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Transforming Legacy Banking Systems through Machine Learning - A Real-World Platform Modernization Story

The journey from legacy banking systems to digital leadership requires vision, strategy, and meticulous execution. Our 18-month transformation revolutionized operations through cloud-native architecture and API-first design, delivering immediate impact across all key performance indicators.

This presentation shares practical insights from our successful modernization initiative, which balanced innovation with operational stability while dramatically improving both internal processes and customer experience.

Transformation Overview

1

Planning

Strategic assessment of legacy systems and identification of modernization priorities

2

Migration

Systematic transfer of 12.5M customer accounts with minimal disruption

3

Implementation

Deployment of cloud-native architecture and API-first design principles

4

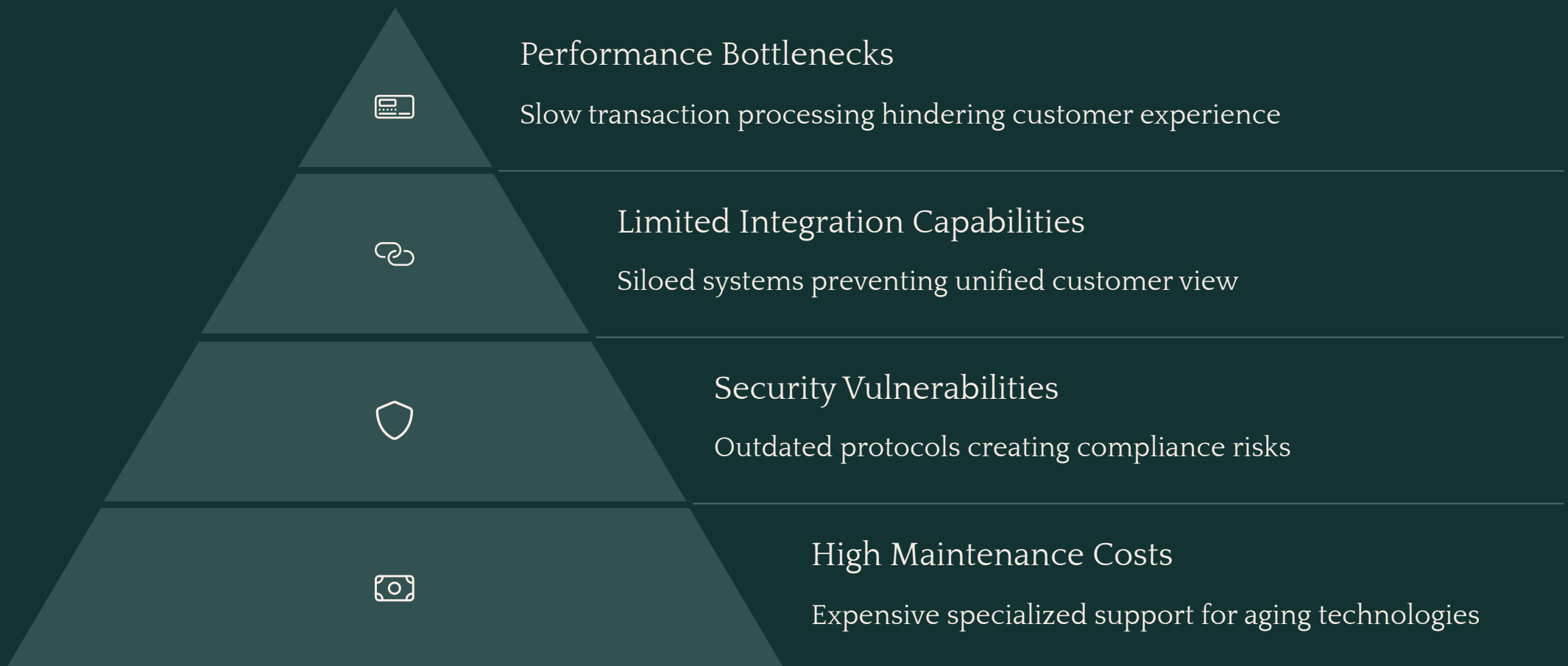
Optimization

Continuous improvement of processes and performance metrics

Our transformation journey unfolded across four carefully orchestrated phases. We began with comprehensive planning to assess our legacy infrastructure and identify modernization priorities. The migration phase involved transferring 12.5 million customer accounts with minimal disruption, maintaining system availability throughout.

