Driving digital transformation – Moving the data needle from monitoring to observability

Understanding industry trends

Telecommunication as an industry is emphatically adopting the following key trends:

- Standardized SDN and NFV platforms and Cloud Network Model
- Analytics platforms for network telemetry and automation
- Data and applications programming interface (API)
- Intent-based networking (IBN) and intent-based analytics (IBA)
- Rapid pursuit of closed-loop monitoring and automation

Analyst views

Top I&O goals:

1. Improve quality
2. Lower cost of 'Run' business
3. Improved alignment with business goals

40% of CEOs see growth as the No.1 business priority

21% of I&O leaders want greater quality at lower cost of 'Run' business to support digital journey

Communications Service Providers (CSP) are embracing the journey to transform into 'Digitally driven' Enterprises by investing in the capability to harness data to deliver better customer and service experience, while evolving the cultural DNA of their organization.

CSPs are increasingly converging on the following three dimensions - Digitalization, Data-driven insights, and Automation to reimagine and transform their Enterprise, Network, and IT ecosystem, and the underlying Data architecture.

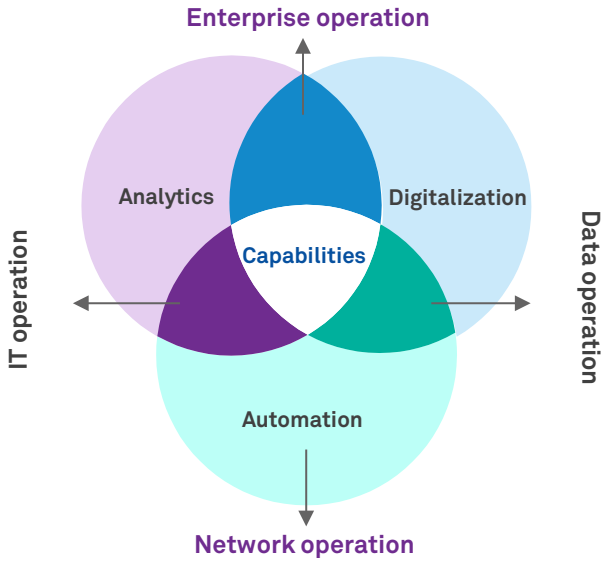


Fig1: Digital transformation

Around the world, enterprises are investing in emerging infrastructure and development technologies to enable faster digital innovation and time to market. Enterprise IT leaders are looking to disrupt traditional business processes and create new ways of engaging with customers and partners.

The network operations of CSPs are increasingly exploring avenues to break out of the network - centric view to service-centricity. The emergence of Video, Cloud, SDN, NFV, 4G, 5G, IoT and other digital services is accelerating the evolution of the network ecosystem to be more agile, open, real-time, predictive, service aware & self-organized. 'Digital Assurance' is shifting the Enterprises from 'Network-Centricity' to 'Experience-Centricity'.

Application development is being accelerated and automated with code updates being introduced weekly, daily, or even hourly. Yet, simultaneously, legacy systems continue to work hand-in-hand with modern systems and applications.

Today's agile and collaborative IT operations teams need to better understand dependencies across application code, automated CI/CD and DevOps-driven tool chains, rapidly changing on-premises infrastructure, complex cloud services, and diverse mobile, web, and Internet of Things (IoT) end-user experiences. They are finding that traditional workflows, change control programs, monitoring techniques, and root cause analytics are too slow and reactive to effectively manage today's rapidly changing environments.

The resulting Enterprise, Network and IT environments are becoming more complex and changing more frequently than ever before. Enterprise, Network & IT operations processes managing these architectures must proactively optimize diverse, distributed multitier network, application and infrastructure resources in a highly synchronized manner that treats the whole system as a unit rather than as a stack of loosely related individual components.

To improve experience and maintain end-to-end service-level agreements (SLAs) in this dynamic, fast-changing environment, Enterprise, Network & IT operations teams need end-toend visibility across the ecosystem combined with data-driven insights and analytics to drive automated responses in real-time and manageexperience and efficiency.Enterprise, Network and IT operations teams need to work more collaboratively by breaking the silos and sharing real-time information about dependencies, performance, and risks.

CSPs evolving to address these dynamics are more likely to position themselves to:

- Surprise and delight customers by tapping into implicit and unexplored needs
- Drive operational efficiencies by simplifying processes across the enterprise
- Gain real-time insights across the enterprise, network, and IT ecosystem
- Equip their workforce with skills, processes, platforms and work culture
- Innovate every day

Analyst views

Key strategies see

1. Provision services, not infrastructure
2. More proactive and less reactive
3. Design for API-driven infrastructure

40% of I&O leaders plan to use AI/ML based solutions by 2020

Addressing the challenge

Digital Service providers are looking for enterprise-wide behavioral changes along with capability-building to:

1. Scale business
2. Embrace changes
3. Execute with high velocity
4. Democratize customer experience and personalization

To achieve scale with experience, at reduced cost and to improve business agility, Digital Service Providers(DSPs) are looking to high-qualitydata insightswith integrity, automate due-diligence and decision-making and eliminate manual tasks.

The approach is to simplify, eliminate bottlenecks, enhance process intelligence, and automate decisions to improve speed of process.

