



The Race to Modernization

How Automotive IT Leaders Are Modernizing Production, Supply Chain, and Inventory Systems Under Pressure



Executive Summary

From the assembly line and just-in-time manufacturing to self-driving cars, market and competitive pressures are forcing automotive organizations to embrace modernization.

Today, that same push for what's next is reshaping the technology powering those operations as they navigate increasing pressure to grow and embrace new business models, meet evolving customer demands, and steady themselves amid market volatility. Persistent challenges with legacy systems, embedded data, and skill gaps are only accelerating the need to modernize.

In partnership with Rocket Software, we surveyed dozens of senior IT leaders in the automotive industry on their modernization priorities, strategies, and challenges. Nearly all (93%) said that their modernization efforts were progressing at least incrementally, including two-thirds who described the pace as either aggressive and enterprise-wide or focused on specific, high-impact areas like supply chain or production.

That progress isn't without hurdles, though. IT teams are navigating the complexity and risk that comes with modernizing foundational systems that house decades of business logic, tightly coupled applications, and mission-critical data, all without disrupting day-to-day operations.

This push and pull creates a modernization paradox: organizations are under pressure to modernize quickly, but the very systems they're changing are the same ones they can least afford to disrupt.

Findings

Pressure to Modernize is Coming from the Inside and Outside

At its core, the goal of IT modernization is to extend the value of existing applications and systems so organizations can take advantage of newer tools, platforms, and practices, like transitioning to the cloud, in a way that doesn't require a costly rip-and-replace of the systems they still depend on.

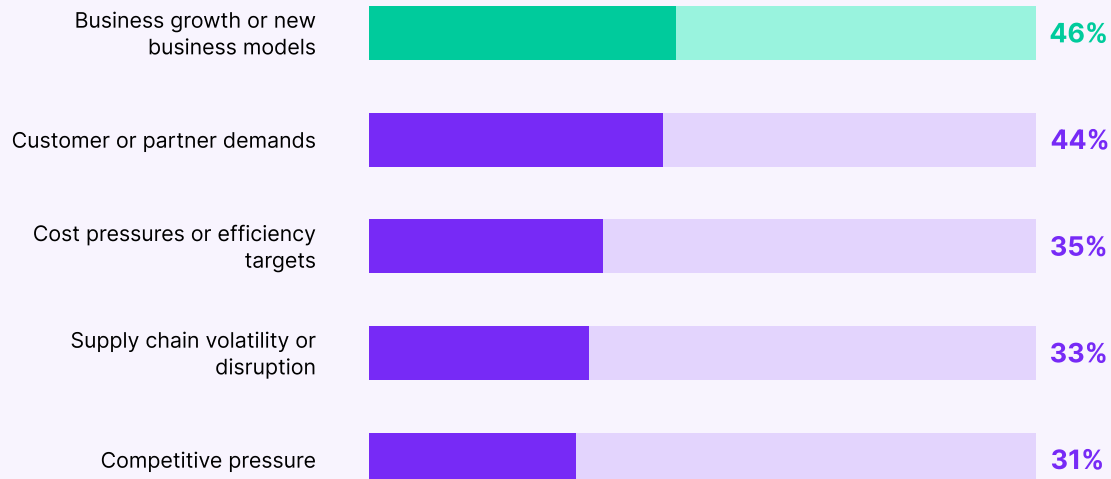
Although new tools, platforms, and practices are all driving the pressure to modernize across the automotive industry, much of it stems from the limitations of the applications and data already in place on systems like the mainframe.

Modern mainframe systems remain critical due to their reliability, security, and data governance capabilities. Yet our research has found that challenges persist — skills shortages, limited flexibility and agility, and costly, complex upkeep — although these are typically a reflection of technical debt, outdated applications, and difficult-to-access data rather than the technology itself.

Our research also found that additional pressure is coming from greater business demands, including the need to grow and embrace new business models, the most common driver cited by respondents, followed closely by customer and partner demands, like faster fulfillment and more streamlined coordination across the supply chain.

Respondents also pointed to plant or operational issues, pressure to improve real-time visibility, and challenges with aging systems, technical debt, or system failures. What stands out, though, is what fell to the bottom of the list: cloud or technology strategy shift.

