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LOW-CODE DEVELOPMENT: PATH FOR ACHIEVING EFFECTIVE ADAPTABILITY AND REMOTE WORK

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About This Report

Organizations today have made critical adjustments to their business, such as implementing work-for-home initiatives and other measures, in an effort to promptly and effectively respond to the emerging challenges as well as opportunities brought forth by the COVID-19 pandemic.

As technology and business budgets take a hit due to the economic crisis resulting from business lockdowns and closures, organization leaders face increasing pressure to adjust the way their business operates and collaborates, and even how their employees perform their daily work routines to be able to adapt to increasingly uncertain conditions and remain not only operational but also efficient.

But achieving business agility, flexibility, and adaptability is no simple feat. It takes leadership and courage from top management as well as the support, collaboration, and hard work from the rest of the organization.

From migrating from on-premises systems to private, public, or hybrid clouds to modernizing financial and operational applications, the departure from what was previously the typical way of doing business may now be the first significant step on the path to achieving greater and more efficient agility and adaptability. This step includes the ability for efficient remote work and effective collaboration via the use of low-code development platforms that permit the development of solutions that can adapt more simply, quickly, and effectively to new processes and/or business conditions.

This brief report explores how new technologies in development such as low-code mechanisms can have a direct impact on creating effective ways to enable and expand remote work and thereby permit an organization to address their pain points and achieve increased business agility and adaptability.

Introduction

As the world adjusts to the new reality of living and working, pressure mounts on many organizations to ensure their business can keep operating, with their systems running at utmost capacity, their lines of communication and collaboration open and effective, and their employees working as efficiently as possible—all with security at top of mind. As we have witnessed, technology is playing a fundamental role in allowing businesses to not only survive but also thrive during these days of radical changes to the way we live and work.

One radical change involves the increased consumption of technologies that enable employees to work remotely (from home, a hotel room, or any other location outside the office). While these technologies were already available before the pandemic, they have since dramatically increased in demand to meet the need of all personnel for full access to their software working tools from any remote location. To provide just a few examples, think of C-level executives attending virtual meetings, service agents attending calls and solving client issues, and information technology (IT) staff addressing requests, managing systems, and solving issues from different locations.

As these new and unusual business conditions place demands for more effective technology such as networking and communications systems that can adapt to these new conditions and remain fully operational, it is incumbent upon companies to have more efficient ways to rapidly design and deliver applications that can provide seamless services to people working remotely.

One of these technologies is low-code application development platforms. These platforms can add new and enhanced capabilities for enabling faster, easier, and better ways for organizations to increase the efficiency of their remote workforce.

This report takes a close look at the capabilities of low-code development platforms and presents the challenges, benefits, and opportunities associated with this technology for permitting more efficient remote working.

Business as "Unusual"?

While during the past decade myriad technologies have emerged or evolved to improve remote working—from more secure business-to-business (B2B) and efficient virtual conferencing and meeting technologies to more robust enterprise mobile technologies—there has never been a time when remote working is as crucial to business sustenance as it is today. Although these technologies have been well established in the business environment for quite some time, current needs have forced organizations to invest more heavily in their development to enable most workers to conduct business as usual within such unusual times.

Not too long ago, many organizations already had some degree of control over elements of remote working such as workers' access to virtual meetings as well as mobile access to well-established enterprise solutions. Yet over the past year, exceptional circumstances have called for organizations to take further steps to integrate these services more tightly and to enable these companies to adapt

faster to unusual circumstances, calling for frequent and oftentimes substantial changes to existing and new applications.

Whether this work involves optimizing a business process, increasing flexibility for remote access, embedding analytics into existing applications, or redesigning user interfaces to make them more suitable for remote access, organizations need to count on reliable and agile ways to speed the design, development, and deployment cycle for applications in these challenging and rapidly changing times.

Under this new perspective, low-code development platforms and technologies have the potential to boost organizations' efforts to increase the efficiency of remote work. As such, they are becoming key facets to the success of remote work and potential increased demand for low-code solutions within many organizations. So, what are these solutions and what can they offer in the context of remote working?

What Is a Low-Code Solution?

Low-code solutions have been gaining momentum and adoption rates across many organizations given the maturity and robustness of these types of solutions and the increased need for more efficacy in software development projects by businesses worldwide.

Simply put, a low-code application solution provides an environment for the design, development, and deployment of new applications by providing a set of visual tools that enable developers to create new applications using little or even no programming code.

In a way, low-code and no-code approaches could be considered as the next step in the evolution of programming languages.

From low-level cryptic assembly language to high-level languages such as C, Java, and Python, much expertise and coding are required to be able to develop applications. This process is time-consuming and is often neither flexible nor highly adaptable and requires skilled application developers to produce robust and powerful applications.

