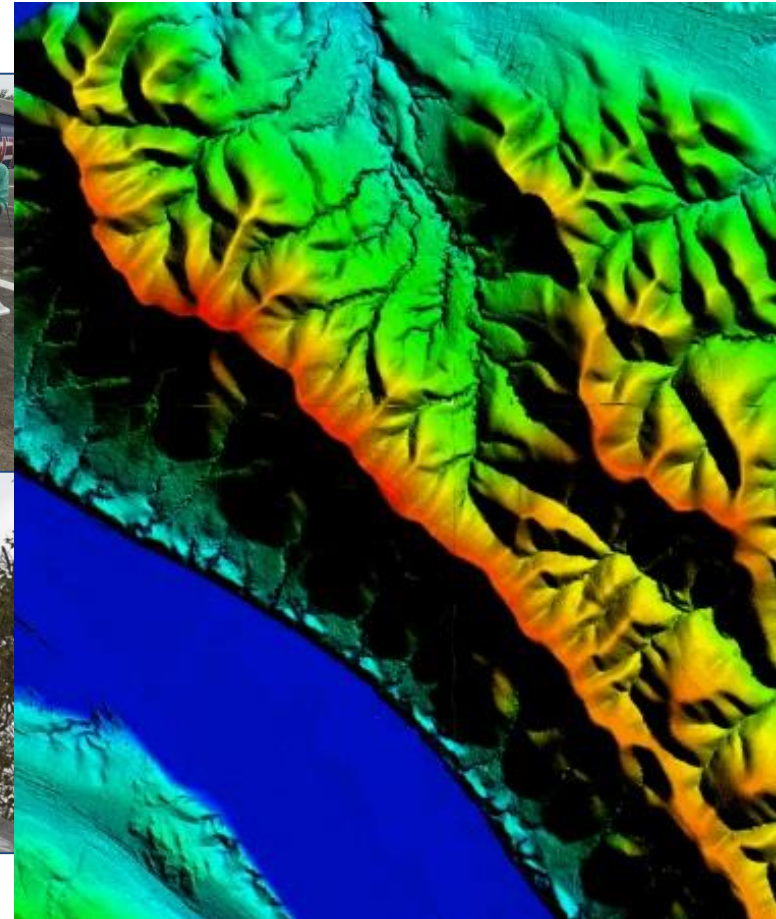
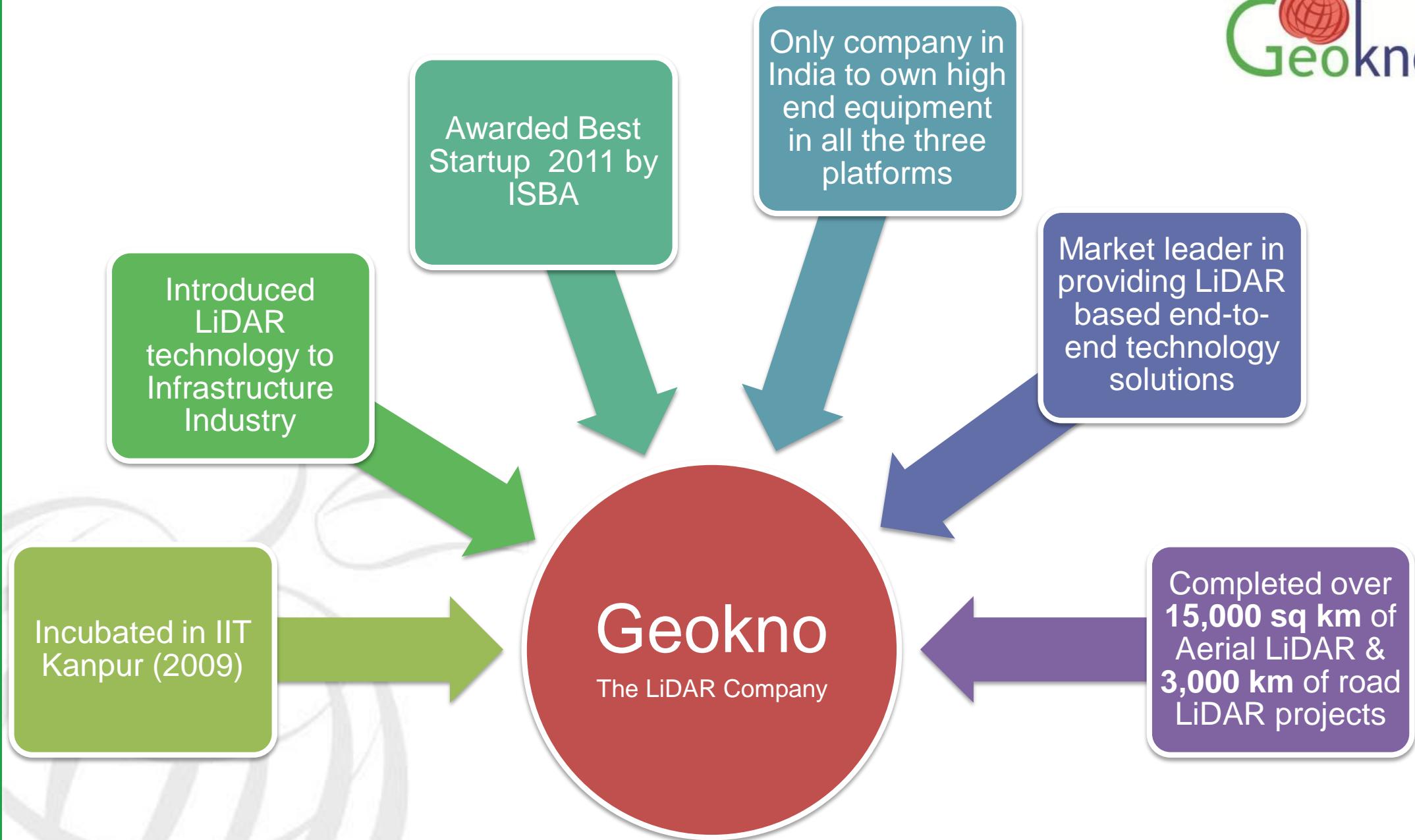