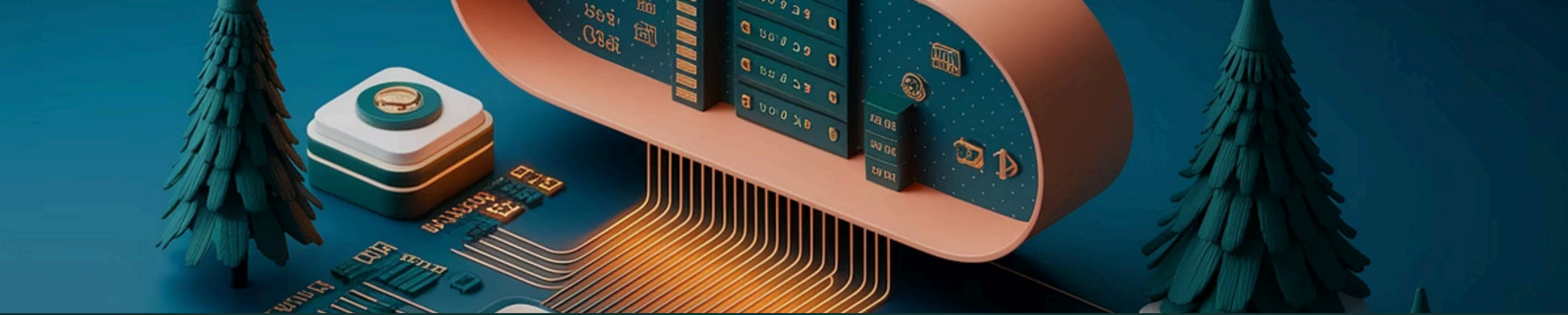


The Legacy Challenge



Our legacy banking infrastructure presented significant challenges that constrained our growth and competitive positioning. Performance bottlenecks resulted in sluggish transaction processing times of 3.2 seconds, frustrating customers accustomed to instant digital experiences.

The siloed nature of our systems prevented us from achieving a unified customer view, while security vulnerabilities in outdated protocols created compliance risks in an increasingly regulated industry.



Technical Architecture Transformation



Microservices Architecture

Decoupled modular services replacing monolithic applications



Cloud-Native Infrastructure

Scalable resources with automated provisioning



API-First Design

Standardized interfaces enabling seamless integration



Zero-Trust Security Model

Comprehensive authentication and authorization protocols

Our technical transformation centered on four key architectural principles. We replaced monolithic applications with a microservices architecture, allowing us to develop, deploy, and scale individual services independently. This approach significantly improved our ability to innovate rapidly while maintaining stability.

The migration to cloud-native infrastructure provided elasticity to handle peak loads efficiently, while our API-first design created standardized interfaces for seamless integration with both internal and external systems.



