सत्यमेव जयते
Department of Telecommunications
Ministry of Communications
Government of India

राष्ट्रीय ब्रॉडबैंड अभियान
National Broadband Mission

भारत दूरसंचार
INDIA TELECOM

Use of PM GatiShakti NMP Platform in Department of Telecommunications

Presentation in the State of Himachal Pradesh.

Himanshu Sharma,
Director,
National Broadband Mission

PM Gati Shakti National Master Plan

- ✓ **PM Gati Shakti - National Master Plan** for Multi-modal Connectivity is a digital platform to bring various ministries together for integrated planning and coordinated implementation of infrastructure connectivity projects.

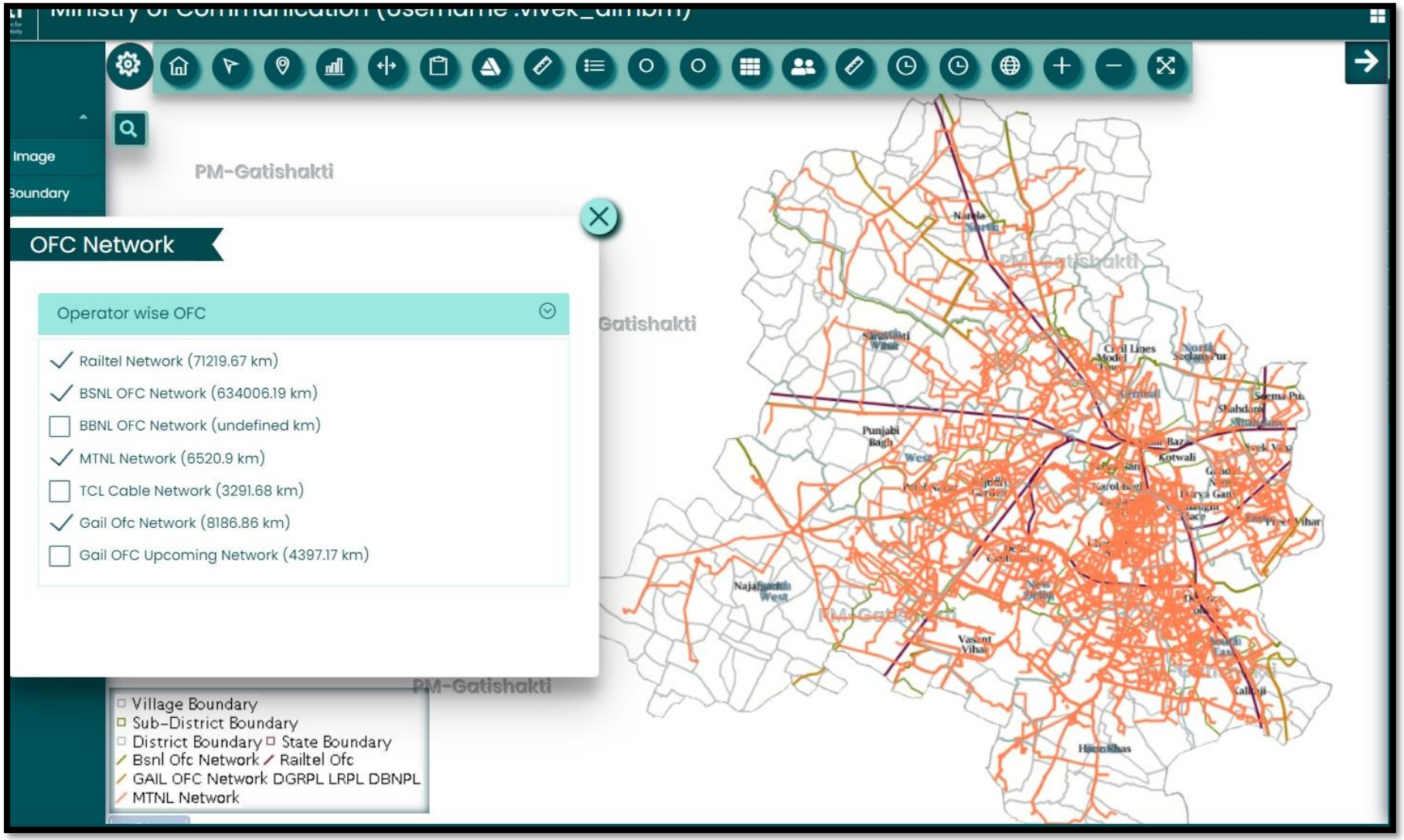
- ✓ This **Multi-modal connectivity** will provide integrated and seamless connectivity for the movement of people, goods, and services from one mode of transport to another and hence make Indian businesses more competitive.

- ✓ It will leverage technology extensively particularly **spatial planning tools** using ISRO (Indian Space Research Organization) imagery and is developed by BISAG-N (Bhaskaracharya National Institute for Space Applications and Geoinformatics).

Benefits of DoT PM Gati Shakti NMP

- Facilitate sharing of **available Telecom assets** like Optical Fiber Cable (OFC), by bringing together the sellers of OFC and its potential buyers.
- Provide an overview of **telecom connectivity** available in an area of interest which is one of the considerations for Governments/businesses while deciding about setting up new projects.
- The project executors of other ministries/departments can see the locations/details of the **mobile towers** and **Optical Fiber Cable (OFC)** to see mobile coverage and broadband connectivity.
- Distance to the **nearest available road** from the proposed site of the Telecom tower can be estimated for the purpose of carrying raw materials for the construction of a **new Mobile Tower**.
- Information about the availability of mapped **land type - Government/private**, near the proposed site of the Telecom tower, can be viewed.

