

TCUP - TCS Connected Universe Platform



With the **IoT** installed base predicted to be **75.4 billion by 2025**, businesses are laser focused on IOT as an enabler of **business process efficiency, better customer satisfaction and cost savings**. But, without the right platform behind it, an IoT solution can become just as complex as the problem it's meant to solve.

Overview

TCUP helps enterprises to develop, deploy, and manage IoT applications securely and with ease. There is no need to learn proprietary IoT skills to stitch together multiple services, to make an IoT solution work. TCUP's pre-built and highly scalable micro-services simplify managing the entire development lifecycle, and also significantly reduce time to market.

SECURE | SCALABLE | SMART | SUPERFAST



- **Connect** – All major IOT & IIOT protocols supported



- **Collect** – High velocity ingestion
 - Persistence in RDBMS/ big data schema



- **Analyze** - Analyze real time streaming data
 - Complex Event Processing



- **Act** - Real time alerts & notifications

TCUP serves as the backbone of digital transformation of IoT enabled businesses.

Our Solution

Device Management

- Secure Device Provisioning
- Remote Upgrades
- Bi-directional communication
- Out of the Box data connectors & support for different protocols

Data Management

- Time series based sensor data storage
- HDFS based file storage with catalogue and search
- High speed data ingestion using variety of protocols

Analytics

- Descriptive, Diagnostic, Predictive and Prognostic Analytics modules
- Data Scientists' workbench and collaboration platform for development

Streaming Data Processing





- Real time pattern analysis on streaming data, event detection, rules for automated decision making
- Complex Event Processing with correlation aggregation and geo fencing with context aware rule

Asset Modeling

- Ability to create comprehensive digital representations of physical world
- Relationships between physical entities, assets, asset properties and sensors

Edge Processing

- Data ingestion and processing in extremely resource constrained device
- Rule configuration, data cleansing, data enrichment and processing at the edge

 Energy Management	 Smart Factory	 Servitization	 Asset Modeling
<ul style="list-style-type: none"> ▪ Lower energy costs ▪ Detection of faulty equipment ▪ Reducing wastage of energy ▪ Predicting energy usage 	<ul style="list-style-type: none"> ▪ Improved plant efficiency ▪ Real time view of Conversion Cost ▪ Real time view of Availability and OEE ▪ Real time analytics and visualization of manufacturing processes 	<ul style="list-style-type: none"> ▪ Unlock new business models for OEMs ▪ Basic Lifecycle Support ▪ Remote Monitoring ▪ Uptime based Service ▪ Usage based Service ▪ Outcome based Service 	<ul style="list-style-type: none"> ▪ Asset transparency and analytical insights ▪ Unified view of assets across the plants ▪ Maintenance Management & Predictive Analytics ▪ Flexible Modeling & contextual view of Asset Hierarchy ▪ API based secure data sharing
<ul style="list-style-type: none"> ▪ Scale and Enabler ▪ 1 million+ transactions per day ▪ Covers more than 15,000 assets ▪ Handles variety of meters and different BMS 	<ul style="list-style-type: none"> ▪ Scale and Enabler ▪ 82 CNC machines connected with 26 parameters captured ▪ Data captured at 1-second interval and sent to cloud at 5-second intervals ▪ Dynamic machines modeling supported 	<ul style="list-style-type: none"> ▪ Scale and Enabler ▪ Approximately 80K connected products ▪ Up to 75% possibility of false positive reduction, based on data quality and availability 	<ul style="list-style-type: none"> ▪ Scale and Enabler ▪ 50,000+ Assets ▪ 40+ Plants ▪ 2 million+ tags in order of seconds ▪ OPC UA/OSI PI protocols ▪ Dynamic asset modeling supported

Use Case Implemented

Benefits

- Accelerate IoT solution development with an **enterprise-grade, full function IOT Platform**
- Integrate easily with existing systems with flexibility of IoT platform deployment - **on the cloud, on-premise, or hybrid**
- Explore a variety of machine integration possibilities with minimal effort using **Out-of-the-Box device connectors**
- Protect the enterprise against cyber threats with stringent, IoT-ready **security** measures
- Implement in a variety of use cases through **Application Development Enablers**
- Deploy powerful data analytics using ML algorithms on resource constrained edge environment using **TCUP Edge processing**
- Reduce learning curves and specific technical skill requirements. Rapidly develop and deploy IoT applications using simple to use TCUP API's, readily available, out-of-the box, protocol handlers and device connectors and a number of development toolkits, speeding up **time to market**
- Grow the enterprise ecosystem with a **scalable architecture**

The TCS Advantage

Leading Innovation for IoT: TCS has 19 labs across the globe for IoT specific development and solutions. Its labs cover cybersecurity, AI, robotics and more, which helps TCS drive next-level technology.

Strategic IoT partnerships: TCS has made strong commitments to partnerships with IoT players like Intel, Cloudera, and Microsoft Azure to enhance its IOT services portfolio. It built a customer experience centre in collaboration with Intel to showcase technologies including 3D printing, virtual reality and IoT-driven solutions to customers.

Deep Domain Expertise: TCS provides deep domain expertise across all major industry verticals such as Manufacturing, Energy & Utilities, Retail, Life-Sciences & Health care etc.

Out of the Box solutions: TCUP already powers solutions in Energy management, Fleet management, Health & Safety management, Servitization and Smart Factory solutions.

Decades of SI experience: As an expert solution integrator, TCS is well versed in the delivery of complex IoT projects. It is able to handle multiple data sources, ensuring seamless integration of the IoT platform with customer back-end systems.

To know more

Visit: <https://www.tcs.com/tcs-connected-universe-platform>

Email: tcup.iot@tcs.com

Research and Innovation Page: <https://www.tcs.com/research-and-innovation>

Follow TCS on Twitter at [@TCS_News](https://twitter.com/TCS_News)

Awards & Recognition



About Tata Consultancy Services Ltd (TCS)

Tata Consultancy Services is an IT services, consulting and business solutions organization that delivers real results to global business, ensuring a level of certainty no other firm can match. TCS offers a consulting-led, integrated portfolio of IT and IT-enabled infrastructure, engineering and assurance services. This is delivered through its unique Global Network Delivery Model™, recognized as the benchmark of excellence in software development. A part of the Tata Group, India's largest industrial conglomerate, TCS has a global footprint and is listed on the National Stock Exchange and Bombay Stock Exchange in India.

For more information, visit us at www.tcs.com

IT Services
Business Solutions
Consulting

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.

Copyright © 2019 Tata Consultancy Services Limited