Top Drivers of Modernization

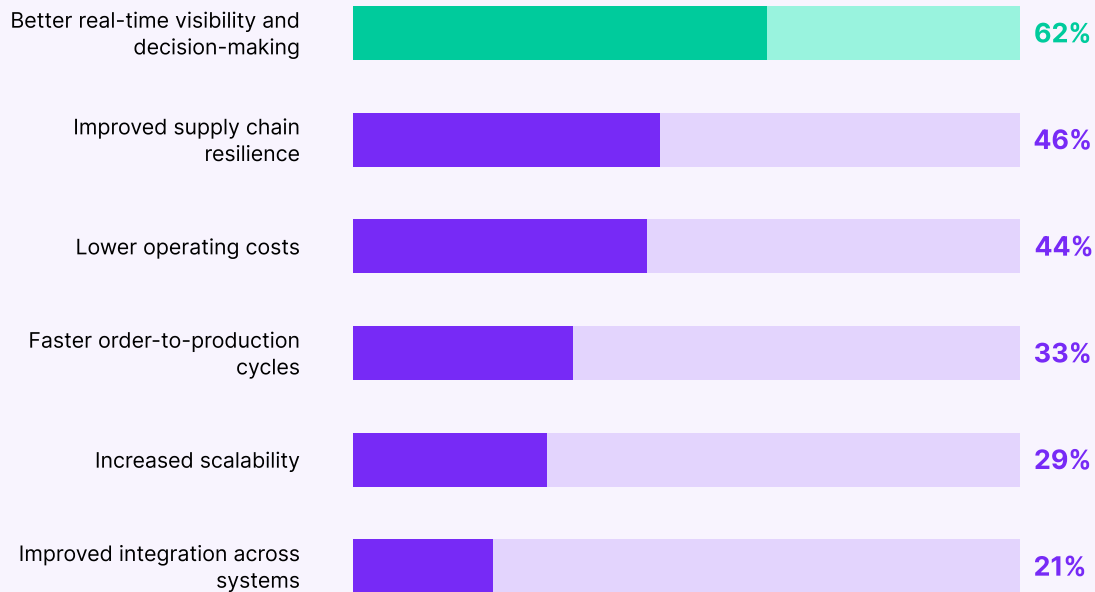


In other words, organizations aren't feeling the pressure to modernize simply because new technology is available or they want to follow the trends. Instead, the pressure to evolve stems from real organizational needs. That imperative comes through clearly in our research.

When asked what outcomes they're prioritizing most in modernization efforts, real-time visibility and decision-making ranked top (**62%**), followed by supply chain resilience (**46%**), and lower operational costs (**44%**).

IT leaders also mentioned faster order-to-production cycles, increased scalability, and improved integration across systems, which give them the flexibility to respond to changing demand, volatile markets, and increasing pressure from customers and partners alike.

What Automotive Leaders Want from Modernization



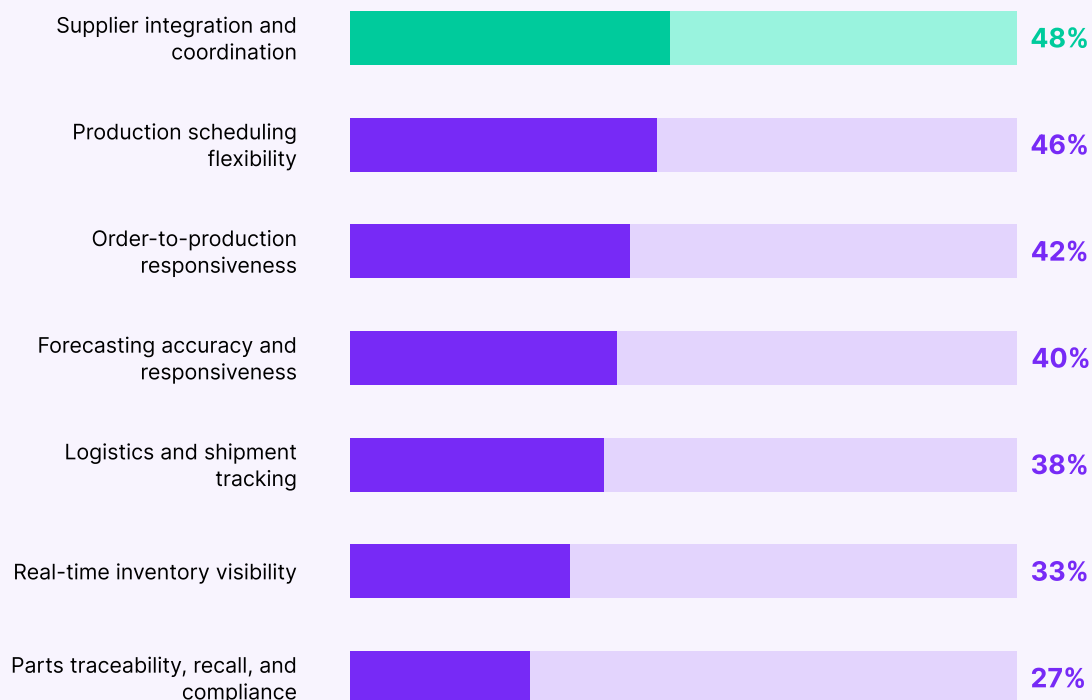
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Legacy Systems Compound the Pressure

As business demands rise and market conditions remain volatile, the inherent constraints of legacy systems make modernization efforts even harder to navigate.

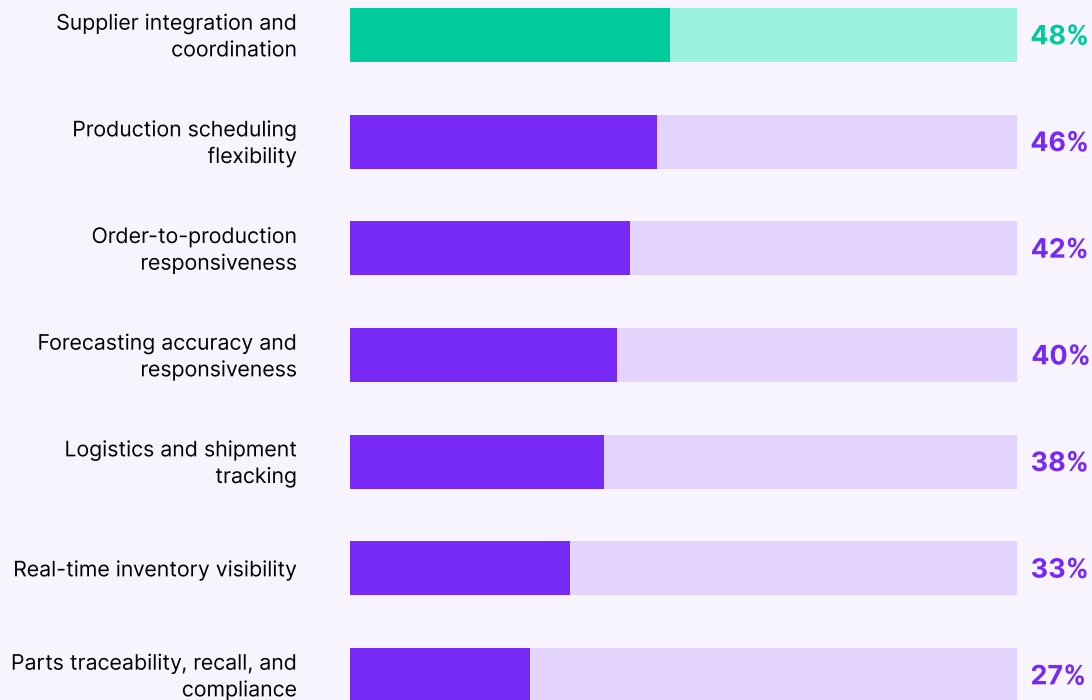
In fact, nearly half of respondents (**48%**) said legacy systems constrain supplier integration and coordination, followed closely by production scheduling flexibility (**46%**) and order-to-production responsiveness (**42%**). Legacy systems also constrain other critical areas, including forecasting, logistics and shipment tracking, real-time inventory visibility, and parts traceability, recall, and compliance.

