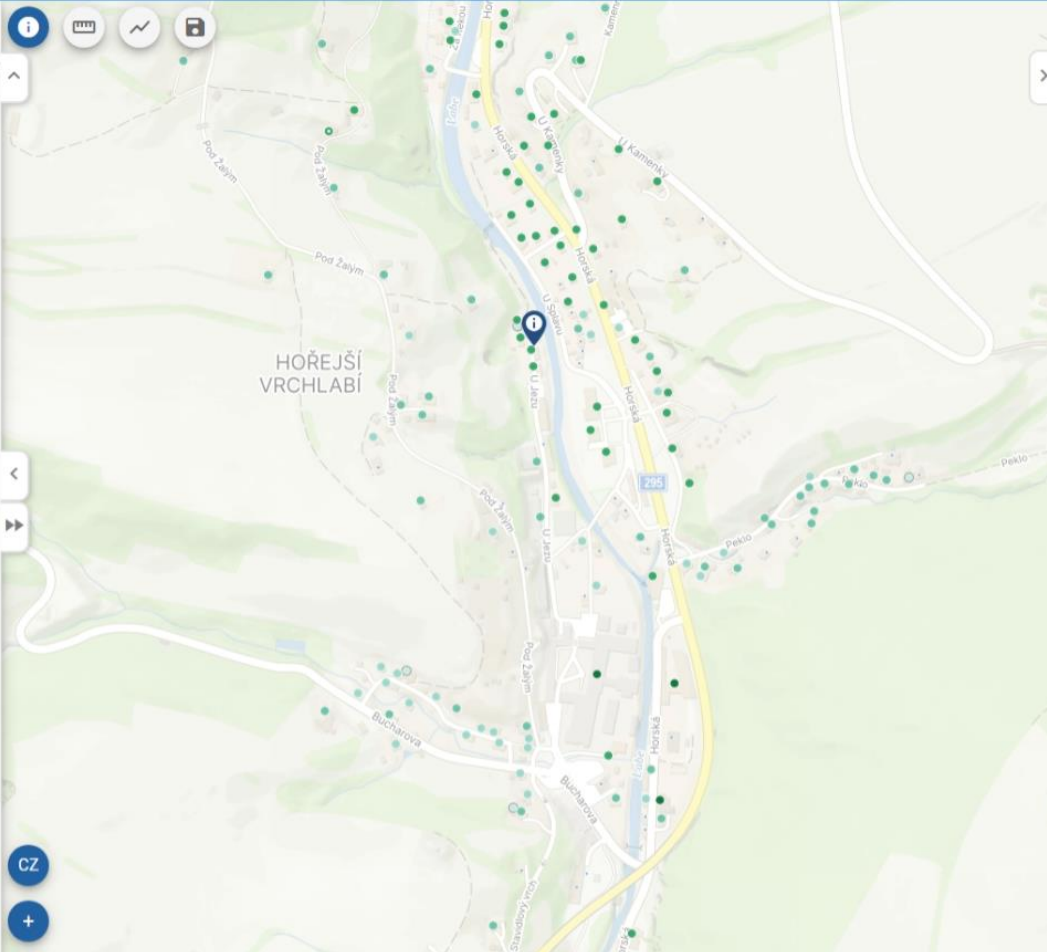
90%

Areas

80%

NetTest

Background map



Information on click

Position: 50°38'45.611"N, 15°36'21.785"E

All providers

Internet connections Points

Address points, Disposable, Speed Effective - Download

U Jezu 153, Hořejší Vrchlabí, 543 02 Vr... 100

Address U Jezu 153, Hořejší Vrchlabí, 543 02 Vrchlabí

Speed - Effective - Download [Mbit/s]	100
Speed - Max. achiev. - Download [Mbit/s]	100
Speed - Effective - Upload [Mbit/s]	10
Speed - Max. achiev. - Upload [Mbit/s]	10
Number of providers	2
Type of technology	Combination
VHCN	3
DOCSIS 3.1 standard and higher	No
> CETIN a.s.	100
> Bartanet s.r.o.	10

