



**LOW-CODE
WITHOUT LIMITS**
**10 KEY CAPABILITIES
FOR SUCCESS**



DIGITAL DISILLUSIONMENT

- BUSINESS FRUSTRATED BY PACE OF DIGITAL INNOVATION
- IT TEAMS UNDER-RESOURCED TO MEET DEMANDS WITH CURRENT APPROACHES

Businesses understand both the opportunity that digital innovation provides and the competitive risks if they fail. Unfortunately, current approaches to application development have left both business and IT teams frustrated. The business is not able to get the digital tools and innovation they need to drive the business and application development teams are overworked trying to deliver with their current tools, processes, and infrastructure.



LOW-CODE PROMISE

- VISUAL, DRAG-AND-DROP TOOLING FOR RAPID APPLICATION DEVELOPMENT
- EXTEND DIGITAL INNOVATION ACROSS COMPANY
- DELIVER APPLICATIONS 3 TO 10 TIMES FASTER VS TRADITIONAL DEVELOPMENT



This is where the promise of rapid application delivery comes in. The ability to quickly design and develop web and mobile applications using visual, drag-and-drop tools that speed development and extend the ability to innovate to a broader set of people. This approach opens up the option for citizen developers and line-of-business teams to get more involved in application delivery, possibly to the extent of owning certain application releases 100%. Low-code can truly change the digital innovation dynamic with application delivery that can be 3 to 10 times faster than traditional application delivery approaches.

LOW-CODE LIMITS

- LIMITS OFTEN AREN'T OBVIOUS UNTIL AFTER DEPLOYMENT
- LIMITED EXTENSIBILITY, FLEXIBILITY, CUSTOMER APP UX, NATIVE MOBILE & MODERN WEB SUPPORT, & SECURITY



The bare minimum requirements of low-code solutions are that they enable fast app delivery and are easy to use. With the excitement of being able to quickly and easily build and deliver an application, many companies don't look beyond those capabilities to see what limits they may run into as they make a decision to adopt a new application development platform. It is often 6 to 9 months after adopting a low-code platform when they start to understand potential critical problems like a rigid architecture, lack of extensibility, inadequate UX for B2C apps, limitations in mobile functionality, outdated web capabilities, weak security, and more. By the time these become obvious it can be hard to change.

LOW-CODE WITHOUT LIMITS

- FAST AND EASY APPLICATION DEVELOPMENT
- LOW-CODE WITHOUT LIMITS REQUIRES ADDITIONAL CAPABILITIES



It is possible to get the amazing potential of low-code without limits! As a starting point any low-code platform has to deliver applications fast and be easy to use. But beyond that there are a set of additional capabilities you need to get a low-code development platform that can both deliver tactical solutions and be a platform for digital transformation. It should give you options from simple, no-code applications for the line of business to rapid delivery of mission critical consumer-facing applications if needed.

TO DELIVER A LOW-CODE PLATFORM WITHOUT LIMITS, A SOLUTION NEEDS TO ADDRESS THE FOLLOWING 10 CRITICAL CAPABILITIES



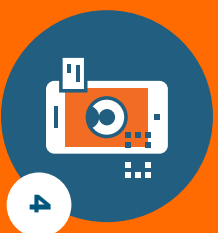
1
Start Fast
Stay Fast



2
Maximize
Developer
Productivity



3
Data
Integration
Simplified



4
Modern &
Engaging UX



5
Native
Omni-Channel



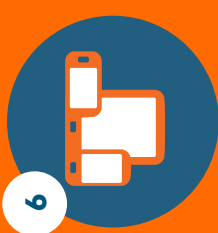
6
Automated
& Integrated
DevOps



7
Effortless
Security &
Protection



8
Unconstrained
Innovation



9
Unified Platform
for Employee
& Consumer
Applications



10
Limitless
Flexible &
Scalability

The time savings associated with low-code development is potentially significant for companies trying to release software before their competitors. For example, 31 percent of application developers Forrester surveyed cited challenges in meeting business requirements in time as a result of using traditional coding with programming languages, frameworks and middleware to build bespoke applications.

CIO.com



CAPABILITY 1

Start Fast.

Stay Fast.

