

Open Fibre Data Standard

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Share Your Questions

© Nyani Quamye



What format are you collecting and sharing infrastructure data?

KML

CSV

GeoPackage

JSON

PDF

Map on the wall in our office

I don't know



Let's see



Romania's terrestrial fiber-optic network transformation

Primary Telecom Laws (Law No. 198/2022 and 159/2016)

Streamlined co-location, wholesale sharing, and VHCN rules.
Alignment with EU Gigabit Infrastructure Act (GIA) mandates.

RO-NET project Rural Backhaul Expansion

Connected ~780 underserved rural localities to national backhaul.

Cross-Border Terrestrial Transit

Increased physical route diversity and resilience across CEE/Balkans.

Network Oversight

Granular locality-level identification for targeted broadband funding.



Cable Cuts Are Still A Thing

2019



BBC

<https://www.bbc.com/news/technology-50851420>

Google goes offline after fibre cables cut

19 Dec 2019 — The issue, which lasted for about two hours, **was caused by multiple fibre cables being physically cut at the same time**, a highly unusual thing ...

2019



Ziare.com

<https://ziare.com/.../abonamente> · [Translate this page](#)

A picat reseaua Orange prin toata tara. UPDATE Inchideti si ...

27 Mar 2019 — Orange a intampinat probleme de functionare, miercuri dupa-amiaza, in mai. Problemele au aparut "ca urmare a sectionarii multiple in reseaua de ...

2025



Primăria Timișoara

<https://www.primariatm.ro/elimina...> · [Translate this page](#)

Primăria Timișoara continuă operațiunea de eliminare a ...

5 Mar 2025 — Totodată, în data de 6.03.2025, echipele STPT vor **elimina** cablurile **aeriane** amplasate ilegale pe Calea Bogdăneștilor, între Calea ...

2025



DIAMATIX

<https://diamatix.com/news-google-services-outage>

Google services outage impacts Bulgaria and Eastern ...

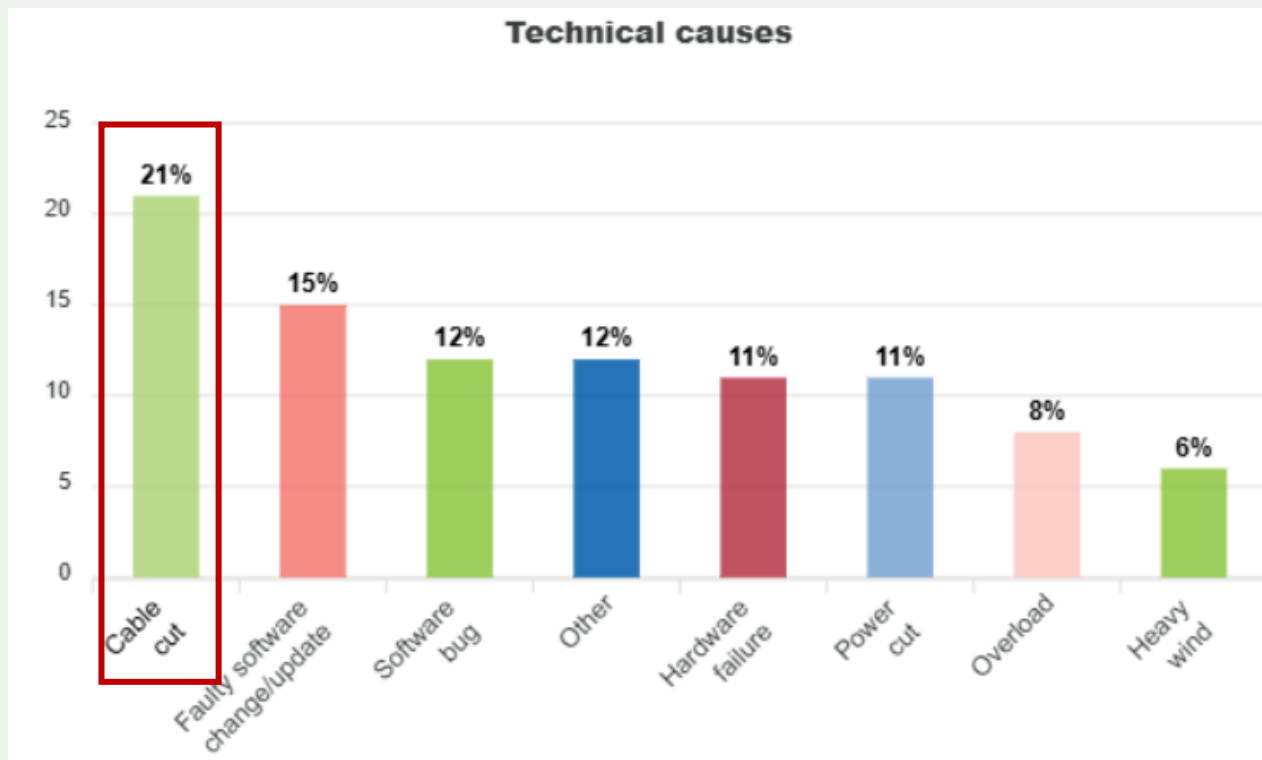
4 Sept 2025 — On September 4th, 2025, **Google experienced a major outage affecting users across Bulgaria and more than 30 other countries in Eastern Europe** ...



ENISA Telecom Security Incidents Report 2024

In 2024, 41 incidents were marked as cable cuts

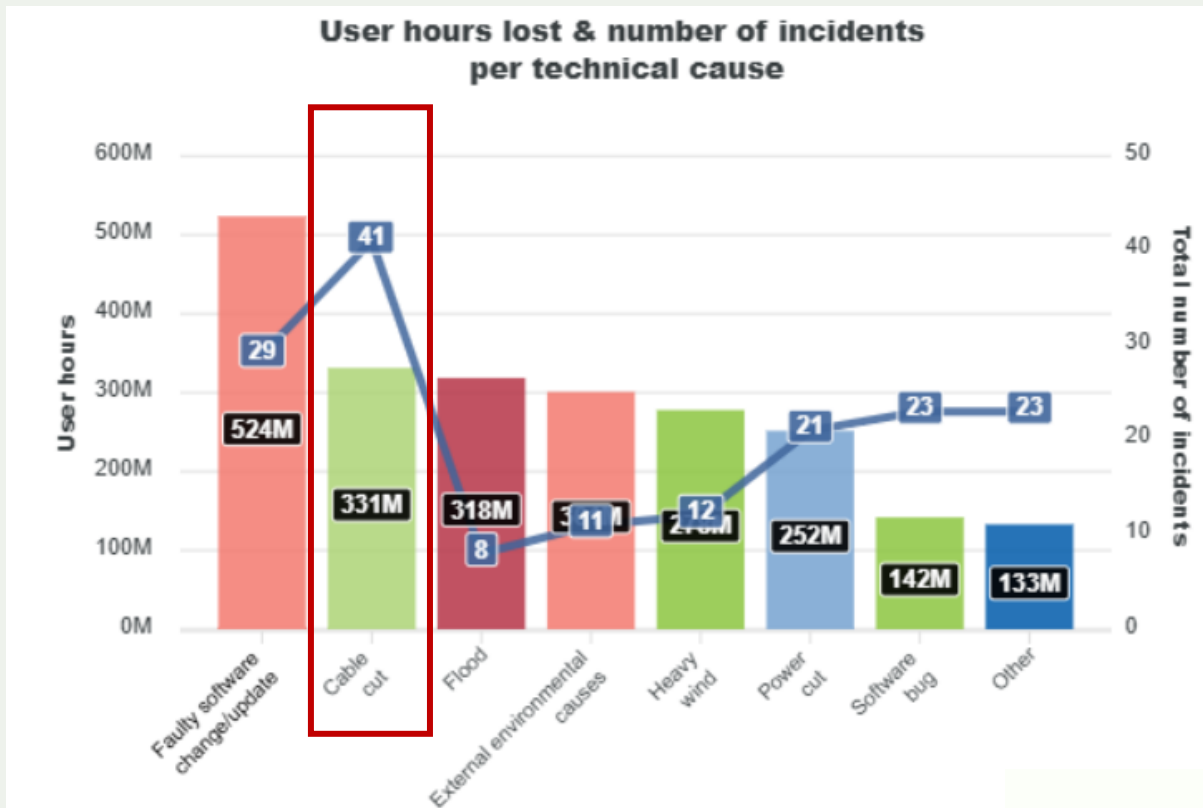
- Increased from 5% of causes in 2022 to 21%
- Led to 331 million hours lost



