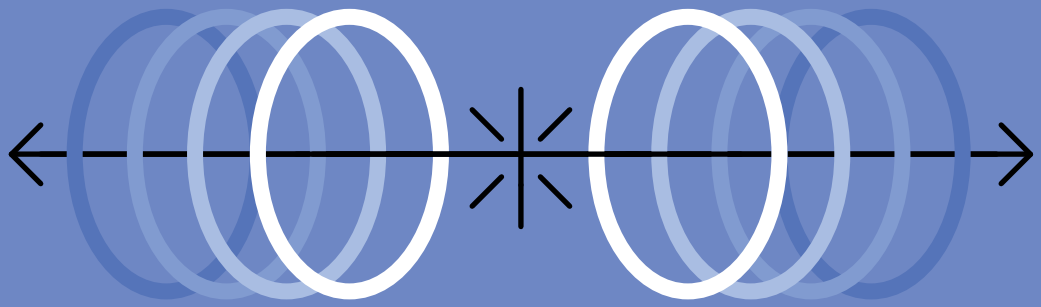
HARVARD BUSINESS REVIEW



Continuous Transformation

Rethinking IT Modernization for the AI Era

HBR Analytic Services **WHITE PAPER**

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Navigating the IT Modernization Journey: A Roadmap to Growth

In the current dynamic digital environment, modernizing IT estates is essential for organizations seeking to sustain a competitive advantage. Remaining at the forefront of technological advancement is crucial.

Kyndryl observes that organizations are increasingly compelled to transform their IT systems to leverage emerging technologies, respond to evolving customer and business demands, and address new cybersecurity and regulatory challenges. Nevertheless, many modernization initiatives do not meet expectations or deliver intended outcomes.

Research conducted by Kyndryl highlights an emerging paradox: While 90% of leadership express confidence in the quality of their IT infrastructure, only 39% believe it is equipped to handle future risks, according to the October 2024 Kyndryl Readiness Report. Although 94% consider modernization a high priority for risk mitigation, just 30% feel their organization is leading in IT transformation and effectively utilizing innovative technologies to achieve business objectives. The research further indicates that to address complexity, leadership require support in aligning IT with broader business goals, upskilling staff on new technologies, and integrating new solutions into existing environments.

The modernization to a hybrid IT model, combining on-premises infrastructure with cloud-based resources, delivers significant flexibility and scalability. However, successful modernization presents challenges that necessitate thorough planning and execution. This report examines these issues critically and provides practical guidance and actionable strategies to facilitate an effective transformation.

Key recommendations include the development of a clear, well-structured modernization roadmap. Organizations should evaluate their current IT environments, pinpoint improvement areas, and formulate strategic plans that align with business priorities. A measured, pragmatic approach—rather than a radical overhaul—is advised, as leadership must continue running operations while allowing for transformation. Additionally, fostering an innovative organizational culture and leveraging artificial intelligence, including generative AI, are highlighted as accelerators of modernization.

IT modernization is an ongoing journey that demands continuous evolution and refinement. By cultivating a collaborative and forward-thinking mindset, organizations can remain agile and seize emerging opportunities while maximizing their return on investment.

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The insights, strategies, and real-world examples featured in this report are designed to support organizations in navigating the complexities associated with IT modernization. The recommendations within offer a framework to achieve modernization objectives and drive long-term business growth.

Continuous Transformation

Rethinking IT Modernization for the AI Era

Despite years of focused investment, large-scale IT transformation remains elusive for many enterprises. Traditional "big bang" approaches—intended to deliver sweeping change—frequently fall short, proving to be too rigid, risky, and resource-intensive.

RESEARCH FROM the Boston-based consultancy Bain & Co. finds that 88% of business transformations fail to achieve their original ambitions, reflecting the difficulties in executing complex, large-scale initiatives.[1] In contrast, a more incremental strategy is emerging: an iterative model focused on short-term gains and long-term adaptability.

"It's not about replacing everything at once. It's about creating a foundation that allows you to change continuously," says Jacqueline Wild, chief information officer (CIO) of Mayr-Melnhof Group (MM Group), a global producer of consumer packaging made of cartonboard, headquartered in Vienna. Wild's sentiment captures a growing consensus and responds to a widespread realization: The demand for digital innovation has not diminished—it has simply become more complex.