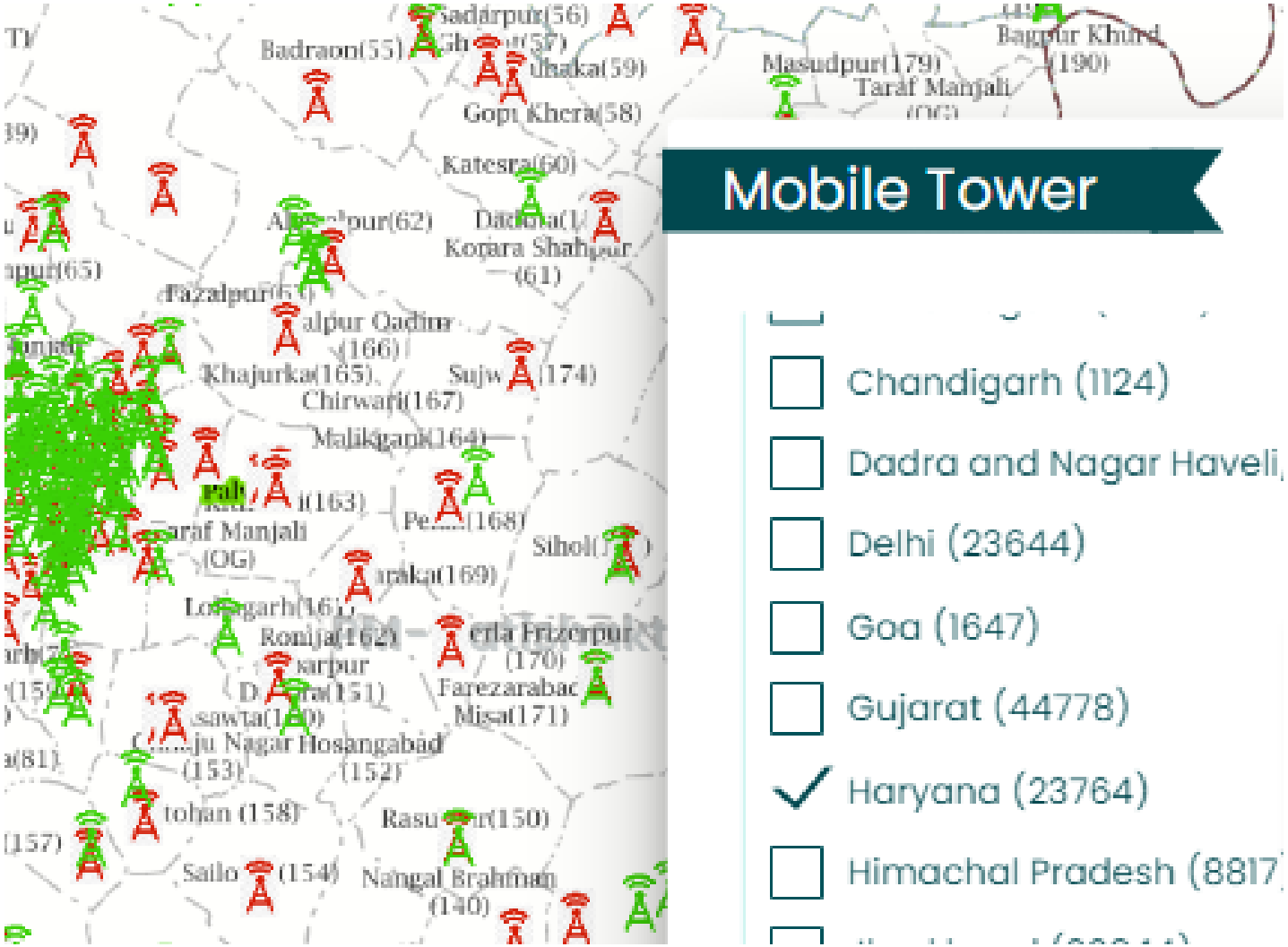
Telecom Data Mapping - OFC



(~12 lakh RKM from PSUs of Railtel/ BSNL/ BBNL/ MTNL/GAIL/MoRTH mapped) or integrate TSP data bases through API

~ 21,000 km of State OFC of North East, Gujarat, Telangana, Kerala, Jharkhand, Rajasthan, Andhra Pradesh, Chhattisgarh and Haryana mapped.

