

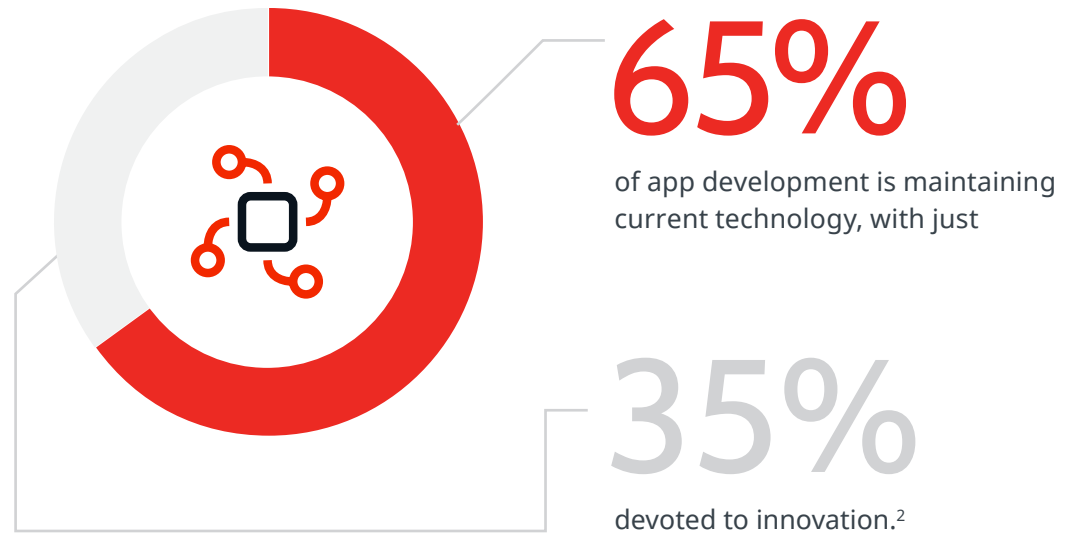


Why IT Struggles with Innovation and What to Do About It





There is a growing divide between innovation leaders and laggards. In a recent study, we found that just 21% of senior IT professionals believe that they are more capable than their competitors when it comes to change.¹ Fast-moving companies — those capable of completing a software project within a month — invest significantly more in approaches that focus on getting closer to customers and experience, leaving the laggards in their wake.



¹ *The Speed of Change: How Fast Are You?* OutSystems, 2020
² *The State of Application Development 2019/2020*, OutSystems, 2019

The 3 challenges that hold back innovation

As the market demands more and faster innovation, CIOs and other IT leaders are faced with three powerful obstacles to keeping up.

1 Growing backlogs

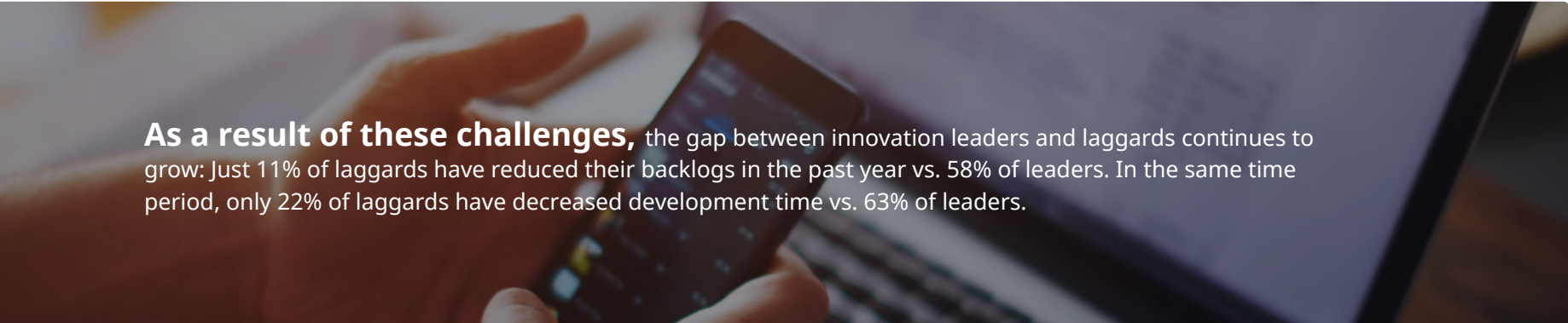
Because of the time it takes to complete development projects, businesses are falling farther behind. Business users who are dealing with increased customer expectations place more and more demands on developers, leading to a disconnect between what business users want and what developers can actually produce. Rather than working together, these separate teams become frustrated with one another as communication breaks down. Meanwhile, companies are competing for development talent, driving up staffing costs and reducing the availability of crucial skills.