ENISA Telecom Security Incidents Report 2024

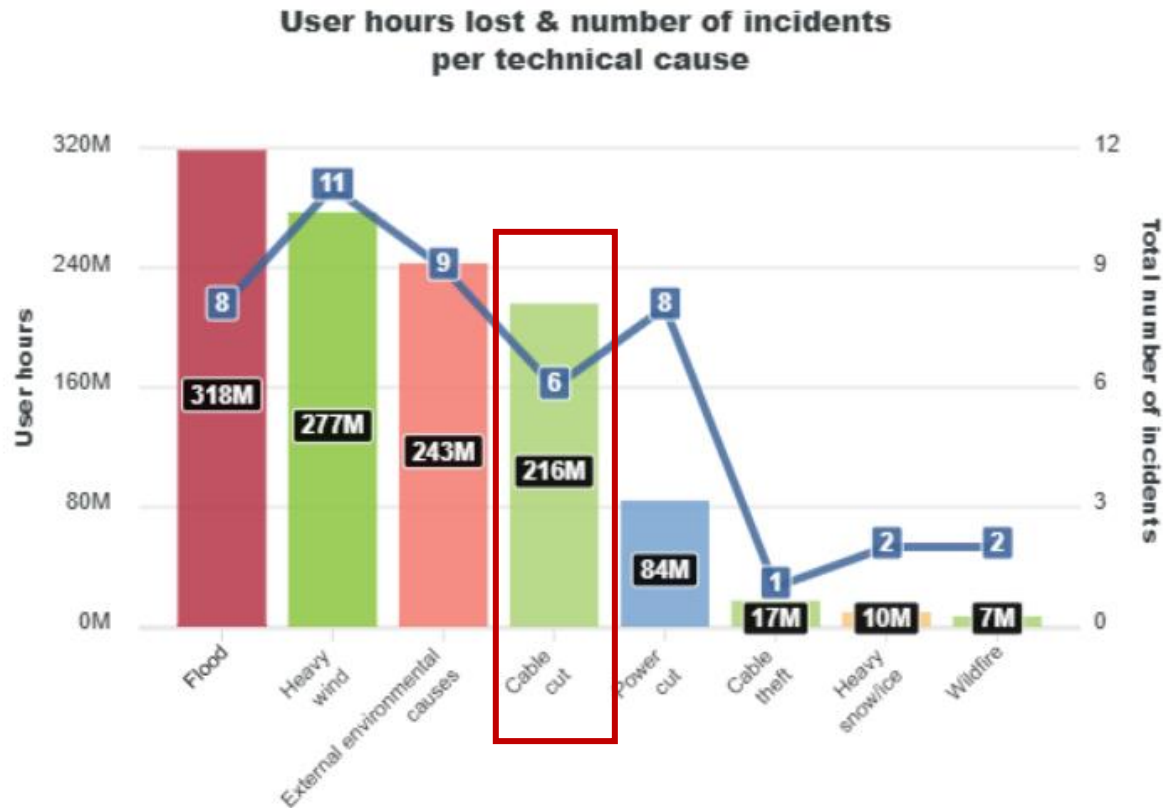
In 2024, 65 incidents were flagged as **failures by third parties**; a 25% increase on 2023

- 41 incidents were marked as cable cuts (23%)
- Led to 331 million hours lost



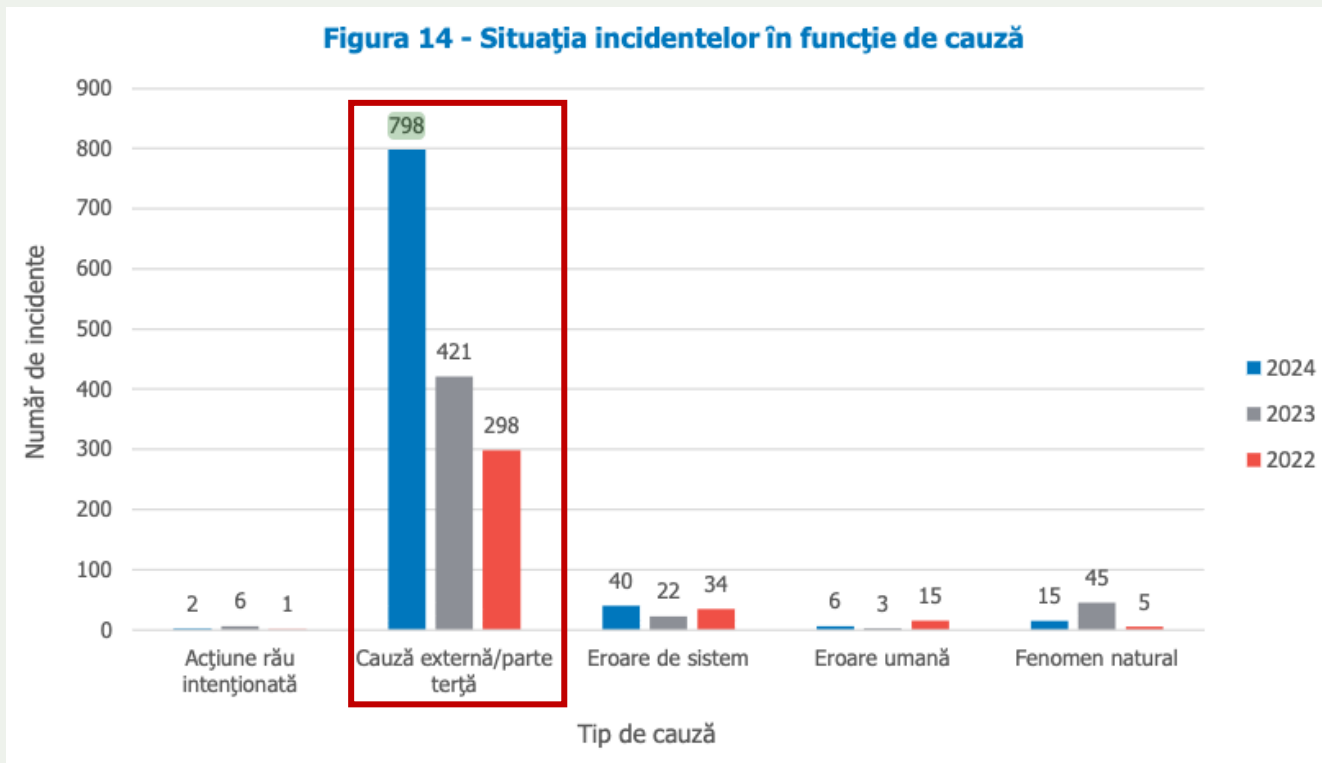
ENISA Telecom Security Incidents Report 2024

- In 2024, 25 incidents were due to natural phenomena; floods were the leading cause
- Cable cuts from natural phenomena led to 216 million of hours lost