www.geokno.com

SMART Data for SMART Utilities using LiDAR Technology





Geokno has executed and is executing multiple challenging projects with a number of happy clients



Survey of India	<ul style="list-style-type: none"> Disaster Mapping of Uttarakhand Flood impacted area (3,600 sq km) First Airborne LiDAR Project for Major Disaster Assessment in India
Govt of Telangana	<ul style="list-style-type: none"> Aerial LiDAR Survey of over 10,000 sq km in Telangana Project helped in shortening DPR preparation time from 3 years to 6 months with more accurate results
Govt of Rajasthan	<ul style="list-style-type: none"> Over 2,200 sq km of area mapped. Further awarded 700 sq km
Govt of Mizoram	<ul style="list-style-type: none"> Aerial LiDAR Survey for Mizoram State Roads Project
RITES Ltd	<ul style="list-style-type: none"> Geokno awarded the prestigious project for Ahmedabad-Mumbai High Speed Rail Corridor
C-STEP	<ul style="list-style-type: none"> Geokno awarded the prestigious project for Aerial LiDAR data capture for Bangalore city for Solar Rooftop potential modelling project
GMR Goa Airport	<ul style="list-style-type: none"> Mapping of greenfield airport at Mopa, Goa
PWD Karanataka	<ul style="list-style-type: none"> Survey of over 3000 KM of roads completed More than 1000 KM in pipeline
IRCON	<ul style="list-style-type: none"> Arpinchalla Station Yard survey in highly challenging Banihal area of J&K Station Yard was in between 2 tunnels and adjoined by river
Tehri Hydro Corp (THDC)	<ul style="list-style-type: none"> Survey of very steep slopes in Pipalkotti (Uttarakhand) for planning of Hydro Power Dam
CIDCO, Maharashtra	<ul style="list-style-type: none"> Topographical Survey for Chikaldara Hill Station Topographical Survey of NAINA & New Khopta Areas of over 500 sq km



About Geokno: Undertaken multiple Aerial LiDAR projects in India with MoD and DGCA clearances



Telangana Project

GOVERNMENT OF INDIA
OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
OPP. SAFDARJUNG AIRPORT, NEW DELHI

No.8/16/2015-IR
Dated:- 21-07-2015

PERMIT NO. 81-PH/2015

In exercise of the powers conferred by Rule 13 of the Aircraft Rules, 1937, **DECCAN CHARTERS PRIVATE LIMITED** is hereby permitted to carry out aerial photography/Remote Sensing survey in Hyderabad / Warangal / Ramagundam for the works related to preparation of detailed project report for construction of the Kaleshwaram Barrage and proposed alignment of the water conductor system in the State of Telangana undertake in consultation with WAPCOS Ltd., a Mini-Ratna Public Sector Enterprise under the aegis of Union Ministry of Water Resources acting through Irrigation and CAD Department of Govt. of Telangana. **M/s Geokno India Pvt. Limited, Bangalore and M/s Deccan Charters Pvt. Limited, Bangalore will undertake the proposed LiDAR survey, subject to the observance of the following conditions:-**

- Any change in the particulars furnished by **DECCAN AVIATION PRIVATE LIMITED** in their application dated 03-06-2015 shall be submitted to the DGCA office for clearance and the aerial photography/remote sensing survey shall not be proceeded with until the clearance is received.
- DECCAN AVIATION PRIVATE LIMITED** shall comply all the conditions stipulated vide Ministry of Defence O.M. No. 20(11)/2015(D/GS-III) dated 14-07-2015 (copy enclosed).

THIS PERMIT IS VALID UPTO 13-07-2016.


