



OPSIS SYSTEM PVT LTD

PHOTOMOD : Future in India

A Value Addition to the Indian
Geospatial Segment

Dr. Balen Basu

www.opsis-system.com

OP SIS SYSTEM PRIVATE LIMITED

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Established in 2004

**Kolkata
Head office**

BD-327, Sector-I,
Salt Lake City,
Kolkata, W. B.
PIN-700064



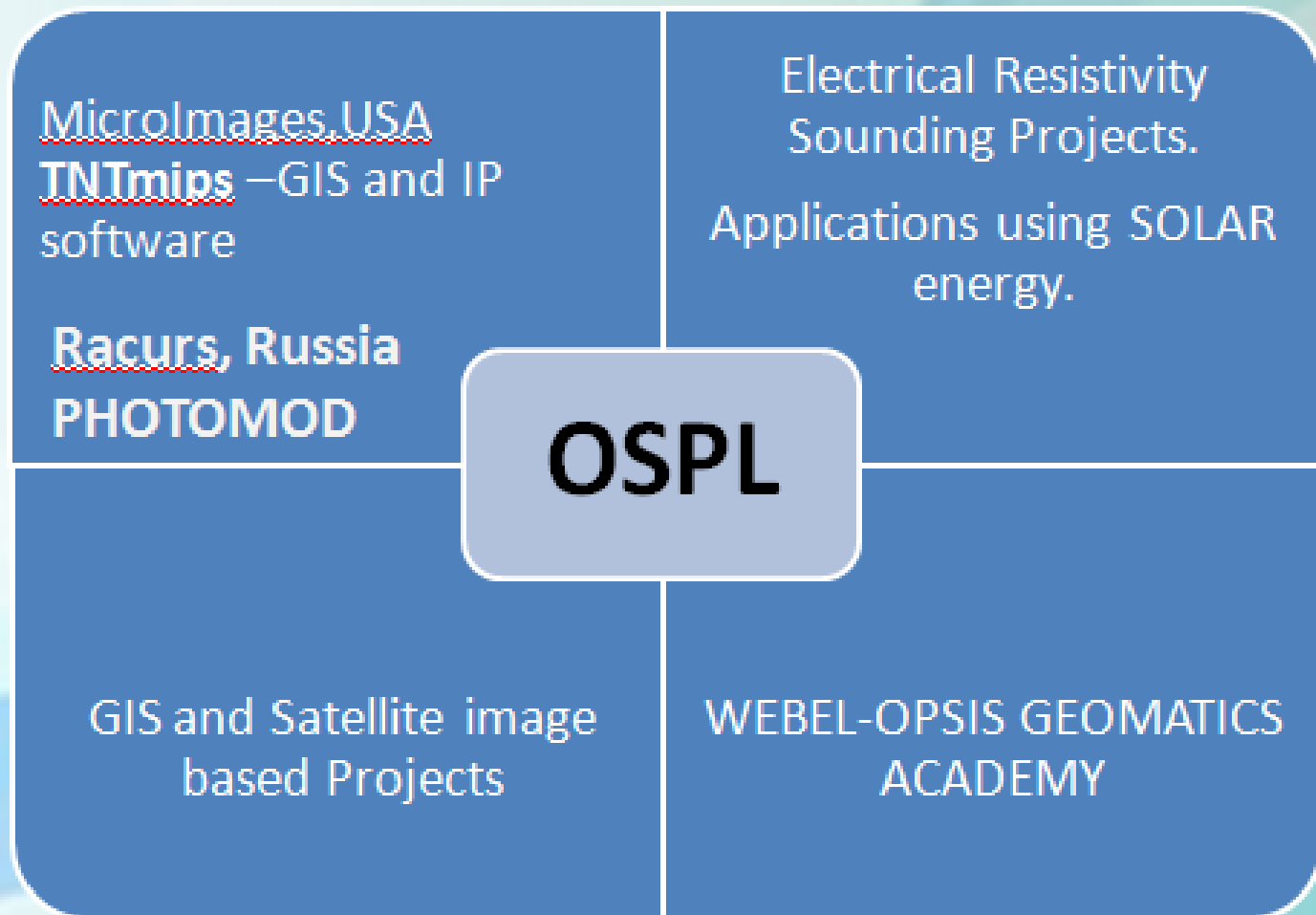
**Sole Authorized
Reseller of
MicroImages, USA for
TNTmips Geomatics
software**