QUICKLY DESIGN AND DEVELOP WEB AND MOBILE APPLICATIONS FROM PRE-BUILT COMPONENTS IN A VISUAL CANVAS. UPGRADE, MAINTAIN, AND EXTEND APPLICATIONS EASILY TO STAY FAST

The fundamental capability that a low-code platform needs to deliver is the ability to quickly design, build, deploy, and update both web and mobile applications. This means a design and development environment that includes:

- A visual design and development environment with real-time updates
- Access to a rich library of pre-built microapps, templates, components, UI elements, & data connectors
- The ability to build web, iOS and Android apps from a single project or code base
- Simple integration to data including drag & drop placement and visual mapping between the application and the back-end data
- The ability to import Sketch and Photoshop designs and autogenerate application UI code
- Rapid user and stakeholder feedback from live prototypes
- Near day-zero automated operating system updates
- Abstraction layer between UI/business logic and data enabling independent changes in either
- Add OSS, channels, form factors or extensions quickly from initial project



CAPABILITY 2

Maximize Developer

Productivity

IN-PRODUCT GUIDED TOURS, REUSABLE COMPONENTS AND TEMPLATES, ONE-CLICK CLOUD BUILDS, AND EASY DATA INTEGRATION WITH VISUAL DATA MAPPING TO MAXIMIZE PRODUCTIVITY

Users should be able to quickly pick up the platform and deliver their first application via an intuitive user interface, in-product guides, and self-service tutorials and help content. It needs to enable developers to build an application or component for one platform (e.g., web) and deploy the same application or component to any other channel, OS, or form factor (e.g., iOS or Android, phone or tablet) with little incremental work. Pre-built component libraries, templates and samples also drive productivity. Finally, when the application is ready, the developer needs to be able to quickly build, test and publish the application. Key productivity capabilities include:

- In-product guided tours and tutorials for initial application development and more detailed features
- Low-code development for native mobile apps that is as easy as a web application
- One-click application builds in the cloud without taking the application offline
- Integrated inline debugger
- Intuitive help from community support, online training and videos, and code samples
- The ability to quickly create responsive web and progressive web applications, native mobile (iOS, Android, Windows) & hybrid apps without rework from a single project
- Simple integration between the data systems and the application
- Simple configuration of business logic and workflow
- Fast development including automated build and testing DevOps capabilities



CAPABILITY 3

Data Integration Simplified

INTEGRATE TO ANY BACK-END DATA SOURCE AND ORCHESTRATE DATA COLLECTION & TRANSFORMATION ACROSS MULTIPLE SYSTEMS

While building an application, the user interface often gets the most attention. However, back-end data integration and orchestration are often what requires the most time and effort. In addition, the idea of providing the right information, at the right time, in the right way is often core to the value an application provides and the user experience resides. This requires the ability to integrate to any back-end data source and orchestrate data collection and transformation across multiple systems without impacting application performance. The user needs:

- The ability to get data from systems like SAP, Salesforce, Oracle, databases, and others without extensive coding or knowledge of their APIs
- Simple data access via REST, SOAP, JSON or Swagger
- Auto discovery and connection to backend system data fields and objects
- Visual mapping to connect the app to the backend data
- The option of in-application data storage if appropriate
- Server-side data orchestration and transformation across multiple backend systems
- Auto translation of data formats to lightweight JSON packets
- Built-in API Management layer
- The ability to connect anything to everything



CAPABILITY 4

Modern and Engaging User Experience (UX)

DESIGN BEAUTIFUL, MODERN, RESPONSIVE AND PROGRESSIVE WEB, NATIVE MOBILE, IMMERSIVE, AND CHAT EXPERIENCES WITH UX BEST PRACTICES BAKED IN

The ability to deliver a great user experience can be “make or break” for many mission critical business-to-employee (B2E) applications and most business-to-customer/consumer (B2C) applications. But it can also be critical for adoption of simpler B2E applications as well. Users have no patience for long load times, crowded screens, and difficult interactions. They also expect the ability to access all the capabilities of the device they are using including things like messaging, geolocation, or offline capabilities when appropriate. A great user experience starts from:

- A component library with built-in UX best practices
- Modern Responsive Web (with Progressive Web Application [PWA]) development without coding
- Full access to all of the design and functional capabilities of the underlying OS and device
- The ability to create powerful, performant native user experiences for iOS and Android
- Applications that work offline and are fast even in low bandwidth environments
- Dashboards and analytics to understand the user journey and any problems





CAPABILITY 5

Native Omni-channel

BUILD AND PUBLISH 100% NATIVE IOS, ANDROID OR WINDOWS MOBILE APPS, AND RESPONSIVE AND PROGRESSIVE WEB APPLICATIONS; PHONE, TABLET AND DESKTOP — ALL FROM A SINGLE CODE BASE

