

Agile and DevOps: Complementary and Crucial to Digital Transformation

A look at the benefits, trends and strategies for adopting an iterative and incremental approach to the transformation journey



Change is the only constant.

With the recent wave of digital disruption, digital transformation has become increasingly critical. Today, organizations need to become nimbler to respond to shifting customer needs, rising expectations and competitive pressures. They must be able to quickly identify which product investments are most valuable to their customers and deliver on these solutions.

Embracing digital transformation requires organizations to manage the combined and often conflicting challenges of the demand for rapid change amidst vague constraints and complex interdependencies — a dilemma familiar to the world of software development.

Agile's iterative and incremental approach is designed to address uncertainty in the product development process.

Addressing these challenges with a traditional waterfall approach, in which projects move along a linear and sequential path, incurs far too much risk. Cumbersome processes lead to long release cycles, which slow the flow of customer features and result in loss of market share. Meanwhile, delayed feedback loops often result in building features that fail to align with customer needs.

Agile's iterative and incremental approach is designed to address uncertainty in the product development process. DevOps fully embraces Agile, together providing the foundational principles and tools to help organizations enable faster feedback loops, shorten production cycles, and ultimately deliver greater value for customers and the business.

By adopting both Agile and DevOps as key components of the approach to ensuring a successful digital transformation, modern organizations can both reduce risk and accelerate their transformational journey.



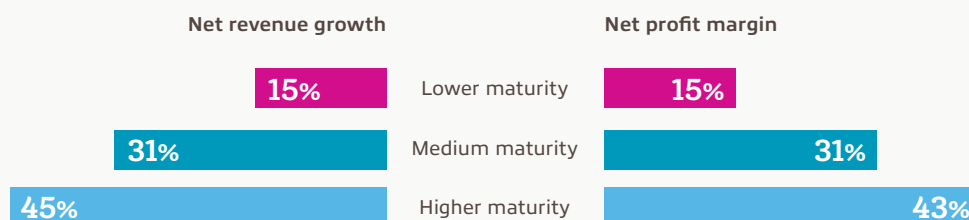
The digital dilemma

The drivers for digital transformation are clear. Whether the specific business outcome is aligned with optimizing operations, engaging customers or improving products, the underlying objective is to increase profitability.

Deloitte reports those organizations with higher digital maturity are, on average, three times more likely than low-maturity companies to report higher annual net revenue growth and higher net profit margins — across every industry.¹

Higher-maturity companies reported industry-leading revenue growth and profit margins

Percentage of respondents reporting metrics significantly above industry average, by level of digital maturity



Note: Comparisons to industry averages were self-reported by the respondents.

Source: Deloitte analysis

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Digital maturity, in this context, is defined by several key pivots, including the implementation of flexible, secure infrastructure; data mastery; intelligent workflows; unified Customer Experience (CX) and business model adaptability.

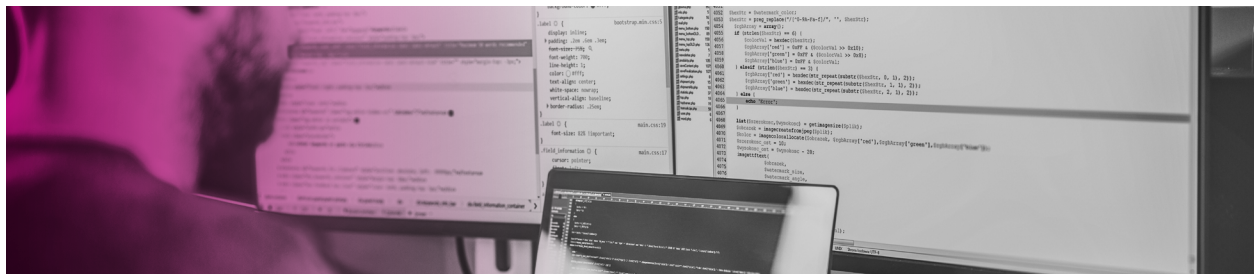
According to the survey, higher-maturity organizations were significantly more likely to have digital business models in place than their low- to medium-maturity counterparts. 58% of respondents from higher-maturity organizations offered digitally connected products, compared to 33% of medium-maturity and 17% of lower-maturity organizations.¹

But making these pivots and achieving the associated business outcomes is not as simple as moving from point A to point B. Digital transformation is a shift from the state of rigidity to a state of continuous agility, embracing ongoing change. As organizations discover the shortcomings of traditional methods for dealing with the uncertainties of a transformative business model, more have begun to recognize the need for a new approach.