ANCOM Security Incident Report 2024

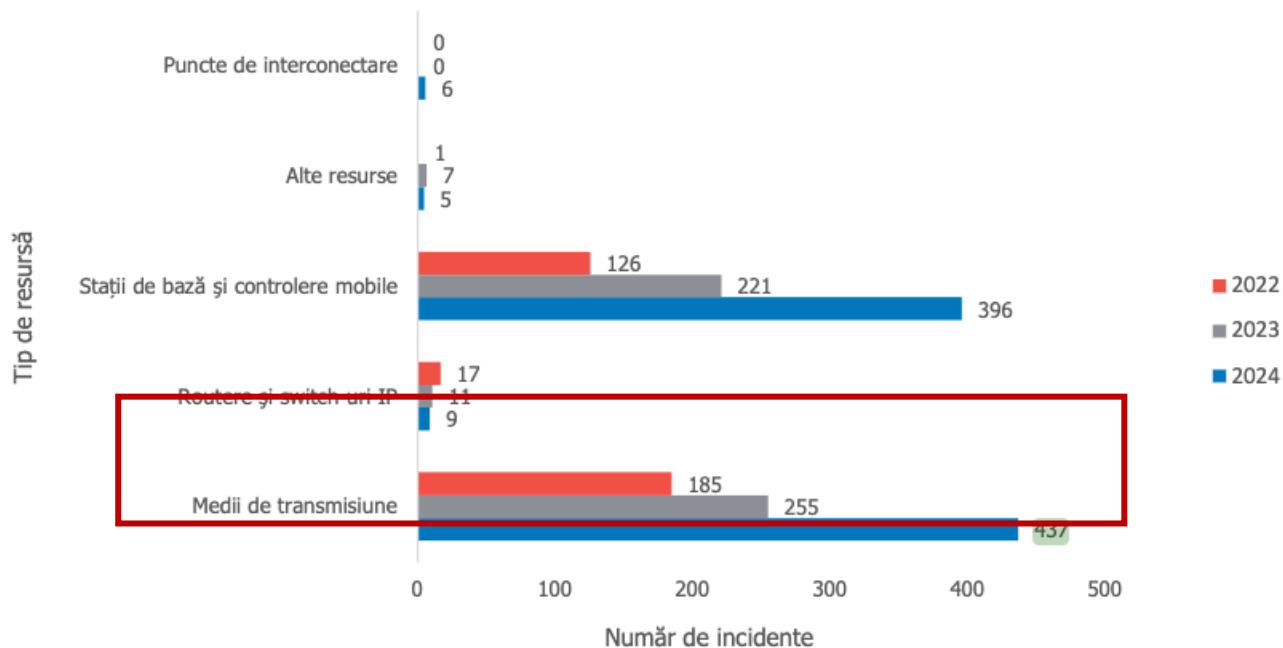
In 2024, the main cause of incidents continues to be involving a third party with a record number of 798 incidents; a significant increase compared to 421 in 2023 and 298 in 2022.



ANCOM Security Incident Report 2024

Of the 437 incidents affecting transmission media, 201 were caused by accidental or intentional cutting of optical fiber

Figura 5 - Numărul de incidente în cazul celor mai afectate resurse



The Open Fibre Data Standard (OFDS) is a standard for publishing data on terrestrial fibre optic broadband infrastructure.

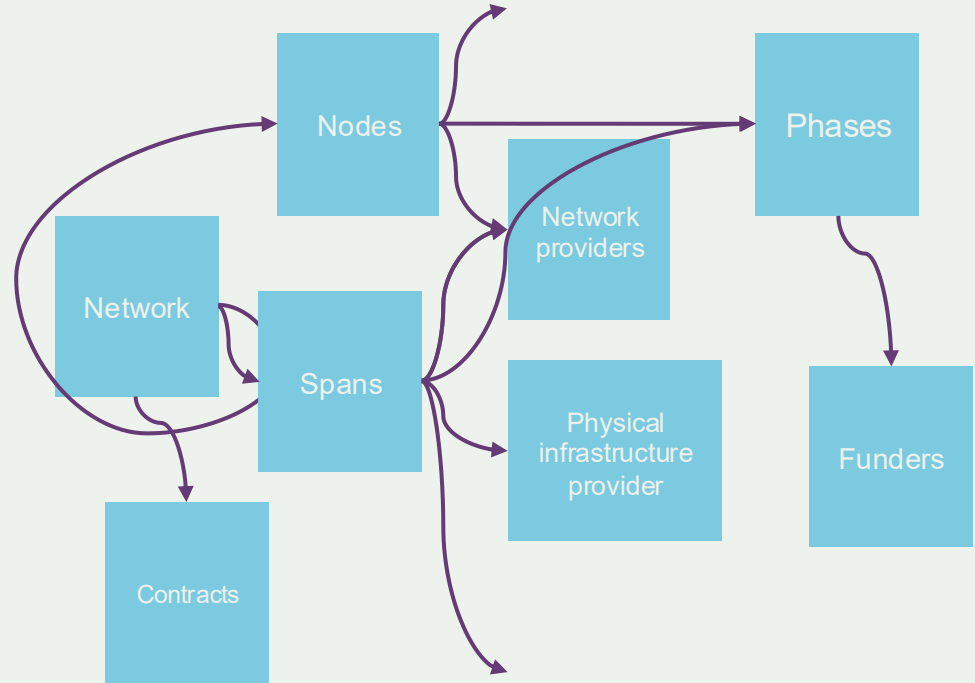


Share Your Questions



Open Fibre Data Standard

- ◆ Describes what data to publish about fibre networks
- ◆ Provides a vocabulary and structure for fibre network data
- ◆ Offers guidance and software tools for publishers and users

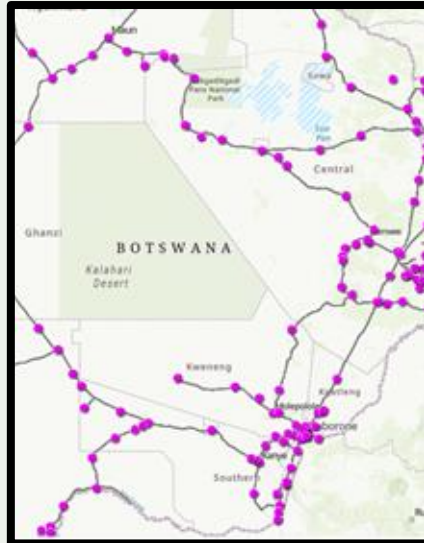


Reach

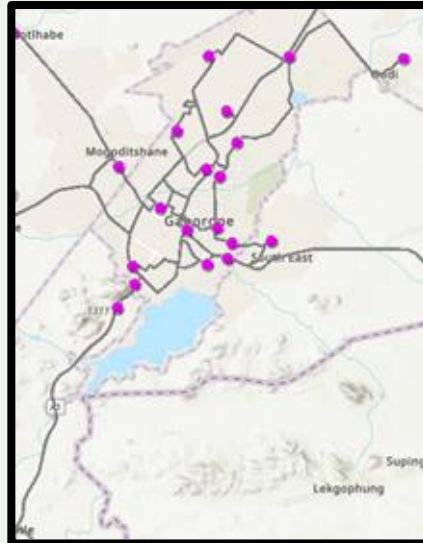
The initial focus of OFDS lies in describing **national and middle mile** networks but will ultimately encompass **last mile** networks.



Undersea



National



Middle mile



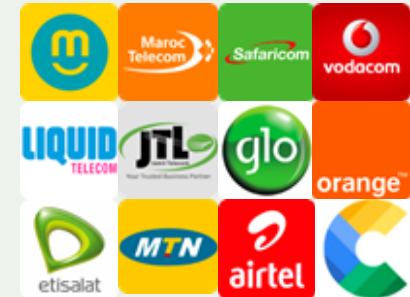
Last mile



Sources: submarinecablemap.com, [BoFiNet GIS portal](http://BoFiNet.org)

Categories of Data

Location data	Technical data	Administrative data
The route of fibre cables, the coordinates of PoPs, towers and IXPs.	Capacity, ITU fibre standards, power availability.	The organisations that own and operate infrastructure, the status of infrastructure, dark fibre availability.



