Digital business demands new approaches to app development. Application leaders must deftly solve legacy app challenges, while infusing modern agile practices, design methodologies, disruptive technologies and a continuous quality mindset, to transform development strategies in the digital era.

Scope

Application development strategies shape the people, process and technology investments that drive the modernization and creation of innovative app experiences for digital business transformation.

It covers:

- Development team practices and culture to respond quickly to business needs
- Design methodologies to discover new business opportunities and drive customer value
- Development technologies to digitally transform processes and address multiexperience needs
- Quality mindset to change QA practices and culture to achieve continuous quality
More than 80% of enterprises are still in the early stages of digital innovation and have not achieved "scale." The typical enterprise application development organization evolves slowly over time. However, the external and internal forces that bring about change are growing and multiplying rapidly. The impacts of cloud, mobile, big data and social technologies already permeate application development, but new digital disruptions — in the form of IoT, AI, machine learning, blockchain, and conversational and immersive experiences — provide new and immediate opportunities, and are forcing organizations to change faster than ever before. In short, evolution is too slow to compete in the age of digital business; new digital DNA needs to be spliced in to truly transform development organizations.

Digital DNA consists of novel ideas, practices and technologies that fuse with existing base development activities to rapidly effect positive change. Application leaders must introduce new digital DNA using a bimodal approach to address digital disruption. Splicing in digital DNA will require:

- Application development teams to be more responsive and agile to support the fast-changing pace of digital business and the digital workplace.
- Digital design to be elevated to the forefront as a priority area of expertise for development.
Development technologies to evolve or be replaced to address new app opportunities.

A continuous quality mindset across development and IT operations to enable continuous delivery of engaging experiences.

Top Challenges and How Gartner Can Help

The application development organization is responsible for designing, creating and delivering rich, targeted and compelling user experiences in a timely and cost-effective manner. With the proliferation of digital devices and channels for customers, partners and employees, application leaders must methodically introduce new digital DNA in the forms of practices, methodologies, technologies and mindset changes. All these new activities are required in order for application organizations to deliver, at scale, a modern style of customer interaction and user experience that not only is more-efficient and frictionless, but also leads to higher satisfaction and value. Application leaders must think strategically about how IT and business stakeholders can work together to best achieve long-term change that results in new behaviors and business models.

The introduction of new digital DNA into development will be different for each organization, depending on the existing makeup and maturity of the four base activities (see "Improve Your Application Delivery With Gartner’s ITScore for Applications"). Gartner’s 2018 research will guide you through the challenges of identifying and adopting the right combination of digital DNA to accelerate digital business transformation.

How can we accelerate digital business by scaling agile and DevOps methods and facilitating citizen development?

Digital business transformation forces organizations to reduce the software cycle times between identifying a business need and having a deployed solution. In two 2017 Gartner surveys of agile and citizen development in the enterprise, the top driver of both initiatives was to increase speed to deliver apps and products. Without an effective strategy and adequate resources, development leaders can only watch as business leaders outsource their most vital initiatives, or try to go at it alone with "shadow IT" development efforts.

Your organization must leave behind traditional waterfall methods and utilize agile development, coupled with DevOps, as a strategic framework to scale and accelerate development. New digital DNA will be needed in the form of:

- New skills acquisition and developer augmentation, including employing AI and machine learning to augment developers and testers.
- New platforms, methodologies, languages and tools that facilitate consistent, effective agile practices.
- Reorganization of development teams as cross-functional groups, drawing from operations, testing/quality assurance (QA), business units and even customers/partners.

You must also enlist, empower and guide those outside IT — such as business analysts, marketers and HR professionals — to contribute to app innovation by converting shadow IT into citizen...
development initiatives. They need to implement a flexible development environment and a set of high-productivity tools that enable citizen developers to proactively participate in app exploration and delivery within defined boundaries. Citizen development will be a force multiplier for transformation, facilitating innovation at the edges of the enterprise by the employees themselves.

Planned Research

- Stop Scaling Agile by Descaling Your Work
- Post-Scrum Methodologies
- Survey Analysis: Agile in the Enterprise
- Scaling Digital Innovation by Identifying and Empowering Citizen Developers

How do we exploit digital design methodologies to maximize the business value of apps and experiences?

The way users experience an app increasingly determines its value and success. Insufficient investment in upfront digital design efforts can quickly undermine the expected business benefits, particularly in mobile apps and emerging conversational and immersive UIs. Poor app store ratings and negative comments on social networks can quickly turn user experience (UX) shortcomings into very public failures. Likewise, the consumerization of IT means that employees now have higher expectations of internal apps; they must not only be useful, but also delightful to use.

An app is the manifestation of a software packaging construct where value results from a specific, defined and sustained purpose, which is identified through people-centered design processes. Digital design is defined and influenced by design thinking, service design, user-centered design, and lean and agile UX. It is a methodology not only to develop apps, but also to find out what apps to create in the first place. You must emphasize digital design mastery in order for application development teams to succeed in finding relevant uses for new and emerging app technologies.