Gartner estimates as many as 85% of organizations now favor a product-centric, rather than project-centric, delivery model as is promoted by both Agile and DevOps. Of these, 32% of respondents identified the need for faster delivery as the primary driver, while 31% reported the need for a new approach to digital transformation.²

The underlying values and cultural shifts associated with Agile and DevOps offer a new way of thinking about and addressing the challenges of uncertainty and ongoing change. Effectively applied, these approaches yield greater visibility and alignment, faster time to market, higher quality and ultimately greater value for the business.

By applying Agile values and principles to the process of digital transformation — managing transformational work as they would product features in the development process — organizations can begin to extend these benefits to the larger digital journey.



An iterative and incremental approach

Because DevOps fully embraces Agile, they share many of the same values and objectives. One of the most fundamental Agile values is an emphasis on iterative and incremental work.

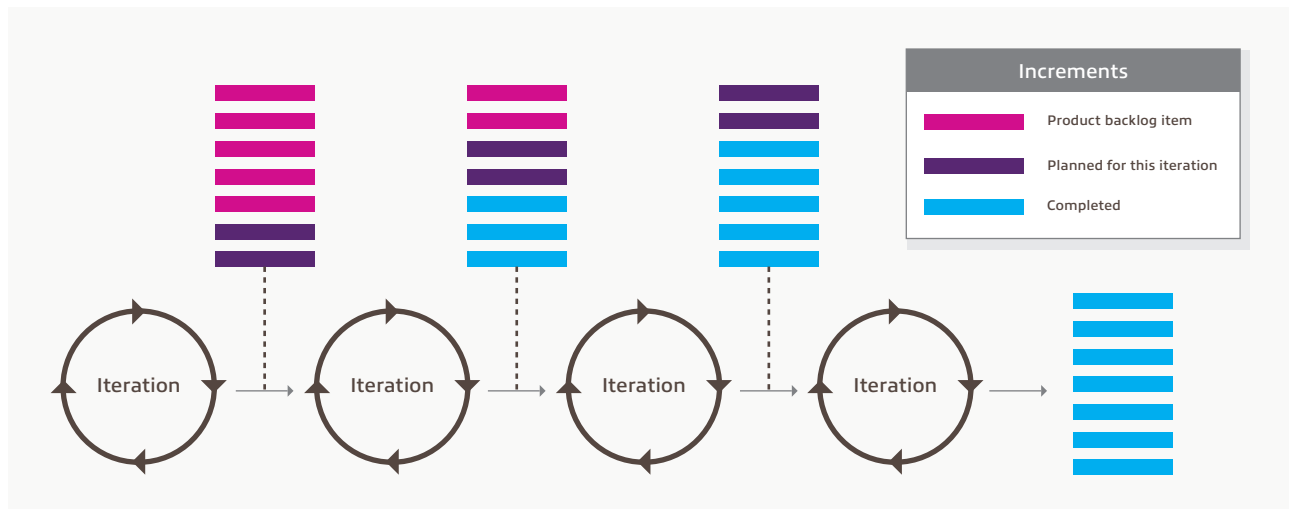
Iterative development refers to the repeated process of adding and refining functionality through short development cycles and ongoing production cycles.

Incremental development involves adding small, quality, complete elements of the larger solution, building upon previous increments over time.³

These models go hand in hand to support the steady, ongoing delivery of results through a cyclical pattern of releases and upgrades. Each new iteration yields an enhanced working increment, and the process is repeated until the product meets the desired outcomes.

In the context of software development, a team might start with the iteration of a working prototype, laying out the basic structure of the system. Gradually, new, incremental functions might then be developed, implemented and tested piece by piece. Rather than waiting until final delivery to receive feedback, an incremental approach ensures the development team has the information they need to make changes early and often.

By iteratively refining functionality and improving the experience over time, teams are able to work toward delivering a product that encompasses an end-to-end user journey. This approach also allows developers to take advantage of progressive learnings throughout the development of earlier parts or versions of the system.



This same, iterative and incremental approach makes it possible for organizations to work toward their transformation goals by tackling objectives in manageable pieces and gradually building up new processes and capabilities over time.

