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THE STATE OF LOW-CODE 2021:

A LOOK BACK,
THE LIGHT AHEAD

CONTENTS

CHAPTER ONE
FOREWORD

Since the early months of 2020, there is little in our daily lives that hasn't changed. The way we live, work, travel, shop, communicate – all have been disrupted by a pandemic that reached almost every corner of the globe.

This disruption has been keenly felt in the digital space as, almost overnight, offices closed when enterprises sent employees home to work remotely, leading many businesses to become nearly 100% reliant on digitalization.

> **How have CIOs responded to the need to reimagine software development in the wake of a massive paradigm shift?**

> **How has the accelerated demand for quick, agile software solutions impacted software developers in the IT "engine room" and the business users that depend on their technology?**

These are the questions that this research set out to answer. The findings reveal that low-code development platforms offer organizations a powerful, scalable solution in these challenging times and is a technology that has quickly come of age.

The report is based on the experiences of over 2,000 IT professionals across six countries, revealing clear global trends and region-specific stories.

It uncovers a rapid evolution in software needs for businesses in every sector. And it explores where these changing needs intersect with the experienced benefits of low-code – most notably in productivity, cost, and time savings. With IT leaders reporting that two-thirds of major software projects are behind schedule, there is no time to lose in adopting low-code.

Our findings reveal that low-code offers great hope for the future of software development – and is a solution whose benefits are only just beginning to be understood. It is increasingly being recognized as having the power to change where and how technology is used, to democratize technology, and to foster IT talent diversity for the better.

CHAPTER TWO
METHODOLOGY

The State of Low-Code 2021 is based on a survey of 2,025 IT professionals (total audience), comprising 1,209 IT leaders (decision-makers) and 816 software developers (developer audience) across six countries. The research was governed by Reputation Leaders, an independent research consultancy.

All IT professionals were employed in organizations with 50 or more employees. IT leaders were identified as either a CIO, CTO, or chief data officer/head of data/head of data management and confirmed as having a major role in technology decisions and in managing IT resources.

Interviews were conducted online in the U.S., China, the U.K., Germany, Belgium, and the Netherlands between May 10 and June 21, 2021.

> The margin of error for the total sample of 2025 is 2.2% at the 95% level of confidence.

> In the U.S. (1012), the margin of error is +/-3.1%,

> and in Europe (503) and China (510),

> the margin of error is +/-4.4%.

CHAPTER THREE
EXECUTIVE SUMMARY
THE STATE OF LOW-CODE 2021: A LOOK BACK, THE LIGHT AHEAD

The COVID-19 pandemic has disrupted the digital capacities of the business world, as organizations have been required to move their activity online while responding to the fast-changing needs of employees and consumers alike.

In this context, 57% of IT professionals surveyed said that the number of staff needed for software development is increasing, and 76% say that demand for developers has reached a fever pitch. Alongside this, 61% say the cost of software development is also rising. Two-thirds of major software projects are currently being delivered behind schedule, and for 62% of IT professionals, that backlog is only increasing.

But far from being worried by digital disruption in a pandemic world and the resulting pressures, the most common response among IT professionals is a positive one: 58% say their organization is excited by the digital acceleration, and it has brought a new urgency for faster and more collaborative development.

Indeed, 45% of IT professionals report feeling a new sense of urgency – and it is becoming clear that business-as-usual software development cannot meet the growing demand.

These pressures have led to enthusiasm among IT professionals for new solutions and different ways of working. IT departments are embracing opportunities to break software development out of the IT box: 64% of organizations have relied on non-technical staff to relieve pressure on the IT department during COVID-19.

Low-code is central to this effort. Low-code is already used in some way in 77% of organizations, and 64% of IT professionals

agree that low-code is their go-to work-around development solution. As many as 59% of projects using low-code are a collaboration between IT and business groups, and a quarter (25%) report fewer instances of shadow IT than before.

IT professionals using low-code have quickly become aware of major benefits to its use. Two out of five low-code users reported more collaboration, faster development, and lower costs – and that low-code projects reduce costs by 53% and are 56% faster.

The benefits have flowed to the top line, too. Customer apps built using low-code increased customer revenues by an average of 58%.

Increasingly, low-code solutions are becoming central to business operations: among those using low-code, 33% have used it to build mission-critical apps. Software developers acknowledge and welcome its flexibility, saying that half of their everyday development work (51%) could be done on a low-code platform.