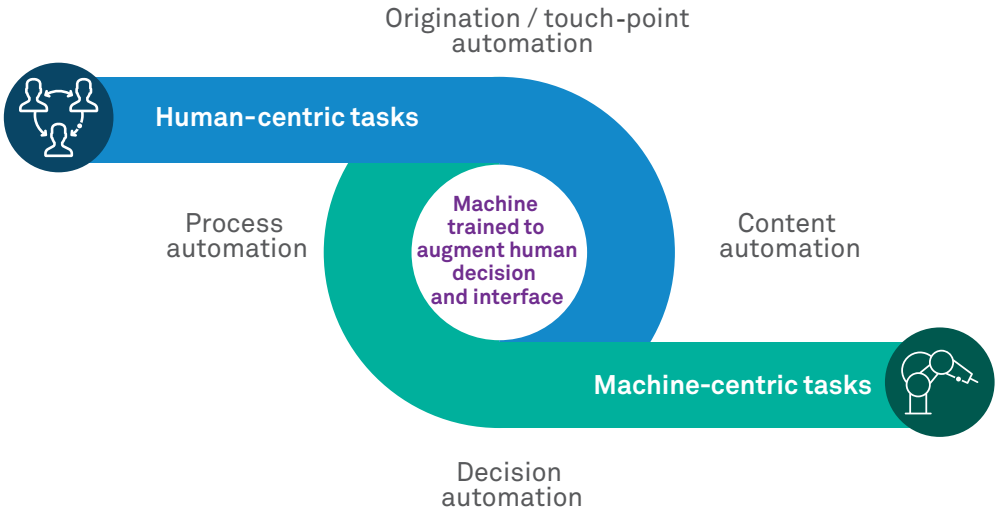


Fig2: Enhance process intelligence

Digital Service Providers (DSPs) are aligning to a model of building "an ecosystem of value creation" rather than siloed thinking to address rapidly changing market dynamics. DSPs are demanding high velocity in all business operations and addressing complex business process through not only simplification but complete reimagining.

Usage of ML models to predict or classify unexpected behaviorswithin operations,and to assess and quantify risk and mitigation is also becoming pervasive. For example, customer profiling, document & data extraction, operational risk prediction and notification, fraud alerts and insights-driven performance and experience monitoring are emerging as key areas for data sciences and statistical modelling to bring in AI/ML based solutions.

DSPs are maturing their behavior from "Monitoring" (which only provides information about whether a system is operating as expected) to "Observability" which encompasses the ability to understand why a system behaves in a certain way. There is a consensus that monitoring alone is not sufficient and it needs to be complemented by good observability, in order to handle the evolving complexity of enterprise and the marketplace.

As a Digital Partner, System Integrator and Managed Service Provider, Wipro's approach to shaping the "Enterprises of the future" focuses on engraining the following core capabilities:

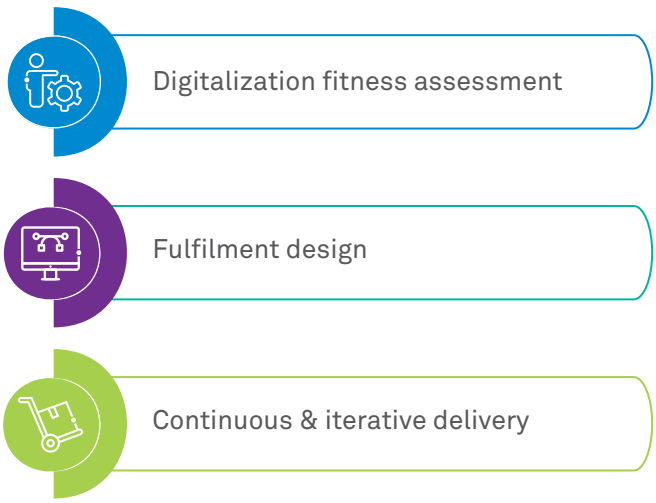
- Experience-driven agile design and engineering
- Data-powered intelligent enterprise
- Service-centric unified network experience
- "Business Aware" IT
- Intelligence-driven Enterprise Operations and Workforce

Wipro acknowledges that **these are critical and core capabilities that** Enterprises have to acquire in order to transform to Digital Service Providers, the enterprises of the future.

The upcoming sections elaborate on Wipro's approach, solution, and guidance to this transformation based on the evolving dynamics and trends of the marketplace.

Experience-driven agile design and engineering

Experience-driven transformation emphasizes on re-imagining and re-engineering customer journeys end-to-end, using these approach methods:



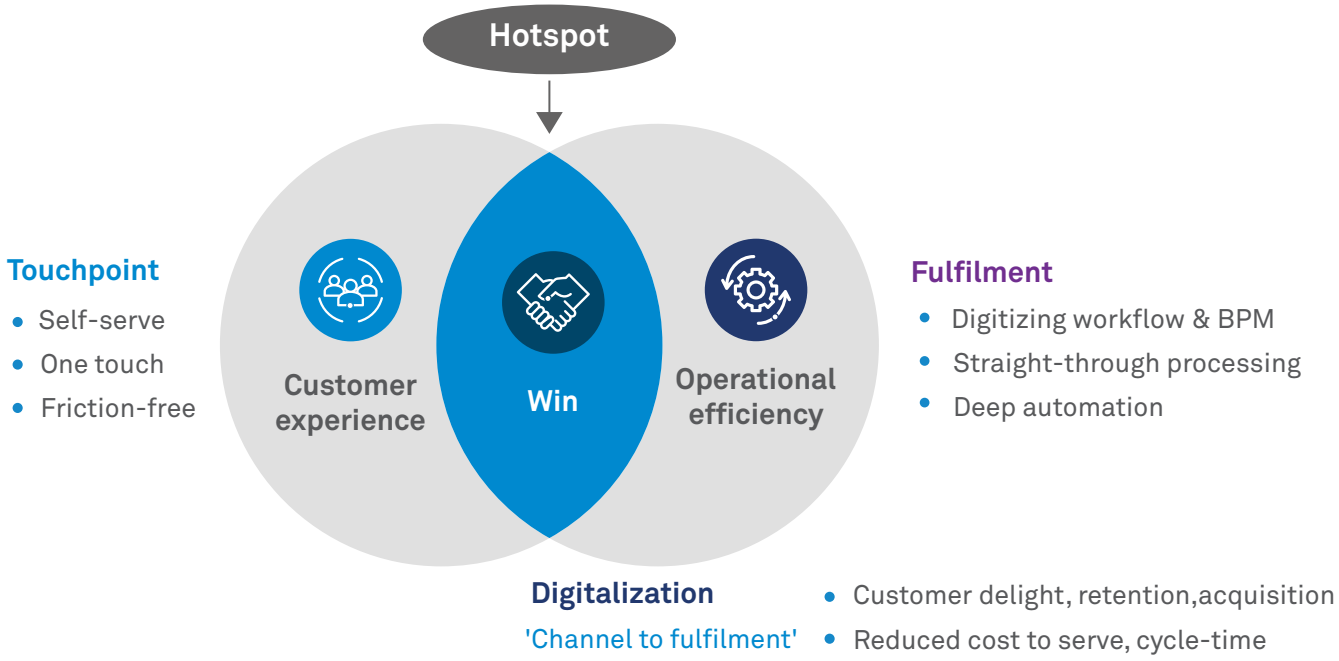


Fig3: Experience-driven transformation

Experience-driven design envisaged by customer journey and orchestration of underlying systems in a seamless manner is critical to provide unified (Channel, Service, Commerce and Device) experience to customers.

Experience-driven design – The 5-step transformation method

The 5-Step method transforms experience and delivery designs through a collaborative working model.

- Disruptive Insights by big digital-data analysis with behavior science provides Market