Business leadership is under increasing pressure to integrate artificial intelligence (AI), unlock value from data, modernize legacy applications, and ensure resilience across distributed environments. These imperatives have turned IT modernization into a continuous discipline that depends as much on governance and organizational change as it does on updating hardware and software infrastructure.

This report examines how organizations are responding. Drawing on insights from academic experts, industry analysts, and transformation pundits, it explores the interplay of cloud platforms, digital architecture,

HIGHLIGHTS

Business leadership is under increasing pressure to integrate artificial intelligence (AI), **unlock value from data, modernize legacy applications, and ensure resilience** across distributed environments.

Big bang initiatives **rarely accommodate the complexity of hybrid environments** or the human capacity required to change at scale.

As enterprise systems **evolve to accommodate AI, hybrid cloud, and data-driven decision making,** transformation has become a continuous discipline.

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>
> Jacqueline Wild, chief information officer, Mayr-Melnhof Group

AI integration, and incremental execution strategies. The findings point to a more resilient and pragmatic path forward, one that delivers measurable value while minimizing disruption and risk.

A Steady Path to the Cloud

When Wild joined MM Group as CIO nearly five years ago, the global paper and packaging leader had a deeply entrenched IT model. The company, which operates 72 sites in 27 countries, has grown rapidly through acquisitions—adding more than 20 manufacturing facilities in just over a year. Integrating these operations under a unified, modern IT environment proved essential not only for efficiency but also for the long-term viability of the company. “We were running everything on-premises—our own data center, custom-developed applications, even our own database configurations,” she recalls. “We didn’t talk much about cloud.”

MM Group’s situation is not uncommon. Alan Thorogood, a researcher at the MIT Sloan School of Management Center for Information Systems Research (CISR), based in Cambridge, Mass., says that many companies operate with outdated or fragmented infrastructure that impedes data sharing and modernization—a situation that has become untenable in the era of AI. “AI needs good data,” he states. “Because now you’re asking the technology to start making decisions, you need to get the data in shape.”

Rather than attempting to uplift all historical information, Thorogood advises business leaders to focus on the crown jewels—critical data sets that drive decision making and innovation.

MM Group’s Wild and her team recognized the wisdom of this strategy early on. They reenvisioned many of their data-driven business processes as cloud services that could be managed by an IT service provider. “We realized that our core competency is producing packaging products,” she says. “We are not an IT company, so we wanted to transition our IT staff to be more like service delivery managers and business partners rather than system administrators.”

With more than 1,000 applications to migrate and 24/7 production lines that couldn’t tolerate downtime, MM Group rejected a big bang approach. Instead, the team began with noncritical systems and gradually moved up to core business applications such as an SAP enterprise resource planning system. “It’s not like we ‘blacked out’ and ‘blacked in’ again,” Wild explains. “We did it incrementally, step by step, with extensive testing and backups.”

Wild’s team ran both old and new environments in parallel for months, validating each phase of the migration before cutting over. Eventually, even the most critical systems were migrated successfully. “I knew we had a backup. I knew we had a plan B,” she says. “That gave us the confidence to go forward.”

As a result, MM Group transitioned to a managed services model while keeping production uninterrupted. “We accelerated our time to market,” Wild adds. “Now we can support remote and mobile client relationships far more effectively.”

By focusing on outcomes rather than systems, Wild and her team not only repurposed key information systems but also reshaped the role of IT. “Before, you were responsible for managing a database,” she explains. “Now you’re responsible for managing the partner who manages the database—and making sure they provide the service levels the business requires.”

This change required more than process optimization—it also demanded a cultural reset. “Most employees stayed because they loved the company and wanted to grow with us,” Wild says. “A few couldn’t adapt and left.”

MM Group now leverages software platforms like SAP, ServiceNow, and Microsoft Azure in a multi-hyperscaler architecture. Internet of things data from production machinery feeds predictive maintenance dashboards. Wild describes new use cases in progress: “Our partners can troubleshoot and repair equipment without even stepping foot in the facility.”