(SUNIL KUMAR)
Director of Regulation & Information



Mizoram Project

GOVERNMENT OF INDIA
OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
OPP. SAFDARJUNG AIRPORT, NEW DELHI

No.8/8/2015-IR
Dated:- 02-06-2015

PERMIT NO. 67-PH/2015

In exercise of the powers under rule 13 of the Aircraft Rules, 1937, **M/s Deccan Charters, Bangalore** is hereby permitted to carry out Aerial Photography Survey using LiDAR technique for 'Project Preparation Consultancy (PPC) service for Package I & II for Group II Road of Mizoram State Road II-Regional Transport Connectivity Project (MSR II-RTCP) under Public Works Department of Mizoram. Govt. of Mizoram. **M/s Geokno India Pvt. Ltd., Bangalore, M/s Deccan Charters Pvt. Ltd., Bangalore and M/s L&A Associates South Asia Pvt. Ltd., New Delhi** will undertake the proposed survey and combine to provide the required Aerial LiDAR Survey components for the project using helicopter AS 350 B3 Regd. No. VT-DCB subject to adherence to MoD Policy No.28(14)/2005(D/GS-III) dated 1st May, 2006 and strict compliance of the condition stipulated in their application. The permission is subject to the observance of the usual security precautions and the following conditions:-

- Any change in the particulars furnished by **M/s Deccan Charters Private Limited, Bangalore** in their application dated 18-03-2015 and other subsequent letters shall be submitted to the DGCA office for clearance and the photography / survey shall not be proceeded with until the clearance is received.
- M/s Deccan Charters Private Limited, Bangalore** shall comply all the conditions stipulated vide Ministry of Defence O.M. No. 20(07)/2015(D/GS-III) dated 27-05-2015 (copy enclosed).

THIS PERMIT IS VALID UPTO 26-05-2016.


(Sunil Kumar)
Director of Regulation & Information



Rajasthan Project

GOVERNMENT OF INDIA
OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
OPP. SAFDARJUNG AIRPORT, NEW DELHI

No.8/22/2016-IR
Dated:- 16-11-2016

PERMIT NO.128-PH/2016

In exercise of the powers under rule 13 of the Aircraft Rules, 1937, **M/s Geokno India Private Limited**, is hereby permitted to carry out aerial photography using Aerial LiDAR Survey along River Chambal, Parbati and Kalisindh & Associated water conductor system for Eastern Rajasthan Canal Project for the works related to construction of the project is the survey of the project area for preparation of the detailed project report for the project in the state of Rajasthan undertaken in consultation with WAPCOS Ltd., a Mini-Ratna Public Sector Enterprise under the aegis of Union Ministry of Water Resources acting through Department of Irrigation of Rajasthan, Government of Rajasthan. **M/s Geokno India Pvt. Ltd. and M/s Deccan Charters Pvt. Ltd., Bangalore** will undertake the proposed LiDAR survey and combine to provide the required Aerial LiDAR Survey components for the project using helicopter AS 350 B3 Regd. No. VT-DCB of Deccan Aviation and Regd No. VT-PEE of M/s Prabhatham Aviation Pvt. Ltd., New Delhi, under their NSOP, subject to the observance of the usual security precautions and the following conditions:-

- Any change in the particulars furnished by **M/s Geokno India Private Limited, Bangalore** in their application dated 04-08-2016 shall be submitted to the DGCA office for clearance and the photography / survey shall not be proceeded with until the clearance is received;
- M/s Geokno India Private Limited, Bangalore** shall comply all the conditions stipulated vide Ministry of Defence O.M. No. 20(23)/2016(D/GS-III) dated 09-11-2016 (copy enclosed).

THIS PERMIT IS VALID UPTO 08-11-2017.


(Sunil Kumar)
Director of Regulation & Information



Goa Project

GOVERNMENT OF INDIA
OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
OPP. SAFDARJUNG AIRPORT, NEW DELHI

No.8/29/2016-IR
Dated:- 01-11-2016

PERMIT NO. 123-PH/2016

In exercise of the powers under rule 13 of the Aircraft Rules, 1937, **M/s Geokno India Private Limited**, is hereby permitted to carry out aerial photography using Aerial LiDAR Survey to assist & design of the project for construction, development and operation of the New Greenfield International Airport at Mopa, Goa. **M/s Geokno India Pvt. Ltd. and M/s Deccan Charters Pvt. Ltd., Bangalore** will undertake the proposed LiDAR survey on behalf of the Directorate of Civil Aviation, Goa Government and combine to provide the required Aerial LiDAR Survey components for the project in consultation with GMR Airport Limited using AS 350 B3 Regd. No. VT-DCB of M/s Deccan Charters Pvt. Ltd., under their NSOP, subject to the observance of the usual security precautions and the following conditions:-

- Any change in the particulars furnished by **M/s Geokno India Private Limited, Bangalore** in their application dated 20-09-2016 shall be submitted to the DGCA office for clearance and the photography / survey shall not be proceeded with until the clearance is received;
- M/s Geokno India Private Limited, Bangalore** shall comply all the conditions stipulated vide Ministry of Defence O.M. No. 20(25)/2016(D/GS-III) dated 28-10-2016 (copy enclosed).

