INDIA'S DIGITAL ADDRESSING SYSTEM

n an era driven by digital transformation, India has made commendable strides in digital governance, financial inclusion, and citizen services. However, one critical area still grapples with inefficiency: addressing and geolocation infrastructure. An outdated and inconsistent address system continues to impede service delivery, emergency response, last-mile logistics, urban planning, and governance. As India advances its "Digital India" vision, the need for a robust Digital Addressing System (DAS) becomes more urgent than ever.

India's traditional address system relies heavily on landmarks, ambiguous notations, or incomplete data. Addresses like "near the temple" or "behind the market" are common, especially in rural and semi-urban areas. Such addresses are not machinereadable, which makes them incompatible with digital systems that power e-commerce deliveries, ambulance services, census operations, and financial inclusion programs. In a country of 1.4 billion people, this poses a massive challenge.

A Digital Addressing System assigns a precise, standardized, and unique digital identifier to every location-be it a home, business, public service, or landmark. Think of it as the Aadhaar for locations. This not only enables clear identification of properties but also brings transparency, efficiency, and traceability across systems. Several global solutions, such as Plus Codes by Google or what3words, have been proposed and piloted, but India needs a customized, scalable, and government-backed solution.

The government, through departments like the Ministry of Electronics and Information Technology (MeitY), the Department of Posts, and municipal bodies, must come together to institutionalize a digital addressing framework. In fact, India Post's initiative of Digital Address Codes (DACs) is a promising step. These codes aim to uniquely identify and geotag every address in India, which will revolutionize not just mail delivery but also boost e-commerce logistics, especially in underserved regions. The implications of a national DAS are far-reaching. In emergency services, accurate location mapping can save lives during disasters, medical emergencies, or fire incidents. Financial institutions can onboard customers in remote areas more efficiently if they have a verifiable digital address. E-governance platforms, like property tax systems, welfare delivery, and utility billing, would become more accurate and accountable. Even urban planning and smart city projects would benefit immensely from clear geospatial datasets that link every citizen to a mappable location. Moreover, such a system promotes digital equity. Millions of Indians living in slums, remote villages, or informal settlements are often excluded from services simply because their addresses don't exist in a formal database. A DAS would provide them with a recognized digital identity for their homes, making them visible to the state and service providers.

Dentavision 2025 redefines future of dentistry in J&K

MOHAMMAD HANIEF



t the foothills of the Himalayas, where tradition and modernity often meet in complex ways, a group of professionals gathered recently to chart the future of a discipline that rarely makes the headlines - dentistry. Dentavision 2025, organised by the Indian Dental Association (IDA) Kashmir Central Branch at Hotel

Sarovar Premiere, Srinagar, was more than just another professional conference. It was a convergence of ideas, ambitions and anxieties, with one shared purpose: reimagining oral healthcare in Jammu & Kashmir.

Opening the summit, Prof. (Dr.) H. U. Malik urged dentists to look beyond fillings and extractions. Dentistry, he said, must embrace prevention, research, and entrepreneurship if it is to serve the region meaningfully. His words resonated with the young graduates in the hall, many of whom are grappling with unemployment and uncertainty about their careers.

The keynote address carried the theme further as Pirzada Farooq Ahmed Shah, IAS, MLA Gulmarg and former secretary of tourism and education, placed dentistry in the larger development story of J&K. Healthcare, education, and tourism, he stressed, are interconnected pillars of growth. With the right policies, Jammu & Kashmir can position itself as a hub for dental tourism, drawing patients from across the country. He commended IDA Kashmir for creating a platform that seamlessly combined scientific exchange with policy dia-

The panel discussions brought out some of the most urgent concerns facing the profession.

Prof. (Dr.) AltafHussainChalkoo, Professor & HOD, Oral Medicine & Radiology at Government Dental College Srinagar, said that dentistry in J&K cannot remain isolated from global trends. Digital radiology, AI-based diagnostics, and collaborative research are no longer optional but essential.

Prof. (Dr.) Mohammed Shakeel, Professor & HOD, Maxillofacial Surgery at SKIMS MCH Bemina, spoke frankly about the dilemmas of young graduates. Dentistry, he admitted, is highly competitive, but opportunities in implantology, cosmetic dentistry, forensic odontology, and craniofacial research are growing rapidly. Young professionals, he suggested, must broaden their skills and think beyond conventional practice.

For EjazAyoub, research scholar in Economics at NIT Srinagar, the focus was on the economics of dentistry. A

Key Takeaways from Dentavision 2025

- · Urgent call for innovation and youth engagement in dentistry
- · Opportunities for self-employment and financial empowerment of young practitioners
- Potential for dental tourism in Jammu & Kashmir
- Launch of The Oral Health Conversation newsletter for professional exchange
- Need for integration of oral health into public health programs
- · Emphasis on ethics as the foundation of patient trust

dental clinic, he explained, functions both as a healthcare unit and as a small business. Financial literacy, credit management, and entrepreneurial training must become part of dental education. Micro-financing, incubation hubs, and startup loans can help young practitioners set up independent clinics and reduce unemployment.

