

GENERATION OF WEB BASED POWER ATLAS FOR CUTTACK CIRCLE, ODISHA USING ERDAS APOLLO 2014



- Implementation
- Integration
- Intelligence



P.K. Parida¹, Ganesh Patra², M.K.Sanabada³, R.R.Mohanty⁴, Sandeep Tripathi⁵



ODISHA SPACE APPLICATIONS CENTRE

(Department Of Science & Technology, Govt. Of Odisha)

Bhubaneswar

www.orsac.gov.in



INTRODUCTION



- **OPTCL is one of the largest Transmission Utility of the country under the Government of Odisha to undertake the business of transmission and wheeling of electricity in the State. The Company owns Extra High Voltage Transmission system and operates about 11517.727 CKT KMS of transmission lines at 400, 220, 132 KV levels and 107 numbers of substations with transformation capacity of 12233 *Mega volt ampere*(MVA) having 262 numbers of transformers.**
- **OPTCL having recognized the importance of Information Technology and its use in functioning and management of Extra High Tension (EHT) towers, Substations and Feeder Lines desired to prepare the Web based Power Atlas for the Cuttack circle on pilot mode with Odisha Space Applications Centre (ORSAC).**



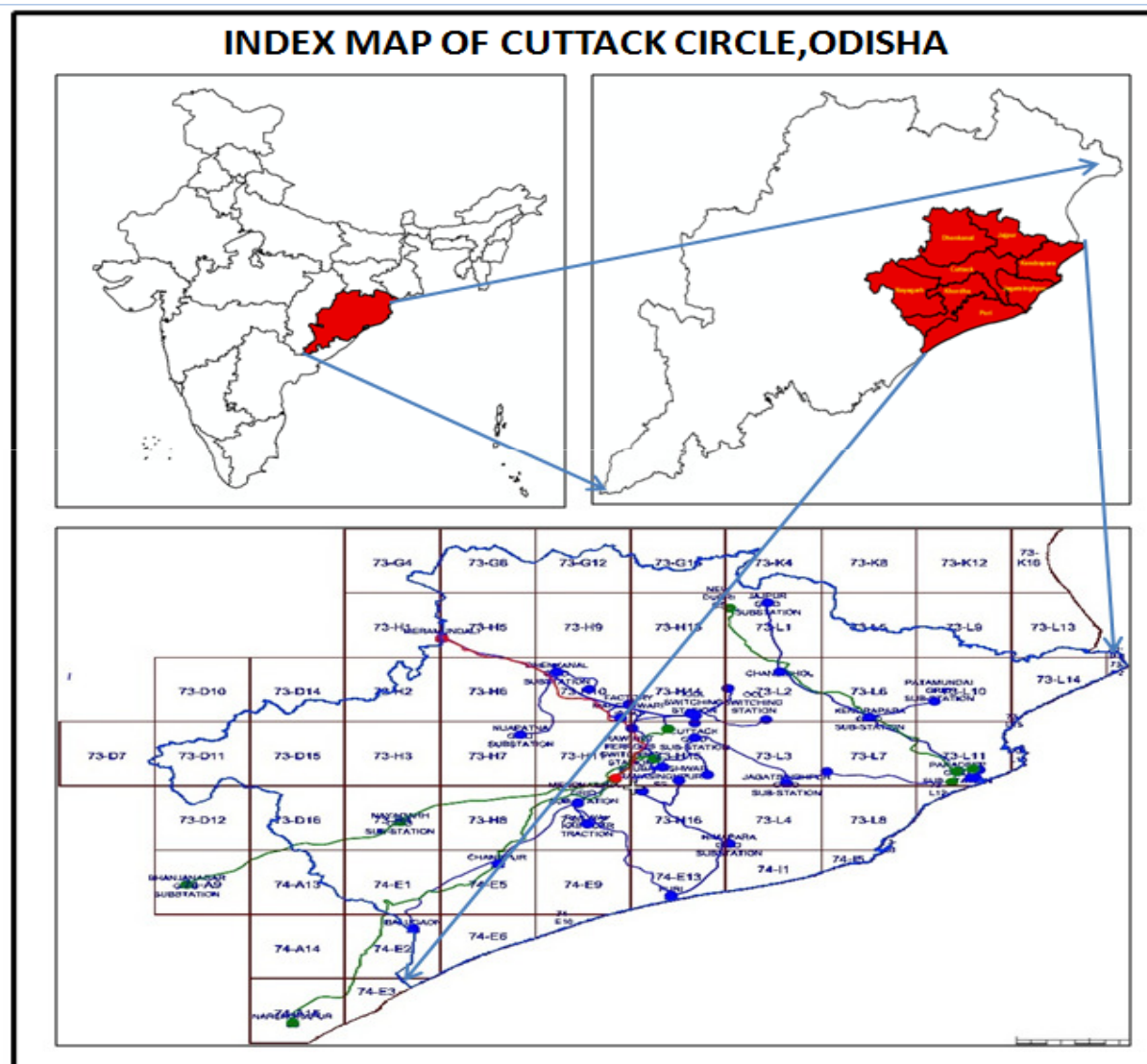
OBJECTIVE



- **To create a Web Based Power Atlas System using ERDAS APOLLO SERVER 2014 for managing the electrical assets and interfacing with the existing MIS/ERP database of the infrastructures mapped in the GIS environment.**



IMPLEMENTED AREA



THE DATA USED

- Surveyed data covering 32 EHT Sub Stations, 16 nos. of field offices /HQRs. Offices, 48 EHT Lines having 5124 Towers (approx.) having 3-5 meter accuracy using GPS Instruments with Geographic Coordinate Systems (GCS) and World Geodetic System(WGS)84 spheroid and datum setting covering 2328.69 circuit KM approximately.
- Land Use/ Land Cover data of substations and other offices in 1:4k Scales with World View II Data of 0.5 m spatial resolution and the cadastral digital database. Administrative layers such as Village, Block, District, Assembly, Parliament and Survey of India Topo boundary were used to view the Power Atlas as per the administrative units desired by the user
- Natural Resource layers like Land use / Land cover, River & Water Body, etc. , Infrastructure layers like Road, Railways, Canal Network, Settlement Spreads, etc. were generated in 1:10K scale using the resolution merged image (Cartosat-1+Resourcesat-2).
- Non-Spatial data of e-Shakti modules viz., EAM, Inventory and HR with Power Atlas and rendering non-spatial data alongside spatial data in user views.



THE TECHNOLOGY USED-Software

❖ **Operating System:**

Windows Server 2012 R2

Windows 8/XP/Vista/7 Or Linux for Clients

❖ **Application Software:**

Intergraph ERDAS Apollo 2014 Professional

E-Shakti for Asset management

❖ **RDBMS:**

Oracle Enterprise Server 11g R2

❖ **Browser:**

Popular browsers like Mozilla, Google chrome and Internet Explorer.



