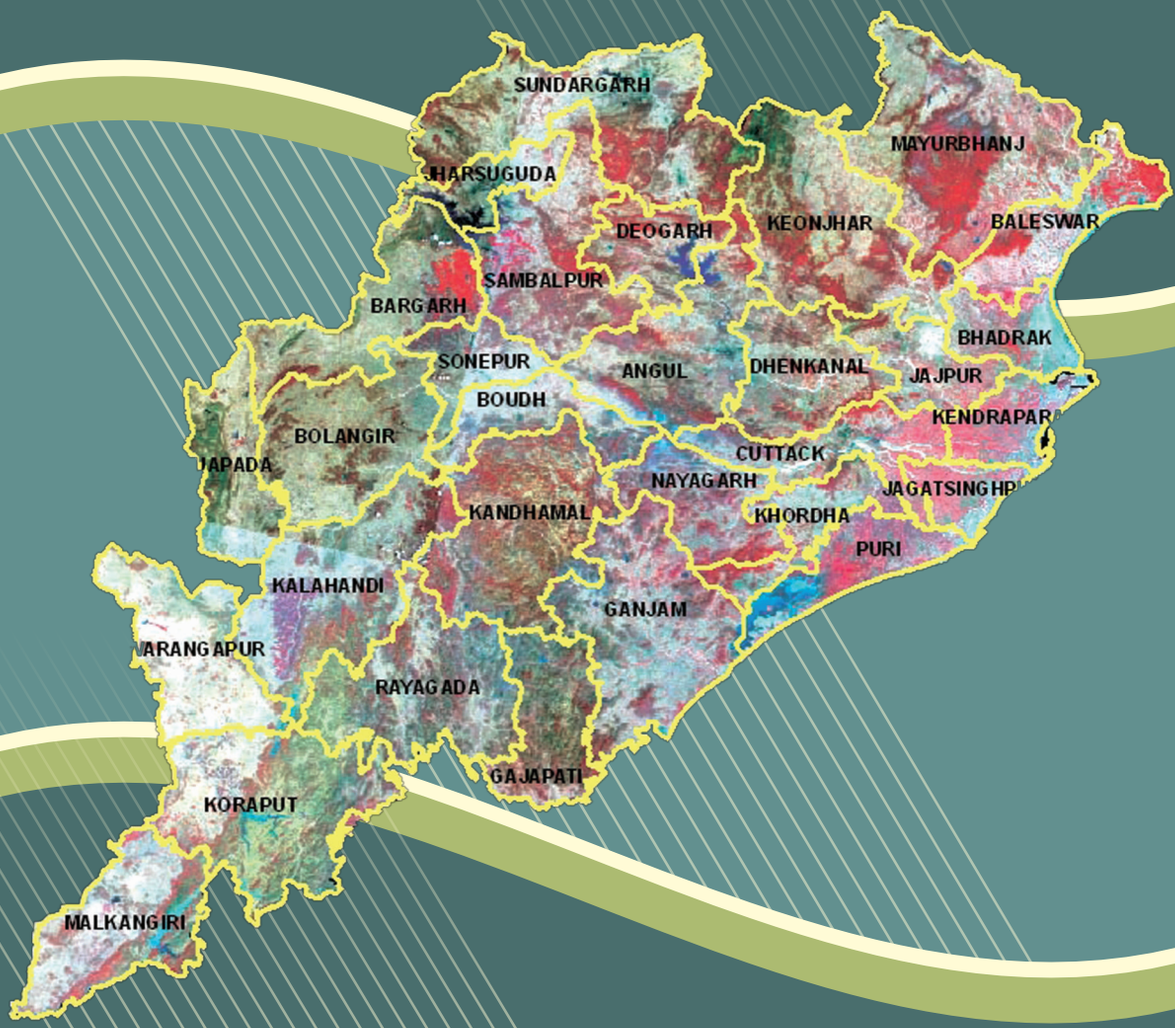
Annual Report
2014-15



ODISHA SPACE APPLICATIONS CENTRE

www.orsac.gov.in

GEOSPATIAL
media + communications

INDIA GEOSPATIAL LEADERSHIP AWARD

On the Occasion of India Geospatial Forum 2015
Geospatial Media and Communications
is proud and privileged to acknowledge

The State of Odisha

as The Leading Geospatial State - 2014

An eco-friendly sustainable development, keeping in mind the welfare of its citizen is what distinguishes the **State of Odisha.** The early adoption of geospatial technologies within the State was possible due to the understanding and acceptance of the technology by the administrators. Today, all State Government funded development is being efficiently planned, monitored and managed through in-house developed applications and programs that have linked all the major government departments, most with their own independent GIS cells.

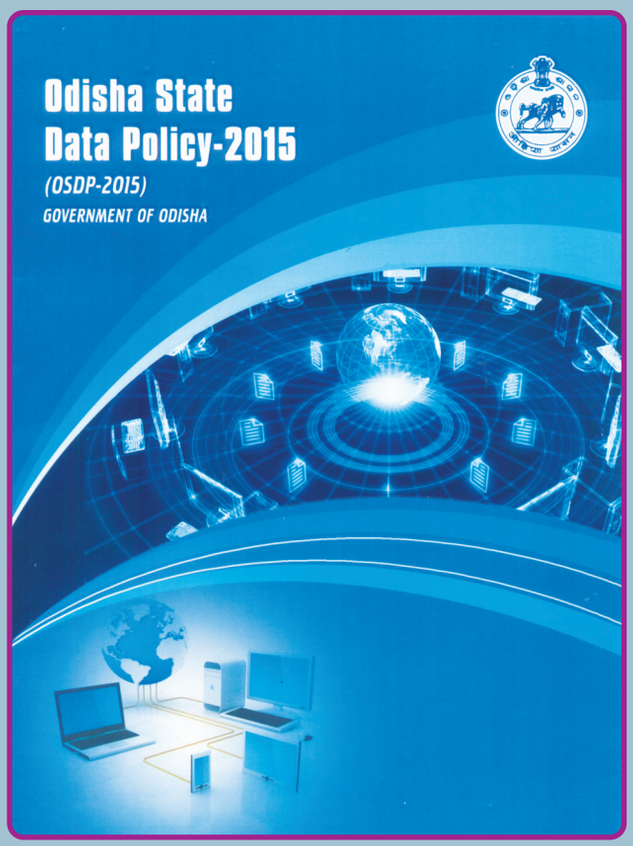
The State of Odisha has two Universities offering postgraduate education in geospatial science and technology, which has also helped internalize the capacity development. The State is engaged in generation, creation, organization and management of geo-spatial databases on natural resources, infrastructure, demography, socio-economic aspects, etc. These technologies and services are being optimally utilised by various users in the government especially the NLRMP, JnNURM, NRDMS, NRIS, NSDI and even the grievance monitoring cell, aptly qualifying the State of Odisha to be India's leading Geospatial State.

C I T A T I O N

DR. M P NARAYANAN
Chairman
Geospatial Media and Communications Pvt. Ltd.

10th FEBRUARY, 2015
HYDERABAD, INDIA

SANJAY KUMAR
CEO
Geospatial Media and Communications Pvt. Ltd.



Odisha State Data Policy-2015, approved by Odisha State Cabinet on 13th August, 2015 and published in Odisha Gazette No.3446-ST-III-ORSAC-5/2015/ST dated 22nd August, 2015.

For implementation of OSDP-2015 in the state, the Science & Technology Department is declared as the nodal department and Odisha Space Applications Centre (ORSAC) shall act as the nodal agency. ORSAC will establish "Odisha Spatial Data Infrastructure-OSDI".

The state of Odisha is awarded as The Leading Geospatial State – 2014 on the Occasion of India Geosptial Forum 2015. The citation and trophy is received by CE, ORSAC on behalf of State Govt.

Nodal agency of the state in the matters of providing Remote Sensing, GIS and GPS applications solutions to all the departments / offices and agencies of the state.
(Vide Govt. of Odisha, No. 3765/ST-Dt.30-07-2009)

Nodal agency of the State Government for the purpose of DGPS and ETS survey to facilitate digitization and Geo-referencing of mining maps
(Vide Govt. of Odisha, Dept. of Steel & Mines order No. 4276/S&M-Dt.17-07-2010)

Nodal agency of the state for submission of Geo-referenced digital data (using Geo-referenced image, ETS/DGPS survey outputs) for proposal submission to central and state Govt. for diversion of Forest land for non-forest use under Forest Conservation Act 1980
(Vide Govt. of Odisha, Dept. of Forest & Environment order No. 18391/F&E-Dt.13-10-2011)

State centre for ISRO, Dept. of Space, Govt. of India towards implementing the ISRO/DoS projects in Odisha state with survey and mapping specifications and standards as per the guidelines/instructions of NRSC/SAC/ISRO, Dept. of Space, Govt. of India.

For further information contact :

Chief Executive

ODISHA SPACE APPLICATIONS CENTRE (ORSAC)

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Chief Secretary, Govt. of Odisha
and ***Chairman, ORSAC***
Phone: +91-674-2536727
Fax: +91-0674-2396348
E-mail- csodi@nic.in

MESSAGE

It gives me immense pleasure to present the Annual Report of Odisha Space Applications Centre (ORSAC) for the year 2014-15, which incorporates its activities and achievements during the year.

ORSAC is the nodal centre for space technology applications in Odisha state. The Centre is engaged in harnessing space technology and geo-informatics for providing inputs to number of Government departments for various development planning activities and societal benefits. The major activities at present include projects related to mining survey; land bank development for industrial development planning and compensatory afforestation; survey and mapping of urban land utilization; water source targeting and quality monitoring; cadastral map preparation for revenue administration; survey for forest diversion proposals; land information system for GA dept.; coastal zone mapping for internal security administration; web-based services for power sector operations; plans for banking network enhancement, canal network spatial datasets for minor irrigation and mines survey etc. The Centre has proved its excellence in the country in the area of web-enabled data services for planning and governance; high-tech survey and micro-level resource mapping besides implementation of satellite communication programmes through Gramsat and Edusat project.

The centre is now identified as an implementing agency for operationalization of “Odisha State Data Policy” approved by Govt. of Odisha. It is also establishing “Odisha Spatial Data Infrastructure” to attain ease of sharing of geo-spatial data and enhanced application of such geospatial data in development planning of the state. This year significant achievements of the centre are development of dedicated web-based services in public domain for land bank and industry census (GOiPLUS-Govt. of Odisha Industrial Portal for Land Use and Services); Power transmission network management for OPTCL; Banking facilities network for RBI; Minor forest product procurement for TDCC; Kendu-leaf procurement services for PCCF, Kendu-leaf and “Odisha Sampad” for use by officials of state government, academician and researchers.

The focus of the Centre in space technology application programmes will remain on generating micro-scale geo-spatial datasets and making it available to different state agencies for developmental planning, internal security strategies and also in building a monitoring tool for all the line departments of the state for all spatial and non-spatial activities.

I take this opportunity to record my appreciation for the dedicated work rendered by the scientist, technical staff and all personnel of ORSAC.

(G.C.Pati)

Technology Footprints of ORSAC

Geomatics

- **REMOTE SENSING :**

  Information generation relating to natural resources and infrastructure at a scale ranging from 1:250000 to 1:1000 using multi-platform, multi-sensor temporal datasets.

- **GIS :**

  Database generation, multi-variable data integration & analysis, trend analysis, scenario creation and modeling relating to natural resources management & environmental monitoring.

- **Geo-ICT :**

  Development of web-enabled database, data dissemination, data mining, solution for data infrastructure & interoperability package development, Decision Support System Development, User need software development and ICT based training etc.

Hightech Survey

- **GPS (Global Positioning System)/TS (Total Station) :**

  Topographic survey, network establishment, control establishment, spatial & attribute data acquisition and determination of geo-coordinates.

- **Photogrammetry :**

  LPS systems and stereo viewing facilities for undertaking photogrammetric block adjustment of stereo pairs, Digital Terrain Model (DTM) creation, Digital Elevation Model (DEM) creation, contour/slope and orthoimage generation.

- **LIDAR / UAV application :**

  Disaster mapping, Infrastructure database creation, environmental monitoring, utility information system development.

From the desk of Chief Executive

It is my privilege to present the Annual Report of 2014-15 which reflects upon the significant achievements and contribution of the Centre in assisting the state administration in its mandated objective of appropriate resources management along with accelerated economic growth and sustainable development.

As a multidisciplinary organization and in line with its mandate, the center is tasked with generating various types of decision support solutions for effective governance using remote sensing, satellite communication, geo-informatics, geo-ICT, satellite navigation and computer technologies. During 2014-15, the center acted like a true nodal agency of the state in providing timely and accurate datasets to state departments like Revenue and Disaster Management, Industries, Steel and Mines, Water resources, School and Mass education, Energy, Forest and Environment, Higher education, SC/ST development, Agriculture, Commerce and Transport, Housing and Urban development, Women and Child development, Rural development, Planning and Coordination and Panchayatiraj Department etc. Besides the above the center is engaged in various projects of ISRO/SAC/NRSC, Dept. of Space, Govt. of India and major public sector undertaking of the country involved in resource management. In recognition of efforts to spread RS& GIS application in the State, the state was awarded "India Geospatial Leadership Award" as the leading Geospatial State of the country, in the India Geospatial Forum, 2014, by a jury under the Chairmanship of DR. R.Kasturirangan, Ex Chairman ISRO.

Significant contribution of the center in last year is to establish a platform in the state to facilitate collation of standard spatial data in an inter-operable and open protocol for development planning and e-governance purposes. In this regard the center prepared guidelines for policy framework for easy sharing of spatial data across the State under "Odisha State Data Policy" in consultation with NSDI, Govt. of India and other SDI's & stakeholders. The state cabinet has approved the same and the center is designated as the implementing agency for operationalization of "Odisha State Data Policy". The center is also going to establish and maintain "Odisha Spatial Data Infrastructure" in the line of National Spatial Data Infrastructure for leveraging this platform as Data warehouse of the state.

Some of other important achievements are development of dedicated web-based services in public domain for land bank and industry census (GOiPLUS-Govt. of Odisha Industrial Portal for Land Use and Services); Power distribution network management for OPTCL; Banking facilities network for RBI; Minor forest product procurement for TDCC; Kendu-leaf procurement services for PCCF, Kendu-leaf and updation of "Odisha Sampad" for use by officials of state government, academician and researchers.

Number of steps have been initiated by the center to keep the momentum of ongoing projects apart from conceiving and formulation of new and diverse projects during the period. The important projects are development of Odisha Spatial Data Infrastructure, IDCO land Bank Project, DGPS mapping and geo referencing along with Joint Survey of all the mines of the State, GIS based Planning and Permit Management System for State carriage permits in Odisha, Geospatial Technology for Rural and Urban Development, Cadastral Level Geospatial Database Generation, Monitoring of Afforestation/Plantation areas, GIS based maps for towns and Resurvey of Cadastral maps etc.

I take this opportunity to record my gratefulness to Shri G.C.Pati, IAS, Chief Secretary who in his capacity as Chairman of the Centre has provided much needed direction and guidance for the growth of the center. I also thank the staff of the center for their contribution to the success of the organization in 2014-15.