Performance Improvements

75%

Transaction Speed

Reduction in processing time from 3.2s to 0.8s

300%

Processing Capacity

Increase in transaction handling capability

99.999%

System Uptime

Availability throughout migration and after

0.01%

System Downtime

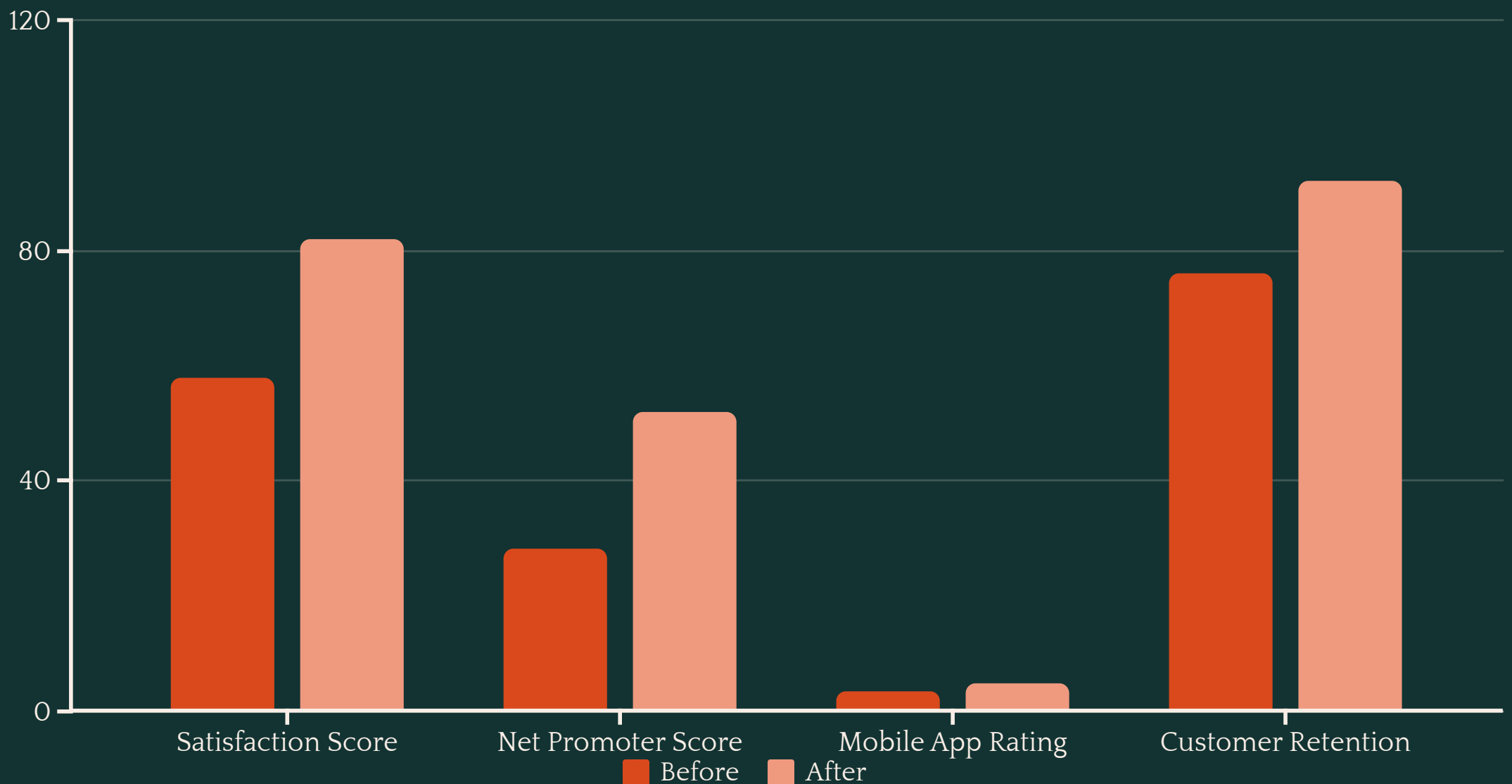
Minimal disruption during 18-month transformation

The technical architecture transformation delivered immediate and substantial performance improvements. Transaction processing time plummeted by 75%, reducing average times from 3.2 seconds to just 0.8 seconds—a change immediately noticeable to customers conducting financial transactions.

Our platform's processing capacity surged by 300%, now efficiently handling 2.3 million daily transactions with 99.999% uptime.

Throughout the 18-month transformation journey, we maintained system downtime at just 0.01%, ensuring minimal disruption to daily banking operations.

Customer Experience Impact



Our technical improvements translated directly into enhanced customer experiences, with satisfaction scores climbing 42% and our Net Promoter Score rising significantly from 28 to 52. Mobile app ratings improved from 3.4 to 4.7 stars as customers embraced the faster, more intuitive digital experience.

Customer retention improved dramatically from 76% to 92%, reflecting increased loyalty and satisfaction with our modernized banking services. These experience improvements have positively impacted our brand reputation and market position.