THE TECHNOLOGY USED-Hardware



❖ Server Specification:

Live Server & Stage Server

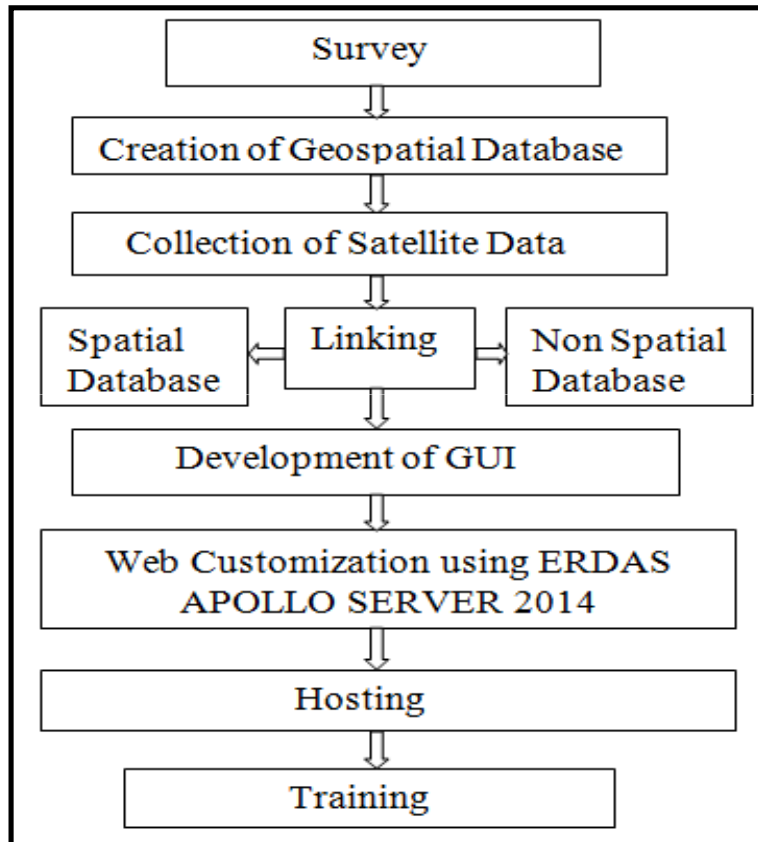
2 Intel Quad Core Processors
Minimum 32 GB RAM
Clock speed 2.4 GHz
Minimum 4 X 500 GB HDD
CD/DVD RW
NIC
21" Monitor
Mouse, Keyboard

❖ Proposed Client Specification:

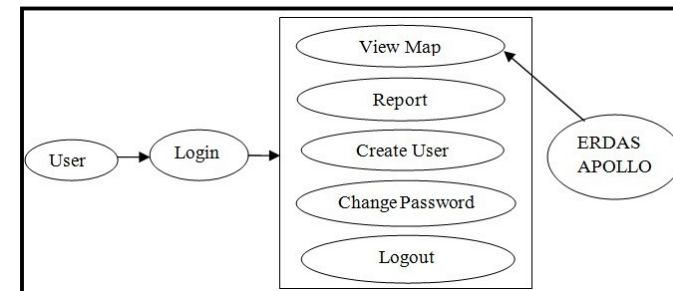
Intel i3/i5/i7 Processors
Minimum 4 GB RAM
Clock speed 3.2 GHz
Minimum 500 GB HDD
21" Monitor
NIC
Mouse, Keyboard