How Legacy Systems Are Holding Automotive Organizations Back



Legacy systems create real operational risk, too: more than half of respondents named data inconsistencies across systems as a top concern, while **44%** cited an inability to respond quickly to changes in demand. Another **42%** pointed to both limited visibility across supply chain tiers and risk of system failure or downtime.

How Legacy Systems Are Holding Automotive Organizations Back

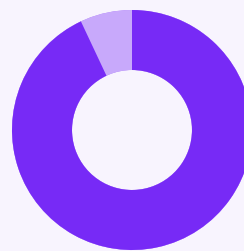


The pressure is coming from multiple directions simultaneously. The challenge is prioritizing without destabilizing systems that cannot afford downtime.

IT leader at an automotive OEM

Modernization is Underway, But Progress is Uneven

The pressure to modernize is leaving automotive organizations and IT leaders little room to stand still. Nearly all respondents (**93%**) said their **modernization efforts are progressing** at least incrementally, including nearly two-thirds who described them as either aggressive and enterprise-wide or focused on specific, high-impact areas.



93% of respondents said their modernization efforts are progressing at least incrementally.

Those high-impact areas show up in the systems respondents said they're actively modernizing or plan to modernize, including inventory and warehouse systems (67%), supply chain systems (63%), and quality/MES systems (60%). At the same time, organizations are also targeting their production systems, planning and forecasting systems, and finance systems.

Systems Automotive Organizations Are Modernizing Most



That concentration across inventory, supply chain, quality, and production shows just how deeply modernization is already extending into automotive operations. And as that work expands, organizations are centralizing their efforts around several modernization priorities, including integrating legacy systems with modern platforms and automating manual processes and workflows.

Automotive IT Leaders' Top Modernization Priorities

- 1 Integrating legacy systems with modern platforms
- 2 Automating manual processes and workflows
- 3 Replacing or re-platforming legacy applications
- 4 Improving data accessibility and analytics
- 5 Cybersecurity and compliance upgrades

However, our research suggests that priority doesn't necessarily mean progress. Several of the highest-ranked initiatives are still in early stages, while lower-priority efforts are significantly further along.

Initiative	Active Deployment or Fully Implemented
Cybersecurity and compliance upgrades	86%
Automating manual processes and workflows	72%
Migrating workloads to the cloud	67%
Modernizing mainframe/core systems	60%
Improving data accessibility and analytics	56%
Replacing legacy applications	48%
Integrating legacy systems with modern platforms	43%

The gap is clearest at the top and bottom of the table. Integrating legacy systems with modern platforms is the most commonly cited priority (selected by **54%** of respondents) yet among those prioritizing it, just **43%** say the work is actively deployed or fully implemented.

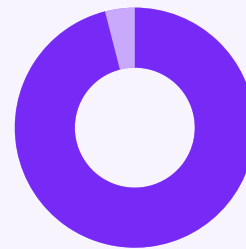
Cybersecurity and compliance follow the opposite pattern. While **42%** identified it as a priority and just **9%** ranked it first, **86%** of those prioritizing it have already reached active deployment or full implementation status.

That contrast reveals an important gap between where organizations want to focus and where they're making the most progress. Security and compliance initiatives are relatively mature, while integrations remain earlier in development despite being a top priority, suggesting organizations have made headway in established areas but face headwinds around the complex work needed to truly modernize.

Modernization spending also appears oriented toward long-term change rather than immediate fixes that can deliver early wins and support. Case in point: **Nearly two-thirds of respondents said they allocate more of their budget to long-term transformation than immediate needs**, suggesting they're betting on modernization even as they navigate immediate internal and external pressure.

External Partners Are Helping Pave the Way

Given the complexity and operational risk involved in modernization, IT leaders are rarely navigating it entirely on their own. In fact, nearly all respondents (**96%**) said that **external technology providers, such as hyperscalers and platform partners, have at least some strategic influence**, including 50% who described that influence as significant and another 42% as moderate.

