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NATIONAL WATER MISSION

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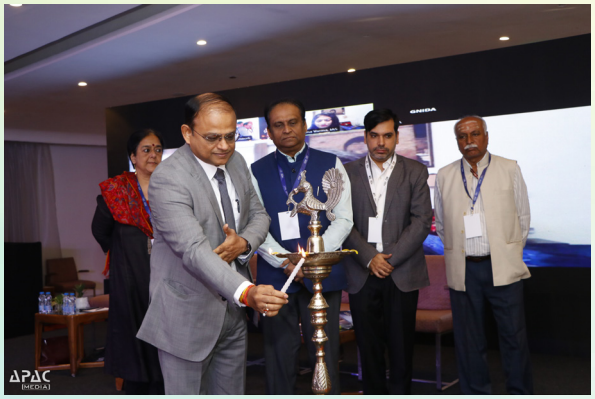
11th ANNUAL NATIONAL SUSTAINABLE WATER MANAGEMENT CONCLAVE New Delhi

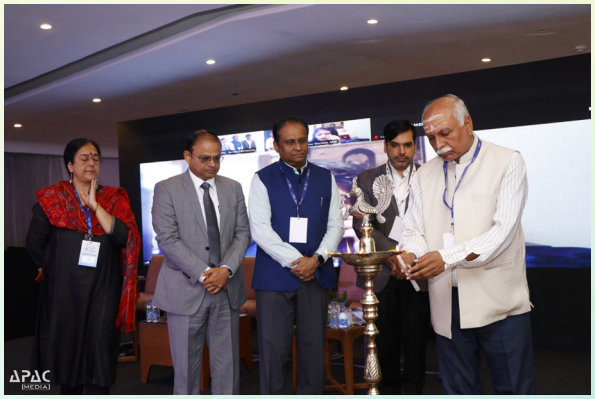
21st November, 2025

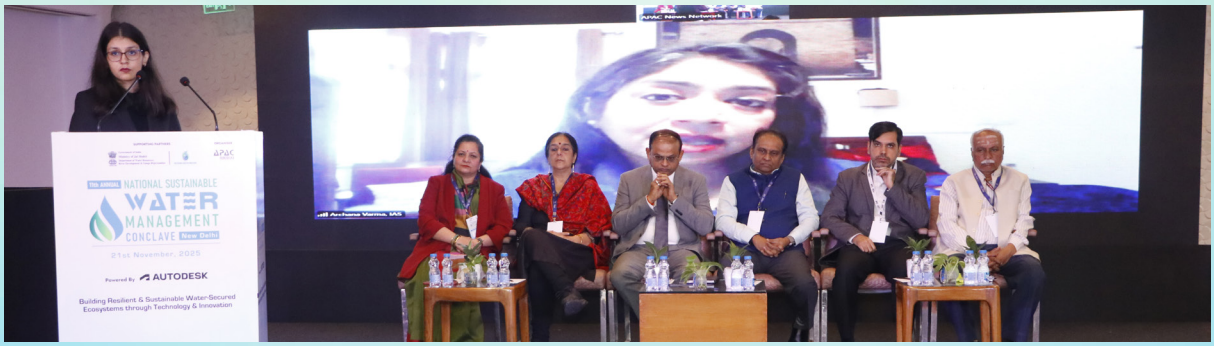
Powered By AUTODESK

Building Resilient & Sustainable Water-Secured Ecosystems through Technology & Innovation

EVENT REPORT







Key Highlights of the Conclave

10+ Engaging sessions on Building a Resilient and Sustainable Water-Secure Future for India through Technology

15+ Representatives from Central and State government departments

30+ Speakers from Public Water Utilities, Municipal Administrations, Water Tech Companies, Digital Solution Providers, IITs, and Civil Society Organisations`

100+ Delegates

India's growing urban population, stressed water resources, and climate uncertainties demand a transformative shift in water management. Technology, innovation, and digitisation now stand at the core of this transformation, enabling sustainable, inclusive, and future-ready water ecosystems.

The **11th Annual National Sustainable Water Management Conclave, held in New Delhi, organised by APAC Media, supported by the Ministry of Jal Shakti and National Water Mission, and powered by Autodesk,** brought together policymakers, technologists, academicians, industry leaders, and experts to explore how cutting-edge technologies, digital infrastructure, and collaborative PPP models can reshape India's water landscape.

