



**SYSTEMSOFT™**  
TECHNOLOGIES

# LEVERAGING HIGH-AGILITY PLATFORMS FOR SOFTWARE DEVELOPMENT

Low-Code and No-Code Approaches  
Gain More by Doing Less

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# EXECUTIVE SUMMARY

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## Application Development Exposed

At one time, application development was relatively simple. Developers built one application to solve one problem. Users then accessed the application through one type of interface on one type of device. Requirements, data types and formats were static. Development was linear and predictable. Skill sets and expertise of developers and user expectations were well-defined, not too diverse and stable.

With so much investment thrown into proprietary software today, the application development process should be highly optimized and cost-effective. Yet, software creation stays resource-intensive, convoluted and inefficient. This is because some organizations are stagnant, continuing to rely on traditional development models, which require coding, lengthy review processes and access to expert developers.

**For more organizations, the application development process rolls like this:**

- *An employee or department requests an application to solve a business challenge related to their role in an organization's processes and their user story. The project receives leadership approval and budgetary funds.*
- *An analyst engages to understand and refine requirements.*
- *Developers build the application.*
- *After months or years of waiting, a first iteration is released, beginning an indefinite cycle of reviews, (slow) updates and new versions.*

### **THIS PROCESS OFTEN PROVES UNSUSTAINABLE.**

Nowadays, though, organizational innovation fueled by digital transformation has completely changed the legacy model. A tremendous variety of users, both internal and external, demand a user experience that delivers flexible functionality they can access across several interfaces, using a plethora of access pathways, such as cloud, mobile devices and apps, wearables, digital assistants and browsers. Their needs and expectations are fluid, and the applications built must accommodate a much wider spectrum of requirements.

This white paper presents an overview and describes trends driving the adoption of more application development outsourcing and different approaches like groundbreaking low-code and no-code software development in an environment enabling developers to more quickly and more easily build applications, while reducing costs, through code reuse and simplified development best practices.



# INTRODUCTION

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A low-code platform provides a development experience, whereby most features can be delivered through graphical interfaces, but still allows “traditional coding” (like Java, .NET, C#, et al) for particularly complex or specific requirements. Traditional coding still requires a developer, but that time investment is small when compared to the considerable time and cost savings the graphical interface provides for a significant percentage of the development effort.

A no-code platform provides a completely graphical development experience, which does not require or permit the use of traditional coding. These platforms focus on a combination of large building blocks in the form of functional modules and then smaller blocks, which allow for heavy refinement.

For organizations to effectively service their customers in this unique environment in a differentiated way, they must develop and innovate around digital transformation in three separate yet interconnected areas — expertise, speed and agility.



# 1. EXPERTISE

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Organizations must access the latest technologies and methods for application development to best meet user demands, which grow more complex and dynamic. Given the variety, depth and changing nature of these capabilities, organizations increasingly struggle to deliver them solely using internal teams. It is nearly impossible and stressful for an in-house team to build skills to support and maintain modern digital transformation technologies, while also supporting a portfolio of legacy technologies. A single IT team needs expertise in artificial intelligence (AI), machine learning (ML), Big Data, advanced analytics, responsive design and a multitude of programming languages to accommodate modern user requirements.

Outsourcing some or all aspects of application development gives organizations access to a wide variety of experts and experiences to fill gaps in their existing digital transformation teams. This provides the opportunity to tap into the global technical pool and use broader

capabilities, helping ensure they can build and iterate applications that accommodate changing user demands.

This is the same strategy adopted by many of the past Software- and Platform-as-a-Service offerings, which introduced Infrastructure-as-a-Service and Application-Development-as-a-Service. Organizations shifted over to SaaS (Software-as-a-Service), PaaS (Platform-as-a-Service), IaaS (Infrastructure-as-a-Service) and ADaaS (Application Development-as-a-Service) to avoid developing, integrating and supporting IT products and services. In some cases, the shift was complete and long-term, such as with Salesforce.com. In others, such as some Amazon Web Services (AWS) subscriptions, usage was only temporary or as needed to support unique requirements or demand spikes. ADaaS follows in the same vein of tapping into external capabilities, augmenting those who internally solve problems, quickly and cost-effectively.