With this comes low-code's potential to create a brighter future. As it opens up software development to more people with a wider range of skills, it creates possibilities for more diversity in IT teams; 40% of IT leaders say their IT department will become more diverse, with a greater range of ages, ethnicities, and backgrounds represented.

Low-code offers businesses the opportunity to meet the challenges of digital disruption head-on and expand what their IT department can achieve. Three-quarters (75%) of IT leaders agree low-code is a trend they can't afford to miss.

BENEFITS OF LOW-CODE:

Costs ▼ **53%**

Speed ▲ **56%**

Customer App Revenue ▲ **58%**

In a world of startling digital disruption. **75%** of IT leaders say low-code is a trend their organization can't afford to miss

CHAPTER FOUR
GLOBAL FINDINGS

COVID-19's disruption of the digital world: both surprising and exciting

The disruption that the COVID-19 pandemic has caused to every aspect of people's lives can't be overstated, and the digital world is no exception. It has caught IT leaders off-guard, with 56% saying that the pace of digital disruption during the pandemic has been greater than they expected; IT professionals in manufacturing (63%) and finance (63%) sectors have been particularly astonished at the pace of disruption.
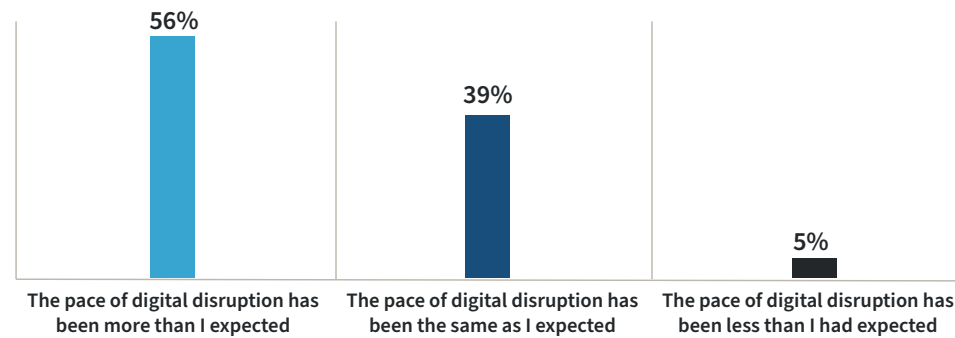
Traditional approaches to software development are no longer fit for purpose. Two-thirds of major software projects are behind schedule – rising to nearly three-quarters in the manufacturing sector – and 62% of IT professionals are seeing the backlog of work increase.

Has your organization seen costs or resources rise for software development in the past two years?
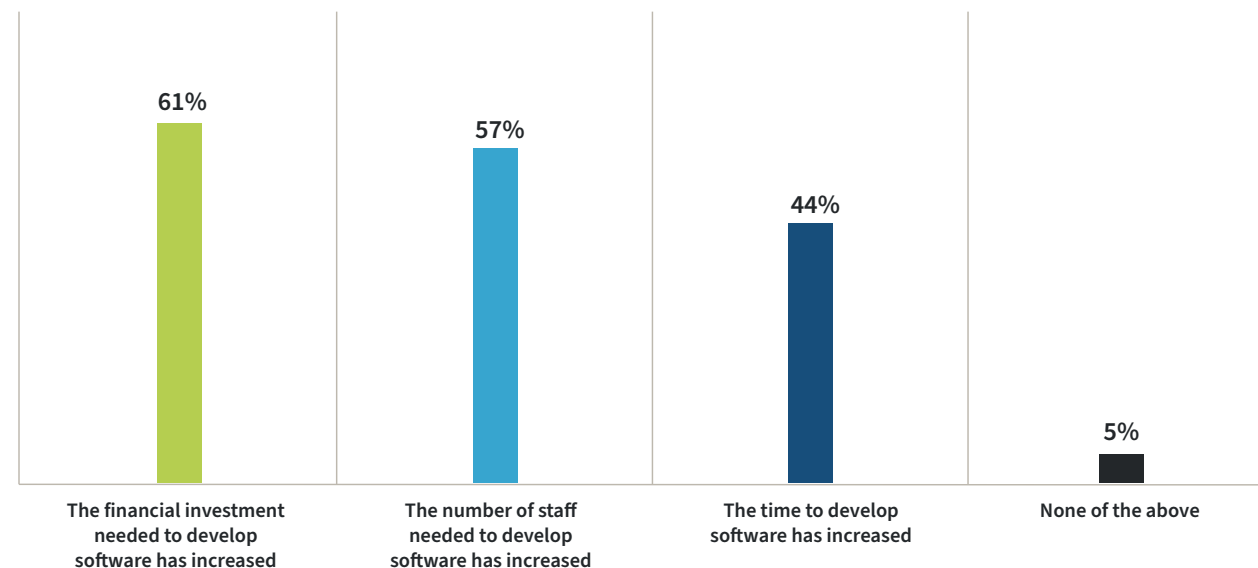
Meanwhile, the cost, time, and number of staff needed have all risen.