THIS PERMIT IS VALID UPTO 25-10-2017.


(Sunil Kumar)
Director of Regulation & Information



GOVERNMENT OF INDIA
OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
OPP. SAFDARJUNG AIRPORT, NEW DELHI

No.8/14/2014-IR
Dated:- 28-07-2014

PERMIT NO. 70-PH/2014

In exercise of the powers conferred by Rule 13 of the Aircraft Rules, 1937, **M/s GMR Aviation Private Limited** is hereby permitted to carry out Aerial Photography/Survey for Data Acquisition, Processing and Large Scale Mapping of Disaster affected areas of Uttarakhand by GMR Aviation Private Limited/Aerial Photography/Survey and processing of data along with the firm **M/s M/s Geokno India Pvt. Ltd., Bangalore, M/s JAM Pty Ltd., Australia and M/s Bayswater Road Pty Ltd., Australia** for bonafide purpose. Further, the operator is not allowed to cover map sheet No.53 N being "Restricted Areas," VAs/VPs and sensitive areas. The permission is subject to the observance of the usual security precautions and the following conditions:-

- Any change in the particulars furnished by **GMR Aviation Limited** in their application dated 26th March, 2014 shall be submitted to the DGCA office for clearance and the photography/survey shall not be proceeded with until the clearance is received; and
- M/s GMR Aviation Private Limited** shall comply all the conditions stipulated vide Ministry of Defence O.M. No. 20(07)/2014(D/GS-III) dated 21st July, 2014 (copy enclosed).

THIS PERMIT IS VALID UPTO 20-07-2015.


(Sunil Kumar)
Director of Regulations & Information

Survey of India Project

Geokno's Aerial LiDAR Survey helped Govt. of Telangana ink pact on Godavari water projects with Maharashtra



Geokno team presenting LiDAR data to Hon'ble Chief Minister along with WAPCOS

THE HINDU

Telangana, Maharashtra CMs ink pact on Godavari water projects

Mr. Chandrasekhar Rao explained how they had been working for over an year including conducting a LiDAR (Light Detection and Ranging) survey for identifying locations to tap water of Godavari and its tributaries to minimise submergence in Maharashtra so that disputes could be avoided.

THE NEW INDIAN EXPRESS

Hope Springs as Telangana, Maharashtra Set to Script Water-sharing Treaty

"The actual negotiation process for Medigadda and Tummadi Hatti barrages started three months back. After TS government conducted Lidar survey, the Maharashtra officials too conducted a ground survey. They were convinced and accepted our viewpoint," top sources in irrigation department told Express.



Geokno is undertaking India's first project for Solar Rooftop Mapping potential using LiDAR technology



- LiDAR is the used world-wide for mapping city management and infrastructure projects including solar rooftop potential
- Geokno has been awarded the India's first project for Solar rooftop potential mapping for Bengaluru

Rooftop solar could provide almost 40 percent of US electricity

This is huge.

To come up with the estimate, scientists from the National Renewable Energy Laboratory (NREL) used light detection and ranging (LiDAR) data to calculate the suitability of rooftops for hosting solar panels – aka rooftop photovoltaic (PV) systems – in 128 cities across the US, then extrapolated from there.

Within the cities examined, the researchers found 83 percent of small buildings have a suitable location for installation of solar panels. But when they analysed each building's capacity to hold a PV system on their roof, only 26 percent passed the grade.

While only about a quarter of most small buildings' roofs could practically be used for solar panels, there are a whole lot of them across the US, which means this type of building could actually provide the greatest combined technical potential compared to other kinds of structures.

BENGALURU

Aerial mapping of city's solar energy prospects

Once completed, it will eliminate the need for consumers to hire a consultant to determine the potential of a rooftop plant in their homes

A small aircraft will soon be going around Bengaluru to map the rooftop area available for generation of solar energy. The Bangalore Electricity Supply Company (Bescom) has entered into an agreement with Karnataka Renewable Energy Development Limited (KREDL) and the Centre for Study of Science, Technology and Policy (CSTEP) to build a roadmap to boost the quantum of power generated using solar energy.

The one-year project will see the use of light detection and ranging (LIDAR) technology and is touted as the first such exercise in India.

At present, Bescom generates 14.8 MW of solar energy from 524 solar rooftop plants across the eight districts it caters to. But this is woefully short of the target set by the Central and State governments. The target for Bengaluru alone is expected to be one gigawatt (1,000 MW).

Case Study: RITES awarded Geokno the Aerial LiDAR survey for Ahmedabad-Mumbai High Speed Rail Corridor



Project Title

Aerial LiDAR survey of Ahmedabad – Mumbai High Speed Rail Corridor.

