tsg | payforge

Modern Payments Infrastructure is the **New Battleground for Growth.**

PSPs face a stark reality: modernizing your payments infrastructure is no longer optional. The question many industry leaders are asking is not “Should we modernize?” but “What should we modernize first?”.

With how fast technology moves, the payments industry has a lot of catching up to do. Platforms that haven’t seen a meaningful upgrade in five years are already becoming legacy infrastructure. Yet, in our experience, the uncomfortable reality is that systems built in the 1970s and 80s still underpin the core infrastructure of most of the payments ecosystem today.

> Most payment systems weren't built for the world we're in today. Every year a business delays modernizing, it isn't just falling behind, it's actively funding its own irrelevance.

Petru Metzger, CEO Payforge.

This whitepaper explores:

1. Why modernization matters
2. The modernization challenge facing the industry
3. What modernization delivers
4. Modernization best practices
5. What modern infrastructure looks like

TSG Strategic Partnership

Together with Payforge, we offer the payments industry's only end-to-end tech enablement solution.

Read more

tsg | payforge

Why **Modernization Matters**

Market demand is relentlessly pushing towards fast, seamless, tech-first experiences. According to a recent TSG survey found that ease of implementation, a mark of modern infrastructure, is one of the top three reasons software companies choose their payment processing partner.

Modern payments infrastructure is critical to avoid falling behind, and the pace of technology enablement determines who gains or loses share. In this environment, the competitive advantage belongs to those who treat modernization as a continuous discipline, not a crisis response.

The Modernization Challenge Facing the Industry

The payments space is filled with monolithic systems that were built decades ago. On the surface, these systems can appear to "get the job done," but their cracks are starting to show, and they often prove slow, inflexible, disconnected, and expensive to run. In efforts to add innovation, legacy architecture becomes a "Frankenstein" patchwork of workarounds, acquired assets, and third-party connections.

This results in users suffering from slow integrations, clunky interfaces, and rigid options that are misaligned with today's expectations. The challenge is that modernization is genuinely complex to execute. It isn't just technical, it's operational. It's like changing the engine while flying the plane.

Organizations must modernize while keeping the business running, a challenge that introduces real execution and attrition risk if not managed carefully. What's changing, however, is the feasibility of doing so. Advances in AI-driven development are reducing the time, cost, and uncertainty associated with understanding legacy systems and accelerating development on well-defined components, making targeted modernization initiatives more practical than ever.

What **Modernization Delivers**

Empowers You to Keep Up with Market Demands

Staying ahead requires an adaptive architecture, one that can absorb change across new payment rails, channels, geolocations, verticals, compliance requirements, and forms of automation. Modern infrastructure gives you precisely that: the ability to evolve your stack continuously without disruption.

When your platforms are built for change, your product roadmap accelerates, you can onboard clients faster, ship features ahead of competitors, and operate more efficiently, translating directly into pricing power. And because changes are made cleanly rather than via patches and wrappers, technical debt stops compounding.

A few current market trends that require modern infrastructure:

1

Agent Commerce

Legacy payments systems are not equipped to support AI-driven experiences that reduce friction, increase conversion, and improve merchant retention.

While consumer-facing AI agents that browse and transact on a user's behalf are one expression of agentic commerce, payments infrastructure needs to support new ways of doing commerce. A practical consumer-facing example is Shopify's AI-driven Universal Cart, which gives users one place to shop across multiple stores, both within and outside Shopify.

Whether through system consolidation, AI-native platforms, or faster integrations, modernization is essential to unlocking AI- driven efficiency and growth.

2

Intuitive APIs

Modern, seamless API experiences are essential in today's developer-centric environment, but too many PSPs aren't meeting the need. TSG conducts regular benchmarking analyses to measure the API quality of market players against best practices for merchant enrollment, record updates, and risk data. The results reveal that onboarding APIs have an average quality score of just 47%, indicating a significant execution gap in the market. Modern APIs enable more businesses to enter your doors. For example, Stripe's IDE-embedded AI assistant enables merchants and platforms to integrate faster with Stripe's platform.

3

Real-time Settlement

Today's market wants fast access to funds. While legacy batch settlement can take days to complete, newer options allow settlement in seconds. In 2025, FedNow recorded 458% year-over-year growth in settled payments. Scheme technology upgrades are required to enable faster settlement.