The increasing squeeze between software demand and supply has naturally created a new sense of urgency among IT professionals (45%). But the most common response is one of excitement (58%) rather than being overwhelmed (16%): IT professionals are ready to embrace new ways of working, particularly in the finance sector, where 74% are excited.

Which feelings would you use to describe the response to digital acceleration and software development demand within your company?
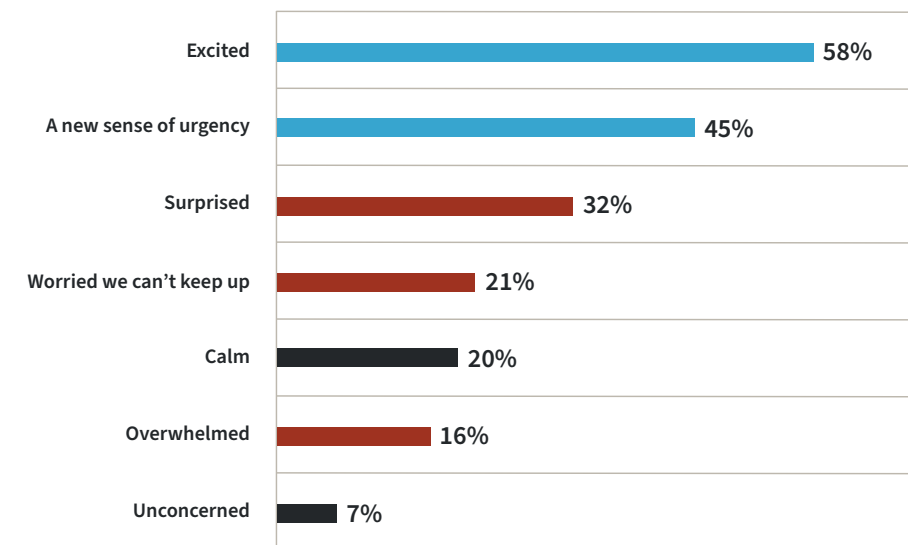
64% agree that low-code is their go-to work-around development solution since they can't keep up with the intense demand for developers

CHAPTER FOUR
GLOBAL FINDINGS CONTINUED...

COVID-19 has accelerated the shift to low-code

The pandemic has prompted different ways of working to meet the changing needs of customers, workers, and employers. These shifts have accelerated the trend toward low-code a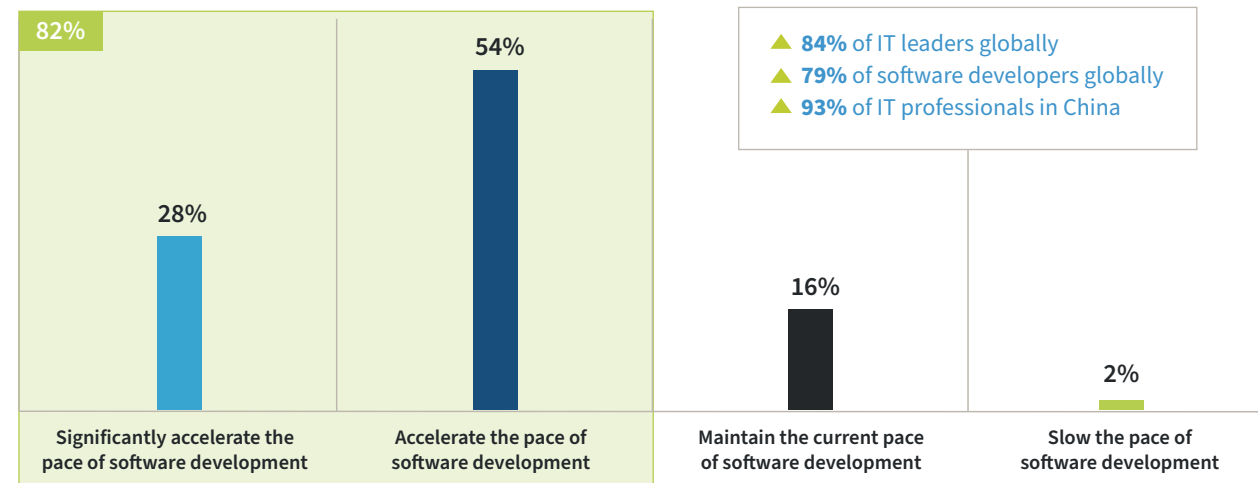s a go-to-market software development solution for businesses across sectors and countries. More than four-fifths (83%) of organizations using low-code say they are using low-code more since the pandemic.