Without mastery of digital design methodologies, an agile development process alone does not automatically make the user’s experience of the delivered solution any better than other approaches. UX quality should be a key success criterion, and the success of an agile development project will hinge on investing time and effort into digital design, and involving digital designers in the product’s development. According to Gartner’s 2018 CIO Survey, 55% of top-performing organizations have UX designer roles, and 5% already have voice interaction designers. You should prioritize the digital design DNA (skills, staff and processes) that your organization needs to improve the resulting UX and meet the increasing expectations of customers.

Planned Research

- The Importance of a Digital Design Center of Excellence for Application Development
- User-Led Design for Multichannel Experiences
- The Future of Applications: Apps Facilitating Experiences
- **Best Practices in Designing Conversational UI**

How do we harness the continuous and ambient experience technologies, trends and tools disrupting our software development?

Modern development is about deconstructing monolithic applications, such as by leveraging mesh application and service architecture (MASA), and creating more purposeful and targeted apps running on the web and mobile devices. But new experiences across the digital device mesh are emerging that are usually outside of a traditional app experience controlled by the enterprise. User attention is shifting away from individual apps and splintering across emerging technologies, such as chatbots, virtual personal assistants, augmented reality (AR) and virtual reality (VR) experiences, and conversational UIs. Increasingly, apps will be informed by a wide variety of algorithmic-oriented libraries and platforms driven by bots. The app is no longer the final destination; thus, harnessing and exploiting these technologies will be crucial to thriving in the digital era.

You must get ahead of these fast-moving trends, working with architecture and endpoint teams to facilitate new interaction paradigms beyond the app. Application leaders must collaborate with business stakeholders to map out new user journeys — for both internal and external constituents — and acquire new skills to implement emerging technologies as part of a digital DNA transformation. Efficient digital experience development will also require the adoption of the appropriate tools, platforms and languages. Our research — including Magic Quadrants, Critical Capabilities and Market Guides — keeps you informed of such new technologies and changing vendor landscapes to guide your evaluation and adoption.

**Planned Research**

- Moving From Mobile to Multiexperience
- Building Digital Automation and Operations to Sustain Digital Transformation
- Development Strategy for Progressive Web Apps Versus Hybrid and Native Apps
- Using Machine Learning to Enable the Augmented Developer

How can we shift to a continuous quality mindset in order to improve our software solutions and shorten cycles?

A majority of enterprise application development organizations are struggling with the rising challenges of producing software of acceptable quality. A primary reason for this common problem is the fact that most application development leaders are mainly concerned with saving money on testing while trying to achieve more frequent releases. The bigger strategic problem to address should be about how development organizations can realize business advantages through DevOps practices that facilitate agile development, faster cycle times, fewer bugs and greater reliability.

Successful development organizations have abandoned conventional ideas of testing centers of excellence and shifted to integrating a continuous quality approach. They have also shifted focus from managing projects to managing products, and are striving for testing to be highly automated...
and integrated into the product team. A well-constructed automated test suite that is integrated into a continuous testing process will benefit not only agile projects, but also the traditional development counterparts. Moving forward, application leaders will need to leverage machine learning and AI services to improve development efficiency and business value delivery.

The transition to continuous automated testing changes the testing skill sets that are needed — an upheaval that can be a significant hurdle for any QA organization. It also impacts the relationship between organizations and their testing service providers. Moreover, according to Gartner’s survey on enterprise DevOps, a focus on people-related aspects is key to success, with team culture and utilization of correct leadership style as the two most essential factors for scaling DevOps initiatives.

You must drive automation in all areas of the application portfolio, but you will also need to remake your organization with new skills via training, hiring and effective partnering. The transition to continuous quality will drive new responsibilities for team members, and will require shifts in practices. This will create a major cultural shift that will be an obstacle for not only the application organization, but the business units that rely on it. Our research this year will focus on best practices, and understanding where and how to transition the QA organization to support the needs of digital business.

**Planned Research**

- The End of QA as We Know It
- Selecting Testing Tools to Support Continuous Quality for DevOps
- Culture Is Priority for Improving Quality
- First 100 Days as a QA Director in a Product-Centric IT Organization
Related Priorities

Table 1. Related Priorities

<table>
<thead>
<tr>
<th>Priority</th>
<th>Focus</th>
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<tbody>
<tr>
<td>IT Operations Transformation</td>
<td>This initiative focuses on the infrastructure and operational processes, technologies and human capabilities that enable desired business outcomes.</td>
</tr>
<tr>
<td>Modernizing Integration Strategies and Infrastructure</td>
<td>This integration initiative deals with the strategies, practices and technologies needed to build a pervasive, enterprisewide integration capacity that serves as the foundation for digital business.</td>
</tr>
<tr>
<td>Application Strategy and Governance</td>
<td>The application strategy and governance initiative encompasses key disciplines and concepts that application leaders must embrace as organizations evolve toward digital business.</td>
</tr>
<tr>
<td>Artificial Intelligence</td>
<td>This initiative equips organizations to understand, plan and adopt emerging artificial intelligence (AI) technologies for significant digital business outcomes.</td>
</tr>
<tr>
<td>Digital Workplace Program</td>
<td>A digital workplace program is a business strategy to boost workforce digital dexterity through an engaging and intuitive work environment.</td>
</tr>
<tr>
<td>Modernizing Application Architecture and Infrastructure</td>
<td>A modernized application architecture and infrastructure increases business agility, improves application usability and resiliency, and enables digital business.</td>
</tr>
</tbody>
</table>

Source: Gartner

Suggested First Steps

Some documents may not be available as part of your current Gartner subscription.