Agile development

In the traditional linear and sequential approach to software development, the process of planning and documenting development cycles often obstructs the delivery of value to customers. Agile represents a direct response to these challenges, establishing an iterative and incremental approach to development which emphasizes the rapid delivery of valuable products amid complexity, uncertainty and change.

Agile, in its simplest form, provides a set of guidelines for helping teams maintain focus on the evolving needs of the customer throughout the development cycle. The goal is to accelerate the delivery of initial business value through a process of continuous planning and feedback to ensure development teams can easily understand and adapt to changing needs.

At its core, Agile relies on a set of four values:

- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

Along with 12 corresponding principles, these tenets serve as the foundation for Agile development.

There are many approaches, from Lean Software Development to Kanban and Scrum, which can be applied to Agile, but it is critical to recognize these practices alone will not help an organization achieve their goals. It is a common misconception that organizations can simply adopt an approach and apply it in a templated manner across all teams. Organizations may also mistakenly believe that Agile only applies to developers or development, and attempt to implement the approach while keeping existing methodologies. But changing the way activities are executed without shifting the underlying culture will inevitably lead to poor results.

Agile involves both a mindset and a cultural change that requires teams to be given the autonomy to self-organize and make decisions based on their own learnings and experiences. Only when practices are effectively aligned to product and team contexts can organizations begin to reap the true benefits of Agile. According to Gartner, through 2023, 75% of organizations will customize Agile practices to match product and team contexts, resulting in increased application delivery cadence.⁴

But Agile is about more than product development or delivering software in an agile way. Applied to transformative activities, “Agile transformation” provides a broader approach to help organizations become more nimble, adaptable and responsive to change. Embracing Agile principles within the context of digital transformation provides the cultural foundation needed to embrace empowerment, transparency and accountability. It also forms the basis to deliver higher quality digital experiences faster through continuous iterations and feedback loops.

DevOps transformation

Sometimes referred to as Agile applied beyond the software team, DevOps evolved from the recognition that many of the same principles established to improve the software development process could also be applied to the entire “value stream,” including everyone involved in taking a feature from a mere idea to a production deployment. The name “DevOps” combines software development (Dev) with Operations (Ops), which exemplifies teams working closely together within a value stream.

At its core, DevOps is the union of people, process and products to enable continuous delivery of value. It relies on an iterative and incremental approach to the intricacies and unpredictability of deploying new applications, managing security and dealing with legacy code in a variety of forms.

By unifying people, processes, technology and culture to create multidisciplinary teams, DevOps improves collaboration and communication, reduces time-consuming handoffs between siloes, and enables greater focus on constant testing and delivery. It embraces many Lean and Agile principles, emphasizing the value of working in small batches, delivering faster, more frequent releases pushed directly to production and providing immediate feedback for continuous improvement.

To accomplish these goals, DevOps uses a framework known as “CALMS,” based on five pillars which can be used to evaluate readiness or progress toward the DevOps transformation:

- **Culture**—The first step toward eliminating siloes is to embrace a culture of shared responsibility. This cultural shift must be holistic and preferably leadership driven.
- **Automation**—Automating as many manual tasks as possible improves speed and precision, especially with respect to continuous integration and testing.
- **Lean**—Lean principles help to eliminate waste and optimize the value stream by minimizing Work in Progress (WIP), improving visibility and reducing hand-off complexity and wait times.
- **Measurement**—Collecting data on projects, processes, deployments and more provides the visibility to understand current capabilities and where improvements can be achieved.
- **Sharing**—A culture of openness and collaboration within and between teams, enabled by effective tools, eases friction and accelerates the path to shared goals.

The goal of DevOps is to streamline and manage the engineering processes from end to end, enabling IT teams to accelerate time to market with high quality and reliability. Because DevOps encompasses the whole value stream, it involves a wide range of skills across software development and IT operations, including testing, database administration, security and more.

But just as Agile is more than Scrum, DevOps is about more than continuous delivery or automation. In many ways it holistically encompasses the methodologies required to achieve digital transformation: from Agile and Lean, to Organizational Change Management (OCM), digital strategy and a broad range of other technical skills.