METHODOLOGY



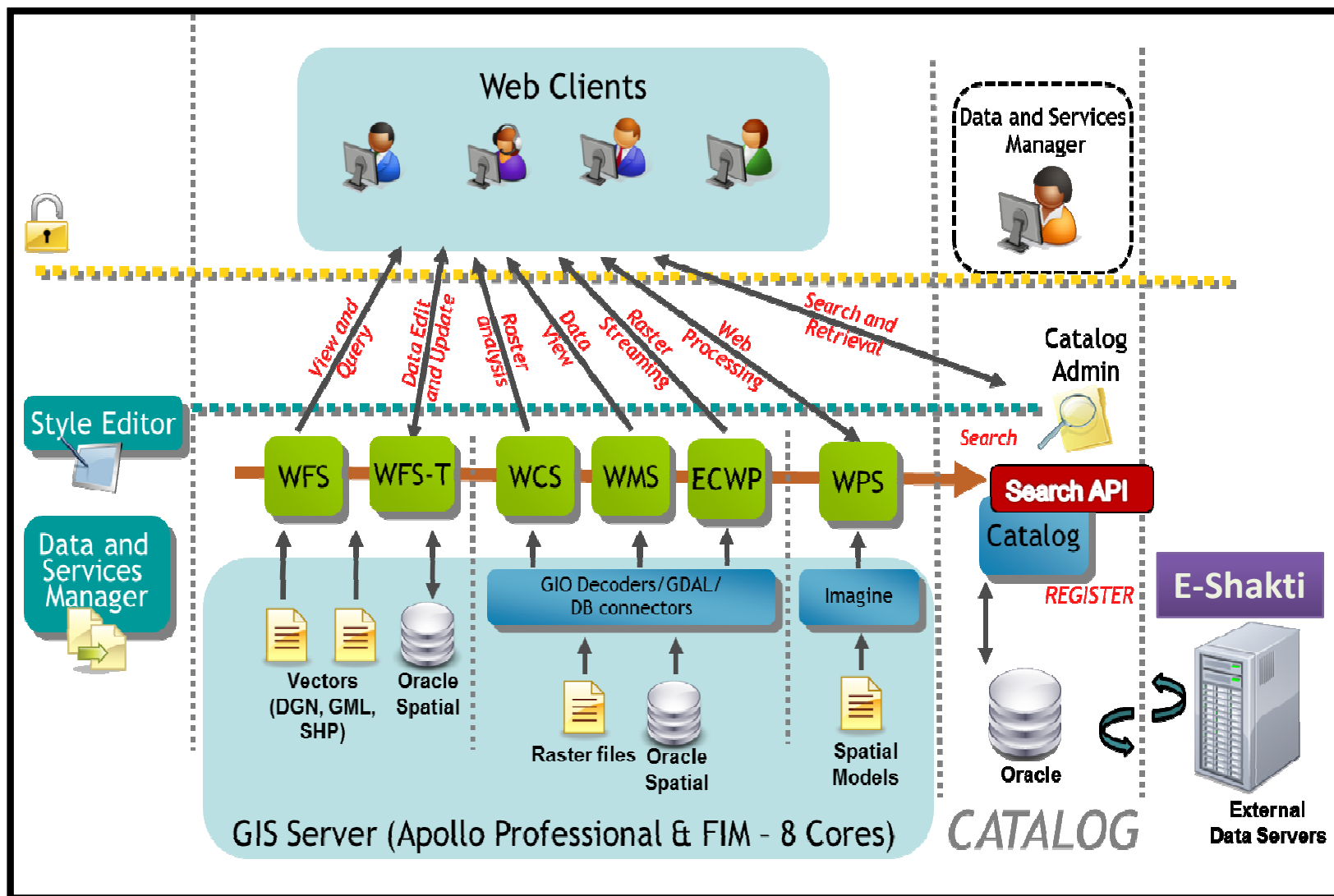
WORK FLOW



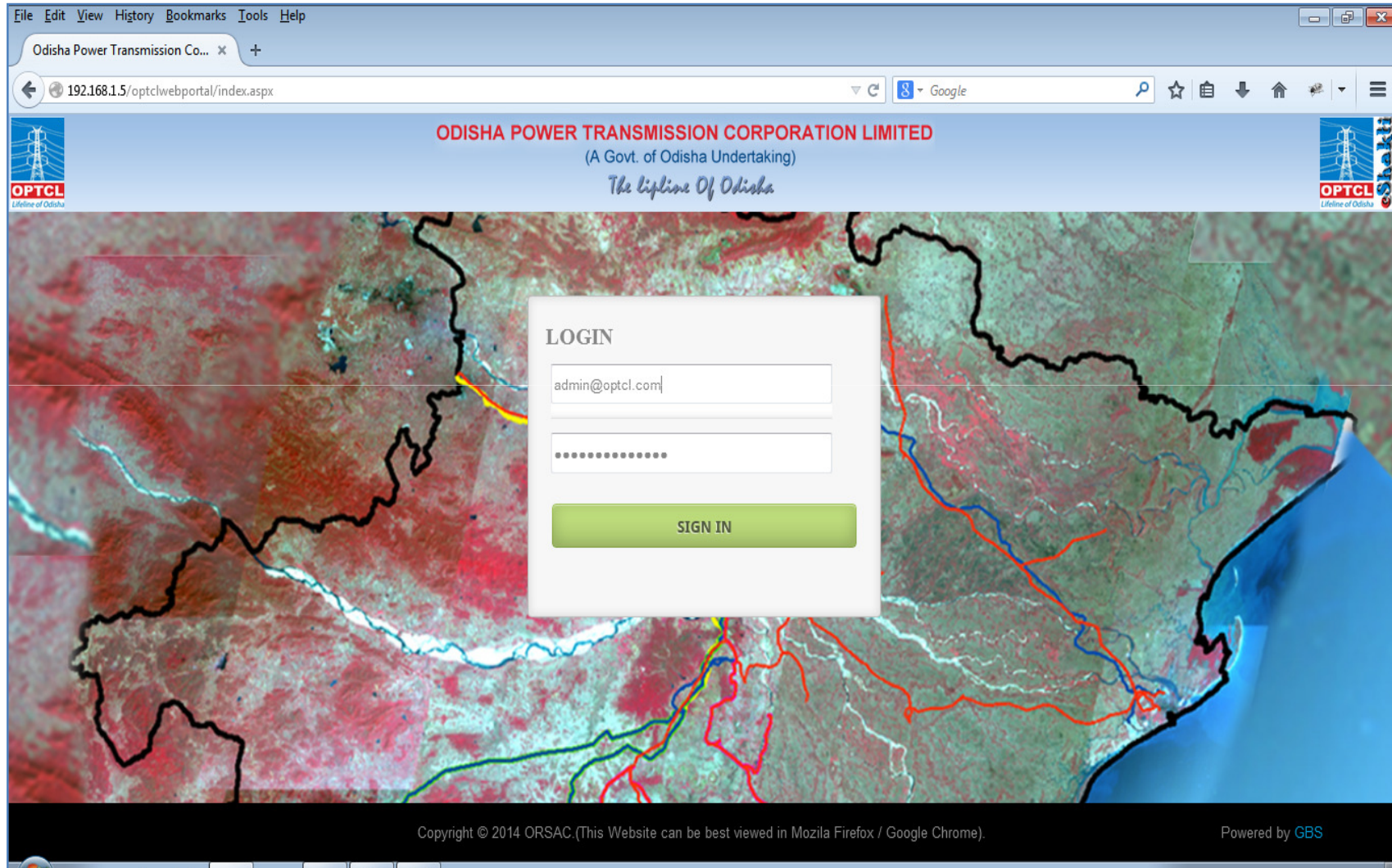
GRAPHICAL USER INTERFACE DIAGRAM



WEB ARCHITECTURE



Step2: OPTCL GIS Web-portal Log in



The screenshot shows a web browser window displaying the OPTCL GIS Web-portal login page. The browser's address bar shows the URL `192.168.1.5/optclwebportal/index.aspx`. The page header features the OPTCL logo on the left and the text "ODISHA POWER TRANSMISSION CORPORATION LIMITED (A Govt. of Odisha Undertaking) The lifeline Of Odisha" in the center. A satellite map of Odisha is the background. A central login form contains the following elements:

- LOGIN** header
- Email input field with `admin@optcl.com`
- Password input field with masked characters
- SIGN IN** button

The footer of the page includes the copyright notice "Copyright © 2014 ORSAC. (This Website can be best viewed in Mozilla Firefox / Google Chrome)." and the text "Powered by GBS".



Step 3: OPTCL Menu Interface



File Edit View History Bookmarks Tools Help

Odisha Power Transmission Co... x +

192.168.1.5/optclwebportal/frmMapIndex.aspx

Google

ODISHA POWER TRANSMISSION CORPORATION LIMITED
(A Govt. of Odisha Undertaking)
The Lifeline Of Odisha

OPTCL
LifeLine of Odisha

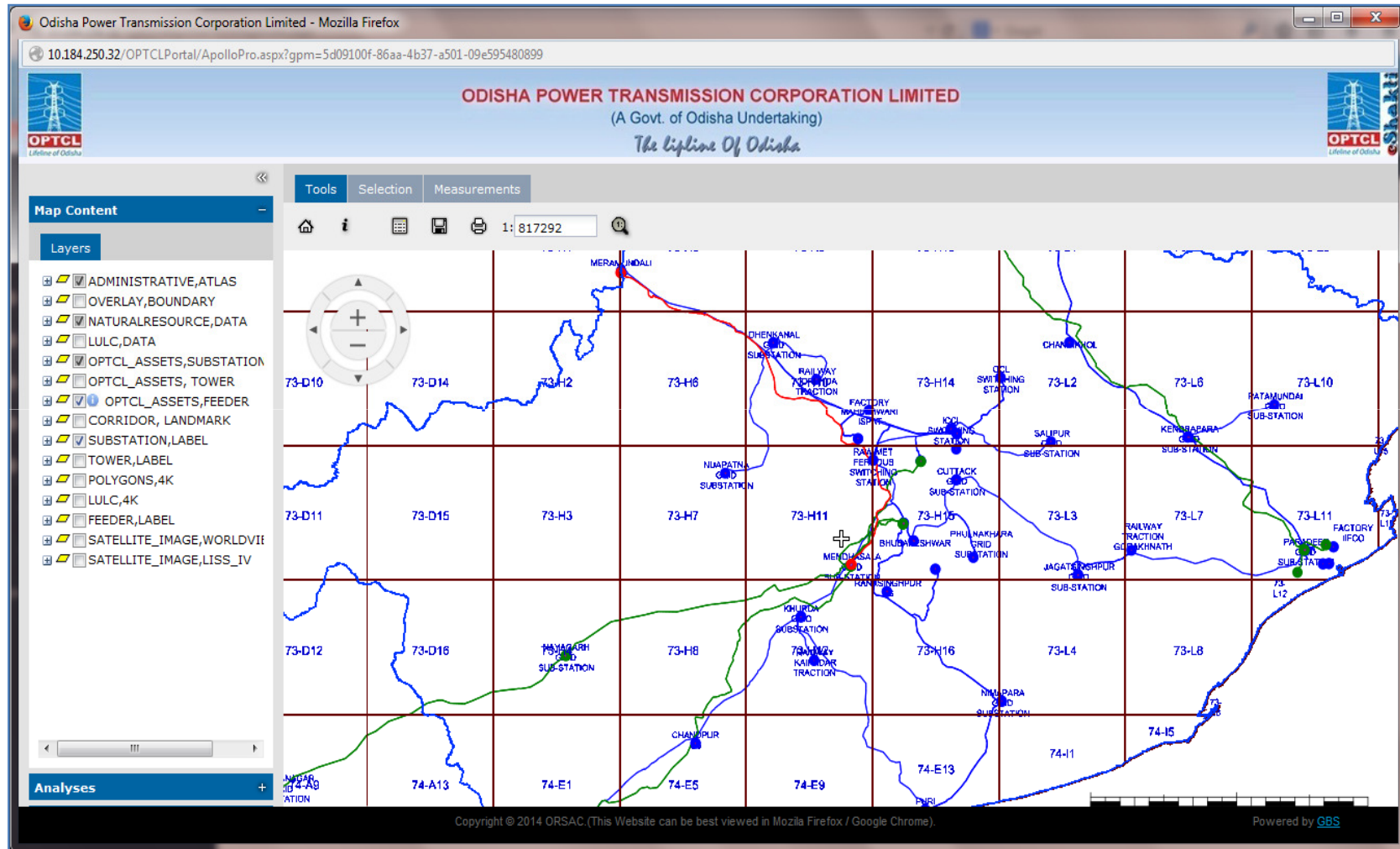
OPTCL eShakti
LifeLine of Odisha

- View Map
- Report
- Substation Details
- Tower Details
- Feeder Details
- Live Crossing
- Geographic Crossing
- Transformer Details
- Create User
- Change Password
- Logout