**Authorized
Reseller of
Racurs for PHOTOMOD
Photogrammetric and RADAR
software**

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MAJOR THRUST AREAS



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MicroImages , USA Serving the Geospatial domain since 1986

Map and Image Processing System (MIPS) is the First ever
INTEGRATED solution

In 1993, MIPS was renamed *TNTmips*[®]

TNTmips Pro used in more than 120 nations

TNTmips Free used worldwide for educational & self-learning
~Wikipedia, The free encyclopedia



TNTmips : Functional Coverage



Other features

GIS

Image Processing

Thematic Mapping

Spatial Analysis

Surface Analysis

Terrain Analysis

Geologic Applications

Hyperspectral Analysis

Watershed analysis

Customization

LIDAR Analysis

Network Analysis

Map Design

WebGIS

RACURS & PHOTOMOD since 1993

Racurs company's business mission is to provide the world-wide geospatial community with advanced and cost-effective digital photogrammetry solutions and services for creation of wide range of output products from the available remote sensing data.

Scope of activity

- ☐ PHOTOMOD development and further integration into Russian and international markets.
- ☐ Photogrammetric production services using both airborne and satellite imagery.
- ☐ R&D in the field of RSD processing software, methods, and algorithms.
- ☐ Remote-sensing data distribution in Russia and the CIS countries.

Partnership and associations:

- ☐ A voting member of GIS - Association of Russia since 1995
- ☐ A sustaining member of ISPRS since 1998
- ☐ A member of RSPRS since its foundation in 2000



PHOTOMOD software family

Digital Photogrammetric Workstation PHOTOMOD (Aerial Photo and Satellite imagery)

Complete image data processing workflow without third party products

PHOTOMOD GeoMosaic

Powerful software solution for combining georeferenced images from any sources into single seamless, color-balanced, geometrically perfect mosaic.

PHOTOMOD UAS

Stand-alone full photogrammetric UAS-oriented software.

PHOTOMOD Radar

Software is intended for full-scale processing of Earth remote sensing data acquired by spaceborne radars with synthesized antenna aperture (SAR)

PHOTOMOD Lite ^{free}

Software package which has all features of DPW PHOTOMOD

PHOTOMOD GeoCalculator ^{free}

Geodetic calculator

PHOTOMOD DirectGeoreferencing ^{free}

Calculations of estimating accuracy assessment of terrain measurements





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WEBEL – OPSIS GEOMATICS ACADEMY.

A Joint Initiative of WEBEL ,

(West Bengal Electronics Industry Development Corporation)

**Government of West Bengal Undertaking and
OP SIS SYSTEM PVT LTD**

The academy was created to open a new vista in the Field of geoinformatics to percolate knowledge to the root level and to professionals wishing to reap benefits of Geoinformatics in their respective industry.

We also jointly offer our solutions for GIS based projects and services by Virtue of an MOU with WEBEL.

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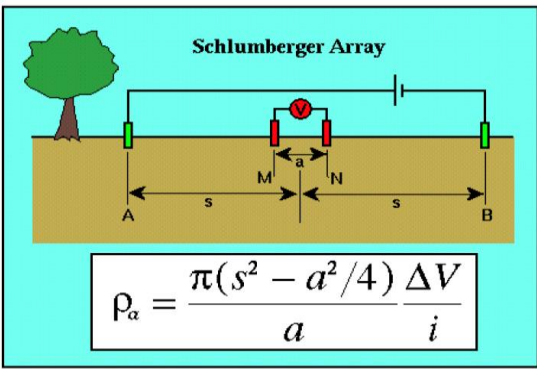
Accelerated Development of Minor Irrigation Project

OP SIS has expertise in power Auditing and installation Of Solar Panels for working Of irrigation Pumps and other Lighting purpose.