The discussions focused on the integration of smart infrastructure and scalable digital solutions to strengthen the country's water security framework.

Reimagining Water Management in the Digital Era

In her keynote address**, Archana Varma, IAS, Additional Secretary & Mission Director (NWM), Department of Water Resources, River Development, and Ganga Rejuvenation, Ministry of Jal Shakti, Government of India,** stressed that technology in the water sector should always serve people and not be imposed on them. She explained that India is integrating tools like underground pipelines, IoT, and precision irrigation into major water schemes. But the success of these projects depends on helping communities understand the benefits.

Varma pointed out that water is sensitive and people often fear change, so adoption must be gradual and backed by awareness. She also highlighted efforts to improve water use efficiency across agriculture, industry, and homes, while encouraging voluntary adoption rather than forced compliance. She emphasized, "Technology can transform water management only when people are willing to embrace it. Progress must empower communities and make their lives better."

In his special address**, Santosh Kumar Mall, IAS, Principal Secretary, Water Resources Department, Government of Bihar,** highlighted the water challenges in the state despite its abundant resources. He explained how the state faces both recurring floods in the north and droughts in the south. He shared the use of digital tools like the Indent- Discharge System for efficient canal water distribution, the DRISHTI app for real-time monitoring of irrigation and flood projects, and satellite-based river training.

Mall noted that flood forecasting systems helped save lives during high-risk events and spoke about the Ganga water supply project that stores monsoon water to support water-scarce regions. He also mentioned upcoming plans, such as expanding SCADA systems and integrating all data into a central Water Knowledge Center. "Technology must help people on the ground and protect their lives. Our aim is to manage every drop better and make Bihar safer from both drought and floods," he concluded.

In his special address, **G. Asok Kumar (Retd. IAS), Former Special Secretary & DG, NMGC; Advisor, Public Works Department, Government of NCT of Delhi,** highlighted the growing role of digital technology in making water management more efficient and sustainable. "Digital tools are transforming how we plan, monitor, and improve water services," he remarked. He highlighted how tools like digital mapping, hydrological modeling, digital twinning, and project monitoring systems help with better planning, design, and execution of large water infrastructure projects.

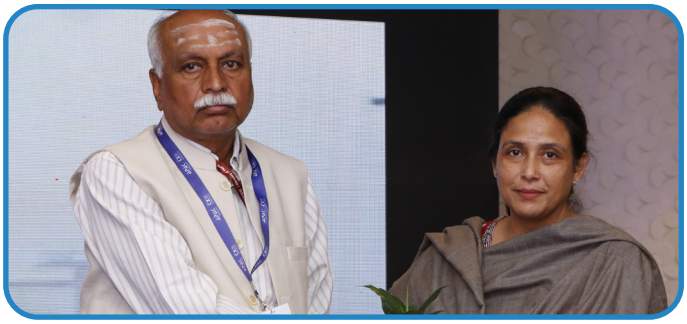
Kumar explained how digital platforms have enabled crowdsourcing of reliable water data, improved real-time monitoring of water quality and leakages, and increased transparency and public participation. He stressed that technology should support people and solve practical challenges like urban flooding, rising water demand, and proper maintenance of systems such as STPs. He also pointed out the need for metering to improve water use efficiency across the country.

Prerna Singh, IAS, Additional CEO, Greater Noida Industrial Development Authority, focused on how the region is planning its water infrastructure in a systematic way to become a world-class and water-secure smart city by 2041. "We are planning ahead to ensure Greater Noida remains water secure and future ready," she said.

Singh explained the current water demand, availability from groundwater and Ganga Jal, and the goal to shift from groundwater dependence to more surface water use. She also pointed out challenges like old pipelines, leakage, and gaps in wastewater treatment at group housing societies. She highlighted the city's efforts toward digital monitoring, SCADA systems, stronger STP operations, and improved reuse of treated

water. She said the authority is planning ahead to meet the rising demand from residents, industries, and data centers while pushing for sustainability and resilience. "Technology and sustainability will go hand-in-hand as the city grows into a global hub," she emphasized.

B. P. Pandey, Chairman, Godavari River Management Board, explained that the Godavari and Krishna River Management Boards were formed after the Andhra Pradesh Reorganization Act 2014, and they focus on regulating and operating major reservoir projects in Telangana and Andhra Pradesh. He listed key reservoirs under both basins and highlighted the complex water-sharing and management issues between the states.