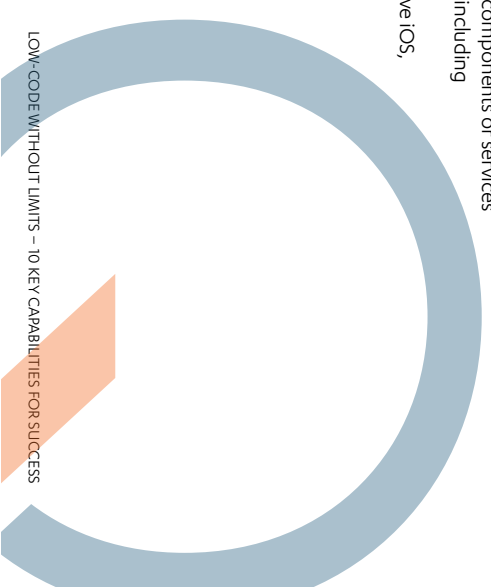
Native omni-channel is having the ability to develop applications directly for the specific operating system or format the target device runs on. It also means that it can run “natively” on each system and as a result leverage all the features, performance and innovation provided by the OS, be it native mobile or web.

For web applications a huge paradigm shift is occurring with Progressive Web Applications (PWAs). First pushed by Google but now supported by all the major browser companies (including Apple), PWAs add key capabilities to web applications including offline capabilities (called Service Worker), the ability to “install” a web application on a phone or desktop, caching for faster performance, and in-application messaging among other things. Almost every web application could benefit from one or more of these capabilities and analysts are predicting rapid adoption of the technology, as can be seen in Forrester’s report “It’s Time to Make Every Web Application a Progressive Web App.” Just like it doesn’t make sense to build a non-responsive web application, now it would be crazy to adopt a low-code platform that doesn’t fully support development of PWA applications as part of a modern web development strategy.

Similarly, when you are picking a low-code platform to drive digital innovation why would you limit your mobile capabilities? Even responsive web mobile apps have huge limitations in user experience options, access to key device features, functionality in no- or low-bandwidth environments, and many others. “No Limits” means having the power of a true native iOS, Android, or Windows app when you need it.

To have a low-code platform without limits supporting native omni-channel development it should include:

- Lightning fast web experiences via built-in best practices like PWA caching
- Responsive web visual design canvas with breakpoints and device-specific views
- Full support for Progress Web Applications (PWAs)
- A single design and development environment generating JavaScript code with the ability to customize for unique capabilities provided in iOS, Android, and Windows
- Access to every API and feature provided by the mobile OS vendors
- Drag and drop development that incorporates things like iOS Human Interface Guidelines and Android Material Design automatically into the design layouts and features
- Support for thousands of device models with service level agreement (SLAs) guarantees for OS updates and new device support running the native apps
- The ability to easily integrate existing code, components or services created in other development frameworks, including React.js, Angular, and more
- Automating the build and publishing of native iOS, Android or Windows mobile apps





CAPABILITY 6

Automated and Integrated DevOps

ACCELERATE THE APPLICATION DEVELOPMENT PROCESS WITH INTEGRATED BUILD AND TESTING TOOLS ACROSS THE DEVELOPMENT LIFECYCLE

A big part of accelerating digital innovation and application delivery is streamlining and automating the end-to-end development process including source control integration, automated application builds with continuous integration/continuous development (CI/CD), and test automation. This automation makes development both easier and higher quality, and has a very tangible return on investment. A low-code platform should include DevOps capabilities like:

- One-click cloud build
- Automated code build for testing (CI/CD)
- Integration to a source control system
- Automated application testing
- The ability to host and deploy applications from a private enterprise app store
- A single automated build and publish process across all target channels
- Operational consoles and performance monitoring
- Notifications on any API errors and latency