Components

Schema and codelists	Documentation	Open source tools
Define the structure and format of OFDS data, the meaning of each field, and the rules that must be followed to publish OFDS data.	A primer, guidance and reference documentation covering how to publish and use OFDS data.	Software tools for converting, validating and exploring OFDS data. CoVE (Convert, Validate, Explore)

Network
A telecommunication network. A network consists of a set of nodes interconnected by spans.

id `string (format: uuid)`
A universally unique identifier for this network, as defined by [RFC 4122](#). For more information, see the [Identifier reference](#).

name `string (1..)` A name for this network.

nodes `array(1..) Node`
Information about the nodes that belong to this network. Information about nodes should be embedded in this field unless:

- The network is too large to load in to memory, in which case a link to a streamable bulk nodes file may be provided in `.links`
- The data is published via an API and the network is too large to return in a single API response, in which case a link to a paginated nodes endpoint may be provided in `.links`.

For more information, see [how to format data for publication](#).

<https://open-fibre-data-standard.readthedocs.io/en/latest/reference/schema.html>

Open Fibre Data Standard

0.2.0 release

Welcome to the Open Fibre Data Standard 0.2.0 release.

We want to hear your feedback on the standard and its documentation. For general feedback, questions and suggestions, you can comment on an existing [discussion](#) or start a new one. For bug reports or feedback on specific elements of the data model and documentation, you can comment on the issues in the [issue tracker](#) or you can [create a new issue](#).

To comment on or create discussions and issues, you need to sign up for a free GitHub account. If you prefer to provide feedback privately, you can email info@openfibredata.net.

Fibre optic networks are approaching the status of essential

<https://open-fibre-data-standard.readthedocs.io/en/latest/>

Open Fibre Data Standard

CoVE Convert, Validate, Explore | Standard Documentation

Load New File

Schema Version

Your data was checked against schema version: 0.2

Data Conversion

Download the data that you submitted in either its original format or in alternative formats. For more information, see the [publication format reference](#). If you are investigating an error, you might find the alternative formats easier to use.

JSON (original)

network.package.json (0.2.0.3)

<https://ofds.cove.opendataservices.coop/>



Use the tool that matches the job

These are working resources, not a future roadmap.

KML2OFDS

Convert an existing KML map into OFDS

<https://kml2ofds.opentelecomdata.org/>

CoVE

Validate and explore a dataset

<https://coveofds.info/>

Sample data

Real published OFDS examples

<https://github.com/Open-Telecoms-Data/OFDS-public-data>

Demo map

Render OFDS output on a live map

<https://ofds-demo.opentelecomdata.org/>

Consolidation

Merge datasets from several operators

https://github.com/Open-Telecoms-Data/ofds_consolidation_tool

WHAT THE OUTPUT ACTUALLY LOOKS LIKE

```
{
  "nodes": [ {
    "id": "node-bne-01",
    "name": "Brisbane exchange",
    "location": { "type": "Point",
      "coordinates": [153.0281, -27.4679] },
    "physicalInfrastructureProvider": { "name": "Operator A" }
  } ],
  "spans": [ {
    "id": "span-bne-syd-01",
    "start": "node-bne-01", "end": "node-syd-04",
    "status": "operational", "fibreCount": 96,
    "route": { "type": "LineString", "coordinates": [ ... ] }
  } ]
}
```

Nodes, spans and attributes - not a picture of a route.

Same file renders on the demo map, validates in CoVE and merges with another operator's dataset.



Terrestrial Fibre Mapping Challenges



Accuracy – Maps are compiled via official maps (from some operators), shareholder reports, World Bank studies, and other ‘informal’ sources.



Completeness - Most maps are not complete and many need updating.



Limited information – Most map data lacks sufficient information to inform policy and development.



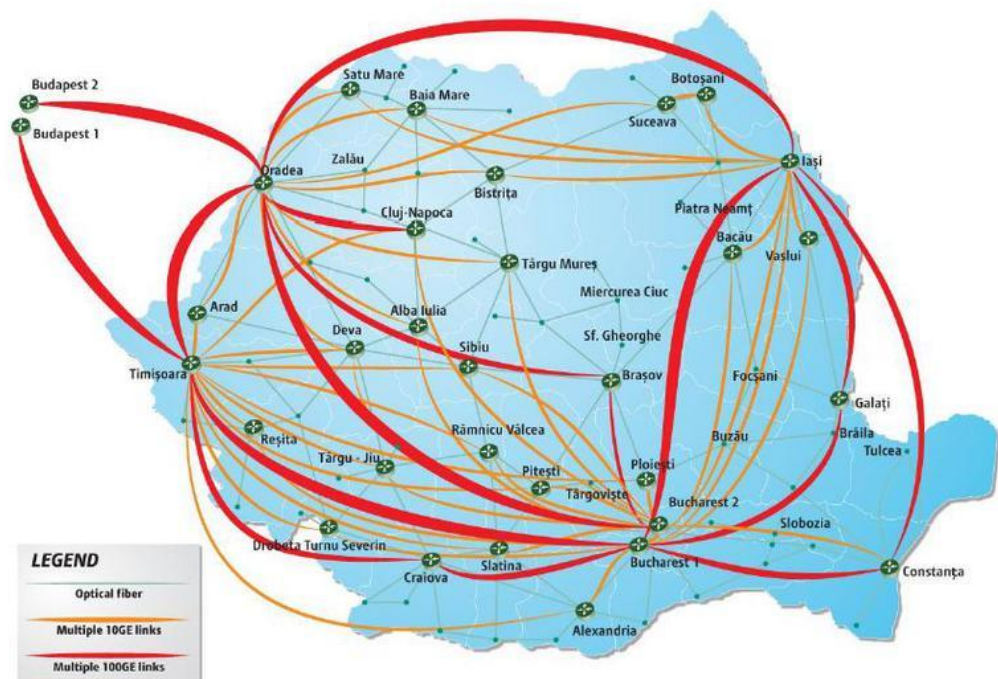
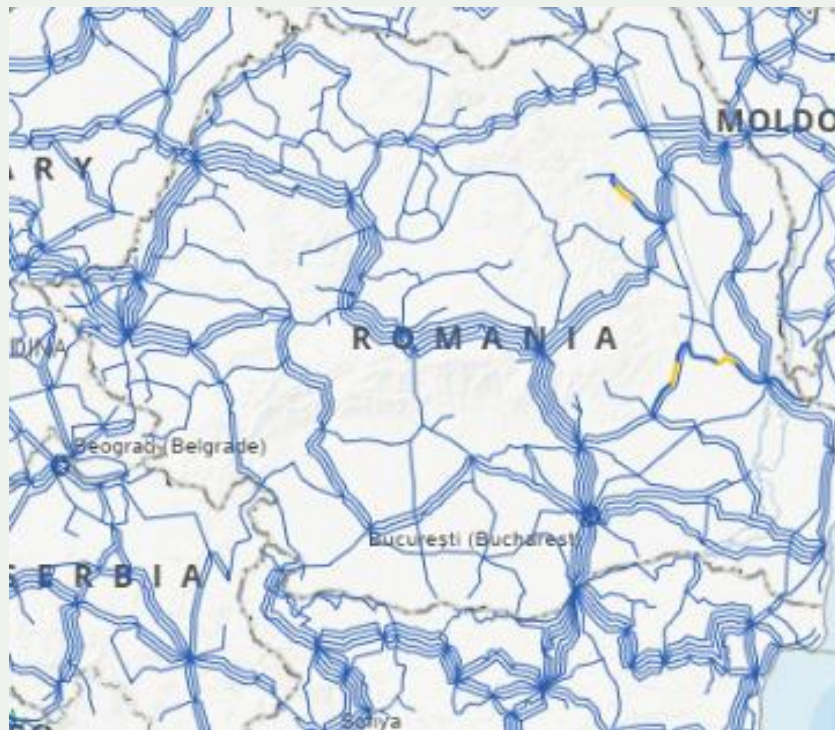
Publication Format – Operators that publish map data are limited in the ways that they can publish - interactive webpages, PDF or KML



Validation – Mapping providers have difficulty verifying and keeping their data current.



