

# TCS Intelligent Urban Exchange™(IUX):

Deliver Analytics to Help Enterprises Achieve Social, Economic and Operational Sustainability

Digital Software & Solutions



Energy companies must become more operationally sustainable, resilient, and proactive to overcome challenges on multiple fronts from supply & demand disruption to operational resilience to environmental targets.

TCS IUX is a purpose-built decision intelligence product for the Energy & Resources Industry. By harnessing the power of artificial intelligence and analytics the solution delivers insights, predictions, and recommendations for sustainable energy operations, production, and services. IUX offers pre-built cognitive solutions that include Intelligent Energy, Intelligent Pipeline, Command Center, and Intelligent Transport that deliver value and consistent results.

### Smart, Sustainable Enterprises

Energy & Resources companies are finding that to successfully transition to sustainable energy production in such a demanding and quickly changing industry they need to become more operationally agile, resilient, and proactive. They must provide services that promote social responsibility, economic development, and sustainable operations.

Enterprise and business leadership is turning to technology to achieve more viable, modernized, sustainable and resilient operations. Today's Smart Enterprise and Smart Business initiatives combine data from multiple domains, systems, and IoT devices and run advanced analytics that support strategic and operational real-time decision-making and actions

IUX is a purpose-built decision intelligence product designed to address these Smart Enterprise and Smart Business challenges.

### Why IUX

As digital transformation continues revitalizing the Energy & Resources Industry, organizations are standardizing on cloud services as a core business enabler. This has led the Energy & Resources industry to realize information and decision fabrics have the power to integrate vast amounts of data from the entire energy value chain and produce contextual and cognitively enabled operational insights.

IUX provides contextual decision intelligence services be it on asset maintenance schedule optimization, safety incidence avoidance, proactive anomaly detection and Environmental, Social & Governance (ESG) actions across all engaged systems, departments, by connecting complete business value chain Examples include:

**Asset Integrity & Predictive Maintenance:** detect assets with high probability of failure and suggest optimum asset rehabilitation strategy by analyzing data from various data sources like operation planning system, asset maintenance system and current asset status.

**Enable Remote Operations Center:** provides an integrated decisions workplace where operators can assess contextual data such as real-time status, location, local events. This can be done for all assets and improves efficiency and safety through the ability to evaluate the impact of multiple scenarios in difficult geography terrains.

**GHG Emissions Monitoring & Reductions:** senses emissions and predicts potential emission levels by applying machine vision-based AI of storage tank thermal images to recognize levels of stored chemical elements. This allows plant operators to evaluate the impact of those elements on the structural integrity and durability of storage tanks and provides optimization strategies to improve process and operation efficiencies.

**Visibility Across Enterprise and Business Functions:** provides all stakeholders from Operations manager to CXO an intelligent, connected ecosystem to deliver intelligent courses of action covering complete enterprise value chain, providing advanced incident response, and effective consumer engagement to become resilient and sustainable

**Faster and Better Decision Making:** Enterprise and business management must coordinate timely multi- departmental responses to sudden incidents. IUX provides the prescribed initiation and execution protocols for effective crisis mitigation actions across domains such as energy, pipeline, logistics and operations.

**Operations Resilience:** IUX meets enterprises and business's constant and growing need to accurately predict physical system maintenance needs and potential failure points. This allows entities to proactively apply the right resources to the right assets and maintain healthy, reliable, and resilient operations.

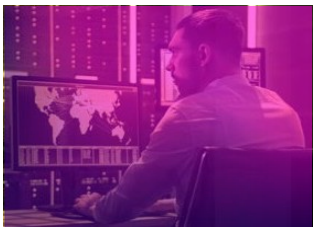
**Simplified, Centralized View of Key Infrastructure:** IUX allows enterprise and business managers the means by which they can see an intelligent overview of their infrastructure utilization to holistically understand , address sustainability and to improve employee safety

## TCS IUX - Our Solution

IUX is a purpose-built decision intelligence product for the Energy & Resources industry that applies the power of artificial intelligence and analytics to help companies achieve sustainable, resilient, and agile energy operations.

IUX empowers AI informed operations that connect the entire business eco-system, spanning devices, departments, people, systems, and processes, in order to generate actionable, data-driven insights, predictions, and recommendations. The software comes pre-built with Energy & Resource industry decision models and scenario simulation capabilities.

Additionally, IUX brings centralized AI activation functions that enables energy organizations to build cognitive operations tuned for sustainable production and distribution. IUX offers pre-built cognitive solutions including Intelligent Pipeline, Command Center, Intelligent Energy, and Intelligent Transport which help companies with faster deployment, time-to-value, and reduced TCO



### TCS IUX Command Center

The Command Center makes enterprise operations and services more resilient and intelligent by breaking down data and operation silos across

multiple enterprise domains for more effective situational awareness and better collaboration and coordination of enterprise resources and services. Command Center features include:

#### Enterprise Data Platform

Open-source platform that ingests multi-domain enterprise data providing insights spanning departmental data boundaries through platform-based Enterprise Data Model

#### Enterprise Command Center

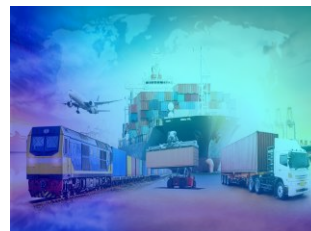
Addresses emergency situations needing cross domain coordination with multi-domain event data capability. Configurable KPI dashboard provides maximum flexibility for vital metric visibility

#### Integrated Operational Dashboard

Provides visualization, monitoring and analysis of the impact of enterprise-level events and alerts coming from various operations systems and sub-systems.