Client: RITES Ltd. on behalf of National High Speed Rail Corporation Limited

Project Details

- The Greenfield project is passing through varied terrain in its 500 km project length
- Railway Board after seeing Mizoram project results opted for LiDAR technology for fast and highly detailed Aerial LiDAR survey
- LiDAR scanner: Riegl LMS780
- Camera: Phase One 100 MP

Data specifications

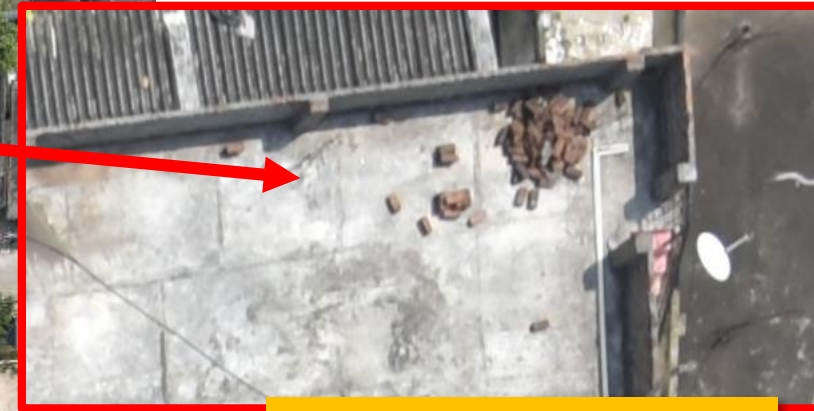
- LiDAR: 10 points per sq m except on slopes
- 10 cm GSD Aerial Imagery



LiDAR Advantages: Data accompanied by high grade imagery



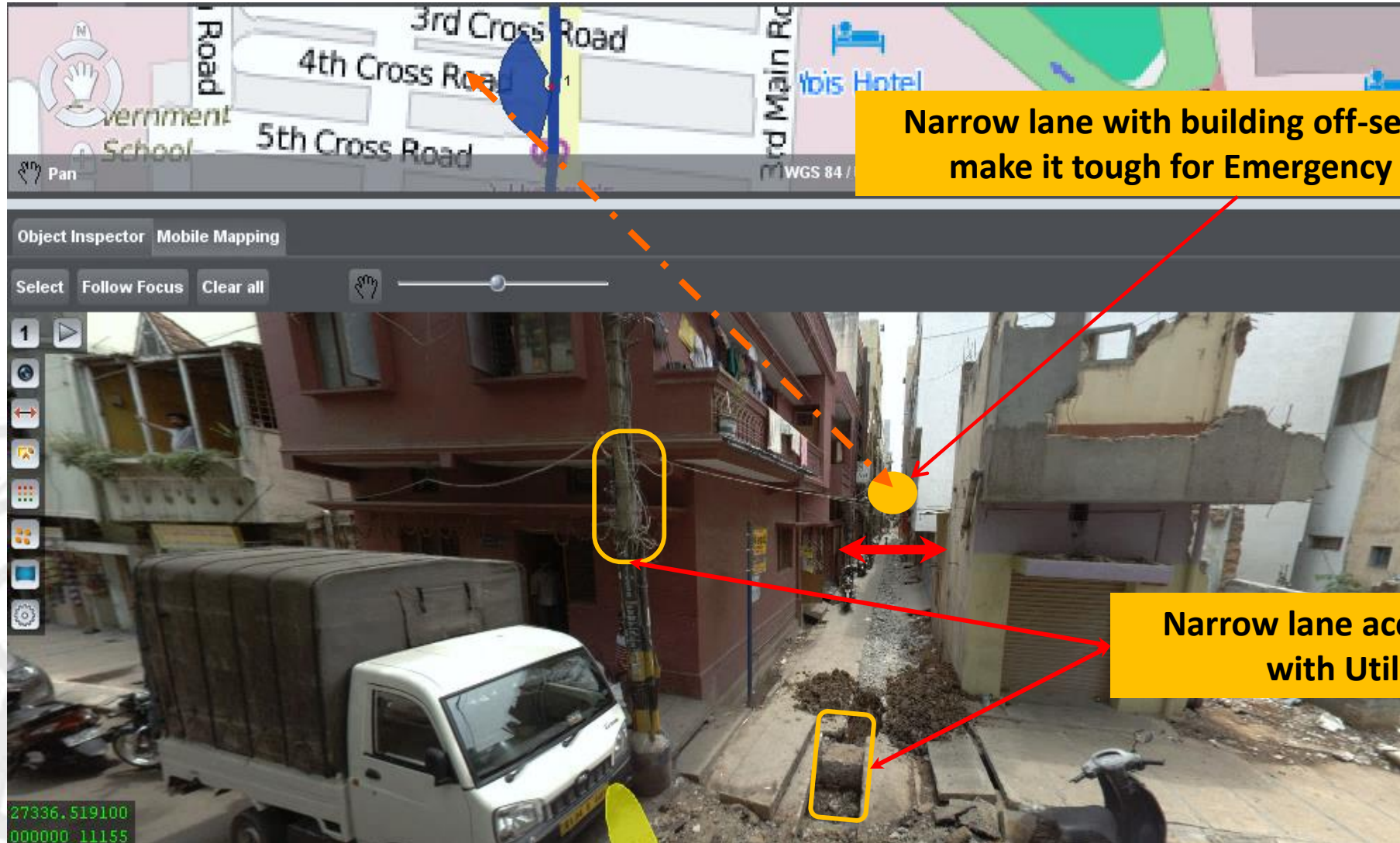
Aerial Image



Detailed Zoom



Urban Planning Assistance: Data helps in identification of Narrow Lanes, Building & Safety Violations