IT Leaders Coverage

- "Five Steps to Increase Development Release Velocity"
- "Scrum Is Not Enough: Essential Practices for Agile Success"
- "Avoid Chaos in Agile Development by Defining When a Story Is 'Done'"
- "High-Performing App Dev Teams Have These Culture and Mindset Traits"
- "Citizen Development Is Fundamental to Digital Transformation"
- "How to Build a User Experience Team"
- "Use Mobile App Analytics to Increase Engagement and Performance"
- "Immersive Technologies Offer Infinite Possibilities"
- "Progressive Web Apps Will Impact Your Mobile App Strategy"
"The Key Fundamentals Required to Scale Mobile App Development"
"Event-Driven Programming Models Will Disrupt End-User Applications"
"Four Use Cases for Chatbots in the Enterprise Now"
"The Eight Essentials When Moving to Automated Software Testing"
"Accelerate Development With Automated Testing"

**Technical Professional Coverage**

"2018 Planning Guide for Application Platform Strategies"
"10 Essential Skills of the Modern Software Architect"
"The Renaissance Developer: Skills Guidance for Modern Application Programmers"

**Essential Reading**

*Some documents may not be available as part of your current Gartner subscription.*

**IT Leader Coverage**

"Hype Cycle for Application Development, 2017"
"Hype Cycle for Digital Design, 2017"
"Hype Cycle for Mobile Applications and Development, 2017"
"Magic Quadrant for Mobile App Development Platforms"
"Magic Quadrant for Software Test Automation"
"Magic Quadrant for Intelligent Business Process Management Suites"
"Magic Quadrant for Enterprise Agile Planning Tools"
"2018 Planning Guide for Application Platform Strategies"

**Technical Professional Coverage**

"Solution Path for Architecting Modern Web Applications"
"Implementing Enterprise Agile Using the Scaled Agile Framework (SAFe)"
"Improve Scrum Development With Effective Use of Agile Metrics"

**Tools and Toolkits**

*Some documents may not be available as part of your current Gartner subscription.*
IT Leader Coverage

- "Toolkit: Mobile App Development RFP Template"
- "Toolkit: Job Description for Application Leader"
- "Toolkit: Application Leader’s First 100 Days"

Technical Professional Coverage

- "Evaluation Criteria for Public Cloud Enterprise Application Platform as a Service"
- "Decision Point for Choosing a Web Application Architecture"

Evidence

**Gartner's 2018 CIO Survey** — Conducted online from 20 April 2017 through 26 June 2017 among Gartner Executive Program members and other CIOs. Qualifying respondents were the most senior IT leader (CIO) for their overall organization or a part of their organization (such as a business unit or region). The total sample is 3,160, with representation from all geographies and industry sectors (public and private). The survey was developed collaboratively by a team of Gartner analysts and was reviewed, tested and administered by Gartner’s Research Data and Analytics team. The 2018 CIO Agenda divides survey respondents into three categories based on self-reported IT and enterprise performance:

- **Top performers** — Rated themselves 6 or 7 (out of 7) on "How effective is your company at factoring digital considerations into strategy and planning?" These performers answered "scaling" or "harvesting" (the two top categories) when asked, "Which of these best describes the stage of your organization’s digital initiative?"

- **Typical performers** — Rated themselves better than trailing performers, yet not high enough to be included in top performers for the same two questions.

- **Trailing performers** — Rated themselves 1 or 2 (out of 7) on "How effective is your company at factoring digital considerations into strategy and planning?" They answered "none" or "desired" (the two bottom categories) when asked, "Which of these best describes the stage of your organization’s digital initiative?"

**Exploiting Self-Service Development for Digital Innovation Survey** — Conducted online in July 2017 with Gartner’s Research Circle — a Gartner-managed panel of IT and business leaders. In total, 228 members of the panel participated, including 66 respondents with active citizen development initiatives at their organizations.

**Agile in the Enterprise Survey** — Online survey conducted in September 2017 among Gartner Research Circle Members. In total, 185 members participated, and 83% of participating organizations use agile for at least some development. Qualifying participants included business end users with either an IT or IT-business focus as a primary role.
Enterprise DevOps Survey — Online survey conducted between 15 September and 2 October 2017 among Gartner Research Circle Members. In total, 73 members whose organizations are using or piloting DevOps at their organization completed the survey. Qualifying participants included business end users with either an IT or IT-business focus as a primary role. The survey was developed collaboratively by a team of Gartner analysts and was reviewed, tested and administered by Gartner’s Research Data and Analytics team.