And low-code adoption increased across many areas of business activity, from e-commerce, process automation, and the Internet of Things to mission-critical solutions.

Now thinking about the next two years (2022-23), does your company plan to accelerate, maintain or reduce the pace of its software development?

- ▲ **84%** of IT leaders globally
- ▲ **79%** of software developers globally
- ▲ **93%** of IT professionals in China

82%

28% — Significantly accelerate the pace of software development

54% — Accelerate the pace of software development

16% — Maintain the current pace of software development

2% — Slow the pace of software development

The move to low-code is well underway

COVID-19 has driven a major shift in businesses' software needs. Four out of five IT professionals have seen increased demand for apps in their organization, and 82% see the pace of software development increasing in the future. This is increasing demand for software developers, which 76% of IT professionals say has reached a fever pitch – particularly in healthcare (84%), professional services (82%), and finance (81%).

Businesses are already adapting to greater demand for software. Many have turned to low-code as a solution, which is in use at 77% of organizations – and an incredible 94% of retail organizations recognize the power of popular e-commerce platforms for streamlining their business activities.

Unable to keep up with the intense demand for developers, 64% of IT professionals agree that low-code is their go-to work-around development solution.
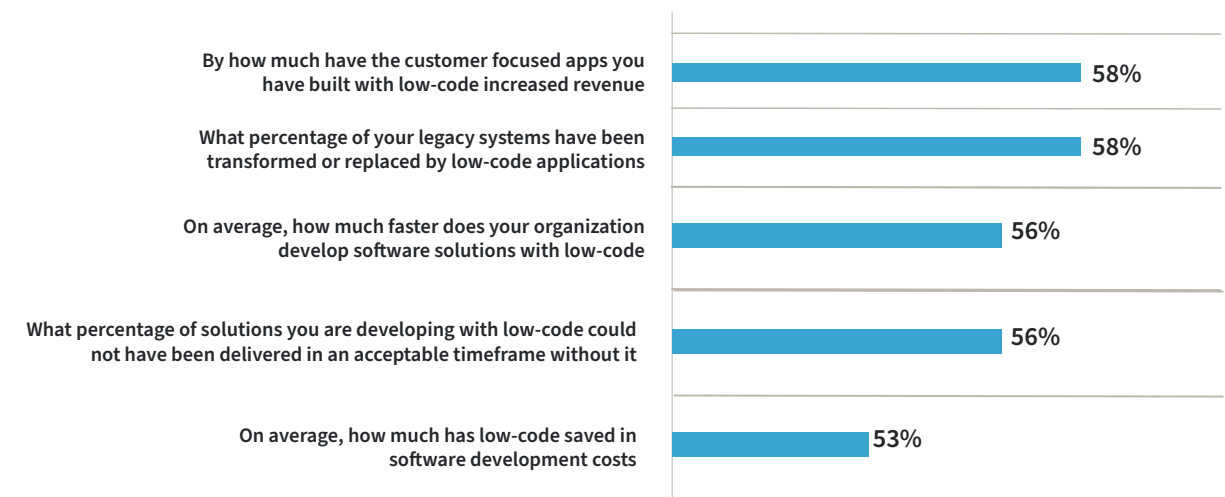
The business benefits of low-code are now evidently clear

IT professionals using low-code have quickly become aware of major benefits to its use. Two out of five low-code users reported more collaboration, faster development, and lower costs – and that low-code projects reduce costs by 53% and are 56% faster.