(Dr. Sandeep Tripathi)

Communication/Training

Satcom

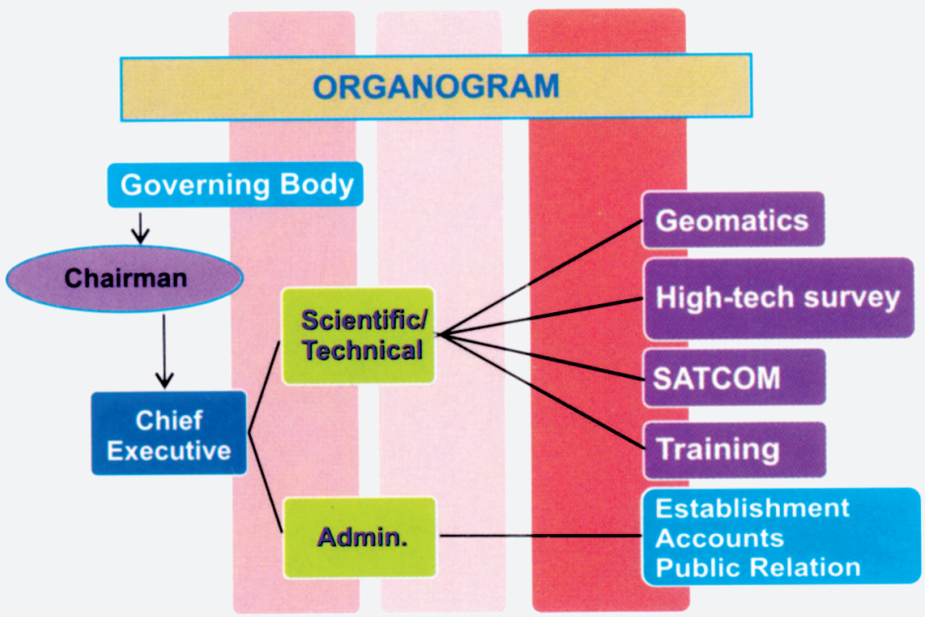
SATCOM- Satellite Communication:- for establishment of hub & network infrastructure for GRAMSAT, EDUSAT & Vigyan Prasar trasmission, Interactive training, and development broadcast activities. During 2014-15, SIT (Satellite Interactive Terminals) are operated in different schools for two way audio-video EDUSAT transmission between state hub at ORSAC with 216 schools. During the year clasroom programs are conducted for school students. Under the Development Broadcast Programme, programs are transmitted through **Swapnara Odisha** and **Sunar Odisha**.

Training/Awareness

- ORSAC provided its services in disseminating knowledge on Remote Sensing & GIS and on hi-tech surveys to the students of different universities and technical institutions through summer training.
- Students from different universities allowed to carry out their project work/ dissertation work for partial fulfillment of M.Phil./M.Sc/ B.Tech /PG Dip. degree for a period up to six months.
- Orientation Training provided by ORSAC to the officials of Government departments to enable them to use RS & GIS datasets and to handle the data in GIS environment.
- The scientists of ORSAC paid visit to different Universities of Odisha. Scientists delivered lectures at Gopabandhu Academy of Administration regularly on topics related to technology use for development planning and decision support system development.
- Scientists, engineers and technical support staffs of the centre are trained on advance application areas relating to CAD, GIS, DGPS operation, spatial data management, image processing, web service applications and Geo-ICT developments.

ADMINISTRATION

Orissa Remote Sensing Application Centre (ORSAC) was set up in 1984 at Bhubaneswar under Dept. of Science & Technology. This centre has been renamed as ODISHA SPACE APPLICATIONS CENTRE with the acronym ORSAC since 2009. The centre is acting as the apex body of the State for space technology applications and comprises of a pool of multidisciplinary application scientists to undertake remote sensing, GIS, GPS and communication technology applications. ORSAC has been appointed by the State Government vide resolution No.3765/ST dated 30th July' 2009 of the Science & Technology Department as the sole Nodal Agency for providing remote sensing and GIS application solution to all the offices including public sector undertakings, Govt. departments, Govt. societies as per their requirement



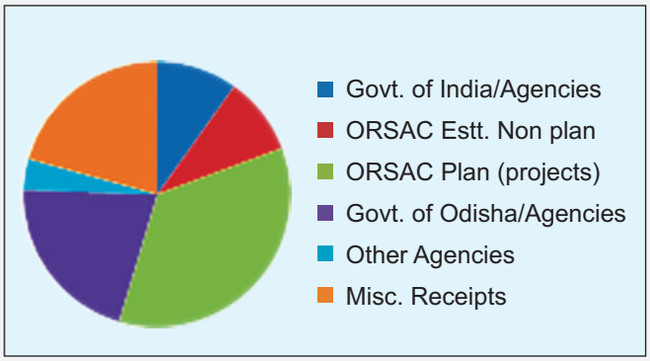
MANDATE/OBJECTIVES

- Establishment of up-to-date library of satellite data, topomaps, cadastral and Geo-coordinates.
- Demonstration and operationalisation of space technology applications in State for several development planning activities.
- Implementing agency for "Odisha State Data Policy" and maintenance of Odisha Spatial Data Infrastructure.
- Demonstration of multi-disciplinary application projects for mapping, monitoring and management of natural resources and environment
- Supply of up-to-date accurate and geo-referenced database to all users of the state.
- Operationalisation of district / block / village level GIS database through internet/Web-services
- Participation in Remote sensing and SATCOM programmes of Indian space Research organization ISRO/ NRSC/ SAC.
- Reaching quality teaching to school students uniformly across the state through EDUSAT network
- Popularization of space technology through Space Information Centre and Vigyan Prasar program
- Capacity building of govt. staff in the use of Remote Sensing, GIS & DGPS.

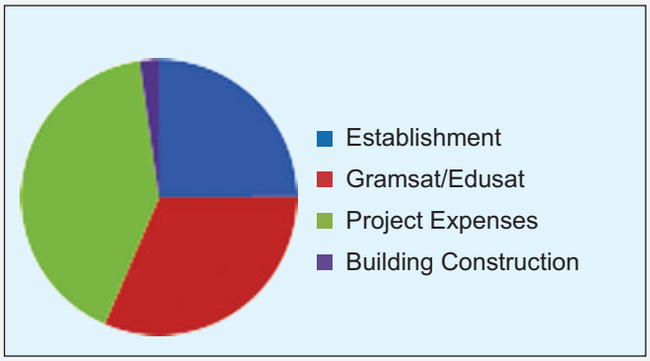
ACCOUNTS

Financial status 2010-15					
Year (Rs. in Lakhs)	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**
RECEIPTS	3581.58	2382.95	2971.28	3112.57	3246.00
EXPENDITURE	1442.99	1759.09	2912.83	1761.25	2645.29

Receipts : 2014-15



Expenditure : 2014-15



Receipts (Rupees in Lakhs)

Schemes	**Nature of funding**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**
Govt. of India/ Agencies	Projects	125.09	295.73	117.10	195.28	318.86
ORSAC Esst. Non plan	Grant-in-aid	48.00	48.00	309.00	309.00	309.00
ORSAC Plan (projects)	Projects	630.00	488.00	580.42	900.00	1146.12
Govt. of Odisha/ Agencies	Projects	2494.72	515.06	163.52	492.48	679.95
Other Agencies	Projects	2.88	223.44	1149.39	560.45	120.09
Misc. Receipts		205.89	700.72	651.85	655.36	671.98
	Total	**3581.58**	**2382.95**	**2971.28**	**3112.57**	**3246.00**

Expenditures (Rupees in Lakhs)

Head of expenditure	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**
Establishment	490.01	654.32	724.54	660.53	658.33
Gramsat/ Edusat	260.34	557.72	299.98	135.31	835.30
Project expenses	690.02	547.05	1888.31	869.18	1092.00
Building construction/Repair	2.62	0.00	0.00	96.23	59.66
Total:	**1442.99**	**1759.09**	**2912.83**	**1761.25**	**2645.29**

RESOURCES & INFRASTRUCTURE

SATELLITE DATA LIBRARY

SATELLITE DATA	Area/Scale	Year
Landsat-4, MSS; TM B/W	Entire State (1:250000)	1985-86
IRS 1A LISS-I FCC	Entire State (1:250000)	1988-89
Landsat-TM FCC	Entire State (1:50000)	1986-87
SPOT FCC	Bhubaneswar, Cuttack, Paradeep, Chilika (1:25000)	1988-89
IRS 1B LISS-II FCC	Entire State (1:50000)	1996-97
IRS 1C LISS-III FCC	Entire State (1:50000)	2003-04
IRS 1C/1D PAN	Entire State (1:50000)	2002-06
IRS 1C/1D LISS-III FCC	Entire State (1:50000)	2005-06
IRS Resourcesat L4 FCC	Entire State (Digital)	2007-09
IRS Resourcesat L4 FCC	Entire State (Digital)	2010-12
IRS Resourcesat L4 FCC/Cartosat 1	Six towns (Digital data)	2008
Quick Bird	Bhubaneswar-Cuttack(Digital data)	2005-06
World View 1 & 2	Four districts (Digital)	2010
World View 1 & 2	Fifteen towns(Digital)	2010-11
Awifs	Entire State (Digital)	2012
Cartosat 2	Fourteen towns (Digital)	2014
IRS 2	Eight districts (Digital)	2014

HARDWARE

System	Nos.
Blade servers (2 x Intel Xeon Eight Core E5-2650 V2@ 2.6 GHz)	4
Rack Server (2 x Intel Xeon Processor E5-4620 v2@2.6GHz)	6
Xeon based Tower Servers	6
High-end Workstation for Digital Photogrammetry	4
High-end Desktop with Graphics and 24" LCD Monitor	50
Desktop - Intel core-i5 / i3	22/2
Desktop - Pentium Quad core/Pentium IV	50/35
Storage	
On -Line Storage (36 TB) with Tape Backup System	1
Mini - Storage attached with Blade servers (9TB)	1
Scanner	
(VIDAR) AO Size (Titan H36) (1 - colour, 1 B&W)	2
Printer/MFP	
Inkjet / Deskjet / Laserjet - A4	13
Multi Function Printer (Print, Scan & Copy)	3
HP ColourLasser Jet 5550dn - A3	1
Plotter	
HP Design Jet 4000 —A0 (36 inch)	1
HP Design T 7100 — EA0 (42 inch)	1
GPS/DGPS	
Hand GPS (Garmin — 12)	21
DGPS (Base) + ROVER (Trimble/Leica)	4/10
ETS (Total Station)	2
GPS Based Hand Held Device	3

SOFTWARE

GIS	Nos.
Arc GIS (Workstation + Desktop) Version 10.3	24
Auto CAD + Auto CAD Map	1/1
Geomedia Desktop	1
Terrago Geo PDF (2D & 3D)	1
Image Processing	
ERDAS WITH LPS (Leica Photogrammetry Suite)	2/4
ENVI / TNT MIPS / ERDAS APOLLO (Enterprise GIS)	4
Intergraph Geospatial Server 2015	3
Arc GIS (Server 10.3)	1
Others	
ORACLE 11g R2/12c	1
VMware Virtualization Kit	1
SYMC ENDPOINT PROTECTION 12.1	11
RDBMS (+) MS SQL 2008 (2) ORACLE	1
Client Supporting / CITRIX	70
Exchange Server 2013	1

MANPOWER

Sections	Unit	No.
Administrative (34)	Establishment	7
	Account	4
	Library / PR / Steno	4
	Vehicle / Driver	5
	Watchman / Attendant	14
Scientific (24)	Scientist - D	2
	Scientist - C	8
	Scientist - B	7
	Scientist - A	7
Technical (46)	Engineering	5
	Computer	8
	Cartography / GIS	15
	Satcom	6
	Tech. Assistant/Lab. Attendant	12
Total		**104**
Contractual Staff	Scientific / Technical	50

Human Resources

24 scientists and 46 Engineering/ Technical staff having specialization in optical and microwave Remote Sensing, Image Processing, GIS, ICT, Digital Photogrammetry, GPS & Computer Applications etc. having subject background of applied geography, geology, physics, botany, oceanography, marine science, mathematics and civil / mining / electrical engineering etc.

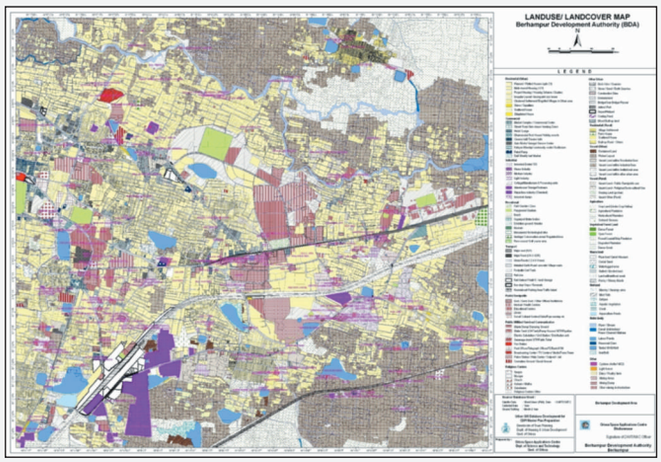
SUPPLY OF INPUTS FOR CDP OF TOWNS OF ODISHA

Housing and Urban Development Department has assigned the task to ORSAC to prepare Remote Sensing and GIS database for CDP preparation of 37 Towns of Odisha State in phase manner. The maps have been prepared on 1:2000/4000 scale. The main objectives for preparation of GIS database of towns are:-

- Preparation of inputs for comprehensive plan on cadastral base of Town Planning area / Development Authority Area / Special Planning Authority Area / Regional Improvement Trust Area.
- Plot level Digital Urban Land use Database Generation on cadastral base
- Transport Network Database
- Mouza / Ward / Municipal / Planning Authority Boundary Database.

In first phase under the project Vision – 2030, Remote Sensing & GIS data base were generated for inputs preparation of comprehensive development plan of Bhubaneswar – Cuttack urban complex constituting the towns Bhubaneswar,Cuttack,Jatni,Khurda and Choudwar. In 2nd Phase (year 2010 to 2011) ORSAC had undertaken 8 towns. During 3rd phase ORSAC completed RS and GIS database generation for CDP preparation of following 11 Towns.

Name of Towns	No.of mouzas/ villages
BRIT, Balasore	206
SPA, Bhadrak	46
SPA, Baripada	55
DRIT, Dhenkanal	200
SPA, Bolangir	27
KRIT, Jeypore	14
SPA, Rayagada	19
SPA, Keonjhar	70
SPA, Bhwanipatna	08
SPA, Baragarh	25
SPA, Barabil	20



ORSAC procured Satellite data (World View-2/0.5m and Cartosat-2/1m data), rectified, georeferenced, mosaicked and enhanced the images for all 11 towns mentioned above.

During 2013-15, inputs of 20 towns namely. Koraput, Malkangiri, Nabarangapur, Phulbani, Boudh, Sonepur, Deogarh, Paralakhemundi, Kendrapara, Jagatsinghpur, Pattamundai, Jajpur, Dhamara, Basudevpur, Nayagarh, Anandpur, Joda, Rajgangpur, Biramitrapur and Sundergarh on 1:2000/4000 scale are prepared. The final data base of thirteen towns (Dhamara, Sonepur, Malkangiri, Koraput, Nabrangapur, Deogarh, Basudevpur, Sundergarh, Pattamundai, Boudh, Paralakhemundi, Joda and Nayagarh) have been completed by using Cartosat-2 data for the year 2014-15. GIS Database generation of additional villages of Bhubaneswar Development Authority area is also taken up by the centre.

The GIS data base in complete format are supplied to planning section of respective Town Planning Units for CDP preparation. The database has been generated to establish an Urban Database Information System in the urban local bodies for planning, monitoring and management purposes.

DESERTIFICATION STATUS MAPPING OF ODISHA

Desertification is one of the major global environmental concerns related to land degradation affecting livelihood of millions of people directly. The United Nations Convention to Combat Desertification (UNCCD), adopted on June 1994, aims at combating desertification in the dry land regions of the world. India is a signatory to UNCCD on June 17,1994 at Paris and came into effect from March 1997. Thematic Programme Network 1 (TPN-1), on "Desertification Monitoring and Assessment" is one of the six thematic programme areas identified as part of Regional Action Programme Implementation in Asia, under UNCCD. Space Applications Centre (SAC, ISRO), Ahmedabad has been identified as the national focal organization to coordinate TPN-1 activities in the country. In view of non-availability of Desertification /land degradation Status Map (DSM) for the entire country, the mapping activities was taken up on 1: 500,000 scale using AWiFS data on board Resourcesat-1 satellite platform.