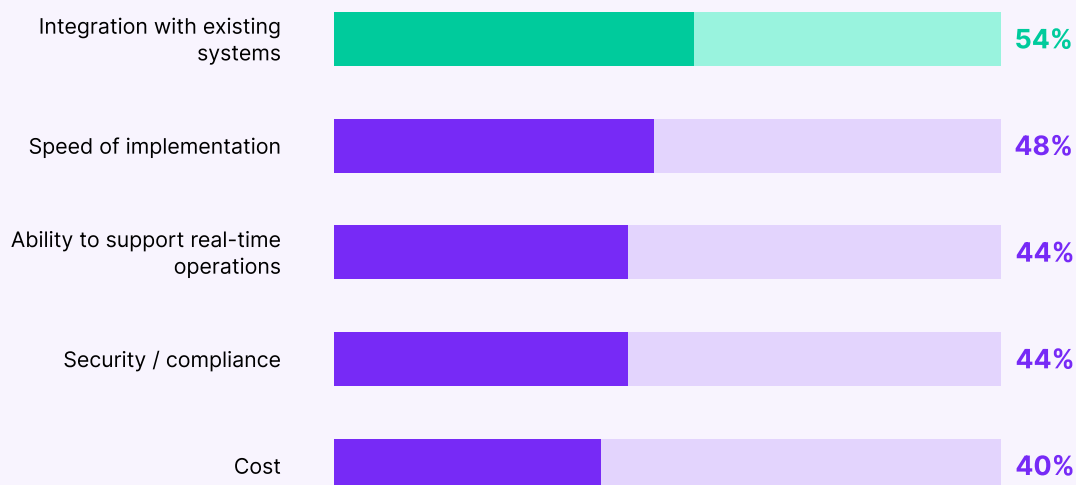


96% of respondents said that external technology providers, such as hyperscalers and platform partners, have at least some strategic influence

That level of influence makes sense given the execution challenges organizations face elsewhere. Modernization is often decentralized, core applications remain interdependent, skills gaps persist, and changes to mission-critical systems can have consequences that extend into production.

When evaluating modernization approaches, vendors, and partners, automotive IT leaders are pulled in several directions, with integration capability, implementation speed, real-time operations support, and compliance all ranking closely. But cost ranks notably lower, suggesting that an external partner's ability to deliver value quickly without compromising the systems and processes the IT team relies on matters more.

What Matters Most When Choosing Approaches, Vendors, and Partners



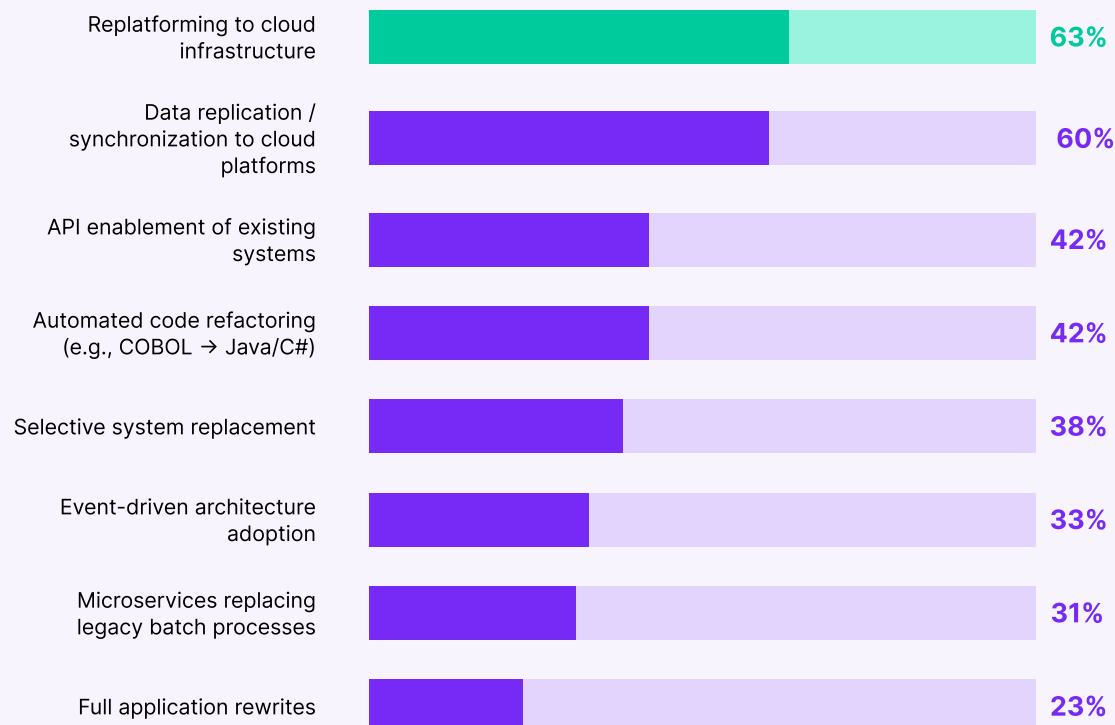
How Automotive Organizations Are Navigating Modernization

Rather than tearing out existing applications and rebuilding from scratch, most are choosing approaches that let them move forward without causing unnecessary disruption to day-to-day operations.

"Never treat the legacy system as the enemy," shared one IT leader at an automotive OEM.

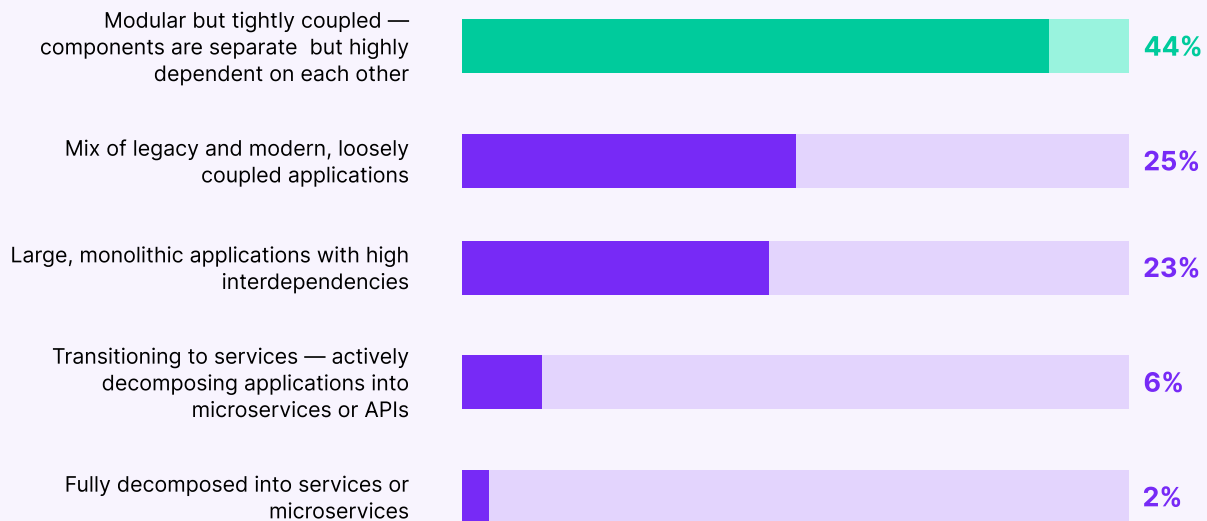
That preference shows up clearly in the mix of approaches organizations are using today, with full application rewrites ranking lowest on the list of modernization approaches automotive IT leaders are actively using or evaluating.