insights, Macro trends, Technology Insights, User Insights, and more. These insights help in ideating a future vision
- Future Vision is derived from the detailed workshops, aspiring value propositions, current market position and target market identification. This vision drives the roadmap of the business
- Enterprise Roadmap helps to visualize future customer journeys, pain points, and potentials in transforming the business, which leads to disruptive service design

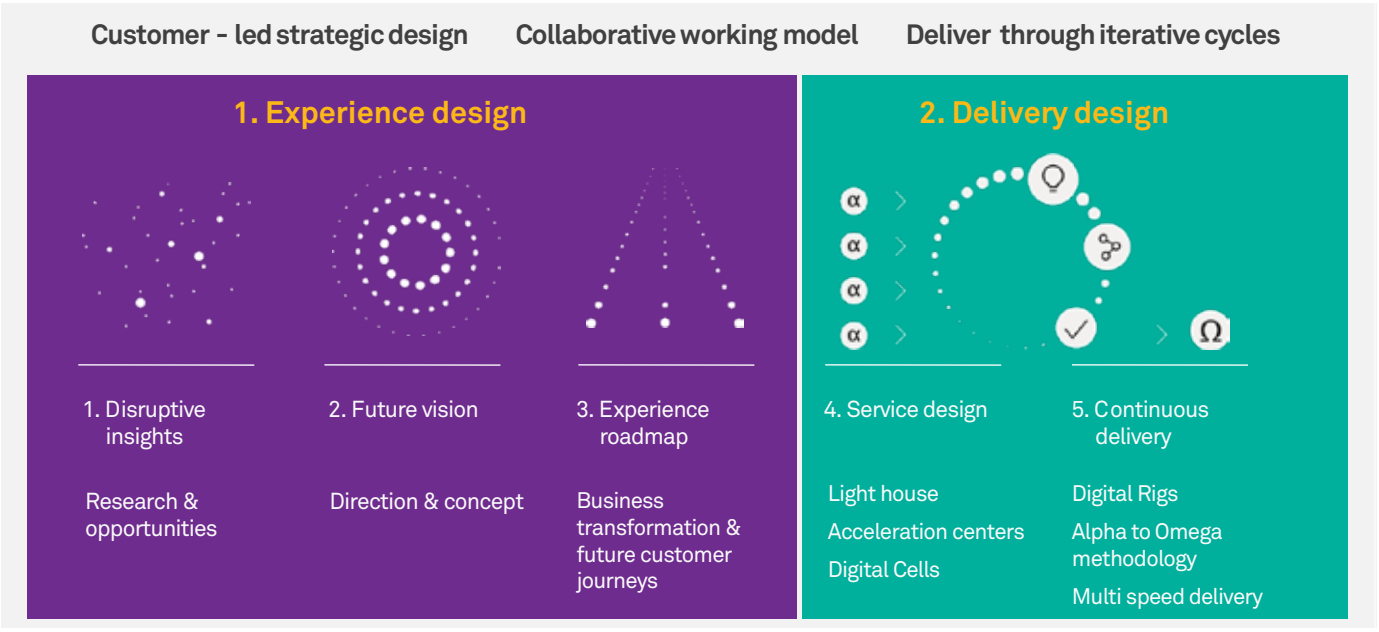
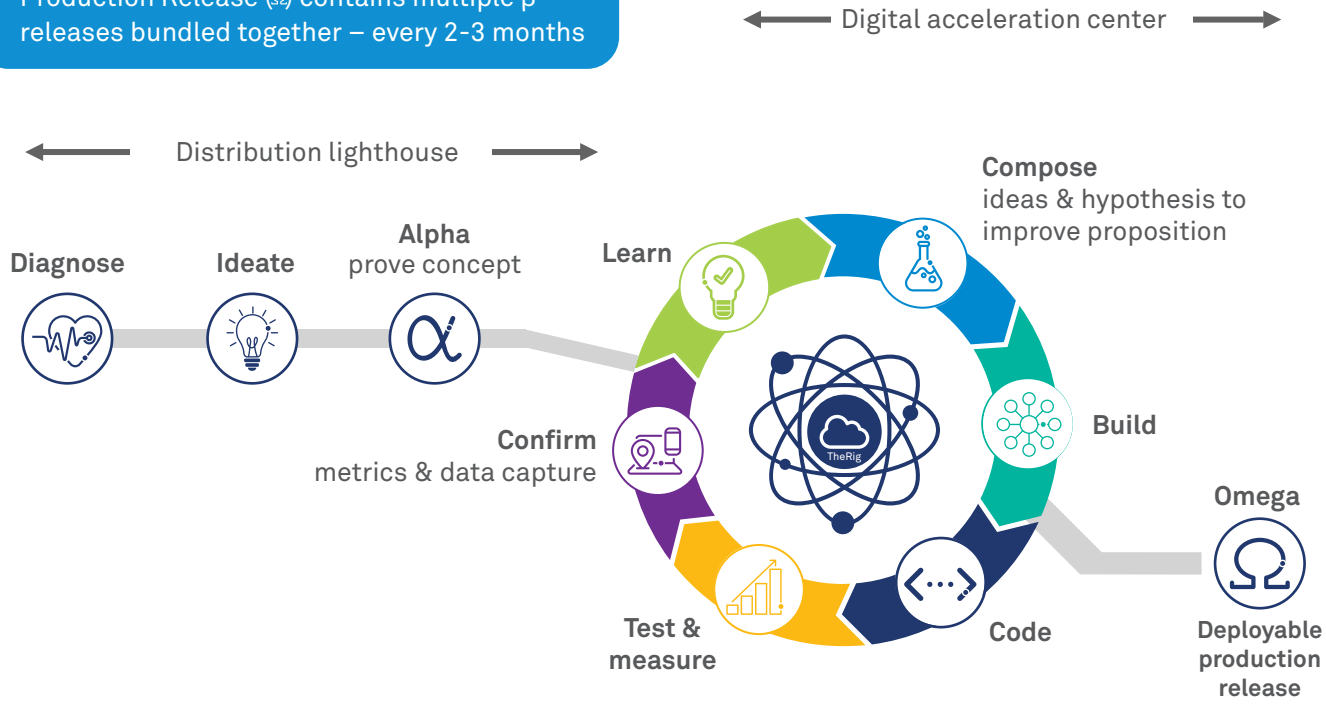


