TECH mahindra

Whitepaper

Engineering Confidence in Core Banking Modernisation



Authors

Anil Venuturupalli

Deven Bharat Doshi

Executive Summary

Modernizing a core banking architecture requires embedding legacy business logic in a modern codebase without disrupting operations or compromising regulatory compliance. In this pursuit, testing presents perhaps the greatest challenge due to the intricate dependencies between business rules, systems, and processes. Therefore, implementing an intensive testing regime across the entire banking journey is imperative for any modernization endeavor.

In 2026, Tech Mahindra demonstrated the value of rigorous testing through a user acceptance testing (UAT) program for a leading bank. The approach centered on end-to-end automation, **validating 235 critical business journeys** across more than **200 applications and interfaces.** Using AI-powered code intelligence, the program enabled faster failure diagnosis and more efficient test maintenance, **delivering a 75% improvement in testing efficiency and a 64% reduction in maintenance effort.**

Drawing on this engagement, the following whitepaper explores how journey-based quality engineering can help banks manage migration complexity and establish release readiness.



Table of Contents

1. Introduction 04
2. Reimagining Assurance in Banking Transactions 05
3. Tech Mahindra's Approach to Journey-Based Quality Engineering 07
4. AI: The Intelligence Layer in Quality Engineering 11
5. Transforming Core Banking Migration with AI-enabled Assurance 12
6. The Final Word 14
7. About the Authors 15

Introduction

Banks traditionally relied on technology estates organized around distinct platforms, applications, and functions. Testing customer journeys often reflected these boundaries, making it difficult to assess how changes affected end-to-end journeys across interconnected systems.

Journey-based UAT addresses these gaps by validating how systems, processes, and interactions perform together from beginning to end. It gives banks a repeatable, scalable approach that aligns testing with business outcomes. By automating journeys ranging from retail account opening to trade settlement, banks can accelerate change while maintaining operational stability and compliance.

For journey-based UAT to deliver lasting value, automated tests must be created quickly, remain stable as applications evolve, and be easy to restore when changes disrupt them. Tech Mahindra addresses this requirement through a journey-based UAT framework that integrates AI-powered code intelligence through GitHub Copilot directly into the quality engineering workflow. This integration strengthens automation resilience, recoverability, and long-term maintainability.



As a testament, Tech Mahindra deployed this framework for a leading UK-based bank operating in Hong Kong.

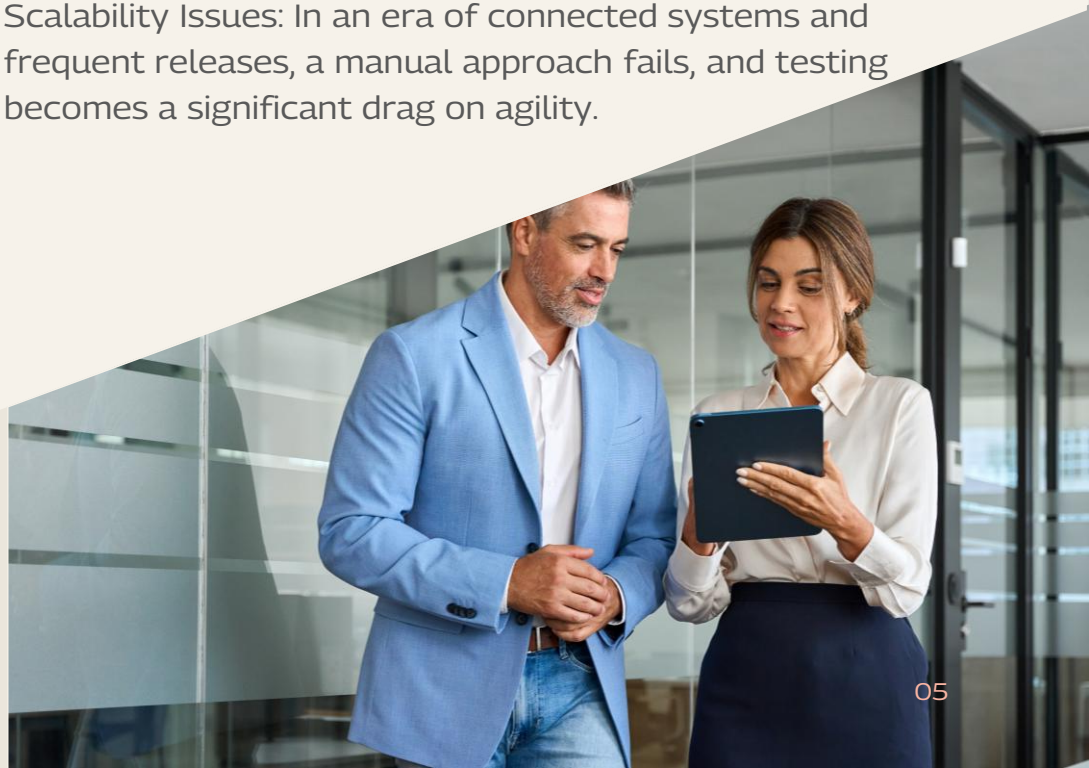
The implementation established a reliable assurance capability that could keep pace with ongoing change while strengthening confidence among business and regulatory stakeholders. It also accelerated time to market, improved testing efficiency by 75%, and resulted in zero critical post-go-live issues.