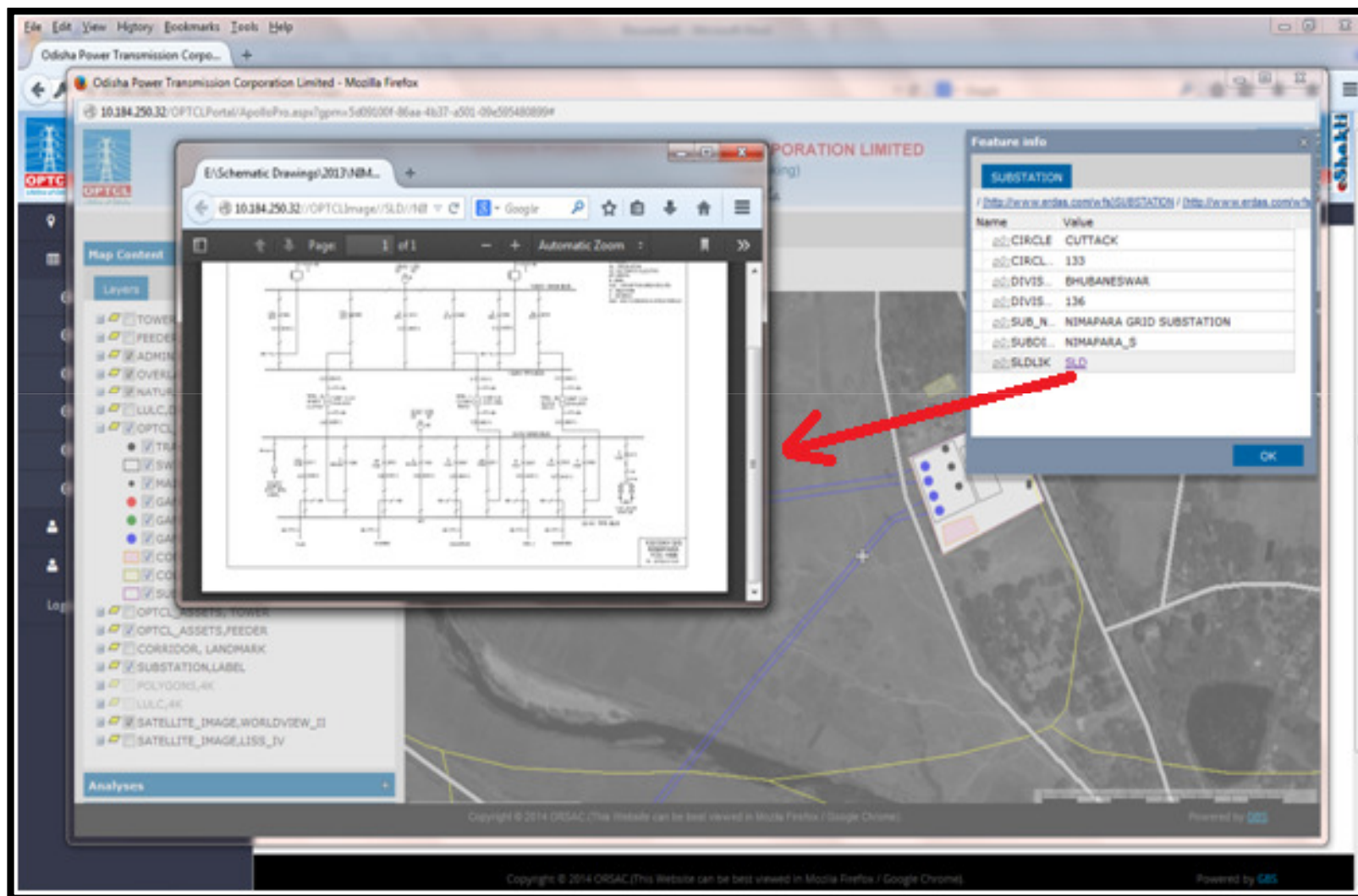
Copyright © 2014 ORSAC.(This Website can be best viewed in Mozilla Firefox / Google Chrome). Powered by GBS



Data Visualization on Web



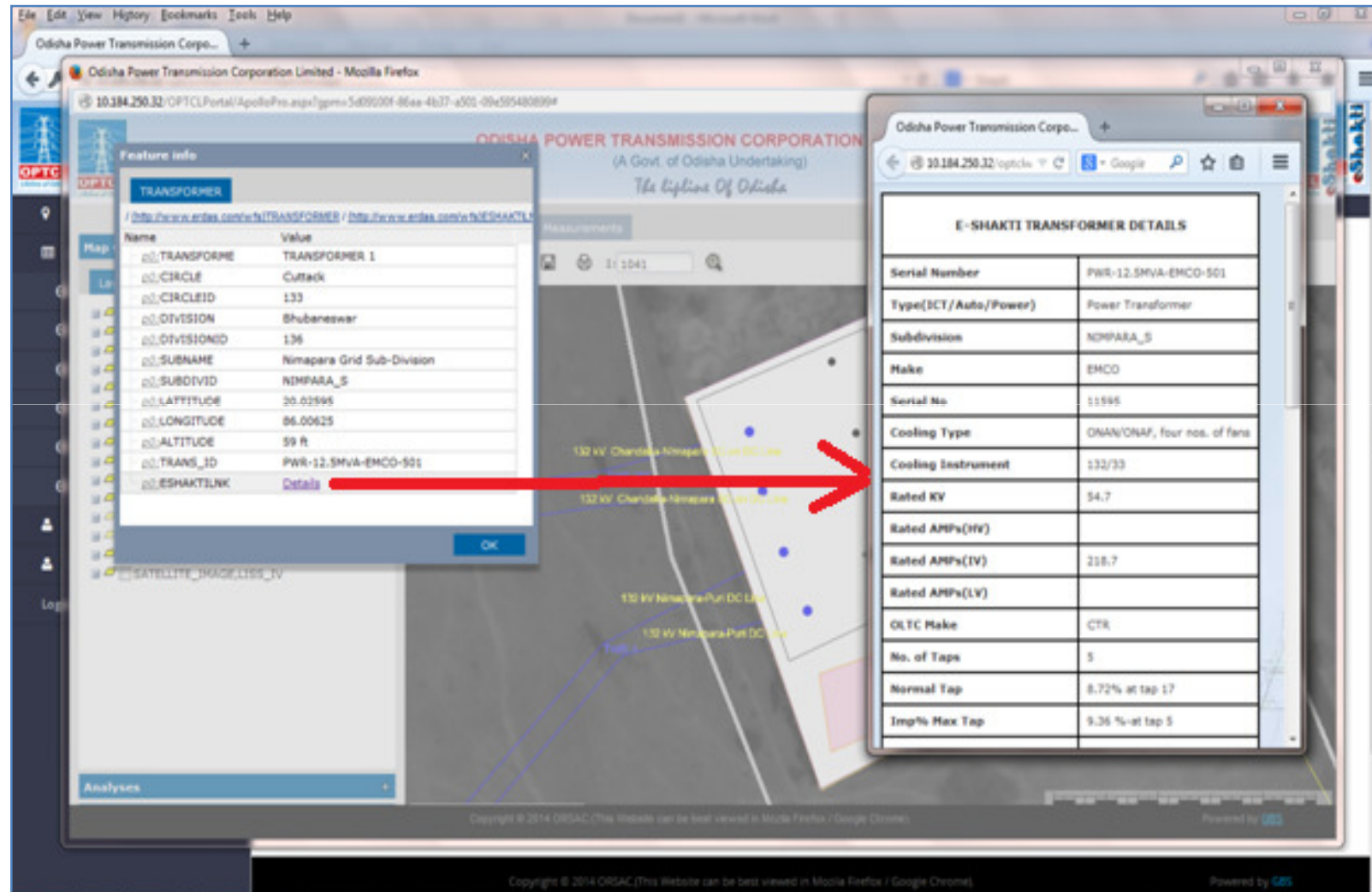
Integration of E-Shakti with GIS Substation -SLD



The screenshot displays the E-Shakti GIS Substation -SLD interface. The main map shows a geographical area with a river and a substation location marked by a cluster of blue dots. A red arrow points from the 'SLD' entry in the 'Feature info' window to this substation location on the map. An inset window titled 'E:\Schematic Drawings\2013\NM...' displays a detailed schematic diagram of the substation's internal wiring and components. The interface includes a 'Layers' panel on the left with various map layers like 'TOWER', 'FEEDER', 'ADMIN', 'OVERHEAD', 'NATURAL', 'LULC', 'OPTCL', 'TRA', 'SW', 'MA', 'GA', 'CO', 'POLYGON', 'LULC', 'SATELLITE_IMAGE', and 'ANALYSIS'. The 'Feature info' window on the right provides details for the selected substation, including its name, value, and a table of attributes.