2 Hard-to-meet basic requirements

In an effort to increase speed, development teams might find themselves short-changing quality and performance, leading fickle consumers to abandon those that fail to meet expectations. Perhaps more worrisome is the risk that accelerated development won't sufficiently address security concerns or complex data governance requirements. That puts your reputation and regulatory posture at risk.

3 Constant change

As backlogs and requirements continue to mount, nimble and disruptive competitors push the leading edge further toward the horizon, meaning that even applications completed on time may arrive in the marketplace already out of date. An explosion of SaaS apps creates ever-increasing customer expectations for interoperability, even as forging more and more connections to other software creates greater headaches for development teams. Add to that the disruptions of staff turnover, and companies may find themselves falling woefully behind their competitors.



As a result of these challenges, the gap between innovation leaders and laggards continues to grow: Just 11% of laggards have reduced their backlogs in the past year vs. 58% of leaders. In the same time period, only 22% of laggards have decreased development time vs. 63% of leaders.

An increasingly complex world

If those internal pressures weren't enough, the events of 2020 highlighted two universal truths that don't make innovation any easier:

The world keeps changing at breakneck speed. This applies across the board: faster product innovation, faster technology churn, and the rapid rise of new market opportunities and threats.

Everything is more complicated. There are far more apps, platforms, data, and technology to take into consideration than ever before.

Let's take a closer look at how these factors add to the workload of IT organizations and make innovation even more challenging.



There's an explosion in demand for new web, mobile, and enterprise apps.

MORE apps

There's an explosion in demand for new web, mobile, and enterprise apps. According to our latest research, 65% of organizations with 500 or more employees have 10 or more apps in development, with 15% trying to get 100 or more through their pipeline.³ Most IT teams simply can't keep pace.

MORE tech churn



Building future-proof applications is no small feat. Technology is a moving target. Developing modern applications typically involves a number of different coding languages, development frameworks, and libraries, which come in and out of favor each year. What you choose today could be outmoded tomorrow.

³ Get the latest data: <https://www.outsystems.com/1/state-app-development-trends/>



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use cases



Enterprises have more data than ever at their fingertips. Analyzing all of this information is a requirement for increasing efficiency, understanding and anticipating customer needs, and modernizing their technology stacks.

These include:

- **Customer experience measurements**, such as revenue, market share, customer satisfaction score, net promoter score, and customer acquisition cost
- **Workplace innovation metrics**, including employee satisfaction, safety, retention, and productivity
- **Process automation**, to reduce costs and increase operational and process efficiency
- **Application modernization**, primarily by using cloud technology to reduce the cost of infrastructure maintenance and commercial off-the-shelf software licensing while directing more IT resources toward achieving strategic goals

MORE
differentiation



Packaged enterprise applications like ERP and CRM are built to accommodate the widest possible user pool. But the growing consumerization of enterprise software has raised expectations beyond the abilities of off-the-shelf software. Instead, business users are looking for technology that is highly customized to their specific needs.



MORE
change



Speed to market and speed to change are key competitive differentiators in a digital economy. Whereas application updates used to happen about once a year, many organizations now want at least some of their applications updated monthly, weekly, or even faster. But achieving continuous integration alongside continuous deployment is hard work, and it requires significant investments in technology and personnel.

MORE
programming
skills



The need for differentiation has led to a burgeoning demand for programmers, especially those who can keep up with all the tools and languages required for digital and mobile development. Greater complexity and a global shortage of modern digital development skills have combined to leave CIOs in a difficult position. The hardest skills to acquire include artificial intelligence (AI)/machine learning, cybersecurity, Internet of Things (IoT), and full-stack developers.⁴

“Greater complexity and a global shortage of modern digital development skills have combined to leave CIOs in a difficult position.”

⁴The State of Application Development 2019/2020, OutSystems, 2019



The search for a solution

In a search for solutions to address today's challenges, many IT organizations consider approaches that seem like a silver bullet at first glance but fall short during implementation. These include solitary no-code or low-code solutions, a single-track mobile development strategy at the expense of omnichannel, and "citizen development," which puts the onus of development on unskilled business users.

No-Code/Low-code

Low-code or no-code in the form of visual, model-based development is touted for enabling speedy development, but it can't deliver:

- An end-to-end platform supporting the full DevOps lifecycle
- AI-powered automation throughout
- Collaboration tools for multi-disciplinary teams
- A broad category of apps and platforms
- Support for continuous change

Mobile-only

As important as mobile has become in recent years, innovation through software requires more than offering mobile apps. The full scope of digital transformation includes web, mobile, front-end, back-end, and everything in between. Digital transformation calls for agility and flexibility, so you need a modern application platform that is equally capable of creating web and mobile apps with a single skill set.





