

22-23 AUGUST, 2023
VIVANTA, DWARKA, NEW DELHI

Co-Organizer



सड़क परिवहन
एवं राजमार्ग मंत्रालय
MINISTRY OF
ROAD TRANSPORT
AND HIGHWAYS

सत्यमेव जयते



CONFERENCE REPORT

www.geosmartinfrastructure.net



OVERVIEW

Geospatial World, with the Ministry of Road Transport and Highways as the co-organizer, successfully concluded the GeoSmart Infrastructure 2023 conference. The conference, themed “Construction 4.0: Building a Resilient and Sustainable Infrastructure,” spanned two days and featured comprehensive discussions, visionary plenaries, and engaging interactions with participants from the government, industry, academia, and many more.

The Inaugural session started with a power packed discussion on **“Infrastructure and its role in Indian Economy”** followed by other plenary sessions on **“Construction 4.0: Transforming India’s Infrastructure Industry”**, **“Digital Twin Strategy for Indian Infrastructure Industry”**, **“Safe, Resilient & Sustainable Infrastructure”** and a special session on **“Infrastructure and Economy: Vision 2047”** followed by deep dive technical sessions on Roads and Highways, Railways & Metros and Airports, Building and Campuses on the second day.



Key Statistics

85

Speakers

342

Delegates

137

Organization

INAUGURAL SESSION



One of the major challenge that we face in the infrastructure development is delay of the processes from few months to years. These delays lead to loss of resources, and adds to wastage The cause of the delay in the system is difficult to identify, this is where the adoption of geospatial technology will help us address the challenge.

Digitalization would provide impetus to the construction and infrastructure sector by fostering a collaborative mechanism, and ensuring qualitative enhancement, transparency, and effective decision-making.

By integrating digital technologies and enabling virtual replicas, we can identify real monitoring, effective maintenance and simulation of various projects.

One such solution could be which offers a transformative approach to planning, construction and managing critical assets. Performance audit is more important than financial audit. We need to identify people, who are responsible for the delay in the project and what their performance is. By evaluating their performance we can make corrective decisions, increase the speed and quality of the project, and digital twin is going to help us in that.

In this ever evolving landscape, digital twin empowers decision makers with data driven insights, adopting sustainable practices, optimizing infrastructure performance.

Decentralization of power and division of work is very important. Digitalization can help in analysing the decision making process and identify the bottlenecks through performance audit of the project, thus we can decentralize the power and divide the work accordingly. ”

“Infrastructure is regarded as the backbone of India’s ambition of \$5trillion economy.”

▼ Shri Nitin Jairam Gadkari

Hon’ble Minister for Road Transport & Highways





“Infrastructure is the foundation for a country’s development. Every Rupee spent on infrastructure has a multiplier effect. There has been an integrated focus under the PM Gatishakti, addressing the needs of various ministries and departments in a systematic manner. The national master plan is a path-breaking initiative to boost connectivity. With the PM Gatishakti National Master plan, the aim is to be efficient with a reliable and sustainable infrastructure development especially in the Transport as the emission is the highest. In Digital Twin, there are no clear-cut world leaders, so it’s a great opportunity for India to take the lead.”

▲ **Shri Amit Ghosh**

Additional Secretary, Ministry of Road Transport and Highways

“BIM is the digital version of a physical object. BIM models can do performance modelling over the full lifecycle of a building. Describing the building in the form of algorithms and letting the computer actually generate the BIM model is the next level of technology evolution. GIS and BIM come together to give unique value. GIS provides the location component which is a crucial information. Correlation between BIM models and GIS, used in geodesign, helps ensure a collaborative mechanism with high efficiency and user functionality.”

▲ **Agendra Kumar**

Managing Director, ESRI India



“Digital Twin is all about ensuring the perpetual maintenance of assets. PM Gatishakti National Master Plan serves as the digital twin, and it requires all departments and state governments to collaborate seamlessly. Digital Twin is essentially the aggregation of all stakeholders to facilitate accurate, near real-time decision-making, which aligns with the core objectives of PM Gatishakti.”

◀ **Kaushik Chakraborty**

Senior Vice President, Bentley Systems



“Digital Twin is a life-saving solution, in many cases such as railway corridor maintenance and preventing accidents. The utility of accurate data delivers immense value to citizens and is helpful in tracking ESG and sustainability measures as well.”

Mandating the use of digital technologies is necessary as it will help a lot in saving time and improving efficiency and quality. This necessitates the adoption of digital technologies and illustrates their growing prevalence within the Indian Diaspora.”