In this direction spatial inventory of desertification of Odisha was taken up by **Odisha Space Applications Centre** in association with Space Applications Centre (SAC). The study revealed that around 35% of the total geographical area of Odisha state was under desertification/land degradation. As a follow up exercise, the Desertification Status Mapping (DSM)-Second Cycle programme was undertaken by ORSAC to assess the dynamic processes using AWiFS data pertaining to the period 2012-13, after a gap of 8 years. Under the project, water erosion, vegetal degradation, waterlogging, wind erosion and man made activities for the state of Odisha are mapped. Temporal data of 2004 & 2012 were used to map the status of desertification in 1:50,000 scale using AWiFS data for entire state.

Desertification status of selected vulnerable districts of Odisha, viz **Bargarh, Mayurbhanj, Koraput, Keonjhar** was mapped using LISS III on **1:50,000** scale for the period 2003-04 and 2012-13. A comparative analysis of the Process wise desertification/land degradation in 2012 vis-à-vis with that of 2004 period reveals that 42.49% of the total geographical area of Odisha is affected due to desertification during 2012 as against 35% in 2004.

COMPARATIVE STATEMENT OF DESERTIFICATION STATUS OF ODISHA STATE

	DSM-2 (2012) AREA(Ha)	%Total Geog. Area	DSM-1 (2004) AREA(Ha)	%Total Geog. Area
Vegetal Degradation	1899478.71	12.20	1176304.39	7.55
Water Erosion	4546956.42	29.20	4148975.64	26.64
Water Logging	83122.68	0.53	64697.79	0.42
Man made	67032.71	0.43	30055.46	0.19
Rocky/Barren	19735.06	0.13	31150.50	0.20
TOTAL	6234256.00	**42.49**	5468034.00	**35.00**
Total Geographical area of the State: 15570700 Hectare Data used – Resourcesat-I (AWiFS image, 2004 & 2012-13)				

Desertification Vulnerability modeling

Multi-parametric weighted index based desertification vulnerability modeling is taken up by the Centre as a follow-up study in one of the most vulnerable districts. Assessment of vulnerability towards desertification is an essential step towards its mitigation. Various parameters like climate type, soil type, land use / land cover, representative vegetation of the area and anthropogenic factors play significant roles in the process of desertification. Climate Index (CI), Soil Index (SI), Vegetation Index (VI), Land-Use Index (LUI) and Socio Economic Index (SEI) at 1: 50,000 scale are under preparation for one district.

COASTAL STUDIES PROJECTS

COASTAL ZONE MANAGEMENT PLAN PREPARATION

With the infrastructure availability and state of art facilities like DGPS, 3D-Analysis Software and advanced Geographic Information System (GIS), ORSAC has undertaken mapping of coastal land in the Coastal Regulation Zone on 1:25,000 scale as per the guidelines of MoEF Notification dated 6th January 2011. Coastal Zone Management Plan Maps on 1:25 000 scale (7 1/2 X 7 1/2' grid) covering 87 maps all along the Odisha coast were prepared in consultation with Forest and Environment Department, Govt. of Odisha and various stakeholder departments.

Status

- CZMP maps for 87 sheets (Pdf files) have been completed and submitted to Forest and Environment Department.
- Maps on HTL and LTL have been authenticated by SAC, Ahmedabad
- CZMP maps in .shp file formats for 87 sheets have been submitted to Forest and Env. Department, Govt. of Odisha for onward submission to NCSCM, Chennai.

LANDUSE MAPPING OF PURI TOWN CRZ AREA

Forest and Environment Department,Government of Odisha vide Letter No.Env.L-05/2013-13134/F&E Dated 17.07.14, assigned mapping of CRZ area of Puri Town on 1:4000/2000 scale in compliance with the orders of Hon'ble National Green Tribunal, New Delhi. The mapping of landuse/landcover using high resolution data provides required information at cadastral level. The superimposition of High Tide Line on the cadastral level maps differentiates the plot boundaries inside and outside Coastal Regulation Zone. Worldview satellite data of 2014 having resolution of 0.5 meter is primarily used for the study. The data were geo-referenced after taking DGPS survey of Puri Town at selected places. The base layer has been prepared from the available cadastral maps of Puri Town. Plot wise landuse and land cover maps were prepared after ground verification by Directorate of Town Planning, Govt. of Odisha. The classification system used is as per the classification system adopted for mapping of urban land use at ORSAC for various towns of Odisha. The delineation of High Tide Line was authenticated by the scientists of Space Applications Centre, ISRO, Department of Space Ahmedabad, an authenticating Agency identified by Ministry of Environment and Forest and Climate Change, Govt. of India. Final maps were prepared and submitted to Forest and Environment Department, Govt of Odisha.

COASTAL ISLAND MAPPING

As per the requirement of Govt. of India, the centre prepared coastal island map of Odisha state using high resolution satellite data, inputs from ISRO, Dept. of Space, Sate Forest & Environment and Tourism departments etc. Island database was created which comprises geographic location, biodiversity, forest status, important activities, nearness to port, distance from coast and habitation etc.

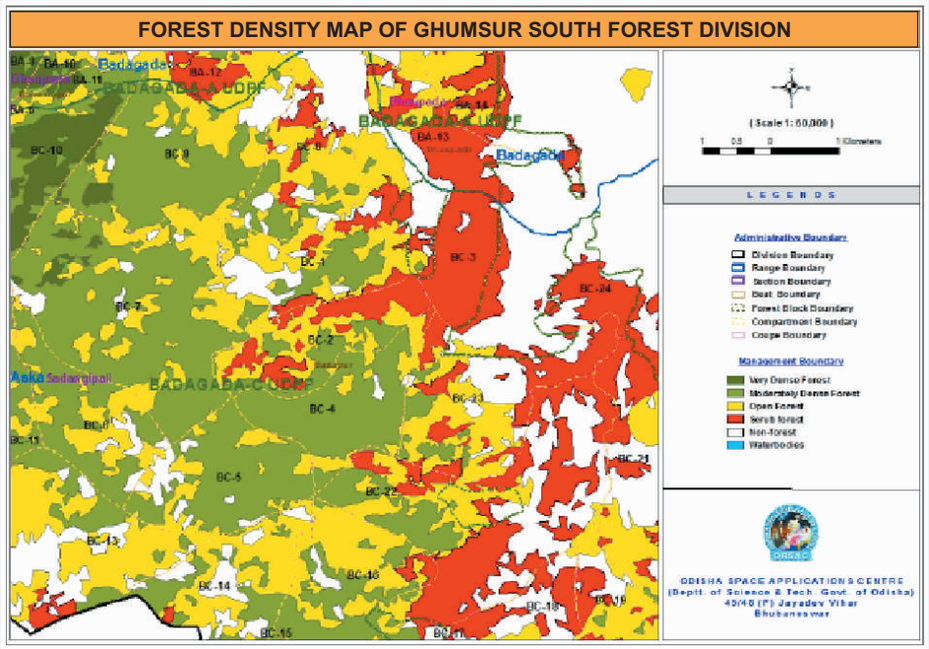
FOREST RESOURCES MANAGEMENT

Identification of Degraded Forest lands for Compensatory Afforestation

The mapping of degraded forest lands (<10% crown cover) within 0-20 degree slopes inside forest blocks for 8 districts namely Angul, Jharsuguda, Sambalpur, Dhenkanal, Keonjhar, Cuttack, Khordha and Sundargarh (1,86,105.35 ha.) have been completed and submitted to Forest Department for creation of land banks for compensatory afforestation programme. Similarly the maps showing degraded forest lands growing outside the forest blocks for 3 districts namely Ganjam, Gajapati and Kandhamal (2,54,140.92 ha.) were also prepared and submitted to Forest Department. The maps prepared on 1:50,000 scale for each district separately are superimposed with important roads, rivers and settlement locations. The geo-coordinates of the central points of each degraded forest land patch has been shown on the map for easy reference on the ground.

Working Plan input preparation of Ghumsur South Forest Division

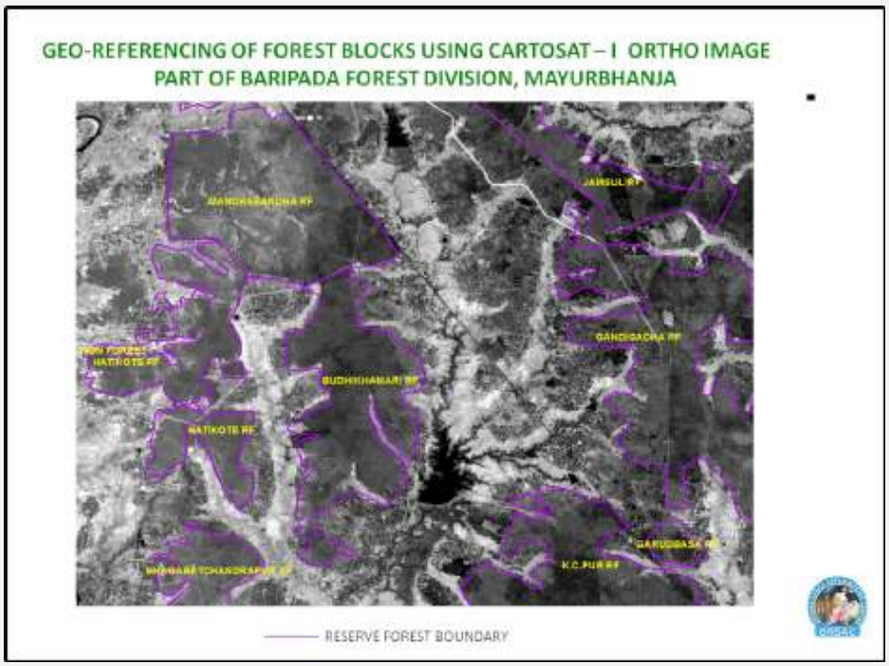
Digital GIS database of forest administrative and management maps submitted by Forest Department are created and geo-referenced for Ghumusur South Forest Division. The forest density maps have been prepared on scale 1:50,000. The Forest Division index map on scale 1:1,00,000, Forest administrative and management maps on scale 1:50,000 and the Working Plan maps are generated on 1:25,000 scale and submitted to the user.



Geo-referencing of forest boundary of Odisha using Cartosat-1 Ortho-image

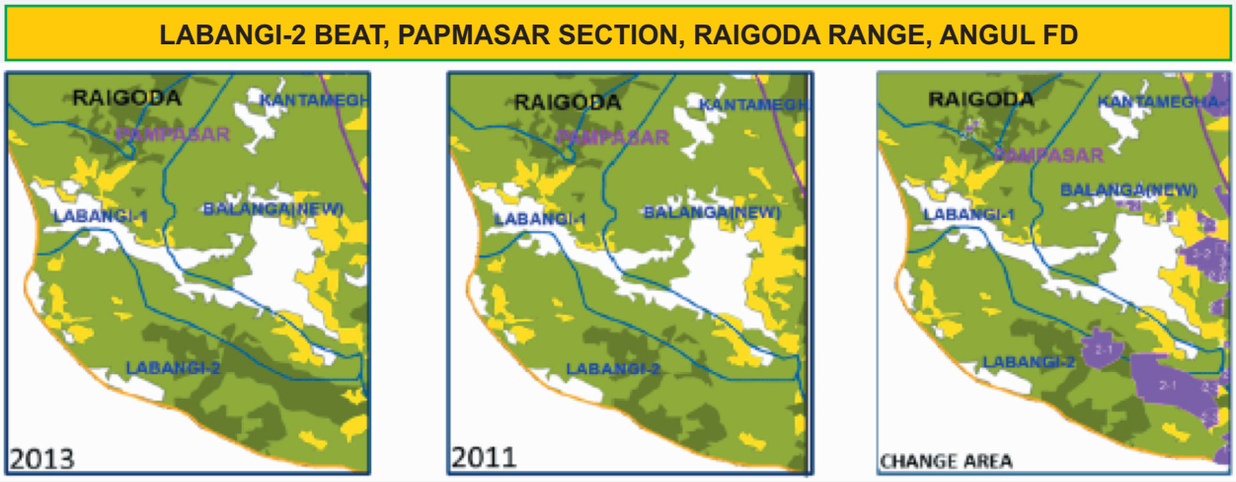
Digitisation of forest block boundaries comprising of Reserve Forest, Protected Reserve Forests, Protected Forests, Demarcated Protected Forests and Un-demarcated Protected Forests of all 50 Forest Divisions of Odisha have been completed on scale 1:50,000 as per the maps supplied by the Forest Department. The forest boundaries are geo-referenced with the Ortho-image of Cartosat-1 data prepared for the state under SIS DP project.

The centre is developing a seamless geo-referenced digital forest block boundary database for the state where the user can able to get information about the forest blocks and its area and geo-coordinates easily.



Forest Cover Change study of Odisha

Forest cover change detection mapping of all 50 Forest Divisions of Odisha has been completed on scale 1: 50,000 using the Forest Survey of India forest layers of year 2011 and 2013. The forest cover layers e,g. 1. Very Dense Forest (> 70% crown cover), 2. Medium Dense Forest (40-70% crown cover), 3. Open Forest (10-40 % crown cover) , 4. Degraded Forest (< 10% crown cover) and 5. Non-Forest land have been used for forest cover change analysis. The forest cover change matrix at beat level , Forest change area statistics and geo-coordinates of the central points of forest change area have been prepared for easy identification on the ground.



National Land Records Modernization Programme (NLRMP)

Government of India is implementing the Centrally-Sponsored National Land Records Modernization Programme (NLRMP) for modernizing management of land records. The major components of the programme are computerization of all land records including mutations, digitization of maps and integration of textual and spatial data, survey/re-survey and updation of all survey and settlement records including creation of original cadastral records. In Odisha state Revenue and Disaster Management Dept. is implementing the program. ORSAC is associated in two major project components of NLRMP project.

- Quality Checking of digitized cadastral maps
- Cadastral Resurvey
  - Cadastral resurvey of 4 districts (Cuttack, Khurda, Ganjam and Keonjhar) by HRSI (High Resolution Satellite Image) method.
  - Cadastral Resurvey of 5 districts (Sundergarh, Deogarh, Samabalpur, Bolangir, and Sonepur) by Aerial survey/photography method.

Quality Checking of digitized cadastral maps

Cadastral maps of the state comprising 51,666 number of villages are digitised by Revenue Dept. are quality checked at survey and Map Publication Office, Cuttack and also at ORSAC. The centre is preparing GIS ready CAD files of digitised maps of the entire state after quality check by automated software developed for the purpose. Datasets are also prepared for linking of Bhulekh RoR data with cadastral map plots.

Cadastral Resurvey by High Resolution Satellite Image (HRSI) method

High Resolution Satellite Images depict field bunds distinctly. The plot parcels are delineated from cloud free ortho-images and obscured/difficult areas are surveyed using DGPS and ETS. The vector datasets derived through RS/DGPS/ETS survey are integrated in GIS environment to generate the base cadastral vector datasets for further settlement/title confirmation activities. The project is implemented in Khurda, Keonjhar, Cuttack and Ganjam Districts by Revenue & DM Dept. in technical consultation with ORSAC.

Cadastral Resurvey by Aerial survey/photography method

The centre is also assisting the Revenue Dept. engaged vendor for preparing cadastral maps of 5 districts (Sundergarh, Deogarh, Samabalpur, Bolangir and Sonepur) using Aerial Photography method.

