

Harness the Disruptive Powers of Low-Code: A Gartner Trend Insight Report

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Initiatives: [Applications and Software Engineering Leaders](#); [Software Engineering Technologies](#)

Low-code capabilities are being added to an increasing number of technologies. Applications and software engineering leaders can harness this long-term trend for the benefit of the business and IT; or suffer frustration, inefficiencies and misuse if they fail to properly govern and implement low-code.

Overview

Opportunities and Challenges

- Application and software engineering leaders are challenged with acquiring and maintaining the necessary software engineering capacity and skills to build and maintain software capabilities that meet business demand.
- Organizations can't achieve the full benefits of low-code technologies — such as productivity increases and reductions in resource constraints — without implementing and supporting inclusive low-code development practices.
- Successful adoption of low-code requires proper evaluation and alignment of technologies, evaluation of cost of ownership models, setup and nurturing of communities of practice, professional developer support for extending technologies, and an adaptive governance model.

What You Need to Know

- On average, 41% of employees are business technologists and many use various technology creation and data and analytics tools that are low-code or even no-code. ¹
- Organizations that realize the business value of low-code embrace an adaptive governance approach and team collaboration through IT and business fusion teams.
- Organizations will continue to increase the number of low-code tools they use. This is due to multiple factors, including an increase in inherited low-code technologies, supported use cases for low code, and increased usage by citizen and professional developers.

Strategic Planning Assumptions

By 2025, 70% of new applications developed by enterprises will use low-code or no-code technologies, up from less than 25% in 2020.

By 2025, spending on low-code development technologies is expected to grow to almost \$30 billion, with a compound annual growth rate (CAGR) of 20.9% from 2020 through 2025.

By 2025, at least 25% of low-code application platforms procured outside of formal buying journeys will need to be augmented with additional platforms that better fit customer requirements.

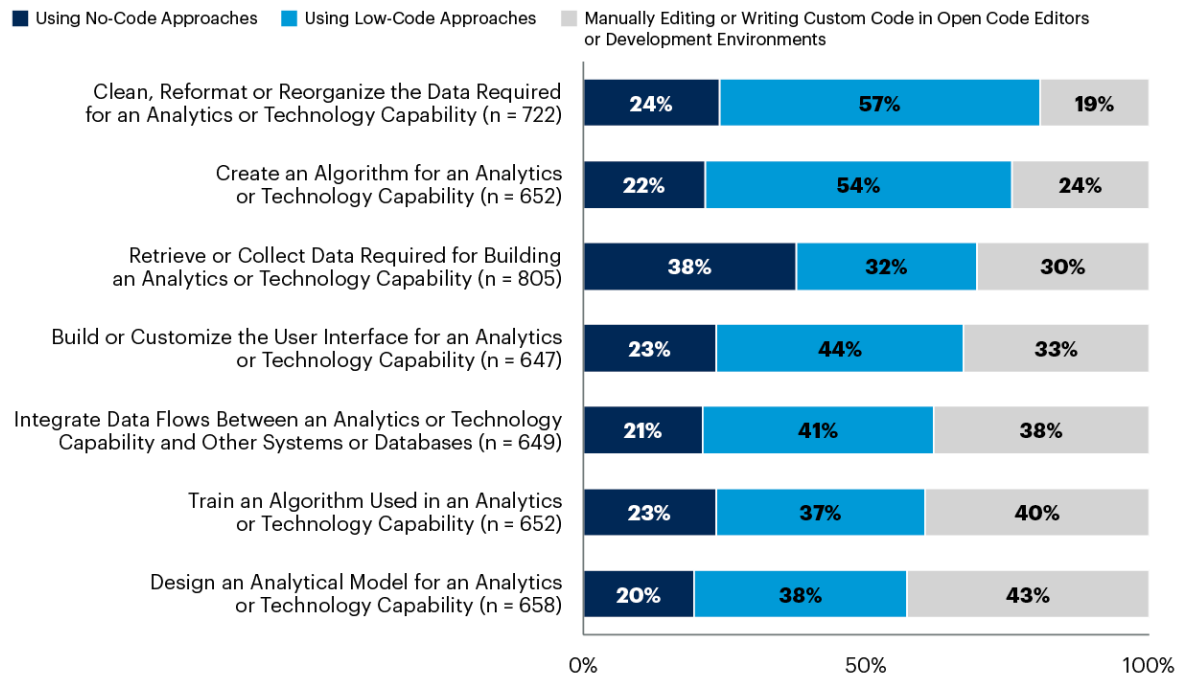
Insight From the Experts

Low-code capabilities are long-term trends in software, accelerated by SaaS, APIs and cloud technologies. Further fueling this is the democratization of development and delivery. Business functions need to be more agile and adaptive through owning their own technology, data and analytics creation. In a Gartner 2021 survey on business technologists, these non-IT employees primarily use either a low-code or no-code approach to create analytics or technology capabilities, versus manual coding (see Figure 1). ¹