## 2. SPEED

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Digital transformation demands frequent and often dramatic updates. Delivering those changes rapidly is a tremendous challenge for most organizations. However, a lack of speed means the business unit is less competitive and reports negatively impacted market success.

As digital transformation has evolved, application development cycles have moved from years to months to weeks. Agile design methods and fail fast mentalities have replaced traditional linear, extended workflows to address accelerating release frequency driven by market demand and competition.

But even with these approaches to shorten development cycles, organizations are still constrained, while delivering against their application backlog. Internal teams can be worked only so hard and so fast and overstaffing to accommodate spikes in demand is not practical nor fiscally prudent.

Shortcuts lead to technical debt, increasing tomorrow's problems, and are further compounded by already-existing technical debt.

ADaaS, along with a low-code or no-code software development platform, provides shorter long-term, scalable capacity to address competitive forces, without risk of cost-prohibitive investment. Speed is a key benefit with low-code and no-code, whereby solutions can be developed in a fraction of the time compared to traditional development. Applications can also take advantage of continuous delivery with initial release quickly scheduled and later-stage enhancements iterated in-house when needed, given these platforms' ease of use. This gives organizations the best chance of maximizing market success.



## 3. AGILITY

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Agility allows organizations to address rapid shifts in market requirements quickly and effectively. Gone are the days when modern applications go through individual design cycles like small updates and optimizations for years. In the digital transformation era, that is a recipe for failure.

Digital transformation is dictating that truly modern applications must be developed quickly, adapt in real time, incorporate the latest advanced capabilities, and be accessed through preferred user channels. Users expect products and services to instantly cater to their needs and preferences. Those that do not are doomed to abandonment. Competitive demands from these market forces pressure organizations in unprecedented ways to respond quickly to rapid changes in requirements. But most organizations lack

the agility to align with these changes on their own. They must supplement their internal capabilities with external expertise and application development capacity.

ADaaS fills the need for agility in application development by acting as a fungible asset, responding to market demand shifts and expansions. Organizations get access to a far broader pool of expertise and development management, which they can access on their own and scale as needed in response to market requirements. Using these low-code or no-code platforms allows them to quickly create proof-of-concept solutions. They can mix and match capabilities on the fly and roll out new or updated applications during a shorter timeline, giving them a significant competitive advantage, without the risk of large and fixed investments in personnel.



# NO-CODE IN ACTION: A REAL-WORLD STORY

## SECTION 1



## SECTION 1

# NO-CODE IN ACTION: A REAL-WORLD STORY

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After delving into expertise, speed and agility, here is a true story, using those areas, about how a small non-profit put no-code software development to use by building a new portal, then delivering \$60 million to local, small businesses in 60 days during the first round of pandemic-related economic relief during 2020.

COVID-19 started out as a global health crisis, but quickly developed into an economic crisis. This double-barreled challenge has been especially hard on urban locations across the United States. The nation's largest 20 metropolitan areas make up 37 percent of the population, but accounted for more than 47 percent of the known COVID-19 cases as of July 31, 2020. The negative economic consequences have been equally distressing in major cities. Job losses in the 20 largest cities through July 2020 have totaled more than 6.9 million people, which is over 46% of all job losses throughout the country.

Houston is the fourth largest U.S. city, with a population exceeding 2.3 million residents. Harris County encircles Houston and includes other ZIP codes, with a county-wide population of 4.7 million people. Like other urban locations, the coronavirus pandemic hit hard the pocketbooks of all Harris County residents. In February 2020, Harris County unemployment stood at 3.9 percent, then shot up to 14.6 percent by July 2020. That was an increase of 375 percent.

Amid all this unwelcome news, regional economic development agencies made themselves available to provide financial relief for those businesses and residents hit the hardest by the pandemic. Houston Business Development Inc. (HBDI) is a small non-profit serving as a catalyst to stimulate economic growth and revitalize communities throughout Houston and Harris County. HBDI was supplied a total of \$60 million from Harris County to offer federal CARES Act grants to those who met specific eligibility criteria.