Accelerated Customer Onboarding

Legacy Process: 48 Hours

Manual document verification, branch visits required, paper-based approvals, overnight processing cycles

Intermediate Process: 4 Hours

Digital document uploads, partial automation, some manual verification steps, same-day processing

Modernized Process: 15 Minutes

Fully digital experience, biometric verification, AI-driven KYC checks, instant account provisioning

One of our most significant achievements was the dramatic reduction in customer onboarding time. The legacy process required 48 hours and multiple touch points, including branch visits and manual document verification. Our transformation journey first reduced this to 4 hours through partial automation and digital document uploads.

The fully modernized process now takes just 15 minutes, featuring biometric verification and AI-driven KYC checks. This improvement led to a 27% increase in new account openings and significantly improved conversion rates for prospective customers.

Enhanced Regulatory Compliance

Before Transformation

- Manual compliance checks
- Reactive monitoring
- 97.5% compliance rate
- 2-week audit preparation
- Limited real-time risk assessment

After Transformation

- Automated compliance verification
- Proactive monitoring with alerts
- 99.99% compliance rate
- 3-day audit preparation
- Continuous risk assessment

The modernization effort significantly strengthened our regulatory compliance framework. We transitioned from manual compliance checks to automated verification systems with continuous monitoring. This transformation increased our compliance rate from 97.5% to an impressive 99.99%, substantially reducing our regulatory risk exposure.

Audit preparation time decreased by 60%, from two weeks to just three days, freeing valuable resources for core business activities. Our new platform enables continuous risk assessment with real-time alerts for potential compliance issues, allowing proactive resolution before they become serious concerns.

Migration Success Metrics

Account Migration

12.5 million customer accounts successfully transferred with complete data integrity and zero losses

Process Modernization

843 critical banking processes redesigned and optimized for cloud-native infrastructure

Testing Coverage

98.7% test coverage across all systems with 1.2 million automated test cases ensuring reliability

Deployment Efficiency

Average deployment time reduced from 72 hours to 25 minutes through CI/CD implementation

Our migration achievements represent one of the industry's most successful large-scale banking transformations. We successfully migrated 12.5 million customer accounts with complete data integrity and zero losses, while simultaneously modernizing 843 critical banking processes.

Comprehensive testing coverage of 98.7% with 1.2 million automated test cases ensured platform reliability. The implementation of CI/CD pipelines dramatically reduced average deployment times from 72 hours to just 25 minutes, enabling rapid iteration and continuous improvement.