Increasingly, low-code solutions are becoming central to business operations: among those using low-code, 33% have used it to build mission-critical apps. Software developers acknowledge and welcome its flexibility, saying that half of their everyday development work (51%) could be done on a low-code platform.

The benefits have flowed to the top line, too. Customer apps built using low-code increased customer revenues by an average of 58%.

To what degree has your organization achieved the benefits of adopting low-code? (If using low-code)

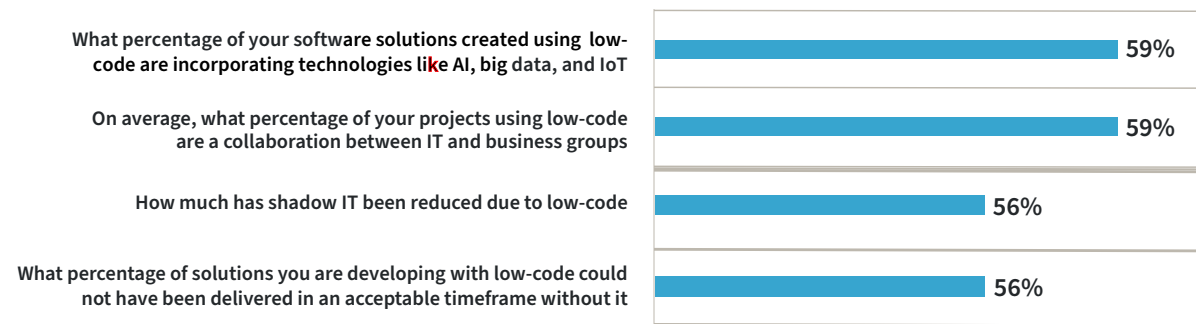|	
By how much have the customer focused apps you have built with low-code increased revenue	58%
What percentage of your legacy systems have been transformed or replaced by low-code applications	58%
On average, how much faster does your organization develop software solutions with low-code	56%
What percentage of solutions you are developing with low-code could not have been delivered in an acceptable timeframe without it	56%
On average, how much has low-code saved in software development costs	53%

CHAPTER FOUR
GLOBAL FINDINGS CONTINUED...

A new era of collaboration: coding moves outside the IT box

IT professionals report that most employees have now embraced low-code in their organization: it is positively accepted by IT decision-makers (92% say it has been accepted or enthusiastically accepted by IT decision-makers) and business users (79% say it has been accepted or enthusiastically accepted by business users).

To what degree has your organization achieved the benefits of adopting low-code? (If using low-code)

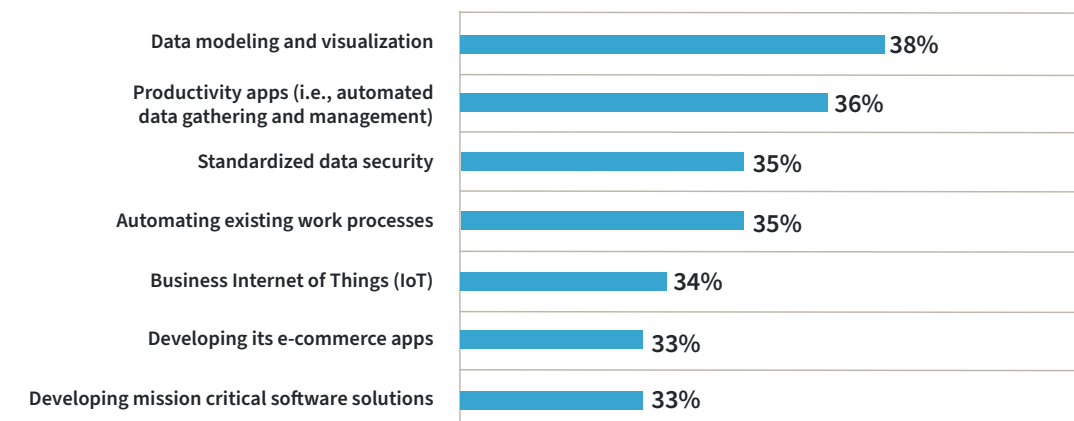|	
What percentage of your software solutions created using low-code are incorporating technologies like AI, big data, and IoT	59%
On average, what percentage of your projects using low-code are a collaboration between IT and business groups	59%
How much has shadow IT been reduced due to low-code	56%
What percentage of solutions you are developing with low-code could not have been delivered in an acceptable timeframe without it	56%

At organizations where low-code is in use, 59% of low-code projects are a collaboration between the IT department and business users and incorporate technologies like AI, big data, and IoT (59%). A quarter (25%) report fewer shadow IT projects than before and claim it has been reduced by 56%.