Name	Value
00_CIRCLE	CUTTACK
00_CIRCL	133
00_DIVIS	BHUBANESWAR
00_DIVIS	136
00_SUB_N	NIMAFARA GRID SUBSTATION
00_SUBO	NIMAFARA_S
00_SLD3K	SLD

Integration of E-Shakti with GIS Transformer



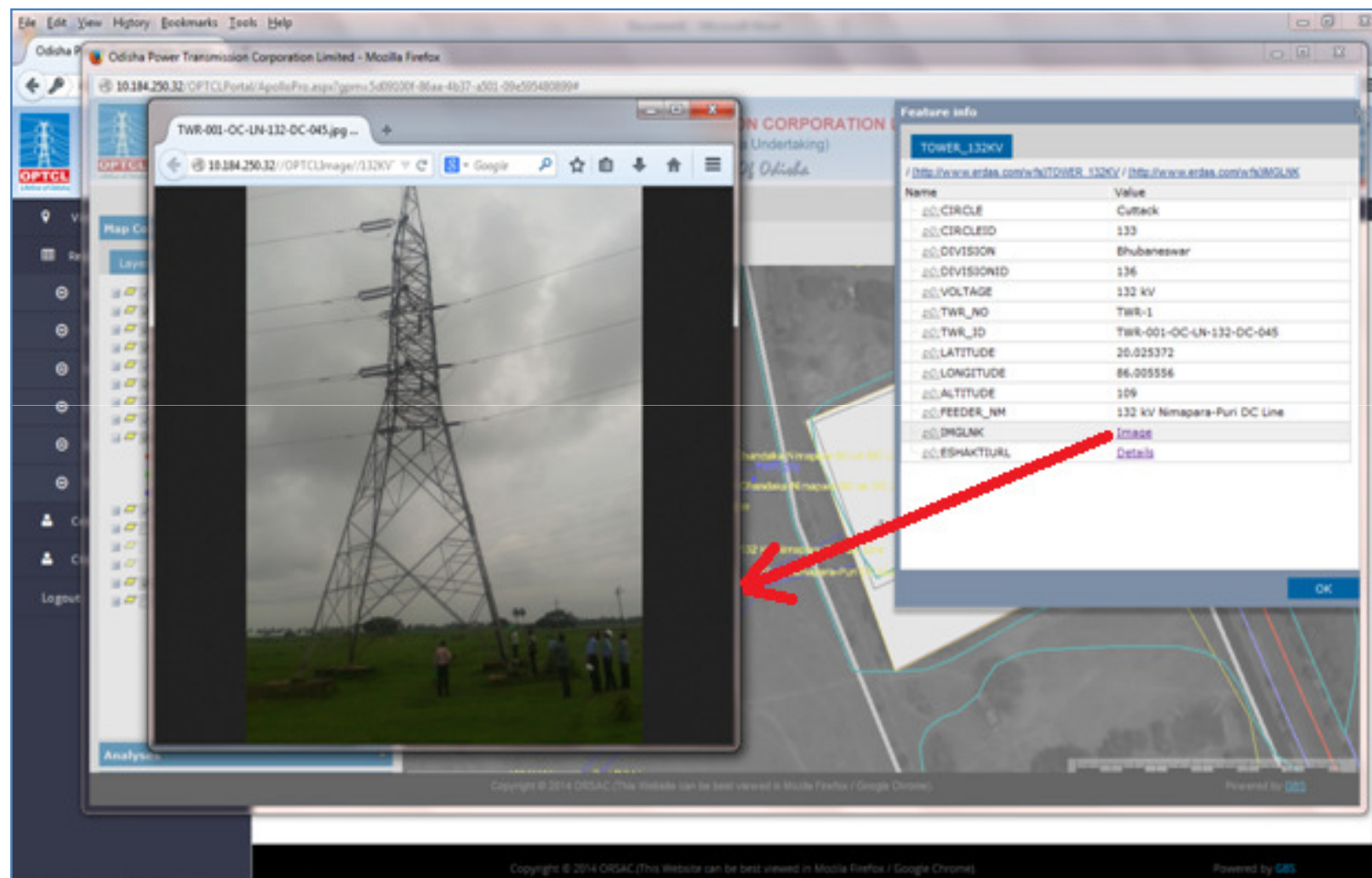
The screenshot displays the Odisha Power Transmission Corporation (OPTCL) GIS portal. The main interface shows a map with various power lines and transformers. A red arrow points from the 'Details' link in the 'TRANSFORMER' feature info window to the 'E-SHAKTI TRANSFORMER DETAILS' window.

TRANSFORMER Feature Info:

Name	Value
TRANSFORMER	TRANSFORMER 1
CIRCLE	Cuttack
CIRCLEID	133
DIVISION	Bhubaneswar
DIVISIONID	136
SUBNAME	Nimapara Grid Sub-Division
SUBDIVID	NIMPARA_S
LATITUDE	20.02595
LONGITUDE	86.00625
ALTITUDE	59 ft
TRANS_ID	PWR-12.5MVA-EMCO-501
ESHAKTIUNK	Details

E-SHAKTI TRANSFORMER DETAILS:

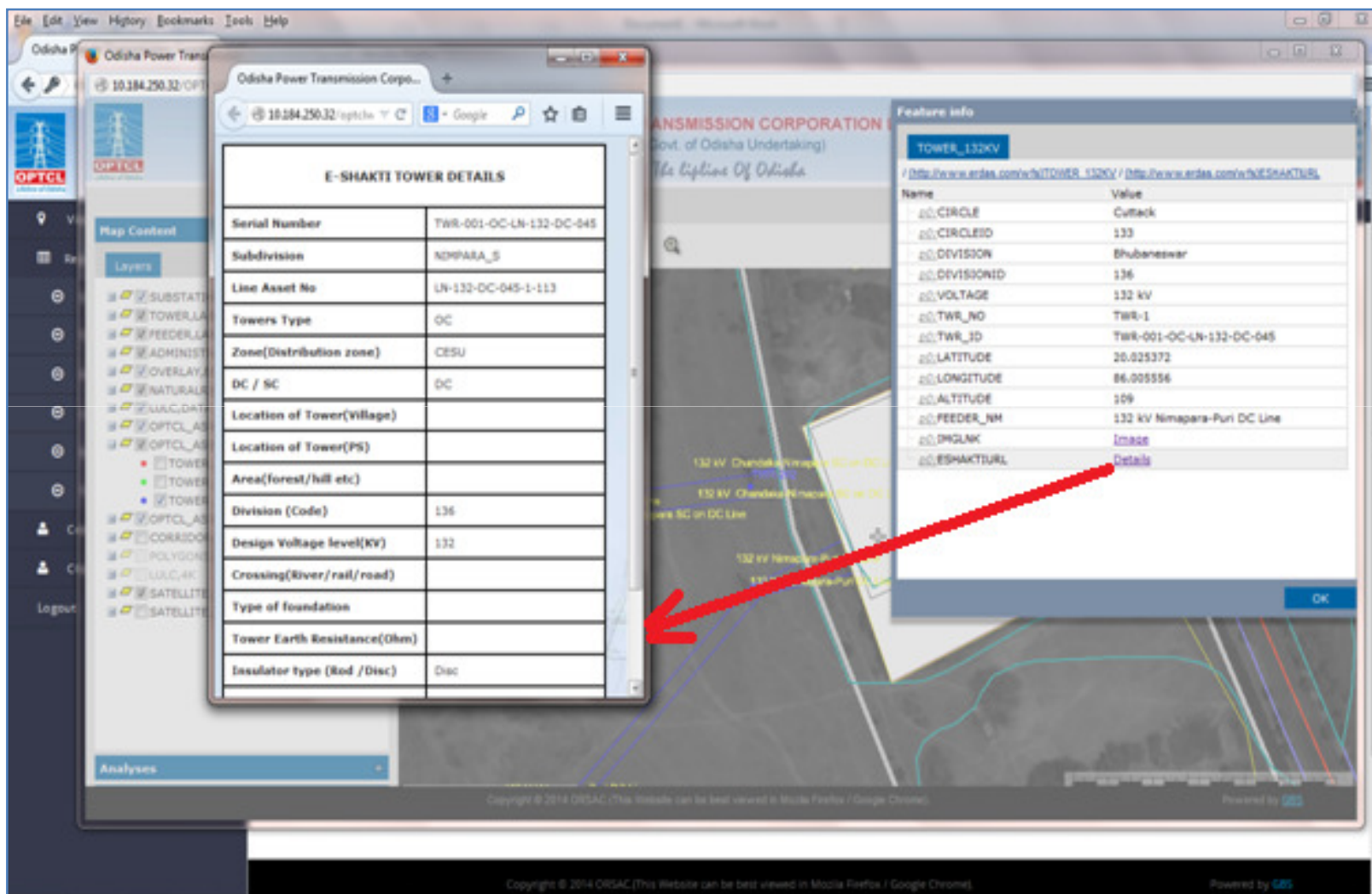
Serial Number	PWR-12.5MVA-EMCO-501
Type(DCT/Auto/Power)	Power Transformer
Subdivision	NIMPARA_S
Make	EMCO
Serial No	11595
Cooling Type	ONAN/ONAF, four nos. of fans
Cooling Instrument	132/33
Rated KV	54.7
Rated AMPs(HV)	
Rated AMPs(LV)	218.7
OLTC Make	CTR
No. of Taps	5
Normal Tap	8.72% at tap 17
Imp% Max Tap	9.36 % at tap 5