Fig 4: 5-step transformation method

- Quick Service design can be achieved by innovation focus – 'Lighthouse' or Delivery focus – 'Acceleration Center'. High - performance, cross-functional Digital Cells help to synchronize the delivery, assemble and deliver the benefits together
- A continuous delivery accelerator - Digital Rig drives the core of acceleration centers and provides an instantiated environment to start delivering benefits

- Digital Iterative way (Agile) of Development (cycles of α+, β) – every 4-6 weeks
- Production Release (Ω) contains multiple β releases bundled together – every 2-3 months



Alpha to omega execution

Experiment orientated, data-driven, fail-fast/learn-faster progression

Hackathon style events generate Alpha prototypes quickly proving design thinking

Alpha+ prototypes mimic real systems and responses, piloted with colleague feedback

One step away from production Beta prototypes are used for colleague training and customer feedback

Omega projects are live, operational, robust and defect free

Fig 5: Wipro's Alpha to Omega delivery methodology

Data-powered intelligent enterprise

Transforming the existing organization into a data-powered intelligent enterprise is a journey across six dimensions covering the business and technology components:

Fig 6: Data-driven transformation journey

Wipro has a comprehensive framework to address the vital design principles depicted in the diagram below:

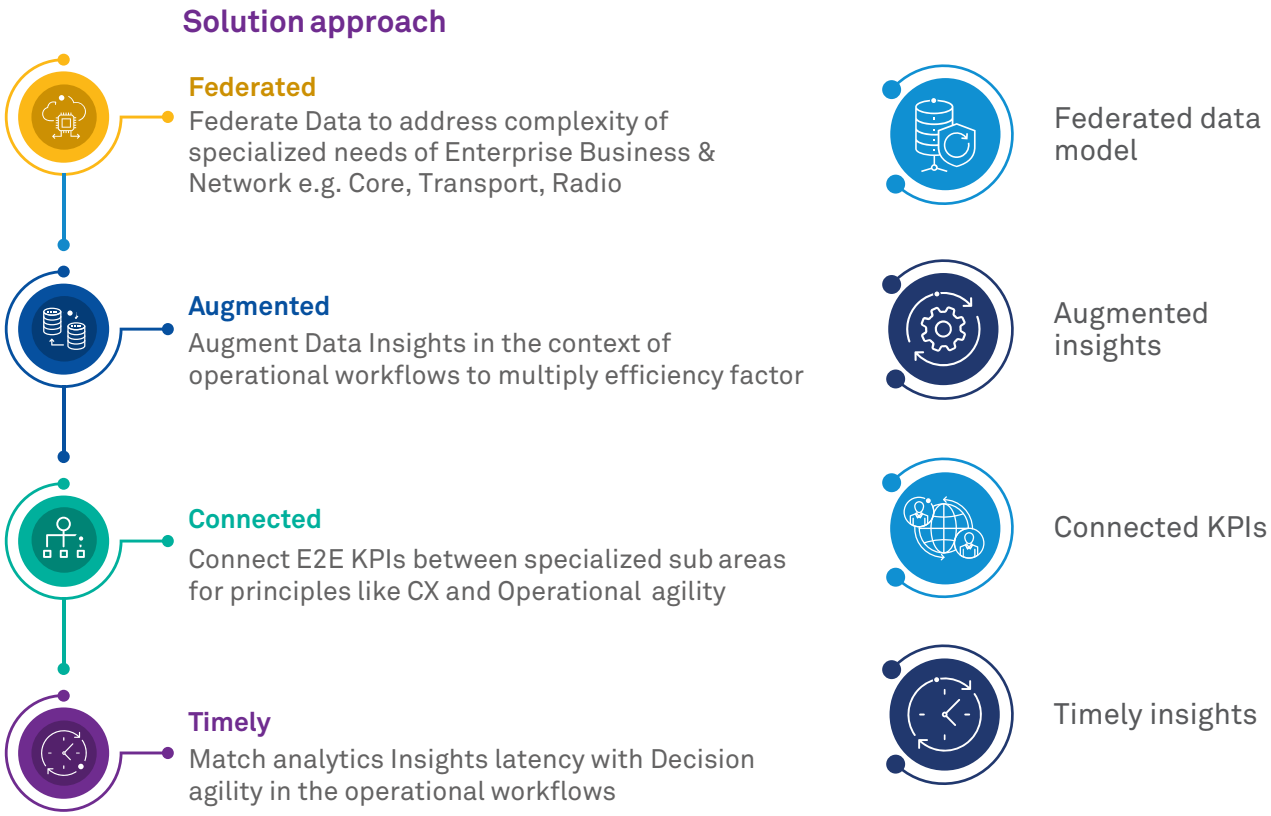


Fig 7: Solution approach - F.A.C.T

The data platform transformation needs to address the end-to-end business value realization through a series of minimum viable products delivered to realize the business benefits incrementally.

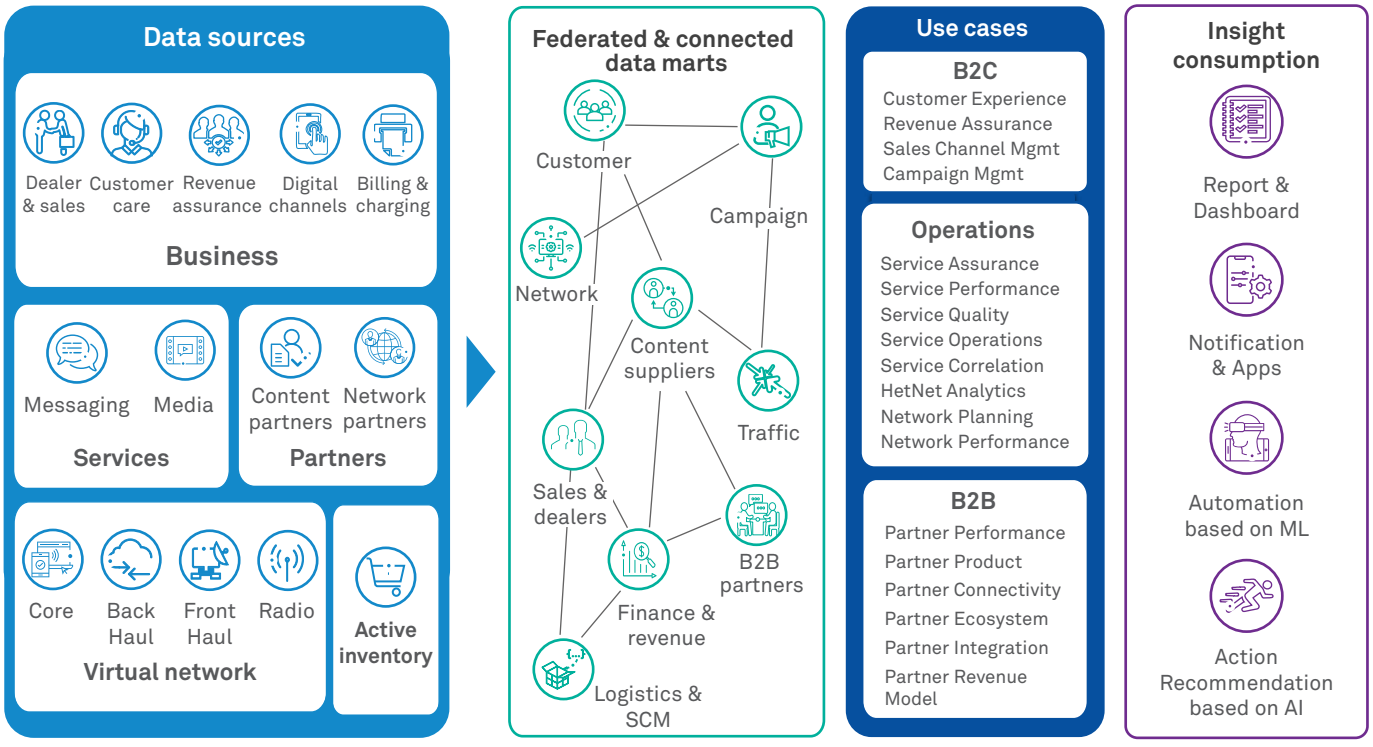


Fig 8: To envision a business architecture

Service-centric network experience

Wipro's Service Orchestration & Analytics framework guides service providers with a holistic approach to leveraging service analytics, service orchestration, and automation in network operations. The framework focuses on "Digital Assurance" that is agile, open, real-time, predictive, service aware & self-organized, to drive service centricity and improve experience.