Figure 1: Business Technologists Primarily Use Low-Code or No-Code Approach to Create Technology Capabilities

Business Technologists Primarily Use Low-Code or No-Code Approaches to Create Technology Capabilities

Percentage of Respondents



n varies; business technologist answering 'multiple approaches are used'

Q: Which of the following was your primary approach to performing the following activities?

Source: 2021 Gartner Reimagining Technology Work Survey

Note: Percentages may not equal to 100 due to rounding.

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The volume of solutions built by business technologists significantly increases the risk of disruptions to an organization's architecture and the ability to make changes to it, particularly if low-code technology is not strategically evaluated, aligned and governed.

Low-code technology is being adopted by various teams and organizations, as well as being introduced into IT environments by incumbent vendors (CRM, ERP, platforms as a service [PaaS], etc). Challenges of low code include an increase in citizen development activities, technology lock-in, resistance from professional developers, and the need to upskill users, developers and support teams across an increasing set of low-code technologies.

How do application and software engineering leaders know when to use low code, which low-code option should they use, and how can they coordinate low-code tech usage for maximum business value, while mitigating technical debt and islands of low-code lock-in?

This Trend Insight report helps leaders be more productive using low code, align various low-code options to business domain use cases, and implement inclusive practices for low-code development and delivery.

Executive Overview

Definition

Low-code development is rapid application development or high-productivity development, with an option to use coding or scripting for extensibility.

These tools offer a variety of approaches for automating and abstracting application development activities, such as drag-and-drop editors, code generation, component assembly and model-driven and metadata-driven development. Low-code technologies often offer a way to extend an app beyond declarative development using code (see Figure 2). The code supported can be a proprietary language or standards-based language. JavaScript is one of the most popular and common programming languages supported by low-code development tools. This approach allows customers and partners to have a higher degree of customization than strictly no-code tools. However, the added custom code must be carefully managed to prevent accumulation of technical debt and change management issues.

Key Drivers:

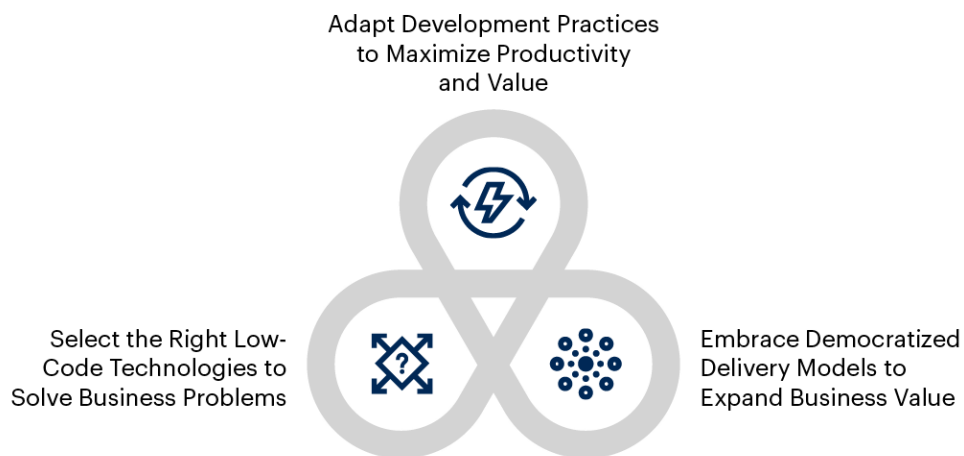
- Business technologists indicate they use low-code and no-code approaches more often than writing custom code to create technology capabilities. ¹
- The 2022 Gartner View from the Board of Directors Survey shows that 40% of board of directors have moved digital-business-related budgets to the business unit to accelerate digitalization. ²
- Companies with high success in building a digital business technology platform have procured low-code development platforms 5x more than those with low success. ³

Low-code tools and platforms are not a panacea for solving every business or IT problem. Low code will not replace the need for coding or make obsolete the practices built around developing custom software capabilities.