Address points

U Jezu 153, Hořejší Vrchlabí, 543 02 Vrchlabí

ČTÚ - Srovnávací nástroj - Pevné místo

Address point - code 2300524

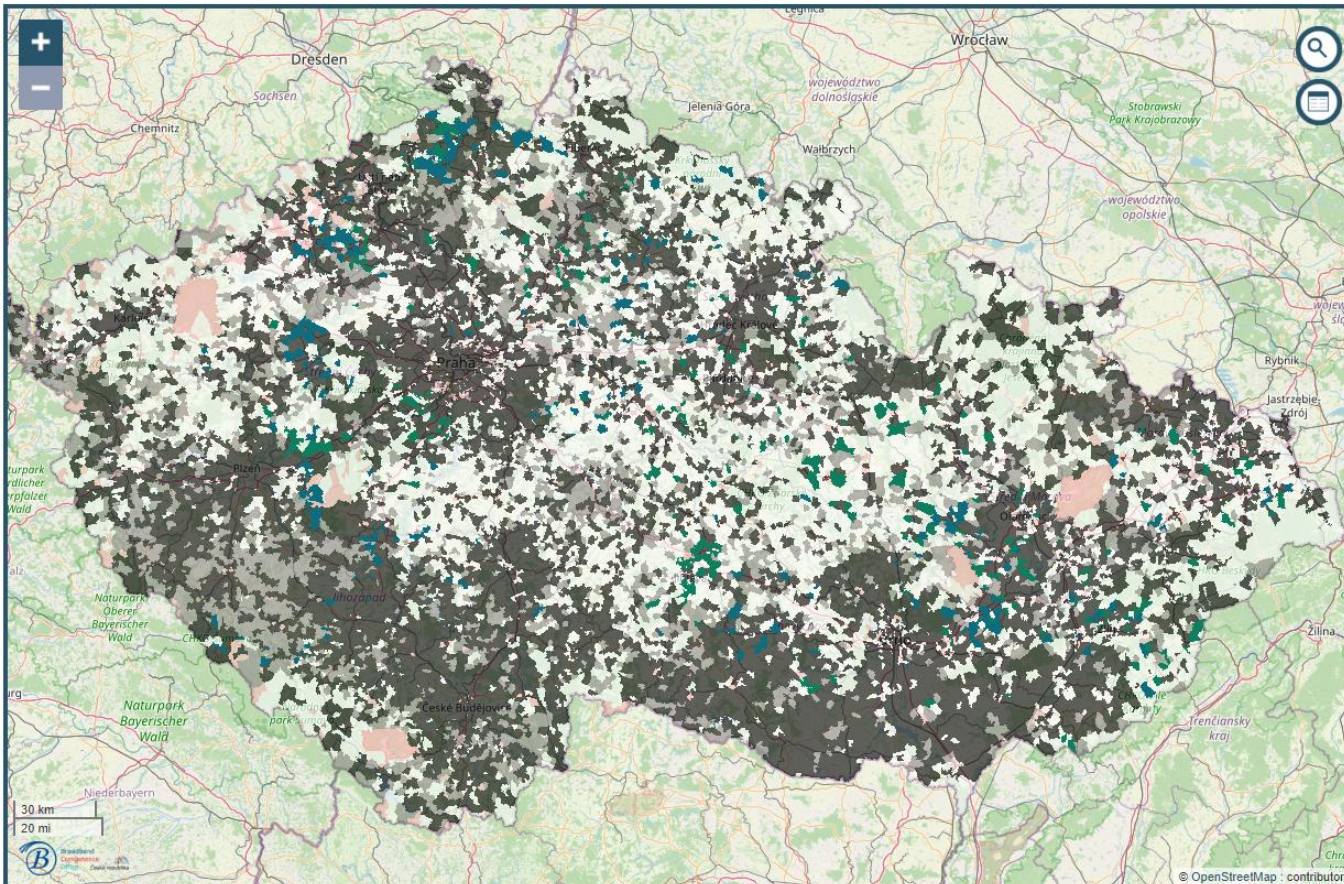
Address U Jezu 153, Hořejší Vrchlabí, 543 02 Vrchlabí

Floor: Housing units: 2 Use: Rodinný dům

Public consultation

- ➔ Identified potential intervention areas (level of BSU)
- ➔ In-depth verification of the data in case of doubts about
 - ▶ the sufficient capacity of backbone interconnection networks
 - ▶ the coverage of a specific address by the access network at a certain speed level
 - ▶ the coverage of multiple addresses or specific BSU by the access network at a certain speed level

