

# Ukrainian telecom company in the war

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# Company functions task in BCM framework upgrade

- Human Resources - *Evacuation, mobilization*
- Technology - *1. Voice service recovery 2. Mobile Data service 3. SMS 4. Fixed Data 5. Satellite phones*
- IT - *BSS, Billing*
- Public Relations - *Communications with state bodies*
- Finance - *Business continuity (insurance for war losses)*
- Government Relations - *Contacts with military bodies*
- Admin - *Real estate and infrastructure*
- B2B - *Subs support during invasion*
- B2C - *Client's support during invasion*
- Cyber Security - *Coordination with state security*
- Call Centre - *Remote work*

# Scenarios



scenario 1



scenario 2



scenario 3

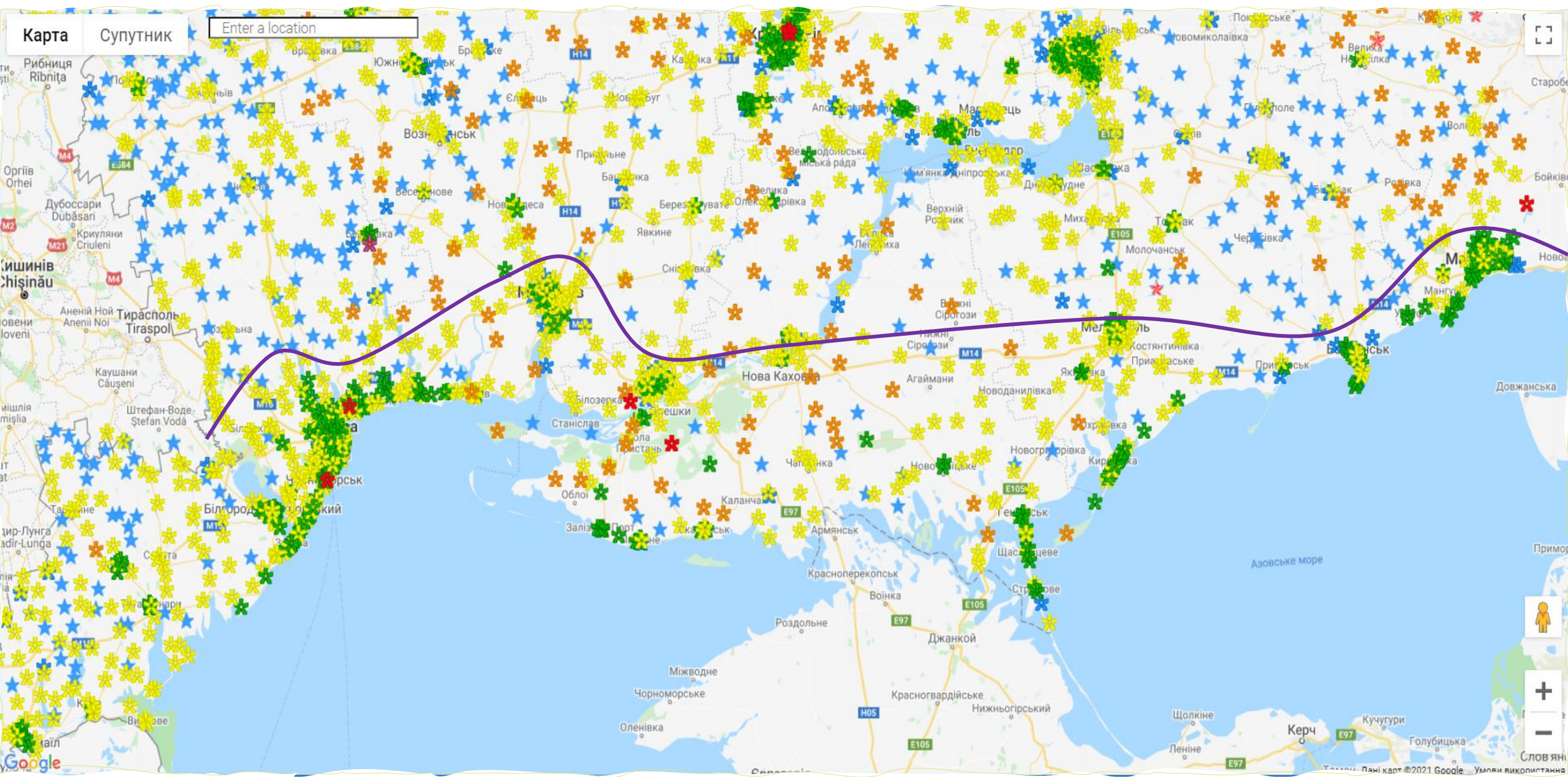


scenario 4

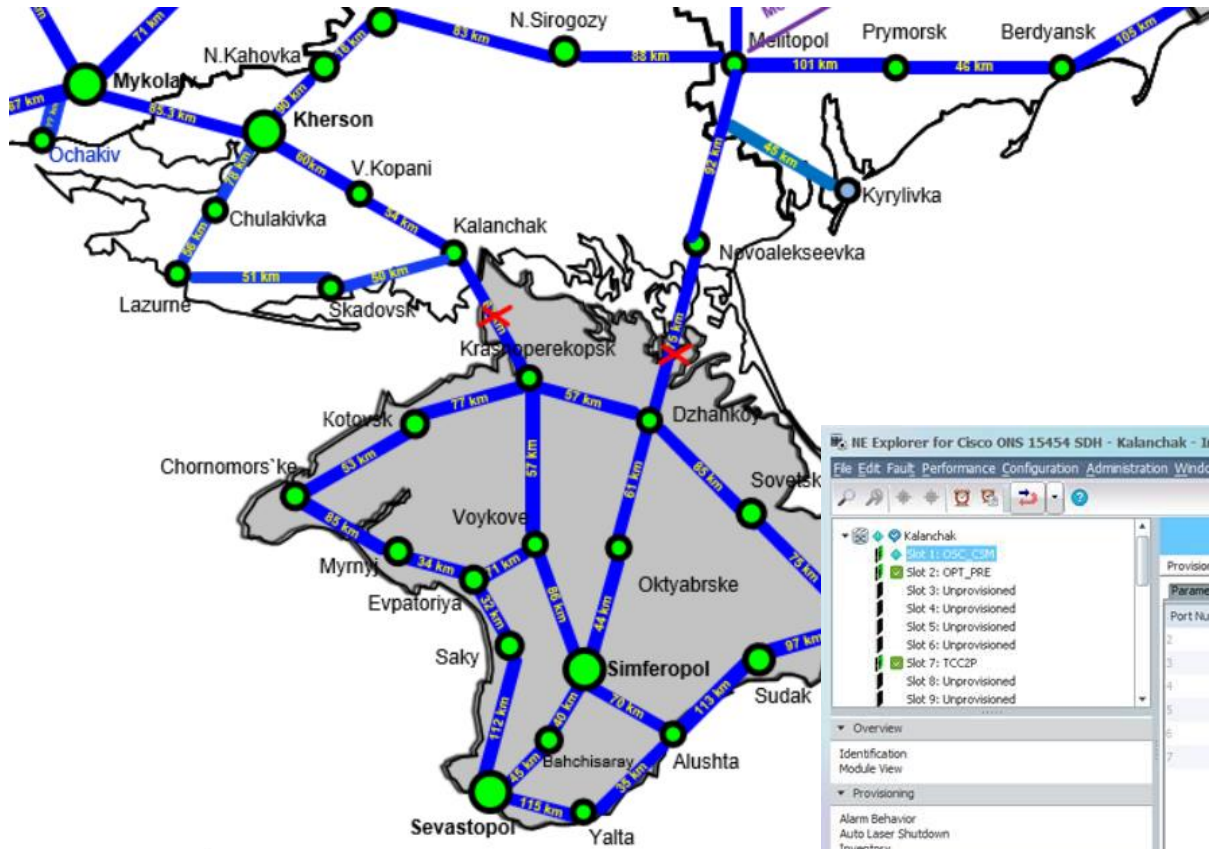


scenario 5

Enter a location



# Lessons learnt



11/08/2014 DWDM equipment switched off  
(Kalanchak and Novoolekseevka cities)

NE Explorer for Cisco ONS 15454 SDH - Kalanchak - In Service

File Edit Fault Performance Configuration Administration Window Help

- ▼ Kalanchak
  - Slot 1: OSC-CM
  - Slot 2: OPT\_PRE
  - Slot 3: Unprovisioned
  - Slot 4: Unprovisioned
  - Slot 5: Unprovisioned
  - Slot 6: Unprovisioned
  - Slot 7: TCC2P
  - Slot 8: Unprovisioned
  - Slot 9: Unprovisioned