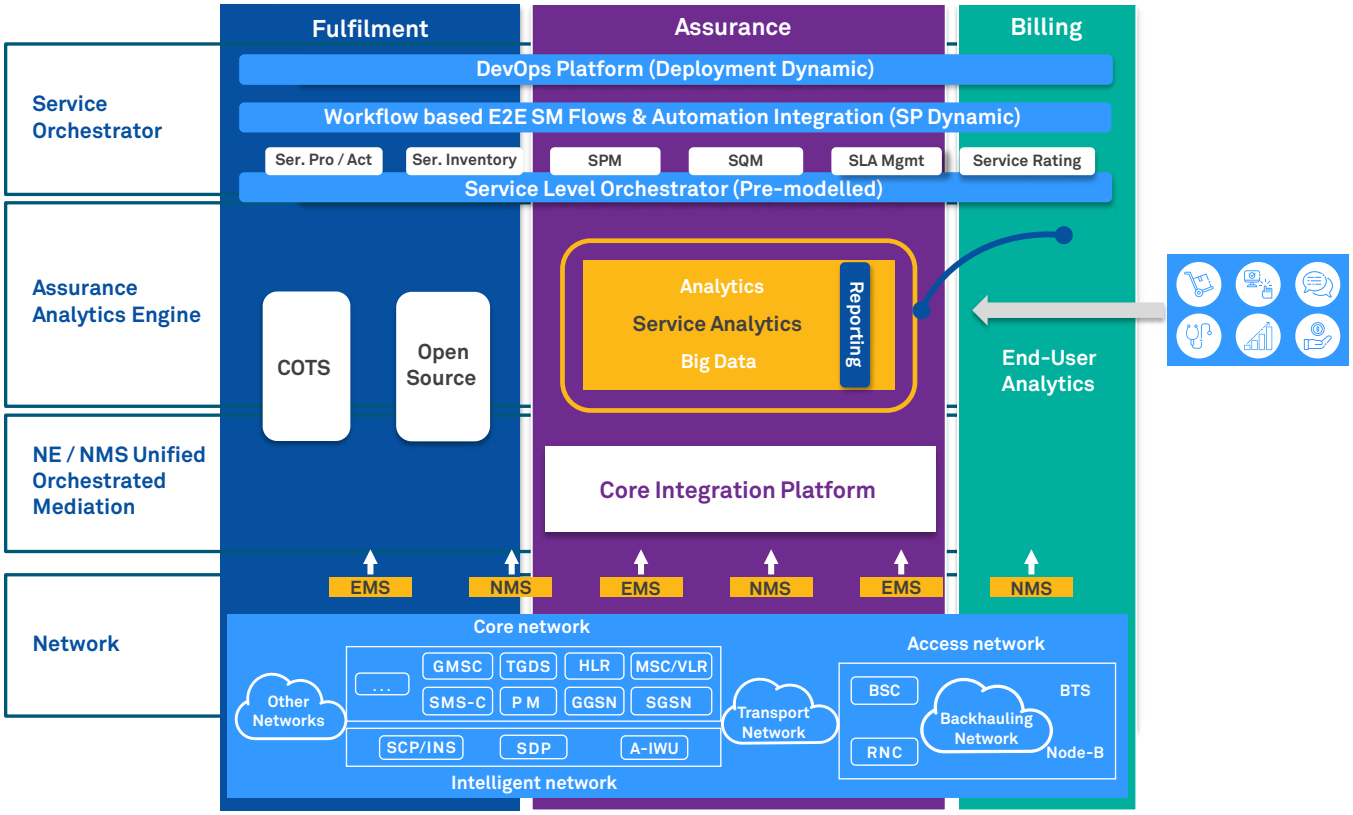


Fig 9: Service orchestration & analytics framework

The framework would drive:

- A 360º holistic view of service taking into consideration - customer, product, technology, service, operational, configuration & environmental Information along with fault & performance data
- Fault and performance data from heterogeneous and hybrid (virtual & physical) network
- Unified mediation & analytics to derive meaningful information with perspective of a Service
- Leverage of software technologies like big data, machine learning, cognitive & artificial Intelligence and orchestrated automation to mature multi-layered & hybrid (virtual & physical) network operations
- Open-API to enable realization of 'network-as-a-service'
- Ability to provide a holistic view of the network to support next-generation service experience

"Business aware" IT - application of observability

In a scenario where observability is not in practice, various operations teams across Business, Network, IT, and Security would be working on issues that are seemingly unrelated and it may need hours or even days before they see that it is all interconnected. Even with the monitoring solution in place and working as designed, each of the teams only realizes its state changes in its respective elements and it is not sufficient to address business in a holistic way.

Let us look at a scenario to understand this better.

The business operations team of a large retail company is suddenly seeing a decline in online sales. At the same time, I&O teams are seeing performance degradations on the application supporting the online portal. The database team had been working on database performance issues on a particular database for the last 3 hours and they have identified a few long running queries as the cause. Coincidentally, security operations have been on high alert due to an unprecedented stream of attacks on the environment.

Is it sheer coincidence that sales are declining at the same time when a security attack is on?

What was needed here was a platform / solution that could have provided a more unified, artificial intelligence/machine learning (AI/ML)–driven way to filter and correlate data across multiple services and applications, helping I&O teams to quickly understand the business and end-user impact from the ongoing infrastructure, cloud, container, or application performance problems.

Observability platforms allow operations teams to construct comprehensive views of the full status and performance of the end-to-end system across applications, on-premises infrastructure, cloud services, containers, Kubernetes etc. In the presence of an observability solution, the security team would have been able to relate the impact of the ongoing security incidents to the decline in the online sale within minutes.

Key capabilities to look for in an observability solution

Unified view [Automated application discovery & service mapping]

Full Stack Monitoring [infrastructure to application to security]

AI/ML-driven event management [aggregation, suppression, correlation]

Service experience monitoring and mapping

Analytics & prediction

Self-heal and self-service capable

Ability to process user feedbacks [from Twitter, Google reviews etc.]

Capability to be business aware

Building the capability

Wipro's guidance on how to build a sustainable and maturing solution.