◀ **Sajid Malik**

CEO, Genesys



“ Sustainability and resilience of infrastructure is very important. Technology integration is crucial for multiple reasons such as mitigating future environmental impacts. PM Gatishakti is a revolution in the government sector. We are deliberating how to involve the private sector without compromising Defence and equity. Geospatial infrastructure helps a lot in social sectors as well, such as establishing women and child care facilities, educational facilities, and healthcare services. ”

◀ **Shri Anurag Jain**

Secretary, MoRTH



“ Geospatial enables precise route mapping, monitoring, optimal resource planning, and reducing carbon footprints. Synchronization of efforts among the ministries for a truly multi-modal platform, is the revolutionary approach of PM Gatishakti.

We have the vision to Make in India for the World via PLIs so that we have domestic manufacturing champions. In order to attract global supply chains and value chains that bring development, employment and other key growth areas, infrastructure is pivotal.

The plan envisions digital mapping and GIS tech to bring about efficiency. Satellite Imagery also plays a very critical role. We are able to bring about predictive planning. 39 states have on boarded with customized tools for every ministry. There are no last gap connectivity problems under the PM Gatishakti plan and it brings about multimodal connectivity. ”

▲ **Smt. Sumita Dawra**

Special Secretary (Logistics), DPIIT

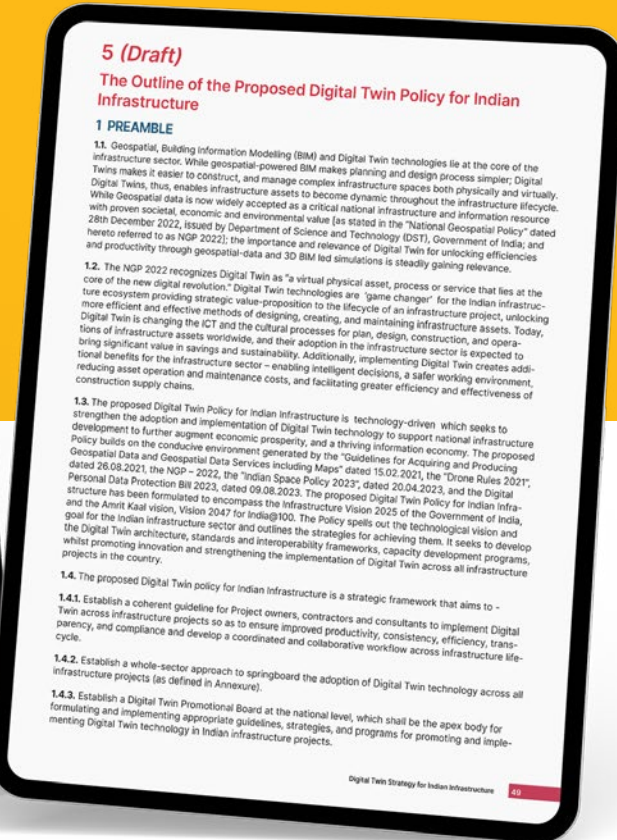
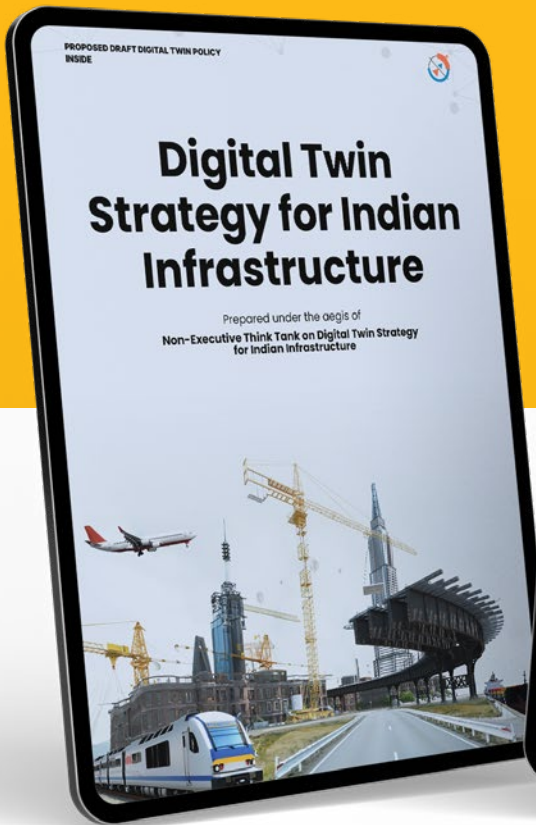


“ Infrastructure is critical for India’s ambition to become the third largest economy by 2030 and first by 2047 at the centenary of the country’s independence. ”

◀ **Sanjay Kumar**

CEO, Geospatial World

REPORT LAUNCH



The Hon'ble Minister for Road Transport and Highways Shri Nitin Gadkari Launched report on '**Digital Twin Strategy for Indian Infrastructure**' at GeoSmart Infrastructure 2023 event. The report has been prepared under the aegis of the Non-Executive Think Tank on Digital Twin Strategy for Indian Infrastructure, constituted by Geospatial World.