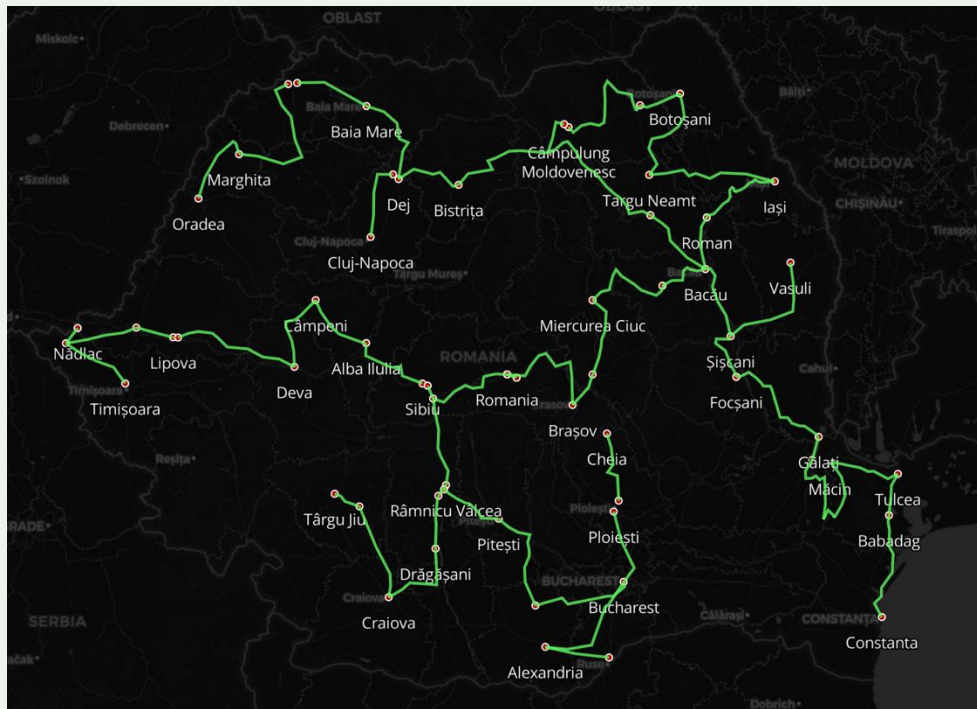
Turn Static and Low Res Maps...



<https://bbmaps.itu.int/bbmaps/>

<https://hotnews.ro/ce-acoperire-are-reteaua-de-fibra-optica-a-rs-rds-in-romania-viteza-de-trafic-zilnic-de-internet-in-retea-a-atins-un-varf-de-aproape-1000-gbps-in-decembrie-2016-428275>

...Into Living Documents



Click a span or node

Ownership, status, attributes and source come with the geometry.

Then add your own

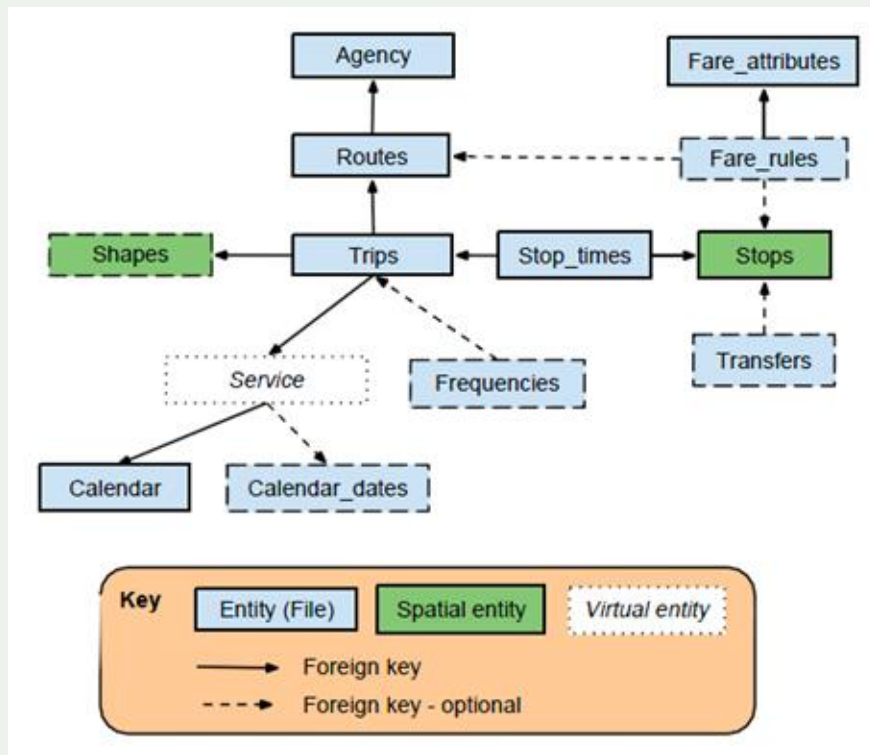
Convert one KML route and see it render the same way.



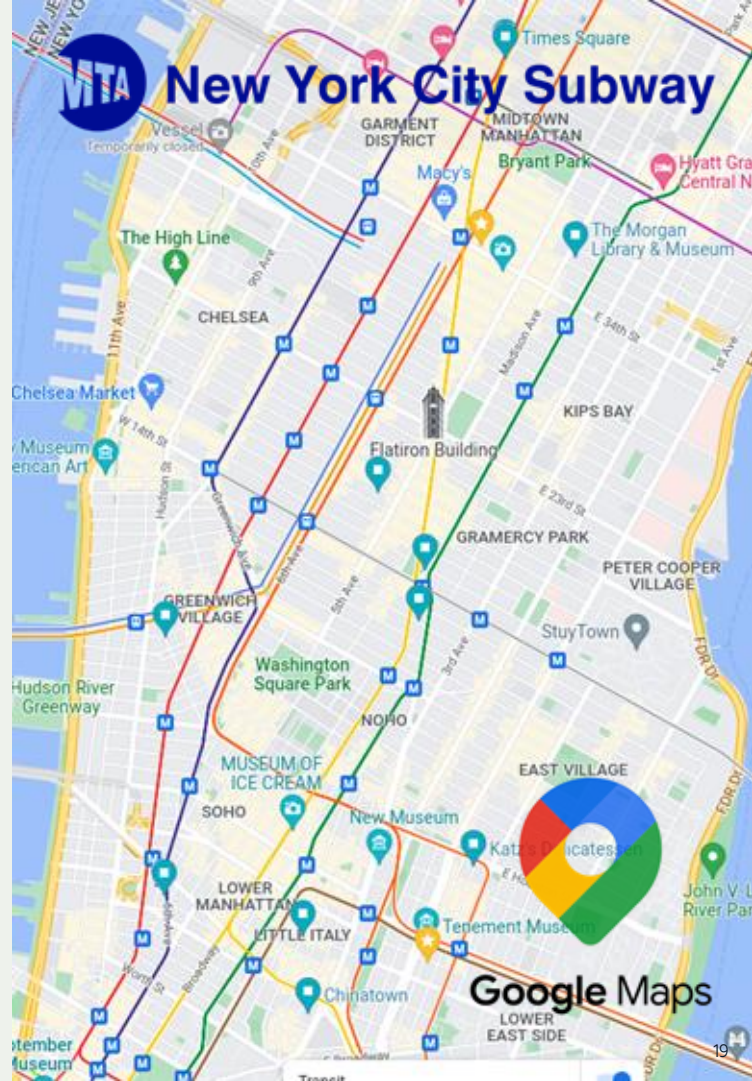
Learn how to create your own maps: https://www.youtube.com/watch?v=WVOz8_AR_X0



Open Data Standard Example



General Transit Feed Specification



Benefits to Governments and Regulators

- More effective network investments by accurately targeting the unserved.
- Improved coordination across infrastructure sectors e.g. road, electricity, rail, oil & gas.
- Reduction of physical network interruption and destruction.
- Opportunity for national and regional benchmarking



Benefits to Governments and Regulators

- Understanding the true extent of national fibre infrastructure
- Benefits to cyber security. Redundancy is key to network resilience.