### Enterprise Emergency Response Module

Automates and accelerates multi-departmental response efforts across domains such as energy, pipeline and logistics management.



### TCS IUX for Intelligent Transport

Intelligent Transport helps optimize fleet operations, increases safety and provides a low carbon footprint.

It also enables enterprises to optimize logistics, enable adaptive route planning & scheduling of materials pickup and products delivery, analytics on driver health analysis, risk profile & score, improve overall trip efficiency - fuel consumption & safety score and proactive decision making on a real time basis. Features include:

**Comprehensive real-time logistics metrics analysis** Provides analysis of open enterprise data and real-time sensors, transport telematics systems, devices and wireless access points provide a view of the enterprises' logistic services



### Insights on driver risk analysis

Delivers real-time analytics of driver health analysis, driver risk profile & score to give insights that allows enterprise to plan scheduling of materials pickup and products delivery

### Recommend Insights and Actions

Collects, filters, and analyzes data from multiple sources to generate real-time and trend alerts enabling fast response remediation

### Multi-modal Logistic Optimization

Optimizes operations and route planning across all modes of logistics based on multi-modal transport demand, improving trip efficiency and providing safe and low carbon logistics.



### TCS IUX for Intelligent Energy

IUX for Intelligent Energy is an integrated, end-to-end energy optimization system based on real-time analytics. It

enables enterprises to meet their sustainability targets through integrated energy efficiency planning and sustainability initiatives. Features include:

#### Comprehensive Adaptive Energy Optimization

Delivers real-time performance monitoring and analysis of energy consumption. Permits proactive management with real-time recommendations and actions using a variety of enterprise parameters. Offers plug and play integration with most edge gateway devices and activation nodes.

#### Building Energy Optimization

Analyzes and optimizes energy intensive asset operations for various sections of a building or facility based on predicted occupancy and usage patterns. Includes energy benchmarking and root cause analysis that benchmarks the performance against the industry standards. Allows plug and play integration and compatibility with existing standards-based building control systems.

**Emissions monitoring & reductions:** IUX can sense and predict asset carbon footprint. It can provide various optimization strategies to improve energy efficiency of process and operation facilities. Using real-time insight and advanced analytics it increases renewables use and reduce carbon footprint.



### TCS IUX for Intelligent Pipelines

This solution predicts potential pipe bursts & detect pipe leakages with high location accuracy and enables operations teams to evaluate

threats and responses. It also improves pipeline operations by optimal pressure valve setpoints recommendation, which improves pipeline life cycle. Features include:

**Pipe leak detection & burst predictions:** Real-time prediction of pipe bursts and pipe leak detection for faster response, reduce risk and maintenance costs.

**Real time Situational Awareness of Pipeline Network:** provides alerts, reports, and real-time insights about pipeline distribution network to take direct action and publish early warning to enterprise systems.

**Pressure Optimization:** provides recommendations on the optimal pressure settings at various network points based on usage patterns.

**Asset optimization:** optimizes spend on CAPEX and OPEX for asset rehabilitation and preventive maintenance based on cost impacts and risk projection on network for the predicted pipe failures.

**Goal based loss management:** non-revenue loss management planning and goal management for concerted action across the network.

# Benefits

- **Reduce Unscheduled Operation Downtime**  
Moves Asset Integrity Management System from reactive to proactive to reduce unscheduled Pipeline downtime
- **Improve Operation Resilience by Cross-domain Intelligence**  
Generates contextual intelligence to make operation more resilient and responsive
- **Provide Remote Inspection and Improve Asset Maintenance Inspection Scheduling**  
Enables cognitive maintenance management to improve maintenance inspection efficiency and enable remote inspection
- **Enable Decarbonization of Operations**  
Delivers comprehensive operation emission assessment to increase operational efficiency and optimize asset usage and management
- **Enable Innovation and Continuous Learning**  
Provides AI platform foundation which drives co-innovation and continuous adaptation to fast-changing market conditions
- **Lower OpEx and CapEx**  
Collective innovation and robust ROI realization through business data and intelligence across departments and multiple stakeholders

# The TCS Advantage

- **Industry solutions:** Our software has been created by experts with proven experience in enterprise operations. It has the latest technology innovations and expertise from TCS' R&D and has received multiple industry awards and recognition
- **Faster deployment:** IUX's open standards platform enables faster solution implementation and integration with your enterprise's existing systems. APIs allow for the rapid building and integration of custom applications.
- **Lower cost of ownership:** IUX's modular architecture lets you buy only what you need now with the option to grow as your needs mature. IUX also extends additional use cases for collaborative and integrated enterprise initiatives.
- **Simplified business and engagement models:** As-a-Service subscription pricing does not require capital outlay. IUX applications are accessible online, on desktop or on mobile devices.
- **Experience Certainty commitment:** Our corporate culture is one of superior delivery and customer certainty. Our consulting clients know the quality of our work, and now, companies can get that same level of quality, speed and certainty with our Digital Software and Solutions offerings

## Contact

Visit the <https://www.tcs.com/smart-city-solutions> page on <https://www.tcs.com>

Email: [tcs.dssg@tcs.com](mailto:tcs.dssg@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.

Visit [www.tcs.com](http://www.tcs.com) and follow TCS news @TCS\_News

All content / information present here is the exclusive property of Tata Consultancy Services Limited (TCS). The content / information contained here is correct at the time of publishing. No material from here may be copied, modified, reproduced, republished, uploaded, transmitted, posted, or distributed in any form without prior written permission from TCS. Unauthorized use of the content / information appearing here may violate copyright, trademark, and other applicable laws, and could result in criminal or civil penalties.