The objective of the Resurvey project (HRSI)

- To generate cadastral maps by using high-tech survey methods using ortho-images, DGPS and ETS.
- To store the cadastral maps in digital format-storing & updating cadastral maps using state-of-art technology and to use this as base for all types of revenue administration and development planning.
- Deriving lat-long of cadastral maps, its mosaiking and Geo-referencing to generate Land Information System (LIS) for Tahasils.
- To use GIS applications for plot level RoR, land use and infrastructure information generation using digital cadastral database.

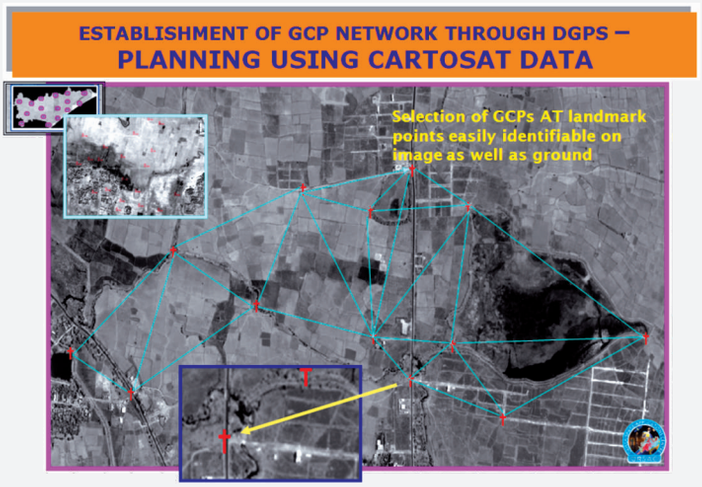
Methodology

The broad methodology adopted under this project is as follows:-

- Acquisition of digital stereo satellite data of World View-II.
- Establishment of GCP control network by DGPS.
- Generation of photogrammetric block.
- Ortho image generation
- Collection of existing cadastral maps & Coding/Scanning/Digitization of maps
- Delineation & confirmation of village boundary
- Plot level vectorisation & map generation from ortho image
- Integration of image derived vectors and cadastral vectors (DoLR map) / ROR linking
- Survey and mapping of difficult areas/ ground truth collection
- Integration of vectors and preparation of base maps
- Map/RoR printing (output generation)
- GIS Database Creation

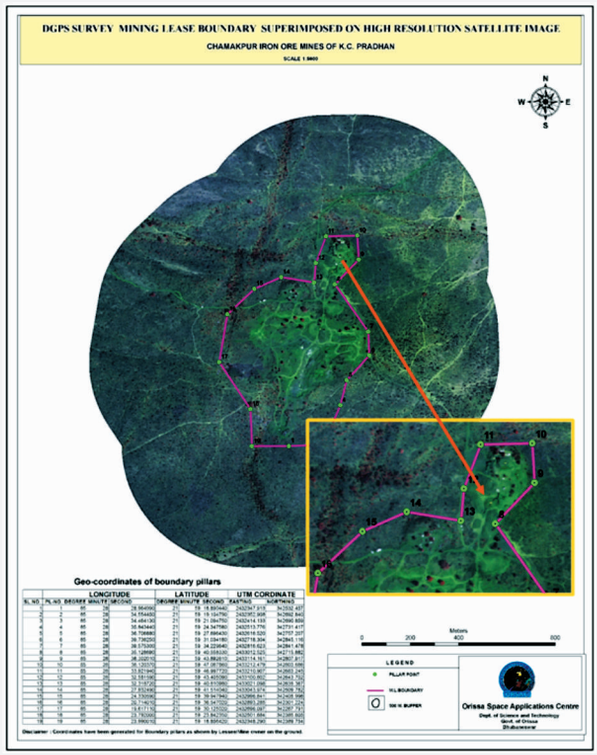
Establishment of GCP control network by DGPS survey

ORSAC has established a Ground Control Network named Primary and Secondary at a spatial grid of 16km x 16 km and 4km x 4 km respectively with the placement of cemented pillars having its pillar numbers. Tertiary control points were also created within a visible distance from both types of control points to facilitate ETS survey in the study area. DGPS observation of 4 hours at the primary control point and 1 hour at the secondary point were recorded. The recorded DGPS observations were post processed and network adjustment was performed using fixed solution with triangulation closing limit of 5 cm in case of primary control network and 10 cm for the secondary network. The network adjusted values were provided in both geographic co-ordinate system as well as real world co-ordinate system i.e. Universal Trans Mercator (UTM) projection with WGS 84 Spheroid and WGS 84 datum.



From the pilot projects and completion of survey and mapping in two Tahasils it can be concluded that high-resolution space-borne remote sensing image data could provide many opportunities to be used as base for cadastral map generation. Orthoimages generated by using satellite data having 0.5 m spatial resolution are ideally suited for deriving cadastral plot vectors for plain areas. The obscured areas need ground survey intervention by DGPS & ETS. The habitation area vectors (very small polygons which can not be resolved through 0.5 m data) of existing cadastral maps can be integrated to image vector maps to finalise the new cadastral maps of the villages. The image derived cadastral maps can be directly used by revenue official for tenant interaction, settlement activities and revenue administration.

MINING LEASE AREA SURVEY

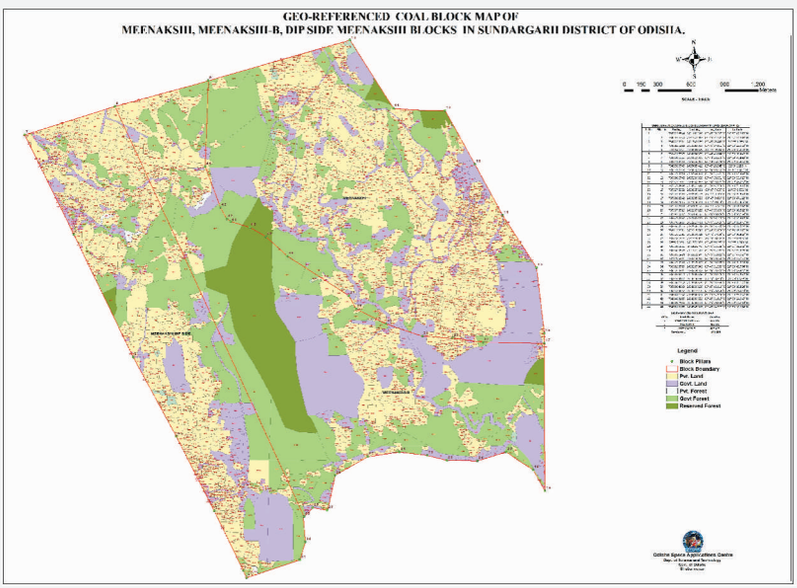


Govt. of Odisha has recognized ORSAC as the Nodal agency for the purpose of DGPS survey to facilitate digitization and geo-referencing of mining lease map(Letter No: 4276/IV(A)SM-92/09 dt-17.7.2010) to comply with the IBM (Ministry of Mines, Govt. of India) circular on geo-referencing and DGPS survey of Mining lease boundary. Accordingly, each Lessee of the individual mining lease has to apply to ORSAC for DGPS survey of their lease. Further, Steel & Mines Department issued an order vide letter No: IV (B) SM-39/2014/ 0058, dt: 18.12.2014 for joint survey of 148 Iron & Manganese mines of the state.

METHODOLOGY : The steps involved in this process are DGPS and ETS survey, ortho-image preparation from high resolution stereo pair image using network adjusted DGPS control points, digitization and geo-processing of cadastral revenue map/ original mining lease map and their integration in a GIS environment to prepare a final geo-referenced map of the mining lease.

Programme 2014-15 : DGPS survey for lease boundary of 232 mining leases and joint survey exercise for 39 Iron and Manganese leases of the state has been completed so far including 11 M.L in the year 2014-15. The joint survey of another 148 mines is under progress and will be completed by 2015-16. Further, the exercise for temporal monitoring of the mining area for detection of illegal mining outside the lease hold is undertaken by the Centre. The 1st report has already been submitted to Steel & Mines Department in January, 2015.

Annual Progress in Mining area survey project		
Year	DGPS Survey of M.L. Boundary Completed	DGPS Survey for Geo-Referencing of Coal Block completed
2010-2011	29	
2011-2012	139	
2012-2013	24	
2013-2014	25	11
2014-2015	11	3
Total	232	14
148 M.L. FOR JOINT SURVEY IS THE TARGET FOR THE YEAR 2015-16		

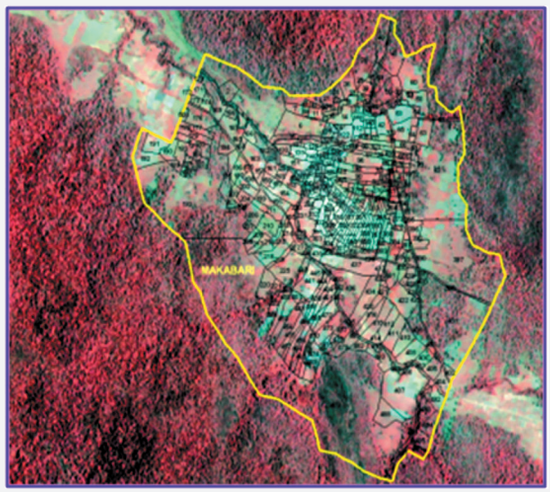


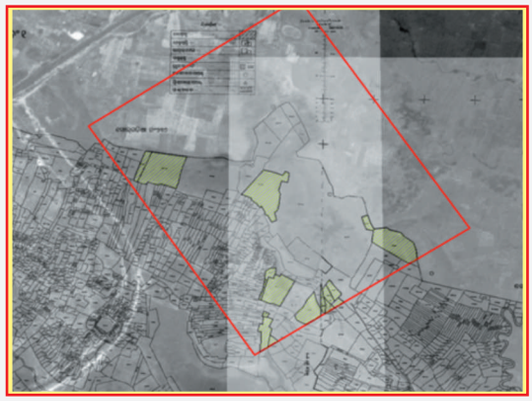
RS-GIS-GPS based Mapping & Survey of Forest Area proposed to be diverted for development planning activities

Ministry of Environment and Forests, Govt. of India vide their circular No.F.No.-11-9/98-FC, dated 08-07-2011 have stipulated that to ensure accurate delineation of forest area proposed to be diverted for non-forestry purposes under Section-2 of Forest Conservation Act, 1980, the diversion proposal under Forest Conservation Act shall be accompanied by DGPS/ETS surveyed maps of the forest land proposed for diversion. The State Govt. in Forest & Environment Department has recognized (vide letter no.18393/F&E, dt.13-1 0-2011) ORSAC as the nodal agency to technically authenticate the DGPS/ETS surveyed maps undertaken by user agencies, through ORSAC empanelled DGPS/ETS servey agencies. Accordingly ORSAC prepared technical guidelines for the guidance of user agencies while undertaking DGPS survey. The activities include establishment of Primary Control Points (Base Stations) and determination of Geo-coordinates of Base Station/ Geo-coordinates of boundry demarcation points. The centre prepared a detailed guideline with specific instructions for maintaining high accuracy of point observations for all agencies desirous of forest diversification and vendors engaged in the survey by them, emphasising the mode of survey and data submission for validation.

Progress of Work 2014-15

Development Sector	Completed byORSAC	Vendors work vetted by ORSAC
Mine (Iron/Mang/Chrm)	00	33
Irrigation	03	01
Defense/Airport	01	00
Road	02	09
Railway/Rail corrider	01	00
Energy/Power Tr.lines	05	02
Institutes/offices	01	00
Compo Afforstn.	03	07
Ind/Al. Services	01	08
Urban	01	00
Misc.	01	00
Total	**19**	**62**





Space Based Information Support for Decentralized Planning (SIS-DP) Project

Thematic Mapping on 1:10,000 Scale

At the behest of Planning Commission, Govt. of India and Planning Committee of National Natural Resources Management System (PC-NNRMS) initiative, ISRO has taken up a programme on “Space Based Information Support for Decentralized Planning” (SIS-DP). The programme aims at generating geo-spatial layers on 1:10K scale on natural resources/infrastructure (land cover, settlements, soils, ground water prospect maps etc.), creating inventory of resources (water sources, road network, public utilities, communication network, health care etc.) and disseminating them by using platforms like Web enabled information system, digital CD/DVD ROMs etc. for use in planning at grassroot level. The project also aims at developing site specific interactive Decision Support System (DSS) for local level planning. SIS-DP is executed by involving individual state government departments by keeping respective State Remote Sensing centers as nodal center. ISRO is playing the role of enabler by providing technological solution, methodology/approach, strengthening the SRSACs and building capacities at every stage of the project under SIS-DP project implementation in Odisha. 1:10K scale thematic mapping activity for entire Odisha state is completed by the centre.

Scope of Work And Methodology

Thematic geo-spatial layers on 1:10K scale on natural resources/infrastructure (land cover, settlements, etc.) and inventory of resources (water sources, road network, drainage, rail network etc.) from high resolution ortho-rectified satellite Cartosat-1 PAN, LISS-IV MX and merged images were generated. Respective stakeholder departments’ data were integrated with the spatial layer in GIS environment. The database will be shareable with State Spatial Data Infrastructure (OSDI) Database as per the OGC standards.

Project Outputs :

The primary output of this programme is a GIS database on various resources, mainly to cater the need of Ministry of Rural Development, Panchayati Raj and other stake holding departments.

Geospatial Database :

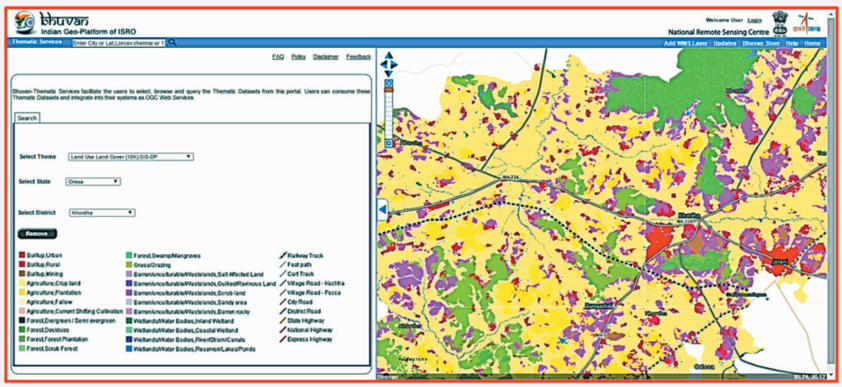
State wise seamless 10K thematic layers as per the open GIS standards.

Digital Maps :

Digital maps at village/block/t/district level on thematic layers (e.g. landuse/land cover, settlements, Transport infrastructure and drainage); and derived/processed maps required for planning (customized to the stake holders requirement)

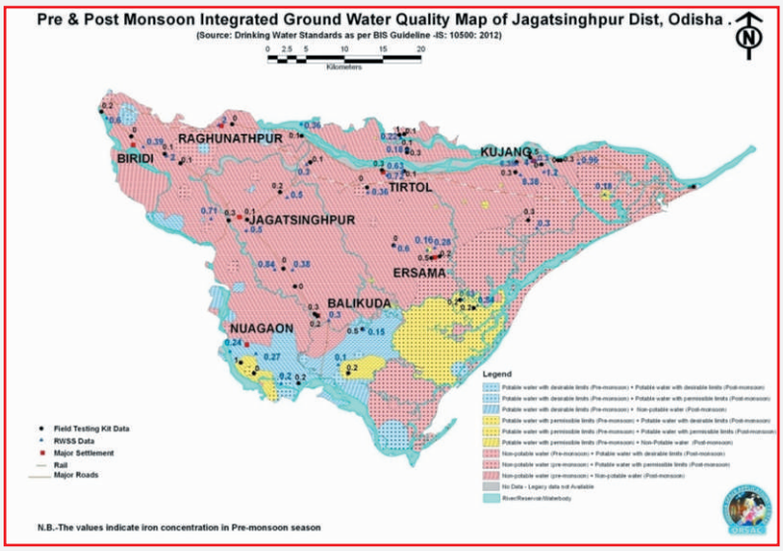
Display in Bhuvan Portal :

Bhuvan is a dedicated web portal of Department of Space where all the thematic layers are uploaded for public viewing and use by the down stream stakeholders.The site may be visited at www.bhuvan.nrsc.gov.in. Digital Data for 30 districts of Odisha is available at Bhuvan portal.



