



CUSTOMER CASE STUDY

The Nava Raipur smart city: quality of life, smart growth, and city resilience

Company Name - Nava Raipur Atal Nagar Vikas Pradhikaran (NRANVP)

Industry - Infrastructure

Goals

- Construct a world-class greenfield smart city
- Achieve high livability through civic operational efficiency
- Develop an infrastructure and operations plan to underpin optimized city management

Challenges

- To deliver the first environmentally sustainable smart city as the new capital of Chhattisgarh state
- To use optimized solutions to meet the needs of citizens and businesses
- To enhance quality of life through safe, efficient, sustainable civic amenities and planning systems.

AVEVA Solution

- AVEVA™ Unified Operations Center
- AVEVA™ Water Network Optimization
- AVEVA™ Water Loss Management
- AVEVA™ Enterprise Asset Management

Results

- Real-time insight and management of critical infrastructure systems across the city.
- Better management of supply and demand for crucial civic services including water, street-lighting, electrical and sewerage services, in real time.
- Nava Raipur designated a lighthouse for the Indian Government's National Smart Cities Mission

Nava Raipur, smart city

Nava Raipur Atal Nagar, located in central India, is the country's first metropolitan greenfield Smart City and a beacon for Smart City planning, development, and operation worldwide. In 2000, when India established Chhattisgarh as its ninth-largest state at a population of 29 million people, municipal authorities quickly identified the need for a new state capital. Nava Raipur – or “new” Raipur – was commissioned to be the state's future economic and financial nucleus.

For the new capital, urban developers needed to deliver an environmentally friendly, well-planned city to bring forth all the latest amenities of a successful Smart City. Nava Raipur was planned from the ground up to deliver quality of life through safety, efficiency, sustainability, and livability. Adopting world-class land use planning principles, the city has established a dedicated zoning system for residential, commercial, and industrial sectors. Recreational space accounts for nearly 30% of the geographical plan, and the city includes Asia's largest manmade reservoir and other recreational facilities like its Jungle Safari, a sports stadium, adventure sports venues, a musical fountain, and more. The city was designed to be a model for smart growth and resilience, to accommodate a population of 600,000 citizens by 2031.

Creating a resilient infrastructural backbone

Worldwide, rapid urbanization has pressured city resources and challenged management infrastructure. In planning and building a world-class greenfield city from the ground up, authorities were aware of the critical technology investment required for sustainability and operational efficiency to achieve a high livability ranking and manage the city's rapid growth. The senior team therefore decided to invest in Smart City software, developing an information and communications technology (ICT) infrastructure plan to underpin efficient, optimized city operations.

Nava Raipur Atal Nagar Vikas Pradhikaran (NRANVP) leadership turned to AVEVA to achieve this vision. To form the city's infrastructural backbone, AVEVA experts connected the city's eight primary operational systems into an integrated command and control center (ICCC) powered by AVEVA™ Unified Operation Center.

This platform acted as a hub for real-time system information, situational awareness, and response, including water, power, street lighting, public transportation, traffic management, CCTV, contact centers, and e-governance. The combined Smart City solution enhances sustainability and operational efficiency, delivering civic services to citizens, communities, businesses, and other stakeholders.

“We selected AVEVA as our ICT partner because we felt they had the experience, expertise, technology, and knowledge to fit with our Smart City vision. We had engaged PwC as a consultant and asked them to work with us to develop our plan. They created a tender for a technology partner, and AVEVA was the best bid for our needs. As we look to the future, we are confident that AVEVA has the software technology we need to scale and grow our operations capabilities, enabling us to support the development of Nava Raipur as a Smart City hub for Chhattisgarh.”

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N N Ekka,
CEO
Nava Raipur

Single-pane-of-glass interface for smart city situational awareness, monitoring, and response

Making use of its Unified Operations Center, the AVEVA team designed a first-of-its-kind ICCC platform to act as a brain and decision support system for all city operations with a single-pane-of-glass interface for camera feeds, GIS/map-based status, and real-time dashboards. The platform provides municipal teams visibility across various departmental operations and enables them to visualize key information with geotagged alerts, alarms, incidences, events, critical city asset performance, and resources utilization. The facility also enables the city operation team to assume control of various operations and systems from the central ICCC during critical incidents or emergencies.