BSU – Basic Settlement Unit



Sítě elektronických komunikací v pevném místě

- Bílá místa
- Pokrytí adresních míst
- Podporované oblasti

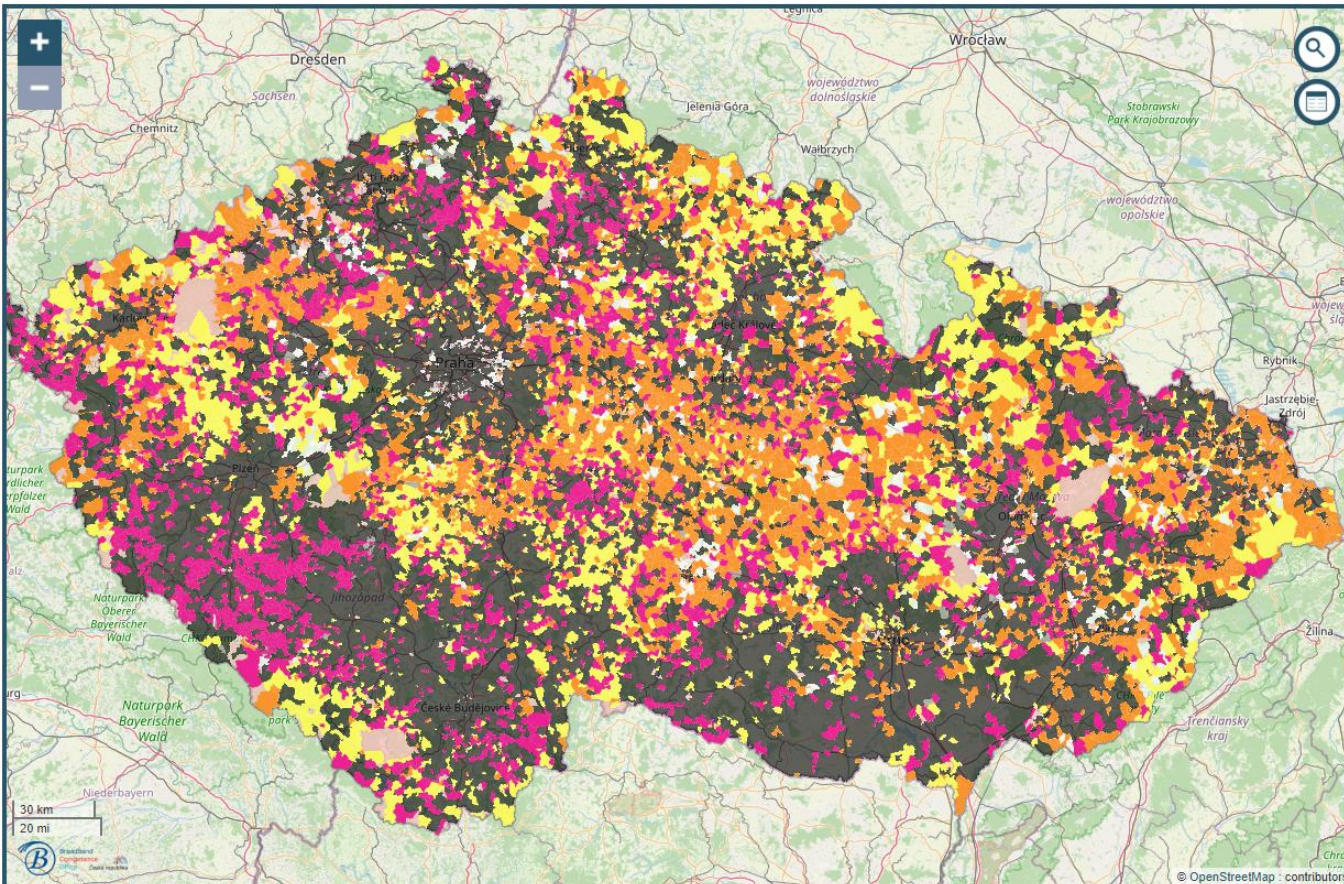
Supported projects

- I. NPO
- II. a IV. OP PIK

průhlednost:

Mapové podklady





Sítě elektronických komunikací v pevném místě

Bílá místa

Pokrytí adresních míst

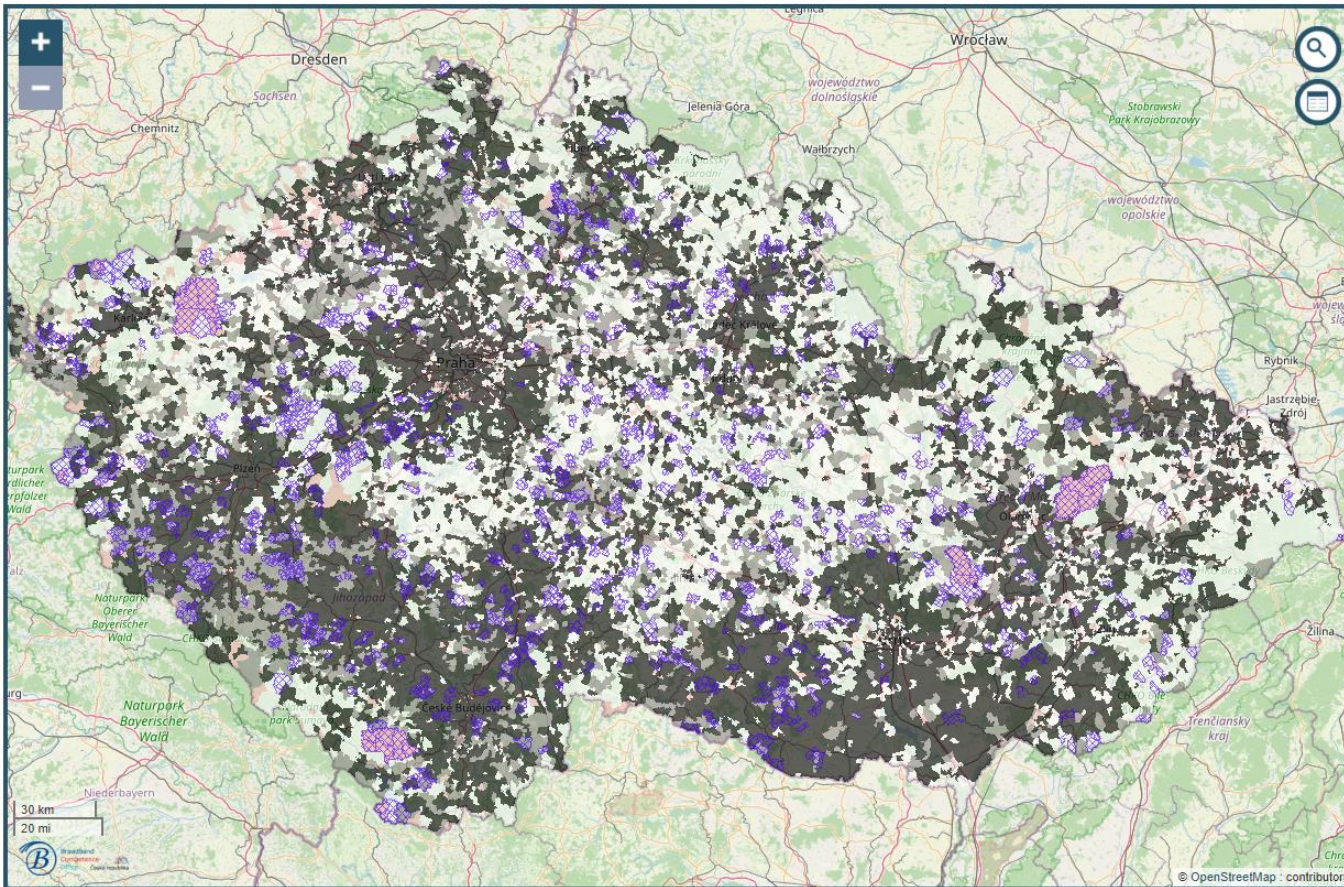
Podporované oblasti

BSU by category of support

- kategorie A “white” to 30 Mb/s
 - kategorie B “white” 30 to 100 Mb/s
 - kategorie C “grey” 100-300 Mb/s according to GBER
- průhlednost:
- Prohibující projekt