The screenshot displays the Odisha Power Transmission Corporation Limited (OPTCL) web portal. A large image of a high-voltage transmission tower is shown in the center. To the right, a 'Feature info' panel is open, displaying details for 'TOWER_132KV'. A red arrow points from the 'Details' link in the panel to the tower image.

Name	Value
@@.CIRCLE	Cuttack
@@.CIRCLEID	133
@@.DIVISION	Bhubaneswar
@@.DIVISIONID	136
@@.VOLTAGE	132 kV
@@.TWR_NO	TWR-1
@@.TWR_ID	TWR-001-OC-UN-132-DC-045
@@.LATITUDE	20.025372
@@.LONGITUDE	86.005556
@@.ALTITUDE	109
@@.FEEDER_NM	132 kV Nimapara-Puri DC Line
@@.IMGURL	Image
@@.ESPAKURL	Details

Copyright © 2014 OSAC (This Website can be best viewed in Mozilla Firefox / Google Chrome) Powered by GIS



E-SHAKTI TOWER DETAILS

Serial Number	TWR-001-OC-LN-132-DC-045
Subdivision	NM PARA_S
Line Asset No	LN-132-DC-045-1-113
Towers Type	OC
Zone(Distribution zone)	CESU
DC / SC	DC
Location of Tower(Village)	
Location of Tower(PS)	
Area(forest/hill etc)	
Division (Code)	136
Design Voltage level(KV)	132
Crossing(River/rail/road)	
Type of foundation	
Tower Earth Resistance(Ohm)	
Insulator type (Rod /Disc)	Disc

Feature info

TOWER_132KV

[/ http://www.orsac.com/eshakti/TOWER_132KV / http://www.orsac.com/eshakti/ESHAKTIURL](#)

Name	Value
@@CIRCLE	Cuttack
@@CIRCLESD	133
@@DIVISION	Bhubaneswar
@@DIVISIONID	136
@@VOLTAGE	132 kV
@@TWR_NO	TWR-1
@@TWR_3D	TWR-001-OC-LN-132-DC-045
@@LATITUDE	20.025372
@@LONGITUDE	86.005556
@@ALTITUDE	109
@@FEEDER_NM	132 kV Nimapara-Puri DC Line
@@DPGLINK	Image
@@ESHAKTIURL	Details

Web Based Tower Report along the Feeder Line



Odisha Power Transmission Corporation Limited - Waterfox

192.168.1.5/optclwebportal/rptTowerDetails.aspx

ODISHA POWER TRANSMISSION CORPORATION LIMITED
(A Govt. of Odisha Undertaking)
The lifeline Of Odisha

Welcome to Report Page / Tower Details

Voltage Class: 220KV
Name of Line: 220 kV Mendhasala LILO DC Line-I

[Submit](#) [Cancel](#) [Export To Excel](#)

TOWERID	CIRCLE	DIVISION	VOLTAGE	LATITUDE	LONGITUDE	ALTITUDE	FEEDERNAME	TYPE LAND
TWR-440/1-NEW-LN-220-DC-015	CUTTACK	BHUBANESWAR	220kV	20.284611	85.687494	61.5696	220 kV Mendhasala LILO DC Line-Mendhasala - Chandaka Ckt - III- IV	AGRICULTURE
TWR-440/10-NEW-LN-220-DC-015	CUTTACK	BHUBANESWAR	220kV	20.276217	85.704972	56.3880	220 kV Mendhasala LILO DC Line-Mendhasala - Chandaka Ckt - III- IV	URBAN
TWR-440/11-NEW-LN-220-DC-015	CUTTACK	BHUBANESWAR	220kV	20.276317	85.706361	58.317384	220 kV Mendhasala LILO DC Line-Mendhasala - Chandaka Ckt - III- IV	URBAN
TWR-440/12-NEW-LN-220-DC-015	CUTTACK	BHUBANESWAR	220kV	20.276931	85.706724	56.6928	220 kV Mendhasala LILO DC Line-Mendhasala - Chandaka Ckt - III- IV	URBAN
TWR-440/2-NEW-LN-220-DC-015	CUTTACK	BHUBANESWAR	220kV	20.282194	85.689889	60.6552	220 kV Mendhasala LILO DC Line-Mendhasala - Chandaka Ckt - III- IV	AGRICULTURE
TWR-440/3-NEW-LN-220-DC-015	CUTTACK	BHUBANESWAR	220kV	20.280006	85.692033	61.8744	220 kV Mendhasala LILO DC Line-Mendhasala - Chandaka Ckt - III- IV	AGRICULTURE
TWR-440/4-NEW-LN-220-DC-015	CUTTACK	BHUBANESWAR	220kV	20.279161	85.693550	58.622184	220 kV Mendhasala LILO DC Line-Mendhasala - Chandaka Ckt - III- IV	AGRICULTURE
TWR-440/5-NEW-LN-220-DC-015	CUTTACK	BHUBANESWAR	220kV	20.278283	85.695217	56.488584	220 kV Mendhasala LILO DC Line-Mendhasala - Chandaka Ckt - III- IV	AGRICULTURE
TWR-440/6-NEW-LN-220-DC-015	CUTTACK	BHUBANESWAR	220kV	20.277550	85.696606	57.811416	220 kV Mendhasala LILO DC Line-Mendhasala - Chandaka Ckt - III- IV	AGRICULTURE
TWR-440/7-NEW-LN-220-DC-015	CUTTACK	BHUBANESWAR	220kV	20.277939	85.698711	59.945016	220 kV Mendhasala LILO DC Line-Mendhasala - Chandaka Ckt - III- IV	URBAN

Copyright © 2014 ORSAC.(This Website can be best viewed in Mozilla Firefox / Google Chrome). Powered by GBS