4

Globalization

Commerce continues to cross borders, and merchants want to unlock new markets. Modern infrastructure enables instant global settlement, lower cost rails, local scheme certifications and regional compliance, click-to-add functionality for locally relevant features, and cohesive data flows. For example, Checkout.com, which was designed for enterprise merchants needing global coverage, built its architecture to be modular so merchants can select specific features tailored to their needs.

5

Crypto Acceptance

Research from the National Cryptocurrency Association and PayPal states that close to 40% of U.S. merchants accept crypto at checkout, with 84% believing that crypto will be mainstream in the next five years. While you may prefer to engage third parties for crypto functionality, any level of in-house ownership over your crypto activity is a competitive differentiator.

6

Unified Reporting

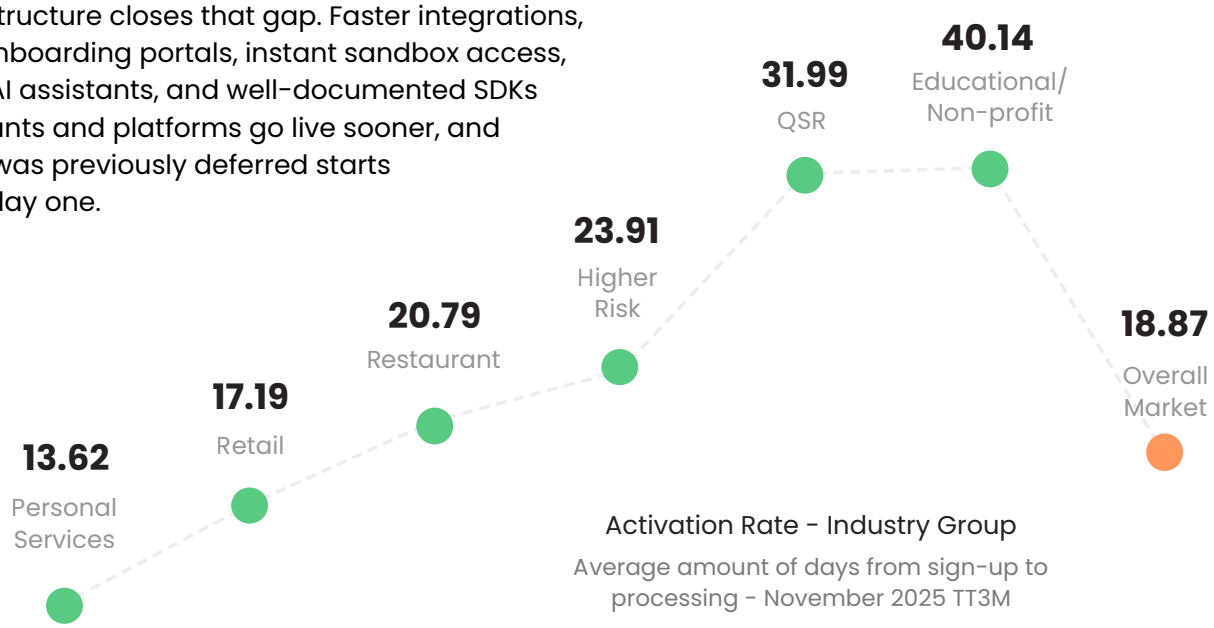
When systems are fragmented, fundamentals degrade. A common resulting pain point for both PSPs and merchants is quality reporting. As a PSP, modern data infrastructure provides holistic views of portfolio performance, enabling better decision-making. For merchants, modernization enables automated reconciliation. Compared to separate setups for online vs. in-person payments, a unified processing platform delivers cohesive reporting that cuts down manual overhead and human error during reconciliation.

Modern Infrastructure Accelerates Revenue

Merchant onboarding has long been one of the most overlooked drivers of revenue performance in the payments ecosystem. While organizations invest heavily in areas like underwriting, a critical financial impact often hinges on a more straightforward question: how quickly does a new merchant begin processing?

Legacy architecture creates friction at every stage of onboarding, slowing integrations and deferring revenue that should already be flowing. A merchant processing $4M annually that takes 30 days to activate represents ~$329K in deferred volume. According to TSG's proprietary data, the average activation time for a $50M+ annual-volume merchant is 59 days, and that figure varies significantly by vertical, as the chart below illustrates.