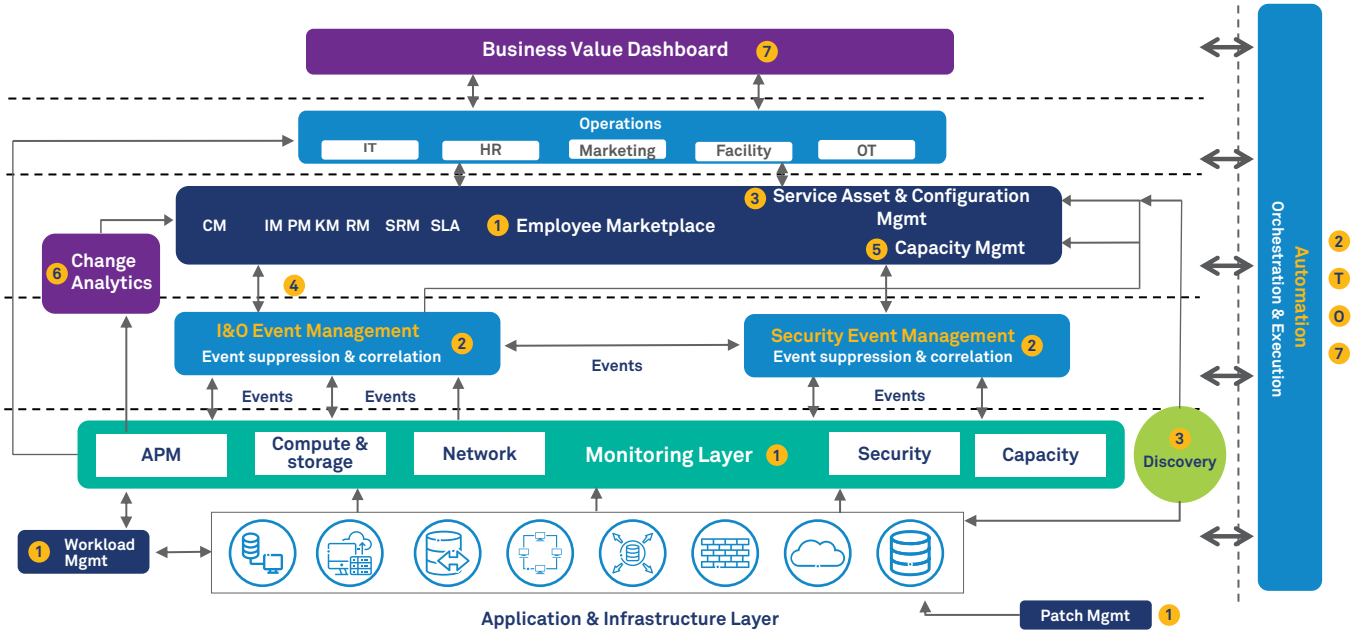


Fig 10: Solution - observability platform

Stage 1	Setting up the core monitoring solution that ensures state collection [performance, health, operating state etc.]
Stage 2	AI/ML event management [impact correlation]
Stage 3	Full stack discovery and service mapping [could be AI driven]. Consumption into event mgmt
Stage 4	Automated incident creation [ticket reduction, CMDB bi-directional synchronization]
Stage 5	Capacity management [could be AI driven]
Stage 6	Change analytics [unauthorized change detection, incident to change correlation etc.]
Stage 7	Business Value Dashboard [360-degree view of enterprise, advanced analytics & prediction]
Automation	This would be a parallel stream and start right from stage 1 all the way up to stage 7

Intelligent enterprise operations

The Enterprise represents its people, process, business and innovation. The transformation journey for intelligent operations starts with assessing the digital maturity across technology, process and platformsto unlock the new ways in which an enterprise can operate in the digital age.

Enterprise Operations Transformation is a modular framework based on the concepts of simplification, automation, intelligence, and immersive experience. It brings technology and domain expertise together to deliver digital experience, insights and end to end integration capabilities.

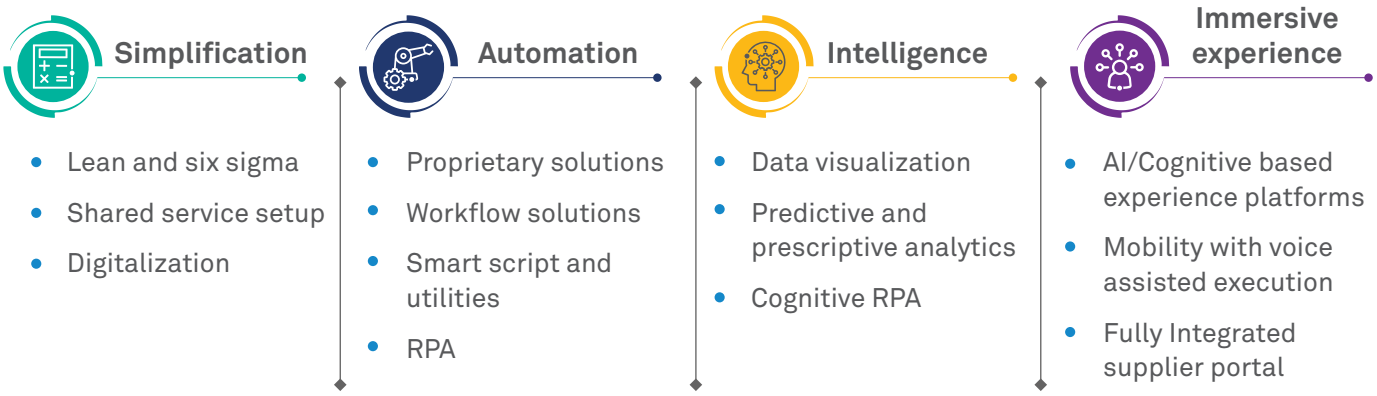


Fig 11: Enterprise operations transformation framework

Enterprise digitization can be targeted by deploying people and process-based levers which unlock significant value.