*Resilience has less to do with
failsafe networks than
networks that are safe when
they fail.*

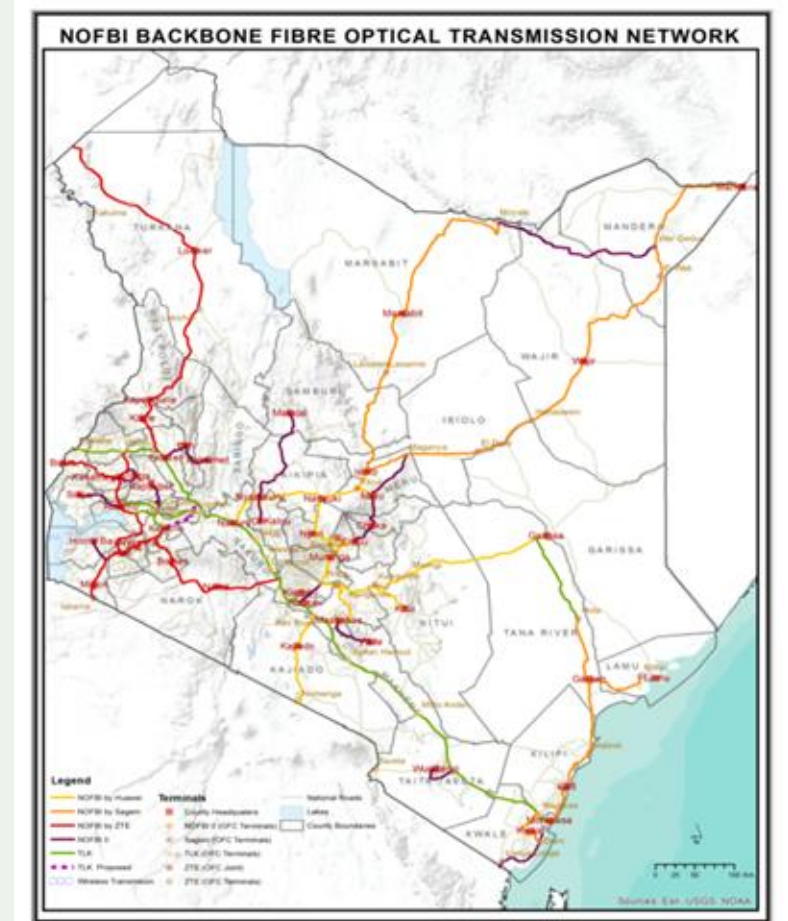


Map of fibre networks from Sao Paulo to Rio de Janeiro

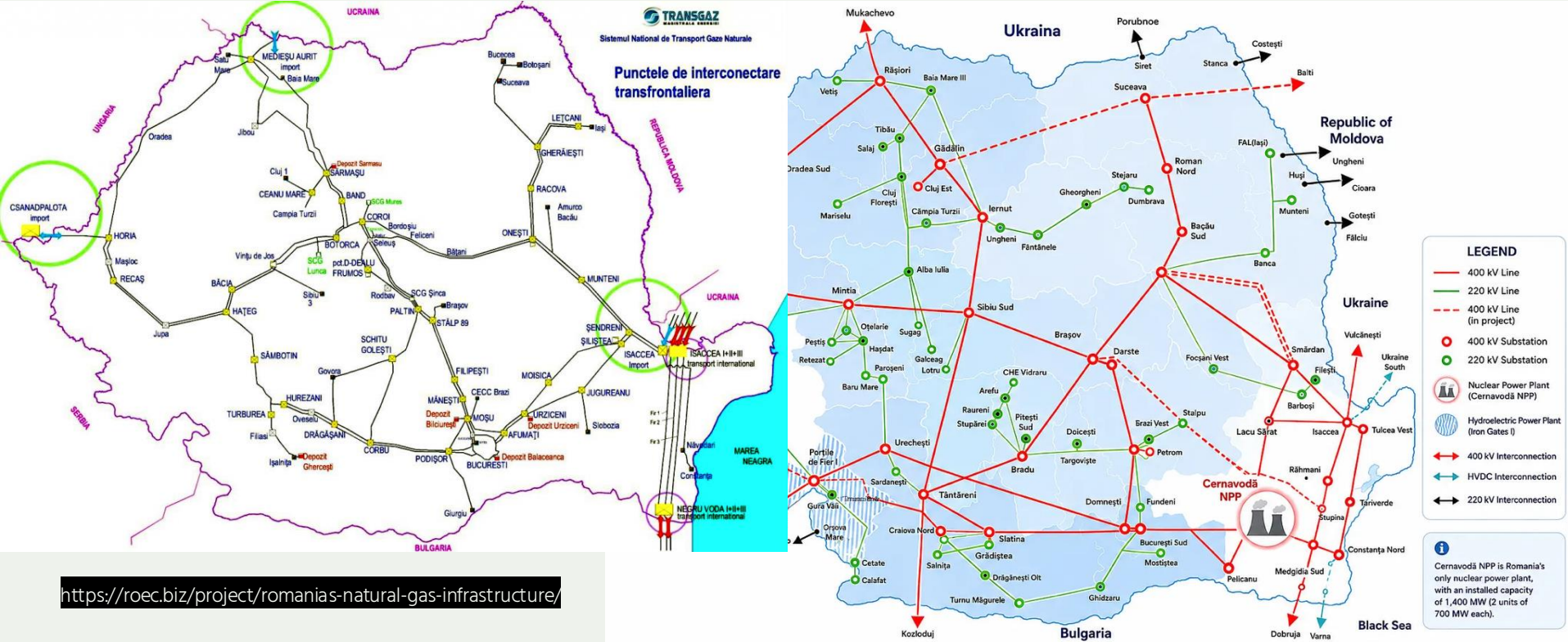


Benefits to Operators

- Opportunities for small ISPs, rural operators in particular.
- More strategic information for investors
- Levelling the playing field in terms of information sharing and building trust
- Better evidence of the socio-economic impact of their networks
- Better network analysis tools



If It's Good Enough For Power and Gas, Why Not Fibre?



<https://roec.biz/project/romanas-natural-gas-infrastructure/>



<https://energygeopoliticsandstatecraft.substack.com/p/heatwaves-war-and-grid-collapse-romanas>

Data sharing possibilities



Different organisations may combine Open Fibre Data with various data sources to serve their individual missions.



Standardise the structure. Choose the access.