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Vertical Electrical Surface Resistivity Survey

OP SIS has expertise in ground Water exploration studies using geophysical methods and geological analysis.

This method helps in identifying the water bearing strata and its depth from the surface.

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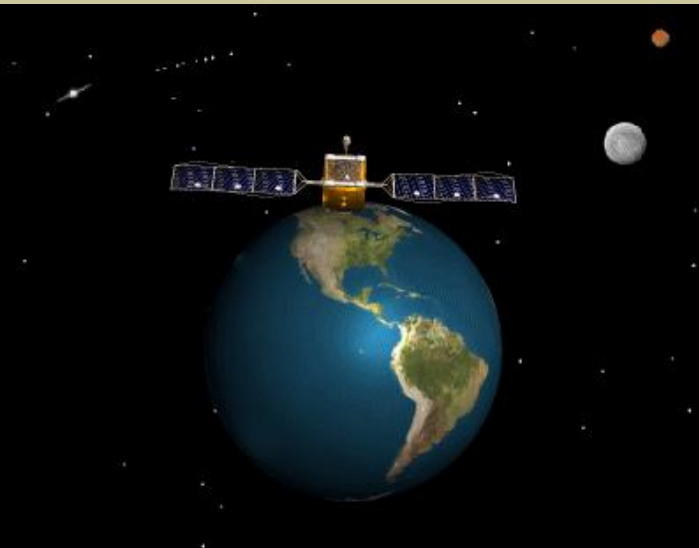


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Established in 2001

**We have our
Presence in**



- Remote Sensing (Software & Projects)
- Geographical Information System
- Photogrammetric Software
- Vehicle Tracking System
- Groundwater Exploration (VES)
- Mapping Services.(GIS-GPS survey)
- SOLAR Devices and Installation
- Training Activities – WEBEL certification

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PHOTOMOD – A new era in India

WHY NEW ERA ?

PHOTOMOD has a presence in India for the last 12 years (with a small gap in between) and has been Used by many Government Organizations and Private users. Hence it Is just a “come back”

The Geospatial industry in India has over the period matured with huge Budgetary allocation for Geospatial services by the Central and State Governments.



PHOTOGRAMMETRY – A RAPIDLY CHANGING INDUSTRY

Image-based 3-D reconstruction	recording of the three-dimensional shape of an object from overlapping images from different perspectives
Computer vision	algorithmic efforts to imitate human vision with focus on automation, amongst other things, to reconstruct 3-D scenes with methods of image processing and image understanding
Structure from motion (SfM)	fully automatic reconstruction of 3-D scenes from 2-D images and simultaneous retrieval of the corresponding camera geometry in an arbitrary coordinate system
Photogrammetry	algorithmic efforts to determine 3-D model coordinates and camera geometry focusing on accuracy and precise measurement in images
SfM photogrammetry	fully automatic reconstruction of 3-D scenes from 2-D images and camera geometry with option to set parameters for (photogrammetric) optimisation of accuracy and precision
Dense matching	increase in resolution of point clouds that model 3-D scenes by pixel- or patch-wise matching in images of known intrinsic and extrinsic parameters
Stereo matching	reconstruction of object point through matching (in image space; Remondino et al., 2014) between two overlapping images
Multi-view stereo (MVS) matching	reconstruction of object point through matching (in object space; Remondino et al., 2014) from multiple overlapping images



GLIMPSES of INDIAN GEOSPATIAL INDUSTRY

Geospatial market by technology

- **Aerial imagery**
- **Electronic total stations**
- **GIS**
- **GNSS**
- **Satellite imagery – Mono**
- **Satellite imagery – Stereo Processing**
- **LiDAR/Laser Scanning**
- **Radar**
- **UAVs/Drone**



GLIMPSES of INDIAN GEOSPATIAL INDUSTRY

The Indian geospatial industry consists of two distinct but mutually supporting segments. The larger, international segment provide geospatial data capture capabilities and software.