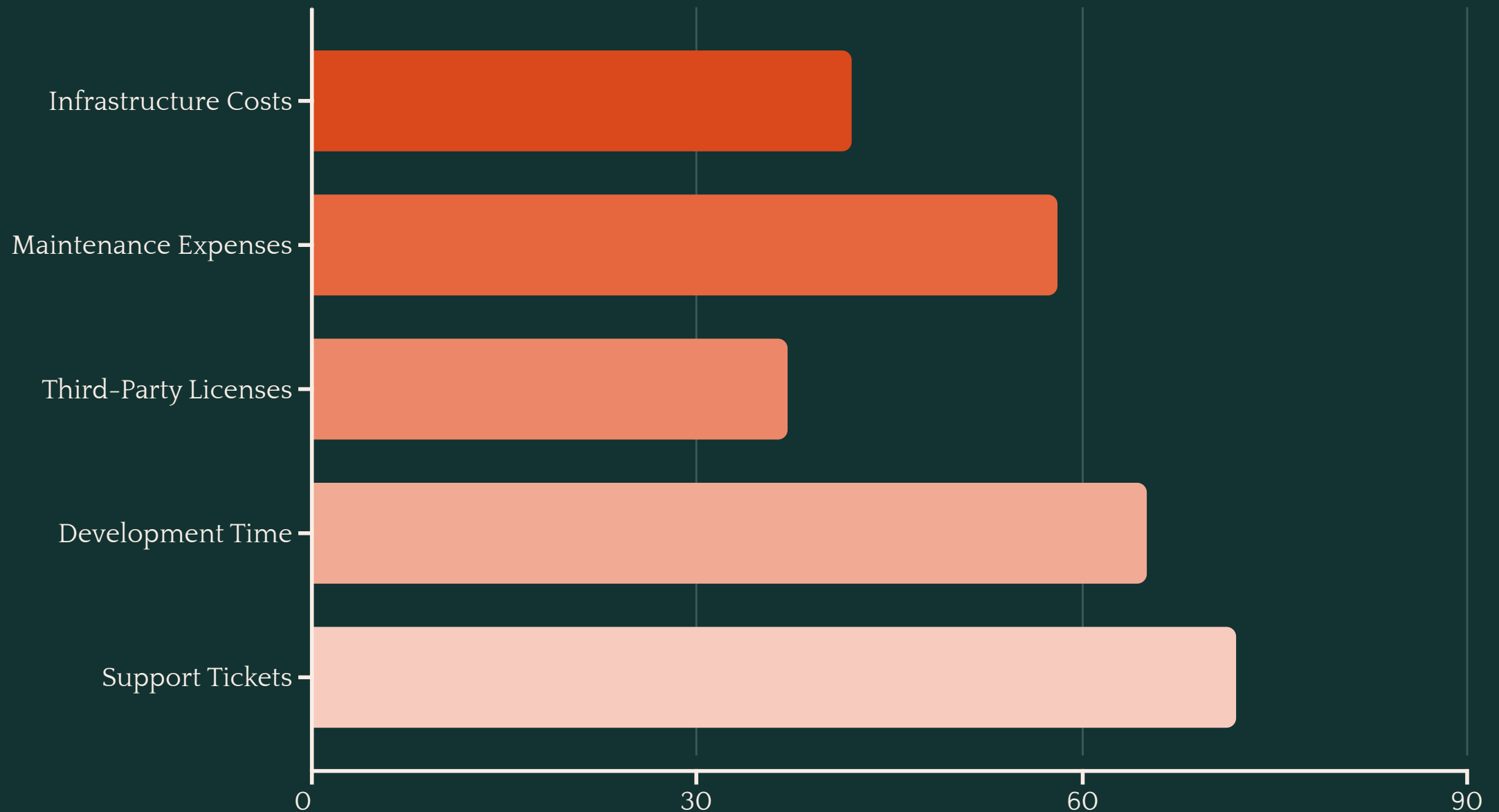
Employee Adoption Strategy



Our comprehensive change management strategy was key to achieving an 89% staff adoption rate within three months of launch. The strategy followed a cyclical approach beginning with awareness campaigns that clearly communicated the benefits of transformation for both employees and customers.

Targeted training programs equipped staff with the necessary skills to operate in the new environment, while dedicated support teams provided assistance during the transition period. Continuous optimization based on employee feedback ensured that the platform evolved to meet actual user needs rather than just technical specifications.