Provisioning > Optical Line > Parameters

Port Number	Type	Port Name
2	COM-RX	
3	COM-TX	
4	LINE-RX	
5	LINE-TX	
6	OSC-RX	
7	OSC-TX	

Last Update Time: 21.03.14 11:39:37 EET

Shelf View - Kalanchak (on z2-EMS-SERVER)

Kalanchak : Slot # X2 XIO192 (on z2-EMS-SERVER)

File Alarms Configuration

File Attributes Propagate

X2-SPIO-Src-1 X2-SPIO-Snk-1 X2-RS-Src-1 X2-RS-Snk-1 X2-MS-Src-1 X2-MS-Snk-1

Alarms:

Total  Cleared

Unacknowledged

Configuration Status Inventory Visible Alarms Invisible Alarms

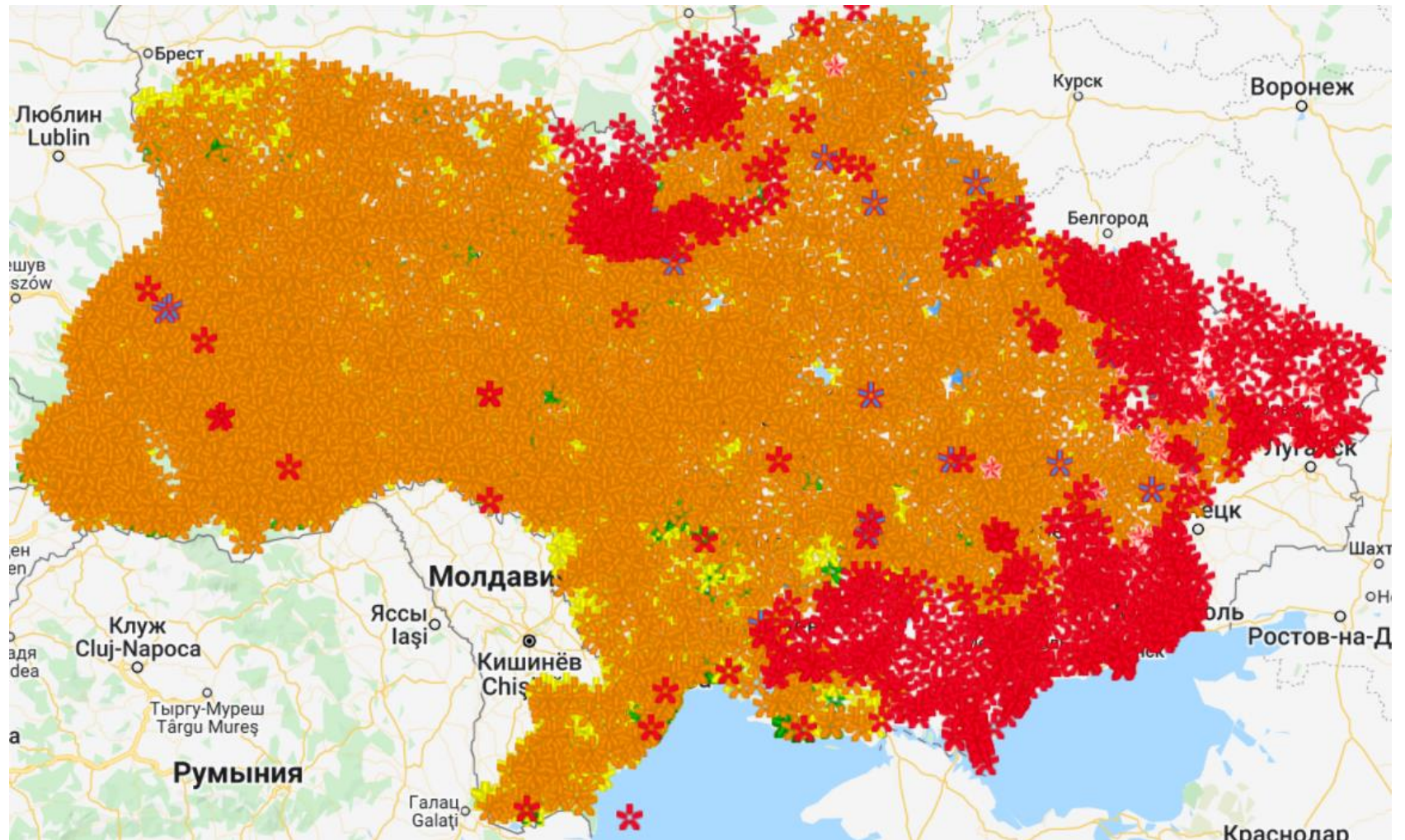
Attribute Name	Attribute Value	Attribute New Value
Actual Laser	On	
Default Laser	On	On
ALS State	Off	Off
ALS Duration (sec)	3	3
User Label		