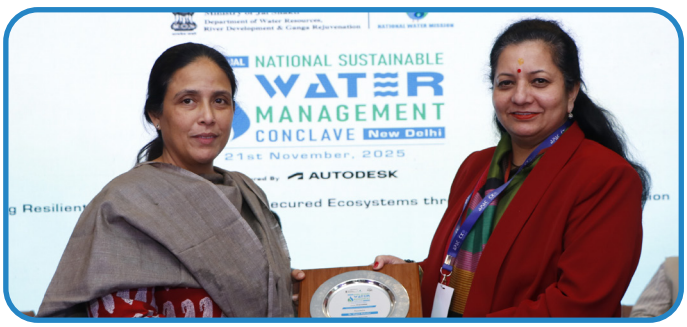


Pandey also spoke about the shift toward technology-based monitoring, including the installation of automatic water level and velocity sensors across reservoirs and barrages for real-time data collection. "Digital systems are helping us monitor reservoir levels and inflows in real time," he highlighted.

Smita Vats, Founder Director, ITIHAAS, spoke about engaging young minds in water conservation and management, emphasizing the importance of educating children about water as both a personal and community resource. She highlighted the efforts of her organization, ITIHAAS, which has worked with schoolchildren for over 20 years, creating curricula that combine practical experiences like visiting rivers with classroom learning. She stressed that children need to understand their responsibilities and develop ownership over water resources from a young age. "If our children are aware from a young age, they can become the change-makers of tomorrow," she stressed.

Vats also shared examples of children innovating solutions for domestic water use and explained that early awareness and involvement can turn youth into "water warriors" who drive meaningful change in society.

Dr. Nupur Bahadur, Director, NMCG-TERI, spoke about the pivotal role of technology in enhancing water reuse, wastewater treatment, and river rejuvenation in India. She highlighted the development of advanced oxidation technology (AOP) using UV-activated nanomaterials to efficiently treat industrial and municipal wastewater without requiring chemical inputs or extensive stream segregation. She emphasized integrating technology with policy, quality standards, and circular economy principles to make water reuse scalable, cost-effective, and sustainable. "The most important aspect in water reuse is quality—quantity is abundant, but without the right standards and technology, sustainability cannot be achieved," she emphasized.



Bringing forward the industry perspective, **Devansh Kakkar, Senior Technical Solutions Executive, Autodesk India Pvt. Ltd.,** explained how the company is supporting the digital transformation of water infrastructure to make it more resilient and efficient. He highlighted the evolution from paper-based designs to digital workflows using tools like AutoCAD and emphasized the importance of integrating data from IoT sensors, GIS systems, and real-time monitoring to plan, build, and manage water systems. He explained how technologies such as digital twins, AI, and predictive analytics help simulate scenarios, detect faults, and optimize operations across the entire water lifecycle, from treatment plants to city-wide distribution and wastewater management, ultimately aiming for safer and more sustainable urban water systems. "Digital transformation in water management is no longer optional—it's essential to build resilient, efficient, and safe infrastructure," he noted.

Key Takeaways from the Session:

- Technology must serve people and support gradual community adoption
- Strong data management and integration are essential for effective planning and decision-making
- Sustainable urban water planning must reduce dependence on groundwater and focus on reuse
- Infrastructure upgrades, including monitoring systems, metering, and modern STP operations, are crucial
- Public-private collaboration will help scale digital solutions and modernize water infrastructure

Technical Session

State's Perspective: Harnessing Emerging Technologies: IoT, AI, & Big Data for Water Governance

In his presentation, **Salil Shrivastav, Engineer-In-Chief, Nava Raipur Atal Vikas Pradhikaran, Government of Chhattisgarh**, explained how Nava Raipur has built and expanded a smart water management system using ICT, IoT, and SCADA. He gave a brief background of the city's planning and infrastructure and then focused on the water supply network that brings treated water from the Mahanadi River to all sectors through fully monitored pipelines and reservoirs.

Shrivastav highlighted the use of a two-way SCADA system that tracks flow, pressure, water quality, and equipment performance from the intake well to the last-mile distribution. He also described automated meter reading for households, online billing, and control of pumps and valves from the command center. He explained that the system supports fault detection, alarms, and data analytics and shared future plans to improve leakage detection with AI, while noting challenges like RTU failures due to underground moisture.