Telecom Data Mapping Towers – Towers/BTSs



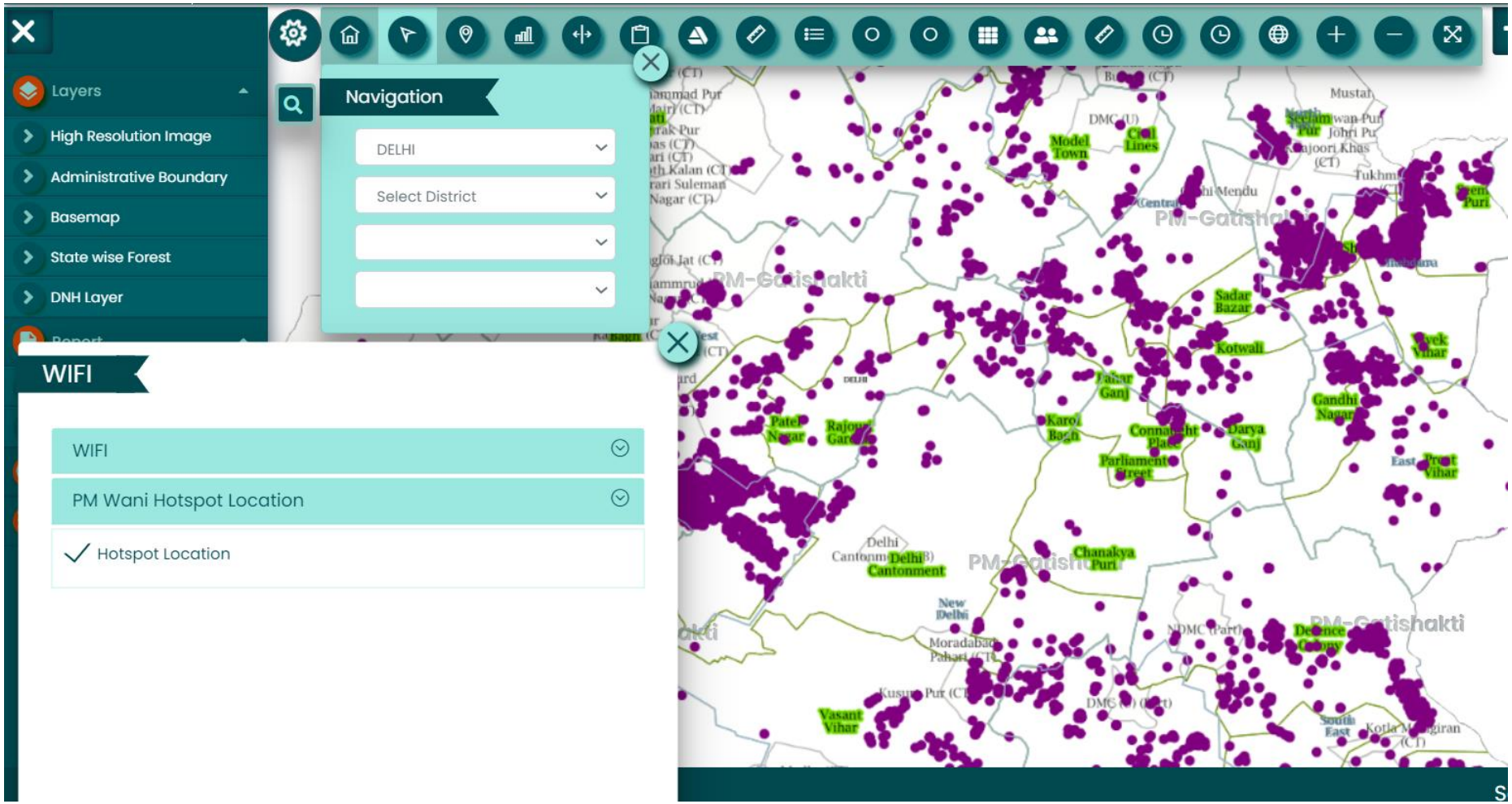
Fiberized Mobile Tower

Non-fiberized Mobile Tower

Towers (with BTSs of different operators) State wise - Fiberized & non-fiberized

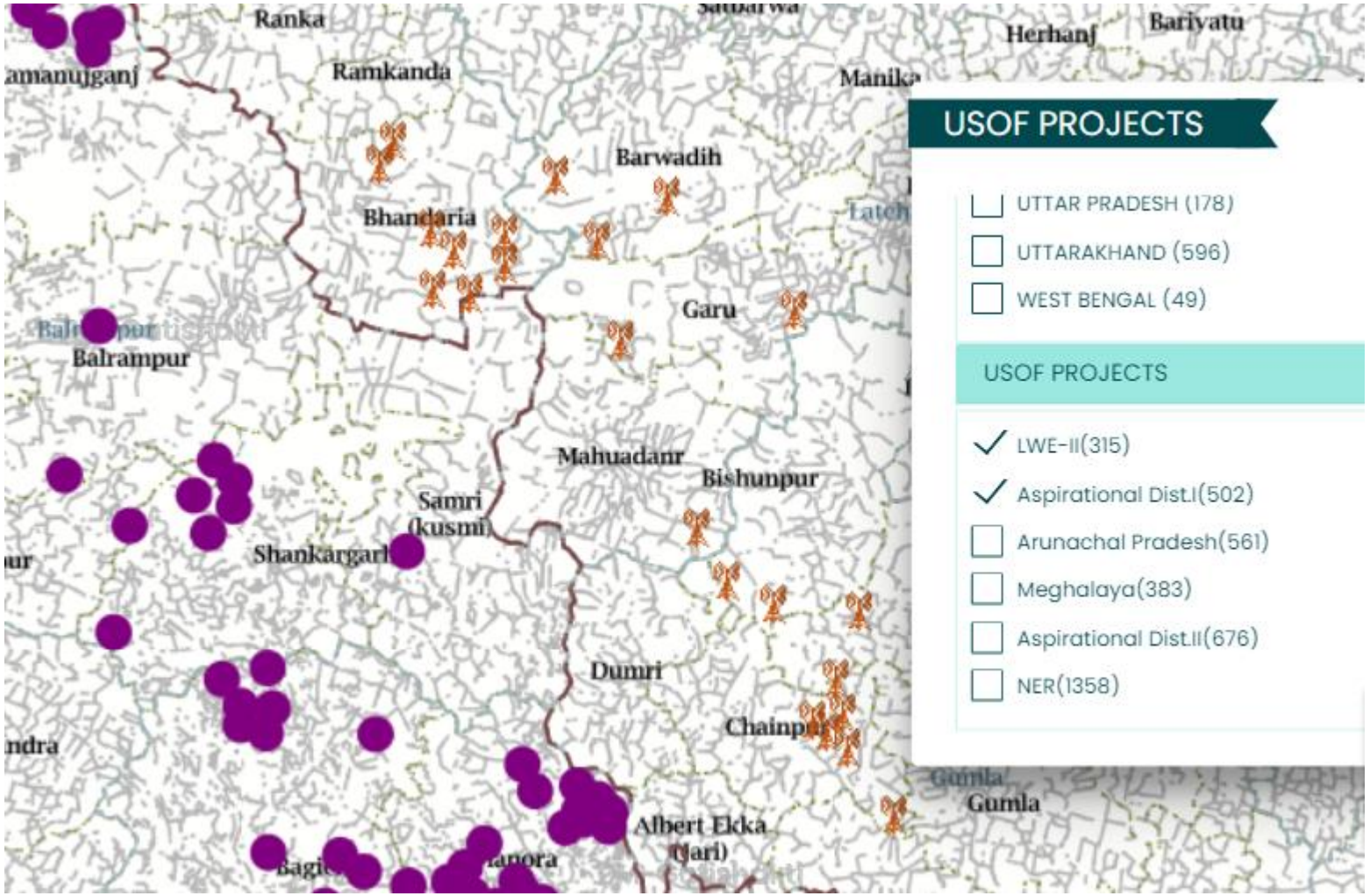
7.69 lakh mobile towers having 27.45 BTSs (Aug 2023) mapped

Telecom Data Mapping – PM-Wani Wi-Fi Hotspots



Nearly 1.33 lakh PM-WANI Wi-Fi(**Sept 2023**) hotspots already mapped

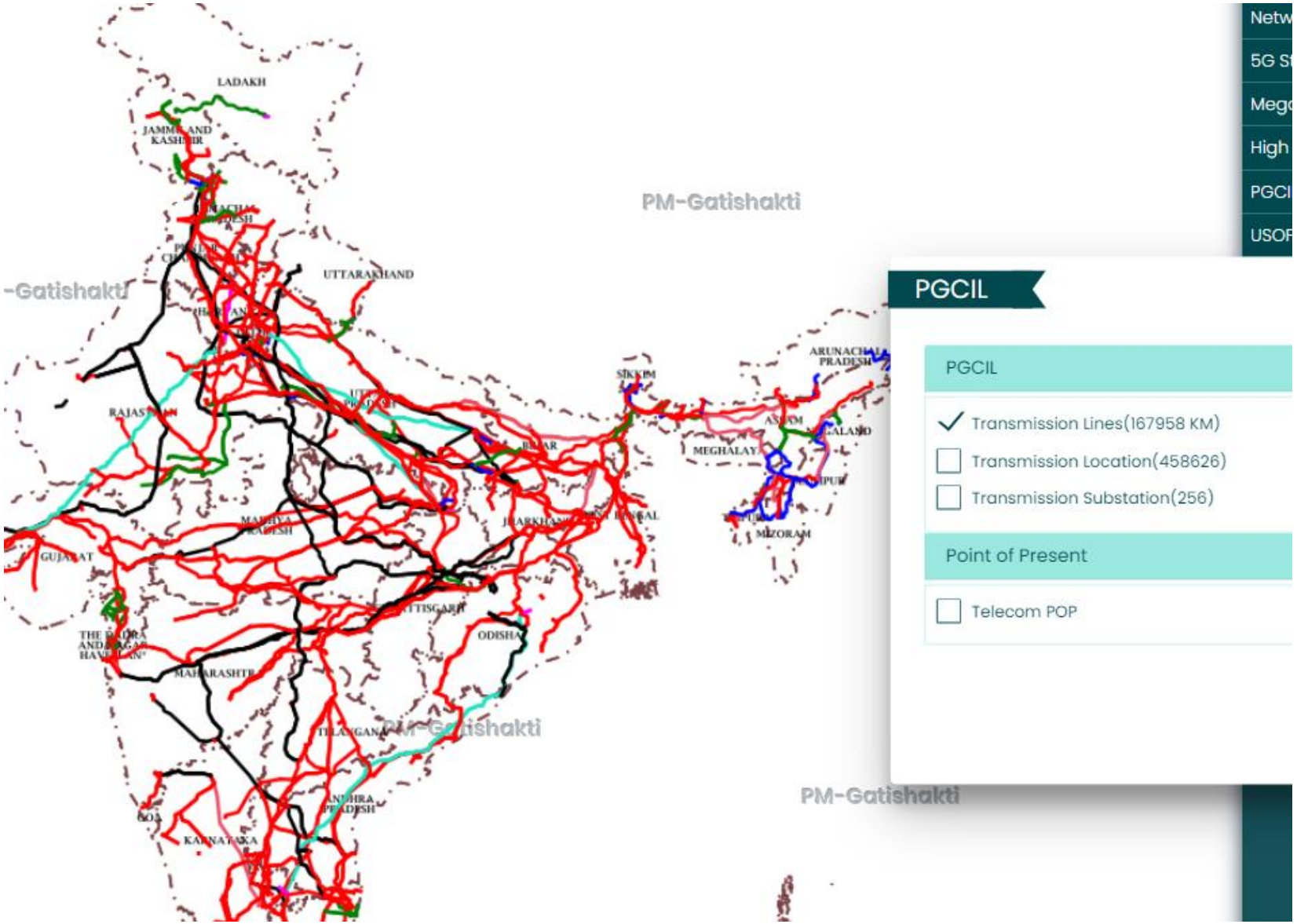
Telecom Data Mapping Towers – USOF Towers



19,488 Proposed Mobile Towers of 4G saturation project mapped.