Mapové podklady








Sítě elektronických komunikací v pevném místě

Bílá místa

Pokrytí adresních míst

Podporované oblasti

-  Municipalities without fibre backhaul
- 
- 

Mapové podklady

- **Subsidy programs**



MINISTRY OF
INDUSTRY AND TRADE

David Valicek
Section of EU Funds



Support programs

2014-2023
OP EIC
 GBER 651/2014

2021-2025
RRP
 GBER 2021/1237
 BEREC BoR(20)165

2024-2029
OP TAC
 GBER 2023/1315
 BEREC BoR(23)164

Basic BB <30 Mbps

BB >30 Mbps

NGA >100 Mbps households

VHCN >1 Gbps households + socioeconomic drivers

18 000 addresses
 53 mil. € *

30 000 addresses
 175 mil. € *

> 30 000 addresses
 248 mil. € *

55 BTS + corridors
 EU:44 mil. € *

* Total eligible costs

FIX
 5G



Funding

National BB Plan for NGA

National BB Plan for VHCN

Program (EU fund)	National BB Plan for NGA		National BB Plan for VHCN	
	OP EIC (ERDF)	NRP (RRF)	OP TAC (ERDF)	
Number of projects	45	34	??	
Number of applicants	9	10	??	
Category of regions (EU cofinancing rate)	100 % LDR (75 %)	-- (80 %)	55% LDR (85%) 45 % TR (70%)	
Supported	SME 66 % LE 34 %	SME 30 % LE 70 %	??	
Status	Fully implemented, reimbursed	Under implementation	Open call	

Model

- ➔ Investment model:
 - ▶ Networks DBO by private => Operator subsidy model
- ➔ Business models:
 - ▶ Wholesale-only : the biggest operator
 - ▶ Vertically integrated: the other operators (beneficiaries)
- ➔ Financing tools
 - ▶ Grants

State Aid regime

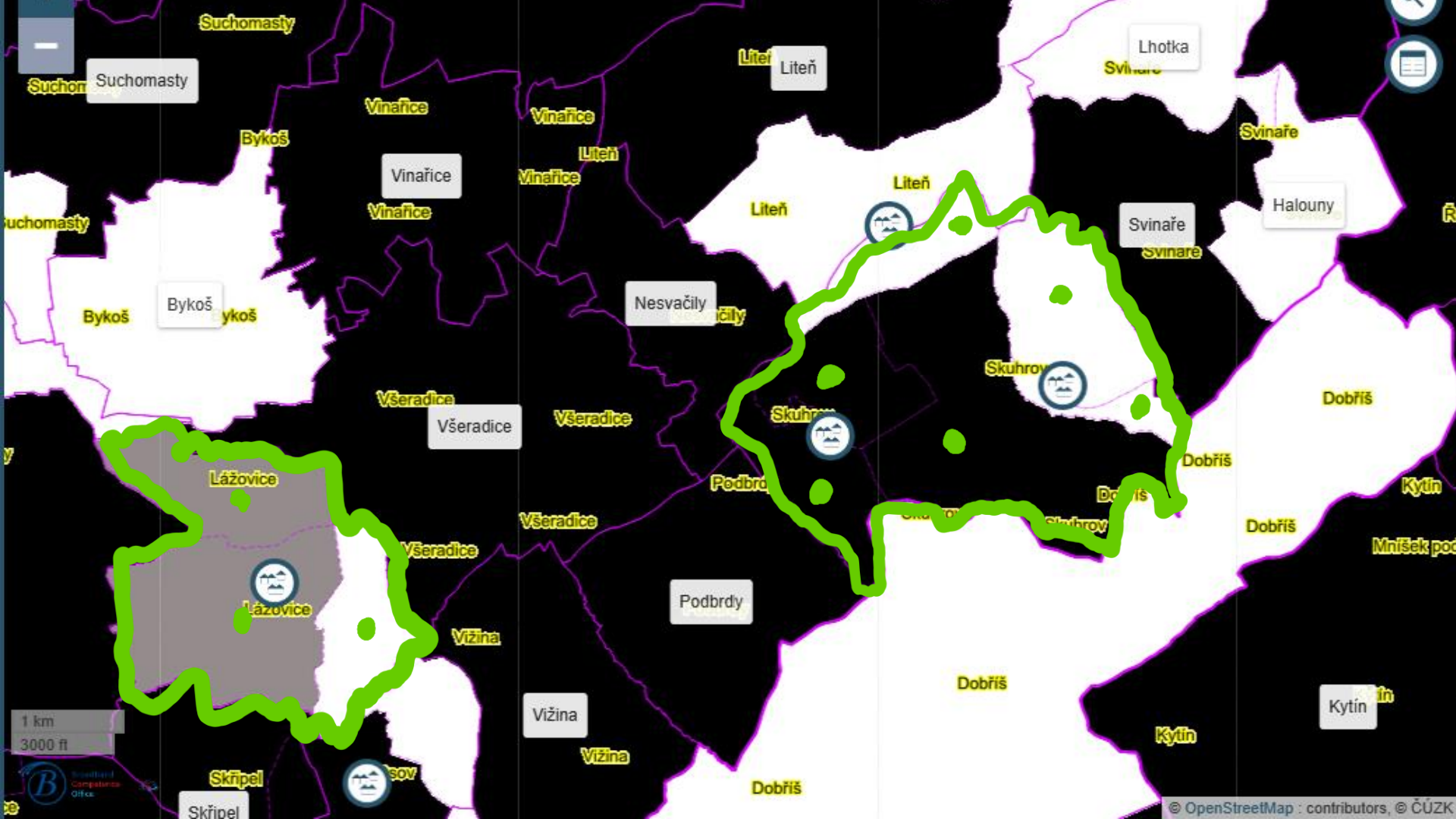
- ➔ Beneficiaries: operators
- ➔ Maximise the coverage of addresses with the lowest subsidy per address

VHCN - NRP

- ➔ Art. 52 GBER
 - ▶ Categories A, B, C
- ➔ Min. Target speed 1 Gb/s
- ➔ Rights of Way (RoW) - calculator

VHCN - OP TAC

- ➔ 2 activities: Outputs:
 - ▶ Art. 52 GBER – access] new VHCN
 - ▶ Art. 52d GBER – backhaul] addresses
- ➔ Min.target speed differs by cat.
- ➔ RoW – simplified cost options