DP Mathuria, Chief Engineer, Planning and Development Organisation, Central Water Commission, Government of India, explained how the commission is using data-driven technologies like AI, machine learning, IoT, and remote sensing to strengthen water management in India. He focused on disaster management, especially national flood forecasting, where AI is improving accuracy and reducing processing needs. He noted that the commission runs a large network of hydrological and meteorological stations, monitors rivers and glacial lakes, and issues real-time advisories at hundreds of locations.

Mathuria also highlighted work on irrigation efficiency, crop water requirement estimation, river morphology, and dam safety. He emphasized that better data and advanced analytics would help move from basic monitoring to intelligent water governance that supports prediction, planning, and national priorities.

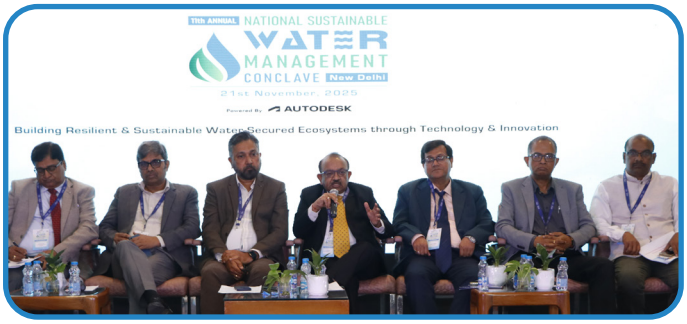
Dr. Manoj P Samuel, Executive Director, Centre for Water Resources Development and Management (CWRDM), highlighted the key policy and field challenges in advancing digital and data-driven water management in India. He stressed difficulties in data generation, sharing, and reliability, limited access to satellite data and costly software, and slow adoption of new technologies among water and agriculture departments. He also pointed to risks like misinformation, lack of validation, and changing climate conditions that demand frequent data updates.

Samuel underlined the need for affordable indigenous tools, stronger community participation, and better irrigation efficiency. He also shared examples of practical digital solutions already emerging, such as sensor-based irrigation, mobile apps for groundwater checks, citizen-powered water quality monitoring, and hyperspectral imaging.

Bilash Kumar Behera, Engineer-in-Chief, Public Health Engineering, Bhubaneshwar Municipal Corporation, Water Supply Sanitation Board, Government of Odisha, spoke about how growing urbanization and limited water resources make smart water management essential. He stressed that utilities need accurate measurement through sensors and data systems because manual management is no longer possible. He explained Odisha's work on a smart water grid that connects pipelines, meters, monitoring tools, and customers. He shared that the state has achieved full piped network coverage and almost universal household tap connections, along with 24/7 safe drinking water in cities like Puri and Gopalpur.

Behera further highlighted the benefits of the system, such as early leak detection, better quality, faster response to issues, and lower losses. He stressed public-private partnerships, policy support, and community involvement as key factors.

Ajay Saxena, **Sector Head, Infrastructure Development and PPP Head, Maharashtra Institution for Transformation (MITRA),** emphasized that technology must deliver real value in the water sector instead of being used only because it sounds modern. He said strong baseline data is essential before applying tools like IoT and AI. Most water problems lie underground, so technology should help detect leaks and losses, cut project costs, and improve planning.



Saxena shared examples from Maharashtra, such as SCADA-based monitoring in Navi Mumbai and GIS mapping for wastewater treatment planning. He highlighted new AI-driven robotic systems that inspect pipelines and help with accurate cost estimates. He also suggested that small performance-based pilot projects should come before large contracts.

Dr. Diganta Barman, Head, Water Resources Division, North Eastern Space Applications Centre, explained the growing challenge of limited freshwater and the urban water crisis. He highlighted how modern smart water supply systems use smart meters, pressure and flow sensors, SCADA, GIS mapping, and real-time monitoring to reduce losses and improve efficiency. He stressed why geospatial technology is essential since water networks are spatial in nature. He shared global examples of smart water grids and India's ongoing efforts, like AMRUT database creation.

Barman also highlighted the work his center in the Northeast is doing, including reservoir decision support, flood early warning, hydraulic modeling, and collaboration with state agencies for better water resource management. Additionally, he pointed out issues like legacy data, manpower, cybersecurity, and coordination in adopting digital technology for water management.