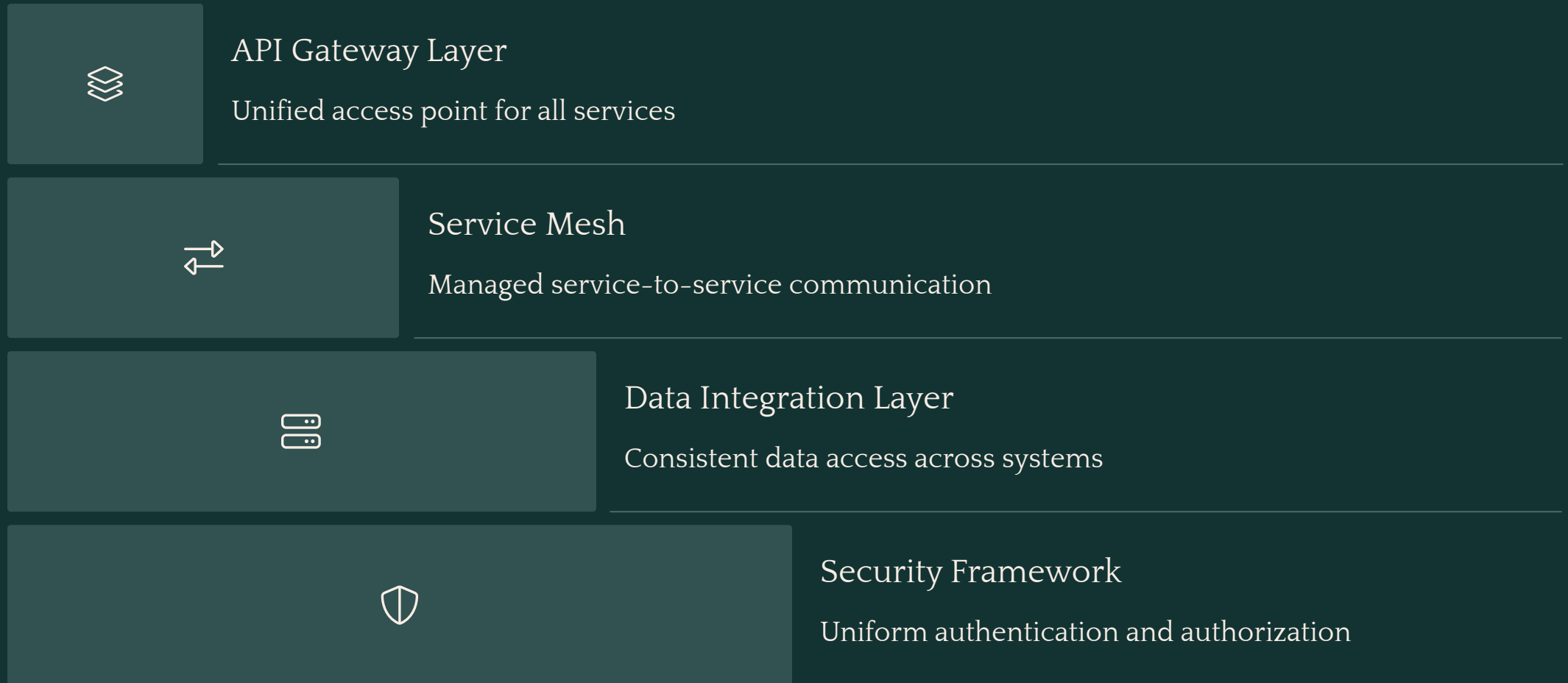
Cost Optimization Results



The transformation delivered a 35% reduction in overall operational expenses, with particularly notable savings in specific categories. Infrastructure costs decreased by 42% through cloud optimization and dynamic resource allocation, while maintenance expenses fell by 58% due to automation and simplified architecture.

Third-party license costs were reduced by 37% by consolidating vendors and leveraging open-source technologies where appropriate. Development time for new features decreased by 65%, enabling faster innovation, and support tickets fell by 72% as system stability and user experience improved.

Integration Strategy



Our integration strategy employed a layered approach to connect legacy systems with new cloud-native applications. The API gateway layer provided a unified access point for all services, standardizing request handling and enabling controlled migration of functionality over time.

The service mesh managed internal communication between microservices, while the data integration layer ensured consistent access across systems. This architecture allowed us to gradually replace legacy components without disrupting operations, maintaining business continuity throughout the transformation journey.

Risk Mitigation Techniques



Effective risk management was crucial to our transformation success. We implemented parallel systems running simultaneously with synchronized data to ensure business continuity. Canary deployments allowed us to test changes with limited exposure before full implementation, gradually shifting traffic as confidence increased.

Comprehensive rollback capabilities enabled instant reversion of problematic changes, while sophisticated monitoring systems provided real-time performance tracking and error detection. Cross-functional teams combined business, technical, and regulatory expertise to ensure all risk dimensions were addressed throughout the transformation journey.

Key Takeaways and Next Steps



Comprehensive Strategy Is Essential

Successful transformation requires alignment of technical, organizational, and customer experience goals



Balance Innovation With Stability

Maintain core banking reliability while introducing new capabilities through measured, iterative approaches



Prioritize Change Management

Employee adoption is as critical as technical implementation for transformation success



Embrace API-First Architecture

Open banking and financial ecosystem integration capabilities provide future competitive advantages

Our transformation journey demonstrates that legacy banking systems can be successfully modernized with the right strategy and execution. The remarkable performance improvements and customer experience enhancements have positioned us as a digital leader in the financial services industry.

Looking ahead, we're leveraging our modernized platform to explore AI-driven personalization, expanded open banking capabilities, and enhanced data analytics. We invite you to discuss how similar transformation approaches could benefit your organization and welcome questions about our implementation strategies.