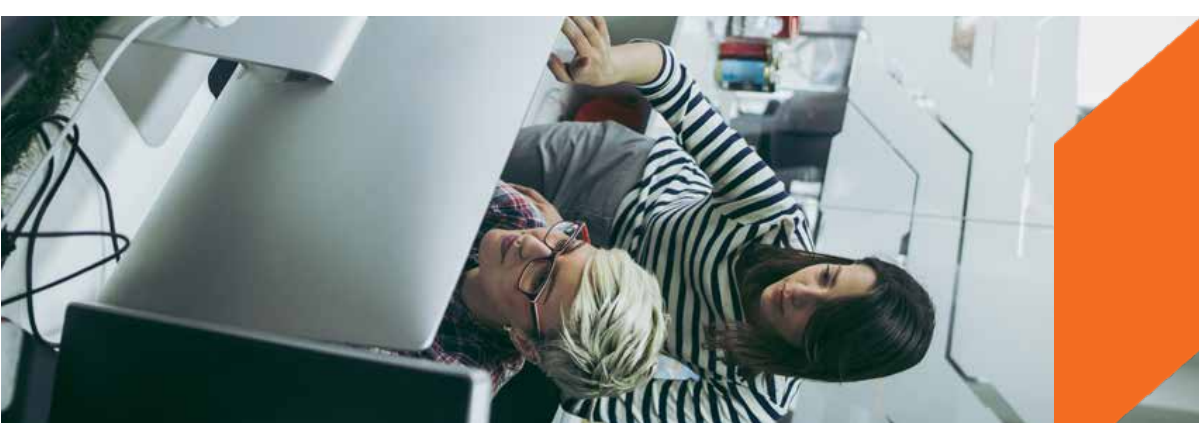
CAPABILITY 7

Effortless Security & Protection

MULTI-LAYER SECURITY THAT DEFENDS AGAINST COMPROMISE, DETECTS AND REACTS TO ATTACKS WITH APPLICATION AND IDENTITY PROTECTION

Every single low-code platform vendor says they are secure, but what security they actually provide varies massively. Just like locking your front door or having armed guards protecting a secure vault can both be considered security, they are worlds apart in reality. Leveraging built-in browser or device encryption is a must, but it is nowhere near the level of security that is needed given the ever-growing sophistication of today's hackers. For security to be adequate it has to provide a multi-layer defense that anticipates the multiple attack approaches used by hackers today. It can get technical, but at a minimum it has to defend against attacks, detect attacks when they occur, and react to defend against them when detected. Each of these categories should include:

- Defend against compromise with:
 - Advanced obfuscation making it harder to know how and where to get access
 - Encryption with whitebox cryptography (a layer above the OS encryption)
 - Pre-damage checking, self-defending and tamper resistant to prevent changes to application code or structure
 - Metadata removal limiting reverse engineering of application & data
 - Hardening against malware attacks
- Detect attacks at runtime with:
 - Checksums, swizzling and hook detection to identify unauthorized code changes
 - Debug detection to tell when someone is trying to analyze the application structure
 - Resource verification preventing replacement of valid data or services sources
 - Jailbreak/root detection of compromised devices
- React to defeat attacks by:
 - Automatic responses when attacked or compromised
 - Ability to self-repair and alert or phone home when an attack is detected
- Advanced identity management with secure token, trust certificate and biometrics management
- Protection for backend systems and APIs with change audit logs, granular API level security, client SSL certificate pinning, two-way SSL certificates, and automated HTTP integrity checking





CAPABILITY 8
**Unconstrained
Innovation**

IN-PLATFORM INTEGRATION FOR CHAT BOTS, ARTIFICIAL INTELLIGENCE (AI), AUGMENTED & VIRTUAL REALITY (AR/VR) AND MORE: EXTEND INNOVATION TO A BROADER SKILL SET

Innovation is a constantly changing journey - not a destination - and any low-code platform needs to be designed to make new and cutting-edge technologies simple and accessible to users. You shouldn't have to be an expert in chat bots, natural language processing (NLP), virtual or augmented reality, or artificial intelligence to incorporate these into your applications where appropriate. Many of these technologies are more mature, affordable, and accessible than many people realize: they just need an easy way to access them as well as future technologies still being developed. A low-code platform with next-gen technologies in mind should include:

- Support for chat bots, NLP, AI/machine learning, AR, and VR inside the development environment or from a pre-built library of microapps
- The ability to experiment with a digital experience innovation lab or innovation "proof of concept as a service" at a low cost
- Proven examples of delivering next-gen technologies at scale
- Native Apple and Android mobile AR support (AR Kit for iOS, AR Core for Android)
- AI-based Instant Language Translation