The Hon'ble Minister said, "The national digital twin strategy will create a platform for sharing data and insight of all infrastructure sector. I believe a knowledge hub should be created to make all stakeholders understand the value that digital twin will create".

"We need to reduce the cost of construction without compromising with the quality, like how can we procure the alternative material for construction. In the two upcoming projects, Delhi-Bombay highway and Ahmedabad-Dholera expressway, we are using 30 lakh ton of waste material through a simple methodology of segregating the garbage and using them. This is our contribution to a better environment practice and in addition we can reduce the cost of construction."



PLENARY 1:

Construction 4.0 Transforming India's Infrastructure Industry



“ Construction 4.0 offers the promise of synergizing with lean construction principles, fostering integrated project delivery through enhanced stakeholder collaboration, and leveraging advanced BIM and digital twin technologies. With the current policy momentum, there's a significant opportunity for the implementation of digital twin technologies integrated with various geospatial tools, AI, cloud computing, and other technology solutions to enhance productivity and compliance. This ongoing trend of digitalization presents ample opportunities, with India having the potential to leapfrog traditional processes. The key lies in fostering awareness, encouraging senior leadership to take charge, and focusing on mandates and tailored solutions that lead to sustainable and resilient infrastructure development. This potential for digitizing construction is not limited to India; it's equally relevant in the Western world. ”

Ananya Narain

VP Commercial Consulting
Geospatial World



“ Connected Construction will absolutely help in Construction 4.0 to make the process more transparent and efficient in terms of cost and time. Connected construction is going to be the basis for construction 4.0 and we do have the technologies available today it is just a mindset that needs to change. Digital construction technology is thought as an afterthought whereas it should be forethought. Adopt the technology from basement level which will synergistically benefit all the stakeholders. ”

▲ Rajan Aiyer

Managing Director, Trimble Inc.



“ Construction 4.0 and Digital twin is not for weak hearted it is for those who want transparency in system and who want to aim for perfection. Planning, Construction and lifetime maintenance are the three main parts to digital twin and construction 4.0. Digital twin incorporation in construction phase in Indian railways has been slow. Training and mindset change at the highest level is the major challenge ”

▲ BP Awasthi

Principal Executive Director,
Infrastructure at the Ministry of Railways

PLENARY 2:

Digital Twin Strategy for Indian Infrastructure Industry



“What you cannot measure you cannot manage. Digital Twin helps you to store all the data seamlessly and process the changes, deliver you back the updated information and store that in a manner you can use it whenever you need it. Simplification of technology and concept is very important.”

▲ Sanjay Kumar

CEO
Geospatial World



“Digital Twin brings an accurate geometric representation of the world we live in. Digital Twin sounds like a futuristic concept but all the enabling technologies are there today to make it a reality. India is on its way to make a digital twin for its cities. Digital twin is not a jargon but real.”

▲ Sajid Malik

CEO
Genesys



“Civil aviation industry has constantly been growing at the rate of 10% for an entire decade before the pandemic hit us in 2020 and post pandemic the traffic has increased much more. India has now become the third largest domestic aviation market in the world and is ready to overtake United Kingdom to become the third largest air passenger market by 2024.”

By fostering efficient collaboration, maintaining data accuracy, enabling data driven decision making, ministry ensures airport projects are delivered on time within budget and with highest quality standard.

AAI shall be focusing on the digital strategy for planning the infrastructure of airports. The objective is to make the infrastructure growth sustainable.”

◀ Charul Shukla

Executive Director (Planning) AAI



“ Most earth observation companies end up becoming defence companies elsewhere in the world. Data is the new oil, and space is the place for collecting planetary skilled data, we are making an oil company equivalent in space. At Satsure we are investing 35 billion dollars, in creating the highest resolution privately funded satellite constellation out of India. Space data, Aerial data and all other Geospatial data, forms an integral part of the digital twin strategy that propels India to the future. ”

◀ **Prateep Basu**

CEO
Satsure



“ National Geospatial Policy by DST was published in December 2022, and MoHUA was mandated to be the nodal ministry for digital twin. It's the right time to mandate digital twin technology in government project tenders. It is environment friendly and enhances the ease of doing business. To make the digital twin policy effective, there's a crucial need for capacity building within the government sector. ”