# March 2022

- 15% of staff stay in red zone; 89% of staff stay in Ukraine while 11% moved abroad
- Third DC for Core services to be launched 25/04
- National roaming was launched for voice since 07' Mar and for data since 13/03. 240k of total InBound and 285k of total OutBound National roamers.
- TelCos closed access from Russian numbers to Ukrainian networks
- 30% of business in Ukraine were stopped completely or temporary as 19/03 according to Ministry of Finance,
- Telecom regulator transferred 2\*15 MHz in 2100MHz FDD spectrum to 3 MNOs (2\*5MHz for each) on free basis and w/o permissions for 90 days; KS activated 4<sup>th</sup> 3G carrier w/o equipment installation, which boost capacity in 3G by 20%. It was allowed to launch L900 w/o permissions; exchange spectrum between operators; tech neutrality during war period
- Coordination Group was organized aiming fast reaction on the network outages; MNOs and TelCos who own transmission lines infrastructure

# Network losses during 6 months war

- 11% of sites were down in average
- most affected regions
  - Donetska obl
  - Luganska obl
  - Khersonska obl
  - Zaporizska obl
  - Kharkivska obl
  - Chernigivska obl









# Roaming

Preparing alternative connection for IP Transit in Warsaw (100\*n Gbps) to increase internet service reliability