Suchomasty

Suchomasty

Vinařice

Vinařice

Bykoš

Vinařice

Vinařice

Liteň

Liteň

Lhotka

Svinaře

Halouny

Liteň

Liteň

Svinaře

Svinaře

Nesvačily

Nesvačily

Bykoš

Bykoš

Bykoš

Všeřadice

Všeřadice

Všeřadice

Skuhrov

Skuhrov

Dobříš

Lážovice

Podbrdy

Dobříš

Kytín

Všeřadice

Všeřadice

Dobříš

Mníšek pod

Lážovice

Podbrdy

Vížina

Dobříš

Kytín

1 km
3000 ft



Skřípěl

Skřípěl

Categories of supported areas in OP TAC

Access Network (AN) support by Art. 52 GBER

Backhaul (BH) support by Art. 52d GBER, if the LAU is without fibre or equivalent backhaul

THRESHOLD speed	Category in area	Min. TARGET speed (down/up)	Support for
30 Mb/s	A (white on level 30 up to 100 Mb/s)	150 / 50 Mb/s	AN/BH for Households, Soc-ec Drivers
100 Mb/s	B (white on level 100 Mb/s or more)	1 Gb/s / 200 Mb/s	AN/BH* for Households, Soc-ec Drivers
100-300 Mb/s	C (grey on level 100 up to 300 Mb/s)	1 Gb/s / 200 Mb/s	AN/BH* for Soc-economic Drivers only
300 Mb/s	D (black on level 100 up to 300 Mb/s)	1 Gb/s / 200 Mb/s	BH* for Households, Soc-ec Drivers

Speeds are normally available speeds at NTP.

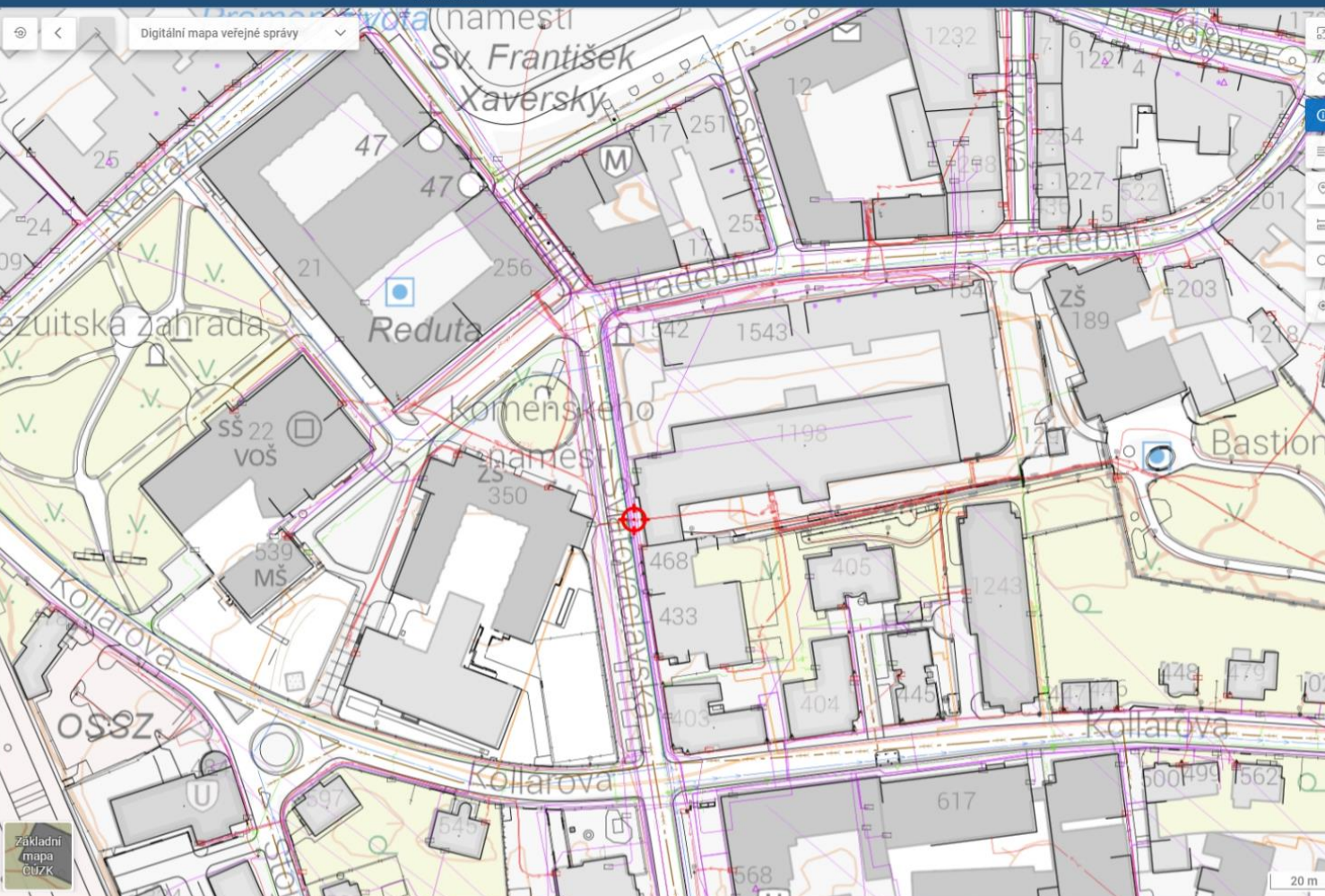
Minimal target speed of service – Intersection of GBER requirements and ERDF funding

Project selects **mandatory speed** (at least the minimal target speed), which is obliged to deploy (the higher, the more valuation points)