This type of shared services approach has had an added benefit: liberating technology professionals to pursue new

initiatives. "We've freed up time to explore AI and other digital workloads," Wild explains. "My team is energized to experiment with new capabilities."

Learning-Focused Modernization

Will Venters, associate professor of digital innovation and information systems at the London School of Economics (LSE), challenges the common framing of modernization as a binary choice between big bang and incremental approaches. "The idea of iterative versus big bang is a bit of a misnomer," he says. "The real question is how you guide the effort—and whether your process becomes a function of learning." For Venters, true transformation hinges less on speed or scope and more on reflexivity—the organization's ability to learn as it builds, adjust course, and adapt technology to its own evolving identity.

In other words, agile transformation is not merely about the pace of delivery but also about intelligent governance. "You need space to explore how technologies are used within the organization," Venters says. That includes understanding how employees interact with cloud services, how responsibilities shift as platforms change, and how decisions are distributed across departments and vendors. "You're not just recruiting IT staff to procure software anymore," he adds. "You're dynamically managing the risks and opportunities of a digital ecosystem."

This ecosystem thinking applies across architecture and operations. "You can't just buy agility," Venters argues. "You need to build the conditions for agility—architecturally, organizationally, and even financially." That's particularly critical in hybrid environments, where different systems, service providers, and cloud models must coexist.

Venters is wary of what he calls "overtheorizing" cloud-first mandates. "It's OK for a startup to go all-in on cloud, but for an established manufacturer or bank with significant technical debt and compliance constraints, that can be incredibly disruptive and expensive." Some workloads, he suggests, may be better left on-premises—especially if modernization would break critical workflows or exceed internal capabilities.

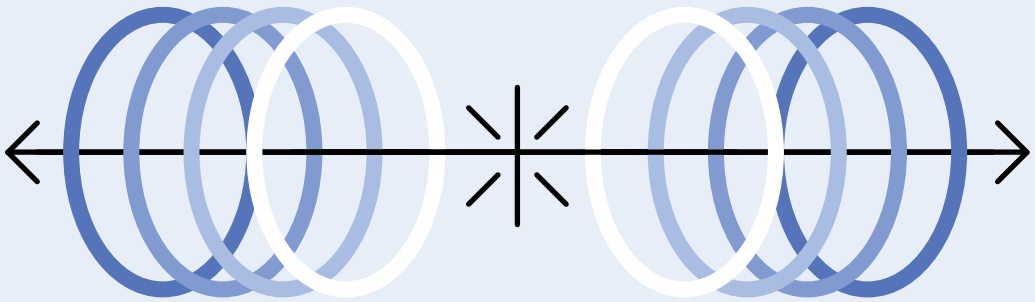
Effective Techniques

Big bang initiatives rarely accommodate the complexity of hybrid environments or the human capacity required to change at scale. Instead, many experts recommend a measured, iterative approach. One popular method often recommended by transformation experts is called hollowing the core. This approach involves "wrapping" legacy systems with application programming interfaces (APIs) so that application functions can communicate and interact with the legacy system while moving those legacy capabilities into a modern, cloud-native environment.

Technically, the hollowing-the-core approach entails strategically extracting key business logic and functionalities from the monolithic core and rebuilding them as modern, cloud-native microservices connected through APIs, creating a more agile, scalable, and cost-efficient architecture. Technologies such as Kafka enable data streaming between systems, letting enterprises bifurcate workloads without interrupting business continuity. Over time, this method reduces reliance on the legacy core, allowing it to function primarily as a system of record until eliminated. The approach enables faster innovation and integration without disrupting business continuity.

However, Venters cautions against modernization strategies that simply patch legacy systems with new interfaces. Instead, he advocates for modular architectures grounded in shared services, reusable APIs, and cloud-native design principles. "You want to be able to reuse things," he says. "That's what creates speed and IT resilience."

Stephanie Woerner, principal research scientist at the MIT Sloan School of Management and director of MIT CISR, agrees that this kind of modular reuse is essential. Her research focuses on how companies use technology and data



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Will Venters,
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London School of Economics

to create more effective business models as well as how they manage the associated organizational change, governance, and strategy implications. "When you move to shared platforms and shared services, you gain lots of efficiencies, especially by reusing the components that you build," she says.