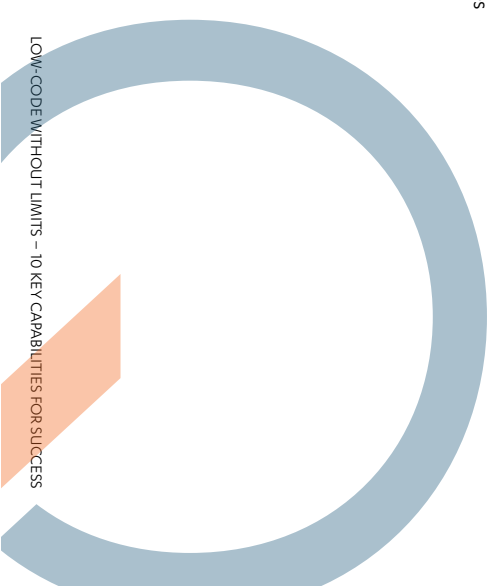


CAPABILITY 9
**Unified Platform for Employee
& Consumer Applications**

PROVEN APPLICATION DELIVERY FROM SIMPLE EMPLOYEE APPLICATIONS TO MISSION CRITICAL BUSINESS-TO-CONSUMER APPLICATIONS

There is a reason that most low-code platform vendors have very few, if any, customer examples of mission critical business to consumer (B2C) applications – their capabilities are limited to the point where they can't deliver the user experience, performance, scalability, reliability, and security it takes for a company to bet not only their financials but also their corporate reputation on. Look for a lack of customer B2C references and examples of these types of rich experience and mission critical applications to avoid these limited solutions. It is also a good indication of where you'd likely run into limits as you build more sophisticated and mission-critical business-to-employee applications. The platform should have:

- Customer examples of consumer-facing applications at scale in industries like financial services, retail, insurance, travel, and more.
- Proven scale and reliability (e.g., have they run a retail app through Black Friday)
- Extensibility to integrate critical 3rd party technologies like authentication services
- Easy access to any and all native device capabilities
- User engagement services including:
 - User Segmentation
 - Campaigns
 - Push/SMS/Email messaging
 - Geolocation triggered events
- Access to enterprise-grade application services that are configurable via a UI like:
 - Integration connectors
 - API orchestration & aggregation
 - Data transformation, optimization and caching
 - Identity services





CAPABILITY 10

Limitless Flexibility & Scalability

NEVER HIT A WALL AS YOUR DIGITAL SOLUTION GROWS WITH MORE APPLICATIONS, CHANNELS, USERS, FEATURES, OR APPLICATION SOPHISTICATION

For low-code platforms, scalability has a lot of dimensions – scaling as you get more applications, users, channels, features, or application sophistication. Any one of these can become a critical roadblock for speed, adoption and, ultimately, success. As they say, “hope isn’t a strategy,” and any low-code platform should be able to clearly define how they can scale and extend as needs expand. Examples of the types of capabilities required include:

- Modern, enterprise-grade architecture like the model-view-controller (MVC) structure
- No model-based application constraints
- High volume application development factory automation and integration with:
 - People and process best practices
 - Integrated source control
 - Automated build/continuous integration/continuous delivery (CI/CD)
 - Automated testing via a third-party or customer device farm
- Ability to extend with JavaScript coding incorporated into a low-code integrated development environment
- Ability to manage high volume, transactional workloads and data
- Cloud-based autoscaling and active-active failover
- Microservices and data object layer abstraction

CONCLUSION

Low-code development platforms have the ability to transform companies’ digital roadmaps, whether it is for one or two applications, or a broader digital transformation strategy. The promise is based largely on the improved speed and ease of use that they provide. What is harder to see initially is where you will end up hitting roadblocks down the road. It can be very difficult to invest the time and money in a new low-code platform only to find that you hit critical limits after you get past those first couple of applications. By carefully evaluating these 10 criteria, you can be confident that you will have a solution that gets you started quickly but that lets you keep accelerating as your needs and scope grow.

KONY QUANTUM – LOW-CODE WITHOUT LIMITS

Kony Quantum is a low-code platform that enables people and businesses to quickly deliver enterprise-grade applications without compromising on user experience, security, or innovation.

Now you can shift the way you work, simply. Rich, functional, engagement-driven: Kony Quantum makes your goals a reality and lets you build the applications you need on your terms.

With Kony Quantum, there are no limits. All you need is your imagination and a mission to create. Kony Quantum will do the rest.

[FREE TRIAL](#)

[LEARN MORE](#)

START YOUR KONY QUANTUM TRIAL

EXPLORE QUANTUM AT
KONY.COM/QUANTUM



For more information, please visit www.kony.com.
Connect with Kony on Twitter, Facebook and LinkedIn.
9225 Bee Cave Road, Building A, Suite 300, Austin, TX 78733
1.888.323.9630 | info@kony.com | kony.com

© 2019 Kony, Inc. All rights reserved.