The other segment, the domestic segment, caters to providing geospatial capabilities to the Indian data providers/users. This segment is funded, managed and controlled largely by national and state governments.

India's bimodal industry structure creates high market potential and worrisome constraints. The Indian growth rate is significantly higher than worldwide geospatial industry growth

GLIMPSES of INDIAN GEOSPATIAL INDUSTRY



	AREAs	(INR)
1	Water Resources	560.00
2	Environment and Forest Resources	305.00
3	Land Resources	1000.00
4	Agriculture	978.00
5	Irrigation	351.50
6	Urban Development	9.47
7	Transport	1606.50
8	Space Applications	1752.00
	Grand Total	6562.47

Which is roughly \$1.5 bn (USD)

Table 1: Budgetary Allocation in 11th Plan for Geospatial Projects (2007-12)

Schemes	Amount (₹ Cr)
Water Resources	
Water Resource Information System	230
National Hydrology Project	150
Hydrology Project - II	180
Environment and Forest Resources	
Forest Information Management and Resource Assessment	300
Strengthening of Computer/GIS Centre	5
Land Resources	
National Land Records Modernisation Programme/National Land Resource Management Programme (NLRMP)	1000
Agriculture	
Development of National Database and Information for Natural resource Management	798
Climate Change, Risk and Disaster Management, Agro-climatic Research Programs	170
Development of Crop Potential Maps	10
Irrigation	
Application of GIS/GPS in river inflow/discharge measurements, Flood Forecasting etc.	1.5
Major and Medium Irrigation - Design, Surveys and Investigation	350
Urban Development	
National Urban Information System	9.47
Transport	
Maintenance of National Waterways - Setting up of DGPS	52
Railway Information System, LRDSS, MIS and other IT applications	52
Remote Control and automation of lighthouses	2.5
R-APDRP - Part A (Core Geospatial)	1500
Space Applications	
DMS, VRC, NR Management, etc.	1752

GLIMPSES of INDIAN GEOSPATIAL INDUSTRY

FACTS - GEOSPATIAL MARKET

India



12 - 15%

growth at a cumulative annual rate



\$4 bn

market



\$3 bn

The annual budget of government agencies for GIS services is estimated to be



\$20 bn

Market - expected to be by 2025

4 facts about the growing Indian Geospatial Market that reflects the growth scenario – Credits: Geospatial Media June 2016

- **\$ 4 billion** > Over all size of Indian Geospatial Industry
- **12-15%** > Cumulative Annual growth rate of Indian Geospatial Industry
- **\$ 3 Billion** > Estimated annual budget of government agencies for GIS services
- **\$20 billion** > Geospatial Industry / Market size expected to be by 2025

The “Digital India” mission is a big boost to the technology sector



PHOTOMOD : Future Prospect

- PHOTOMOD has a historical presence in India and not a new entrant.
- The Geospatial knowledgeable human resource has increased many fold in the last one decade
- The Indian Geospatial industry has a very democratic outlook.
- In the huge vibrant Geospatial ecosystem there is a need of competition
- Holistic approach to provide total solutions is gaining popularity.
- There is a strong private sector catering to overseas projects in India.
- The Government sector is gearing up to use Geospatial technology



Conclusion

1. The future of Indian Technology is driven by “Digital India” Policy
2. The mindset of Policy makers are changing rapidly
3. Private sector is being looked upon as a partner in the new mindset
4. The bias factor of “Brand” is being replaced by “Value for money”
5. The support system is playing a crucial role in software market.
6. PHOTOMOD is capable of addressing the whole wide spectrum of Photogrammetry which makes it a good candidate for consideration
7. Prompt updating to keep pace with technology is going to be a very positive factor in India – for both Private and Public sector.
8. Well coordinated and sincere support services locally in India is Going to take PHOTOMOD a long way.

THANK YOU