GROUND WATER QUALITY RE-MAPPING

Ground water quality (GWQ) mapping was done earlier under Rajiv Gandhi National Drinking Water Mission, Govt. of India for Odisha state in 1:50,000 scale. The objective of the project was to asses potability of drinking water (Ground water) as per BIS standards. Legacy data on GWQ was procured from RWSS for pre and post monsoon periods. Out of the 15 districts completed, it was observed that ground water in most of the area in seven districts namely Anugul, Baragarh, Jagatsinghpur, Malkangiri, Kendrapara, Khordha and Rayagada was non-potable. Expecting that the probable reason for this non-potability was due to data gaps, re-mapping was proposed to RWSS. The mapping exercise in these districts were undertaken by ORSAC with funds made available by RWSS. Ground water quality sample were collected afresh for points selected by ORSAC which were well distributed in a spatial domain. Groundwater sample collection and analysis was done by RWSS. The GWQ data for pre- and post- monsoon periods was provided by RWSS afresh. Finally the mapping was done by ORSAC in a GIS environment using Spatial Analysis module on eight common parameter such as pH. Alkalinity, Hardness, Chlorides, Fluoride, Iron, Nitrate and Phosphate for mapping of ground water quality in terms of suitability for human consumption i.e. potable, permissible and non-potable as per Bureau of India Standards (BIS). The mapping has been completed for Jagatsinghpur district and is under progress for other six districts.

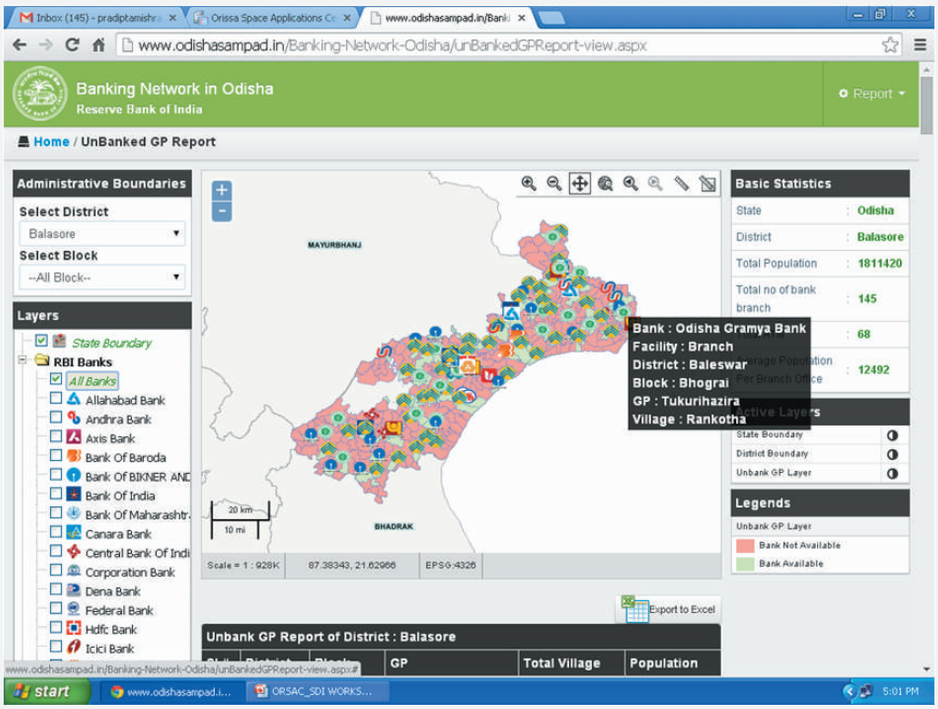


Forecasting Agricultural Output Using Space, Agro-meteorology and Land Based Observations (FASAL)

Districtwise Kharif rice acreage estimation and production forecasting in Odisha has been made in collaboration with Mahanalobis National Crop Forecast Centre (MNCFC), Ministry of Agriculture, Govt. of India, New Delhi. Three dates of RISAT-I SAR (Synthetic Aperture Radar) Medium Resolution Scan SAR mode data were used for acreage estimation. Rice yield has been estimated by IMD using correlation weighted Agro-met model at district level using weather data upto 21st September 2014. The Kharif rice acreage and production has been estimated at 3.98 millon ha. and 6.49 million tonnes respectively for the year 2014-15. Rabi rice acreage and production forecasting for Odisha state has been undertaken in the similar manner. The Rabi rice acreage and production at the state level has been estimated at 2.86 lakh ha. and 8.26 lakh tonnes respectively.

BANKING INFORMATION SYSTEM FOR ODISHA

Presently Government of India is emphasizing on stressing in financial inclusion through Jan Dhan Yojana. It has become imperative on the part of the banks to set up more branches in rural areas. According to the 2011 Census Report, only 45 percent of the total households in the state are covered by bank accounts and around 4600 Gram Panchayats in Odisha state are without bank branches. Beneficiaries of different schemes of Union Government as well State Government like subsidy on cooking gas, MGNREGA, wages of kendu leaves pluckers and all pension schemes etc. need to access a bank to transact their accounts. Considering the importance, RBI, Bhubaneswar entrusted ORSAC to develop GIS based Banking Network Database for Odisha State.



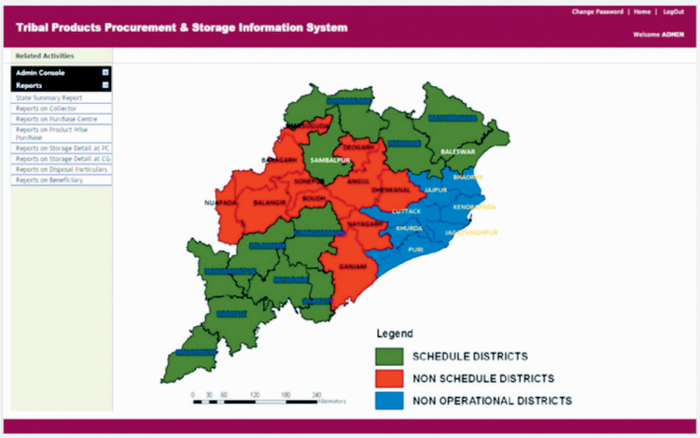
"Banking Network-Odisha" is a web based GIS hosted in public domain for use of Reserve Bank of India; all bank administration and common citizens. Developed using open source softwares it is a low cost utility software. The Banking Network is web application of GIS for all RBI approved 3999 scheduled Banks and 4000 nos. of ATMs present in Odisha which has the potential to organize complex spatial environment of all 34 types of banks with tabular and statistical form. The home screen consists of five major reports like Branch Details, Gram Panchayat having no bank, Distance of Nearest Bank from GP and Distance of Bank from village. Easy toolbar has also been provided for users. In the Branch Detail Report, the user can find the detailed availability of Bank and ATMs in a particular district/block/GP along with the attribute data and map. User can also get spatial information about administrative boundaries, natural barriers (forest, river etc.), road connectivity, market sites, and industries around the bank. In the no bank GP Report, the list of Gram Panchayats either for a district or a block is displayed. In the "Distance of Nearest Bank from village", the user can find the details of distance from the village to its nearest bank branch/ATM along with the facility of "scale to map" allow the user for distance calculation. Facility has been provided to users to download any desired data in MS Excel format.

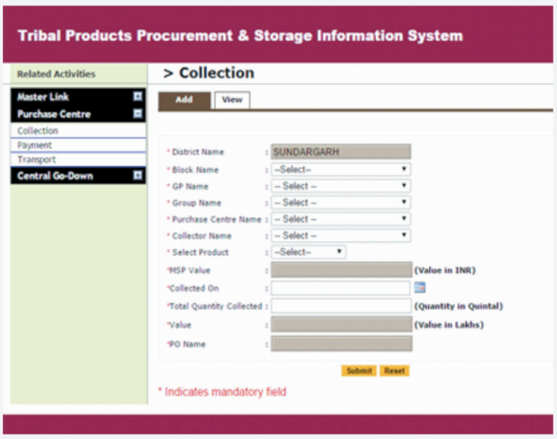
With the hosting of this application software "Banking Network-Odisha", it is helping the Reserve Bank of India and all banks to identify the No Bank Gram Panchayats / villages in the state to set up new banks especially in rural Odisha. Since the application software is hosted in public domain, it is becoming helpful to the citizen to identify and know banking infrastructures in their localities.

Tribal Products Procurement and Storage Information System

Tribal Products Procurement and Storage Information System is developed for Tribal Development Co-operative Corporation of Odisha Ltd (TDCCOL). TDCCOL, an Apex Co-operative under ST & SC Development Department, Govt. of Odisha is operating since 1967 having 28 branches, 92 Godowns and 9 exclusive tribal outlets to facilitate the marketing of tribal produces with a view to ensure remunerative price to the primary producers / collectors. It is the State level Agency for marketing of Minor Forest Produce (MFP) through Minimum Support Price (MSP) and procurement sale of MFP items. TDCCOL having recognized the importance of Information Technology and its use, entrusted the development of a web-GIS based system for management of tribal products procurement and storage. The project is to focus on Govt. Of India MSP Scheme on MFP for the better price realization to the tribal families.

Based on the above objectives, ORSAC developed a web based application for storing information about procured tribal products with web form based as well as SMS (Short Message Service) based way to administer MSP for 10 products viz. Tamarind, Sal seed, Sal leaf, Lac, Karanja Seed, Harida ,Gum Karaya, Honey, Chiranjee Seed and Mahua Seed. The web based application facilitates different login system for different branches of TDCCOL across the state for entering the procured products data by the procurement officers deployed at different purchase centers. The procurement officers can also send their procured data in a SMS format by their mobile phones at the procurement locations which are monitored by the branch managers instantly. The information related to collection, transport to central godown and payment to the collectors (Beneficiary) are entered at the purchase centers tracked at Central Godown level to check the monopoly and capturing of sell status. The system finally generates required reports (Collector Details, Group Details, Purchase Center Detail, Cental Godown Details, Collection Report, Transport Report, Payment Report, Receipt Report, Sales Report and State Summary Report) with calculations which are submitted to the Head office by the branch managers for monitoring at primary collectors levels. This web based application is used by 28 Branches of 23 Districts of TDCCOL.





Web-GIS based Odisha Land Bank for Industrial Development

Land is one of the most important factors in economic development today and must be managed well to enhance socio economic conditions of communities. Government departments, industrialists and business communities are facing difficulties to implement their development plans because of shortage of appropriate lands. Therefore, technological solutions are searched for creation of land banks. Geo-informatics, ICT and Space Technology inputs are used to create the Web-GIS based Odisha Land Bank for industrial development. High resolution ortho-images, geo-referenced digital revenue cadastral datasets, NIC-Bhulekh RoR data, satellite derived spatial datasets and attribute datasets of industry department are used to create the Web-GIS Odisha Land Bank for Dept. of Industries comprising of 75000 Acres out of identified 2.4 lakh acres in 2014-15. The outputs are web-hosted in public domain for use by all stakeholders interactively under Industries Department website **investodisha.org** website and also in the Web-GIS portal **GOiPLUS** (Govt. of Odisha Industrial Portal for Land Use and Services). Besides real time information with regards to industrial land in the State, GOiPLUS is a web enabled platform to provide investor friendly services and is accessible from web, smartphones, tablets and desktops providing ready-to-use information and maps to users. User can use various query options to obtain their information. The portal is accessible through **gis.investodisha.org**.

Development of Land Bank maps and Land schedule

Revenue cadastral maps are used as base maps. Initially the plots are listed considering its government ownership as excel files by Tahasil/Industries Dept. The listed plots are identified on cadastral maps. The shape files of cadastral maps and digitised RoR data are used for identification of plots. Clustering was made considering its shape, size, landuse, location, physiograpghy, morphology, connectivity and contiguous nature. Ortho-rectified Cartosat 2.5 m and World-View 0.5 m data are used to geo-reference the plot clusters. Land Bank cluster maps are prepared in revenue scale in digital dwg and shp format. During 2014-15 the mapping has been completed for 22 districts only for govt. lands.

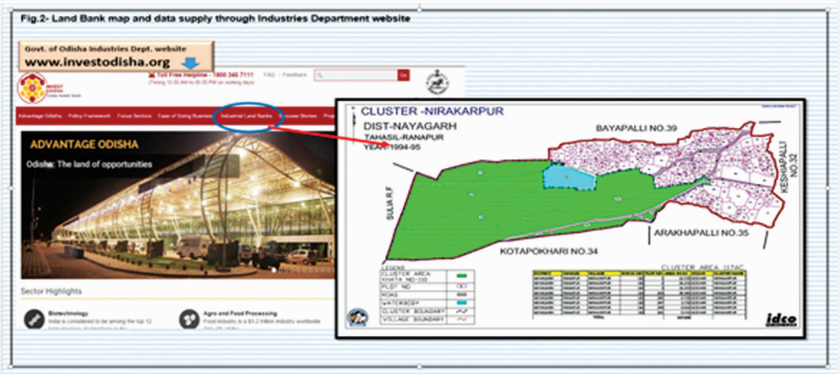
- Land Bank clusters identified and mapped for 2.4 lakh Acres in 22 districts of the state.
- Land Bank map, data and land schedule for 75000 Acres are made available in public domain and the hard copies are submitted to IDCO for alieneation at local administration.
- Web-Based GOiPLUS is available in public domain and under operational use by various stakeholders.

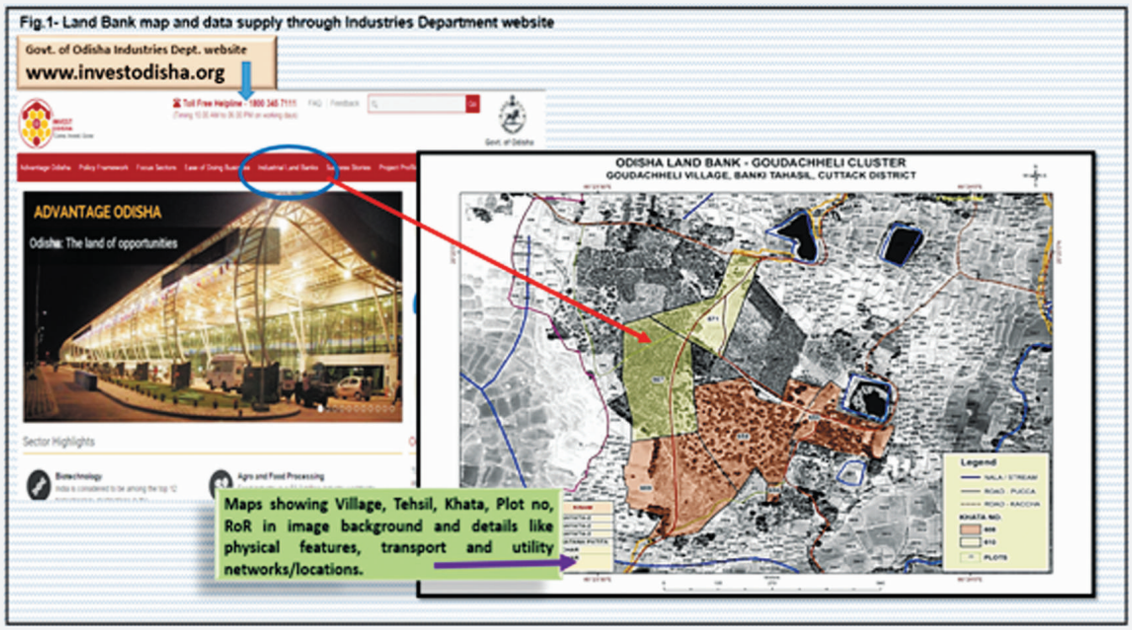
Data service through Website

Cadastral maps prepared from ortho-images as per Govt. of Odisha NLRMP project guidelines and SIS-DP datasets are used to generate Land Bank clusters for industrial development and compensatory afforestation in the state. The outputs are provided through website of Industries Dept. of Govt. of Odisha.

