

AI powered decisioning for smart, sustainable cities and enterprises

TCS Intelligent Urban Exchange™ (IUX)

Data driven digital backbone, advanced analytics and AI/ML optimize sustainable smart city and smart enterprise operations, services, and reporting



Cities and enterprises today are on a journey to become operationally interconnected, resilient, and sustainable as they work to balance responsible growth and climate strategies.

The world's urban-center populations continue to grow at unprecedented rates making safe, sustainable cities, organizations and workplaces more important than ever. Business leaders and administrators are struggling to maintain operational efficiency and meet growing demands while managing costs and complying with new sustainability regulations. Essential operations, functions and services must be responsive, flexible, and integrated as never before to safely, effectively serve citizens, commerce, and employees amidst this change.

TCS Intelligent Urban Exchange™ (IUX) is an AI/ML and analytics powered solution that provides a command center console to monitor and help coordinate pre-built multi-functional solutions for climate action, enterprise resilience, water, energy, and transportation. IUX enables organizations to efficiently view and administer a connected & optimized ecosystem, effectively meet city and business demands, and comply with eco-friendly protocols and regulations.

Overview

City and business leadership are turning to technology to achieve safer, more modern, and sustainable urban living conditions and working environments. Smart City, Smart Enterprise and sustainability initiatives need merged data from multiple domains, systems, and IoT devices in order to leverage intelligent analytics and AI & ML for real-time operational insights, decisioning and services coordination.

Challenges

Administrators, executives and leaders are challenged to address urbanization and deliver superior services to citizens while managing limited resources. They must leverage data from multiple Smart City 1.0 sources such as IoT infrastructure and siloed systems to provide services that promote sustainable living, economic development, and superior citizen experiences.

Additionally, cities and businesses today are seeking ways to provide cost-effective sustainable services, real-time incident responses and safer, more resilient connected environments.

Our Solution

TCS Intelligent Urban Exchange™ (IUX) is modular, integrated software that helps cities and businesses accelerate the implementation of interconnected smart operations and sustainability initiatives easily and cost-effectively.

IUX empowers leaders to optimize city and company-wide systems, processes and assets and runs in cloud or on-premise environments. It offers **five innovative use case-based modules including, intelligent climate action, enterprise resilience, intelligent water, intelligent energy, and intelligent transportation**. IUX provides a singular view of these, and other critical operations, through a configurable **command and control center** dashboard. Key features Include:

- **Organization-wide views and incident alerts** across systems, departments, and services
- **Intelligent water, streetlights, and public transportation**
- **Resilient** enterprise operations
- **Climate risk and sustainability** management
- **Industry specific** AI models and advanced analytics
- **Asset integrity** and predictive maintenance
- **Modular and extensible** platform

IUX for intelligent climate action



TCS Intelligent Urban Exchange™ (IUX) for intelligent climate action is an advanced AI and ML powered decisioning sustainability solution that delivers comprehensive insights, recommendations, and metrics for environmentally responsible city, enterprise, and value chain operations.

IUX for intelligent climate change is Cloud based with prebuilt tools that simplifies climate action and net-zero journeys. It is a holistic sustainability solution for strategic planning, risk management, forecasting, monitoring, and reporting. Key features Include:

- **Automated Scope 1, 2 and Scope 3 Reporting:** Available out of the box with easy configuration.
- **Leading Climate Models:** Minimize climate risk and projected loss.
- **Carbon Transition Risk Assessment:** Drives energy transition and climate action.
- **AI Based ESG Sentiment Analyzer:** Delivers insights on public perception of ESG initiatives.
- **Sustainability twin carbon value chain simulation:** Supports enterprise decarbonization strategy planning from Scope 1 to Scope 3.
- **Optimal Sustainability Initiatives:** Enables organizations to achieve more effective and cost effective carbon reduction.

IUX for enterprise resilience

IUX for enterprise resilience is an integrated analytics platform with a business command center that helps enterprises coordinate and optimize responses to crises such as pandemics, natural disasters, and other major disruptions to business.



By ingesting and analyzing all types of data, IUX for enterprise resilience is an insights-driven business command center to help accurately determine the extent of incidents and enhance real time decision making at the point of need. Features include:

- **Smart Enterprise Protection**
Allows organizations to monitor site level infection risk and take immediate action, determine optimal workplace occupancy, and identify alternate movement flows to avoid congregation and identify at risk individuals.
- **Smart Comprehensive Regulatory Compliance**
Ensures regulatory measures are followed. Our solution makes it easier to comply with regulations and record and report to local administration.
- **Smart Operational Agility**
Empowers organizations to profile risk at specific site locations based on variables such as infection, workforce impact and client relationships. What-if analysis' predict risk enabling entities to tailor proactive business continuity and plans.