▲ **Dr Madhu Rani Teotia**

Director NULM & Swacch Bharat Abhyan, MoHUA



“ AWS platform has a few services that work on hardware itself. AWS just doesn't have data centres it also has 22 pop locations all over India which has a dedicated fibre line, and you can create a captive fibre line from your infrastructure to the cloud without even getting the public infrastructure. It also has 200 + services. ”

▲ **Sanjeev Jha**

Principal, Smart Infrastructure, AWS

“ Show me a healthy community with a healthy economy and I will show you a community that has its green infrastructure in order and understands the relationship between the built and the unbuilt environment. ”

Will Rogers

PLENARY 3:

Safe, Resilient & Sustainable Infrastructure



“ By harnessing 3D mapping and digital twins, we can build and maintain infrastructure that not only meets the needs of today but also stands ready to tackle the challenges of tomorrow, ensuring safety, resilience, and sustainability. These technologies enable us to assess risks, plan for disaster resilience, optimize resource allocation, and make informed decisions throughout the infrastructure lifecycle. Digital twins and 3D mapping technologies are not just transformative tools for enhancing social and economic growth within a country, but they are the keystones of modern urban development. ”

▲ Lt Gen Girish Kumar VSM

Former Surveyor General of India



“ Sustainability of the infrastructure is very important, the reason being that if we create the infra in the area where it is not there and if it is not sustainable then the very purpose of sustainability is defeated.

A single technology is not good enough we need to leverage upon several technologies including geospatial technology, smart sensors, AI, ML and others. ”

▲ Dr SK Srivastav

CGM (Regional Centers)
NRSC



“ Digital way of working is going to give us a lot of stimulative power.

Digital consumption is a double edge sword. The data that you feed into the system, the quality of that data also decides the governance and the decision making that happens on that.

CDCP India envisioned an inclusive Infrastructure Digitalization strategy which is a combination of both Top-Down & also Bottom-Up approaches enabling Data Democratization ”

▲ Sunil Joshi

General Secretary
CDCP India



“Infrastructure is going to be the key agenda in India’s development in the next three decades. There is a vision 2030 and the vision for 2047 is already set by the Hon’ble PM for India to be a developed country. Sustainability in construction in the last few years has been focused predominantly on design as well as operation phases whereas the construction phase has often been neglected.”

▲ **Bhargav Dave**

Founder & CEO
Visilean

“In Himachal, the projects that have been completed may have relatively simple building bylaws, but this simplicity can potentially lead to disaster. The coastal zone maps are severely outdated, adding to the challenges. Convincing local decision-makers to take action is a major hurdle for significant infrastructure projects. Solution providers must possess the capacity to meet the industry’s demands.”

▲ **Deepak Gahlwot**

Director
Xebec Design



“India’s presidency has introduced a working group on disaster risk reduction, demonstrating the government’s keen interest and robust commitment to advancing resilient and sustainable infrastructure. The critical focus lies in addressing urban areas, with sustainability revolving around three key components: mitigation, adaptation, and the creation of new ecosystems, known as protection. Collaborative efforts between not only the private sector but also the government sector are pivotal in addressing the challenges of resilient and sustainable infrastructure.”

◀ **Siddharth Sinha**

Lead Public Policy Geo
Google

India will be integrated into a high-quality transport network, powered by greenfield expressways, electrified railways, revamped airports, and an EV ecosystem. The transformative power of new infrastructure is a precondition for the high growth that India aspires to achieve. It is a rising tide that will lift all the sections of India.

PIB India

SPECIAL SESSION: INFRASTRUCTURE



“ While the geospatial community is diligently working behind the scenes, its significance often goes unnoticed. Yet, this community holds the key to creating robust and sustainable infrastructure. Geospatial expertise allows for intricate analysis and simulation of infrastructure projects, enabling planners to predict disaster impacts and devise effective mitigation strategies. The last three union budgets have underscored the significance of infrastructure development, with a focus on capital expenditure. Investment in infrastructure projects has a remarkable multiplier effect on the economy, generating significant growth and employment opportunities. When meticulously planned and executed, these projects become pillars of economic progress. ”

◀ **General (Dr.) Vijay Kumar Singh** **PVSM, AVSM, YSM (Retd.)**

Hon'ble Minister of State for Road Transport & Highways and Civil Aviation



“ Sustainability stands as a paramount goal, and technology, especially location technology, is a linchpin in achieving it. Geographical Information Systems (GIS) and Building Information Modeling (BIM) are invaluable tools that enable meticulous planning and execution.