Prof. A K Keshari, Water Resources Section, Civil Engineering Department, IIT Delhi, spoke about how emerging technologies like AI, machine learning, IoT, and geospatial tools can strengthen water management. He said GIS, remote sensing, drones, and GPS can improve planning, monitoring, and decision making rather than being used only for maintenance. He stressed the need for policy changes so that utilities and buildings must map pipelines and underground infrastructure upfront.

Keshari shared examples of his work, including urban land cover mapping with machine learning, regulating river and groundwater extraction for sustainability, groundwater pollution assessments, and flood vulnerability prediction. He emphasized using these technologies across planning, operations, and management for better governance and long-term water security.

Key Takeaways from the Session:

- Smart water systems powered by ICT, IoT, SCADA, and data analytics are improving monitoring and operational efficiency
- AI and machine learning enable better forecasting, modeling, and intelligent decision support
- Adoption challenges remain in data sharing, system reliability, validation, and workforce capability
- Digital transformation should begin with small pilots that deliver measurable value before large expansion
- Integration of prediction, planning, and citizen tools leads to long-term sustainable and resilient water systems

Panel Discussion

Urban Water Management: Resilient Sustainable Water Management & Infrastructure

Panelists:

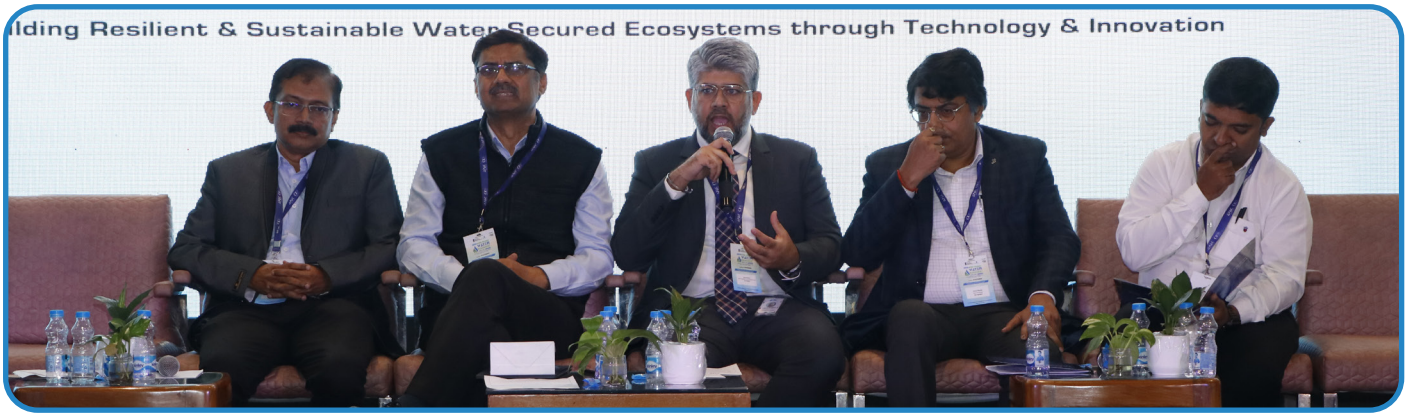
- **Shajatnan K.H.**, Director (Technical), National Water Development Agency, Government of India
- **S.V. Singh**, Additional Surveyor General, Surveyor General of India
- **Vivek Sharan**, State Head of Bihar, Water for People
- **Varun Tandon**, Chief Executive Officer, Water Management and Plumbing Skill Council

Moderator: Dr. Viraj Loliyana, Sr. Advisor, Maharashtra Institution for Transformation (MITRA)

The panel focused on how cities can manage water in a resilient and sustainable way while improving infrastructure. Panelists highlighted that new systems such as smart metering, IoT devices, and real-time monitoring need skilled workers to operate them. A lack of manpower and technical capability was identified as a major challenge, and continuous upskilling in operations, maintenance, and customer-side efficiency was seen as essential.

Experts emphasized that long-term water sustainability depends on strong data systems, secure water sources, and reliable shared information to support smart water networks and transfers between regions. The use of high-resolution geospatial data was discussed as a way to improve hydrology mapping, though utilities need support to manage large datasets. Community-focused digital tools were cited as effective in improving billing, transparency, and decision-making at the local level.

In closing, the discussion reinforced that technology alone is not enough. Cities need active citizen participation, collaboration between public and private stakeholders, and scalable models to strengthen urban water systems across the country.