Land Bank Data service through Web-GIS GOiPLUS

Web-GIS service developed under GOiPLUS for map and data supply relating to Land Bank are done through **gis.investodisha.org**. Users can obtain Land Bank data and availability of utilities, services and institutional facilities around identified Land Bank clusters through interactive options.





AREA IDENTIFIED AS LAND BANK

Sl. No	District	Area identified (In Ac.)	Filling area in Ac Web-hosted
1	Balasore	11105.056	4777.200
2	Bhadrak	3921.048	3323.904
3	Jagatsinghpur	2660.051	1631.950
4	Kendrapara	1545.173	1257.685
5	Jajpur	18306.470	2145.280
6	Khordha	6397.580	4176.481
7	Puri	6627.819	1449.720
8	Nayagarh	311.570	314.810
9	Cuttack	13414.760	9038.250
10	Ganjam	3632.927	665.457
11	Sambalpur	1718.030	1411.150
12	Jharsuguda	3284.010	3740.177
13	Bargarh	3258.350	3272.850
14	Bolangir	2116.364	1913.580
15	Keonjhar	3345.923	2341.267
16	Kalahandi	45162.244	1639.340
17	Deogarh	2264.000	2920.930
18	Sundargarh	1080.225	1035.230
19	Dhenkanal	6968.400	3639.580
20	Angul	260.620	284.230
21	Koraput	94707.553	14396.546
22	Rayagada	5336.450	345.270
	TOTAL	**237424.623**	**65720.887**

Web-hosted as on 15th Nov.2015 out of identified 2.37 lakh Ac

WEB BASED POWER ATLAS

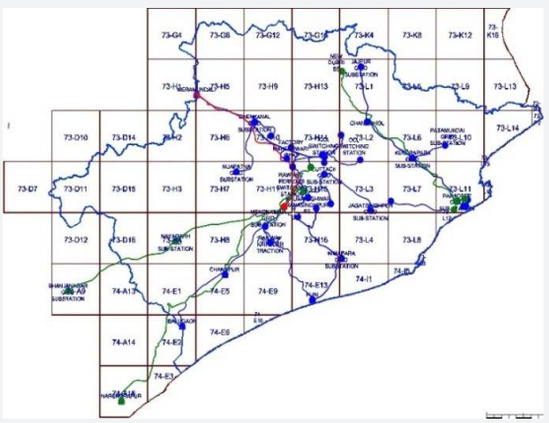
The centre developed Web based Power Atlas System for ODISHA POWER TRANSMISSION CORPORATION LIMITED (OPTCL), ODISHA. OPTCL is one of the largest transmission utility of the country under the Government of Odisha to undertake the business of transmission in the State. The Company owns Extra High Voltage 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 MVA having 262 numbers of transformers. OPTCL having recognized the importance of Information Technology and its use in functioning and management of its infrastructure, assigned ORSAC to prepare the Web based Power Atlas for the Cuttack circle.

ORSAC conducted survey of 5124 EHT towers and 32 numbers of substations covering 2328.69 Km circuit using Global Positioning System and the geospatial database was generated with Universal Transverse Mercator Projection System with WGS 84 spheroid and Datum. Natural Resource layers like Land use / Land cover, River & Water Body, etc. , Infrastructure layers like Road, Railways, Canal Network, Settlement spread, etc. were generated in 1:10K scale using the resolution merged image (Cartosat-1+Resourcesat-2). The substations were mapped in 1:4K scale for generation of plot wise land use/cover using 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. Linking and integration of spatial layers with respective attributes were carried out using ERDAS APOLLO and ORACLE RDBMS to facilitate the query, viewing and managing the electrical assets v/s natural resources like live and geographic crossing of electrical circuits. A Graphical User Interface was created using ASP.NET for its customization.

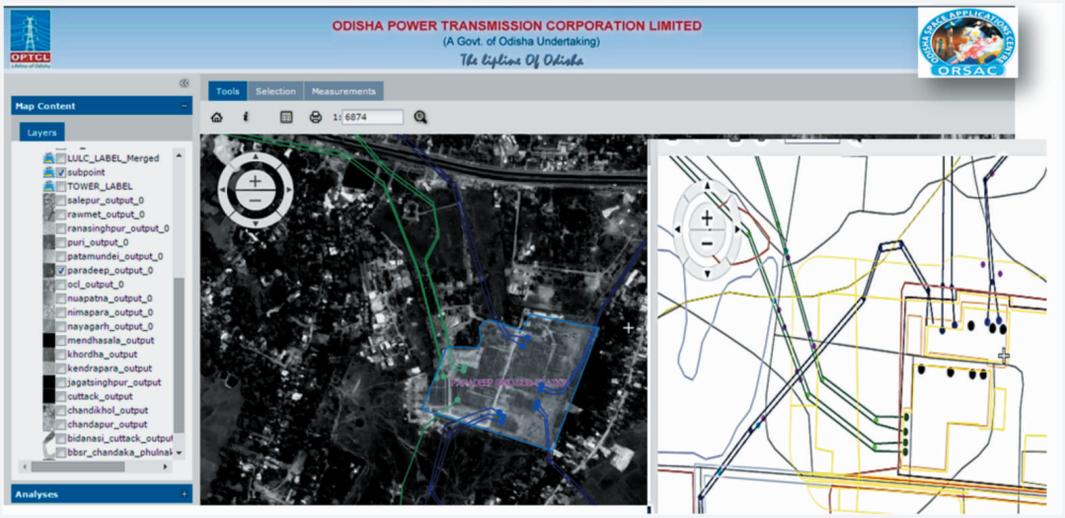
This project has facilitated unique integration of external E-shakti database of OPTCL in the GIS environment for accessing asset and human resources data to monitor the day-to-day decision making and disaster scenarios. The present implementation is planned to be rolled over to the whole Odisha state. This model also promises the potential to benefit the other Energy stake holders of the country by adopting the aforementioned protocol.

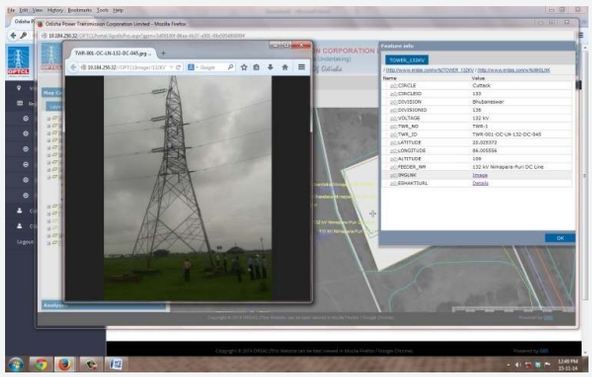
OBJECTIVES & ACTIVITIES

Objective of this project was to create a Web Based Power Atlas System for Cuttack Circle, Odisha for managing the electrical assets and interfacing with the existing MIS/ERP database. The detailed objectives are:



- Survey of each substation, tower and other assets and collection of ground control point (Longitude, Latitude and Altitude) for Cuttack Circle
- Creation of up-to-date Asset (Substation, Tower and Feeder Line) database with a unique identification number.
- Mapping the electricity network, with a geographical location/geotagging.
- Creation of asset database and indexing of each asset with a unique number.
- Integration of Land Use and Land Cover Map in 1:10,000 scale and 1:4,000 scale with back drop of satellite imagery (Cartosat and LISS-IV merged and Worldview II imagery)
- Creation of Power Atlas map using Circle/Division/District/Block and SOI grid boundary.
- Integration of other E-Shakti Software using Asset Unique Number.
- Customization on ERDAS Apollo and hosting the application in Web for the admin user and end user of OPTCL.





This project depicts successful implementation of Web Based Power Atlas System for Cuttack Circle Odisha for getting the geospatial information of electrical assets in emergency situations and for efficient decision making and planning at affordable cost of OPTCL.

Study on "Interoperability of GIS softwares and its interface with Digital Image Processing Softwares (R&D Project)

The"Study on interoperability of different GIS softwares and its interface with Digital Image processing (DIP) software as well as web applications of both the software" is carried out under Research & Development scheme, which has been approved by Department of Science & Technology, Govt. of Odisha under 12th Financial Commission Grant. The objectives of the project were as follows.

- To study the interoperability among various GIS software (Desktop, Enterprise and Open Source)
- To study the interface between GIS and DIP
- To study the feasibility of viewing the geospatial data(Satellite images and Vector layers) by various Govt. Departmentsover internet or intranet

To achieve the above objectives the following softwares are procured

- ORACLE (Relational Data Base Software)
- ESRI (GIS Software)
- Intergraph/ERDAS (GIS & Image Processing Software)
- Terrago (GEOPDF) (GIS software)
- TNT Mips (Digital Image Processing Software)
- Envi (Digital Image Processing Software)

The interoperability among the above softwares are being studied.

GOiPLUS
(Govt. Odisha Industrial Portal for Land Use and Services)

High resolution ortho-images, geo-referenced digital revenue cadastral datasets, NIC-Bhulekh RoR data, satellite derived spatial datasets (ORSAC Spatial datasets, NLRMP georeferenced cadastral maps, ISRO SIS-DP Datasets and Odisha Sampad data) and attribute datasets of Industries department are used to create the Web-GIS Odisha Industry information and Land Bank, which is web-hosted in public domain for use by all stakeholders interactively under GOiPLUS (Govt. of Odisha Industrial Portal for Land use and Services). Multisource data are used to generate data on infrastructure such as landuse, power supply transmission, electric substations, transportation corridors, rail-road-port-air connectivity; social Infrastructure like schools, colleges, hotels, medical facilities, technical Institutions, police stations, fire stations and bank/ATM etc; physical themes like forests (RF/PF), habitations, surface water along with administrative zones and industrial activities.The system provides detailed information pertaining to land with regards to availability of industries, plots under land bank cluster and location specific attributes in terms of connectivity, linkages and availability of other utilities, amenities and services. Through the System, a prospective investor can get information not only about land availability but also the key attributes of existing industries operational in that area such as sector of operation, products, capacity, employment, raw material linkages etc. It provides a spatial relationship between industrial clusters and infrastructure and other amenities through an overlay of attributes that measures the suitability of industrial development. Web-based development is made to provide information through query mode on appropriate amenities and facilities close to the land bank cluster and proposed business activity which the investors can rely in deciding a particular location. It maps the existing land parcels and its status along with a query analysis that provide a glimpse of developed infrastructure and competitive efficiency in the movement of goods and products. It provides inputs for smart growth strategies and policy framework. The application is utilized in creating inventory and prioritise industrial land utilization to provide strategic direction to industrial and economic development. The database provides critical information in the decision making process and planning for future industrial developments in the state.

Objectives of GOiPLUS Service

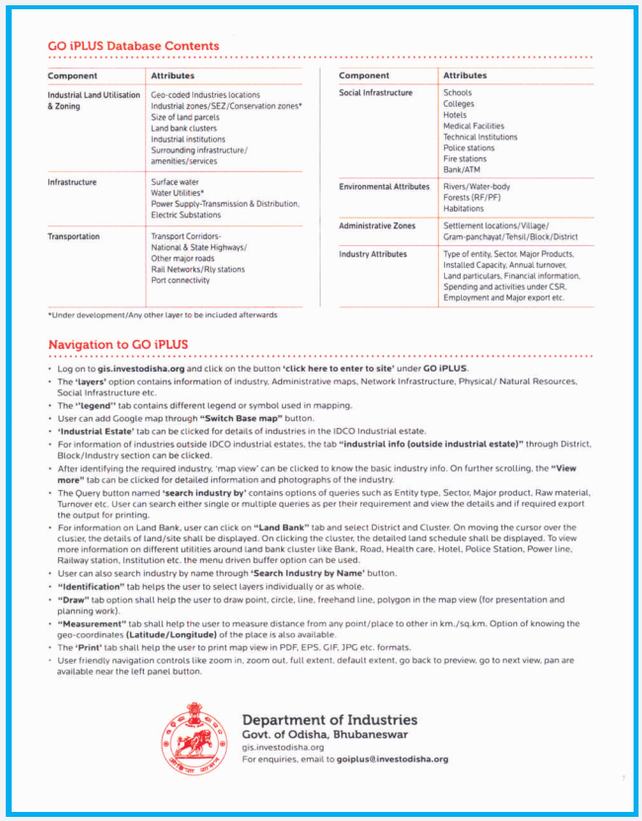
⇒ GOiPLUS is a web enabled platform to provide investor friendly services.

⇒ Provides information on Land Bank of Odisha.

⇒ Database of industrial land use and infrastructure along with social infrastructure facilities.

⇒ Provides a spatial relationship between industrial clusters and infrastructure and other amenities through an overlay of attributes.

⇒ Creating inventory and prioritise industrial land utilization to provide strategic direction to industrial and economic development.



GO iPLUS Database Contents

Component	Attributes
Industrial Land Utilisation & Zoning	Geo-coded Industries locations Industrial zones/SEZ/Conservation zones* Size of land parcels Land bank clusters Industrial institutions Surrounding infrastructure/ amenities/services
Infrastructure	Surface water Water Utilities* Power Supply-Transmission & Distribution, Electric Substations
Transportation	Transport Corridors- National & State Highways/ Other major roads Rail Networks/Rly stations Port connectivity

Component	Attributes
Social Infrastructure	Schools Colleges Hotels Medical Facilities Technical Institutions Police stations Fire stations Bank/ATM
Environmental Attributes	Rivers/Water-body Forests (RF/PF) Habitations
Administrative Zones	Settlement locations/Village/ Gram-panchayat/Tehsil/Block/District
Industry Attributes	Type of entity, Sector, Major Products, Installed Capacity, Annual turnover, Land particulars, Financial information, Spending and activities under CSR, Employment and Major export etc.