While there was fanfare and enthusiasm throughout the region for the grant program, HBDI was in a bind. How could the small non-profit put together the front-end portal for grant applicants, automate grant processing and do so in a tight timeframe to meet the requirements of Harris County and their residents? The answer: The organization of less than 10 employees turned to trusted technology partners to use a no-code software development platform, delivering the needed technology solution.

HBDI and System Soft Technologies (SSTech) quickly got to work, creating a requirement backlog report, which documented the unique requirements for grant applicants in one week. The focus of this first week was to set up an internet-accessible grant applicant portal, which was easy to use but also reflected the grant requirements. Harris County required explicit criteria for how each grant application was evaluated and complex formulae on prioritization and grant funding. All these requirements and user interface considerations were documented in the backlog report.

Once the backlog report was approved, the team built the grant application portal and put it into production on the cloud. Improvements

to the user interface were iterated many times during the first week of its roll out based on consumer feedback. More than 50,000 applications were eventually received, and page hits exceeded 6 million in the first few weeks of operation.

With the front-end in place and grant applications streaming into the portal from applicants, the technology partners then worked with HBDI to document the processes, reporting and interfaces required to handle grant review and funds distribution. Once again, there were complex processes that needed to be automated, enabling HBDI's small team of processors to handle the high volume of submitted applications. The deadlines were tight for HBDI to review and approve or reject the more than 50,000 applications. Two weeks were needed to assemble the internal processing backlog report and for the team to use the no-code platform to develop the software supporting process automation, reporting and interfaces with financial institutions for grant distribution.

For a program of this degree of complexity and volume to roll out with sophisticated software and a customized, compliant,



secure user portal in one month is in most circles unbelievable. The platform scaled in the cloud to accommodate huge volumes of grant applications and grant program inquiries. None of this was possible without the no-code platform and the expertise of HBDI's technology partners. The development team used the drag-and-drop nature of the no-code platform to build the code, design the user interface, and develop the interfaces necessary to support reporting and financial processing. The HBDI team was engaged on daily sprint calls and the agile process accommodated multiple change requests, which arose during the four-week project.

### **HBDI was able to meet the difficult requirements and timeline given to them by Harris County by:**

- Overcoming a lack of IT capacity and capability.
- Leveraging no-code technology and launching a portal in less than 10 days.
- Meeting tight deadlines to create a portal, automate the process, address compliance, distribute funds and handle external reporting.
- Supporting 6 million website visitors, processing a total of 50,000+ applications, and distributing \$60 million in less than 60 days.



# APPLICATION DEVELOPMENT SERVICE TRENDS

## SECTION 2



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# APPLICATION DEVELOPMENT SERVICE TRENDS

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As focus on high-agility platforms becomes more mainstream, such as virtualization, cloud and SaaS before it, organizations will embrace it at an accelerated rate. Outsourced projects and processes are not new. What is changing is the nature of the projects directed to external vendors. The increasing validation of outsourced application development in the eyes of IT professionals is making it a staple of their application development toolbox. The growth of low-code and no-code platforms, with sophisticated cloud-accessible tools, allows application development service vendors to keep expanding their value-added capabilities, further justifying IT professionals to engage them.

In addition to the general comfort of adopting various as-a-Service solutions and rapid access to expertise and scale, there are other factors driving the accelerating popularity of third-party application development services.