3,795 Mobile towers(planned/radiating) of various USOF projects mapped

Other layers– OPGW of POWERGRID



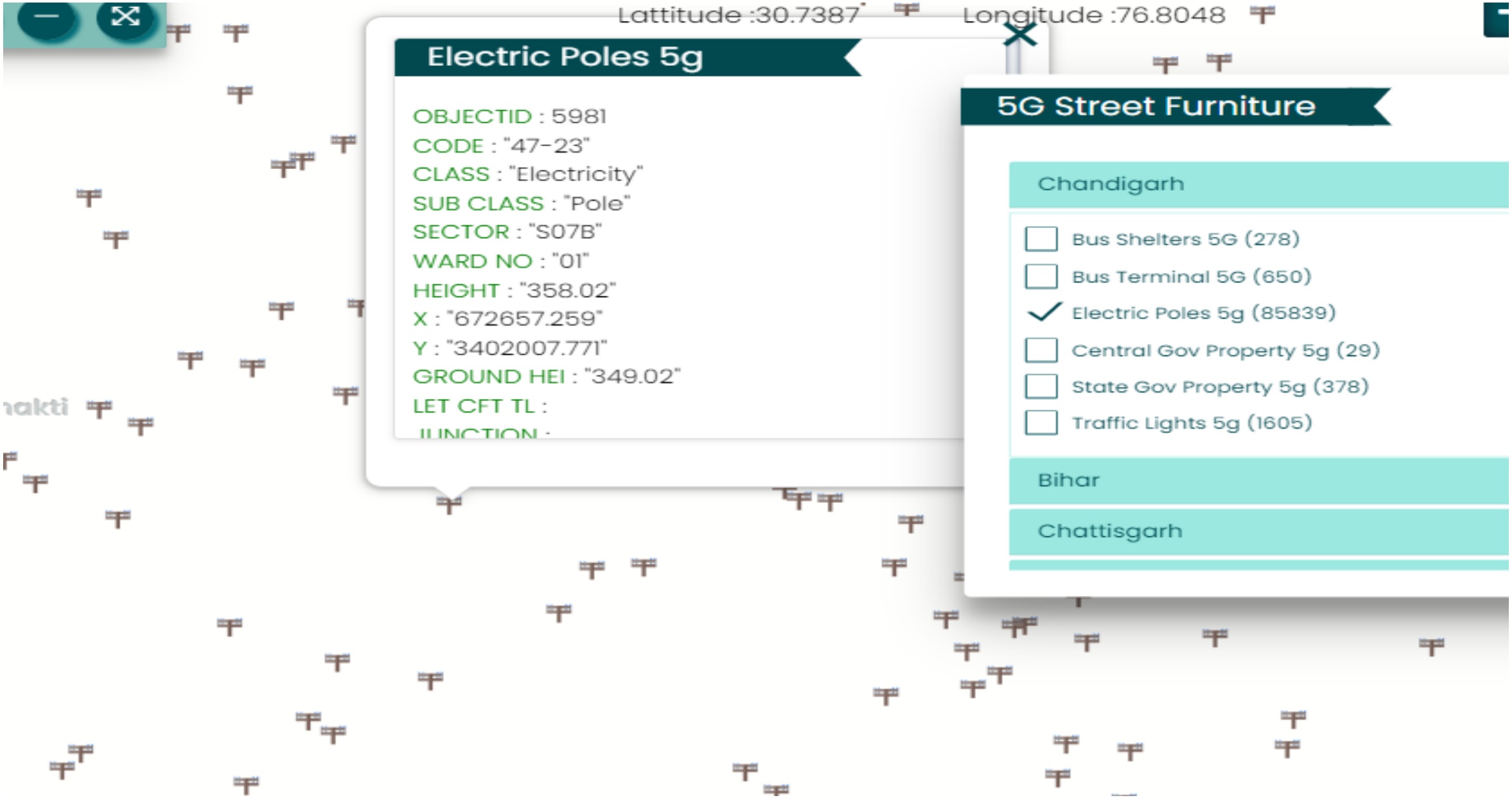
~1.68 lakh km transmission lines,

4.59 lakh transmission locations,

256 transmission substations,

~600 telecom PoPs mapped)