This body of research helps your organization to harness the powers of low-code technologies to improve development productivity for IT and business technologists, drive better business alignment, and promote more inclusive practices between business and IT.

Figure 2: Harness the Disruptive Powers of Low-Code Technologies and Practices

Harness the Disruptive Powers of Low-Code Technologies and Practices



Source: Gartner
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Research Highlights

Select the Right Low-Code Technologies to Solve Business Problems

Harnessing the power of low-code technologies starts with going beyond the hype and marketing of vendors' low-code versus no-code claims. There is a difference between these approaches which comes down to the extensibility of the platforms. There are also myriad product segments in the overall low-code development space. Gartner is tracking more than 600 low-code vendors in the integration, automation and development categories alone.

Low code evolved from rapid application development approaches, and today they address much more than relational data-driven applications. Process and workflow automation are key capabilities that both IT and business leaders want in low-code platforms. However, nearly all types of technologies offer some form of automation, even if it is just simple task automation.

Low code has also become a characteristic or feature of business applications, such as IT service management (ITSM), CRM, HR and collaborative work management. Select tools that align to the skills of the target developers, as well as the business objectives of the various business functions in order to best solve business problems with low code.

These research notes help you select the right low-code technologies to solve business problems:

Related Research

[Quick Answer: What Is the Difference Between No-Code and Low-Code Development Tools?](#)

The overused terms “low code” and “no code” are confusing application and software engineering leaders about which development tools to choose. Leaders should focus on evaluating these tools based on their fit to use cases and skill sets, rather than the labels used to describe the products.

[Identify and Evaluate Your Next Low-Code Development Technologies](#)

Low-code development tools promise success in application democratization, workflow automation and composite development. Software engineering leaders should use this research to understand the low-code development tool landscape, and evaluate solutions that meet their strategic and tactical needs.

[Decision Point for Process Automation Platforms](#)

Automation is critical to digital transformation. Here, we help application technical professionals select automation platforms to align the use of robotic process automation, business process management suites, low code and integration to meet critical business requirements.

[Future of Work Trends: Tinkerers Become Mechanics](#)

Business-led technology delivery is an essential ingredient for accelerating and scaling digital transformation. To move from tactical experimentation to sustained, business-led democratized technology delivery, executive leaders must prepare to play a bigger technology leadership role.

[Follow the Buying Journey for Enterprise Low-Code Application Platforms](#)

Choosing the right enterprise LCAP solution with the best deal requires an approach that informs, guides and helps you execute effectively. Use the resources summarized in this research to underpin your strategy and drive your own optimized, contextualized buying journey.

[Adapt Development Practices to Maximize Productivity and Value](#)

Gartner sees clients building more technology capabilities with low-code tools and platforms. In a 2021 survey, we found that 44% of participating organizations already have low-code development platforms in place and have no plans to replace them.⁴ However, maximizing the potential of low code requires adapting development, testing and security practices, especially when the spectrum of developers expands to include citizen developers, some who may have high technical skills.

Low-code development must work in unison with “traditional” coding workstreams. Assessing when to use which approach is critical to achieving the greatest business benefit from the development efforts. Gartner is seeing more clients use low-code development for more business-critical use cases, such as customer or partner facing applications and processes. As such, application and software engineering leaders must address the different challenges of release management, disaster recovery, audit, and security and testing on low-code tools and platforms. They must align and integrate these low-code technologies with existing security, testing and DevOps tools as use cases increase in complexity and criticality. Finally, technical debt is often a concern given the abstracted nature of low-code platform architecture and development. Managing technical debt will require coordination among business, IT and developer stakeholders on using the low-code technologies.

These research notes help you adapt your development practices to maximize low-code development productivity and value:

Related Research

[Tool: Assess When to Use Low-Code Application Development Versus Traditional Coding](#)

Low-code development is becoming an increasingly viable alternative to traditional coding as platform capabilities continue to expand. Software engineering leaders should assess their readiness to adopt low code by evaluating specific criteria across five focus areas of application delivery.

[Quick Answer: How to Secure Low-Code Application Development](#)

Low-code application development can introduce security risks, such as data leakage and unauthorized access to application functionality. Here is how software engineering and security leaders can secure low-code application development.

[Quick Answer: How Should We Test Low-Code Applications?](#)

Low-code development contributes to an organization’s digital immunity by leveraging modeled and reusable code objects. However, the quality of the application is not guaranteed. Software engineering leaders should use an adaptive testing approach to align investment in quality with risk exposure.