Modern infrastructure closes that gap. Faster integrations, self-service onboarding portals, instant sandbox access, MCP servers, AI assistants, and well-documented SDKs mean merchants and platforms go live sooner, and revenue that was previously deferred starts flowing from day one.



Activation Rate - Industry Group

Average amount of days from sign-up to processing - November 2025 TT3M

Optimize Your Costs

A modern tech stack delivers lower operating costs and unlocks the cloud-native benefits of scalability, resilience, security, and flexibility. Consolidating to a unified setup eliminates the hassle of managing the connections between different systems. Efficient code optimizes your product development and operational overhead. A key question is: how many routine tasks can you automate with greater modernization?

Upfront investment is needed, but the long-term savings, combined with strategic necessity, make at least some level of modernization worth it.

Allows You to Control Your Destiny

Many software companies, payment facilitators, point-of-sale providers, and ISOs rely on locked-down, legacy payments technology owned by third parties. If you're in this camp, you get stuck waiting on vendor roadmaps that may not reflect what your unique users need.

Modernizing the right areas of your business and taking portions of your tech stack in-house (such as a gateway, merchants' portal, etc.) allows you to create enterprise value through intellectual property ownership. You'll be able to take greater control of your product roadmap and ensure the needs of your unique users are met.

Key Takeaways so Far

Modernization is an imperative for PSPs to succeed	Modernization delivers revenue generation and cost savings	Modernization can come in multiple forms, such as building, migrating, or integrating	Even modernizing a portion of your business can reap benefits

Modernization **Best Practices**

There is no single path to modern payments infrastructure, but there are principles that consistently separate successful modernizations from costly ones. For business leaders, these principles translate directly into faster time-to-revenue, lower migration risk, and greater control over product direction.

- **Decouple the payments stack** into distinct layers: orchestration, processing, clearing/settlement, and reporting, so each can evolve independently. Modern, modular architectures designed for realtime data flow give you this flexibility.

- **API-first design** is non-negotiable. Every capability should be exposed via well-documented, versioned APIs. This enables third-party integrations, embedded finance use cases, and future composability.

- **Real-time rails readiness** should be a design goal from day one, whether that's ISO 20022 compliance, FedNow, or RTP. Building a batch-first architecture and retrofitting for real-time is painful and expensive.

- **Tokenization and vaulting** should be centralized early. Retrofitting payment card data security across a distributed system after the fact is far more complex than building it into the foundation.

- **Shift left on compliance** and involve compliance, legal, and risk teams at the architecture stage, not after. PCI-DSS, AML/KYC, GDPR, and open banking regulations have architectural implications.

- **Fraud and AML controls** should operate in real time and be embedded directly into the payment flow, rather than treated as after-the-fact checks.

- **Resilience testing and realistic simulation environments** are critical to ensure reliability at scale and prevent outages before they impact merchants.

- **Build a payments platform team** with clear ownership, rather than spreading payments concerns across multiple product groups. Payments infrastructure benefits enormously from deep, concentrated expertise.

- **Vendor and partner management** deserves the same rigor as internal engineering. SLA definitions, integration testing expectations, and exit strategies should be explicit in any PSP or processor relationship.

What **Modern Infrastructure** Looks Like

While the term “modern infrastructure” can feel abstract, its impact is very real. For payments leaders, modernization isn’t about adopting the latest technology; it’s about enabling faster growth, reducing operational friction, and maintaining control in a rapidly evolving market.

Modern infrastructure succeeds when it balances strategy, execution, and ongoing optimization. Organizations that approach modernization as a structured journey (rather than a one-time rebuild) are better positioned to move quickly, minimize disruption, and compound value over time.

To help organizations do exactly that, TSG and Payforge guide modernization efforts through a clear, business-first framework focused on outcomes rather than architecture.

1 Assess: Align Strategy Before Technology

Modernization that starts with technology instead of strategy is one of the most common and costly mistakes in payments. This stage establishes a clear baseline by identifying where current platforms create friction, revenue drag, risk, or competitive disadvantage.

The outcome isn’t a technology plan. It’s a prioritized business roadmap that defines where modernization will deliver the greatest impact.

2 Stabilize: Reduce Risk and Enable Change

Before building anything new, organizations must make change possible. Most legacy payment stacks are tightly coupled, brittle, and difficult to evolve safely.

This stage focuses on reducing risk: decoupling critical components, addressing the most fragile areas of the stack, and migrating volume in a controlled way, while keeping live operations running. This is where disciplined execution matters most.