So, low-code solutions aim to significantly simplify and speed up the application development process to enable faster and straightforward development of applications.

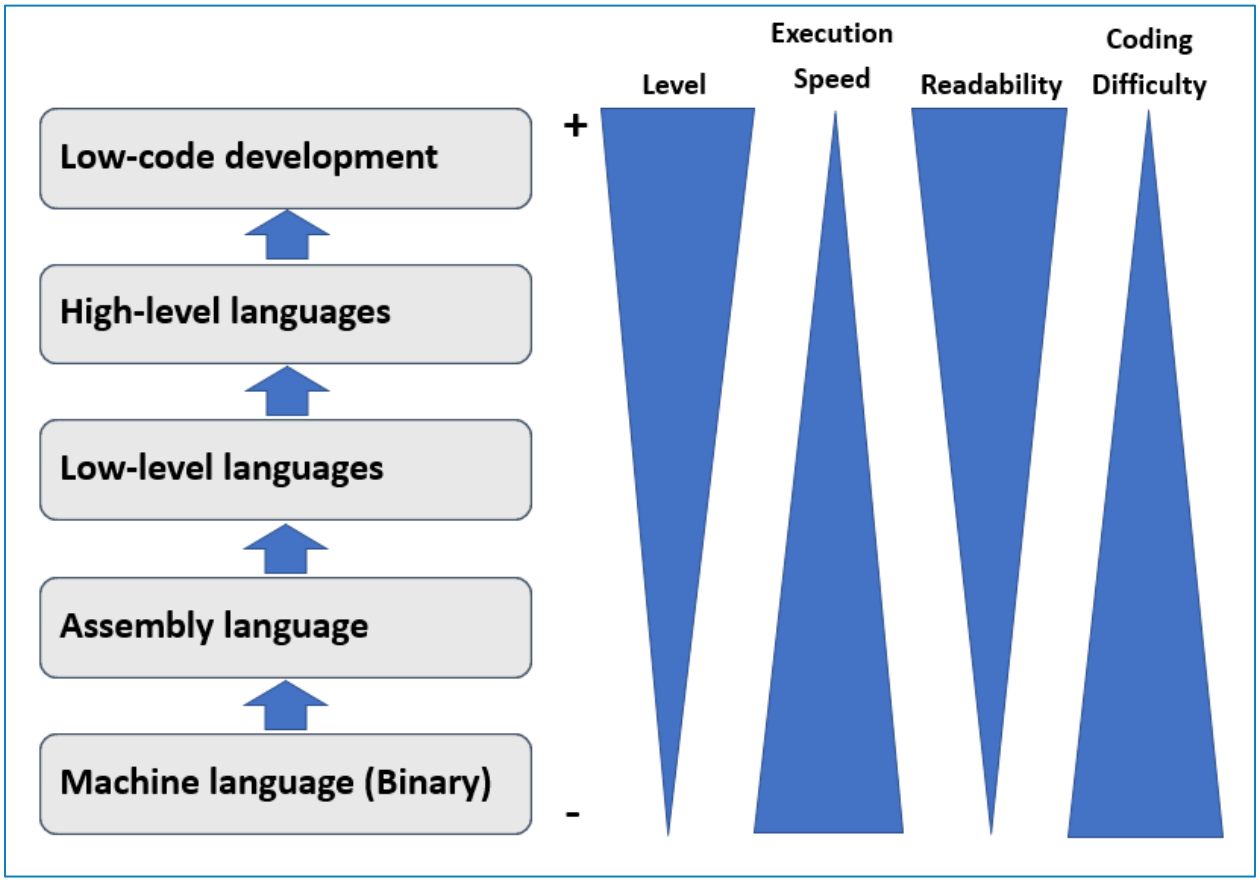

Figure 1. Main differences between programming languages

As we can see from figure 1, the main goal of low-code solutions is to strip from the software development process the implicit complexities inherent with common programming languages such as C and Python, including the hefty learning curve of learning the language and the time-consuming process of generating the code. Low-code solutions aim to enable application development by employing, instead of code, a visual-design approach where users and developers assemble and order application elements (forms, data fields, charts, and others) to form a new application using as little code as possible—facilitating the widespread availability of software development within an organization.

Low-Code Development and Remote Work: Challenges and Opportunities

Being able to re-think and re-design the way organizations adapt and create their new software solutions for enabling the new "remote working" becomes essential to business viability. Yet it is important to consider that the adoption of low-code strategies and solutions carries challenges (or concerns) as well as growth opportunities.

Challenges or Concerns

While there is increased interest in acquiring low-code platforms, some organizations understandably have concerns as well as challenges to overcome to ensure they succeed with a low-code platform deployment.