Agile and DevOps, better together

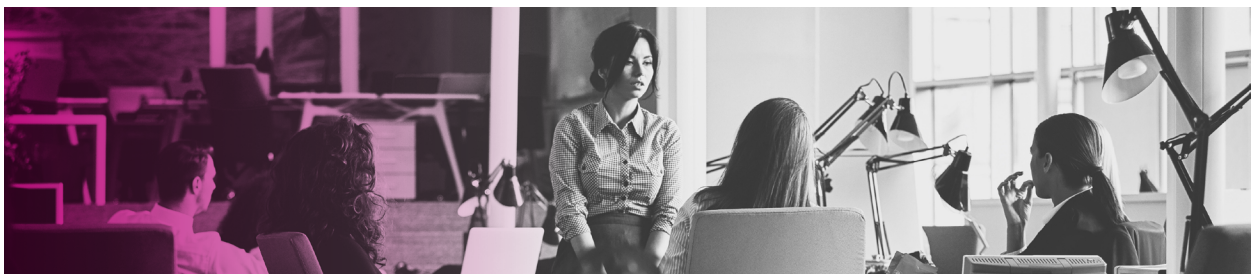
While software is a critical part of digital transformation, alone, it's not enough to achieve long-term organizational agility. Producing high-quality applications and services that drive business value requires a modern development and delivery process.

For this reason, both Agile and DevOps are essential to business transformation, and building capabilities in one area often reveals a need to build capabilities in the other.

While Agile is effective at highlighting these issues, it is not intended to provide solutions — it doesn't include specific tactics for execution or measurement. Instead it assumes organizations will need to adopt other practices and methodologies in tandem.

Organizations that have implemented Agile, for example, may be able to rapidly develop and deliver applications, but the approach often reveals corresponding challenges with technical support, security and automation. While Agile is effective at highlighting these issues, it is not intended to provide solutions — it does not include specific tactics for execution or measurement. Instead it assumes organizations will need to adopt other practices and methodologies in tandem.

DevOps helps to provide many of the complementary practices needed to resolve technical and process challenges related to rapid delivery. Bringing together all teams within the value stream with an emphasis on collaboration, automation and testing allows organizations to better support the fast, frequent releases which Agile strives for. Conversely, DevOps would not be what it is without Agile. While it does not fully encompass or take ownership over Agile teams, it embraces the approach as part of the end-to-end engineering process.



Because both Agile and DevOps embrace the same underlying goals of improving collaboration, customer feedback and iterative, incremental releases, the two approaches work seamlessly together to support the digital transformation journey.

Modern organizations recognize this need and are incorporating both approaches into their digital transformation strategies. A Freeform Dynamics report on digital readiness found that of those organizations who had adopted Agile for software development, 43% had an active initiative to implement DevOps, 25% had already completed a DevOps implementation and 27% had plans to do so in the near future.⁵

Do you have an initiative to implement DevOps?



Among the companies surveyed, those that actively leveraged Agile and DevOps — not just among specific teams but across their organizations — were considered “agility masters.” As a group, these businesses reported 60% higher revenue and profit growth than others surveyed. They were also 2.4 times more likely than the others surveyed to have grown their businesses at a rate of over 20%.⁵

When Agile and DevOps are implemented effectively:

- Development teams are empowered to maintain focus on the next-best product investment.
- Investments enable efficient operation of the product and the technologies that support development.
- There is a clear impediment ladder, allowing teams to address as much as possible, while enabling transparency and impediment removal from those around and supporting the teams.
- Organizational structures (teams and reporting hierarchies), processes and tools are optimized to enable sustainable flow of value. For example, cross-functional development teams, cross-cutting guilds, enabling architecture teams, transformation enablement team.
- Prior silos are removed or integrated to support common goals, creating greater clarity in decision-making responsibilities and involvement in key domains.
- Teams deploy features to production faster than before, more frequently, with higher quality, less effort and at a significantly lower cost.
- Teams within value streams are more productive, feel less stressed and enjoy their work and their employment more than before.

Tips for implementation

Of the 1,279 IT leaders surveyed by Freedom Dynamics, just 18% were considered part of the agility masters group which had broadly implemented Agile and DevOps across their organizations.⁵ This indicates that while modern business leaders understand the need for DevOps and Agile adoption, the majority are missing out on the full benefits for digital transformation.

Those considering implementing DevOps and Agile together should begin with whichever approach addresses the most immediate business need. In many cases, building capabilities with one approach will lead to the other. Whether starting with Agile or DevOps, the following guidelines can help organizations maximize the benefits of their transformation:

Begin with a baseline.