*Under development/Any other layer to be included afterwards

Navigation to GO iPLUS

- Log on to **gis.investodisha.org** and click on the button **'click here to enter to site'** under **GO iPLUS**.
- The **'layers'** option contains information of industry, Administrative maps, Network Infrastructure, Physical/ Natural Resources, Social Infrastructure etc.
- The **"legend"** tab contains different legend or symbol used in mapping.
- User can add Google map through **"Switch Base map"** button.
- **'Industrial Estate'** tab can be clicked for details of industries in the IDCO Industrial estate.
- For information of industries outside IDCO industrial estates, the tab **"industrial info (outside industrial estate)"** through District, Block/Industry section can be clicked.
- After identifying the required industry, 'map view' can be clicked to know the basic industry info. On further scrolling, the **"View more"** tab can be clicked for detailed information and photographs of the industry.
- The Query button named **'search industry by'** contains options of queries such as Entity type, Sector, Major product, Raw material, Turnover etc. User can search either single or multiple queries as per their requirement and view the details and if required export the output for printing.
- For information on Land Bank, user can click on **"Land Bank"** tab and select District and Cluster. On moving the cursor over the clusier, the details of land/site shall be displayed. On clicking the cluster, the detailed land schedule shall be displayed. To view more information on different utilities around land bank cluster like Bank, Road, Health care, Hotel, Police Station, Power line, Railway station, Institution etc. the menu driven buffer option can be used.
- User can also search industry by name through **'Search Industry by Name'** button.
- **"Identification"** tab helps the user to select layers individually or as whole.
- **"Draw"** tab option shall help the user to draw point, circle, line, freehand line, polygon in the map view (for presentation and planning work).
- **"Measurement"** tab shall help the user to measure distance from any point/place to other in km./sq.km. Option of knowing the geo-coordinates **(Latitude/Longitude)** of the place is also available.
- The **'Print'** tab shall help the user to print map view in PDF, EPS, GIF, JPG etc. formats.
- User friendly navigation controls like zoom in, zoom out, full extent, default extent, go back to preview, go to next view, pan are available near the left panel button.

Department of Industries
Govt. of Odisha, Bhubaneswar
gis.investodisha.org
For enquiries, email to goiplus@investodisha.org

Database used

Component	Attributes	Source data
Land Bank Clusters	1. Geo-coded cadastral level plot boundaries,	1. Cartosat 2.5 and Wordview 0.5m/ Revenue maps
	2. Size of land parcels land bank clusters	2. 1:4000 cadastral maps
	3. Infrastructure/ amenities/ services around Land Bank	3. SIS-DP 1:10,000 maps
Infrastructure	4. Surface water	4. SIS-DP 1:10,000 maps
	5. Power supply- Transmission & distribution	5. SOI topodata 1:50,000
	6. Electric substations	6. SOI topodata/ Google image
Transportation	7. Transport Corridors – National & State Highways/ Other major roads Rail Networks/ Rly stations Port connectivity	7. SIS-DP 1:10,000 maps/ 1:4000 ORSAC urban landuse maps
Social Infrastructure	8. Schools, Colleges, Hotels, Medicals facilities, Bank/ATM	8. ODISHA SAMPAD 1:50000 data/ Google image/ Wikimapia/ Bing maps
	9. Technical Institutions, Police stations Fire stations	9. ODISHA SAMPAD 1:50,000 data/SOI topodata 1:50,000
Environmental attributes	10. Rivers/ Waterbody	10. SIS-DP 1:10,000 maps
	11. Forests (RF/PF) habitations	11. ODISHA SAMPAD 1:50,000 data/ SOI topodata 1:50,000
Administrative zones	12. Settlement locations/ village/ Gram Panchayat/Tahsil/Block/ District	12. ODISHA SAMPAD 1:50,000 data/ SOI topodata 1:50,000

Software used

GIS Softwares :	ArcGIS Desktop – 10.3, ArcGIS Server – 10.3, ArcSDE – 10.3 and ArcGIS Javascript API – Ver3.13
RDBMS :	Oracle 11g – 11.0.2
Development Technology :	HTML 5, Java Script (DOJO) and Asp.net
Development Environment :	Visual Studio 2012
Web Server :	IIS(Internet Information Services)Compatible with ArcGIS Server version.
Website URL :	http://gis.investodisha.org

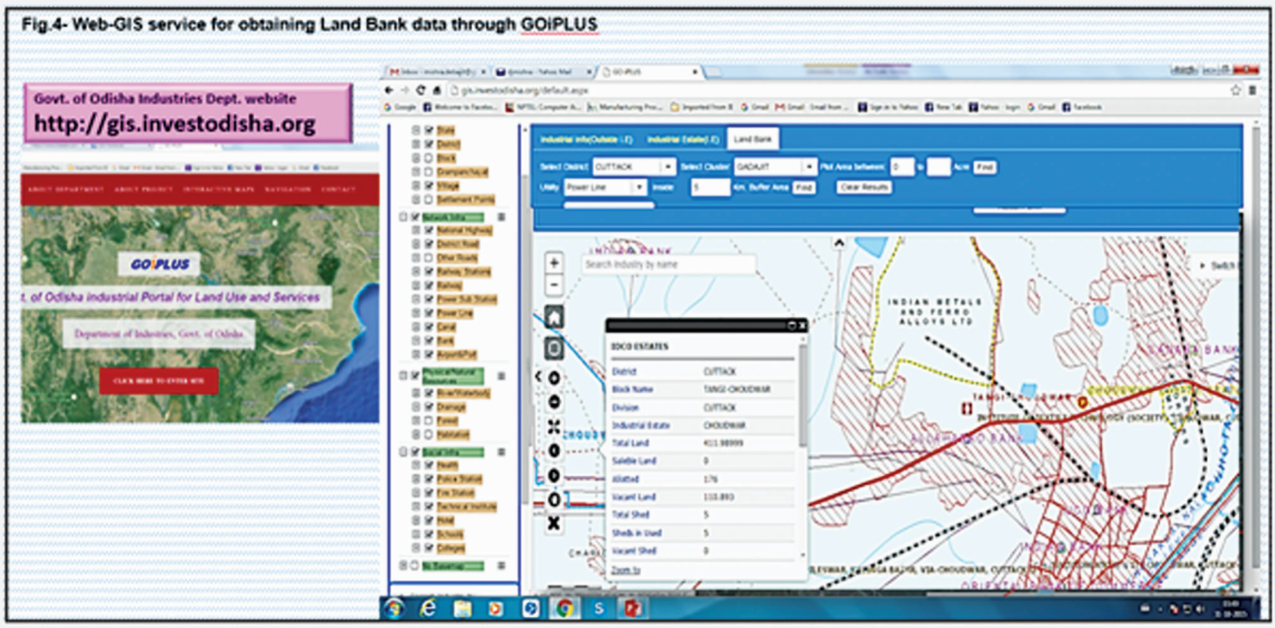


Fig.4- Web-GIS service for obtaining Land Bank data through GOiPLUS

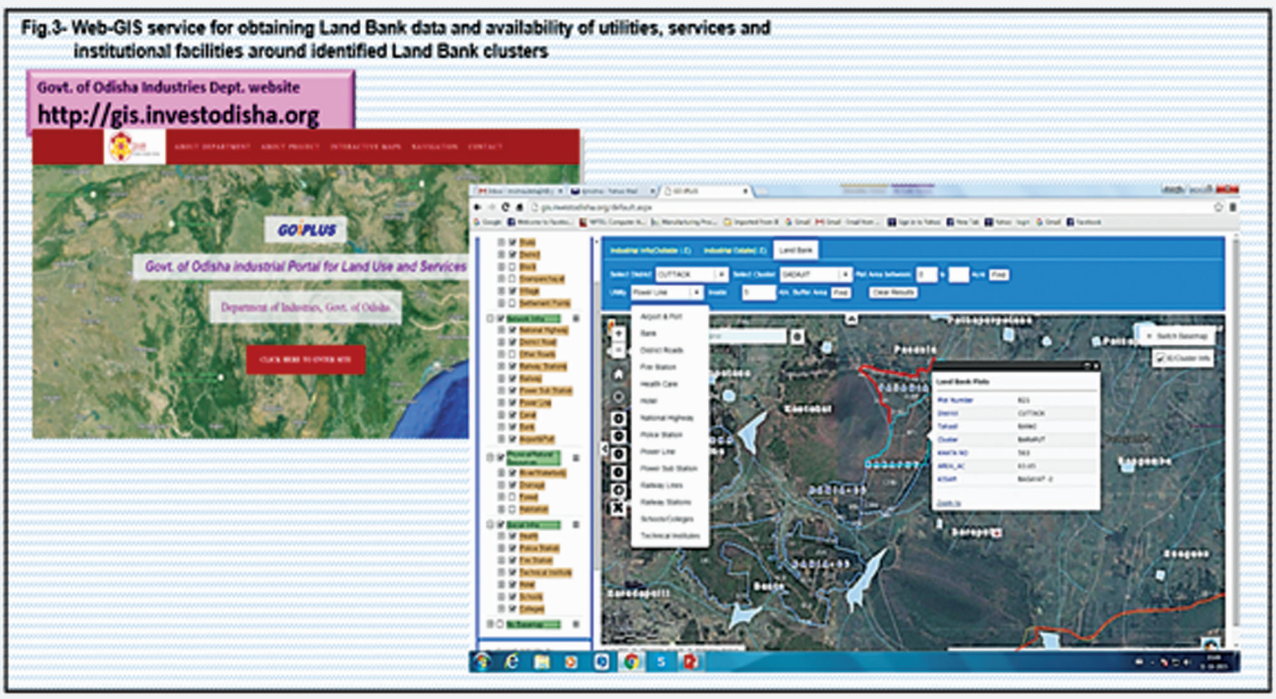


Fig.3- Web-GIS service for obtaining Land Bank data and availability of utilities, services and institutional facilities around identified Land Bank clusters

GEO-SPATIAL TECHNOLOGY FOR RURAL & URBAN DEVELOPMENT PROJECT

Project Objectives:

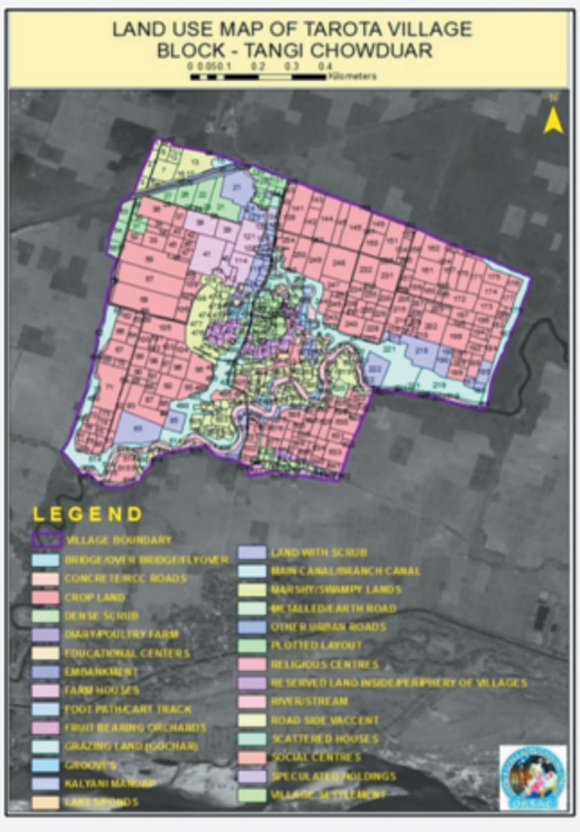
To develop web based solution on GIS platform for visualisation, planning & management of rural and urban development programmes/ schemes in Odisha state by integrating various technologies.

Project Features

1. Creation of plot wise infrastructure and landuse information system generation
2. To act as online monitoring of Govt. programmes and schemes at all levels (GP-Block-District-State)
3. To generate queries both generic and specific specially meant for planning and management purposes
4. To facilitate linking of e-mail, video, audio, IVRS, GPS/DGPS based observations and Personal Digital Assistant based information with the spatial database of cadastral (plot) level
5. To enable the web solution to work as a Citizen Grievance Management System

A dynamic application with MIS supported, capable of generating queries, both generic and specific, and working as a Decision Support System & Grievance Management System in general and as a Programme/Scheme Monitoring System in specific for Odisha state at 1:4000 Scale.

In pilot phase, the project has been implemented in three blocks of Cuttack and field survey and spatial information generation has been completed for seven blocks namely: Tangi-Chowdwar, Salipur, Cuttack Sadar, Nischintkoili, Mahanga, Baranga and Banki.



Work Progress Status	Completed
Selection of Schemes by line Departments	
Development of Web Application	
Development of Mobile Application	
Installation of IT Infrastructures	
GIS generation for 7 blocks	

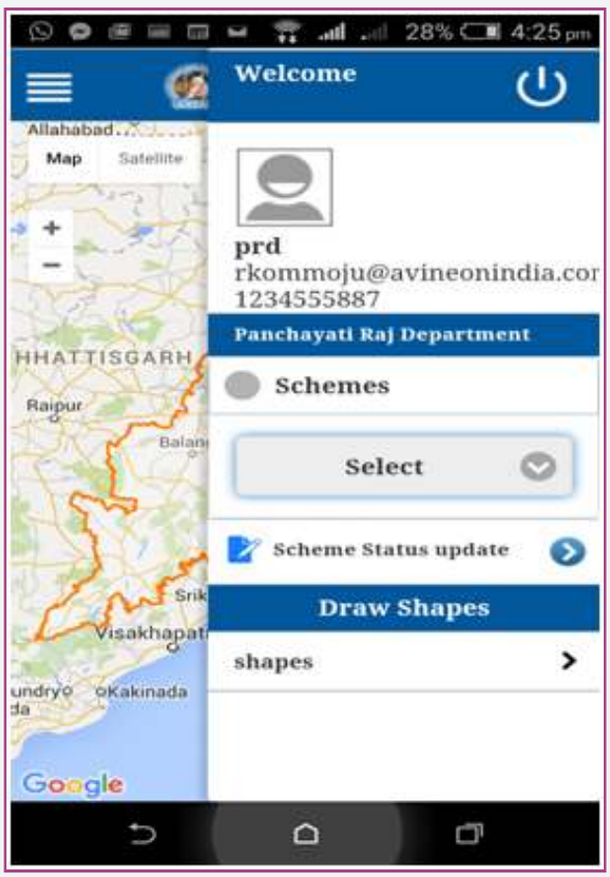
Methodology for GIS generation

a) Digital geo-referenced cadastral mosaic of the blocks
b) Interpretation of Worldview-II satellite image
c) Plot to plot GPS survey of infrastructures /amenities / utilities
d) Web hosting of the plot level geo-spatial data

LIST OF DEPARTMENTS SELECTED UNDER THE PROJECT

- Rural Development Dept.
- Panchayati Raj Dept.
- Women and Child Development Dept.
- Food Supplies and Consumer Welfare Dept.
- School and Mass Education Dept.
- Water Resources Dept.
- ST & SC Development, Minorities & Backward Classes Welfare Dept.
- Agriculture and Food Production Dept.
- Fisheries & Animal Resources Development Dept.
- Works Dept.
- Housing and Urban Development Dept.


GEOSPATIAL PORTAL
for Rural and Urban Development, Odisha
Agriculture & Food Production Development
Home
Map Viewer
Grievance Management
Scheme Management
Administration Module
Welcome AFPDAdmin
Logout
Schemes Associated
External Links
DASHBOARD
Complaint Dashboard Summary
Scheme Location Summary
Grievance Status
Agriculture & Food Production Development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Panchayati Raj Department
Schemes
Select
Scheme Status update
Draw Shapes
shapes
Raipur
Visakhapat
Google


GEOSPATIAL PORTAL
Murdanga
Kalanda
Dharmasa
Haridaspur
Kapilash
Forest Range
Bharchhan
Chaudwar
Jagatpur
Salipur
Cuttack
Mundali
Urali
Sankataras
Add Location

Status of Gramsat and Edusat Network for the Year 2014-15

GRAMSAT NETWORK IN ODISHA :

GRAMSAT Network provides a two-way audio and video connectivity between the studio and all the districts end. The user Govt. Depts. use this infrastructure for training of the field functionaries and other related beneficiaries. The Dept. also uses this infrastructure for review of various Govt. projects for its smooth implementation in the field.

Developmental Telecast :

GRAMSAT is in the process of resuming production & transmission of both of its popular developmental news programmes titled “Sunara Odisha” & “Swapnara Odisha” in the year 2015-16. The programme is planned to be transmitted through various news channels to motivate general viewers to avail the benefits/ opportunities out of Govt. plans & programms for improving upon the livelihood.