Other layers– Street Furniture

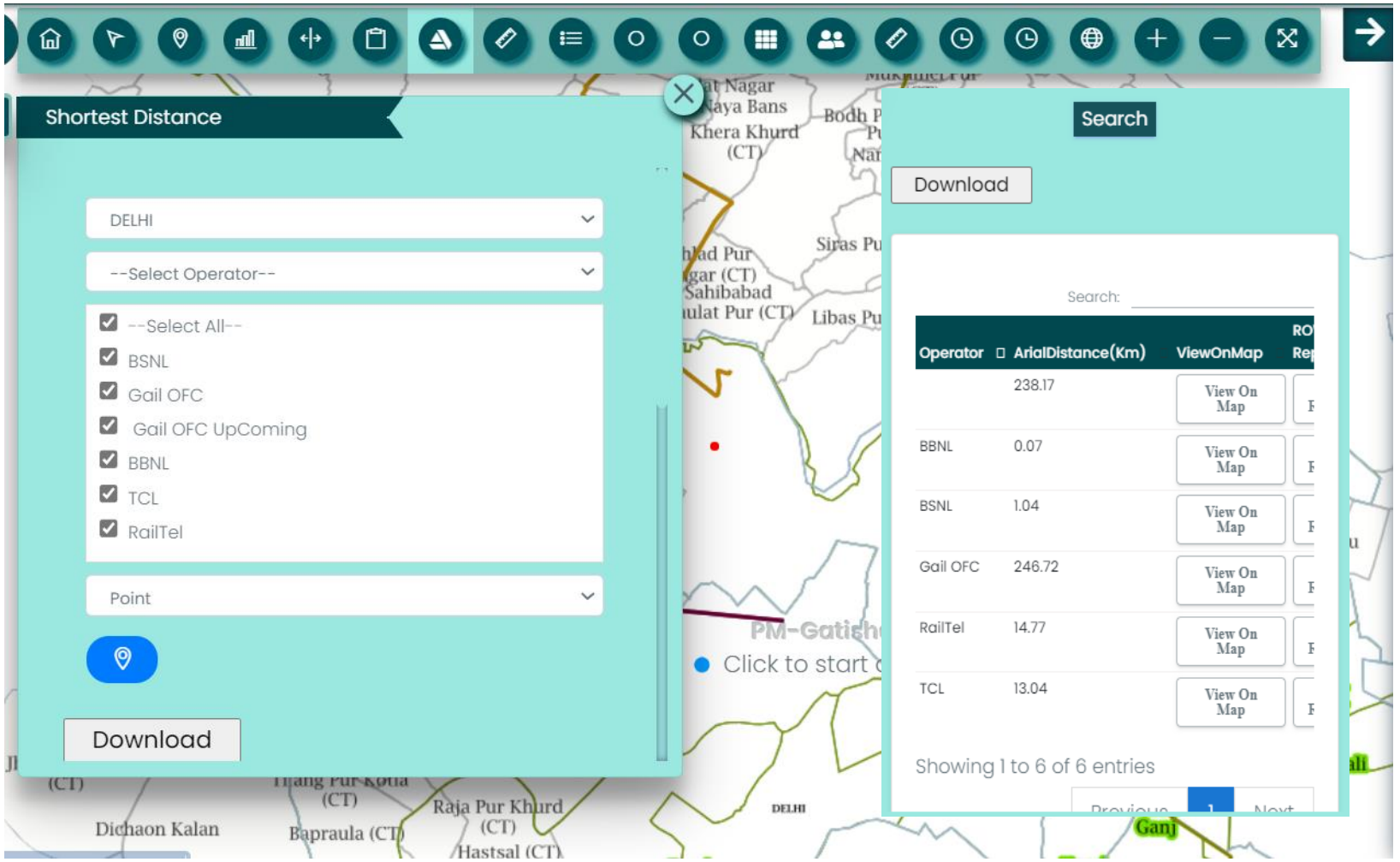


Mapping of High Impact Projects DoT

Major Schemes USOF-Ongoing

1	Submarine Optical Fibre Cable connectivity between Kochi and Lakshadweep Islands (KLI Project)
2	BharatNet (4.53 lakh Rkms mapped)
3	Internet Connectivity to Agartala through BSCCL, Bangladesh
4	4G based connectivity in 44 Districts of India - 7287 villages in Aspirational Districts
5	Submarine Optical Fibre Cable connectivity between Chennai and Andaman & Nicobar Islands

PM GatiShakti NMP-Tools Developed (1/4)



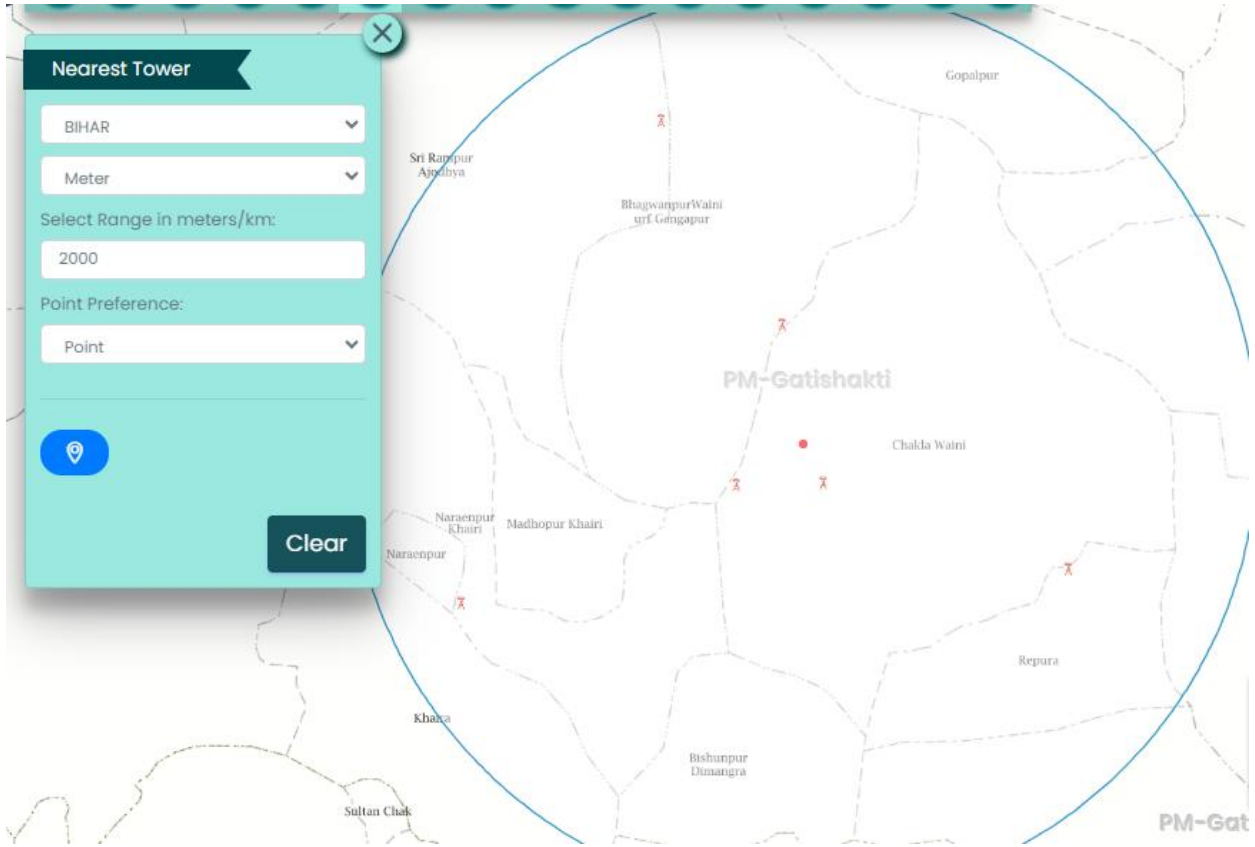
NEAREST OFC TOOL

- Find the shortest distance of OFC from the point of interest (use case fiberization of Towers/ Public institutions)
- Select the point of interest on the map or by entering the latitude & longitude
- Find the distance for one or all operators.
- Find distance by road as well as aerial
- Find RoW information along the route
- Download the information on distances calculated

Use cases:

1. Providing FTTH connection to all the tribal schools of the country.
2. Enabling sale/purchase of OFC for quick Fiberization of mobile towers
3. Find the nearest OFC to all the economic zones, warehouses of the country or any other business centres.

PM GatiShakti NMP-Tools Developed (2/4)