# KNOWLEDGE TRANSFER

SECTION 3



## SECTION 3

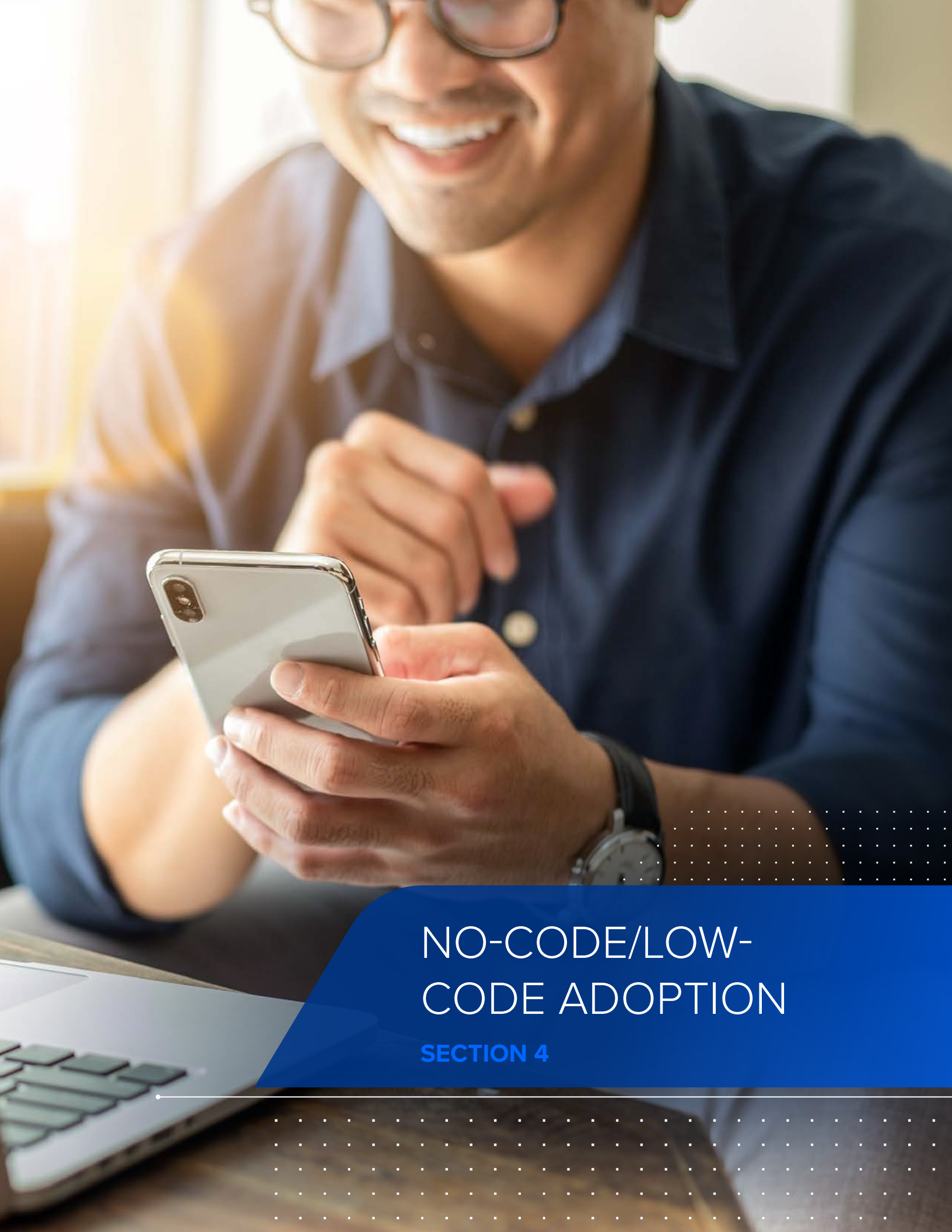
# KNOWLEDGE TRANSFER

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Rapid development and prototyping must not be an ongoing dependence on a vendor for a set of applications. Each project should be accompanied by a design document, containing a complete transfer of knowledge of application feature design and workflow for clients to become self-sufficient in many of the capabilities. From the beginning, all projects need a knowledge transfer process in place, ensuring

vendor knowledge becomes client knowledge. Clients drive the definition of accountability, documentation and transparency to meet their needs. The goal is to have all learnings shared with clients for handoff when the project is finished. With the use of low-code or no-code platforms, this transfer is easier than it has been before now.