OFDS

WHAT THE DATA MEANS

Nodes • spans • routes
organisations • attributes
formats • validation rules



SHARING

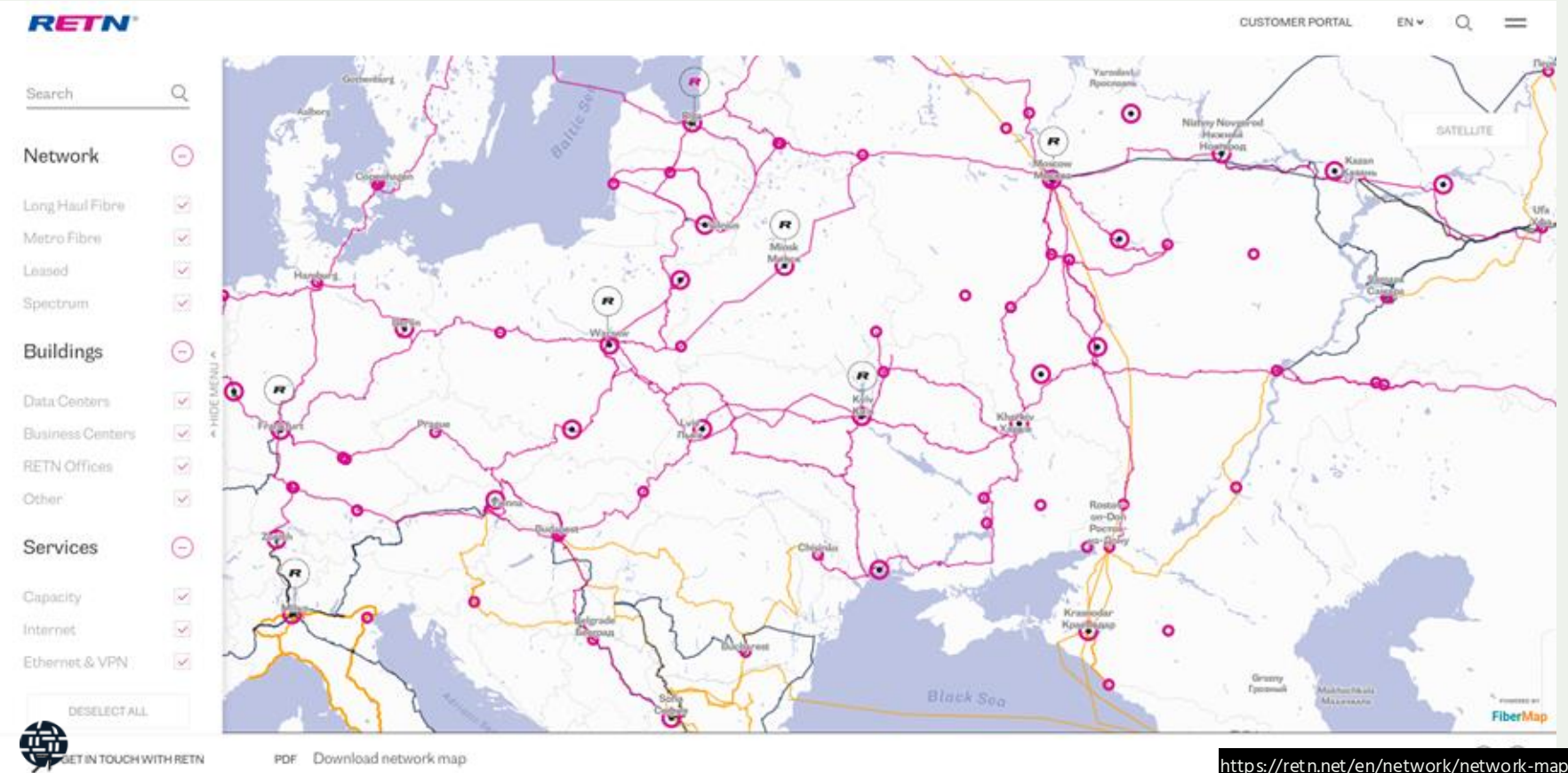
WHO CAN SEE IT

Internal only
Trusted exchange
Generalised public map
Open dataset

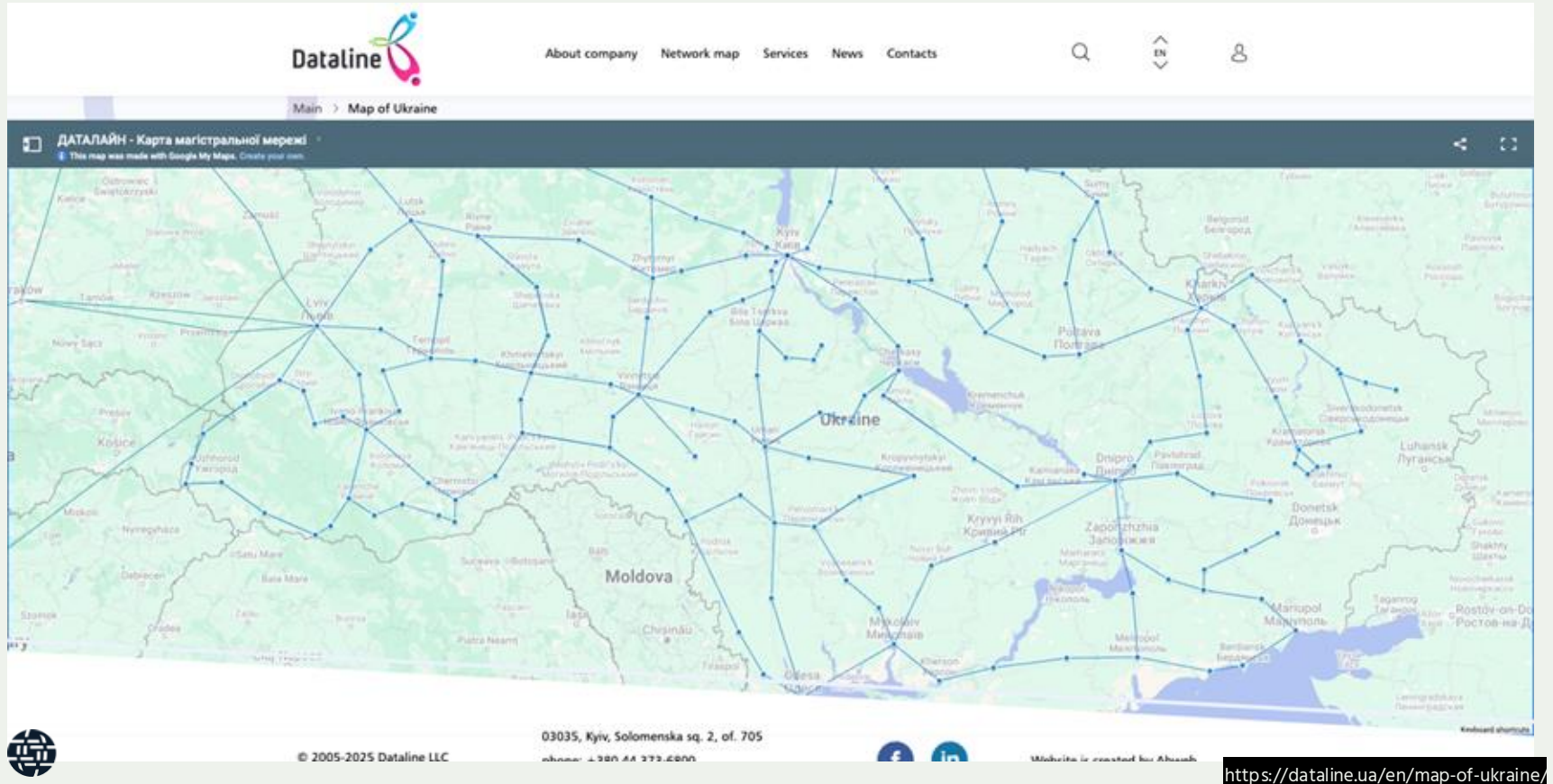


OFDS defines the data. The owner defines the disclosure level.