NEAREST TOWER TOOL

Find the towers in the given radius from the point of interest

Select points of interest on map or by entering latitude & longitude

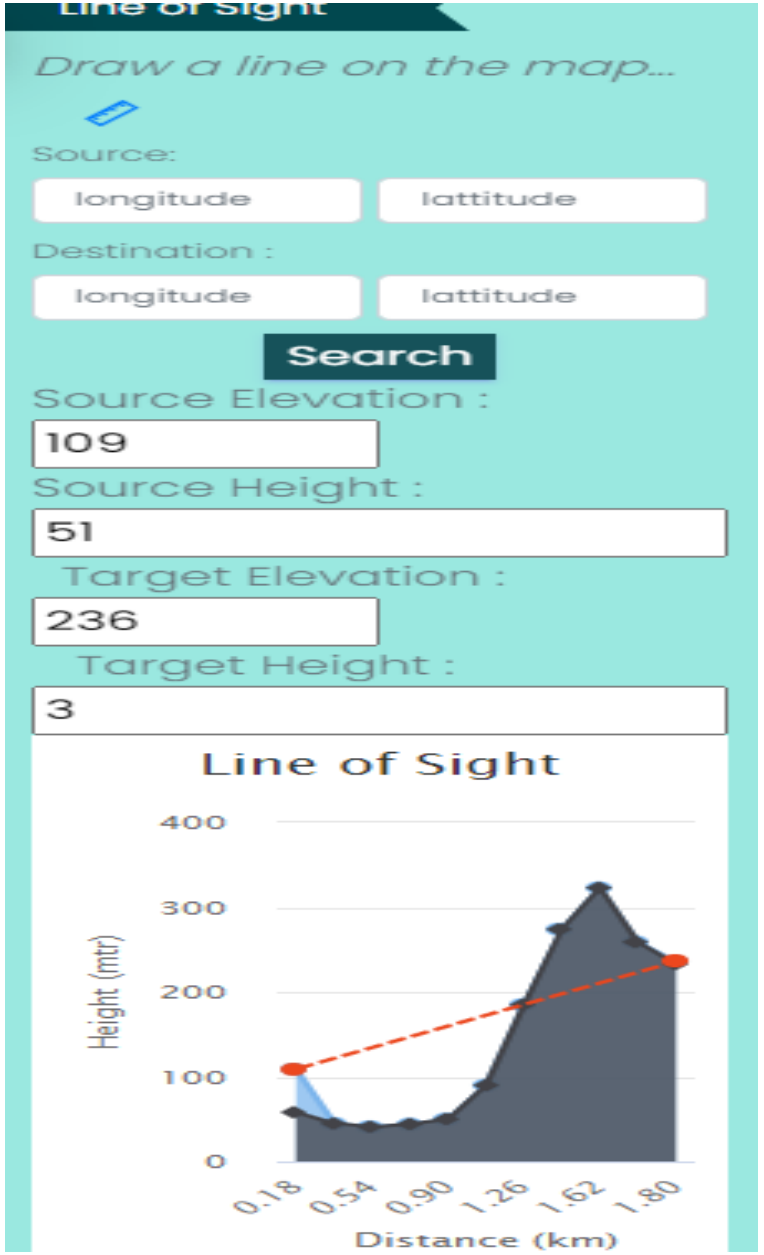
Enter the radius of influence and see the results

Easy to use graphical interface

Use cases:

1. Providing the list of mobile towers available in the area of interest.
2. Providing the available mobile technologies (2G/3G/4G/5G) in an area.
3. Providing the list of towers available for infra sharing to a TSP.
4. Assists the TSPs in planning a new mobile tower.

PM GatiShakti NMP-Tools Developed (3/4)



LINE OF SIGHT TOOL

Find height of towers required at 2 points of interest to bring them in **Line of Sight**

Select points of interest on map or by entering latitude & longitude

Dynamically change height of any point(s) and see the results

Easy to use graphical interface

Use cases:

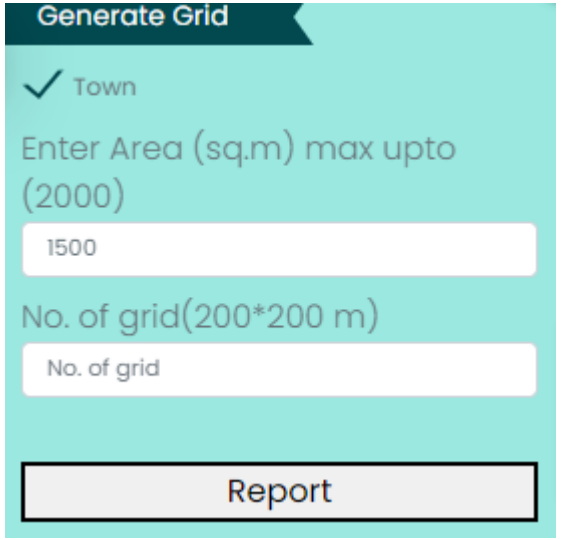
1. Providing telecom connectivity in far-off remote areas like LWE, and hilly areas.

2. Assists in conducting a desktop exercise whether microwave-based telecom connectivity is feasible.

PM GatiShakti NMP-Tools Developed (4/4)

5G PLANNING TOOL

- Generate grids of customizable size in the city of interest for 5G planning
- Overlap layer of mobile towers to see which grids are being covered
- Overlap layer of street furniture to check which grids are being covered
- The uncovered grids can be focused for infra installation



Use cases: Will assist telecom operators in the 5G rollout by providing the information regarding what street furniture is available in an area

Format of Street furniture

1. Following street furniture of the HP has been mapped on NMP:
   a) 30 traffic lights
   b) 62 bus terminals
   c) 1,48,874 electric poles
2. All States are requested to provide data on the following assets that will be used as street furniture for the 5G rollout:

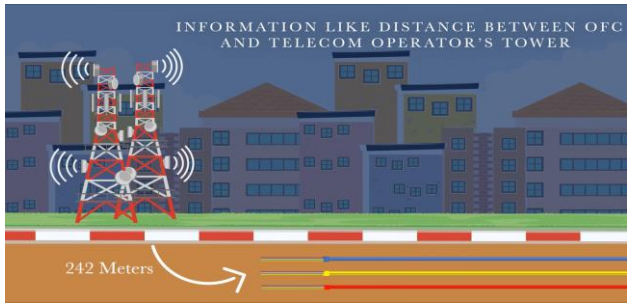
   Electric Poles, Traffic light poles, Bus shelters, Government buildings, Streetlights, billboards, etc.

3. Data can be provided in Excel format to BISAG, and complete data need to be mapped not partial

Sr. No.	State	City Name	Street Furniture Type	Latitude(min. 5 decimal places)	Longitude(min. 5 decimal places)	Authority	Street Furniture Id/Name	Street Furniture Height(meters, 2 decimal places)	Structure Type of Street furniture	Class	Sub Class
1			Pole	23.23235	75.12345	MPEB	3045	8.56	Steel	State government	DISCOM
2			Bus Shelter	23.45676	75.45677	MC Bhopal	ISBT	10.12	RCC(reinforced cement concrete)	State government	Transport Department

Leveraging PM GatiShakti : 4G Saturation Project (1/4)

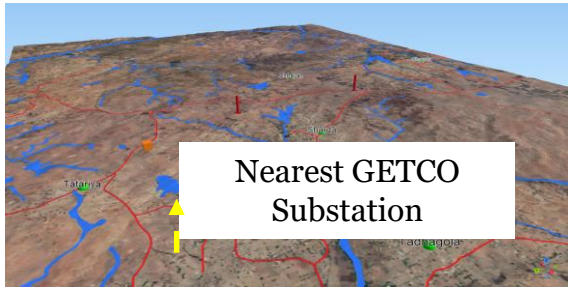
Planning of 4G Saturation project in ~33,000 uncovered villages using NMP



Distance of available OFC from proposed sites. 32000 km (approx.) OFC route has been identified to be laid.

Distance of nearest available roads

Availability of land for installation(Used in 7558 locations & 2329 no of RoW application submitted).