Low-code is the light ahead

As we emerge from the pandemic and its many challenges, IT professionals see low-code as the light ahead. Low-code offers more than just hope; it is a tried and tested solution to ever-increasing time and cost demands across the enterprise. Thus, low-code is being used in more and more fundamental areas of business activity. Among organizations using low-code, its use for mission-critical apps (33%) is quickly catching up with more traditional uses like data modeling and visualization (38%). In organizations that use low-code, more than half (56%) of employees are now using apps built on low-code platforms.

Does your organization use low-code for any of the following applications?

Data modeling and visualization	38%
Productivity apps (i.e., automated data gathering and management)	36%
Standardized data security	35%
Automating existing work processes	35%
Business Internet of Things (IoT)	34%
Developing its e-commerce apps	33%
Developing mission critical software solutions	33%

51%

Software developers say half of their everyday development work could be done on a low-code platform

Low-code platforms free up software development teams to work on new projects:

- **Software developers say that half of their everyday development work (51%) could be done on a low-code platform.**

- **And low-code offers the opportunity to resolve major pain points reported by organizations, particularly training time (35%) and overall time needed to develop software solutions (30%).**

CHAPTER FOUR
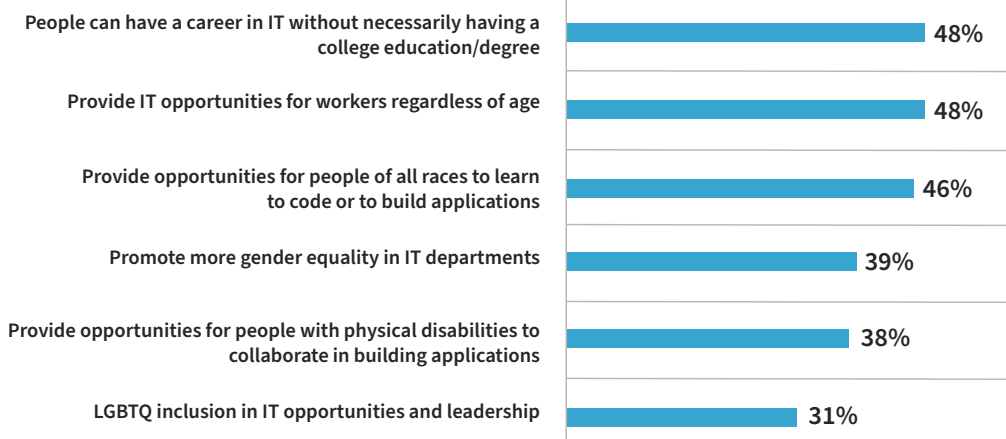# GLOBAL FINDINGS CONTINUED...