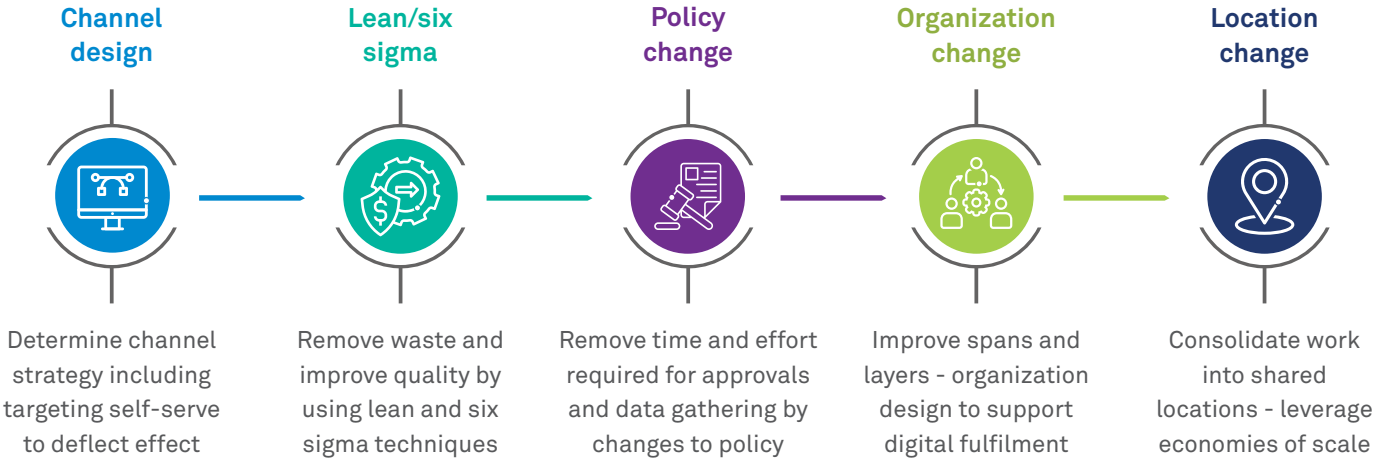


Fig 12: Digitalize – simplification levers

The platforms and data levers can focus different technology-based interventions to enable greater impact through immersive experience.

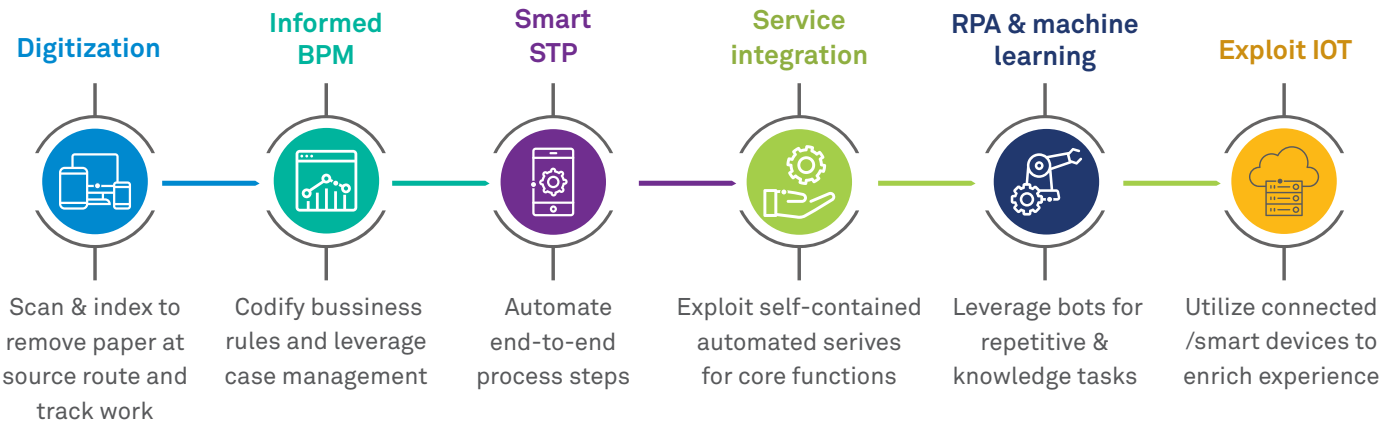


Fig 13: Digitalize – Technology & data levers

The merging mindsets of design and engineering shapes the framework to be user-centric, global scaling and high impacting to improve customer's experience through seamless fulfilment and assurance.

Conclusion

Communication service providers need to embrace digital transformation in their journey to become "Enterprises of the future". While this journey involves a cultural change to modernize the workforce, it is imperative that CSPs leverage pervasive technologies to harness data, analytics, automation and cognitive insights to take on the challenges of the ever-changing marketplace.

Human Centered Design Thinking

Business Process Re-imagination

Innovation to Scale

CSPs need to focus on the following key levers in this transformation journey:

- Human Centric Design Thinking
- Business Process Re-imagination
- Innovation at Scale

CSPs should be cognizant of the fact that the ongoing maturity and success of the journey depends on observability being an essential aspect of the enterprise's 'continuous improvement process'.

Observability is the key step of the digital evolution that CSPs should be embracing. While the concept of observability in itself is an age-old practice, the advent of artificial intelligence and machine learning techniques have given this a new dimension to assure more realistic and viable return on investments.

Value realizations and sustainability are the two foundational pillars that will ensure the transformation journey is successful. Here are some of the values based on Wipro's approach to this transformation:

Value realization & sustainability

- Automated correlation, event reduction, improved velocity of response
- 360-degree view of enterprise
- Self-healing and proactive problem management through automated diagnostics
- Cognitive risk management
- Single pane of view, persona-based views, advanced analytics [predictive]
- Self-service, self-recovery – RPA to RBA
- Ability to measure and influence Business Outcome

About the authors

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