Distance of nearest available electric supply installation(6560 applications submitted)

Usage of layers of other departments/States

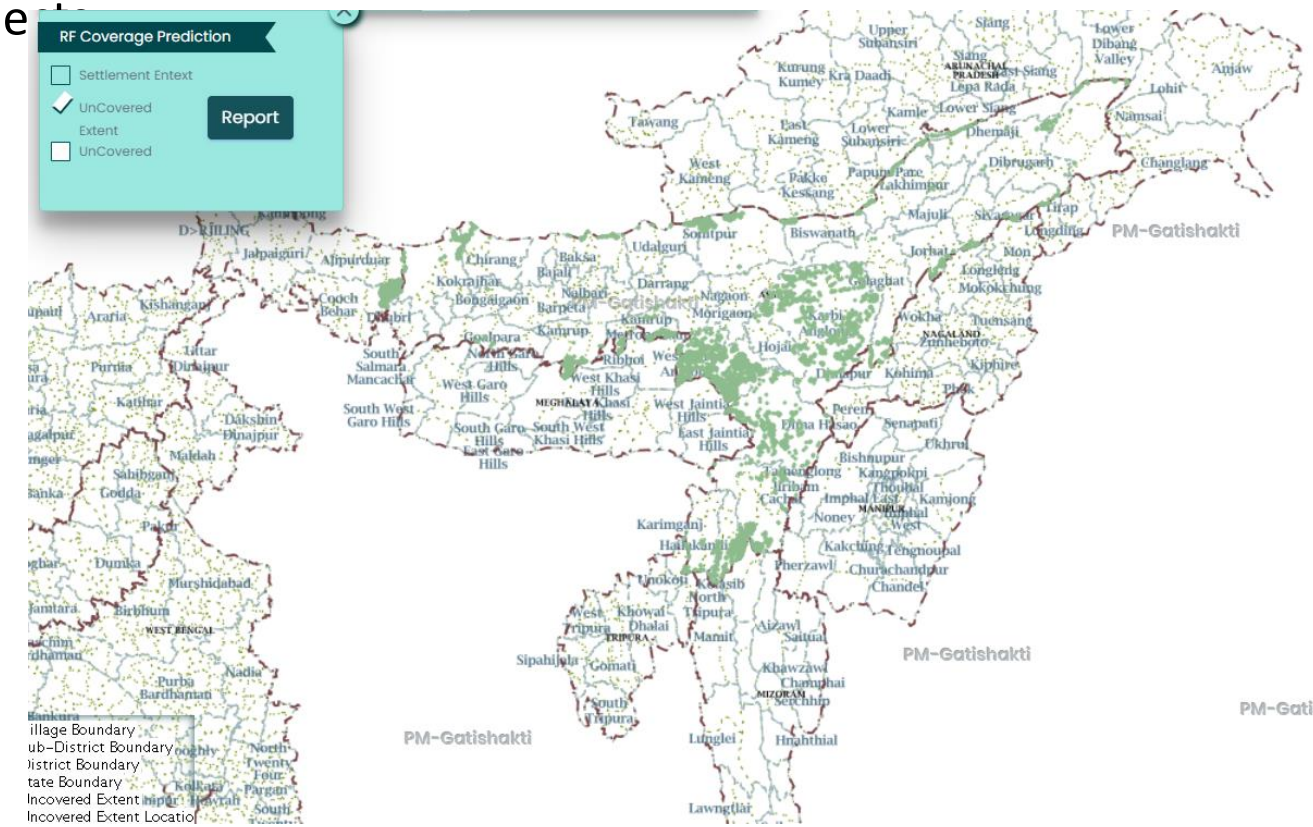
Leveraging DoT PM GatiShakti NMP USOF(2/4)

Whether the new towers being planned are justified? – NMP may help in finding out the towers lying within 3/2.5/2 Km (aerial radial distance) of any project (example USOF 4G planned sites of the 4G saturation project). By conducting this exercise, it was observed as to how many towers are lying in a particular range/circle

TOTAL SUMMARY OF USOF 4G PLANNED SITE		
SR.NO.	**MOBILE TOWER BUFFER LENGTH**	**USOF 4G PLANNED SITE**
1	2 Km	5385
2	2.5 Km	2516
3	3 Km	2456
TOTAL USOF 4G PLANNED PROXIMITY SITES		10357
TOTAL USOF SITES		19618
NON-PROXIMITY SITES (LYING MORE THAN 3 KM AWAY)		9261

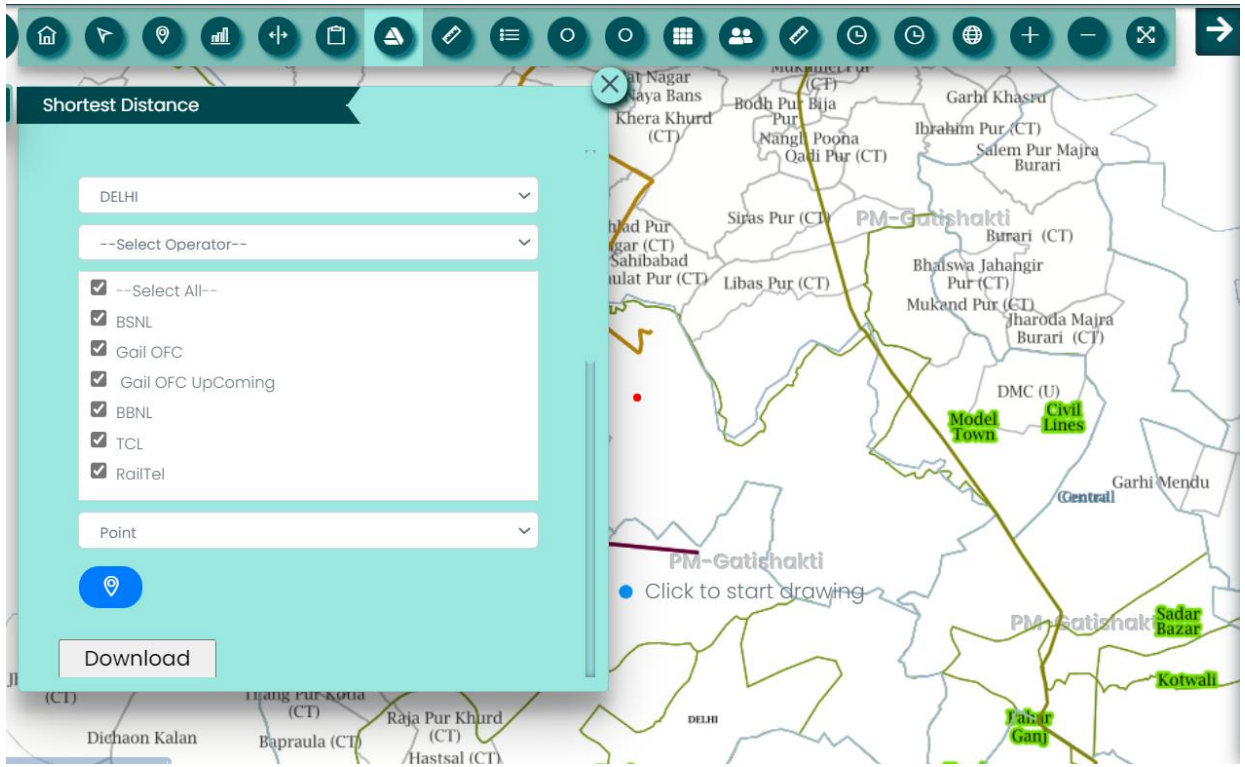
Leveraging DoT PM GatiShakti NMP (3/4)

- **To find out habitations without adequate 4G coverage – example Assam state**
  - ✓ First the village habitation layer of state was mapped on NMP
  - ✓ Then the 4G coverage map, as taken from each Telecom service provider of the was mapped
  - ✓ Overlap the two layers to find out the area with no coverage i.e. having coverage worse than -110 dbm.
  - ✓ Area in Green show the same. List of Lat.-Long of the centre of such areas can be taken for making fresh proje



Leveraging DoT PM GatiShakti NMP: OnGoing Tasks (4/4)

- **To find the availability of OFC nearest to a village for BharatNet phase III project:**
  - ✓ ‘Shortest OFC’ tool can be used to find out the nearest OFC of any Telecom service Provider from any Lat. Long.