# NO-CODE/LOW-CODE ADOPTION

## SECTION 4



## SECTION 4

# NO-CODE/LOW-CODE ADOPTION

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Most clients do not specifically plan or budget for outsourced application development. Instead, they tend to use existing application development money to fund such engagements. The level of reliance on outsourced development depends on a few factors, including:

- **Adoption of new processes, technologies and approaches by the organization.**

As the rate of IT innovation accelerates, organizations have adapted at different rates. The more an organization adopts advanced collaboration, analytics, AI, ML, modern security, Internet of Things (IoT), et al, the more likely they will leverage ADaaS, because they are unable to exclusively support these rapid changes with internal resources.

- **Variability in user demand.**

Planning effectively requires accurate predictions of need. In situations where need is fluid and/or undefined, internal development resource planning is a challenge. With market demand changes come new business strategies, innovative

approaches to application development and new customer requirements. Most organizations are ill-equipped to adapt to all of this, so many turn to outside resources to fill the development gap.

- **Shortage of programmers.**

There is a rise of non-programmers or novice programmers contributing to application development. As full-blown programmers grow increasingly short in supply, organizations are turning to non-experts to fill the gap, which is expected to increase. The rise of no-code and low-code tools and platforms give organizations the ability to expand both their software development efforts, despite a shortage of programmers, and ability to rapidly respond to fluid changes in market demand.



	Traditional Code	Low Code	No Code	Hybrid
<b>Cost</b>	Very Expensive	Large Cost Reduction (50 percent to 80 percent reduction when compared to traditional)	Dramatic Cost Reduction (70 percent to 90 percent reduction when compared to traditional)	Offers Low-Code and No-Code Development Options in the Same Platform. Choose your benefit.
<b>Application Development Time</b>	Months or Years	Months	Weeks	
<b>Supported Application Complexity</b>	Any Complexity	Any Complexity	Limited to Platform Capabilities	
<b>Traditional Coding Allowed</b>	Yes	Yes	No	
<b>Integration of Third-Party Tools</b>	Limited to Developer Expertise	Direct Connection to Traditional Database Allowed. Native Support for Vendor-Chosen Third-Party Tools	Native Support for Vendor-Chosen Third-Party Tools	
<b>Database Model</b>	Limited to Developer Expertise	Traditionally Formatted SQL	Non-Traditionally Formatted	
<b>Project Management</b>	Tedious, Long-Running Projects; Requires Traditional and Expensive Project Management	Supports Continuous Delivery Cycle and Rapid Prototyping; On-Demand Application Development	Supports Continuous Delivery Cycle and Rapid Prototyping; On-Demand Application Development	
<b>Systems Team: Burden Reduction?</b>	No	Yes, Platform Fills This Role	Yes, Platform Fills This Role	
<b>Engineering Team: Burden Reduction?</b>	No	Yes, Platform Fills This Role	Yes, Platform Fills This Role	
<b>DBA: Burden Reduction?</b>	No	Sometimes	Yes, Platform Fills This Role	
<b>Sr Developer: Burden Reduction?</b>	No	Yes, Junior Developer Fills This Role	Yes, Many Can Fill This Role	
<b>Jr Developer: Burden Reduction?</b>	No	No	Yes, Many Can Fill This Role	
<b>Business Analyst: Burden Reduction?</b>	No	Sometimes	Sometimes	
<b>Business Team can "Self-Serve" Modification of Application Features</b>	No	No	Yes	
<b>Ease of Application Transition Post-Deployment</b>	If the organization is not doing this now, building this function will be extremely difficult and expensive to support all necessary roles.	Senior IT members will likely embrace this quickly, because data and code are traditionally accessible.	Business teams will quickly embrace due to increased agility. IT transition to senior developers can find resistance, because coding is not allowed, and data is not traditionally organized.	
<b>Why Select This Option to Outsource?</b>	Legacy application modification. Application development is for a COTS (Commercial Off the Shelf) product, intended for resale.	Significant cost reduction to build a new application. Post-Deployment Continuous Development transitioned to in-house senior development team.	Largest possible cost reduction for a new application build. Post-Deployment Continuous Development supported by vendor, in-house junior developers, BA Team or Business Team Self-Serving.	



