

2017

State of DevOps:

What Every CIO Should Know



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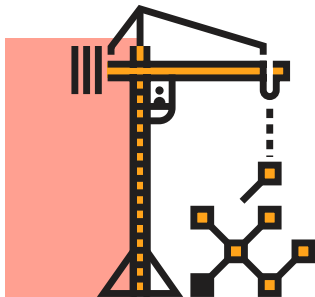
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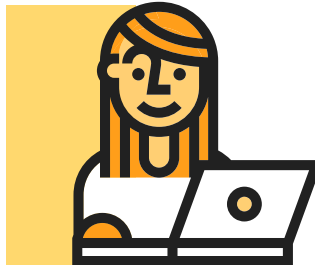
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DevOps and digital transformation

The [2017 State of DevOps report](#) shows that leaders are critical to the success of any DevOps or digital transformation effort across an organization. Conversely, failing to facilitate effective change is highly risky. By 2020, it's predicted, half of CIOs who have *not* transformed their teams' capabilities will lose their place on the digital leadership team.¹

This abstract of the 2017 State of DevOps report highlights key findings about DevOps and digital transformation that every CIO should be aware of.

¹ <http://www.gartner.com/binaries/content/assets/events/keywords/infrastructure-operations-management/iome5/gartner-predicts-for-it-infrastructure-and-operations.pdf>

Why is it so important to transform your team's capabilities? Because business now moves so fast, IT is no longer about making technology choices you'll stick with for decades. It's about being agile enough to respond to shifting market conditions in a strategic way. Technology, and the ability to make technology changes in a timely and graceful way, is critical to this agility.

Some CIOs have figured out that DevOps is the key to transforming their teams into agile organizations that can step up to regular technology change. Ron van Kemenade, CIO of ING Bank, transformed his company's IT organization from one with a low appetite for risk and an equally low skills level into a team that is moving towards continuous delivery by means of agile and DevOps methodologies, as well as dedicated DevOps teams.²

² <https://www.cxotalk.com/episode/financial-services-digital-transformation-ron-van-kemenade-cio-ing-bank>



Ron's efforts aren't confined to the Netherlands team. He is now working to spread the DevOps model to the rest of ING's global operations, and to unite ING's various IT teams and solutions. It's an effort designed to boost efficiency while improving and standardizing the customer experience.

Expanding the DevOps model across an organization can be a struggle, though, whether you're in the executive suite or on the practitioner front line. For one thing, it's hard to find the right people with the right kind of experience. **Sixty-five percent of CIOs say lack of talent has become a key limiting factor for organizations that want to broadly scale DevOps practices.**³ Meanwhile, teams that try to advance DevOps practices from the bottom up frequently hit a wall when leadership fails to support their efforts.

³ <https://home.kpmg.com/xx/en/home/insights/2016/05/harvey-nash-kpmg-cio-survey-2016.html>

The ability to build and retain a talented workforce is one of many good reasons for leaders to champion DevOps. In our 2016 State of DevOps Report, we shared that **employees in high-performing organizations where DevOps practices are strong are 2.3 times more likely to recommend their place of work to others.**

This isn't surprising: As we all know, "A" players want to work with other "A" players. So implementing advanced practices that produce success is going to attract people who care about making a difference and advancing their careers.

It takes more than just the desire of A-list practitioners to create such a workplace. This year, the nearly 3,200 IT leaders and practitioners who responded to our survey showed us that transformational leadership is key to teams being able to scale DevOps and achieve high performance — both IT performance and overall organizational performance. The insights in this abstract will explain why that's the case, and help you determine what you need to do in your own organization.

Transformational leadership enables DevOps

Leadership really does have a powerful impact on results. A leader affects a team's ability to deliver code, architect good systems, and apply lean principles to how the team manages work and develops products. All these things have a measurable impact on an organization's profitability, productivity, and market share.

Key leadership characteristics that help drive high performance include having a clear vision; communicating in an inspirational way; intellectually stimulating team members; and supporting and recognizing individuals (Rafferty and Griffin 2004)⁴.

⁴ Rafferty, A. E., & Griffin, M. A. (2004). Dimensions of transformational leadership: Conceptual and empirical extensions. *The leadership quarterly*, 15(3), 329-354.