These outcomes demonstrate the potential of journey-based UAT. However, understanding its strategic value requires examining the limitations of traditional testing approaches.

Reimagining Assurance in Banking Transactions

Traditional UAT typically relies on a team of manual testers to execute multiple test cases across different systems. In major transformation initiatives, this approach becomes a bottleneck. As UAT cycles drag on for months, critical defects emerge late, while the active participation of frontline staff disrupts everyday operations. More importantly, manual validation can leave gaps in end-to-end coverage across complex customer journeys, channels, and applications. These challenges lead to:

- Delayed Time-to-Market: Extended testing phases cause banks to miss key project launches, erode value, and increase service costs. In a competitive banking world, such delays lead to lost business opportunities.
- Strained Resources: As testing gets stretched, SMEs and branch staff cannot focus on serving customers or managing risks. This, in turn, increases production costs and affects the morale of all associated parties, as they are diverted to repetitive testing.
- Quality and Compliance Risks: Manual testing under strict deadlines can lead to overlooked defects, resulting in regulatory non-compliance, penalties, or customer complaints. Banks simply cannot afford such outcomes.
- Scalability Issues: In an era of connected systems and frequent releases, a manual approach fails, and testing becomes a significant drag on agility.



A journey-based UAT, on the other hand, proactively addresses these challenges. With a unified approach that combines process understanding with automation technology, it enables banks to manage service quality effectively. Here's a rundown on key changes observed through journey-based UAT.

- All crucial journey variants are systematically tested, ensuring comprehensive coverage of customer and employee activities.
- Tests run overnight without manual supervision, reducing elapsed time and improving turnaround time for iterative development.
- Business users contribute their expertise during the design phase, while automation handles execution, allowing them to focus on improving customer experiences and supporting business outcomes.
- Every test execution offers detailed audit and compliance logs, satisfying risk officers and regulators about the rigor of testing.
- Once the automated test suite is built, it becomes a long-term reusable asset that can be used for regression testing, patch releases, and new projects. This results in compounding returns on the initial investment.
- Quality checks are embedded throughout the DevOps lifecycle, leading to frequent and confident releases.



Tech Mahindra's Approach to Journey-Based Quality Engineering

Addressing the need for faster, scalable, and more comprehensive UAT, Tech Mahindra's journey-based approach extends quality engineering across complete customer journeys. It combines industry-aligned methodologies, automation-led technology, and deep domain expertise to address each customer's needs. The approach is structured around five pillars:

Pillar	Description
Business-centric Design	**Start with the journey that matters** Quality is measured against business outcomes, not individual systems.
Journey Readiness and Validation	**Remove uncertainty early** Every journey must be validated before it is automated
Robust Automation	**Build strong automation framework** Framework designed with key principles of tech maturity, design consistency, scalability and maintainability
Continuous Assurance and Governance	**Build trust through visibility** Provide clear evidence of readiness, risk, and progress.
Repeatable and Scalable Framework	**Create value beyond go-live** Reuse proven assets across future transformation programs.

AI-Powered Quality Engineering

In Tech Mahindra's recent engagement, AI-assisted application maintenance delivered:

64%
Reduction in Maintenance Effort

75%
Faster Root-Cause Analysis

50%
Faster Test Remediation

Self-Healing Automation & Intelligent Defect Triage

Business Impact

Proven Results

235
Critical Business Journeys Mapped

200+
Applications & Interfaces Covered

75%
Improvement in Testing Efficiency

64%
Reduction in Maintenance Effort

75%
Faster Root-Cause Analysis

Zero Critical Post-Go-Live Issues

1) Business-centric Design

First, Tech Mahindra collaborates with product owners and operations leaders to map end-to-end processes by identifying the bank's most critical business journeys and desired outcomes. These journeys form the basis for testing, ensuring that quality is defined and measured in terms of business functionality and customer experience. This approach focuses testing on what matters most, including regulatory reporting, customer onboarding, payment processing, and trading across all relevant systems.