Top Modernization Approaches IT Leaders Are Using / Evaluating



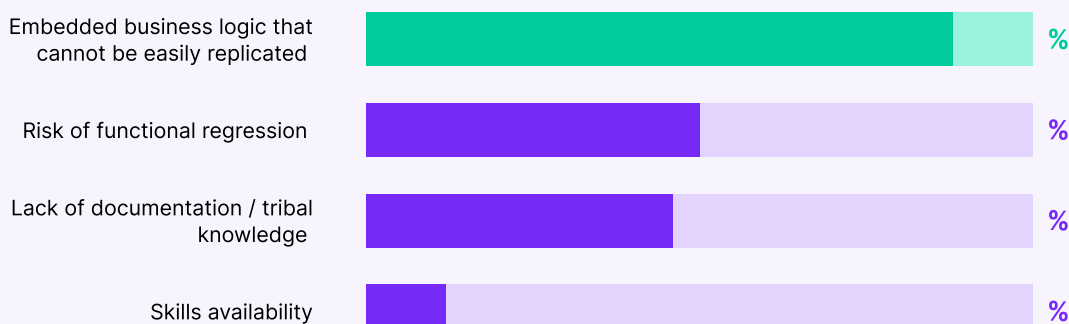
The reason full rewrites remain uncommon—and risky—becomes clear when you look at what sits beneath existing applications. Overall, about two-thirds (**67%**) of respondents described their core application portfolios as either modular but tightly coupled, or large and monolithic with high interdependencies.

How IT Leaders Describe Their Core Application Portfolio



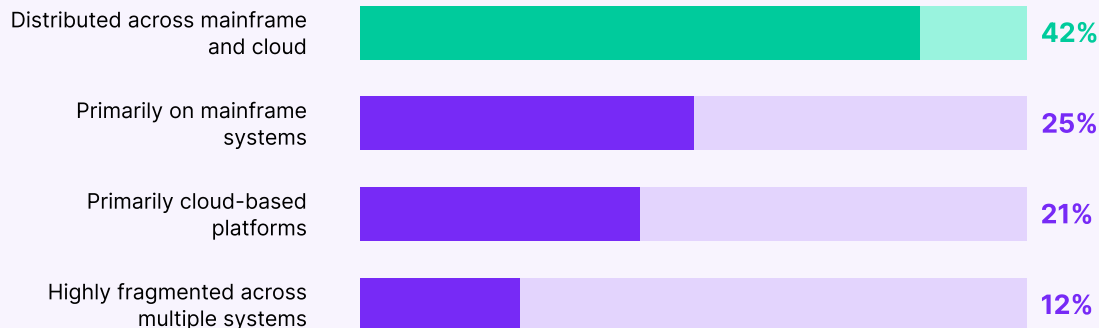
In environments like these, rewriting applications is a gamble most organizations can't afford to take. More than half of respondents (**52%**) said that they can't easily replace embedded business logic when modernizing existing applications, with others citing functional regression risk (**42%**), a lack of documentation or tribal knowledge among tenured staff (**40%**), and skills availability (**37%**).

Challenges When Modernizing Existing Applications



Data siloes add another layer of complexity. With more than 40% of respondents saying that mission-critical data resides across mainframe and cloud environments, and another 12% saying it's highly fragmented.

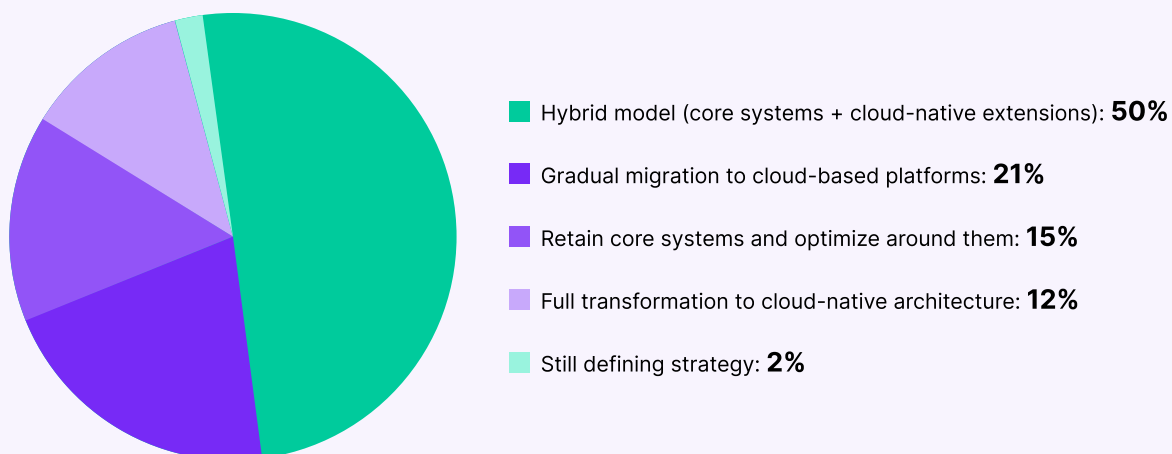
Where Mission-Critical Data Resides



Suffice it to say, accessing, moving, or reconciling information across systems proves challenging—and nearly three-quarters of respondents (71%) say that long-term retention requirements create at least moderate constraints on modernization.