One needs to use technologies in a way that it does not harm the climate. 60% of the large infrastructure project get delayed due to which there is a cost overrun from 20% to 70%. By integrating location-based data, infrastructure planners can analyze potential impacts, optimize resource allocation, and simulate disaster scenarios. These technologies serve as critical guides in the construction of resilient and sustainable infrastructure. ”

◀ **Agendra Kumar**

Managing Director
ESRI India

INFRASTRUCTURE AND ECONOMY: VISION 2047



“ Effective infrastructure development requires a robust risk assessment framework to identify hazards and formulate mitigation strategies. Upgrading standards and regulations is essential to maintain quality and safety. Private sector investment in resilient projects supports economic growth and long-term sustainability. Integrating geospatial expertise from project inception empowers planners to make informed decisions. Fostering knowledge sharing within the geospatial community drives innovation in infrastructure development. ”

◀ Kamal Kishore

Member Secretary
NDMA

“ Fuelled by the ambitious PM Gatishakti National Masterplan for multi-modal infrastructure development, the new roads and railways will help India fulfil its ambition to turn into a \$5 trillion economy—up from \$3.74 trillion currently (IMF, 2023). ”

TRACK A: ROADS & HIGHWAYS

Keynote Address: **Shri Amit Kumar Ghosh**
Additional Secretary, MoRTH



Within the overarching framework of PM Gatishakti, a comprehensive focus has been applied to methodically address the diverse requirements of ministries and departments. The introduction of the national master plan stands as a pioneering initiative designed to amplify connectivity. In the realm of Digital Twin, where global leadership is not clearly defined, India finds itself presented with a significant and promising opportunity to establish a prominent presence.

Session 1: Geospatial and Sensor Technologies for Surveying and Mapping of Highways Infrastructure

Moderator:

Dr. Deb Jyoti Pal, Vice president
Data Product, Geospatial World

Panellist:

GV Sreeramam, CEO, NeoGeo

Prashant Patil, Executive
Engineer, PWD Mumbai

Amit Agarwal, AVP & HOD, Systra

Javed Shaikh, Technical Director,
QuantaSIP Geomatic Informative
Solutions

OM Prakash Das, Co - Founder
and COO, IG Drones

Sunil Krishnan, Business Head,
Pan India

Key Points:

- Terrestrial LiDAR excels in shadow area mapping, delivering precise 3D data for improved understanding and optimization of lighting in diverse applications.
- BIM may save up to 20% of projects cost by reducing the time with its high-speed and convenient working methods.
- GIS can be used to streamline the land acquisition process and right way of planning for highway projects.
- The implementation of a GIS-enabled toll system leverages advanced geographic information systems to enhance toll collection and management, optimizing traffic flow and revenue generation on roadways.
- Trimble machine control technology revolutionizes construction equipment with precision GPS and automation, improving efficiency and accuracy in earthmoving and paving operations.



Session 2: BIM and Digital Twin -based Collaborative Design Workflows

Moderator:

Abhishek Verma, Senior research Analyst – Consultancy, Geospatial World

Panellist:

Ashish Arora, Industry Head Commercial & AEC, ESRI India

Dr. Ravindra Kumar, Chief Scientist, CRR

Kasturi Srinivas, Industry Sales Director - Transportation, Bentley Systems

Sanjeev Jha, Principal Smart Infrastructure, AWS

Bidur Kant Jha, Director New Technology, MoRTH

Bhushan Avsathi, Director, Hightech Digital

Key Points:

- Intelligent construction for infrastructure integrates model science and innovative technologies, applying intelligent perception, computing, decision-making, and feedback controls across the entire lifecycle, optimizing operations, minimizing risks, and adapting to environmental changes.
- I - Twin, an advanced digital twin platform, empowers infrastructure professionals with real-time insights and collaborative capabilities, enhancing project performance and decision-making across the asset lifecycle.
- AWS IoT TwinMaker is a powerful tool that simplifies the creation of digital twins for IoT devices, enabling businesses to monitor, analyze, and optimize their connected assets with ease and precision.
- BIM and digital twin-based collaborative design workflows empower teams to seamlessly share and leverage real-time data, enhancing coordination and efficiency throughout the design and construction processes.