Solution for 1% of remaining non-NGA

- **DTM (*Digital Technical Maps*)**





Informace o prvcích v mapě

ID prvku	72001150000129787
ID JVF	0100000098
Evid. č. objektu	-
Typ objektu	trasa elektrické sítě
Popis objektu	-
Level	-1
Třída přesnosti v poloze	3
Třída přesnosti ve výšce	9
Datum vkladu	20. 7. 2024
Datum změny	8. 11. 2024
ID změny	EDTI-5709FA26-7E40-4700-A0BF-ACBD09A575E3
ID vlastníka	SUBJ-00003157
Název vlastníka	EG.D, a.s.
ID správce	-
Název správce	-
ID provozovatele	-
Název provozovatele	-
Ident. č. stavby	-
Zjednodušená evidence	Ne

ID prvku	72001240000212448
ID JVF	0100000105
Evid. č. objektu	-
Typ objektu	trasa sítě EK
Popis objektu	-
Level	-1
Třída přesnosti v poloze	3
Třída přesnosti ve výšce	9
Datum vkladu	1. 7. 2024
Datum změny	-
ID změny	EDTI-E46BB528-1F3F-46E5-8448-0C4B5D58E74
ID vlastníka	SUBJ-00004229
Název vlastníka	CETIN a.s.
ID správce	SUBJ-00004229
Název správce	CETIN a.s.

Digital Technical Maps (DTM)



- ➔ Public map portal: <https://dmvs.cuzk.gov.cz/mapovy-portal>
 - ▶ **800 000 ha** of Basic spatial situation (BSS) cover total built-up area of CZ
the most detailed location map: every curb, sidewalk, ditch,...
 - ▶ **1 mil. km** of Technical and transportation infrastructure (TTI)
underground, on the ground, overhead pipes, ducts and cables,...
 - ▶ **200 mil. of TTI point objects**
masts, cabinets, manholes, inspection chambers,...
-
- ➔ DTM help simplify and speed up construction preparation
 - ➔ A tool for broadband cost reduction

DTM support

- ➔ Implemented IS + data for whole CZ > 200 mil. € (EU funds)
 - Grants to regional and local governments and org.units of state
 - Doesn't constitute state aid
- ➔ Legal obligation to provide the data for all (incl. private) owners of TTI
 - They inserted most of the TTI data
 - No grants
- ➔ Legal obligation to update the data to DTM (*preparation for GIA*)
 - Existing physical infrastructure (*for access to existing PI/ sharing, art. 3, 4 GIA*)
 - Planned infrastructure (*for coordination of civil works, art. 5, 6 GIA*)

1. Situation
2. Measures taken
- 3. Challenges**

- High FWA coverage makes resistance to VHCN
- Mapping and verification of FWA data
- Cost reduction

4. How to reach the goals



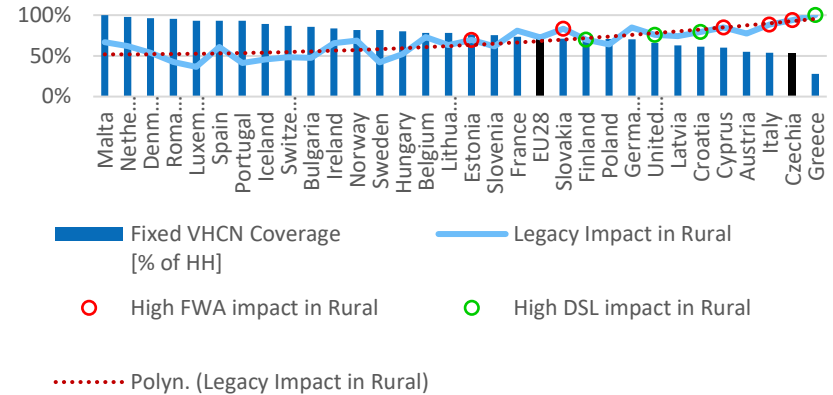
FWA MAKES RESISTANCE TO VHCN a competition for building VHCN and FTTx



CZ Coverage by Technologies

- High coverage with legacy technologies (xDSL and FWA) in CZ:
 - very high legacy rel. coverage in rural areas
 - **high FWA relative coverage in rural areas**
 - stable FWA rel. coverage (doesn't increase)
- High adoption of legacy technologies
- Low coverage with VHCN

DESI 2022]	Coverage [% of households in rural]	Relative Coverage [in rural]
FWA	85 %	45 %
xDSL	93 %	49 %
Coax	4 %	
FTTx	8 %	



Negative correlation VHCN coverage and Legacy relative coverage in Rural areas

Relative coverage = ratio of the technology coverage to sum coverages of all technologies.

Countries with a high legacy relative coverage occur only on the lower half of the list,

Relative FWA coverage

- is recently spreading in BE, CY, IT, NO
- is high but stable in CZ, SK

High legacy coverage makes resistance to adopt VHCN

Markets, **where legacy technologies have high adoption rates**, have also **high resistance to adopt FTTx** due to:

- Previous legacy infrastructure investment

Already invested significantly in legacy infrastructure. => economically challenging to justify new investments

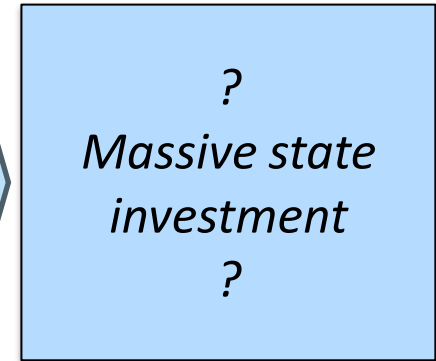
- Consumer inertia

Consumers are accustomed to the legacy technologies and may not see the immediate need to switch to a new technology

- Market dynamics

Incumbent protects their market share (competitive practices that make it difficult for new technologies to gain a foothold)

- Regulatory development barriers



QUESTION 1

Introduction: We have quite good coverage with NGA networks, but we are dealing with insufficient Cable/FTTx adoption by the market. The high legacy investments and negative impacts of the construction on the municipalities are significant barriers comparing to existing legacy technologies – where the NGA are available. So operators, municipalities and even end users, have low incentive to invest and to develop VHCN networks quickly.