To maintain the reliability, security, and governance that core systems provide while gaining the flexibility to adopt newer tools and applications, many IT leaders are gravitating toward a hybrid future state.

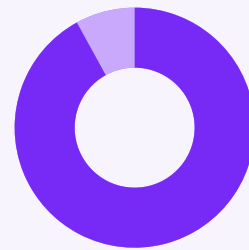
Preferred Future-State Architecture for Production and Supply Chain Systems



Using AI as an Accelerant, Not a Shortcut

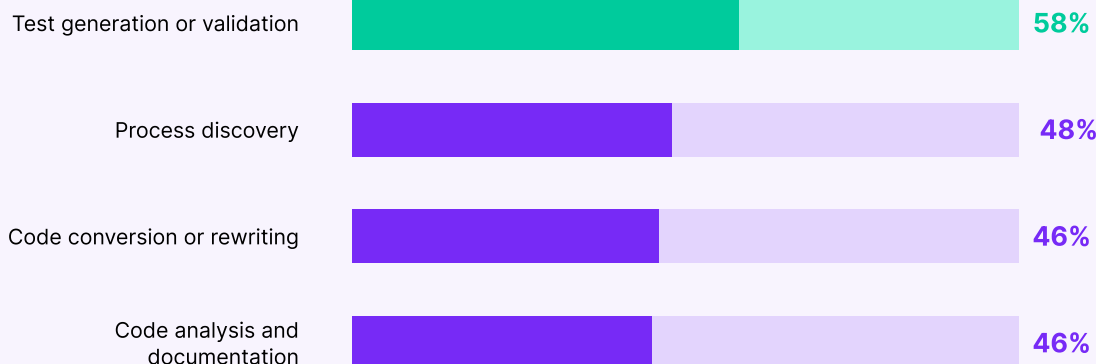
As automotive organizations and their IT leaders look for ways to modernize without disrupting current operations, they're increasingly turning to AI. That includes use cases such as plain-language code explanation, business rule extraction, dependency analysis, and documentation, with the latter becoming especially valuable as employees with deep mainframe expertise exit the workforce faster than organizations can bring new ones in.

Additional AI use cases included test generation or validation, process discovery, code conversion or rewriting, and code analysis and documentation.



92% of respondents said they're using or evaluating AI for at least one modernization use case.

How Automotive Organizations Are Using AI for Modernization Efforts



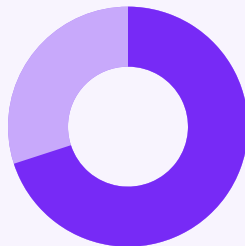
But that adoption isn't coming without reservations. Respondents are raising concerns about whether AI-driven modernization can reliably preserve embedded business logic, explain the output, meet security or compliance requirements, or support the level of testing and validation they need to embrace the new technology with confidence.

Balancing Progress With Stability

No matter which modernization path organizations choose, the goal is largely the same: introduce new capabilities to push operations forward, but do so with as little disruption as possible to current production, supply chains, and other operations that still depend on those systems.

And most automotive IT leaders are confident they can strike that balance. Overall, more than seven in 10 respondents said they were at least moderately confident they could modernize without impacting production continuity.