IUX for intelligent water

IUX for intelligent water management collects and analyzes data from multiple sources— flow, pressure, and level sensors and SCADA, meter data management systems, water management systems, Geographic Information Systems (GIS), enterprise systems, and Leak Detection systems (LDS)—to generate real-time insights and next step recommendations. IUX helps governments, utilities, and water technology partners adopt a proactive approach to water loss management. Features include:

- **Goal Based Water Loss Management**
Analyzes water flow balance metrics to reduce water loss (over/under flow rates) using goal-based process.
- **Leak Detection**
Supplies water system infrastructure leak detection mitigating significant water loss through concealed and/or slow leakage as well as catastrophic system failure using patented leak detection model.



IUX for intelligent energy

IUX for intelligent energy is an integrated, end-to-end streetlight optimization system based on real-time analytics. It enables cities and enterprises to



meet their sustainability targets through integrated energy efficiency planning and empowering digital participation by citizens in sustainability initiatives. Features include:

- **Adaptive Streetlight Optimization**
Delivers real-time performance monitoring and analysis of streetlights on a pole-by-pole, street-by-street or sector-by-sector basis.

Enables proactive management with real-time recommendations and actions based on pedestrian traffic patterns.

Permits proactive management with real-time recommendations and actions based on pedestrian traffic patterns or special events (concerts and sports events for example).

Offers plug and play integration with most Edge devices and luminosity sensors.
- **Building Energy Optimization**
Analyzes and optimizes HVAC operations for various sections of a building based on predicted occupancy patterns.

Includes energy benchmarking and root cause analysis that benchmarks the performance against the community performance.

Allows plug and play Integration and compatibility with existing standards-based building control systems.

IUX intelligent transportation



IUX for intelligent transportation helps cities enhance and improve bus services and passenger experience. It provides real-time and trend views of wait times, queue build-up, and ridership across various routes and times.

This solution enables increased revenues through greater ridership and improved utilization. Features include:

- **Comprehensive real-time transit metrics analysis**
Provides platform analysis of static open city data, enterprise fleet and real-time sensors, bus telematics systems, devices and wireless access points provide overview of transportation services
- **Insights from rider pattern analysis**
Delivers real-time analytics from citizen movement and demand patterns designed to give insights that allow transportation operators to anticipate and respond to passenger transportation needs.
- **Recommends transportation actions**
Collects, filters, and analyzes data from multiple sources to generate real-time and trend alerts enabling fast transit issue remediation.
- **Multi-modal transport optimization**
Optimizes operations across all modes of public and enterprise transport based on multi-modal passenger demand and reduces wait times for citizens at potential choke point in the transit routes and networks.

IUX command and control center







IUX command & control center makes city operations and services more efficient, transparent and sustainable by breaking down data and operation silos across multiple city domains for more effective situational awareness, collaboration and coordination of personnel, resources and services through an integrated dashboard. Features include:

- **City Data Platform**
Ingests multi-domain data providing insights spanning departmental boundaries through open source platform-based models.
- **Command and Control Center**
Addresses incidents and events needing cross department coordination with multi-domain data managed through a configurable dashboard for maximum flexibility of vital response efforts.
- **Integrated City/Enterprise Operational Dashboard**
Provides visualization, monitoring and analysis of the impact of city and enterprise-level events and alerts coming from multiple operations systems and sub-systems.
- **City Emergency Response Module**
Automates and accelerates multi-departmental response efforts across domains such as energy, water, and transportation.

The TCS advantage

TCS helps organizations take advantage of the following key differentiators:

-  **Award Winning Expertise:** Our software has been created by industry experts who are actively and continuously scanning the global business horizon. Our industry specific development approach is complemented with the latest innovations from TCS' award-winning R&D efforts.
-  **Lower Cost of Ownership:** We create modular and integrated solutions for solving the real-world problems our customers face. Our flexible platform architecture allows you to adopt what you need today and scale as your needs evolve - all with limited, if any, downtime.
-  **Simplified Business and Engagement Models:** We offer flexible business models that adapt to how you want to engage. We build our solution to enable rapid implementation that accelerates time to value.
-  **World Class Innovation:** Unencumbered by legacy code and requirements, we bring state of the art open-source technology to our solutions that fits today's and tomorrow's requirements – such as artificial intelligence (AI), machine learning (ML), and intelligent workflows

Awards and Accolades



Contact

Visit the <https://www.tcs.com/what-we-do/products-platforms/tcs-intelligent-urban-exchange> page on <https://www.tcs.com>

About Tata Consultancy Services Ltd. (TCS)

Tata Consultancy Services is a purpose-led transformation partner to many of the world's largest businesses. For more than 50 years, it has been collaborating with clients and communities to build a greater future through innovation and collective knowledge. TCS offers an integrated portfolio of cognitive powered business, technology and engineering services and solutions. The company's 469,000 consultants in 46 countries help empower individuals, enterprises, and societies to build on belief.

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