Banking On an Iterative Strategy

For example, when Desjardins Group launched its modernization initiative four years ago, the goal wasn't to overhaul everything at once. The Canadian financial cooperative, which serves nearly eight million members and clients, opted instead for a deliberate, phased approach guided by a desire to reduce business risk, increase technical stability, and build long-term value.

"We had to manage obsolescence, like many other IT businesses," says Daniel Grossi, chief technology officer at the company's Montreal office. "That obsolescence was driven by the business units and some of their needs—applications that had been running within the credit union for many years." Instead of prioritizing specific technologies for an upgrade, Grossi and his team framed modernization and resilience around strategic outcomes such as enhancing service delivery, enabling future scalability, and minimizing technical debt.

The scope was broad, but the execution was anything but monolithic. Desjardins broke down its application and infrastructure landscape into chunks, assessing each for business criticality and modernization potential. "We looked at what was creating risk, what could increase our agility and resilience, and what could enhance the member/client experience," Grossi says. "Then we came up with a multiyear roadmap."

That roadmap now stretches to 2028. Four years in, Desjardins has modernized more than half of its targeted systems and has added technological resilience to better support business continuity management. This progress was made possible by a phased, federated approach. "We broke up the elephant into pieces," Grossi says. Departmental IT leaders partnered with specific lines of business to define modernization roadmaps, while Grossi's cross-sector IT team provided enterprise-level guidance on technology standards. "Let's say one team wanted to use a certain type of database," he explains. "We'd say, 'We're aligning on these two database platforms—here's how you can modernize and manage risks from IT services resilience and still hit the strategic targets.'"

Desjardins' hybrid IT strategy reflects the same pragmatism. "We're not trying to lift and shift everything to the cloud," Grossi adds. Some of these workloads still reside in Desjardins' two Canadian data centers—recently consolidated, modernized, and aligned with resiliency requirements—while other parts run in the cloud. "We want to keep growing our cloud capacities as new requirements or business needs arise," he says. "But for entrenched systems like mainframe apps and telecom components or applications that are business-critical or top secret, those will likely stay within our data centers."

A Measured Approach

As part of its pragmatic approach, Desjardins now governs modernization decisions through an architectural playbook—buy first (software as a service), build second (preferably with platform as a service), and deploy in the cloud when it makes sense. Even the mainframe core—still used by Desjardins' retail banking arm—is under evaluation for future modernization.

LSE's Venters believes this type of playbook is not only technically wise but also financially prudent. "You're giving away parts of your digital core in some cases, and you must assess the cost trade-offs properly," he says.

In some cases, the pressure to modernize legacy systems is tied to end-of-life concerns—and the mounting technical debt that accrues as key information systems gradually become obsolete. "The longer you wait, the more expensive

it becomes to operate these systems," says Tom Davenport, distinguished professor at Babson College. "What may be workable and affordable today might become unsupported tomorrow."

Yet, as Venters cautions, rapid modernization is not always the answer. "Some organizations that pursue an aggressive cloud-first strategy later discover that a new mainframe or well-managed on-prem solution can be more efficient—especially where sovereignty, latency, or uptime were critical," he explains. "Modernization isn't about chasing trends. It's about building the right future for your business."

In Desjardins' case, the benefits of following a well-managed iterative strategy have been substantial. "Cost optimization over the past four years has been tremendous," Desjardins' Grossi says. "That lets us reinvest in services for members and clients—more features, more agility, faster rollout."

Improved agility hasn't come at the expense of stability. In fact, it's been the opposite. "There's a high correlation between the number of changes and the number of incidents," Grossi warns. "So we've been extremely rigorous about change management." Key business periods—such as when lots of members and clients are contributing to their Registered Retirement Savings Plans—are shielded with development embargoes so as not to disrupt key business processes and workflows. And while the number of changes has increased more than 50% over the past two years, overall system stability has also improved.

Grossi says this track record doesn't just stem from selecting the right architecture—it requires cultural and strategic alignment, as well. "We relied heavily on our leadership team," he says. "This was a top-down approach. We set the constraints, gave them the tools, and let them execute within those boundaries."

To build consensus, Desjardins also focused on communicating business value. "We spent a significant amount of time trying to explain why this was necessary," Grossi continues. "It's not just an IT thing—it had to be an organizational thing."