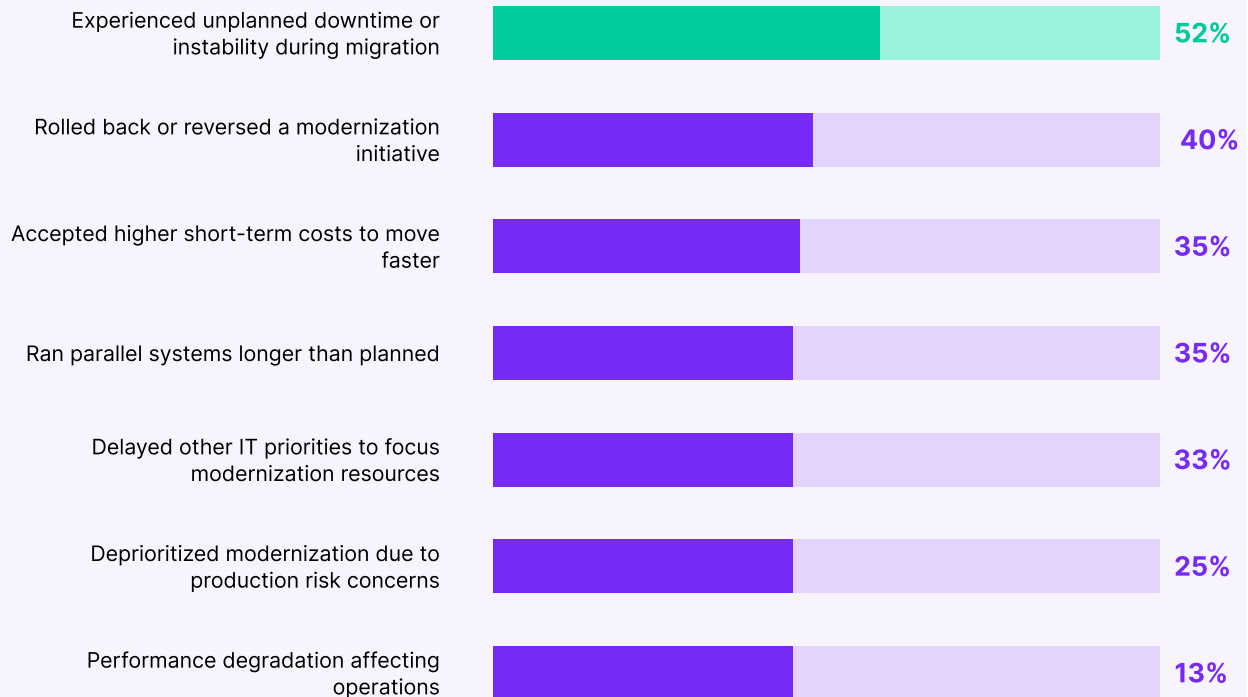
70%



70% of respondents are at least moderately confident they can modernize without impacting production continuity.

While confidence is high, at least a third said they've already experienced unplanned downtime or instability during migration, accepted higher short-term costs to move faster, like bringing in outside specialists, or delayed other priorities to keep efforts moving, which may seem fine in the moment, but can set organizations back even more.

The Costs and Complications of Automotive Modernization



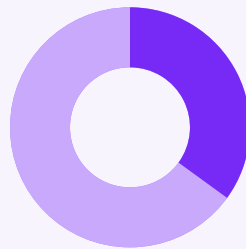
I would rather have a modernization program that takes eighteen months longer than planned and delivers operational continuity than one that hits a milestone date and causes a production incident.

IT leader at an automotive OEM

Managing these trade-offs and challenges becomes even harder when modernization is happening across multiple teams and systems at once.

According to our research, just 35% of respondents said they have a centralized, coordinated program. Instead, most said that business units, domain teams, or distributed initiatives lead that work.

That structure isn't inherently bad, but it can make enterprise-wide execution harder when several core systems are in play, and no single group is responsible for identifying duplicative efforts, aligning data standards, maintaining consistent practices, and ensuring individual improvements support organizational goals.

35%

Just 35% of respondents said they had a centralized and coordinated program for modernization.

But coordination is only one factor that can knock modernization off course. Other common derailments include budget cuts or reprioritization, an inability to demonstrate ROI early enough, production disruption during migration, key staff or skills gaps, and accumulated technical complexity overwhelming the program.

What It Takes to Modernize Without Losing Ground

Despite the challenges, leaders remain optimistic about what modernization can deliver over the next three years.

Overall, confidence is highest around order-to-production responsiveness, where 67% of respondents said they expect significant or transformational improvements. Meanwhile, more than half of respondents also anticipate meaningful gains in production scheduling flexibility, system integration across platforms, operational scalability, supplier coordination, and real-time data accessibility.

Area	Significant or Transformational Improvement
Order-to-production responsiveness	67%
Production scheduling flexibility	59%
System integration across platforms	58%
Operational scalability	58%
Supplier integration and coordination	57%
Real-time data accessibility	54%
Supply chain visibility	46%

One area stands apart: supply chain visibility, with just 46% of respondents expecting significant or transformational improvements, and 19% anticipating only limited progress, even though better real-time visibility and decision-making is the most cited outcome organizations desire.

That gap reflects two of the most persistent challenges respondents pointed to throughout the report: data and integration. Data inconsistencies are the most cited operational risk tied to legacy systems, and maintaining data consistency and integrity is the challenge respondents say has the greatest impact on modernization outcomes.

At the same time, integrations remain a work in progress, with connecting legacy systems with modern platforms cited as the most common priority. Despite that, just 43% of those prioritizing it have reached active deployment or full implementation.

Takeaways

Moving Forward: How Automotive IT Leaders Can Modernize with Less Risk

The findings in this report point to a world in which automotive organizations and their IT leaders don't need to completely abandon their systems. What they do need, however, is a deliberate approach to deciding what to change, how to coordinate those decisions, and how to prove value.

Here are a few tactical tips:

Create a Center of Excellence

Modernization efforts often span teams, systems, and functions, and only **35%** of respondents say their program is centrally coordinated. While business units and domain experts can still own the initiatives closest to them, organizations also need a way to align those efforts. A center of excellence, or a strategic modernization lead, can bridge the gaps by aligning architecture, data standards, priorities, and decision-making for long-term transformation.

Put Data Integrity Above Everything

Data consistency and integrity challenges surfaced repeatedly throughout our research, as both the top operational risk (**52%**) and the most impactful barrier to modernization outcomes (**43%**). Before moving, replicating, or exposing data to new systems, organizations need to first understand where their data lives, which applications and processes depend on it, and how they'll maintain it over time. Mapping dependencies before any migration begins often reveals surprising interconnections, and helps you prioritize sequencing while protecting operational continuity.

Build AI Governance Before Scaling

With **92%** of IT leaders already using AI in at least one modernization use case, the technology is already widespread in automotive modernization. But concerns around AI are just as widespread: **92%** expressed at least one concern about AI-driven approaches, with loss of embedded business logic (**40%**), lack of explainability (**38%**), and security and compliance risks (**37%**) topping the list.

Before scaling up AI use at your organization, establish a clear governance framework that addresses topics like who has authority over deployment decisions, which data quality standards a model must meet, what gets automated and what doesn't, and where human judgment comes in.



AI has become an accelerant for modernization because executive interest in AI forces investment in the plumbing beneath it.

IT leader at an automotive OEM

Rethink ROI and Prove Business Value Early

Nearly half of respondents (**48%**) said an inability to demonstrate ROI early enough could derail modernization efforts. Most organizations, however, are still evaluating modernization primarily through total program cost (**44%**) or cost per system or domain (**31%**) rather than ROI or payback period (**13%**), which can make it more difficult to secure buy-in for long-term investments.