Ethics remained central to the debate. Dr.Sanjeet Singh Risam, head of dentistry at government medical college Anantnag, reminded the fraternity that technology and finance may open doors, but without ethical practice and patient trust, the profession risks losing its foundation.

The discussions, moderated by senior media professional Sardar Nasir Ali Khan and digital banker and anchor SabaReshi, maintained a lively and probing tone. Young dentists questioned their seniors about job creation, specialisation, and financial support, while senior experts responded with guidance and candour.

Another highlight was the launch of The Oral Health Conversation, a quarterly newsletter of IDA Kashmir

Central Branch. Organising Secretary Dr.Adil Malik explained that the newsletter would connect professionals across the Union Territory, share research and updates, and give young practitioners a platform to voice their ideas

Amidst the optimism, sobering facts were also presented. Nearly 70 percent of the population in Jammu & Kashmir continues to suffer from untreated dental problems, a situation driven by low awareness, affordability issues, and weak access to rural healthcare.

Speakers stressed that oral health must be integrated into public health planning. Preventive care in schools, mobile dental clinics, and tele-dentistry, they said, can help bridge the gap between urban centres and remote villages. Without such measures, dentistry risks remaining an elite service, inaccessible to large sections of society.

The event proved to be transformative for younger attendees.For Dr.NidaBhat, a recent graduate, the summit expanded her understanding of dentistry as a field that goes beyond clinical practice into research, entrepreneurship, and public service.

For Dr.Suhail Ahmad, the real value lay in networking and mentorship. Meeting senior practitioners who were willing to guide and support the younger generation gave him a sense of belonging to a professional community.

Faculty members, too, found themselves reflecting. Prof. (Dr.) Shazia Jan underscored the need to modernise dental education to keep pace with contemporary healthcare realities and prepare students for the challenges ahead.

Closing the proceedings, Dr.Adil Malik emphasised that Dentavision 2025 should not be remembered as a ceremonial gathering. Instead, it must mark the beginning of a sustained effort to transform dentistry in J&K. The summit, he said, had identified urgent challenges - unemployment among graduates, ethical lapses, and weak public awareness - but had also opened pathways for innovation and collaboration. Dentistry in J&K must now aim to be patient-centred, technologically modern, and globally com-

A Roadmap Emerges

Dentavision 2025 left its participants with both questions and clarity. Can dentistry become a viable career for J&K's youth? Can oral health become part of the public health system? Can ethical practice withstand market pressures?

The consensus was clear: the time for transformation is now. With innovation, collaboration, and patient trust as guiding principles, oral healthcare in Jammu & Kashmir is

Jammu under Water: A Comprehensive Report on August 2025 Floods

DR RAKESH VERMA

n August 23rd and 24th, 2025, the city of Jammu and surrounding areas experienced torrential rainfall, leading to catastrophic flooding. The downpour, the secondhighest single-day August rainfall in nearly a century, overwhelmed the city's infrastructure, causing widespread damage to homes, businesses, and public assets. This report provides an indepth analysis of the event, exploring the meteorological context, the scientific processes behind the flooding, the root causes tied to urban planning, and a detailed account of the damage. Furthermore, it outlines a series of short-term and long-term strategies, including advanced early warning systems, to build a more floodresilient future for Jammu.

The Deluge of August 23rd: An Unprecedented Downpour

The India Meteorological Department (IMD) had issued warnings of intense rainfall, flash floods, and landslides for the Jammu and Kashmir region from August 23rd to 27th. The forecast tragically became a reality when heavy rains began lashing the region overnight on August 23rd.

Jammu recorded a staggering 190.4 mm of rainfall in a 24-hour period, a figure surpassed only once in the last century, on August 5, 1926. The sheer volume of water quickly overwhelmed natural and man-made drainage systems. Lowlying urban areas, including Janipur, Roop Nagar, Talab Tillo, and Sanjay Nagar, were severely inundated as overflowing streams and choked drains caused floodwaters to surge into homes and businesses. The event led to at least two fatalities in separate rain-related incidents in the nearby Reasi and Kathua districts. In response to the crisis, authorities declared the closure of all schools in the Jammu Division on August 25th.

Geographical and Meteorological Context: A Recipe for Disaster

Jammu's susceptibility to flooding is rooted in a combination of its unique geography and potent meteorological factors. The city's location within the Shivalik hills, part of the Himalayan foothills, and its humid subtropical climate create a complex interplay that influences its vulnerability to extreme weather events.