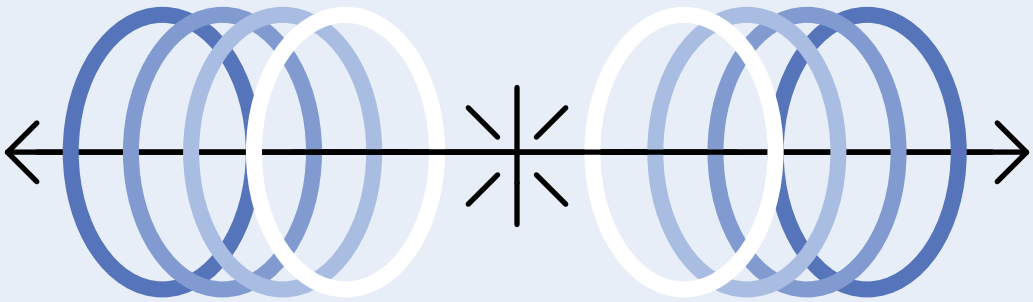
This message was reinforced by officers in the highest echelons of the company; Desjardins' president identified modernization, systems resilience, and data protection as three of the company's strategic imperatives. Still, in some cases, the workforce needed convincing—especially when modernization meant rebuilding legacy systems yet not gaining obvious new features. "Sometimes you are replacing something old with something new that does the same thing," Grossi admits. "We had to explain that it's not always about new functionality but about reducing risk, avoiding future costs, ensuring durability, and enabling innovation down the road."

To guide the modernization and resilience efforts, Grossi and his team worked with IT service providers that played a "coaching role"—guiding the effort and supplying talent to supplement Grossi's internal team. "They were cocreators," Grossi recalls, reflecting on the ongoing consulting engagement. "They helped us understand our environment and surface blind spots we didn't even know we had."

Babson's Davenport believes IT service providers that understand legacy environments can play a crucial role in accelerating modernization—especially when business continuity is at stake. He says these outside experts are increasingly viewed as essential partners in complex IT modernization projects, partly because few enterprises have the internal expertise to decommission mainframes or transition to AI-capable infrastructure. He emphasizes the value of outside support to manage both technical execution and strategic alignment. "If you're going to be changing either software or hardware technology, you probably don't have the skills in-house to do that."

Artificial Intelligence as a Modernization Driver

According to a recent Spotlight report from International Data Corp. (IDC), a market intelligence provider based in Needham, Mass., a growing number of organizations use a digital



"We relied heavily on our leadership team. This was a top-down approach. We set the constraints, gave them the tools, and let them execute within those boundaries."

Daniel Grossi,
chief technology officer,
Dejardins Group

business platform to accelerate IT modernization projects. IDC defines a digital business platform as a multilayered enterprise-wide technology architecture that seamlessly integrates systems and applications from multiple vendors. Through features like artificial intelligence for IT operations, this type of platform reduces downtime, enhances performance, and lowers the cost of operations. An open architecture makes it easy to integrate a wide range of third-party tools and technologies, facilitating smoother transitions during cloud migrations, application modernization, or infrastructure consolidation. A digital business platform can also unify data from disparate tools and systems—ranging from cloud services to IT operations software—into a single integrated view.[2]

Davenport identifies AI not only as an aid but also as a major catalyst for IT transformation. Cloud infrastructure also plays a critical role in this shift, mainly because "AI apps tend to need GPUs [graphics processing units], and you can't easily plug those into your existing architecture," he notes.

Generative AI (gen AI) is accelerating the pace of modernization by automating labor-intensive tasks. "It's getting easier to rewrite old software, because you can get generative AI to take the first cut at it for you," Davenport says. These tools can assist in translating legacy code, documenting systems, and identifying "refactoring opportunities," he adds, referring to the process of restructuring computer code to improve its design, readability, maintainability, or efficiency.

Of course, AI adoption hinges on data readiness. Davenport underscores the limitations of older systems and data warehouses that were not built to support modern analytics or unstructured data. Migrating to cloud-native data platforms is often a prerequisite. In many cases, organizations find that existing platforms were not designed to manage the variety and velocity of data required to support real-time AI decision making. "If you want to use the data in a 20-year-old data warehouse, you probably need to migrate it to a more modern environment," he says.