Transmission of Developmental News Programme :

SUNARA ODISHA (OTV)

Telecast days	:	Tuesday, Thursday and Friday (6.50 pm to 7.00 pm)
Total episode transmitted	:	23 episodes

SWAPNARA ODISHA (DOORDARSHAN)

Telecast days	:	Saturday (5.30 pm to 6.00 pm) Sunday (6.00 pm to 6.30 pm)
Total episode transmitted	:	19 episodes

Arrangement of programme preview

These developmental news programmes were previewed by a committee to find out its utility and correctness on contents. Corrections were made on programmes as per the suggestion of the committee before they were scheduled for transmission.

Interactive Training Programmes (ITPs) conducted through Gramsat Network:

02 Nos. of ITP

EDUSAT NETWORK IN ODISHA :

Indian Space Research Organization, Govt. of India has pursued the utilization of the space technology for the education and development and has come up with a dedicated satellite named as EDUSAT. This satellite enables a platform for two-way video and two-way audio communications between a central control center and series of remote terminals. To reap the benefit of this communication facility, ISRO has launched EDUSAT programme across the country. Under this programme, ISRO has supported installation of control center and a few remote terminals in the State of Odisha following the decision to utilize the channel for benefit of the High School students. The programme and thereby initially **Forty** numbers of Satellite Interactive Terminals (SITs) had been installed during 2009-10 in the selected **Forty** High Schools of Odisha with the central control center at ORSAC, Bhubaneswar. During the year 2011-12 another 179 High Schools have been connected with SIT. Out of these 179 High Schools, 90 High Schools of School & Mass Education Dept. and 89 SSD High Schools of ST&SC Development Dept. were selected by both the departments of Govt. for installation of SITs. In Odisha state, Odisha Space Applications Centre is the Nodal Agency for installation & implementation of EDUSAT Network.

EDUSAT REACH :

At present 216 Satellite Interactive Terminals (SIT) installed in 127 High Schools of S&ME Dept. and 89 Residential Schools of ST &SC Dev. Dept.

HARDWARE :

Studio Infrastructure :

a) Multi camera studio with digital transmission facilities.
b) 3 Cameras, Video recorder & Player, Audio console, Powerpoint provision, Vision mixer, Camera control unit, Transmission hub etc.
c) Edusat School (Satellite Interactive Terminals: Antenna, Radio Frequency Terminal, Modem, Computer, Sound box, Wireless microphone, LCD TV, UPS etc.

SOFTWARE (Production of Edusat programmes) :

a) Target audience of Edusat transmission:
The programmes are designed to cater to the requirement of secondary school students (Class-IX & X).
b) Subjects covered – Mathematics, English, Physical Science, Life Science & Physical Geography.
c) The network is basically used for live classroom programmes:
The trained Resource teachers identified by School & Mass Education Dept. are now operating from ORSAC studio as Resource Persons. The hard spots on Mathematics, English, Science and Geography are being taught to the students with required visual support.
d) Transmission timing –

Monday to Friday : 12.30 PM to 01.30 PM, 03.00 PM to 04.00 PM, 07.00 PM to 08.00 PM

Saturday & Sunday : 11.00 AM to 01.00 PM

Evening transmission and transmission on Saturdays & Sundays are meant for ST&SC Dev.Dept.'s Residential Schools. The transmission schedule in form of wall calendar is provided to all Edusat schools for information of students and teachers about the specific subject to be covered in each transmission slots.

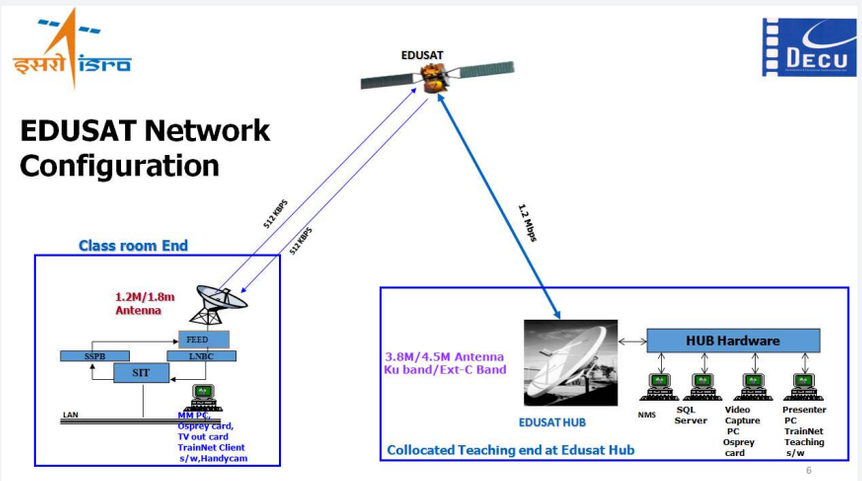
A. Edusat transmission planning :

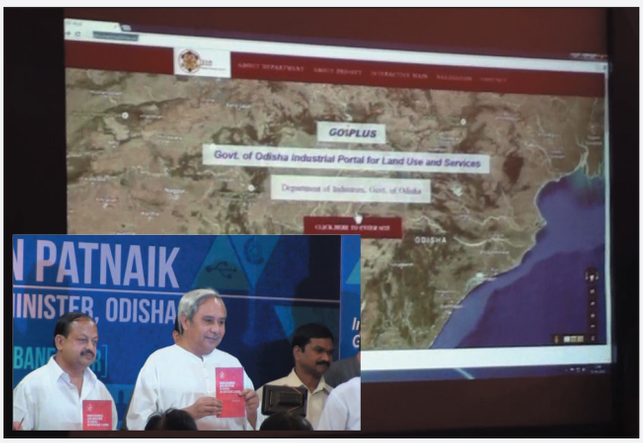
1) Topic identification for transmission :- Edusat has identified subjectwise hard spots for its transmission through a workshop involving academic experts such as Syllabus Committee chairpersons, Subject Experts and Tele-teachers. In the process Edusat has identified 496 hard spots for its transmission.
2) Preparation of annual transmission schedule :- Edusat has prepared annual transmission schedule and for the convenience of user students and teachers of Edusat schools, printed Edusat transmission wall calendars were circulated.

B. EDUSAT Transmission

Subjects covered under Edusat programme for Class-IX & X : Mathematics, English, Physical Science, Life Science and Geography

Edusat programmes transmitted			
Year	Class-IX	Class-X	Total
2014-15	273	223	496





Hon'ble CM & Minsiter, Industry of Odisha dedicating GOiPLUS to the state for public use during release of State Industrial Policy 2015.

OSDI Inauguration
by Chief Secretary of Odisha

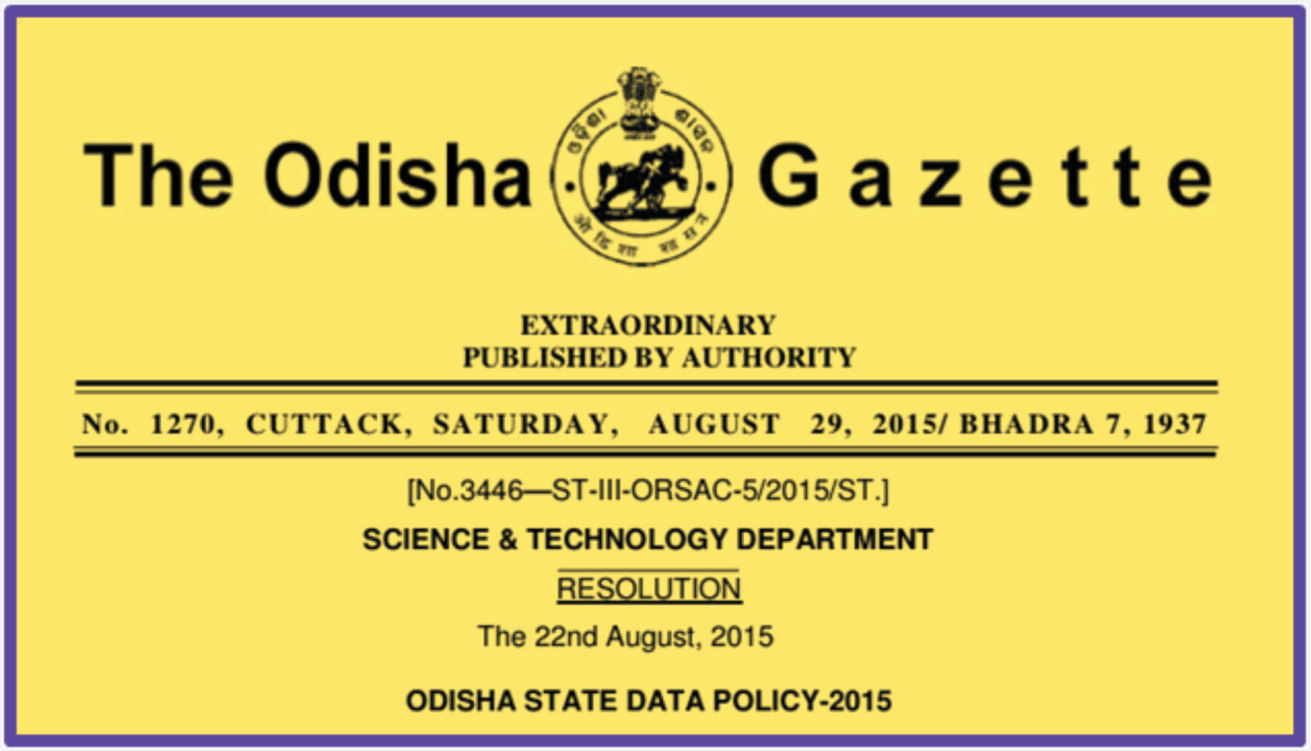
Scientists attending lectures on NSDI
by Director, NSDI, New Delhi

Training of officials of Directorate of Town Planning and District levle Town Planning Officers on Urban GIS

Teachers imparting Edusat Classes
from ORSAC Studio

ORSAC participation in IPR-2015 release and training workshops.

ODISHA STATE DATA POLICY (OSDP)-2015



The Odisha Gazette

EXTRAORDINARY
PUBLISHED BY AUTHORITY

No. 1270, CUTTACK, SATURDAY, AUGUST 29, 2015/ BHADRA 7, 1937

[No.3446—ST-III-ORSAC-5/2015/ST.]

SCIENCE & TECHNOLOGY DEPARTMENT

RESOLUTION

The 22nd August, 2015

ODISHA STATE DATA POLICY-2015

Odisha State Data Policy-2015 has been approved by Odisha State Cabinet on 13th August, 2015 and subsequently it has been published in Odisha Gazette (No.3446-ST-III-ORSAC-5/2015/ST dated 22nd August, 2015)

In Odisha state most of data generated using public funds remain inaccessible to common citizen although majority of such data may be unrestricted and non-sensitive in nature. Government Department generated data, specifically spatial data, do not have compatibility and interoperability due to lack of common standards and non-interoperability. The State Government felt that there is an urgent need to make all the data accessible and shareable to augment use of such data in planning as well as good and inclusive governance in the state.

The Odisha State Data Policy is, therefore developed on principles like Non-Redundancy, Openness, Flexibility Standards, Interoperability, Quality, Efficiency, Accountability, Intellectual Properly Right (IPR) and Right to Information. The Odisha State Data Policy aims to facilitate the accessibility of authentic data and information of all the Government departments to all the stakeholders through a electronic network within the framework of various related policies, Acts and Rules of Government of Odisha from time to time with a view to empower the citizen. Odisha State Data Policy need to include data storage at one platform, easy access of data, a common protocol of data standardization / cataloguing / updation / access / dissemination, easy quality control and use of open source technology and SMAC (Social, Mobile, Analytic and Cloud).

Datasets of the Government departments shall be classified into open, registered and restricted categories. All spatial data in the state shall be stored in open WGS-84 datum with WGS-84 spheroid formats.

For implementation of OSDP-2015 in the state, the Science & Technology Department is declared as the nodal department and Odisha Space Applications Centre (ORSAC) shall act as the nodal agency. A State Data

Steering Committee (SDSC) is constituted under the Chairmanship of the Chief Secretary to Govt. of Odisha with Chief Executive, ORSAC as the Member Secretary, comprising officials of the State Government, experts having experience and qualifications in the field of Remote sensing/GIS & IT as well as representatives from industries and intelligentia, for taking up policy level issues. A 'State Data Executive Committee (SDEC)" under the Chairmanship of Principal Secretary, Science &Technology Department, Government of Odisha with Chief Executive, ORSAC as the Member Secretary and officials from Government departments and experts from Remote Sensing/Geographic Information System/Information Technology and industries as members shall be constituted to facilitate day-to-day issues in implementation of mandates of OSDP. A dedicated Project Management Unit (PMU) shall be formed to carry out activities relating to data standardization, quality checking, interoperability, sharing and other similar activities as advised by SDEC. The PMU is proposed to comprise scientists from Odisha Space Applications Centre (ORSAC) and IT specialists from Odisha Computer Application Centre (OCAC), State Data Centre and NIC . All departments of the State Government shall form a Data Dissemination Cell for sharing, publishing and standardization of their data.

As per OSDP-2015, an Odisha State Data Infrastructure (OSDI) is to be created by ORSAC with the financial support from Science & Technology Department of Government of India.The OSDI shall be repository of all non-spatial and spatial database and its metadata. The GIS servers of all departments shall be linked to OSDI through Odisha State Wide Area Network (OSWAN) / National Knowledge Network (NKN).OSDI is to function from the State Data Centre with linkage to all citizen centric and e-Governance applications of the State.

ORSAC Stall at India Geospatial Forum - 2015, Hyderabad

Important Application Projects undertaken by ORSAC during 2014-15

NATIONAL LEVEL PROJECTS

- Space based Information support for Decentralized Planning, Orissa,
- Desertification Status Mapping
- Natural Resources Census (NRC) Landuse Project.
- Ortho-Image Generation of Odisha and Maharastra
- FASAL

CENTRAL & STATE JOINT PROGRAMMES

- NLRMP-(National Land Records Modernisation Programme) - Cadastral Resurvey & Updation
- Dissemination of Educational Services through EDUSAT
- Interactive training through GRAMSAT network

STATE SPONSORED PROGRAMMES

- Geo-spatial technology for rural & urban development programme on web-GIS platform
- Landuse mapping of mining areas
- Study on interoperability of different GIS softwares and its interface with digital image processing (DIP) softwares as well as web applications of both the softwares.
- Cadastral level Geo-spatial Database generation (1:4K) for Odisha
- RS & GIS inputs for Comprehensive Development Plan (CDP) preparation of towns
- Odisha Land Bank Development
- Web GIS 'Odisha Sampad'.
- Site indentification for compensatory afforestation
- Mining lease boundary survey through High-Tech method
- DGPS survey for Forest Diversion approval
- DGPS survey, Infrastructure and Landuse mapping of OTELP/Power-GIS
- GOiPLUS-Govt. of Odisha's Portal for Industrial Land Use Services.
- Plantation monitoring of Odisha state.

IMPORTANT INITIATIVES PLANNED FOR 2015-16

- Web services for Land Bank data dissemination
- Cadastral level Geo-spatial Information Dissemination
- Geo-coordinate Library of Landmarks/important Locations of the State
- Updated Odisha Sampad on Internet
- Odisha Spatial Datasets Availability through 'BHUBAN'
- Utilisation of 'RISAT' all Weather Data & ISRO 'GAGAN' Network
- Urban Cadastral GIS database for GA Dept., Odisha
- Extension of Edusat Network
- Establishment of Odisha State Database Infrastructure (OSDI)
- Industrial infrastructure data supply services through GOiPLUS
- Canal Network (Minior Irrigation) Database Development