2) Journey Readiness and Validation

First, Tech Mahindra collaborates with product owners and operations leaders to map end-to-end processes by identifying the bank's most critical business journeys and desired outcomes. These journeys form the basis for testing, ensuring that quality is defined and measured in terms of business functionality and customer experience. This approach focuses testing on what matters most, including regulatory reporting, customer onboarding, payment processing, and trading across all relevant systems.

3) Robust Automation

In the third pillar, Tech Mahindra's automation framework, refined through real-world engagements, serves as the engine of delivery. This behavior-driven development (BDD)-powered, multi-technology framework supports web, mobile, API, mainframe, and database interactions in a unified manner. Its key features include:

- **Controller Orchestration:** A custom controller supports multi-day scenarios and cross-application flows, ensuring each step follows a sequential order. This helps prevent data readiness and scheduling issues from becoming roadblocks during complex testing.
- **Modular and Reusable Components:** The framework uses a library of reusable step definitions and functions for common operations, such as login, payment processing, and approvals. This feature allows teams to update a shared component once and apply the change across multiple journeys, enabling consistency and reuse.

- **Externalized Data and Configurations:** All test data, environment URLs, and credentials are stored and managed in secure stores and data files. This secure feature protects sensitive information and allows quick reconfigurations without code changes.
- **CI/CD Integration:** It seamlessly integrates with the client's DevOps pipelines to run tests automatically as part of build and release processes. It also supports scheduled nightly runs and on-demand triggers and publishes results on dashboards accessible to all stakeholders.

4) Continuous Assurance and Governance

The fourth pillar extends beyond the toolset to provide a comprehensive assurance framework built on clear ownership, transparent reporting, and a one-team delivery model. Through active engagement with business teams and other stakeholders via live demonstrations, audit trails, and readiness reports, it builds trust, accelerates issue resolution, and keeps transformation programs on track.

5) Repeatable and Scalable Framework

Developed for any major banking transformation, Tech Mahindra's journey-based UAT integrates tailored testing with a reusable accelerator to minimize implementation time and risk. The Hong Kong-based bank transformation demonstrated the value of this approach, which has since been adopted as a reference point for similar initiatives across the bank's global operations.

AI: The Intelligence Layer in Quality Engineering

The integration of AI across quality engineering is Tech Mahindra's key differentiator. In the journey-based UAT, AI is embedded in two main ways.

- **AI-accelerated Test Maintenance and Creation:** Maintaining large test suites requires significant effort, particularly when applications undergo UI changes or introduce new features. Integrating GitHub Copilot with Tech Mahindra's testing framework accelerates failure analysis, repairs broken scripts, and generates new test steps. In Tech Mahindra's recent engagement, AI-assisted application maintenance delivered:
  - 64% reduction in maintenance effort, minimizing a week-long manual update process to approximately 2.5 days.
  - 75% faster root cause analysis of test failures, with AI quickly identifying the code or data responsible for each failure.
  - 50% faster test fixes, as AI-generated suggestions helped repair broken locations or logic in hours instead of days.

The engagement demonstrates how an automated test suite can be restored to full functionality in a fraction of the usual time, cutting a week-long process down to days and keeping delivery schedules on track.

- **Agentic AI for Autonomous QA:** To help banks keep pace with this complexity, Tech Mahindra embeds agentic AI capabilities into quality engineering through AI-powered testing agents that can dynamically plan, execute, and adapt tests with minimal human input. The proprietary AppGinieZ platform, an agentic AI enabler, is currently being used in several pilot projects to:
  - Generate test scenarios and data.
  - Run self-healing test scripts.
  - Automatically triage defects and generate well-documented bug reports.
  - Parallelize and scale testing across multiple AI agents.