Low-code can open new doors for talent

Low-code has the potential to empower more people from more varied backgrounds to participate in software development than ever before.
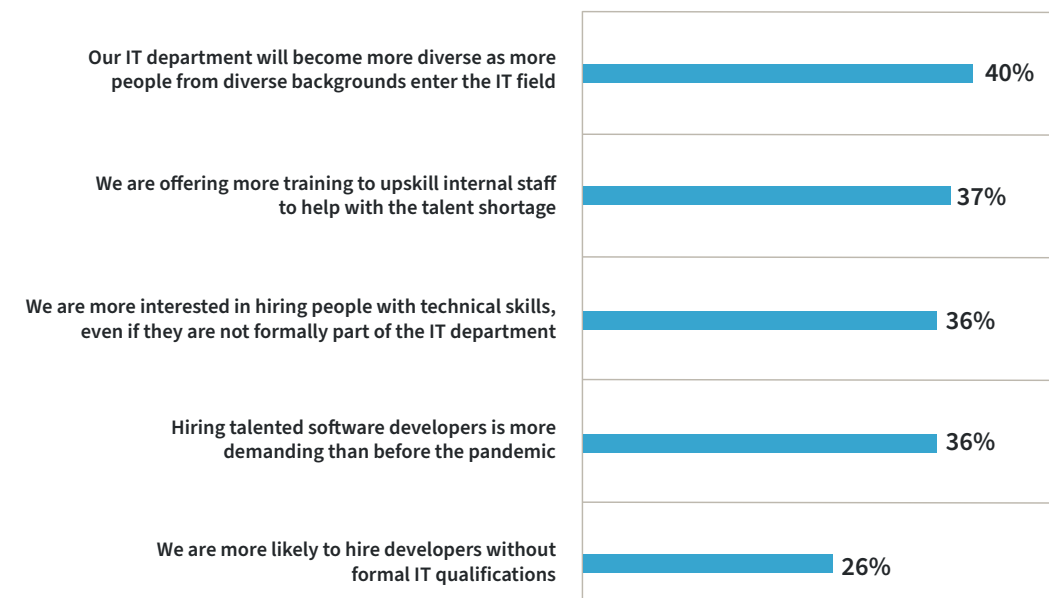
It breaks software development out of the IT box, so that non-technical staff can be part of the process, which has become more necessary during the pandemic than ever. Pandemic-related pressures on IT departments have already led 64% of organizations to rely on non-technical staff to help relieve that pressure – particularly in manufacturing (70%) and finance (71%). A quarter of all IT leaders and developers surveyed reported that their employer was now more likely to hire developers with no formal IT qualifications. Two out of five IT leaders say their IT department will become more diverse as more people from many backgrounds enter the IT field. 45% of IT leaders in technology companies similarly expect an increase in diversity in their IT department post pandemic.

This shift would not be possible without low-code making software development more accessible. IT professionals see low-code empowering more people to break down social barriers to entering the IT field – particularly those without a college education (48%) and people of different ages (48%) and races (46%).

In what ways, if any, can low-code platforms help to empower a greater diversity of people to break through barriers into technology/IT jobs and opportunities?

Category	%
People can have a career in IT without necessarily having a college education/degree	48%
Provide IT opportunities for workers regardless of age	48%
Provide opportunities for people of all races to learn to code or to build applications	46%
Promote more gender equality in IT departments	39%
Provide opportunities for people with physical disabilities to collaborate in building applications	38%
LGBTQ inclusion in IT opportunities and leadership	31%

How has the COVID-19 pandemic affected hiring and employment in your organization?

Category	%
Our IT department will become more diverse as more people from diverse backgrounds enter the IT field	40%
We are offering more training to upskill internal staff to help with the talent shortage	37%
We are more interested in hiring people with technical skills, even if they are not formally part of the IT department	36%
Hiring talented software developers is more demanding than before the pandemic	36%
We are more likely to hire developers without formal IT qualifications	26%

IT professionals see low-code as part of a bright future that is more collaborative and diverse.

72% say low-code is a trend they can't afford to miss.

Low-code is a trend we can't afford to miss!

75% of IT leaders
67% of developers
72% overall

CHAPTER FIVE
REGIONAL FINDINGS

U.S.

The U.S. leads the way when it comes to low-code. Four out of five organizations now use it (compared to 77% globally), and three out of five employees are now using apps built with low-code (compared to 56% globally). This may be linked to greater time pressure felt by U.S. organizations, which report that 72% of their major software projects are behind schedule (compared to 67% globally).

The reaction to recent digital disruption has been one of surprise (36%) – although there is little concern about not keeping up (18%). This contrasts particularly with China, where, despite being less surprised (24%), respondents are more worried about not keeping up (27%).

The greatest barrier to adopting low-code in the U.S. is organizations being tied to legacy systems, which is an issue for 31% (compared to 23% globally). Those not yet using low-code in the U.S. also suggest that other barriers include reluctance from IT decision-makers (28% compared to 19% globally) and business decision-makers (25% compared to 18% globally).

CHINA

China's low-code adoption lags behind the U.S. at 75%, but there is greater enthusiasm for it and a keen awareness of its necessity for business. Chinese IT professionals have already seen the biggest increase in the demand for software (85% compared to 80% globally), as well as the

financial investment needed for development (68% compared to 61% globally), the number of staff needed to develop software (72% compared to 57% globally), and the time taken to develop software (53% compared to 44% globally). They are the most likely to say that demand for software developers has reached a fever pitch (86% compared to 76% globally).