The platform is enriched by enterprise workflow capabilities that support collaboration and information sharing, enabling teams to manage incidents through standard operating procedures. This improves response time and accountability while optimizing resource usage and assuring uninterrupted citizen services. The ICCC's operational capabilities are enhanced through AVEVA asset performance management software, which tracks life cycles of critical assets with predictive failure and alerts to ensure better asset availability and performance, resulting in lower capex expenditure.

In the first phase of the project, the team focused on integrating six key city systems, including: a rapid transit solution for buses to improve public transportation; CCTV systems to enhance public safety; traffic speed detection and rule violation monitoring to improve traffic circulation; supervisory control and data acquisition (SCADA) systems and actuated valves and pumps to improve water and sewerage systems; a smart grid outage management system and distribution management system solutions to improve power distribution; and building management solutions to manage energy consumption and streamline the operation of government buildings and citizen contact centers. All these systems are integrated with the ICCC, meaning the team can now:

- Directly monitor information on roads and transportation, water and wastewater, electricity generation, transmission and supplies, LED street lighting, social and recreational activities, government offices' energy and resource use, residential energy and resource use, and the city's green civic systems.

- Enable direct control of water, sewage, power, streetlights, building management systems, and CCTV systems, enabling users to centralized critical operations, exceptions, and emergencies.

Benefits of a sustainable, digital city for citizens

The ICCC implementation of a citywide operation platform enhanced operational efficiency to the next level, resulting in higher liveability index. New systems benefit Nava Raipur's growing population of citizens in various ways:

- The unified portal integrates all citizen services through a common interface and mobile app, which is more user-friendly for citizens to access.
- Citizens can now make one automated annuity payment, making it easier for people affected by building projects to receive benefits. This payment includes distribution of compensation for housing allocations and land loss, too. Citizens can also secure planning permission through the online system, or even apply for new water connections. They can also make online payments, file documents, and get communications updates, all using online tools.
- 24*7 uninterrupted water and power supply is secured, with real-time monitoring and control through state-of-the-art electrical and water SCADA systems integrated with the ICCC.
- It is easier for the municipal authorities to enforce traffic rules using speed detection and automatic number plate recognition to reduce accidents and increase traffic safety and driver discipline.

Benefits of the sustainable, digital city for municipal authorities

The ICCC also makes day-to-day operation of the city easier for the city management staff by:

- Bringing accountability into the city administration with end-to-end operational visibility to stakeholders via mobile app and through ICCC dashboards, including KPIs and incident and status reports across multiple city operations. These include public bus transportation, traffic management, law and order, LED street light operations, building management, utility operations, land allotment, water connection billing and payment, right to information requests, grievances, etc.
- Centralization of departmental systems within the ICCC enables a collaborative, multi-agency response driven by standard operating procedures during emergencies.
- A faster, more accurate response due to centralization of critical operations like emergency response (fire outbreaks and accidents) and utility incidents. This ensures quick restoration of services, taking control over assets like valves, pumps, building management systems, streetlights, and cameras as deemed necessary.
- Real-time integration of utility control systems with ICCC enhances operational efficiency by providing rapid assessment, planning, and management of electrical, water, and sewage systems to optimize demand and supply.
- Reduction in operations and maintenance costs due to asset performance management capabilities.

“Using the ICCC, we now have real-time insight into all critical infrastructure systems across the city. This enables us to match supply and demand with greater accuracy, and respond to emergencies as they arise, cutting response times by 60% on an average. During the recent lockdowns, the ICCC combined with the Smart City portal and app made it easier for municipal authorities to communicate with the general population and respond to the needs of affected citizens, supporting the containment process.

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Salil Srivastava,
Engineer-in-Chief and Municipal Manager

Optimizing city growth

As the first phase of its plan reaches completion, Nava Raipur meets all the promises of a Smart City – smart governance, smart energy, smart building, smart mobility, smart infrastructure, smart technology, smart healthcare, and smart, enabled citizens. Nava Raipur will soon be embarking on the second phase of its plan, which will focus on education, health, e-environmental management, an emergency call center, and other features. The city is also exploring with AVEVA the possibility to extend the ICCC facilities to manage other cities in Chhattisgarh state.

The city’s strategic vision is being achieved and constantly improved as a result of the unified systems and processes the team is putting in place. Today, Nava Raipur is a beacon for India’s Smart City program, providing a template for the one hundred Smart Cities being developed across India to follow.

Working in partnership with AVEVA, the city is becoming a magnet for people seeking a Smart City lifestyle, with leading-edge infrastructure and processes to respond faster, optimize services, balance resources, and manage costs as the city and its citizens thrive into the next decade and beyond.