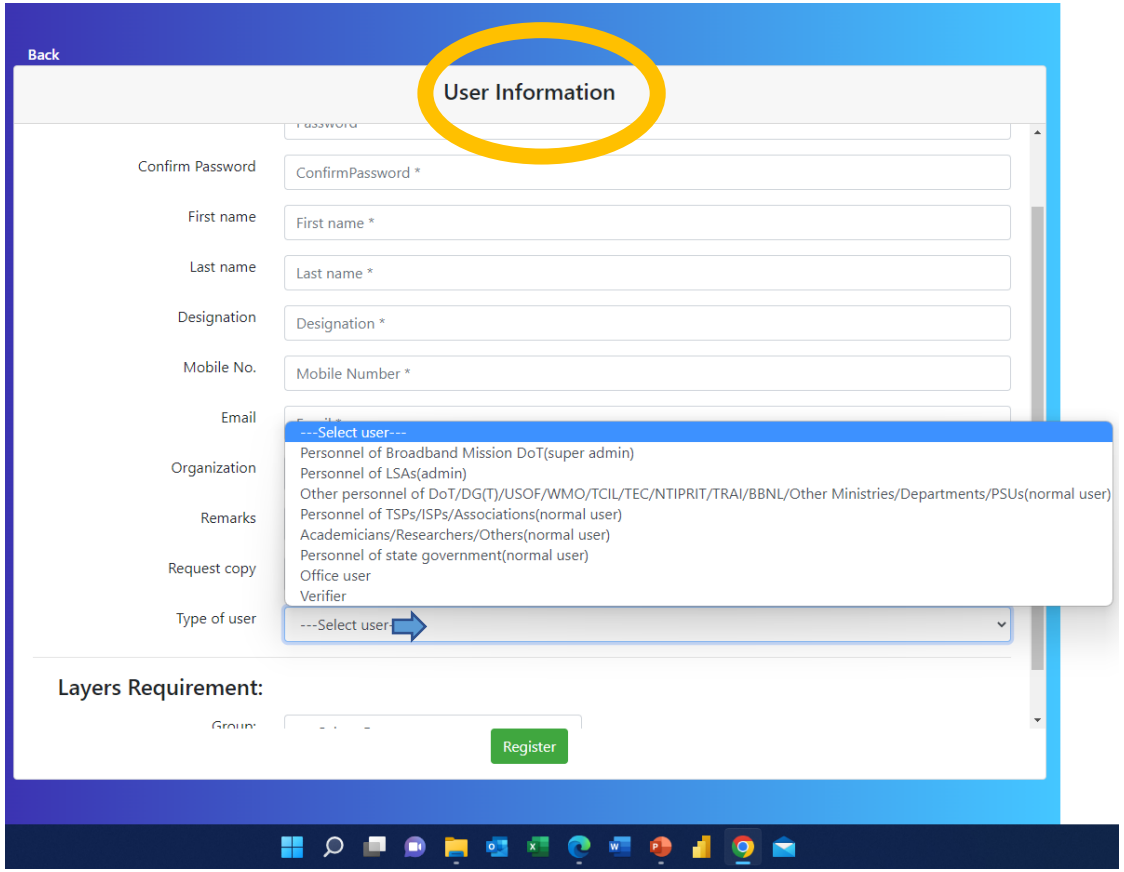
User Registration (1/2)

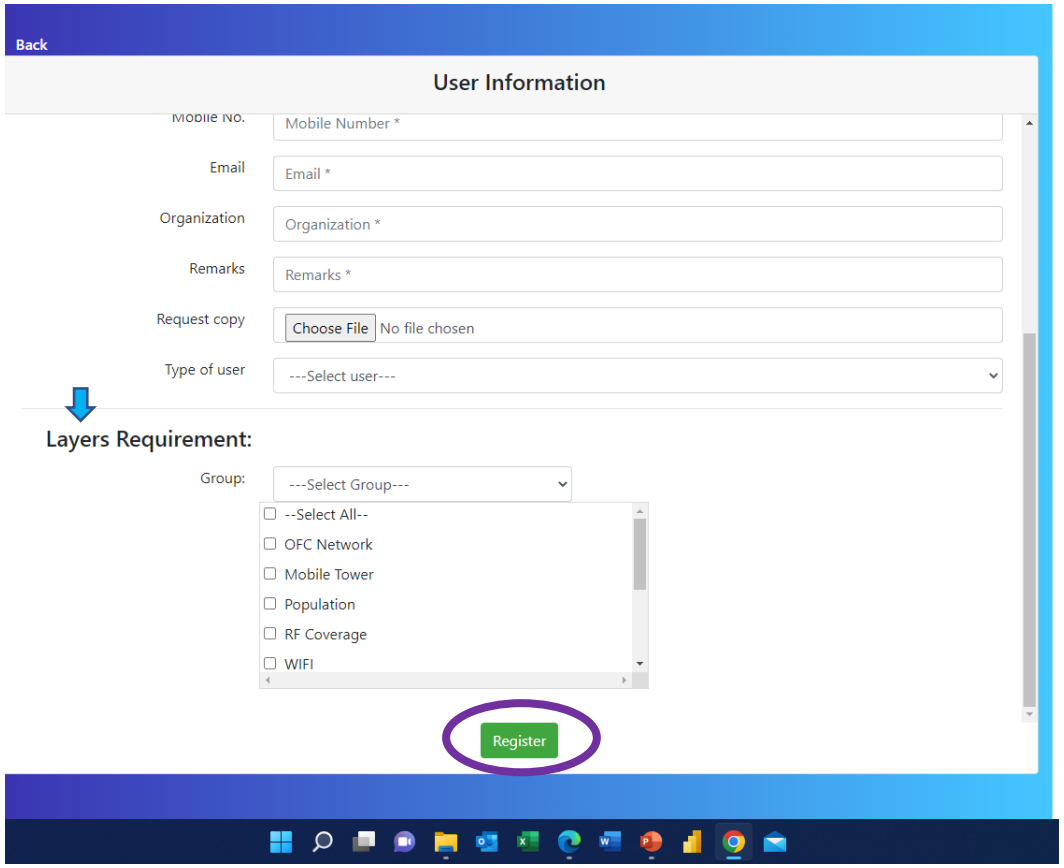
1. Click on

https://telecom.pmgatishakti.gov.in/telecom/login

2. Click on Register Tab

User Registration (2/2)





3. Fill all the user Information & select type of user

4. Select Layers requirement

5. Click on Register Tab

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