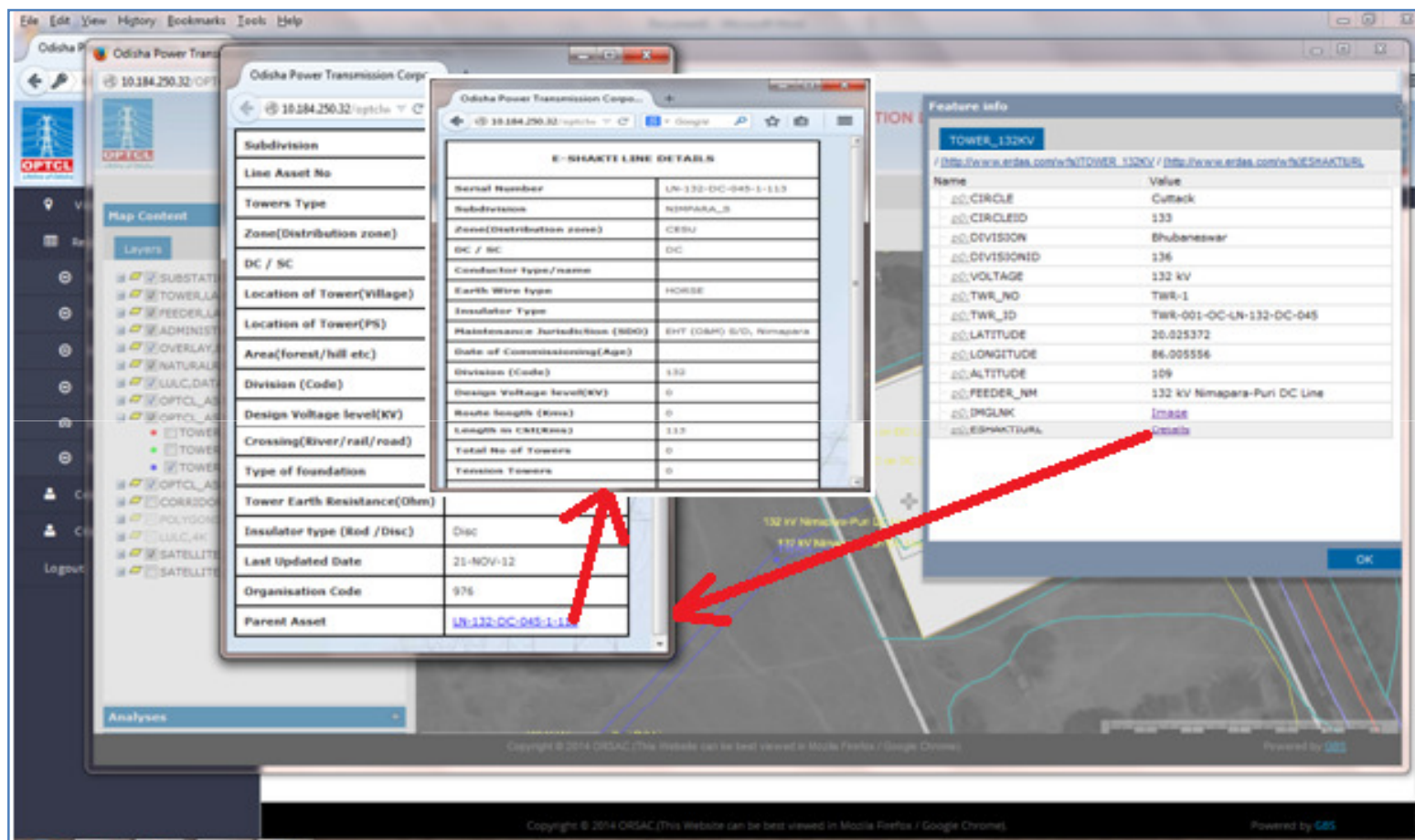
Extract Report from Web Based GIS : Feeder Line



Feeder_Details - Microsoft Excel

G13 TWR-243-OP-LN-220-DC-015										
LINE CODE	NAME	VOLTAGE	FROM-SUB	TO-SUB	FROM-TOWER	TO-TOWER	SPAN	LENGTH	INCHARGE	SUM
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-231-OP-LN-220-DC-015	TWR-232-OP-LN-220-DC-015	263.774916	1574.36		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-232-OP-LN-220-DC-015	TWR-233-OP-LN-220-DC-015	283.683157	1858.05		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-233-OP-LN-220-DC-015	TWR-234-OP-LN-220-DC-015	286.224386	2144.27		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-234-OP-LN-220-DC-015	TWR-235-OP-LN-220-DC-015	258.519623	2402.79		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-235-OP-LN-220-DC-015	TWR-236-OP-LN-220-DC-015	320.028123	2722.82		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-236-OP-LN-220-DC-015	TWR-237-OP-LN-220-DC-015	293.482516	3016.3		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-237-OP-LN-220-DC-015	TWR-238-OR-LN-220-DC-015	307.189923	3323.49		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-238-OR-LN-220-DC-015	TWR-239-OP+3-LN-220-DC-015	332.382531	3655.87		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-239-OP+3-LN-220-DC-015	TWR-240-OP-LN-220-DC-015	232.643387	3888.52		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-240-OP-LN-220-DC-015	TWR-241-OP-LN-220-DC-015	305.281572	4193.8		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-241-OP-LN-220-DC-015	TWR-242-OP-LN-220-DC-015	249.03527	4442.83		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-242-OP-LN-220-DC-015	TWR-243-OP-LN-220-DC-015	303.226302	4746.06		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-243-OP-LN-220-DC-015	TWR-244-OQ-LN-220-DC-015	240.525801	4986.59		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-244-OQ-LN-220-DC-015	TWR-245-OP-LN-220-DC-015	625.270679	5611.86		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-245-OP-LN-220-DC-015	TWR-246-OP-LN-220-DC-015	359.514225	5971.37		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-246-OP-LN-220-DC-015	TWR-247-OP+6-LN-220-DC-015	331.11331	6302.48		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-247-OP+6-LN-220-DC-015	TWR-248-OP-LN-220-DC-015	314.189733	6616.67		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-248-OP-LN-220-DC-015	TWR-249-OP-LN-220-DC-015	180.373752	6797.05		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-249-OP-LN-220-DC-015	TWR-250-OP-LN-220-DC-015	130.444189	6927.49		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-250-OP-LN-220-DC-015	TWR-251-OP-LN-220-DC-015	313.759486	7241.25		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-251-OP-LN-220-DC-015	TWR-252-OP-LN-220-DC-015	303.721568	7544.97		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-252-OP-LN-220-DC-015	TWR-253-OP-LN-220-DC-015	286.237	7831.21		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-253-OP-LN-220-DC-015	TWR-254-OP-LN-220-DC-015	311.611316	8142.82		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-254-OP-LN-220-DC-015	TWR-255-OQ-LN-220-DC-015	300.150331	8442.97		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-255-OQ-LN-220-DC-015	TWR-256-OP-LN-220-DC-015	285.48727	8728.46		
LN-220-DC-015-231-299	220KV Nayagarh-Mendhasal SC Line	220kV	Nayagarh	Mendhasala	TWR-256-OP-LN-220-DC-015	TWR-257-OP-LN-220-DC-015	301.089696	9029.55		

Online Integration of E-Shakti with GIS Feeder Line



The screenshot displays the Odisha Power Transmission Corporation (OPTCL) GIS interface. The central window shows the 'E-SHAKTI LINE DETAILS' table, which lists various attributes for a specific line. The table is as follows:

E-SHAKTI LINE DETAILS	
Serial Number	LN-132-DC-045-1-113
Subdivision	NIMPARA_S
Zone(Distribution zone)	CEBU
DC / SC	DC
Conductor type/name	
Earth Wire type	HORSE
Insulator Type	
Maintenance Jurisdiction (RDS)	EHT (OSM) S/D, Nimpara
Date of Commissioning(Age)	
Division (Code)	132
Design Voltage level(KV)	0
Route length (Kms)	0
Length in CTR(Km)	113
Total No. of Towers	0
Tension Towers	0
Tower Earth Resistance(Ohm)	
Insulator type (Rod / Disc)	Disc
Last Updated Date	21-NOV-12
Organisation Code	976
Parent Asset	LN-132-DC-045-1-131