☐ Є камера

## УМОВНІ ПОЗНАЧЕННЯ

Завантаженість пунктів пропуску

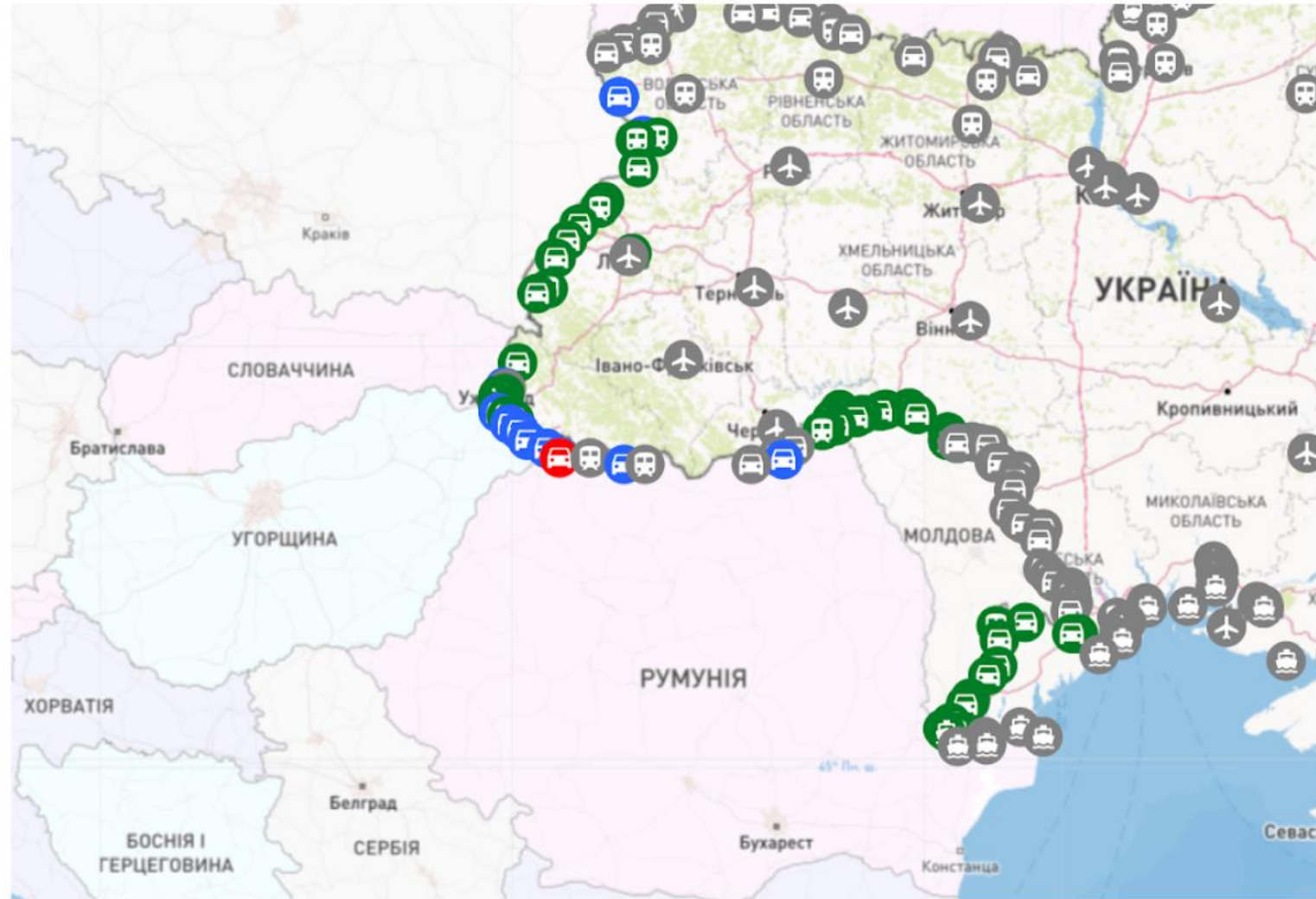
● Висока ● Середня ● Низька

Статус пунктів пропуску

● Закритий

Типи пунктів пропуску

- 🚗 Автомобільні
- 🚆 Залізничні
- ✈️ Повітряні
- 🚢 Морські/річкові/поромні
- 🚶 Пішохідні
- 🚦 Адміністрація ДПСУ
- 🚧 Регіональні управління
- 🛡️ Прикордонні загоны



# With a help of partners

## Local partners:

- fuel supply in war zones
- electricity recovery in Base Station area
- masts and towers recovery
- new constructions and RAN modernization

## Global partners (Ericsson, ZTE, Huawei, Nokia...):

- traffic/services analysis
- fast reaction in problem solving
- supply chain speed up
- special offers and SW solutions





# November 2022

Post CEO Kyivstar in FB:

Starting from October 11<sup>th</sup> about 1000 Base Stations do not work due to planned electricity switching off. Today (13 of Nov) at 1PM we have 427.

We see next steps that can help us in such situation:

1. To organize high priority electricity connection with BS
2. To increase quantity of generators and field teams
3. To purchase more batteries (Li-ion especially)
4. To switch off some part of BS equipment (decrease capacity but increase life time)
5. To use partners source of energy where it is possible

Region	Без живлення	Не працює
CHG	57	26
CHK	60	11
CHN	2	1
DNE	13	3
DON	1	6
IFR	0	0
KHA	27	16
KHE	0	1
KHM	0	0
KIE	292	234
KIR	5	0
LVV	5	1
NIK	2	2
ODE	21	10
POL	70	30
ROV	5	4
SUM	98	74
TER	3	0
VIN	4	3
VOL	4	1
ZAK	1	0
ZAP	0	2
ZYT	2	2
Total	672	427



# Communication is the main thing...

Communication is the main thing that unites us now and helps us continue to work. To ensure it, in just one day on November 23, we used more than 60 tons of diesel fuel to support our base stations.

It is very difficult to maintain the power supply of all 13.5 thousand telecom objects. Therefore, we are initiating the project "Business unites for the sake of victory". We invite owners of generators who are ready to connect telecom equipment to them on a commercial basis.