This is Not the Case Everywhere



This is Not the Case Everywhere



This is Not the Case Everywhere



Select your city: Kyiv   Service centers

Eng  

[For Home](#) [For Business](#) [To Partners](#) [About us](#) [News](#) [Contacts](#)



 **Німецький** 

Німецький

Німецький

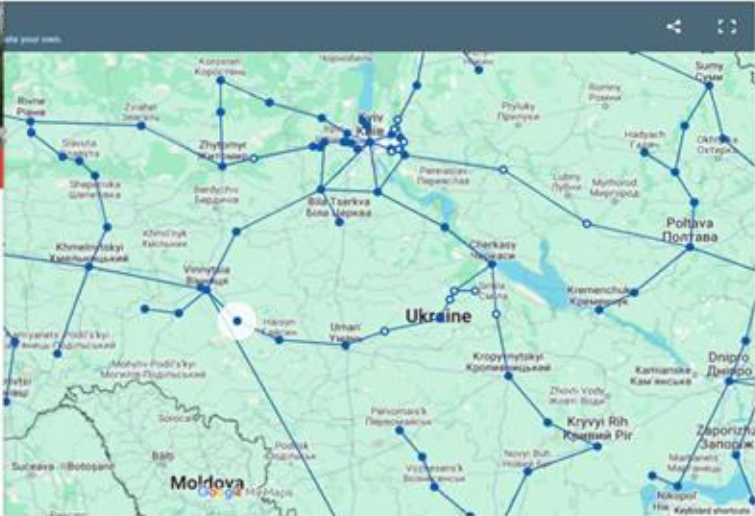
Details from Google Maps

Nemyniv, Vinnytsia Oblast, Ukraine

[View in Google Maps](#)



10 photos from Google Maps



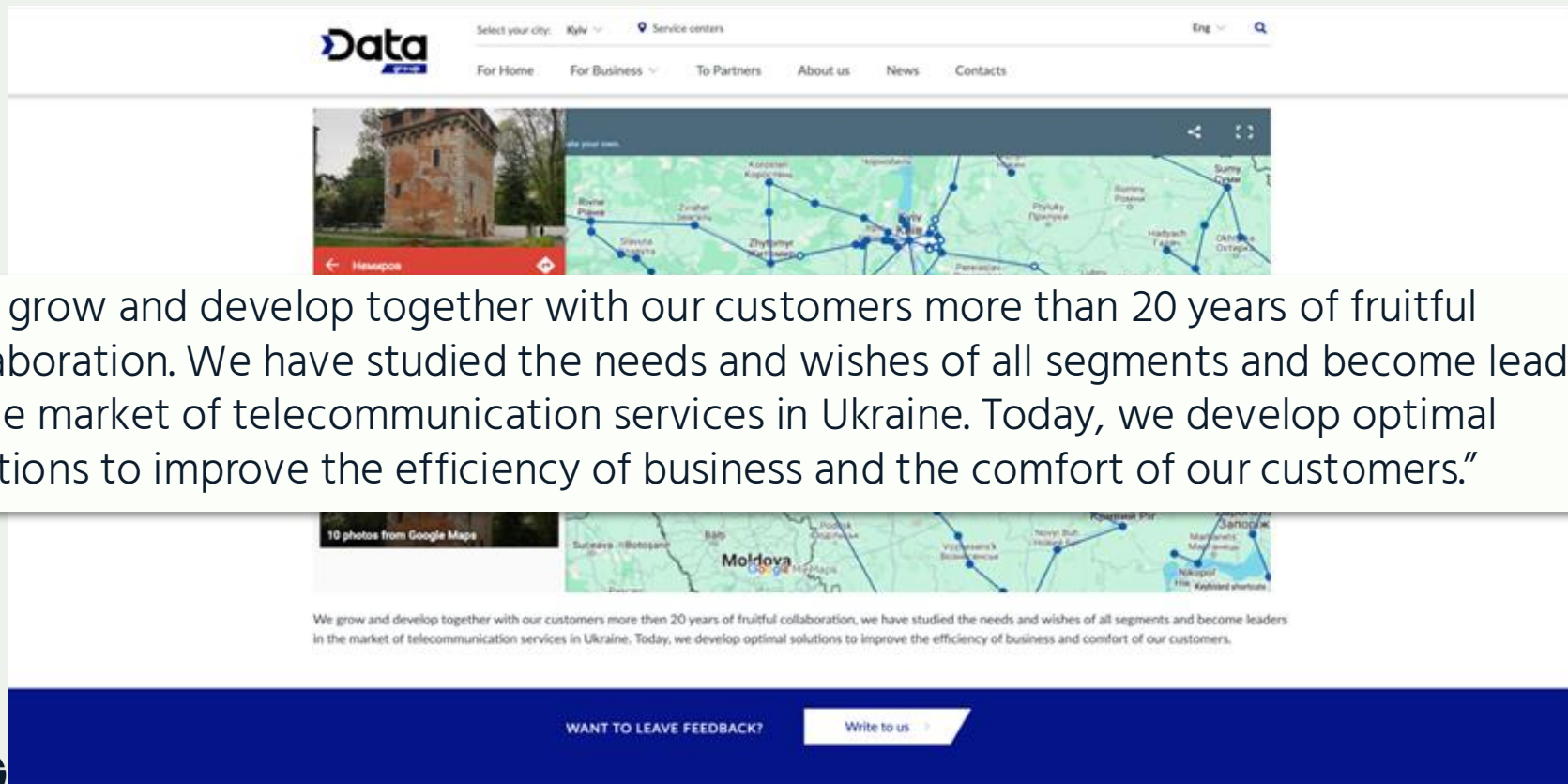
We grow and develop together with our customers more then 20 years of fruitful collaboration, we have studied the needs and wishes of all segments and become leaders in the market of telecommunication services in Ukraine. Today, we develop optimal solutions to improve the efficiency of business and comfort of our customers.

WANT TO LEAVE FEEDBACK?

Write to us 



This is Not the Case Everywhere



Select your city: Kyiv Service centers

Eng

For Home For Business To Partners About us News Contacts

10 photos from Google Maps

Moldova

We grow and develop together with our customers more then 20 years of fruitful collaboration, we have studied the needs and wishes of all segments and become leaders in the market of telecommunication services in Ukraine. Today, we develop optimal solutions to improve the efficiency of business and comfort of our customers.

WANT TO LEAVE FEEDBACK? Write to us

“We grow and develop together with our customers more than 20 years of fruitful collaboration. We have studied the needs and wishes of all segments and become leaders in the market of telecommunication services in Ukraine. Today, we develop optimal solutions to improve the efficiency of business and the comfort of our customers.”



Multistakeholder initiative

At a recent workshop in Geneva, an Interim Governance Committee for the standard was established, consisting of members listed here.

We worked with the Open Data Services (ODS) , who were contracted by the World Bank to provide technical support in the development of the standard. ODS are international experts in data standards



Workshops

- ◆ Working with partners to promote the development of a global initiative to support the standard
- ◆ Next steps are to develop transparent, democratic governance mechanisms for OFDS and fundraise for its support globally.

Join us!



National Workshops

	Kenya	Ghana
Regulator	 COMMUNICATIONS AUTHORITY OF KENYA	 NATIONAL COMMUNICATIONS AUTHORITY <i>Communications for Development</i>
Operator Association		 GHANA CHAMBER OF TELECOMMUNICATIONS <i>M-Powering People • SIMpacting Lives</i>

Regional Workshops



We want to learn



Take our Poll

- What formats is data being collected?
- Where is the data being stored?
- Who is collecting this data?
- Which players need to be involved in this discussion?
- What are the challenges with collecting and sharing this data?
- What support is required to alleviate these challenges?



Get involved!

Please get in touch if you are interested in:

- Learning more about OFDS
- Hosting an OFDS workshop
- Participating in standard development and governance

<https://ofds.info>
outreach@ofds.info