# IMPLICATIONS OF APPLICATION DEVELOPMENT

## SECTION 5



## SECTION 5

# IMPLICATIONS OF APPLICATION DEVELOPMENT

As outsourcing application development becomes more widely adopted, it significantly affects how organizations operate and service their customers. This is true for both those that are small and large.

Small organizations tend to be nimble and adaptable, but they lack resources to fully meet the needs of their market and maximize competitiveness. On the other hand, enterprises have resources to deliver on changing market demands, but they lack the adaptability to quickly respond. Application development services using low-code or no-code platforms allow for rapid solution prototyping, a seamless user experience across many devices, and quick deployment across an entire organization. These benefits can address the different skill gaps and capacity limitations of an entire range of organizations, which enhances its appeal and impact. They can significantly reduce risk by accessing seasoned talent with experience specific to a given business need.

While high-agility platforms can potentially transform how organizations address the

needs of their constituencies, there are pitfalls that must be navigated to avoid failures. Most important is the selection of the vendor-partner. The best engagements are well-defined, with a collaborative approach to agreement on responsibilities, deliverables and metrics. Beyond completing and possibly supporting the initial deployment of an application, as mentioned above, the client must collaborate with its vendor to maximize the sharing of lessons learned and skills, so the client adds to its expertise and does not remain solely dependent on the vendor.

As outsourced application development adoption expands, its impact will continue to grow. Organizations will enhance their ability to address both a broader range of requirements and rapid changes in demand for applications without an acute need for risky investments for in-house IT staffing to address uncertain market requirements. It allows them to quickly and cost-effectively expand into new markets, while streamlining their ability to transform and competitively grow the business to reach market success.

# Rapid Application Development

## The Impact of Low-Code and No-Code



### Build Applications Faster, Better and Cheaper without Compromise.

Low-code and no-code capabilities have the potential to shave huge chunks of time off of developers' work, allowing them to prototype, test, and deploy tools at a rapid speed. These platforms speed up development by allowing developers to skip repetitive, mundane work and automate technical tasks.



**70%** reduction in costs and effort of application development

Source: Forrester Total Economic Impact

**40%** reduction in costs and efforts of ongoing management and maintenance

Source: Forrester Total Economic Impact

**15%** increase in overall user productivity

Source: Forrester Total Economic Impact

**200%** or more return on investment (ROI) within three years

Source: Forrester Total Economic Impact

Learn more about how SSTech helps companies use innovative technologies. Visit <https://sstech.us>

# Rapid Application Development

## The Benefits of Low-Code and No-Code



### Improved Agility

Apps built with low-code and no-code platforms help organizations become more agile. Visual design that allows drawing instead of coding can exponentially speed development.



### Better Customer Experience

With low-code and no-code development, organizations can quickly adapt to market changes or customer needs. This allows an organization to provide a better and more relevant customer experience.



### Decreased Costs

Low-code development allows more apps to be built in less time. What used to take months can be reduced to days...even minutes. With low-code development, time is no longer a barrier to real innovation.



### Effective Compliance

Even with the global scale of ever-changing regulations, low-code and no-code development allow for quick changes so you can meet requirements and stay ahead of deadlines.