Urban Planning Assistance: Danger Objects next to Road

High Power Transmission Towers are usually difficult to shift

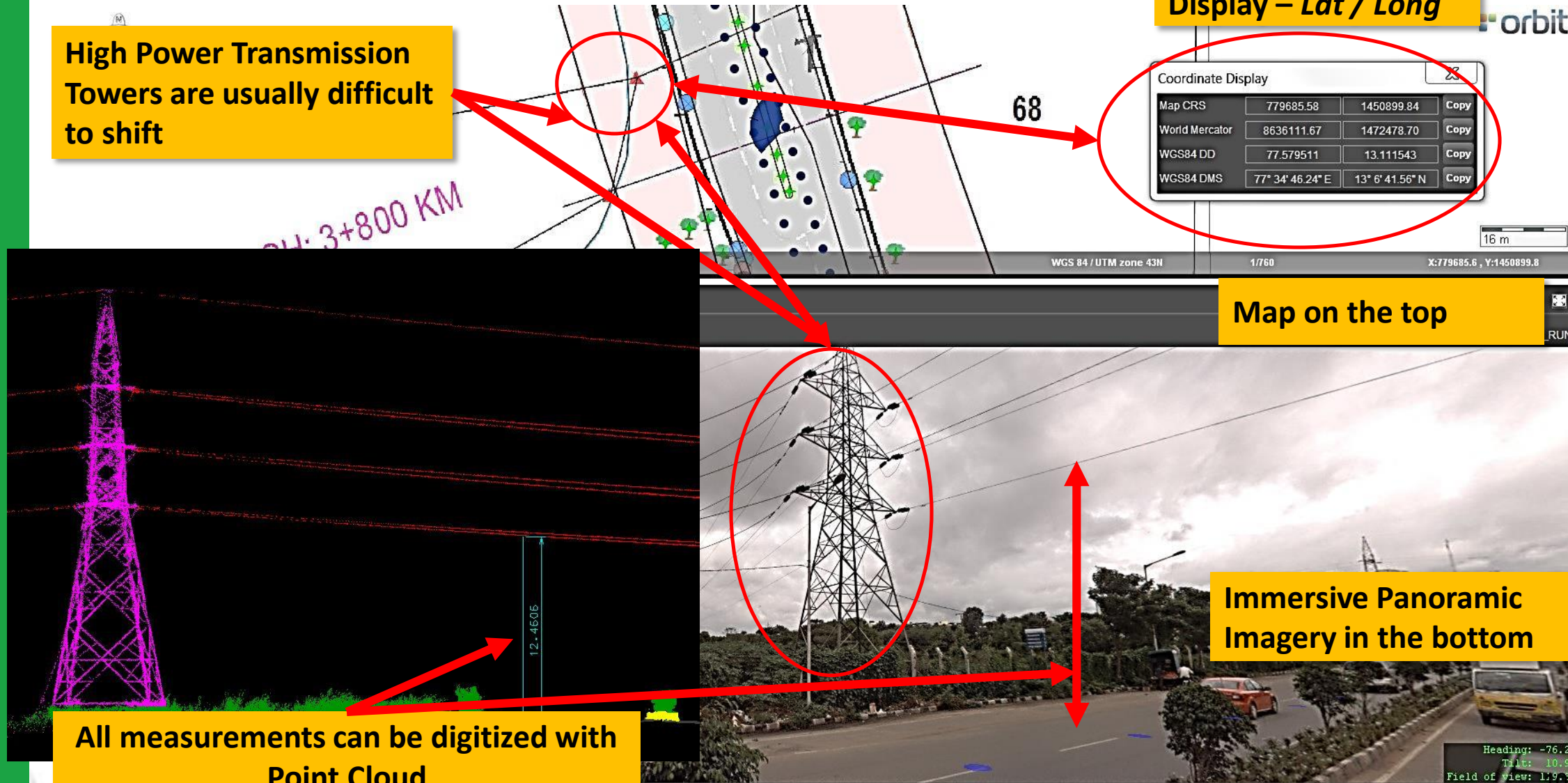
Display – Lat / Long

Coordinate Display			
Map CRS	779685.58	1450899.84	Copy
World Mercator	8636111.67	1472478.70	Copy
WGS84 DD	77.579511	13.111543	Copy
WGS84 DMS	77° 34' 46.24" E	13° 6' 41.56" N	Copy