Question: **Are you dealing with a similar problem?**

Answer:

YES

NO

If Yes: How do you cope with it? If No: What do you advise?

Comment: There is widespread coverage of FWA technology in CZ, so it is often addressed at the village level why re-dig a village when we have 3 years of new sidewalks

CZ Response

YES

We would welcome a more detailed discussion with colleagues who have resolved this.

- **Mapping and verification of data**



MINISTRY OF
INDUSTRY AND TRADE

David Valicek
Section of EU Funds



Mapping with focus to FWA

→ Coverage of Premises Passed (PP)



Already connected (with subscriptions)

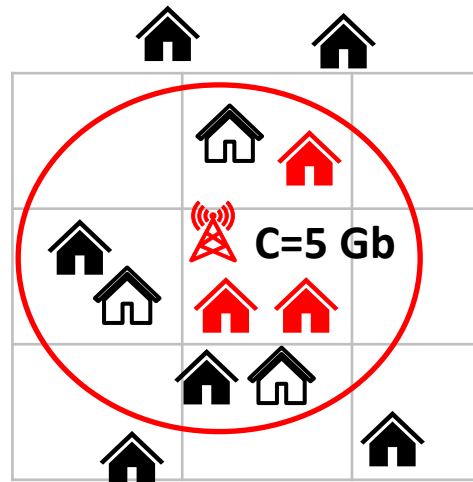
Not connected, but available within 4 weeks

→ Operator can declare PP within an antenna range if his network has capacity to serve the PPs

→ E.g. Within an antenna range there are 8 addresses
Operator has 1 Gbps subscriptions on 3 of these addresses only
Network is equipped to serve 2 more addresses = 5 addresses
So, he shouldn't declare 8 PPs on 1 Gbps level, but only 5 PPs

▶ **But which PPs specifically to declare?**

→ Similar problem on cable solutions
when network is not equipped to all addresses



Problem of
specific PP
selection

Verification of capacity for backhaul

➔ Calculator <https://www.ctu.cz/vyhodnocovani-kapacity-siti>

➔ Poisson method:

➤ Number of PP

➤ Required **Capacity** of the CO

➤ To find the optimal **Capacity of the CO** the **Output speed** must be at least the normally available speed on the required level (e.g. target speed 1 Gb/s)

➔ Simplified method by BBGL

➤ Number of PP * required target speed * 0,1

Kalkulačka pro výpočet dopadu kapacity sítě elektronických komunikací

Český telekomunikační úřad
Metodika pro vyhodnocování dopadu kapacity sítě elektronických komunikací na výkon služeb přístupu k internetu, verze 1.0

Nápvěda

A. Vstupní parametry sítě elektronických komunikací

A.1 Kapacita sítě elektronických komunikací (L1) 2 000,0 Mb/s

A.2 MTU (Maximum Transfer Unit) 1 500 B

A.3 Velikost IP záhlaví 20 (IPv4) B

A.4 Agregační poměr (pro vyhodnocování) 1 : 100

B. Výsledky monitoringu síťového provozu (měsíc)

B.1 Maximální bitová rychlost NBR_{max} (L1) 1 000,0 Mb/s LU_{max} 0,5

B.2 Průměrná bitová rychlost NBR_{avg} (L1) 500,0 Mb/s LU_{avg} 0,25

B.3 Faktor využití UF 0,5

C. Vstupní parametr Poissonova procesu

C.1 Pravděpodobnost 90 (venkovské oblasti) %

D. Dopad agregace na přípojku

D.1 Výsledná SDR (L4) 158,2 Mb/s (bez UF) 211,0 Mb/s (s UF)

E. Dopad agregace na úzké hrdlo sítě elektronických komunikací

E.1 Požadovaná SDR (L4) přípojky 441,0 Mb/s

E.2 Průměrný počet přípojek (NTP) 10 (bez UF) 20 (s UF)

E.3 Pokles výkonu služby na přípojce 43,5 % (bez UF) 36,9 % (s UF)

E.4 Potřebná šířka pásma (L3) úzkého hrdla 5 320,8 Mb/s

E.5 Potřebná kapacita (L3) úzkého hrdla 2 312,9 Mb/s

Annotations: A red arrow points from the '2 000,0 Mb/s' input field to the 'Number of PP' bullet point. Another red arrow points from the '1 : 100' input field to the 'Simplified method by BBGL' section. A green arrow points from the '158,2 Mb/s (bez UF)' output field to the 'Output speed' text in the Poisson method description.

QUESTION 2

Intro: CZ is mapping the premisses passed (PP) on the individual address level. It is problematic to say which specific PPs are covered with the **FWA** (with regard to the network capacity) with a speed profile and to check the accuracy of the reporting. In the CZ, we subsequently have to process a large number of comments in Public Consultation indicating the inaccuracy of reported FWA coverage.

Question: Do you recognise the problem of specific PP selection

Answer:

YES

NO

Comment:

How do you cope with it? How do you collect FWA data? How do you assess data on FWA when defining intervention areas?

CZ response:

YES

We would like negotiate that with colleagues who have already solved this.