### Higher Productivity

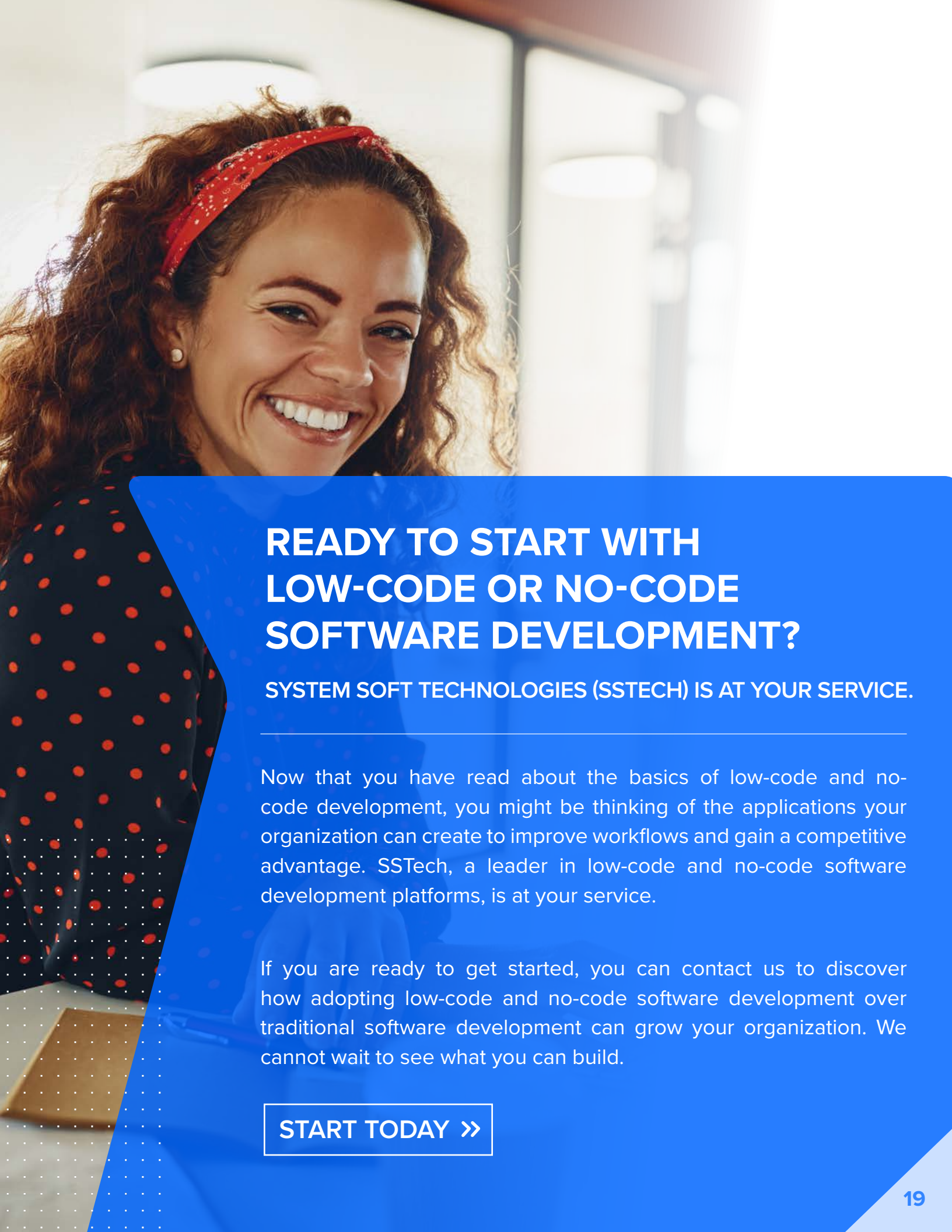
Low-code and no-code development allows more apps to be built in less time. What used to take months can be reduced to days...even minutes.



### Rapid Delivery

Develop complex applications for almost any business use case in a matter of weeks, not months or years. Low-code and no-code allow for rapid delivery.

Learn more about how SSTech helps companies use innovative technologies. Visit <https://sstech.us>



## READY TO START WITH LOW-CODE OR NO-CODE SOFTWARE DEVELOPMENT?

SYSTEM SOFT TECHNOLOGIES (SSTECH) IS AT YOUR SERVICE.

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Now that you have read about the basics of low-code and no-code development, you might be thinking of the applications your organization can create to improve workflows and gain a competitive advantage. SSTech, a leader in low-code and no-code software development platforms, is at your service.

If you are ready to get started, you can contact us to discover how adopting low-code and no-code software development over traditional software development can grow your organization. We cannot wait to see what you can build.

[START TODAY >>](#)



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