Key Takeaways from the Panel Discussion

- Skilled manpower is essential for operating smart water systems
- Citizen participation is key for successful technology adoption
- Smart water management must balance technology with long-term resilience and sustainability

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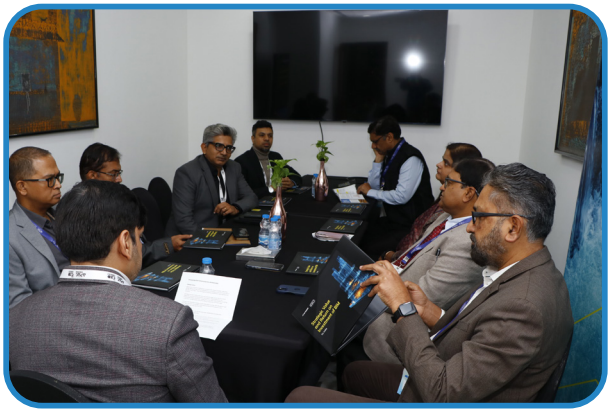

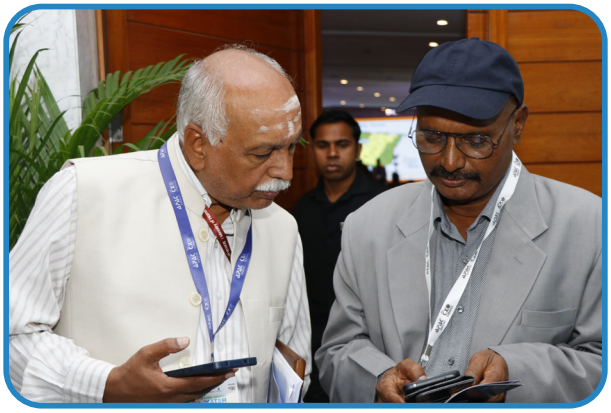

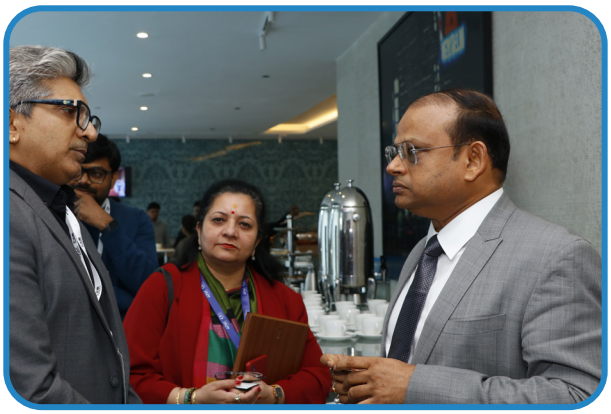

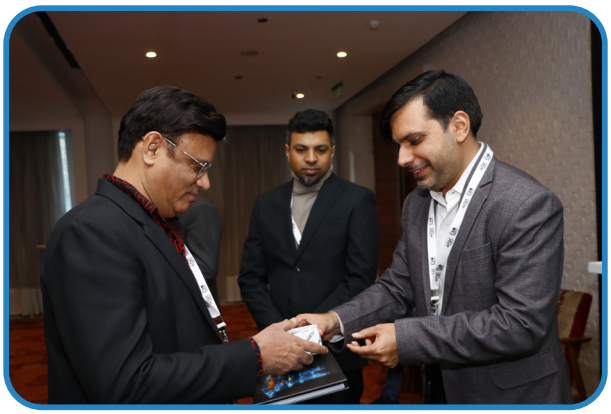

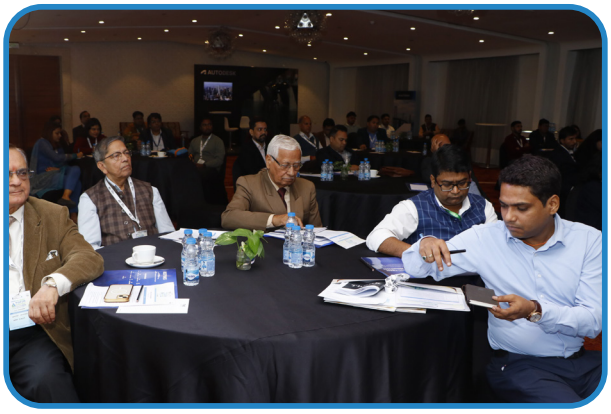

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