Map on the top

Immersive Panoramic Imagery in the bottom

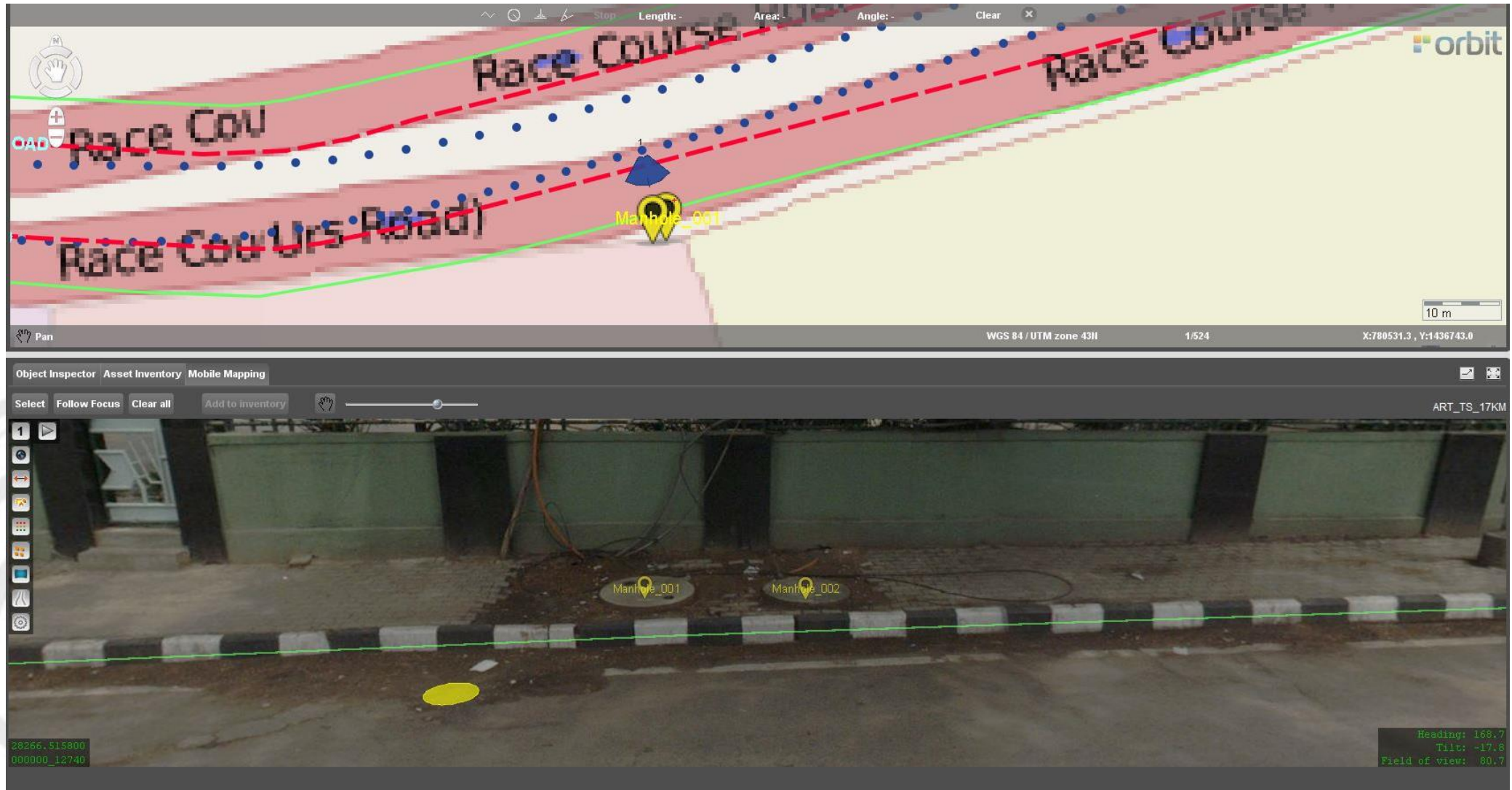
All measurements can be digitized with Point Cloud



Utility Management – Comprehensive identification of all utilities spread out in the city