Session 3: Geospatial Technologies Powering Construction Management for Roads and Highways Infrastructure

Moderator:

Abhishek Verma, Senior research Analyst - Consultancy, Geospatial World

Panellist:

Anand Sirohi, Director, Trimble

Saurabh Rai, CEO, Arahos

Dr. Purna Ramesh – Joint Advisor, NHAI

Karthik Mani, BIM Expert, Louis Berger

Sudershan K Popli, Advisor Road Safety, NHAI

Key Points:

- Technology-driven highway construction and management leverages cutting-edge digital tools and real-time data analytics to optimize project planning, execution, and maintenance, ensuring cost-effectiveness, safety compliance, and infrastructure longevity.
- Timely completion of a project leading to timely realization of returns – crucial for financial viability.
- Data/Information modelled on digital Geo-tech platform helps quick compiled data to the distributed network of workforce.
- Drone videos provide invaluable site visualization, offering real-time aerial perspectives that enhance project monitoring, decision-making, and communication in construction and land development.
- Shifting of the data to a spatial environment would help in fast tracking creation of reports and analytics for quicker and informed decision making.
- Principles of Human Centred Design should be referred while developing platforms being used by the field personnel in order to ensure maximized output with minimal scope for errors.
- In highway asset management, BIM facilitates data-driven decision-making and precise asset condition assessment by creating a digital model of infrastructure, enhancing maintenance planning and lifecycle optimization.



Session 4: Integrated Digital Technologies for Highways Inventory and Asset Management

Moderator:

PV Rajashekhar, Addl Surveyor General, Survey of India

Panellist:

NC Pal, OSD cum Engineer - In - Chief, PWD Orissa

Bovin Kumar, CEO, Cube Highways

Abhay Kimmatkar, Managing Director, Ciensys

Sachin Joshi, VP - O & M Highway, Concession One

Vipul Singh, Co - Founder & CEO, Aereo



Key Points:

- The implementation of a GIS web-based application for Digital Project Management ensures streamlined project tracking, data visualization, and spatial analysis, enhancing efficiency and informed decision-making in infrastructure development.
- Reliability, Availability, Maintainability, and Safety (RAMS) principles are critical in highway asset management and inventory. They help assess and optimize the performance and safety of road assets, ensuring efficient maintenance, minimizing downtime, and enhancing overall infrastructure reliability.
- GIS (Geographic Information System) empowers highways inventory and asset management through spatial data analysis, allowing precise mapping, condition assessment, and strategic decision-making for optimal infrastructure maintenance and performance optimization.
- The integration of drones and geospatial intelligence represents the cutting-edge future of road construction, offering advanced capabilities in data capture and analysis for improved project planning, precision, and cost-effectiveness in both construction and maintenance operations.



TRACK B: AIRPORTS, BUILDINGS AND CAMPUSES

Session 1: Role of Technologies in Airport, Building Operations and Maintenance

Keynote Address:

Sajid Mukhtar, Chairman, Roter Group

Col. Gaurav Singh, Head–Automation Project, Adani Group

Moderator:

Mohit Sharma, Senior Research Analyst, Geospatial World

Panellist:

Mansoor Ahmad – Former Executive Director, AAI

Akshansh Agarwal – Co founder & CEO, Onsite

Prashant Alatgi, MD, Prashant Advanced Surveys



Key Points:

- Leveraging automation and digital twin technology to optimize airport operations, providing a comprehensive visual representation of the entire process and facilitating informed and efficient decision-making
- Emphasis on QEMS and the integration of geospatial solutions, such as BIM, LiDAR, Deflecto, ECODYN, Digital Twin, and GPR, underscores their transformative potential in revolutionizing airport infrastructure for enhanced efficiency, sustainability, and safety.
- Mobile LiDAR technology revolutionizes data collection by providing high-precision 3D mapping capabilities on the move, offering unprecedented efficiency and accuracy for various industries, from urban planning to autonomous vehicle development.
- Mobile phones construction app in construction, offering real-time communication, project management, and instant access to vital data, thereby boosting productivity and fostering better collaboration throughout construction projects.
- India has the best air navigation techniques and technologies in the world but it's not visible. One of the Cutting edge technologies deployed is Space based sensors to track the aircraft.



Session 2: Airport Infrastructure Planning and Design: Realising the Potential of Integrated Geospatial and BIM Solutions

Moderator:

Mohit Sharma, Senior Research Analyst, Geospatial World

Panellist:

Srilata Ramkumar, Director, Design, E&A Design Consultant

Gaurav Vatsa, Head Design, Noida international Airport

Neha Bagrecha, Head Design, Adani Airport

Gaurav Chawla, Founder & CEO, GKC Consultants OPC Private Limited

Pankaj Gupta, Managing Partner, Roark Consulting

Key Points:

- Understanding the hierarchy is very crucial and critical to effectively develop the airport master plan and Geospatial tech plays the major role at every stage of it.
- Utilizing BIM models from concept to scheme stages streamlines design development, enhances collaboration among consultants, simplifies tendering and cost estimation, and provides stakeholders with clear visualizations, ultimately expediting engineering, minimizing errors, and consolidating project documentation for improved efficiency and quality.
- Integrating geospatial solutions with BIM in airport design optimizes resource usage, enhances passenger experience, and promotes sustainability, bolstering overall airport success and functionality across planning, design, operations, and safety measures.
- Taking a pragmatic approach to implementing BIM in the design process focuses on practical, effective utilization, streamlining workflows, and maximizing the benefits of Building Information Modeling for enhanced project outcomes.