To do this, you need:

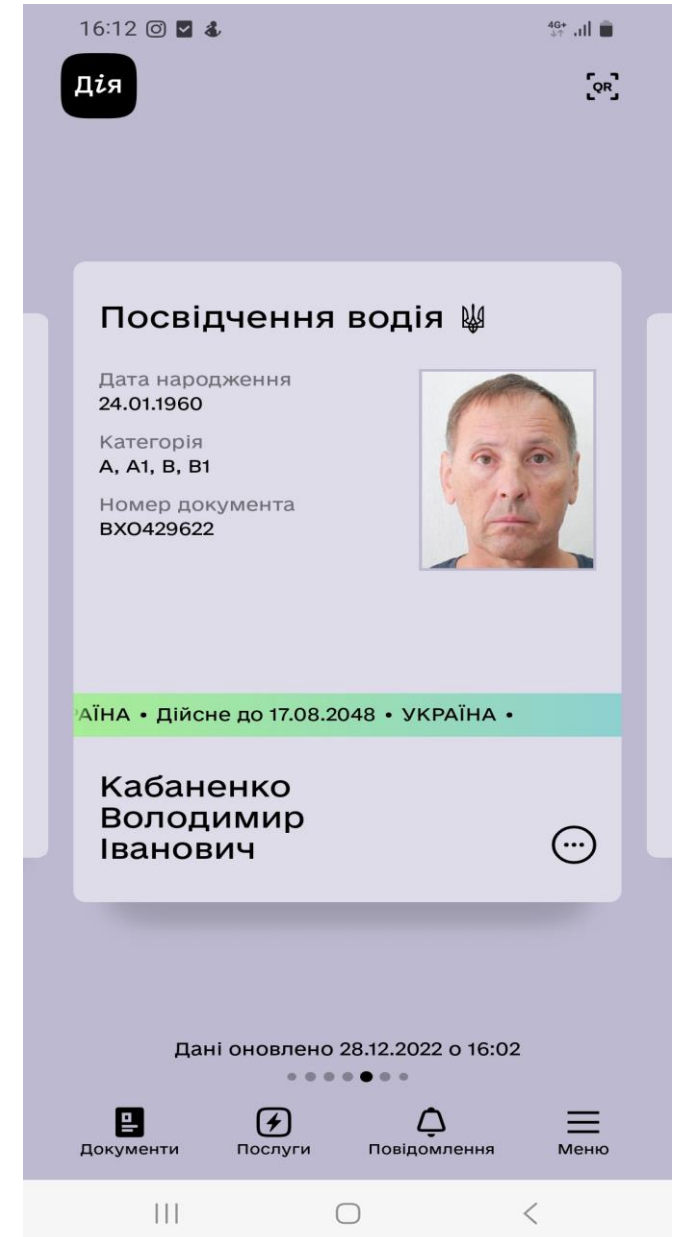
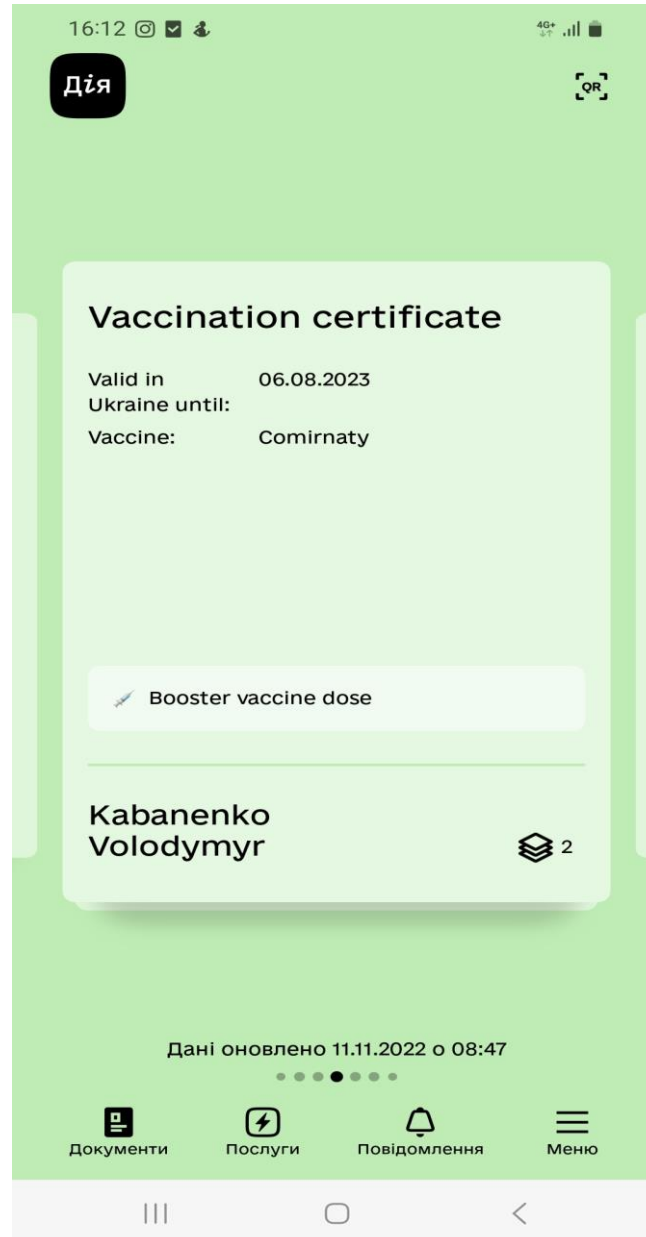
- have a generator with a capacity of 6 kW;
- fill out the feedback form on the <https://kv.st/aSf> website or write on the [RAZOM@kyivstar.net](mailto:RAZOM@kyivstar.net).