Topography and Climate: Jammu is nestled in the Shivalik hills, the outermost range of the Himalayas. These hills, characterized by their undulating terrain and relatively lower elevation compared to the higher Himalayan ranges, significantly influence local weather patterns. The region's humid subtropical climate, marked by hot summers and a pronounced monsoon season from June to September, contributes to the region's high annual rainfall. The monsoon season brings moisture-laden winds from the Arabian Sea and the Bay of Bengal, which, when interacting with the Shivalik hills, result in substantial precipitation.

The city's location in a topographically complex area means that rainfall distribution can be highly variable. The hills act as barriers, forcing air masses to rise, cool, and release their moisture. This orographic lift effect leads to increased rainfall on the windward side of the hills, while leeward areas may experience rain shadow effects. Jammu, situated in this dynamic zone, is therefore prone to intense rainfall events, particularly during the monsoon season.

The city's natural drainage patterns are also influenced by the topography. Numerous seasonal streams and rivulets flow down the Shivalik hills, converging into larger water bodies as they descend towards the plains. These natural drainage channels, if not properly managed and maintained, can become conduits for flash floods



Meteorological Drivers: The flooding was driven by a powerful combination of the Southwest Monsoon and Western Disturbances. When moisture-laden winds from these systems encounter the mountainous terrain around Jammu, they are forced to rise. This process, known as orographic lift, causes the air to cool and condense, releasing its moisture as intense, concentrated rainfall. Experts note that climate change is amplifying these events, leading to more erratic and extreme precipitation patterns. The intensity of the monsoon, coupled with the frequency and strength of Western Disturbances, creates a scenario where Jammu is repeatedly exposed to the risk of heavy rainfall and subsequent flood-

The Science of the Flood: From Raindrops to Ruin

The transformation of heavy rain into a destructive flood involves distinct hydrological

Runoff Generation and Flash Flooding: A flash flood occurs when rainfall intensity exceeds the ground's infiltration capacity. In urban areas like Jammu, impervious surfaces such as concrete roads and rooftops prevent water from soaking into the ground, leading to immediate and massive surface runoff. This surge of water flows rapidly into low-lying areas, overwhelming drainage channels and causing a swift, dangerous rise in water levels. The increased urbanization in Jammu has led to a significant reduction in permeable surfaces, exacerbating the runoff problem. As more land is covered with concrete. the natural ability of the ground to absorb rainwater diminishes, resulting in a greater volume of surface runoff during heavy rainfall events.

Prolonged Inundation: After the initial surge. prolonged inundation occurs when the water has nowhere to go. This is caused by a combination of saturated soil that cannot absorb any more water, river systems that are already swollen, and, most critically in an urban context, drainage systems that are blocked, undersized, or completely overwhelmed. The city's drainage infrastructure, designed decades ago, is inadequate to handle the increased runoff generated by the expanding urban landscape. The lack of proper maintenance and the accumulation of debris further reduce the efficiency of the drainage system, leading to prolonged waterlogging in many areas.

The Force of Destruction: The damage is twofold. The high velocity of flash floodwater carries immense force, capable of tearing out trees, and even bridges. Subsequently, the prolonged contact with standing water leads to structural degradation, ruin of property, and long-term damage to public infrastructure. The force of the floodwaters is amplified in areas where natural drainage channels have been obstructed by construction or encroachment. The resulting concentration of water flow can lead to catastrophic damage to buildings and infrastructure located in these vulnerable zones.

The Aftermath: Documenting the Widespread

The August 2025 floods left a significant trail

of destruction across the Jammu region. Damage to Public Infrastructure: The most prominent damage was to a crucial bridge on the Jammu-Pathankot National Highway over the Sahar Khad in Kathua district. The powerful currents damaged a pillar and bent the structure, forcing authorities to halt traffic and severely disrupting regional connectivity. Other reported damages included a caved-in road near the Tawi bridge, a collapsed culvert at the Jammu bus stand, and damage to a government school building in Kathua. The damage to transportation infrastructure highlights the vulnerability of the region's connectivity to extreme weather events. Disruption of road networks can have significant economic and social consequences, affecting the movement of goods, services, and people.

Impact on Private Property: Residential areas were hit hard. Reports from localities like Roop Nagar and Janipur described floodwaters inundating homes, collapsing boundary walls, and sweeping away nearly a dozen vehicles. Students at the Indian Institute of Integrative Medicine (IIIM) had to be evacuated after floodwaters inundated their hostel. The impact on private property underscores the need for better urban planning and enforcement of building codes in flood-prone areas. Many homes and businesses in Jammu are located in areas that are susceptible to flooding, either due to their proximity to natural drainage channels or their location in lowlying areas.