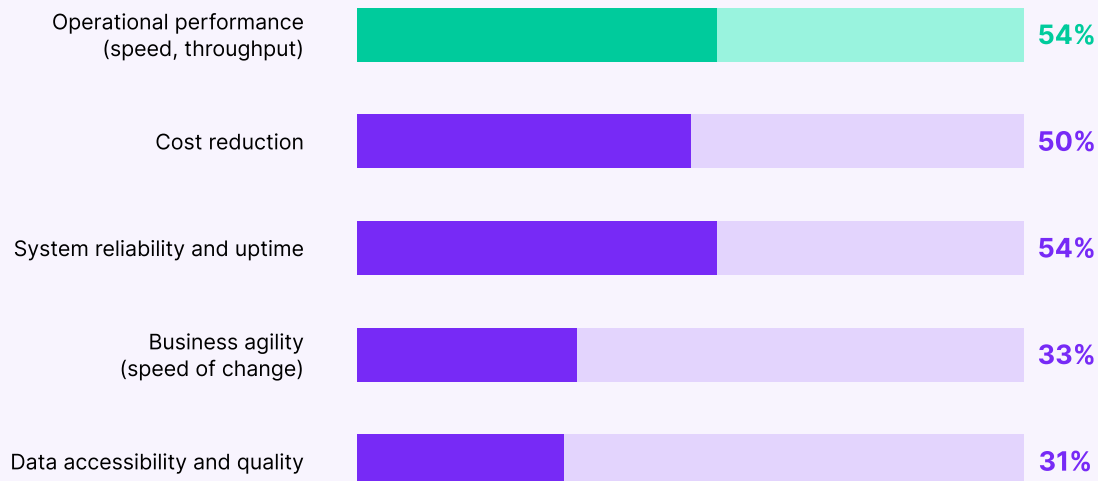
Instead, leaders should identify a small set of business outcomes from the start, such as faster order-to-production cycles, and track them consistently so they have early proof points to justify the time and resources dedicated to those investments.

Focus on Outcomes Before Technology

Customer and partner demands were the second most commonly cited driver of modernization (**44%**), reinforcing that modernization should start with the outcomes the business needs, not the technology itself. By working backward from customer expectations, teams can identify which systems, processes, or capabilities are creating the most friction and focus their efforts there first.

And once modernization is underway, leaders need a clear way to determine whether it's delivering the expected value. According to respondents, that means looking across a mix of operational, financial, and strategic measures, with operational performance (**54%**), system reliability and uptime (**54%**), and cost reduction (**50%**) among the most common measures of success.

How Automotive IT Leaders Measure Modernization Success



And whenever they can, leaders should connect results back to the outcomes they set out to improve, whether that includes order-to-production cycles, supply chain resilience, or greater agility.

As one IT leader at an automotive OEM said, "Instead of talking about cloud migration percentages, I show how our new architecture let us onboard a critical supplier in 3 days instead of 3 months. That resonates."

Conclusion

The Road Toward Modernization Requires Deliberate Action

Our research makes it clear that automotive IT modernization has moved well beyond the planning stage. But many of the systems they need to modernize have evolved over decades, remain deeply embedded in day-to-day operations, and contain the critical data, embedded business logic, and tightly connected dependencies that make change difficult to execute without introducing costly risk.

That reality helps explain why half of organizations prefer a future state that combines core systems with cloud-native extensions, allowing them to preserve what works while selectively introducing newer capabilities as they fit in. It also explains why, despite most respondents expressing confidence in their ability to modernize without disruption, more than half have already experienced unplanned downtime, rolled back initiatives, or absorbed higher costs.

But before committing to any path, leaders need a clear understanding of what they must preserve, where dependencies exist, and how they'll validate success.

The goal isn't to slow modernization down, but to make sure each step strikes a balance between what the business can change and what it still depends on. As one IT leader at an automotive OEM put it, "Patience is a competitive advantage in this space."

Methodology

To understand how IT leaders were approaching modernization in the automotive industry, we—in partnership with Rocket Software—conducted an online survey of 52 automotive IT leaders.

The sample included respondents from across the automotive ecosystem, including nearly half (48%) from original equipment manufacturers (OEMs), 25% from Tier 1 suppliers, 12% from Tier 2 or below, and 12% from distributors or aftermarket organizations.

Respondents also represented a mix of business types. More than a third (37%) worked in automotive parts and accessories manufacturing or distribution, while 35% were in automotive sales and dealership operations. Another 13% worked in electric vehicle (EV) manufacturing, with the remainder spanning car or light-duty vehicle manufacturing, and automotive finance and insurance, among others.

From a functional perspective, most respondents said they worked in IT infrastructure and Operations (42%) or manufacturing Systems and Operational Technology (21%). The remainder represented Data and Analytics, Supply Chain and Inventory Systems, Cybersecurity and Compliance, IT Strategy and Governance, Cloud and Architecture, and Application Development and Modernization.

The sample also skewed senior, with more than three-quarters (77%) of respondents holding C-suite, board-level, or senior leadership roles. The remaining participants included middle managers, first-line managers, and technical contributors such as developers, analysts, and engineers.

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Trusted by over 12,500 customers and 750 partners, and with more than 3,000 global employees, Rocket Software enables customers to maximize their data, applications, and infrastructure to deliver critical services that power our modern world. Rocket Software is a privately held U.S. corporation headquartered in the Boston area with centers of excellence strategically located throughout North America, Europe, Asia and Australia. Rocket Software is a portfolio company of Bain Capital Private Equity. Follow Rocket Software on LinkedIn and X or visit www.RocketSoftware.com.