Dimensions of transformational leadership

Vision

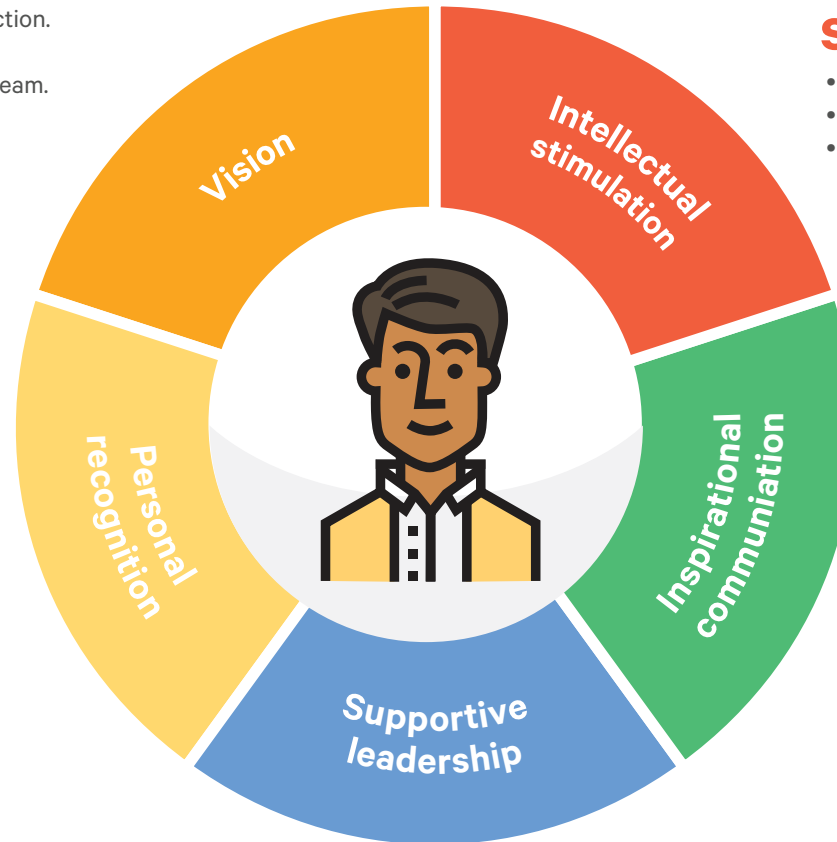
- Understands organizational direction.
- Understands team direction.
- Understands 5-year horizon for team.

Intellectual stimulation

- Challenges team status quo.
- Challenges team to constantly ask new questions.
- Challenges team on basic assumptions about the work.

Personal recognition

- Commends team for better-than-average work.
- Acknowledges improvement in quality of work.
- Personally compliments individuals' outstanding work.



Inspirational communication

- Inspires pride in being part of the team.
- Says positive things about the team.
- Inspires passion and motivation; encourages people to see that change brings opportunities.

Supportive leadership

- Considers others' personal feelings before acting.
- Is thoughtful of others' personal needs.
- Cares about individuals' interests.



Survey respondents working in high-performing teams reported having leaders with the strongest behaviors across all five leadership characteristics. In contrast, low-performing teams reported having leaders with the weakest behaviors. The results for high performers are truly impressive. When it comes to throughput and stability, high performers have:

- 46 times more frequent code deployments.
- 440 times faster lead time from commit to deploy.
- 96 times faster mean time to recover from downtime.
- 5 times lower change failure rate (changes are 1/5 as likely to fail).
- Significantly more of their work automated, and much less of it is done manually.

Many CIOs are already taking on the role of transformational leader. Fifty percent of respondents to [IDG's State of the CIO 2017 survey](http://go.idgenterprise.com/state-of-the-cio-2017) reported that they spend most of their time and attention on transformational activities. For example, they are focused primarily on implementing new systems and architectures, leading change efforts, and aligning IT with business goals⁵.

⁵ <http://go.idgenterprise.com/state-of-the-cio-2017>

What transformational leaders do

C-level executives often have a much rosier picture of what's happening in the organization than practitioners and team managers do.⁶ It's not surprising; they are further from the work. But there are questions you should be able to answer — and if you can't, that's an indication you need to check in with managers who know how the work is actually getting done, and what's impeding the flow of work.

⁶ <https://www.forrester.com/report/A+Dangerous+Disconnect+Executives+Overestimate+DevOps+Maturity/-/E-RES136142>



Good transformational leaders build organizations that can work in agile ways, and that are structured to scale the scope of their work. They do this by enabling teams to re-architect their systems and to implement the continuous delivery and lean management practices that enable high performance. Transformational leaders also support effective communication and collaboration between team members in pursuit of organizational goals.