Despite more projects being delivered on time in China (58% compared to 33% globally), there is overall higher concern about not keeping up (27% compared to 21% globally). China is now braced for rapid change: 93% think digital disruption will accelerate (compared to 82% globally). It is a change they welcome, more so than other regions: 70% report feeling excited, compared to 58% globally.

Acceptance of low-code is most widespread in China compared to other regions, with over 90% of each group of IT professionals positively accepting low-code. The Chinese are also the most likely to suggest that low-code is a trend their organization can't afford to miss (84% compared to 72% globally).

Low-code's positive impact is already being felt in China, with 81% saying it has helped tear down walls/silos in their organization (compared to 69% globally) and that it could put the manufacturing sector back on its feet (85% compared to 73% globally). Adaptability and forward-thinking characteristics in Chinese organizations are already evident, with non-technical staff already crossing over into IT more often (78% compared to 64% globally).

IT professionals in China are more likely (34% compared to 28% globally) to look to new development approaches such as low-code and a broader talent pool to achieve their software development goals over the next two years – indicating the benefits of more diversely skilled development teams are only set to grow.

EUROPE

The adoption of low-code has been slowest compared to other regions (74% in Europe compared to 77% globally), but this varies widely across the countries included in the research. Belgium lags the furthest behind, at 48%, in contrast to the U.K., which is in line with the U.S. at 80%. The U.K.'s swifter move to low-code is likely linked to the double challenge of the pandemic and Brexit, which has driven the need for collaboration and adaptability[1].

Despite more projects being behind schedule in Europe (81% compared to 67% globally), IT professionals are relatively relaxed about the digital disruption of recent months. They are less excited about it than other regions (44% compared to 58% globally), particularly in Belgium (25%), and are the most likely to feel unconcerned (11% compared to 7% globally). In the Netherlands, IT professionals are particularly unfazed: 30% say the pace of digital disruption has been less than they expected (compared to 6% globally).

When thinking ahead to software development over the next two years, Europeans tend to downplay the need for change. They are more likely to claim that their company intends to maintain the same pace (24% compared to 16% globally) and less likely than others to see it accelerating (74% compared to 82% globally). They anticipate a continuation of a more traditional approach to software development, such as hiring developers to help meet software development demand over the next two years (21% compared to 17% globally) rather than keeping up with other regions' preference to look to new development approaches such as low-code and a broader talent pool (22% vs. 28% globally). In line with this, software developers in Europe are less likely to see low-code skills as important to future career opportunities (43% compared to 58% globally) and more of a "nice to have" (32% compared to 16% globally).

[1] Mendix, 'Navigating the UK landscape: It's time for a low-code approach' https://www.mendix.com/press/low-code-software-development-is-key-to-navigating-post-brexit-post-covid-world-british-businesses-report/

CHAPTER SIX
CALLS TO ACTION

The State of Low-Code 2021 report reveals how low-code's use has evolved and accelerated. Based on these findings, here is what business leaders can do to best leverage the opportunities low-code offers:

Harness the excitement of digital disruption. Accelerate the pace of software development by democratizing software development to include business users. Low-code has the potential to bring major software projects back on track while keeping costs down and using the hidden technical talent already in your organization.

Embrace collaboration. Low-code allows non-IT business users to engage with the IT department and collaborate on software development projects, bringing their expertise and energy to the process. As this report shows, both business users and IT professionals respond positively to the opportunity to collaborate with low-code.

See the possibilities, not the limitations. Don't place unnecessary limits on low-code. Software developers say that as much as half of their everyday development work could be done using low-code. It can do more than expected and is already used in mission-critical applications across businesses of all sizes and sectors.

Low-code can change the world. Opening doors for more people from more backgrounds doesn't just benefit a business[2] by expanding its talent pool; it paves the way for a more fair and inclusive business world. Low-code is already being recognized as a means to foster diversity in age, education, and race among those working in IT departments.

Mendix, a Siemens business, is the leading low-code software development platform, working with organizations across the globe to make it possible for people with varied skill sets to build world-class software. It has received the highest score in Forrester's analysis of the top low-code development platforms. It is identified in Gartner's Magic Quadrant as a leader in both multiexperience development platforms and enterprise low-code application platforms.

[2] *World Economic Forum, 'The business case for diversity in the workplace is now overwhelming'*
https://www.weforum.org/agenda/2019/04/business-case-for-diversity-in-the-workplace/