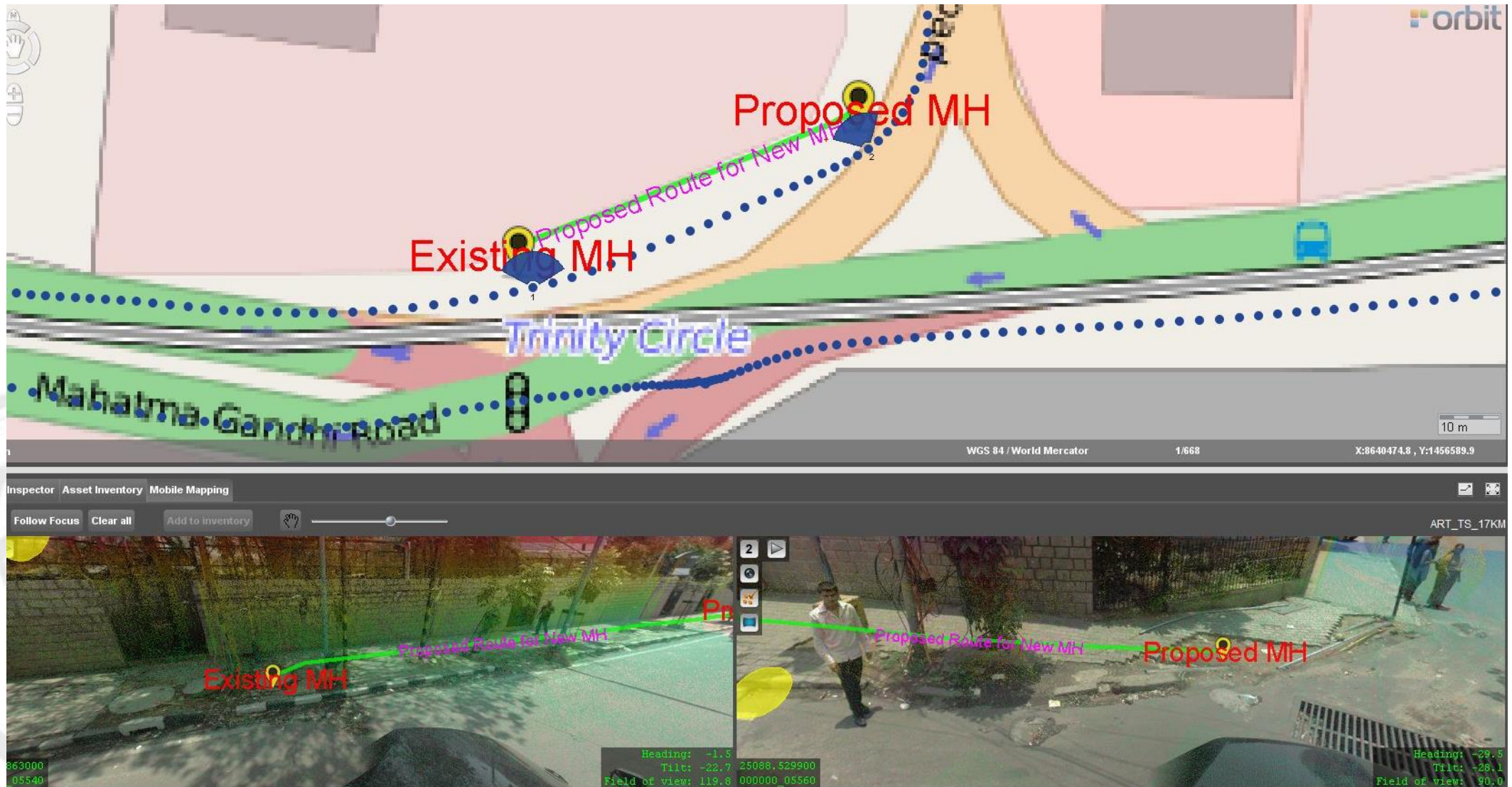
Utility Management – Comprehensive identification of all utilities spread out in the city



Utility Management – Comprehensive identification of all utilities spread out in the city



Utility Management – Comprehensive identification of all utilities spread out in the city



Complete city can be brought into a virtual world with 3D Models for better Smart City Planning



Trinity Circle, MG Road, Bangalore – Real Imagery

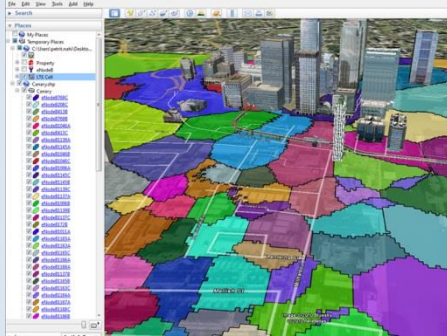


Trinity Circle, MG Road, Bangalore – 3D CAD Model

In Telecom Industry itself SMART LiDAR data can be of monumental assistance across Business Operations



Radio Network Planning



- Planning of optimal tower locations :
 - 3D City Models
 - Survey for new locations
 - Accurate data for Radio Network Planning

Asset Registry



- Maintenance of asset registry for assets spread in multiple locations
- Optimization of capex costs during expansion planning

Operations & Maintenance



- View health, capacity of infrastructure
- Optimal deployment of resources to maintain geographically spread assets
- Total lifecycle cost analysis for each individual asset

Sales Force



- Feasibility studies for new connections
- Customer acquisition with geographically targeted marketing
- Customer service level analysis

A successful GIS depends on the quality of data captured for these applications and LiDAR technology is highly suited to meet the data requirements of Utility Industry for above applications

Thank You

Geokno on YouTube:

<https://www.youtube.com/channel/UCTcHSwRhGvusB3NxACeY3g/videos>

Geokno India Pvt Ltd

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3D Immersive City GIS

90 views • 2 months ago



LiDAR Corridor Mapping

196 views • 2 months ago



3D Building Model

29 views • 2 months ago



3D City Model

45 views • 2 months ago