In general, we can group the challenges into three main categories: governability, functionality, and of course, security, particularly in the context of enabling remote work.

Governability

One of the foremost concerns of deploying a low-code development platform is making sure the organization will be able to select a platform with the right capabilities to enable them to achieve their three main goals for application development:

- Establish the right policies to ensure users and developers will be able to easily develop modules, components, or applications that comply with existing requirements for software quality, reusability, maintenance, and security while focusing on the business logic required to achieve the main objective of the software.
- Ensure these new functional software components will have the necessary elements for enabling agile and rapid development and change according to new business conditions as well as for guaranteeing universal and secure access to internal and external users as needed.
- Ensure the low-code platform will integrate as efficiently as possible with all the existing and new solutions in the enterprise's software stack to enable IT and business teams—regardless of who generated and owns the code—to comply with the company's existing or new standards.

Functionality

A key concern of organizations deploying low-code platforms has to do with potential functionality limitations when they have extensive software development requirements. The fear is that once deployed, low-code platforms might not be equipped with the necessary functionality capabilities to enable them to adjust applications to new business and operational needs in an effective, easy, and secure fashion.

To overcome these issues, organizations need to make sure they conduct the following:

- Full evaluation to determine which platform will functionally fit with the organization's current and likely future demands of the business, with special emphasis on the platform's ability to enable the development of agile, flexible, and extensible applications.
- Selection of a solution that can be debugged flexibly and effectively, so that both the front-end and back-end portions of an app can be effectively cleaned and debugged.
- Deployment of a platform that will be able to, as apps grow and get more complex, remain agile, and perform as efficiently as possible.
- Use of a platform that meets the expectations for dealing with complex workflows that involve heavy remote and onsite interactions.

Organizations will need to overcome the above core challenges in order to increase their chances of successfully implementing and deploying a new low-code application development platform.

Security

Another key challenge associated with all low-code development efforts relates to their security features, especially if this is set to enable remote work across an organization. Two specific challenges concerning security are these:

- IT staff have the potential difficulty of monitoring the tools and apps that employees develop and ensuring that security standards continue to be met. They need to improve development security standards and select a low-code platform that highlights security features, including

opting for centralized security approaches such as selecting a solution hosted in the cloud, via either a public or private model.

- There is a potential for lack of oversight, control of movement, and security of the data collected and processed by low-code applications. Organizations need to ensure the novel low-code development platform exhibits strong features for data control and auditing options as well as for testing and sandbox capabilities, so they can run extensive tests and provide data security assurance.

Security plays a key role, particularly in the context of remote work, where data and applications will be used and run both within the organization and outside of the organization.

Benefits and Value

Once these and other challenges have been overcome, organizations may be in a position to fully exploit the plethora of benefits from the proper and thoughtful deployment of a low-code platform. As companies engage with the development of low-code applications for mixed remote and on-site work environments, some of the benefits they are likely to see include the following:

- Easily building agile and easy-to-use applications that can be put into production faster and are flexible enough to readily change according to new business conditions.
- Easily planning for and creating a strategy based on the business while IT follows through as a highly efficient service provider.
- Incorporating, or enabling integration with, new advanced technologies such as artificial intelligence (AI) within more efficient, intuitive, and overall “intelligent” applications.
- Achieving universal accessibility to the extent possible to provide full-time, all-place, and all-access to key business process applications.

Organizations stand to gain these and other benefits from successfully implementing a low-code development platform across the business.

Conclusion

The COVID-19 pandemic has forever changed the way businesses operate by enabling a remote workforce to efficiently and effectively maintain business operability. Organizations have thus placed intense pressure on their IT teams to keep business securely running and all communications open with both internal and external parties.

Low-code development platforms are increasingly coming of age as potential solutions to current and upcoming work challenges and the need for continuous process improvements—bringing time and place transparency to process execution and remote work environments.

Lastly, low-code development platforms are being increasingly seen by players in the software industry, from users to providers, as the final vehicle to bringing a true Lego-like experience to constructing software, an ideal scenario that fits well with the work-from-home reality of today's corporate environment.

About the Author

Jorge García is TEC's Principal Analyst, Business Intelligence (BI) and Data Management. He has more than 20 years of experience in all phases of application development, database and data warehouse (DWH) design, as well as 9 years in project management, covering best practices and new technologies in the BI/DWH space.

Before joining TEC, García was a senior project manager and senior analyst developing BI, DWH, and data integration applications with Oracle, SAP Business Objects, and data integration. He has also worked on projects related to the implementation of BI solutions for the private sector, including the banking and services sectors. He has had the opportunity to work with some of the most important BI and DWH tools on the market.

García is a member of the Boulder BI Brain Trust.

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