This visible, clear guidance and support from a transformational leader provides the foundation for a culture in which continuous experimentation and learning are part of everybody's daily work.

The questions every CIO should be able to answer:

- Are our applications architected for testability and deployability?
- Are our teams structured in a way that supports velocity?
- What barriers do we need to remove to help people get things done?
- Are our teams empowered to make decisions that allow them to move forward, instead of stalling out?

Specifically, good transformational leaders:

- Empower the formation of loosely coupled teams that embrace lean product management practices.
- Support the creation of loosely coupled architectures that use bounded contexts and easily consumable APIs to decouple large domains.

Loosely coupled teams are those that can get work done without depending on high-bandwidth communication with other teams. They can also work without much dependence on the work or approval of other teams.

Most important of all, loosely coupled teams are able to make decisions on their own. Development teams, for example, have the authority to create and change specifications as part of the development process, without requiring approval.

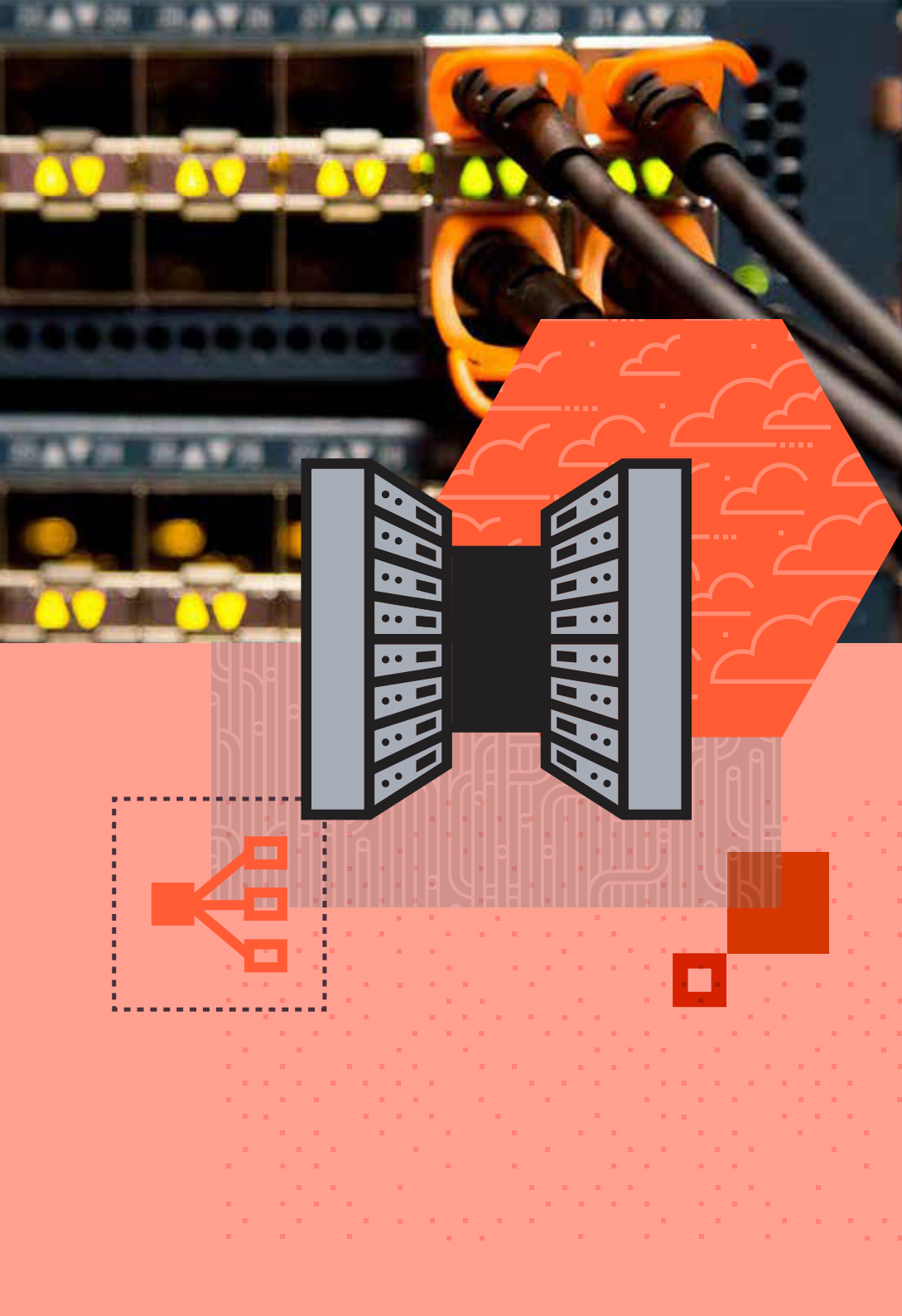




Enabling teams in this way makes it far more likely that they will build products and services that deliver delight to customers, and value to the organization.