Session 3: Construction 4.0 Technologies Enhancing Resiliency of Building Infrastructure.

Moderator:

Rajiv Nehru, Market lead, APAC, RICS

Panellist:

Sonali Dhopte, Founder, Excelise

Atul Bhohe, Head BIM, TPF Engineering consultancy

SJ Vijay, Founder & Chairman,

Salmon Leap & hoMMission India

Abul Kalam Azad, Senior Project Management Consultant, JLL



Key Points:

- Construction manufacturing is increasingly turning to sensors, robots and drones to see jobs through to completion, as they are often faster and more reliable than traditional methods.
- Digital Transformation shifts tasks from siloed, department specific and manually done to being streamlined, universally accessible and strategically automated
- Hybrid Concrete Building (HCB) technology in construction offers the dual advantages of speed and strength, enabling faster project completion while ensuring robust, durable structures, ultimately delivering cost-efficiency and long-lasting quality.
- 3D Monolithic Modular Precast construction combines advanced 3D design with efficient modular precast elements, streamlining construction processes and delivering innovative, durable, and customizable building solutions.
- Integrated Project Delivery (IPD) revolutionizes construction project management by fostering collaboration and communication among all stakeholders from conception to completion, resulting in streamlined workflows, cost-efficiency, and superior project outcomes.



Session 4: Innovations in Built Environment with Digital Twins.

Moderator:

Mohit Sharma, Senior Research Analyst, Geospatial World

Panellist:

Ashish K Jain, Partner, AEON

Kuber, Team Leader, Ramboll

Vishal Shah, Executive Director, Gleeds Consulting

Manasa Garikaparthi, Urban Designer, AECOM

Chitranjan Kaushik, CEO, ECO First



Key Points:

- Digital twins hold immense significance as they offer real-time, data-driven replicas of physical assets, enabling industry stakeholders to optimize operations, improve decision-making, and enhance efficiency, ultimately driving innovation and competitiveness.
- Digital twin technology's transformative potential lies in enabling buildings to develop self-healing capabilities, primarily through real-time temperature data analysis and visualization.
- The seamless phygital integration of physical and digital realms highlights the construction industry's technological advancements, incorporating AI/ML, geospatial technology, and virtual reality to drive innovation and efficiency.
- BIM's potential for cost control strategies lies in its ability to provide real-time insights, optimize resource allocation, and enhance decision-making, ultimately ensuring efficient budget management in construction projects.
- Digital twins play a pivotal role in enhancing sustainability, improving outdoor comfort in housing, and utilizing parametric tools like Ladybug, Honeybee, Butterfly, and Dragonfly to study outdoor environments, showcasing their significant impact.



TRACK C: RAILWAYS, METROS, BRIDGES & TUNNELS

Session 1: Reality Capture, GIS and BIM to Enhance Construction Productivity of Railway Tunnels and Bridges

Keynote Address:

Anisur Rahman, Chief Engineer,
Northern Railway

Dr. M.P. Ramnavas, Director
Projects, Kochi metro rail Ltd.

Pawan Kumar, Senior Vice
President, Global Indirect
Business, Altair

Moderator:

BP Awasthi, Project Executive
Director, RDSO

Panellist:

Dr. Venkata Dilip Kumar

Pasupuleti, Associate Prof - Civil
Engineering, Mahindra University

Samkith Bagmar, Manager Drone
Solutions, ESRI India

Parveen Sharma, CEO, BIM
Engineer

Ela Bora, Deputy Manager, TATA
Projects



Key Points:

- 4D BrIM (Bridge Information Modeling) technology offers an advanced approach to technical inspections for crucial railway bridges, providing dynamic and data-driven assessments that enhance safety and ensure structural integrity.
- Regenerative Braking Systems on rolling stock enhances energy efficiency, reclaiming over 95% of lost traction energy, and deploying energy-efficient LED lighting in train coaches and stations.
- SimSolid solution is a powerful engineering tool known for its rapid structural simulation capabilities, enabling engineers to quickly and accurately analyze complex designs without the need for time-consuming model simplifications.
- Digital twins offer real-time monitoring, predictive maintenance, and improved operational efficiency, to railways and metro infrastructure ultimately enhancing safety, time, cost and passenger experience
- Integrating Structural Health Monitoring with Digital Twin, a comprehensive approach emerges, blending real-time data analysis and digital replicas to enhance infrastructure management, promote safety, and optimize maintenance strategies.
- Combining reality capture, GIS, and BIM in railway projects offers a sophisticated approach, harnessing precise spatial data, advanced geospatial analysis, and detailed 3D modeling to enhance rail infrastructure design, management, and maintenance with a data-driven precision.
- The simulated 3D construction can be used to show design intent to owners with greater visualization, generate coordinated drawings for eliminating rework & change order and eradicate work-stoppages due of RFIs in view of availability of high degree of detailing within the model itself.
- BIM allows for increased use of prefabrication and modular construction technology, which can ultimately diminish waste, reduce labour and material costs and help sidestep common issues like.