Transforming Core Banking Migration with AI-enabled Assurance



A leading UK-based bank operating in Hong Kong needed to replace its legacy core banking system with a modern platform in its largest market. The program spanned more than 200 applications and interfaces, with UAT performed manually by hundreds of business users. This caused delays and raised concerns about test coverage and execution consistency. With go-live subject to approval from the Hong Kong Monetary Authority, the bank required a more rigorous and scalable assurance approach. Tech Mahindra's journey-based end-to-end UAT automation strategy helped address these challenges by improving coverage, accelerating testing, and strengthening confidence in go-live readiness. Tech Mahindra's strategy helped to:

- Map 235 critical end-to-end business journeys and develop detailed test scripts using BDD. Each step underwent a dry run ahead of automation to resolve ambiguities and confirm its readiness.
- Integrate the existing test framework 'Genie' with a controller to unify several applications under a single testing environment. Additionally, integrate QA dashboards and CI/CD pipeline triggers were also integrated to enable continuous test execution and reporting.
- Apply AI through GitHub Copilot midway through the project to accelerate script fixes following UI changes. Use AI to analyze failing journeys, identify broken UI locators, recommend accurate corrections, and accelerate script refactoring and revalidation.
- Collaborate with the bank's team to resolve issues quickly and maintain stakeholder confidence throughout the transformation.

Tech Mahindra's contribution strengthened the delivery and supported a smooth go-live. These results now form a cornerstone of the solution's 'first-time-right' delivery proposition. The solution is also being reused across the bank's other markets, extending its value beyond the initial project.

Callout

"The level of confidence and control we had in this go-live is unprecedented. It's the smoothest major launch I've seen in my 30-year career."

- CIO, a UK-based bank operating in Hong Kong

The Final Word

Banks planning large-scale core banking migration should treat assurance as a business transformation capability, not only a testing workstream. They should prioritize end-to-end business journeys, validate journeys before automation, externalize test data, engineer reusable automation across technologies, and establish transparent governance with clear ownership and evidence.

Tech Mahindra can help banks discover and prioritize critical journeys and risks, design and build journey-based automation with AI-enabled maintenance and evidence-based governance, and scale and run reusable assurance assets across releases and markets. This converts assurance from a late-stage control into a repeatable capability that strengthens confidence in transformation outcomes.





Anil
Venuturupalli

SVP, Global Head of the Banking and Products Group, and Chief Product Officer for Financial Services, Tech Mahindra

About the Author

Anil is a seasoned technology and banking leader with over 25 years of global experience spanning strategy, transformation, digital innovation, and core banking. He has led large-scale initiatives across Asset and Wealth Management and Private Banking, holding senior global CIO and COO leadership mandates. With deep expertise in AI and knowledge-driven systems, Anil is passionate about shaping the future of banking architecture and enabling intelligent, policy-driven financial ecosystems.



Deven Bharat
Doshi

Competency Head,
Consumer Banking,
Tech Mahindra

About the Author

In this role, Deven leads the consumer banking competency globally and advises financial institutions on digital transformation, with a focus on modernization, cost optimization, and revenue growth through innovative business models. Deven brings over 24 years of experience in business and IT consulting and practice development.

About **Tech Mahindra**

Tech Mahindra (NSE: TECHM, BSE: 532755) offers technology consulting and digital solutions to global enterprises across industries, enabling transformative scale at unparalleled speed. With 146,000+ professionals across 90 countries, Tech Mahindra provides a full spectrum of services including consulting, information technology, enterprise applications, business process services, engineering services, network services, customer experience & design, AI & analytics, and cloud & infrastructure services. It is the first Indian company in the world to have been awarded the Sustainable Markets Initiative's Terra Carta Seal, which recognizes global companies that are actively leading the charge to create a climate and nature-positive future. Tech Mahindra is part of the Mahindra Group, founded in 1945, one of the largest and most admired multinational federation of companies.. For more information on how TechM can partner with you to meet your Scale at Speed™ imperatives, please visit https://www.techmahindra.com/.

www.techmahindra.com
www.linkedin.com/company/tech-mahindra
www.x.com/Tech_Mahindra

Copyright © Tech Mahindra Ltd 2026. All Rights Reserved.

Disclaimer: Brand names, logos, taglines, service marks, tradenames and trademarks used herein remain the property of their respective owners. Any unauthorized use or distribution of this content is strictly prohibited. The information in this document is provided on "as is" basis and Tech Mahindra Ltd. makes no representations or warranties, express or implied, as to the accuracy, completeness or reliability of the information provided in this document. This document is for general informational purposes only and is not intended to be a substitute for detailed research or professional advice and does not constitute an offer, solicitation, or recommendation to buy or sell any product, service or solution. Tech Mahindra Ltd. shall not be responsible for any loss whatsoever sustained by any person or entity by reason of access to, use of or reliance on, this material. Information in this document is subject to change without notice.