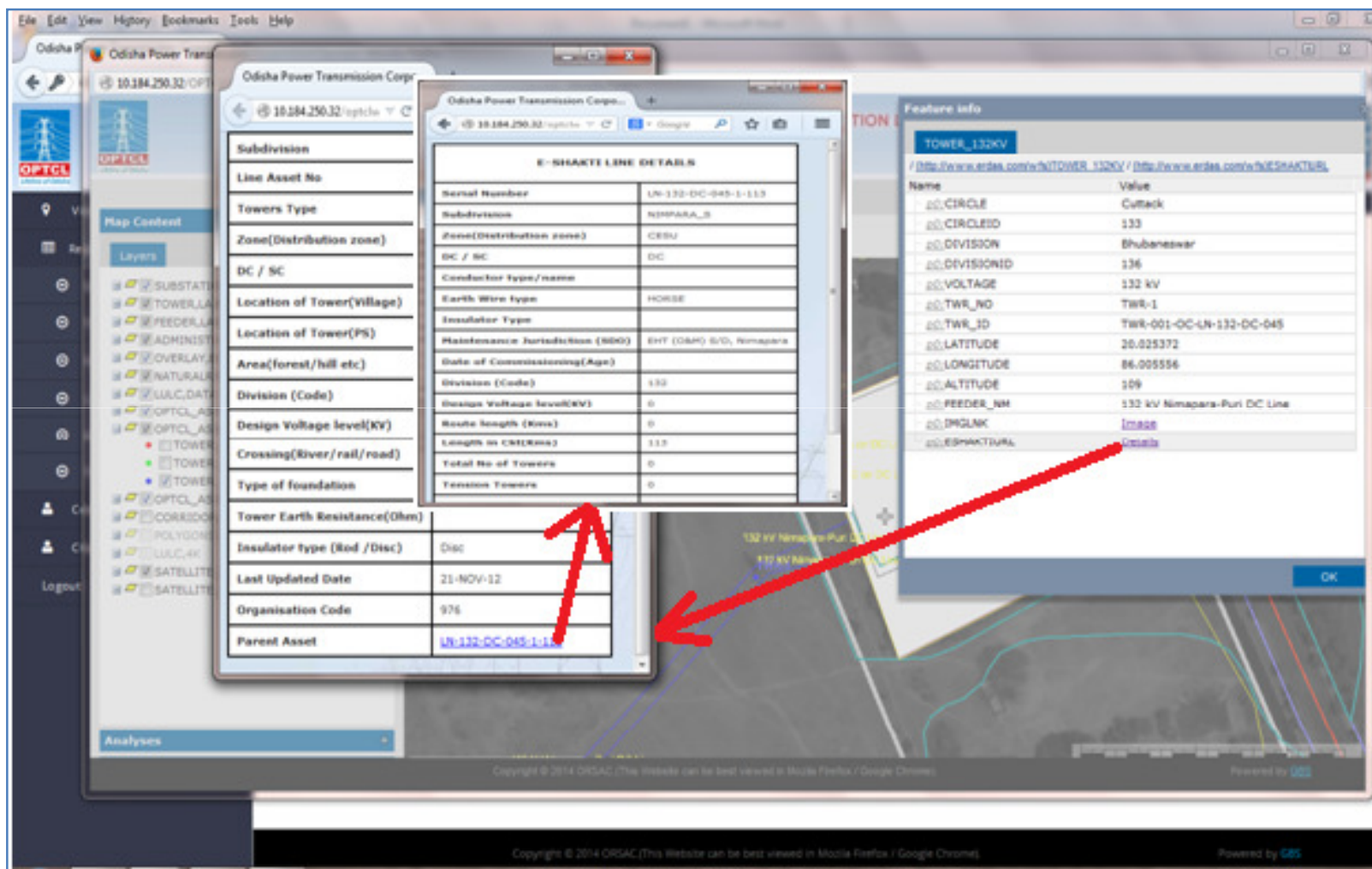
Red arrows point from the 'Parent Asset' link in the table to the 'Feature info' panel on the right, which displays the details for the selected tower (TOWER_132KV). The 'Feature info' panel shows the following details:

Name	Value
@@CIRCLE	Cutack
@@CIRCLESD	133
@@DIVISION	Bhubaneswar
@@DIVISIONID	136
@@VOLTAGE	132 kV
@@TWR_NO	TWR-1
@@TWR_ID	TWR-001-OC-LN-132-DC-045
@@LATITUDE	20.025372
@@LONGITUDE	86.005556
@@ALTITUDE	109
@@FEEDER_NH	132 kV Nimpara-Puri DC Line
@@IMGLINK	Image
@@ESPAKTURL	Details

The interface also includes a sidebar with layers (SUBSTATION, FEEDER, ADMINISTRATION, OVERLAY, NATURAL, ULC, OPTCL, TOWER, etc.) and a map showing the location of the selected tower. The bottom of the interface displays the copyright information: Copyright © 2014 ORSAC. (This Website can be best viewed in Mozilla Firefox / Google Chrome). Powered by GIS.



Multilevel E-Shakti Data Linking



The screenshot displays the Odisha Power Transmission Corporation (OPTCL) E-Shakti web application interface. The main window shows a map with a selected tower asset. A pop-up window titled "E-SHAKTI LINE DETAILS" provides information about the parent line, including its serial number, subdivision, zone, and voltage level. A red arrow points from the "Parent Asset" field in the tower details to the "E-SHAKTI LINE DETAILS" window, indicating the data linking process.

E-SHAKTI LINE DETAILS

Serial Number	LN-132-DC-045-1-113
Subdivision	NIMPARA_S
Zone(Distribution zone)	CESU
DC / SC	DC
Conductor type/name	
Earth Wire type	HORSE
Insulator Type	
Maintenance Jurisdiction (SBO)	EHT (O&M) S/O, Nimapara
Date of Commissioning(Age)	
Division (Code)	132
Design Voltage level(KV)	0
Route length (Kms)	0
Length in CSR(Kms)	1.13
Total No of Towers	0
Tension Towers	0

Feature info

Name	Value
@@_CIRCLE	Cuttack
@@_CIRCLEID	133
@@_DIVISION	Bhubaneswar
@@_DIVISIONID	136
@@_VOLTAGE	132 kV
@@_TWR_NO	TWR-1
@@_TWR_ID	TWR-001-DC-LN-132-DC-045
@@_LATITUDE	20.025372
@@_LONGITUDE	86.005556
@@_ALTITUDE	109
@@_FEEDER_NM	132 kV Nimapara-Puri DC Line
@@_DMLINK	Link
@@_ESHAKTIURL	Details

RESULTS & DISCUSSION

1. Facilitates the officials to obtain spatial and attribute information on assets and OPTCL power line areas by different search options. Electrical
2. Information on infrastructure, settlement, road, canal, rail, administrative boundary, Natural resources like land use , soil, drainage and plot level information etc .
3. Promote to use of geographic information for better decision-making.
4. The entire transmission network database is available digitally.
5. Electrical Asset data consistency has been maintained as all data are maintained centrally
6. It stepped towards improvement and further benefits in Asset management, outage management, network operation, planning, refurbishment and expansion studies .
7. Ability to review any outages / overhaul / shutdown being planned, and the maintenance work planned to be performed during a particular period.
8. New infrastructure planning using Web GIS interface.



CONCLUSIONS



This paper shows the implementation of Web Based Power Atlas System for Cuttack Circle Odisha using ERDAS Apollo 2014 for getting the geospatial information of electrical assets in decision making and planning process efficiently and at affordable cost of OPTCL. This Web GIS framework is expected to be beneficial to different industries, organization and dependable stake holders as like OPTCL.

It is on pilot mode to extend the above work to the whole state for more useful of the OPTCL. For future it may be developed for other power industries and related organizations.



THANK YOU