Loosely coupled architectures use bounded contexts and APIs as a way to decouple large domains, resulting in smaller, more loosely coupled units. The architecture should enable the use of test doubles and virtualization to test services or components in isolation.

Taking these two concepts together, it's clear that organizations should architect around team boundaries to ensure that the architecture itself supports teams being able to get their work done — from design through to deployment — without requiring high-bandwidth communication between teams.



DevOps depends on automation

DevOps practices are made possible by automation, both because it cuts out time-consuming manual work and because it eliminates human error. With automation, including automated testing, you can promote work far more quickly through the pipeline, with confidence that your systems are all working as they should be.



High-performing teams — which employ DevOps practices — do far less time-consuming, error-prone manual work than their lower-performing peers, because they have automated far more of their work:

- 33 percent more of their configuration management
- 27 percent more of their testing
- 30 percent more of their deployments
- 27 percent more of their change approval processes

What these teams do with the time they get back is just as important as the efficiency automation brings. High performers are able to increase, to an often amazing degree, the time they spend on developing new features and services. HP LaserJet, for example, was able to increase the time spent on new features by **700 percent** after investing in a continuous improvement initiative and automation.

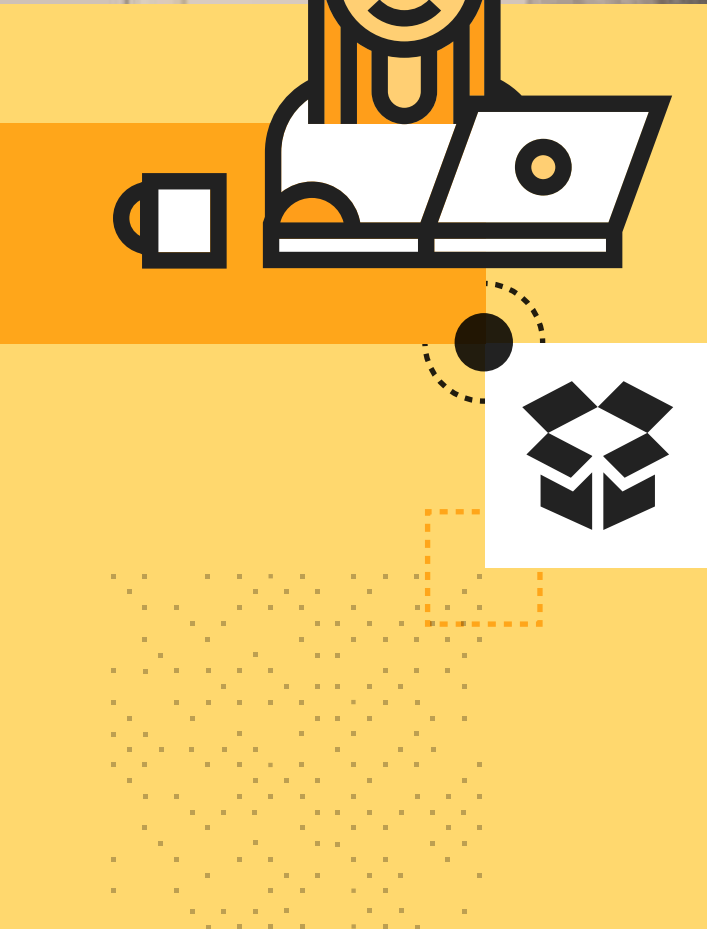


Leaders affect performance

A transformational leader's influence is felt throughout the system and the organization. It is seen in their support of the technical practices that teams use, and in the teams' lean product management capabilities. So the leader's influence — positive or negative — also affects IT performance and organizational performance.

What this means for organizations is simple: Leaders with transformational behaviors can make an outsized impact on results. Their impact is felt on a team's ability to deliver code, architect good systems, and apply lean principles to the way they manage work. These things all have a measurable impact on an organization's profitability, productivity, and market share. That's why transformational leadership is a key contributor to success.

Read the complete [2017 State of DevOps Report](#).





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