Let's move together towards victory!

#факт

Понад 60 тонн дизпалива використано за добу для підтримки базових

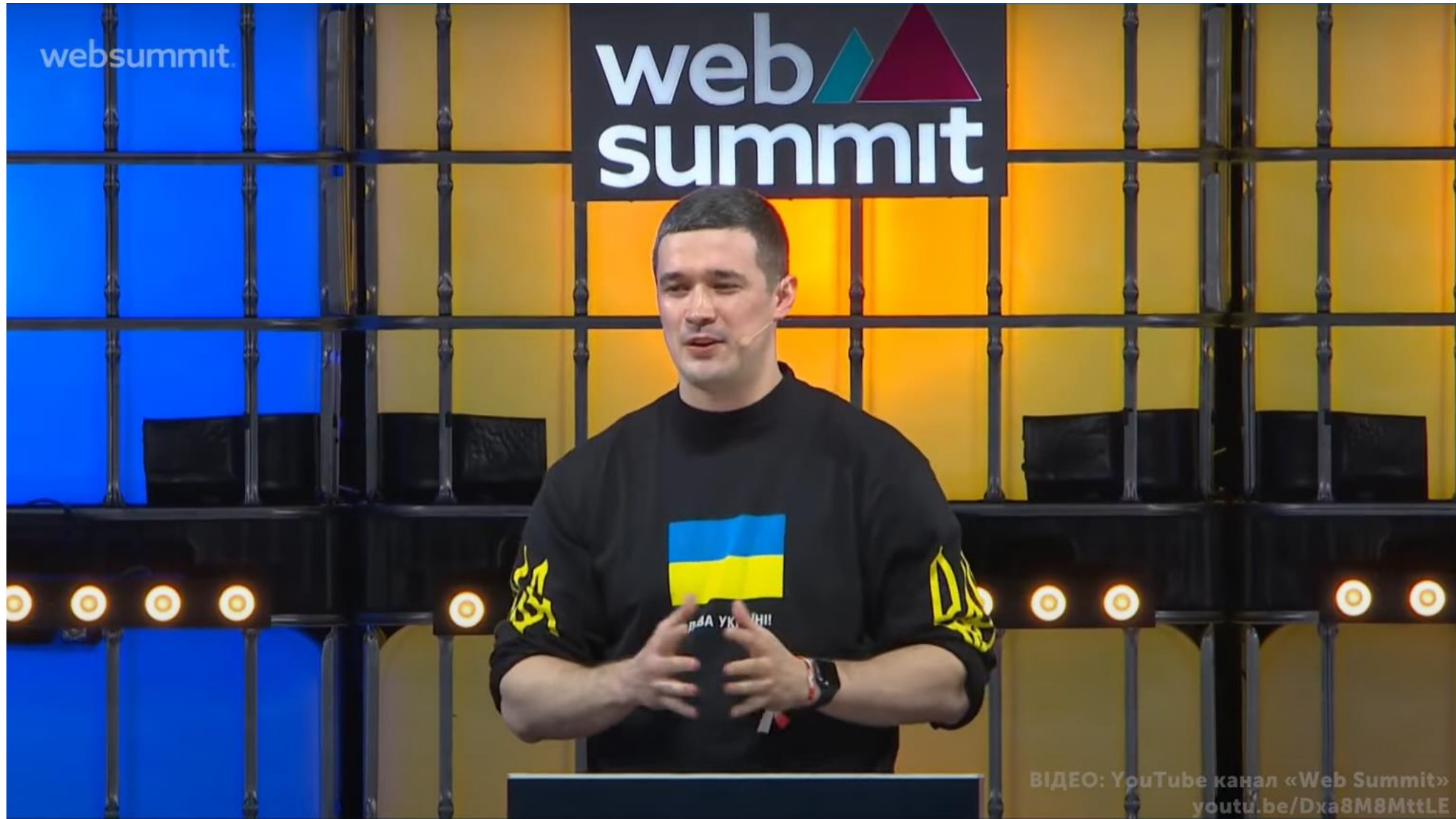
# Not only connectivity



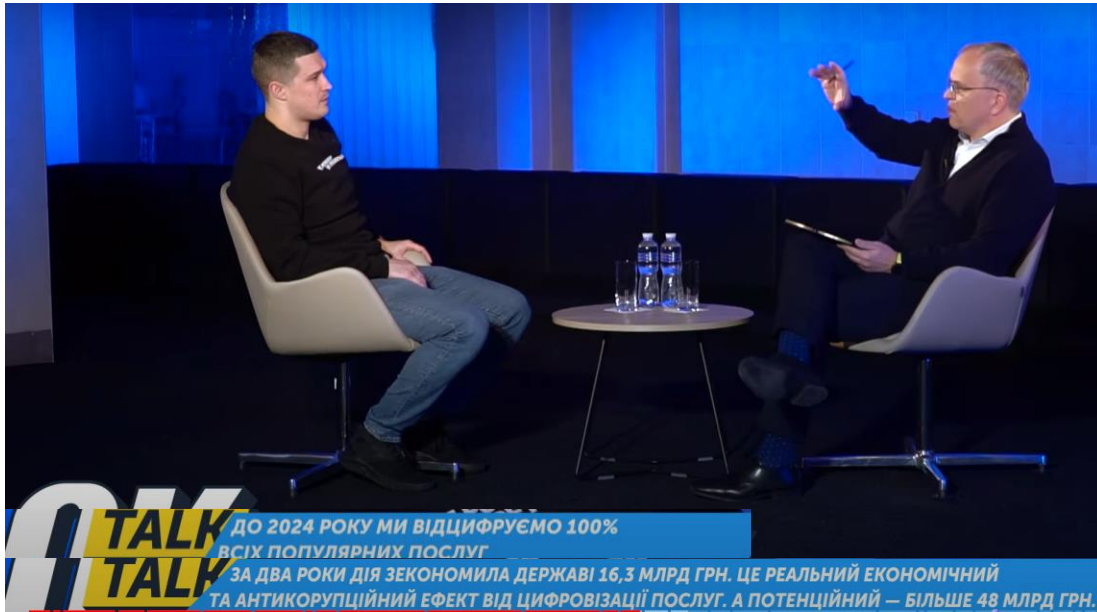


# Minister of Digital Transformation: The war in Ukraine is the war of technology

[youtu.be/Dxa8M8Mttle](https://youtu.be/Dxa8M8Mttle)



# “During the technological war, the smartphone has become a weapon and an intelligence tool”



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**TALK TALK** МИ БУДЕМО ПРЕЗЕНТУВАТИ ЕСТОНСЬКУ «ДІЮ»

- We have already digitized 70% of the most popular services in Ukraine
- In two years, «ДІЯ» saved the state 16 billion UAH. Potential savings - up to 44 billion
- Key priorities 2024: development of «ДІЯ», completion of digitalization of all services, development of innovations, human capital and military tech
- Security is a trend for the next 10-20 years. Even if we win tomorrow
- Army of Drones purchased more than 1,500 drones worth UAH 3.2 billion
- People from 110 countries donated 255 billion USD through UNITED24
- We received more than 420,000 applications in the eBopor (eEnemy) chatbot
- Satellite communication changed the course of hostilities
- We will present Estonian «ДІЯ»

# Short summary

Main reasons of connectivity losses:

- electricity supply outage
- optical lines cuts
- BS infrastructure destruction

Measures that mitigate risk of losses:

- GENERATORS, battery backup, fuel storage
- to build transport network using different physical/logical lines for different technology and OpCo
- to organize extra capacity in control plain (signaling) and user plain (traffic)
- drills for personnel, prepare body armors, helmets