Digital transformation and innovation require harnessing the abilities and enthusiasm of expert business users.

Citizen dev

Digital transformation and innovation require harnessing the abilities and enthusiasm of expert business users. But building “apps” without development skills creates poorly designed, insecure, unreliable, and unsupported software. It also creates an ungoverned and unmanaged “shadow IT” that can waste resources, reinforce data silos, and generate unnecessary redundancy. Instead, cross-functional teams in which business users collaborate closely with expert developers ensure the governance, scale, and security that enterprise-grade apps require.

What about buying?

SaaS enterprise software is not built to meet every need, and it cannot be customized to the degree that legacy systems could. In fact, customization adds technological debt that becomes increasingly costly as it goes unaddressed. Commercial off-the-shelf software is fine when your needs are the same as any other organization. But certain circumstances call for in-house development — specifically when it comes to applications that:

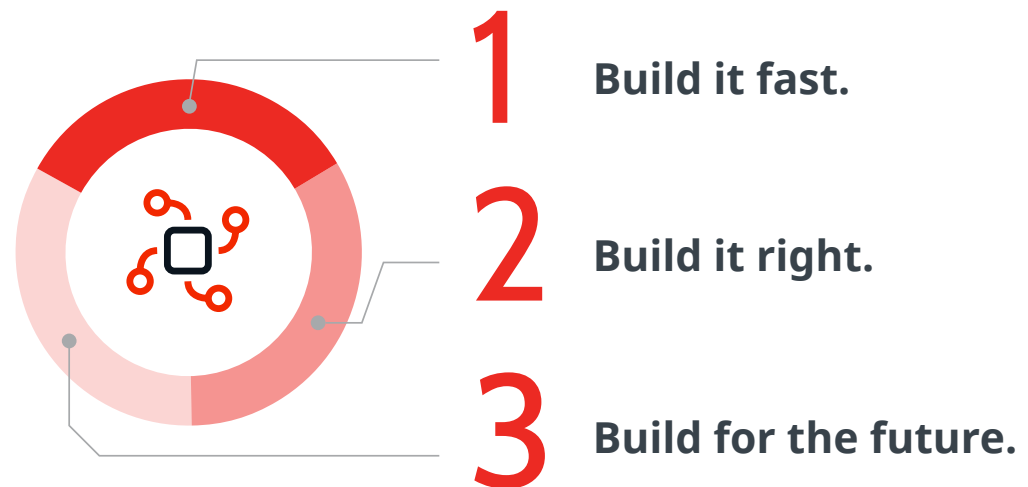
- Differentiate your business from your competitors.
- Must adapt as quickly as your organization and your competitive environment.
- Innovate rather than maintain the status quo.

By contrast, a modern application platform offers an opportunity to create applications built from the ground up to serve a specific need — not by modifying commercial software, but by integrating with it to share data and other resources.



The right kind of platform for innovation through software

The modern application platform is an AI-driven, high-productivity toolset that automates and simplifies while delivering the power and expressiveness of traditional development. This approach goes beyond the traditional definitions of no-code/low-code development, single-track mobile solutions, and citizen development. It radically transforms the way enterprises build, deploy, and evolve their critical applications. Modern application platforms allow businesses to meet three development imperatives for success in the digital age:



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Business leaders are coming to recognize the role of modern application platforms and the capabilities they offer in achieving these imperatives. More than half (51%) are using or plan to use modern application development tools, either by professional developers exclusively (69%) or in collaboration with business users (44%),⁵ thereby reducing the risk of shadow IT emerging without the oversight of IT.

⁵The State of Application Development 2019/2020, OutSystems, 2019. Respondents were allowed to select multiple options.

Build it fast.

As we've seen, speed is a top priority when it comes to application development. To achieve the velocity necessary to be competitive, companies must streamline and accelerate development, engage in whole-team collaboration, allow for expressive code that's easy to understand, and create solutions that connect and integrate with other enterprise applications and systems.

How a modern application platform supports building it fast

- **A visual, model-driven development environment** makes most of the application development process as easy as dragging and dropping. Start with pre-built templates and patterns, then add your own code where needed to differentiate your application.
- **High-productivity collaboration** is enabled using fast, comprehensive, and intelligent tools connected in a modern, team-based environment and fueled by AI-assisted development. IT and business users can work together without the back-and-forth of traditional app development processes.
- **Streamlined deployment** is easy with reactive web apps and portals that run on any device and deliver to any app store, or deploy as a Progressive Web App (PWA).
- **Easy integration** with third-party external enterprise systems, databases, and custom applications creates a flexible and open environment for developing future-proof software solutions. Integrate with smart-home voice assistants or incorporate chatbots into your apps or third-party messaging platforms such as Facebook Messenger, Slack, and WhatsApp.