MIT's Thorogood agrees. "With clean, well-governed data, enterprises can support real-time analytics and pave the way for autonomous systems," he says.

Davenport highlights a practical application for gen AI: translating COBOL to modern languages like Java. "It's particularly useful for documenting legacy systems," he notes, "and that can really jump-start modernization."

The Architecture of Innovation

In his work for MIT Sloan CISR, Thorogood has interviewed CIOs across industries to understand what "IT of the future" entails. His findings point to six converging forces reshaping enterprise IT: artificial intelligence, cybersecurity threats, platform-centric business models, complex privacy legislation, the fusion of business and IT strategy, and the growing influence of hyperscaler vendors. Across all six of these areas, the role of data has become central.

MIT's Woerner builds on this perspective, saying it's about how the data is shared and integrated among corporate information systems. In her view, many established companies have amassed duplicate technology stacks and created point-to-point interfaces that limit agility. "Lots of big old companies are in a stage where every product or service has its own stack," she says. "Modernization is about moving to shared platforms."

That shift often begins with customer data. "You decide that what you need is the same customer data across all of the silos," Woerner continues. "You should enforce rigorous data quality processes, and you should reuse that data rather than storing it in different places. That approach yields lots of efficiencies."

Shared platform services—whether they apply to customer data, security, or IT operations—can then be reused across new digital offerings, reducing duplication and enabling speed. "You do something small, see if it works, and build on it," she adds. "That's the value of modularity."

Thorogood cites the disparate modernization experiences of a multinational bank. In one region, the IT team relied on traditional integrators to deliver a top-down modernization program. Two years later, the effort had stalled. Meanwhile,

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another region started small, using an internal agile team to deliver incremental functionality every 90 days. That localized effort ultimately succeeded—delivering a modernized stack through APIs—and became the model for the broader organization.

These transformative efforts not only reduce costs. They can also generate revenue. Woerner points to organizations that have not only modernized for internal efficiency but also have gone on to monetize those capabilities. One financial services firm built an internal anti-money-laundering engine that proved so effective that they commercialized it as a standalone service.

Finally, as Thorogood points out, don’t overlook the operational benefits of modernization, such as the ability to resolve service breaks quickly with real-time decision making. “Such capabilities can improve both customer and employee experience—and reduce costs,” he notes.

Conclusion

Modernization is no longer a one-time event. As enterprise systems evolve to accommodate AI, hybrid cloud, and data-driven decision making, transformation has become a continuous discipline.

Insights from Babson College, MIT Sloan, and IDC—bolstered by the experience of transformation experts like Jacqueline Wild and Daniel Grossi—all point to the same core idea: Modernization must align with business outcomes and unfold incrementally. Modular platforms, reusable data services, and AI-enabled automation provide the foundation. Strategic partners fill capability gaps. And organizational change, from platform thinking to workforce reskilling, sustains momentum.

For example, by taking a measured approach—modernizing in pieces, aligning technology with business outcomes, and embedding change management at every step—Desjardins has positioned itself to evolve continuously. “This is a journey,” Grossi says. “We’re not done. But we’ve proven that we can modernize without disruption, and that’s what builds trust.”

Of course, as technology evolves, so too must the modernization agenda. Enterprises that treat transformation as an ongoing capability—not a singular event—will be best positioned to build IT environments that adapt, endure, and lead.

“Transformation never ends,” Wild concludes. “We are always working to make the business better. Previously, MM Group was more like Sleeping Beauty,” she adds with a smile. “Now it’s like we have woken up the company to a whole new century of innovation.”

Endnotes

1 Bain & Co., “88% of Business Transformations Fail to Achieve Their Original Ambitions; Those That Succeed Avoid Overloading Top Talent,” April 15, 2024. https://www.bain.com/about/media-center/press-releases/2024/88-of-business-transformations-fail-to-achieve-their-original-ambitions-those-that-succeed-avoid-overloading-top-talent/.

2 International Data Corp., “Deliver Better Bottom-Line Results With an Open Digital Business Platform,” August 2024.

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