A readiness assessment is a critical first step to establishing an organization's current state and creating a roadmap for next-best steps. This assessment should evaluate maturity in a few key areas including cultural readiness, leadership commitment, previous implementations, continual improvement maturity and IT service management process maturity. These results provide organizations with the information to develop the objectives and scope for transformational activities moving forward.

Start as small and simple as possible.

Organizations should apply the principles of Agile to implement change in an iterative and incremental way, treating the transformation itself like a Minimum Viable Product (MVP) which provides value to your organization, customers and employees through nimble processes and supporting technologies. Teams must learn through iteration, adding complexity incrementally over time. Otherwise, businesses run the risk of re-creating something that operates and produces very similar results to existing systems with minimal improvement in outcomes.

Not all challenges should be addressed in the same way.

Throughout the digital transformation journey, organizations almost always discover multiple types of problems and opportunities for growth — simple, complicated, complex and chaotic. There are principles and practices that align to each type of challenge. The highest-performing organizations recognize that they will need to address all four types and enable adaptive use of the best-suited principles and practices for each situation.

Automation is an example of this, as it can be effectively applied to simple and complicated types of repeatable problems, such as building, deploying and regression testing software. It's desirable to automate these activities to increase efficiency, reduce errors and increase employee satisfaction. This liberates people and teams to focus their creative problem-solving efforts on the complex and chaotic challenges.

Solutions should be defined by those closest to the work.

Many leaders attempt to define the solution to be implemented, which naturally creates resistance and significantly limits effectiveness. Greater success is found when leaders clearly define the problem and desired outcomes, along with boundaries and clear levels of decision delegation. The goal should be to create a space where those closest to the work are given the freedom to experiment and discover solutions.

Lead through culture.

Ongoing support and engagement from senior leadership is the number one indicator of success for any transformation. Leaders within any organization set and sustain the cultural standard through words, actions and rewards. Throughout the transformation, they must consistently examine which elements of the current culture are impeding growth and identify steps to shift words and actions to support behaviors that will enable agility.

The role of leadership must be to drive and support the critical culture changes required to enable communication, collaboration, compassion and creativity across the business.

Don't just set it and forget it.

Organizations need to anticipate that the first iterations of any solution will be imperfect and plan for ongoing improvements accordingly. Even those solutions which are well-suited to existing needs or circumstances will need to be adapted over time to deal with new uncertainties and ongoing changes. This need for continuous optimization applies to software products, processes, tools and transformative efforts.

Goals, desired outcomes and measurements should be set up front along with processes to enable frequent inspection of results and the adjustment of tactics for improvement.

Avoid falling back into old habits.

Both organizational inertia and fundamental human nature make it easy for organizations to get comfortable with the way things are, for better or worse. Even when companies make the commitment to change, in the long run, if the cultural mindset doesn't equally transform to embrace the new way of doing things, these changes are likely to fall away.

When change is effectively implemented and goals are achieved, successes should be communicated and celebrated beyond the immediate teams. Ongoing performance metrics related to change should be tracked to ensure they continue to demonstrate value, and to reinforce change over time.

Conclusion: Driving ongoing transformation

Technology is no longer a part of the business; it is the business.

Regardless of the challenges, digital transformation is a necessity for future resilience. Agile and DevOps provide complementary approaches to streamline collaboration, improve feedback loops and deliver faster, more frequent releases.

But Agile and DevOps represent more than just a mechanism for delivery. These iterative and incremental approaches support the larger cultural shift in the way modern organizations must address change. Ultimately, widespread adoption of both DevOps and Agile increases an organization's potential to achieve the end-to-end flexibility and responsiveness required to enable business-level agility and digital readiness.

About Insight

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¹ Camhi, J., Gurumurthy, R., Schatsky, D. (2020, May 26). Uncovering the Connection Between Digital Maturity and Financial Performance. Deloitte Insights.

² Omale, G. (2019, Feb. 19). Gartner Survey Finds 85 Percent of Organizations Favor a Product-Centric Application Delivery Model. Gartner.

³ Visual Paradigm. (2020). Agile Development: Iterative and Incremental.

⁴ Gartner. (2019, Dec. 5). Gartner Predicts 2020: Agile and DevOps Are Key to Digital Transformation.

⁵ Freeform Dynamics. (February 2018). How Agile and DevOps Enable Digital Readiness and Transformation.