Economic and Human Cost: While a precise financial toll for this event is not available, the widespread destruction points to losses likely running into crores of rupees. For context, major flood events in the region have historically been devastatingly expensive; the 2014 Jammu and Kashmir floods, for instance, resulted in insured losses estimated at around ?9,000 crore (USD includes not only the direct damage to property and infrastructure but also the indirect costs associated with business disruption, loss of productivity, and increased healthcare expenses. The human cost of flooding extends beyond the immediate casualties and includes the long-term psychological and emotional impacts on affected communities.

Root Causes: Beyond the Rain

The disaster was not caused by rainfall alone but was exacerbated by deep-seated issues in urban management.

Inadequate Drainage: A primary culprit is the city's outdated and poorly maintained drainage system, which is ill-equipped to handle the runoff from such intense rain. The city's drainage system was originally designed to accommodate a much smaller population and a less developed urban landscape. As the city has grown, the drainage infrastructure has not kept pace, resulting in a system that is inadequate to handle the increased runoff generated by urbanization.

Unplanned Urbanization and Encroachment: Experts point to unplanned construction and illegal encroachment on natural water bodies and floodplains as a major contributing factor. When these natural drainage paths are blocked, water has no escape route, leading to urban flooding. The encroachment on natural water bodies, such as wetlands and ponds, further reduces the city's capacity to absorb and store excess water.

Land Use Change: The conversion of permeable green spaces into impermeable concrete surfaces across the city has drastically increased the volume and speed of surface runoff, placing an unbearable strain on the already struggling drainage network. The loss of green spaces not only increases runoff but also reduces the city's ability to mitigate the urban heat island effect, which can further exacerbate extreme weather

Path to Resilience: Mitigation and Adaptation Strategies

Building a flood-resilient Jammu requires a multi-faceted approach combining immediate fixes with long-term strategic planning.

Short-Term Mitigation (Structural Measures)

Upgrade and Maintain Drainage: The immediate priority is the modernization and regular maintenance of the city's stormwater drainage network, Projects like the Jammu City Drainage Subproject must be implemented and expanded to increase the system's capacity. The upgrading of the drainage system should include the installation of larger diameter pipes, the construction of additional drainage channels, and the implementation of regular cleaning and maintenance

Channel and River Management: Channel improvement and dredging works can artificially lower flood water levels, helping to confine water within river banks and preventing spillage into urban areas. These measures should be carried out in a sustainable manner, taking into account the ecological impacts of altering natural water-

Long-Term Adaptation (Non-Structural Measures)

Sustainable Urban Planning: Developing and enforcing a comprehensive Drainage Master Plan for Jammu is critical. This should be integrated with land-use planning that strictly prohibits construction in flood-prone zones and protects natural water bodies. The Drainage Master Plan should be based on a thorough hydrological analysis of the region, taking into account the impacts of climate change and future urbanization.

Implement Green Infrastructure: Cities worldwide are adopting "Sponge City" concepts. Jammu can integrate solutions like permeable pavements, rain gardens, green roofs, and bioswales. These measures help absorb rainwater where it falls, reducing runoff and easing the burden on the drainage system. Green infrastructure not only reduces runoff but also provides numerous other benefits, such as improved air quality, reduced urban heat island effect, and enhanced

Community Awareness and Preparedness: Long-term resilience also involves educating the public about flood risks and implementing community-based disaster preparedness programs. Public awareness campaigns should focus on educating residents about the causes and impacts of flooding, as well as the steps they can take to protect themselves and their property.

Advanced Warning for Future Threats

Effective prevention hinges on the ability to anticipate and communicate threats before they materialize.

Impact-Based Flood Forecasting: Jammu and Kashmir is slated to receive the country's first impact-based flood forecasting system in collaboration with the UK Space Agency. This advanced system will predict not just water levels, but the specific impact on homes, crops, and infrastructure, enabling highly targeted emergency responses. Impact-based forecasting relies on sophisticated models that integrate meteorological data, hydrological data, and vulnerability assessments to provide a more comprehensive picture of the potential impacts of

Real-Time Monitoring and Dissemination: Expanding the network of automatic water level recorders and rain gauges is essential. The "Kashmir Flood Watch" mobile app is a positive step in leveraging technology to provide realtime data to both authorities and the public. Real-time monitoring provides valuable data for validating flood forecasts and for making informed decisions during emergency situations.

Community-Based Early Warning Systems (CBFEWS): To be truly effective, warnings must reach the last mile. Implementing CBFEWS ensures that official alerts are communicated through trusted local channels and that communities are trained to respond appropriately, a practice advocated by organizations like ICIMOD and the World Meteorological Organization. CBFEWS empowers communities to take proactive steps to protect themselves and their property, reducing the risk of loss and damage.