IDC ANALYST CONNECTION

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The Rise of Low-Code Platforms and Modern Disruption

January 2017

In recent years, information technology (IT) has moved from the back office to the front office and has started to permeate every aspect of business, embedding itself into people's personal lives and business workflows. The most recent intensification and broadening of this wave is often described as "digital transformation" (DX) and essentially puts information technology and software specifically at the heart of business differentiation and success. Thus the competency to construct highly customized applications to support internal business process or customer engagement has become an important area of innovation. In this context, software development capabilities are playing an essential role in business development and innovation and are increasingly being supported out of business unit budgets.

The following questions were posed by Appian to Al Hilwa, research director for IDC's Software Development group, on behalf of Appian's customers.

Q. What are low-code platforms, and why are they important?

A. Low-code platforms belong to a category of application development tools and environments called model-driven application platforms. Generally, model-driven platforms, whether offered for on-premises deployment or provisioned in the cloud (platform as a service or PaaS), enable the construction of applications while working with higher-level abstractions more relevant for humans than machines. Such platforms can have different areas of focus (e.g., mathematical or statistical modeling, engineering design, or business processes). Model-driven platforms focused on business applications deal directly with business concepts such as customer data or process workflows. These platforms tend to significantly lower the amount of code written by application builders and are thus being increasingly positioned as low-code platforms.

Q. Why have low-code platforms become important in recent years?

A. Interest in model-driven development tools and environments goes back to the days of mid-20th-century computing when early high-level programming languages were developed to make computers more useful and to simplify the highly complex task of writing machine code for developers. Business-oriented low-code platforms can be traced back to the 4GLs and rapid application development (RAD) tools that emerged in the late 1970s. The category has continued to evolve, and the technologies have become more and more effective over the years and have been adapted to new platforms and delivery modes such as mobile and cloud.

We are now in a highly intensified period of digital transformation requiring an up-leveling of software competency by all businesses. The growth of software development skills has not kept up with this new focus on software, and the pressure on developers to be more productive and agile has intensified. Thus the focus on all manner of tools and platforms that can help existing developers not only work more quickly but also work more effectively with the business units they serve is giving rise to significant renewed interest in low-code platforms.

Q. What should enterprises look for in low-code platforms?

A. Low-code platforms come in many varieties and styles and present users with an array of new concepts and approaches. Although some of the environments have similarities, they are not standardized and are essentially premised on proprietary innovations that aim to make application construction simpler and faster. Thus the key criterion in evaluating low-code platforms is evidence that these platforms have been used effectively and successfully by customers in the field. A strong portfolio of detailed case studies and the availability of references for discussion are essential steps in any evaluation.

In addition to considering customer success stories, enterprises should carefully assess the capabilities and design focus of a specific low-code platform, ideally with some proof-of-concept implementations. The higher level of abstraction in model-driven platforms in general calls for significant domain specialization. For enterprise-grade business applications, strong capabilities in process management, data management, and scalability are essential. Because of the highly differentiated approaches used by different low-code platforms, not all will meet these requirements, and it is common to encounter application scenarios not well-suited for a particular platform or not considered by the platform design team.

Next, a set of traditional attributes of all applications should be explored, such as portability and support for mobile devices or cloud back ends, the performance of the constructed applications, interoperability with other commercial application systems (e.g., ERP or CRM), data stores (e.g., relational databases), or legacy systems and the general level of customer support and orientation of the vendor.

Application life-cycle support is another area that is increasingly important for low-code platforms because most applications are intended to be in production for several years and constantly evolved and redeployed for the duration of their use. Thus a focus on application testing, deployment, and maintenance, as well as up-stream design and requirements gathering, is becoming important.

While this is not a comprehensive list of evaluation criteria, given the varied nature of enterprise needs, one key issue is the degree to which the application platform allows applications to interoperate with other applications built with other tools or platforms (e.g., Java or .NET). This can prove crucial in terms of reusing valuable components built with low-code platforms in existing code bases or new applications constructed through different approaches.

Q. Are low-code platforms exclusively for business users?

A. Low-code platforms provide productive abstractions no matter what type of user. Platforms catering solely to the nontechnical "citizen developer" are often not suited to enterprisewide application deployment. Ideally, a low-code platform would offer an on-ramp for citizen developers to quickly build something while providing more power for more technical users to extend and enhance those applications. Low-code platforms can make the process of constructing and delivering an application faster, easier, and generally more productive than using lower-level tools. However, the responsibility for understanding user requirements and business needs or mastering the complexity of business rules remains the same no matter what tool or platform is used to create applications. Technical rigor is needed to create effective enterprise-grade applications in low-code platforms, and this requires training and experience. Given the increased level of business engagement in technology that we have seen in recent years, it is understandable that many new custom application initiatives are emerging in business units and outside of IT. Low-code environments give these business units the ability to harness talented analysts and domain experts for developing or at least product managing new applications even if developers are recruited to use the platform.

In many situations, IT organizations get involved in the low-code platform selection process and often contribute the developer skills needed to develop the applications for, and in collaboration with, the business units. Well-designed low-code environments can be highly effective and agile in the hands of traditionally skilled developers who are able to leverage the abstractions to deliver applications faster.

Q. What are the key trade-offs in using low-code platforms?

A. A large number of low-code environments are on the market, and they offer diverse approaches. Because low-code platforms have to provide an abstracted application model for business data and process workflows, they tend to develop unique concepts and approaches to application construction. These approaches may be effective for certain types of applications but not for others. This is known as the platform range problem. It is important for enterprises to evaluate the reference set of production applications developed with the platform to make sure that the applications they intend to develop are in the range of the platform being evaluated.

Because low-code platforms come in many varieties and styles, the skills needed to use these platforms effectively are specialized and do not carry over from one platform to another. Similarly, the applications that are constructed with the platform require the specific supplied runtime to work and cannot be migrated in a useful and reusable way to other platforms. This is generally known as the problem of lock-in in the IT industry and has made it difficult for any single low-code platform to become dominant or a de facto industry standard. The creative ideas and approaches used by these environments to deliver productive abstractions have to be maintained and evolved by the platform vendors to take advantage of new industry innovations such as mobile devices and cloud provisioning or even to integrate with modern popular packaged applications. Thus it is important that vendors of low-code tools be vetted thoroughly in terms of their innovation in and commitment to the space, their focus on customer service and support, and their business scale and projected financial longevity.

One of the key success factors in the adoption and use of low-code platforms is a good understanding of application requirements. Enterprises need to have a handle on their custom application development requirements both at present and over a two- to three-year planning horizon, and they must determine that any tools selected pay back in terms of return on investment within this time frame.

ABOUT THIS ANALYST

Al Hilwa serves as research director for IDC's Software Development group. In this role, Mr. Hilwa provides thought leadership, expert opinion, analysis, research, and competitive intelligence on all issues related to application development technologies, processes, and audiences. Mr. Hilwa also offers technology and vendor advice to investment and technology firms as well as Global 2000 end-user companies that subscribe to IDC's services.

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