Session 2: Role of Multi-dimensional BIM in Metro infrastructure Planning, Design and Project Execution

Moderator:

Titas Roy, Senior Research Manager, Geospatial World

Panellist:

R S Rao, Chief General Manager - Project, DMRC

Namrata Kalsi, Chief Architect, Haryana Mass Rapid Transit

Dr. Kandimalla Venkateswaralu, Senior GIS Expert, NCRTC

Viraj Voditel, Founder & Director, Techure

Rashmi Bharty, Senior Manager, KEC

Soma Ganguly, Associate Technical Manager, ATKINS



Key Points:

- Multi-dimensional Building Information Modeling (BIM) goes beyond traditional 3D models, incorporating time, cost, and facility management data to provide a comprehensive and dynamic platform for more informed decision-making and enhanced project outcomes.
- BIM has become a new buzzword in the AEC industry. Architecture and design industry is adapting to Building Information Modelling (BIM), considering the platform's efficiency, transparency, and flexibility.
- Virtual Reality technology in construction transforms project visualization, design reviews, and training simulations, fostering enhanced collaboration and more successful project outcomes through immersive experiences.
- Need for a Connected Platform built for the way Construction Projects happen in India.
- Technology Advancement & Organization to be at par with global standards as per project & client demands.
- 6D Digital Twin technology in railway infrastructure focuses on sustainability by providing a comprehensive digital replica that incorporates not only 3D geometry but also time, cost, and environmental data.
- The simulated 3D construction can be used to show design intent to owners with greater visualization, generate coordinated drawings for eliminating rework & change order and eradicate work-stoppages due of RFIs in view of availability of high degree of detailing within the model itself.
- BIM allows for increased use of prefabrication and modular construction technology, which can ultimately diminish waste, reduce labour and material costs and help sidestep common issues like.



AWARDS

The Geosmart Infrastructure 2023 presented the Geosmart Infrastructure Awards, which aims to celebrate technologies best – in – class application, leadership, execution and management in sectors like Transport Infrastructure, Buildings & Campuses development and asset management. The awards felicitates the forward-looking projects and organisations for their impeccable work in the field of digital construction and engineering.

General (Dr.) Vijay Kumar Singh PVS, AVSM, YSM (Retd), Minister of State, Ministry of Road Transport & Highways presented the awards to the winners at Geosmart Infrastructure Awards.

GEOSMART INFRASTRUCTURE EXCELLENCE AWARD



Delhi Metro Rail Corporation
Excellence in sub – surface
Infrastructure



PWD Karnataka
Excellence in Roads & Highways
Infrastructure



Noida International Airport Ltd.
Excellence in Airport Design &
Construction



National Highway Authority of India
Recognition for undertaking
advanced technology initiative



Systra
Excellence in Railways & Metros



Aereo
Innovation in Surveying & Mapping



Onsite
Innovation in Construction Site
Management



Tecture
Excellence in Accelerating digital
transformation in construction



Visilean
Innovation in Sustainable
construction

SPONSORS & PARTNERS

| Co-Organizer |



सड़क परिवहन
एवं राजमार्ग मंत्रालय
MINISTRY OF
ROAD TRANSPORT
AND HIGHWAYS

सत्यमेव जयते

| Strategic Sponsor |



esri India

| Platinum Sponsor |

Bentley®

| Gold Sponsor |

GENESYSSM

| Cloud Partner |

aws

| Bronze Sponsors |



PAN INDIA
CONSULTANTS
PVT. LTD.

Trimble®

| Knowledge Partners |



Council of Architecture

CDCPindia
Inspiring Inclusive Digitalisation & BIM

| Supporting Partner |



| Trade Partner |

GEOSPATIAL WORLD
CHAMBER OF COMMERCE

| Association Partner |

India BIM
Association
ibima.co.in

| Media Partners |

CONSTRUCTION TIMES

GW PRIME
YOUR WHERE IS HERE

| Produced by |

GEOSPATIAL
WORLD
ADVANCING KNOWLEDGE FOR SUSTAINABILITY

Produced by