Tip

A visual, model-driven development environment makes most of the application development process as easy as dragging and dropping.

Build it right.

As important as speed is for today's competitive environment, it should never come at the expense of quality. Look for a development solution that provides mission-critical stability and enterprise-grade security to build apps that scale and perform at enterprise levels.

How a modern application platform enables companies to build it right

Modern application platforms ensure adherence to development best practices with efficient change processes for faster time to value, without accumulating technical debt, by:

- **Removing guesswork and repetition** with continuous monitoring at design time, build time, and runtime. A combination of automation, AI, and analytics engines can check for architecture errors and duplication, provide team and architecture governance, and monitor performance in real time.
- **Controlling versions** in a multi-developer build environment. When different developers work on the same version of a module at the same time, the system automatically determines the changes to be merged and creates a visualization of these differences, allowing developers to choose which to merge and publish.
- **Automating impact analysis and bug checking** at build time to assure error-free and consistent application builds, deployments, and changes across all application components. Developers and architects can avoid long, laborious dependency checking and debugging processes and get their mobile and web apps to market faster.
- **Automating runtime analysis** of an application's implementation and execution metrics. Detect performance or quality problems early and resolve them quickly with AI-recommended solutions to keep costs low and deliver a great user experience.

Tip

Remove guesswork and repetition with continuous monitoring at design time, build time, and runtime.

Build for the future.

The ability to change an app quickly to take advantage of new technology or respond to a new customer need is critical to an app's success and longevity. Your apps should be able to continuously evolve without needing customization that increases complexity and makes updates difficult.

How a modern application platform can help you build for the future

- **It supports continuous change** with a fully automated continuous integration/continuous delivery (CI/CD) pipeline to deliver code changes more frequently and reliably. Deploy and roll back with a single click. Govern deployments with role-based approval across app pipeline stages and layers. Integrate with enterprise CI/CD platforms for extended lifecycle automation.
- **It adapts to your business** with intelligent automation that lets you change your business processes rapidly and safely as you optimize your workflow over time. Visually model your business processes and workflows, and define human interactions. Trigger workflows based on schedules or events. Increase worker efficiency by ensuring tasks are assigned to the right teams.
- **It incorporates emerging technologies** for continuous innovation. Pull in advanced capabilities such as AI, IoT, and robotic process automation (RPA) as you need them. Draw from a repository of reusable, open-code modules, connectors, UI components, and business solutions to keep your applications up to date.
- **It adds portability**, with a deployment system that can run in any cloud or in your data center.



Tip

Incorporate emerging technologies for continuous innovation. Pull in advanced capabilities such as AI, IoT, and robotic process automation (RPA) as they become available.

Customer experience transformation

With 91% of organizations making CX a top priority,⁶ you need a development platform that can provide more than just a great UI. It should make it easy and convenient for customers to access and use products and services to meet their needs on multiple digital channels.

Typical initiatives and projects

- Differentiating customer experiences that delight and engage
- Self-service options to help customers complete transactions quickly and easily
- Seamless omnichannel customer experience
- Personalized experience based on multiple criteria

Process automation

Optimize communication between multiple tools and systems, and between employees and customers, to operate most efficiently and cost-effectively with intuitive front- and back-office business applications.

Typical initiatives and projects

- Automated workflows to improve internal productivity
- More efficient and transparent supply chains
- Optimized field and customer services
- Streamline case management work

⁶ Gartner, *Survey Analysis: Customer Experience Maturity and Investment Priorities*, 2020, Ed Thompson, Varun Agarwal, Melissa Davis, 28 July 2020



Workplace innovation

Make employees' lives easier and enable them to be more engaged, productive, and satisfied with intuitive employee-facing applications for digital business processes.

Typical initiatives and projects

- Differentiating digital experiences that attract the right talent
- Customized employee apps that streamline onboarding
- Employee self-service portals and mobile apps that adapt to rapidly changing work

Application modernization

Modernize existing applications and systems to reduce complexity, maintenance needs, and software licensing costs while increasing IT agility.

Typical initiatives and projects

- Replacing end-of-life software
- Replacing expensive commercial software builds with OutSystems applications
- Extending legacy core applications
- Creating modern front ends for legacy systems





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