- **Cost reduction**



MINISTRY OF
INDUSTRY AND TRADE

David Valicek
Section of EU Funds



Cost reduction

- ➔ Cost reduction = Access to infrastructure (sharing) and Coordination of civil works
- ➔ Now we have information (DTM) available. We require to reduce costs at least in subsidy projects (when BBCRD is not much working).
- ➔ Despite, low use of cost reduction options:
 - Disagreement on the financial aspects
 - Resistance from other utilities operators and municipalities (e.g. energy companies - critical infrastructure, time, ...)
 - Telco operators are in weaker position

More complex topics for next session

- ➔ How much are the cost reduction options used?
 - ▶ With subsidies, the condition is to share, but how to realistically force all entities to share (those who are not operators)
 - ▶ According to GIA Report - good experiences from Germany, Poland... Best practices?
- ➔ Public evidence
 - ▶ Level of detail (BIM, DTM style – the path w/o elements, or no precise geodata)
 - ▶ Existence and limitation of rights (ownership, rights from sharing - IRU, Lien on the infrastructure elements – collateral)
- ➔ Methodology of apportioning the costs associated with the coordination of civil work and with access to PH (sharing)
 - ▶ Valuation decree or methodology for assessors?

1. Situation
2. Measures taken
3. Challenges
- 4. How to reach the goals**



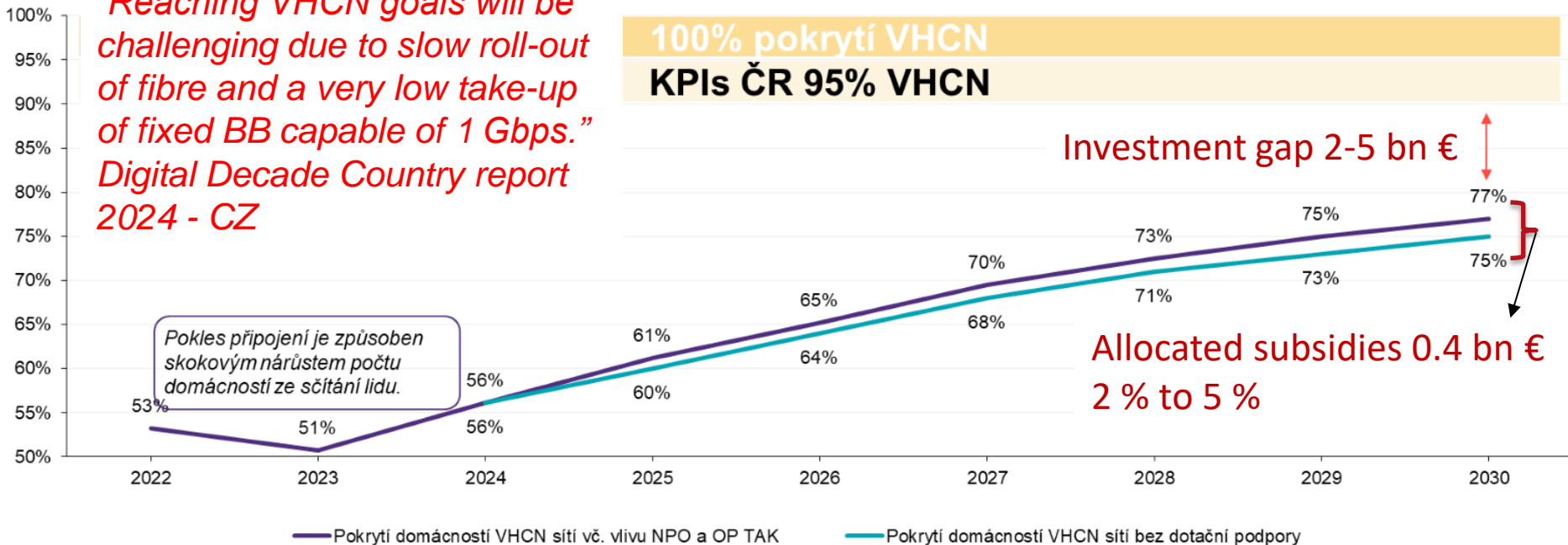
How to reach the 2030 goals for 1 Gbps?

*“Reaching VHCN goals will be challenging due to slow roll-out of fibre and a very low take-up of fixed BB capable of 1 Gbps.”
Digital Decade Country report 2024 - CZ*

100% pokrytí VHCN
KPIs ČR 95% VHCN

Investment gap 2-5 bn €

Allocated subsidies 0.4 bn €
2 % to 5 %



What to do with the „Remaining 20 %” ?

- ➔ Union-level projected trajectories for the digital targets C(2023) 7500, p.15
 - ▶ Finds a similar EU trajectory for the Gigabit connectivity KPI:
*„The remaining 27% of households still not covered by VHCN will be reached mainly through further FTTP deployments, which will require sustained efforts. It should not be ruled out that **a significant share of rural areas will have to be reached by 5G FWA networks.**“*
- ➔ Why only 5G FWA?
- ➔ Need technology neutrality: **any FWA satisfying VHCN Crit. 2 or 4 (350 Mbps)**
- ➔ FWA-VHCN should be an accepted „low-fat“ alternative to fibre-VHCN in the most problematic areas (namely in 100 Mbps-white areas for state aid)

Steps to approach the 2030 goals

- ➔ Finish running projects (RRF) + the open call (ERDF)
30 000 addresses in rural areas + planned another > 30 000
- ➔ Finish the construction law reform (digitisation)
- ➔ Use already existing broadband atlas (DTM) and employ GIA
- ➔ Further support in 2028+ period

In area with Threshold speed [Mbps]	Based on	Min. Target speed	VHCN level by BEREC 23(165)
100 white	GBER	350 Mbps	At least crit. 2 or 4 (any FWA)
300 white&grey	notification	1 Gbps	Only crit. 1 or 3

Thank you for attention!

We welcome your further suggestions before next event

david.valicek@mpo.gov.cz

+420 224 852 111

or to BCO EU to distribute everyone.



MINISTRY OF
INDUSTRY AND TRADE

David Valicek
Section of EU Funds