[Quick Answer: How Can I Reduce Technical Debt in Low-Code Development?](#)

Low-code application platforms have the potential to transform the delivery of software, but LCAPs are not immune to the problem of technical debt. Software engineering leaders should follow five steps to minimize the technical debt accrued by their teams.

Embrace Democratized Delivery Models to Expand Business Value

IT is an enterprise function, but the delivery of information and technology capabilities is now a set of activities undertaken across the enterprise by different developer roles and personas (see Table 1). In a Gartner survey of low-code product vendors, we found that vendors target developers spanning many different types of roles and personas inside the enterprise. This is part of the larger trend of democratized delivery with fusion teams across IT and business units.

Table 1: Low-Code Product Vendors Target a Variety of Developer Roles and Personas

| Who Are the Target Developers for Your Low-Code Platform? | ↓ | ↓ |
|--|---|-----|
| Developers reporting to IT/application leader | | 42% |
| Developers reporting to business unit leader | | 39% |
| Technical citizen developer | | 37% |
| Nontechnical citizen developer | | 32% |
| Developers reporting specifically to a digital business initiative leader or CTO | | 25% |
| Administrators, database admins, etc. | | 10% |
| | | |

Source: Gartner 2022 Low-Code Vendor Survey n = 136

Application and software engineering leaders need to effectively coordinate, manage and govern all these different developers using different low-code technologies. Often this starts with defining and guiding citizen development and citizen data science practices in the business units. Integration is typically a key activity to link development efforts. Optimizing for an integration strategy for multiple personas will be essential.

Governance should not be a “one-size-fits-all” approach. Different tools and initiatives will require nuanced approaches to governing their deliverables and connecting to other workstreams. A common example is the use of Microsoft Power Apps and Power Automate. Given the ubiquity of these tools, they are a natural focal point for citizen development and fusion team activities. Gartner sees the democratization of delivery going mainstream over the next few years. Organizations in different industries and of different sizes are evaluating low-code technologies as a way to decentralize development to those who face the business problems directly. In the U.K., Heathrow Airport’s rollout of a community of practice is a great example of how to do it well.

These research notes can help you embrace democratized delivery models to expand the business value of low-code technology:

Related Research

[How to Define and Guide Citizen Development Practices](#)

Business units increasingly control their own application development efforts, of which citizen developers are playing a crucial role. Application and software engineering leaders must help define and guide citizen development to maximize mutual benefits for business and IT.

[Maximize the Value of Your Data Science Efforts by Empowering Citizen Data Scientists](#)

Citizen data scientists complement expert data scientists in meeting growing demand for machine learning and advanced analytics. Data and analytics leaders must empower citizens across the organization to scale decision automation, accelerate time to market and deliver sustainable business outcomes.

[How to Optimize Your Integration Strategy to the Needs of Different Personas](#)

Integration specialists, software engineers, IT administrators and citizen integrators have different needs that should be addressed by your integration strategy. Software engineering leaders should use this guidance to identify which integration tools and approaches to use to support each persona.

[Quick Answer: What Governance Model Should I Use for RPA and Low-Code Citizen Development Initiatives?](#)

Software engineering leaders are apprehensive about managing and governing risks incurred by citizen developers using RPA and low-code technologies. This research offers an adaptive framework to determine the best-fit governance model for RPA and low-code initiatives that involve citizen developers.

[30 Best Practices for Governing Microsoft Power Apps and Power Automate](#)

Microsoft Power Apps and Power Automate provide professional and citizen developers low-code development capabilities. Application technical professionals must apply best practices to Power Apps and Power Automate governance to prevent misuse, application sprawl, data leakage, and orphan solutions.

[Case Study: Kick-Starting a Low-Code/No-Code Community of Practice \(Heathrow Airport\)](#)

The low-code/no-code development market has seen dramatic growth across the last few years. This case study shows CIOs how the IT department at Heathrow Airport manages a low-code/no-code community of practice to foster and scale business-driven hyperautomation initiatives.

