

# TCS TwinX™ – An enterprise digital Twin platform

Communications, Media & Technology



Modern organizations are complex systems operating in highly dynamic business environments and working towards collective business goals. Business leaders in these organizations rely on historical data, past experiences and intuitions for decision-making. However, rising global uncertainty, augmented with rapidly shifting consumer behavior and workplace culture demand an evaluation of these decision points for maximizing business outcomes.

TCS TwinX™, an enterprise digital twin platform, enables organizations to construct their own enterprise digital twins by modelling key enterprise entities including customers, products, processes and resources. This digital twin-based simulator helps construct hypothesis, model entities and test business decision outcomes in the virtual A/B testing mode, enabling organizations to analyze, adapt and transform themselves towards achieving holistic business goals.

## Overview

Shifting customer purchase and consumption patterns in the face of deep uncertainties have brought a new urgency to create improved products and services to grow and retain customers. Organizations also need to enhance internal process efficiencies, reduce costs and curb revenue leakages. However, taking continuous and dynamic decisions in an ever-changing business environment is a daunting challenge. Historical data-driven models lack the capability to predict deviations and effectiveness of business responses in the face of deep uncertainties and unavailability of prior data.

TCS TwinX leverages cutting-edge research on artificial intelligence (AI) and actor model of computation to help envision, experiment with and execute business decisions through a digital twin-based simulator. The platform creates a virtual and faithful representation of the organization based on key business entities, their interrelationships and the impact of external forces on them including competitor movement, natural calamities and unforeseen global emergencies such as the pandemic. The outcome: An accurate insight into future evolution of enterprise systems based on entities' behavioral changes and their situational responses at the n=1 level. This helps to accurately predict and simulate the future behavior of entities and the system as a whole.

# Our Solution

Key features of the TCS TwinX (see Figure 1) solution include:

- High fidelity digital twin construction, validation and synchronization of enterprise entities that provide micro trends and behavioral dispositions at the n=1 level.
- Clustering and aggregation of entity cohorts to understand macro patterns and group behaviors.
- Hypothesis formulation, virtual A/B testing and adaptive iterations based on simulated behavior of enterprise entities.
- Comparative analysis of various simulated scenarios through a wide range of business KPIs, outcomes and cross-functional implications.
- Explainability of entity attributes, interrelationships, behavioral dispositions and reinforcement of the digital twin to ensure higher correlation with real-world systems based on business user feedback.

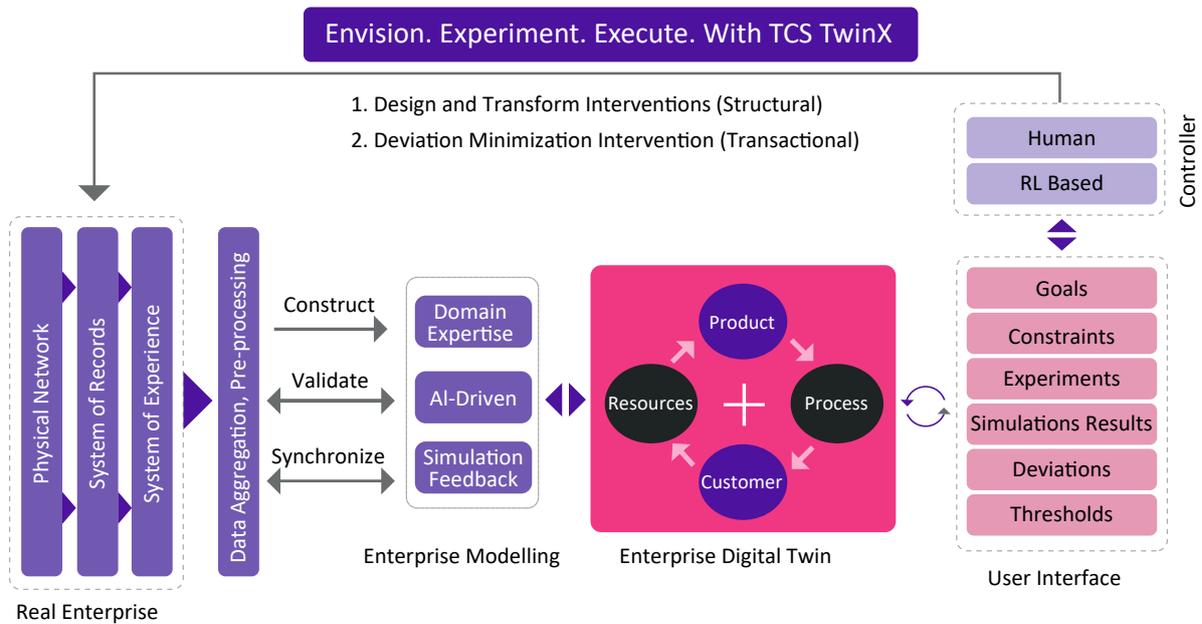


Figure 1: TCS TwinX Drives Evidence-based Decision-making

# Benefits

By leveraging TCS TwinX across various business functions, organizations have achieved multiple business benefits including:



Increase in revenue by 10-15% through improved product, offers and campaign configurations, retentions and hyper-personalization strategies leading to higher customer lifetime value (CLV).



Minimize revenue leakages by identifying, and pre-empting fraudulent attacks.



Drive cost optimization and waste reduction through improved supply network efficiencies.



Enhanced customer experience across channels and touchpoints through constant monitoring, transformation and redesign of the customer journey.



Faster time to market (2X) for new products and offers, leveraging digital twin-based virtual A/B testing.



Reduced opex through improved process efficiency and process reliability with up to 20-30% increase in right first-time success. This has ensured reduction in cycle time by up to 15%.

# The TCS Advantage

TCS leverages its rich industry experience, contextual knowledge, pioneering research and innovation to drive measurable success, fostering an organizational culture of experimentation and developing playbooks to implement purposive digital twins across varied business functions. Our key differentiators include:

- **Best-in-class technology:** Best-in-class digital twin-based enterprise modeling and simulation platform as a ready-to-use solution for organizational decision testing and evaluation.
- **Explainability:** Explainability module for enhanced understanding of entity attributes, interrelationships and behavioral dispositions in the simulated environment.
- **Ease of use:** Experimentation console architected and designed for business decision makers helps highlight domain context requests, expert feedback and plays simulation outcomes in a gamified UI.
- **Robust technology stack and scalable platform:** Scalable microservices-based architecture with capability to run tens of thousands of experiments in parallel, fostering an organizational culture of experimentation before implementation.
- **Seamless integration with existing business landscape:** Minimal intrusion to existing systems, mature APIs for ingestion and up-stream and down-stream informationpush and pull systems.
- **Cloud-ready:** Ready for AWS, Azure and GCP hosting in addition to on prem-hosting options.

## Contact

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