3 Build: Deliver Capabilities That Create Advantage

With a stable foundation in place, the focus shifts to building the capabilities that drive growth. This includes modern acceptance, faster onboarding, improved developer experiences, and platforms designed to absorb ongoing change.

At this stage, modernization stops being a cost center and becomes a source of competitive differentiation and revenue acceleration.

4 Operate: Sustain Performance and Compound Value

Modernization doesn’t end at launch. This stage ensures platforms perform reliably, remain compliant, and continue to improve over time.

The strongest organizations treat operations as a competitive capability, using performance insights, iteration, and optimization to continuously strengthen the platform and inform the next cycle of improvement.

Modern Payments Infrastructure Is the **Growth Battleground**

Concluding Takeaways

The cost of delay is real and compounding.

Legacy platforms slow onboarding, restrict innovation, increase operating costs, and quietly defer revenue every day they remain unchanged.

You don't need to modernize everything at once to see results.

Targeted modernization in high-impact areas can unlock meaningful gains in revenue, efficiency, and control.

Successful modernization is as much operational as it is technical.

The organizations that win are those that modernize with discipline, balancing execution, migration risk, and business continuity.

Treat modernization as a continuous capability, not a one-time project.

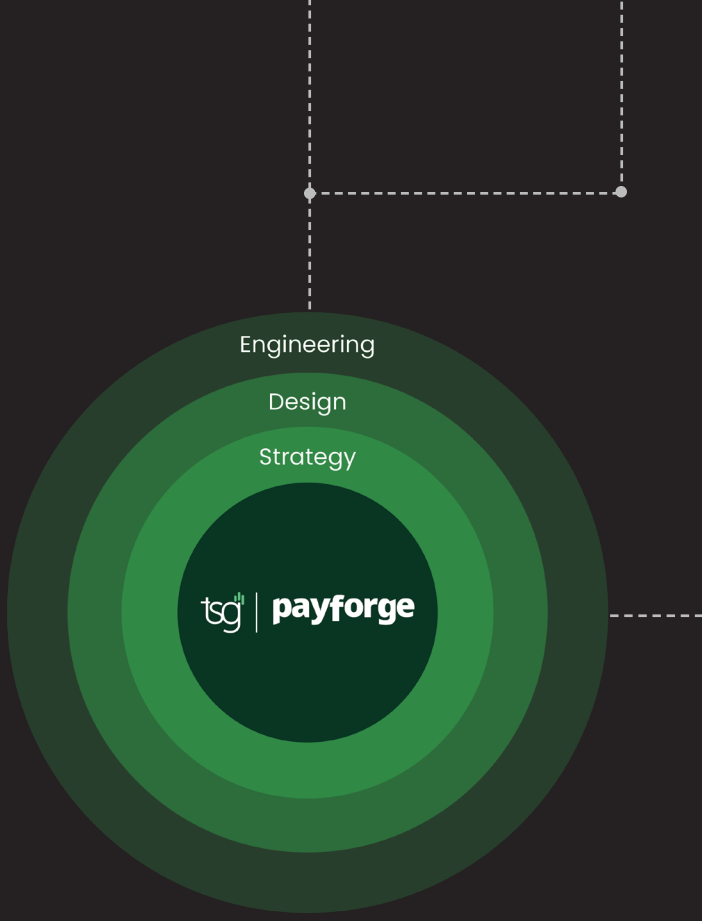
The strongest PSPs build platforms designed to evolve, enabling faster growth today and resilience as the market changes tomorrow.

How TSG & Payforge **Help**

TSG and Payforge are two powerhouses that united to create the new gold standard in acceptance-focused consulting and engineering services.

Operating as a unified team, we deeply understand the business, technical, and AI landscape of the modern PSP. This means you get faster builds, smoother delivery, and fewer surprises.

Click here to learn more about how we plug in quickly to help you accelerate toward your goals.



100% acceptance-focused

We deeply understand the entire acceptance value chain, from both business and technical perspectives

End-to-end spcialization

Disciplined specialists, from vision to production, with complementary strengths combined

Faster time-to-value

Tightly integrated strategy and execution removes handoffs, helping teams move faster

Fewer vendors, less risk

A single accountable partner reduces coordination overhead, delivery risks, and operational complexity

tsg | payforge