Gartner Associates Supporting This Trend



[David Pidsley](#), Sr Director Analyst



[Dionisio Zumerle](#), VP Analyst



[Oleksandr Matvitskyy](#), Sr Director Analyst



[Saikat Ray](#), VP Analyst

Acronym Key and Glossary Terms

| | |
|------------------------|--|
| Fusion team | A fusion team is a multidisciplinary team that blends technology or analytics and business domain expertise, and shares accountability for business and technology outcomes. Instead of organizing work by functions or technologies, fusion teams are typically organized by the cross-cutting business capabilities, business outcomes or customer outcomes they support. Fusion teams do not have a prescribed reporting structure. Team leaders or members may report to either dedicated IT departments or business areas outside of IT. Fusion teams often start as agile project or scrum teams and gradually adopt product management disciplines to oversee a capability end-to-end, from strategy to delivery and its continuous enhancements. |
| Business technologist | A business technologist is an employee who reports outside of IT departments (centralized or business unit IT) and creates technology or analytics capabilities for internal or external business use. Context: Business technologists can be individuals whose primary job entails technology work (such as Python developers hired in marketing, data scientists hired in finance and accounting teams or software engineers hired in R&D). They can also be citizen technologists whose primary job is done through technology work (such as pricing managers building algorithms, customer service reps building chatbots or doctors writing pandemic apps). |
| Citizen developer | A citizen developer is an employee who creates application capabilities for consumption by themselves or others, using tools that are not actively forbidden by IT or business units. A citizen developer is a persona, not a title or targeted role. They report to a business unit or function other than IT. All citizen developers are business technologists. However, all business technologists are not necessarily citizen developers. There is no required designation of proficiency or time allocation for citizen developers but they must be legal employees of an organization. |
| Citizen data scientist | A citizen data scientist is a person who creates or generates models that use predictive or prescriptive analytics, but whose primary job function is outside the field of statistics and analytics. |

Evidence

¹ **2021 Gartner Reimagining Technology Work.** This survey was conducted via an online platform in March 2021 among over 6,000 employees across functions, levels, industries and geographies. The survey examined the extent to which employees outside IT were involved in customizing and building analytics or technology solutions, the types of activities they performed, the teams and structures they worked in, and the types of support they received, among others. To determine the key factors that help business technologists be more successful, we used logistic regression analysis to assess the impact of over 150 factors on the successful achievement of business technologists' key objectives.

² **2022 Gartner View From the Board of Directors Survey.** This survey was conducted to understand how boards of directors (BoDs) will address the risk from economic and political volatility and a multipolar world, and their intent to convert digital acceleration to digital momentum. The survey also helps understand the impact of the key societal issues that took center-stage during the pandemic on BoDs' strategy and investment approaches.

The survey was conducted online from May through June 2021 among 273 respondents from the U.S., Europe and Asia/Pacific. Companies were screened to be midsize, large or global enterprises.

Respondents were required to be a board director or a member of a corporate BoD. If respondents served on multiple boards, they answered for the largest company, defined by its annual revenue, for which they are a board member. The survey was developed collaboratively by a team of Gartner analysts and Gartner's Research Data, Analytics and Tools team.

Disclaimer: Results of this survey do not represent global findings or the market as a whole, but reflect the sentiments of the respondents and companies surveyed.

³ **2020 Building Digital Platforms Study.** This study was conducted to provide guidance on how to build a digital initiative.

The research was conducted online from May through June 2020, among 206 respondents working for organizations in North America and Western Europe with at least \$1 billion in annual revenue. Organizations were from the manufacturing and natural resources, communications, media, services, retail, banking and financial services, insurance, healthcare providers, transportation and utilities industries. Organizations also had to be working on a digital business effort or have plans to do so, defined as involving Internet of Things (IoT), delivery of public APIs, private and/or B2B APIs, or a combination thereof. Quotas were set to ensure a majority of respondents have a fully implemented digital business initiative.

Respondents were required to have a job title of director or more senior and to be involved in either digital business, data analytics, IoT or API-based platforms for partners. In respect to digital business initiatives, they were also required to have a role in either defining technology requirements, investigating, evaluating service providers or making final decisions. The study was developed collaboratively by Gartner analysts who follow digital business trends and Gartner's Research Data and Analytics (RDA) team.

Disclaimer: Results of this study do not represent global findings or the market as a whole, but do reflect the sentiments of the respondents and companies surveyed.

⁴ **2021 Gartner Platforms for Software Engineering and Delivery Survey.** This survey was conducted online from 28 April through 8 May 2021 to understand application platforms in terms of their usage, drivers and value. In total, 87 IT leaders responded to the survey, with members from North America (n = 38), EMEA (n = 32), Asia/Pacific (n = 11) and Latin America (n = 6). The survey was developed collaboratively by a team of Gartner analysts and Gartner's Research Data, Analytics and Tools team.

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