Critical Success Factors For DevOps

Pink Think Tank 2017
Research Paper

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Executive Summary

Each year Pink Elephant hosts a thought leadership working session to explore current issues and trends affecting the IT industry. Following the identification of the theme and key question to be addressed, subject matter experts and thought leaders from early adopter organizations are identified and invited to participate in the Pink Think Tank (PTT) for a face-to-face working session at Pink Elephant's Annual International IT Service Management Conference. This year's topic was:

What Do Leaders Need To Know About Strategic Critical Success Factors (CSFs) For DevOps?

A key theme of the DevOps movement is the acceleration of the IT value delivery processes with the goal to improve flow from requirements to production. This year's PTT met to discuss the current state of DevOps adoption and also the critical success factors related to culture, structure, process and business engagement.

This paper represents the first in a two-part series of outputs from this year's PTT workshop.

This first white paper represents the output of a research survey that Pink Elephant sent in advance of the conference to provide input into the PTT discussion, observations and conclusions. The survey structure and content is developed by the PTT team in advance of the conference, with the intent to probe the survey audience on their adoption of a set of initially identified DevOps critical success factors.

One of the key findings of this year's research indicates that for the majority of the 160 organizations that responded to the survey, speed is currently more important than process maturity.

Another interesting observation that can be extrapolated from several of the data points researched in this year's survey is that the general adoption of DevOps practices has a common adoption curve. For many of the more technically or culturally challenging DevOps practices, approximately one-third of the organizations have responded, stating that the practice is in place at some level of adoption. Another one-third have indicated that they either plan to start or have started. The remaining one-third of the participants either do not know or have not planned to start activities related to DevOps adoption.

At a high level, this breakdown sheds light on the current state of DevOps adoption. Organizations which have already adopted DevOps practices or are planning to soon represent roughly two-thirds of the survey respondents.

Table Of Contents

Introduction

Culture, Collaboration & Automation

From a leadership perspective, it is hard to argue against the goals of the DevOps movement, which focuses on improving communication, standardization, collaboration and automation to enable accelerated value delivery. However, these virtues have eluded most IT organizations for decades. Our actual experience is one of silo-based cultures, intentional process variation and tool strategies that place more value on 'best of breed' over integrated IT management tools.

It is not that we have been without guidance and best practice models to point to a better way; our industry is blessed with a literal library of best practices and guidance on how to achieve these elusive goals. For decades, IT tools have been capable of a much higher level of integration and automation than we have typically been able to use effectively, due to internal politics and lack of agreement on basic process. So what is different now that has not been the case for the last 20 years?

The answer is external pressure! Like most personal improvement programs we typically do not pay attention until there is some external force that intrudes on our comfortable but bad habits in such a way that it is difficult if not impossible to ignore. The reality is that there are multiple drivers that have colluded to bring about an urgency and appetite for change in the short term that were simply not as pressing just a few years back. As advances in technology and cloud based services have flattened the world in respect to the competitive landscape, we have external market pressures in place today that are unprecedented.

Newly formed, built-on-the-web brands are now able to leverage cloud-based services and stand up complete technology environments and software-as-a-service business automation in a matter of weeks if not days. Enabling them to come to market with new and disruptive products in a fraction of the time it would take a traditional brick and mortar organization to respond. In short, the cloud has changed everything!

With this new degree of external pressure organizations are forced to address long-standing cultural issues, political barriers and leadership gaps that have traditionally brought most improvement programs to their knees. So now is the time to change, and to change rapidly in order to survive and the banner many organizations are flying to give a name to that change is DevOps. Of course, the challenge we face is that DevOps is an undefined term for many organizations. This year's PTT has taken on the challenge of defining the CSFs for developing a culture, standard processes and tooling strategy which focuses on the people, process and technology enablers to accelerate speed to market.

Pink Think Tank – 2017

Each year we gather the brightest minds to explore today's most pressing issues and trends. The PTT team gathers for a full day during the weekend before Pink's annual conference to debate and discuss a specific topic. During the conference, their findings are presented and white papers are then made available.

This year's topic: **What Do Leaders Need To Know About Strategic Critical Success Factors (CSFs) For DevOps?**

The buzz and adoption of DevOps principles is sweeping through the IT industry bringing with it a welcome focus on systemic thinking, value stream optimization and a culture of end-to-end collaboration. At the heart of this movement is a welcomed focus on breaking down silos and focusing on the cross-functional work required to improve the value delivery.

Pink17's PTT members were the following industry experts:

Gary Case,
Principal
Consultant,
Pink Elephant

Jack Probst,
Principal Consultant,
Pink Elephant

Troy DuMoulin,
VP, Research &
Development,
Pink Elephant

Mike Orzen,
Lean IT Pioneer,
Mike Orzen &
Associates

Cindy Trudeau,
Director IT
Customer Services,
HonorHealth

Rob England,
The IT Skeptic

Niels Loader,
Principal Consultant,
High Performance
IT, Quint
Wellington Redwood

Dave van Herpen,
Management
Consultant,
Enterprise Agility
& DevOps,
Sogeti Nederlands
B.V

Jayne Groll,
Co-Founder
& Board Member
Of The DevOps
Institute (DOI)

Jason Walker,
Enterprise Architect,
Cargill

As part of the annual process, the assembled team met several times prior to the conference to outline the Problem Statement, Scope and Agenda for the face-to-face workshop. Through this process, it was determined that the best use of time would be spent on addressing the underlying organizational, cultural and leadership issues that have both blocked improvement in the past and that are critical to enable a DevOps culture of collaboration. With this objective defined, the following areas were identified as the key focus areas of the PTT workshop:

Culture:

- How do we enable cross-functional work across silos?
- How do we set, share and manage priorities?

Organization:

- What organizational structures are required – continue the traditional?
- Is it an hierarchical model or is there a shift to a matrix model?

People:

- How do we do teaming and assign resources?
- How do we structure our reward systems? Etc...

Business Alignment:

- What role does the business play in setting development strategies within IT?
- How is the Business/IT Operating Model changed?

It is essential for leaders at all levels to understand and address these questions now in order to deliver on the DevOps promise of increasing Speed To Value, an extended journey for any organization.

The output of the survey is revealing and provides key insights in to the state of thinking and adoption around the questions faced by our industry.

The second paper following this initial research document will outline the observations, conclusions and recommendations that came out of this year's PTT Workshop.

Pink Think Tank Research – Urgency For DevOps?

As part of the PTT output each year, we conduct a survey focused on the proposed topic of discussion. This year's research focused on what leaders need to understand about the CSFs for achieving the goals of increased speed to value. Last's year research was related to a similar theme focused on speed:

Pink16 PTT: How do you lead and manage a multi-speed organization in order to meet the changing demands of the customer?

Last year's PTT outputs can be found on the "My Pink" online portal. Visit mypinkportal.com to register for your free account and to access last year's PTT documents.

In general, the last few years have seen an intense focus on improving organizational speed and efficiency. This pressure to move faster has driven the relatively recent popularity of frameworks and models focused on accelerating process flow such as Agile, Lean and now more recently DevOps.

Survey Approach: The survey respondents for this research data are the attendees of Pink Elephant's Annual International IT Service Management Conference & Exhibition hosted each February. The typical candidates who attend this conference represent middle to senior level stakeholders from most major verticals. The survey respondents for this data represent 160 organizations, which vary in size and complexity. The nature of the respondents as decision makers and their levels of seniority provide a diverse mix of perspectives and blend of input from different verticals.

Survey Participant Verticals 2017
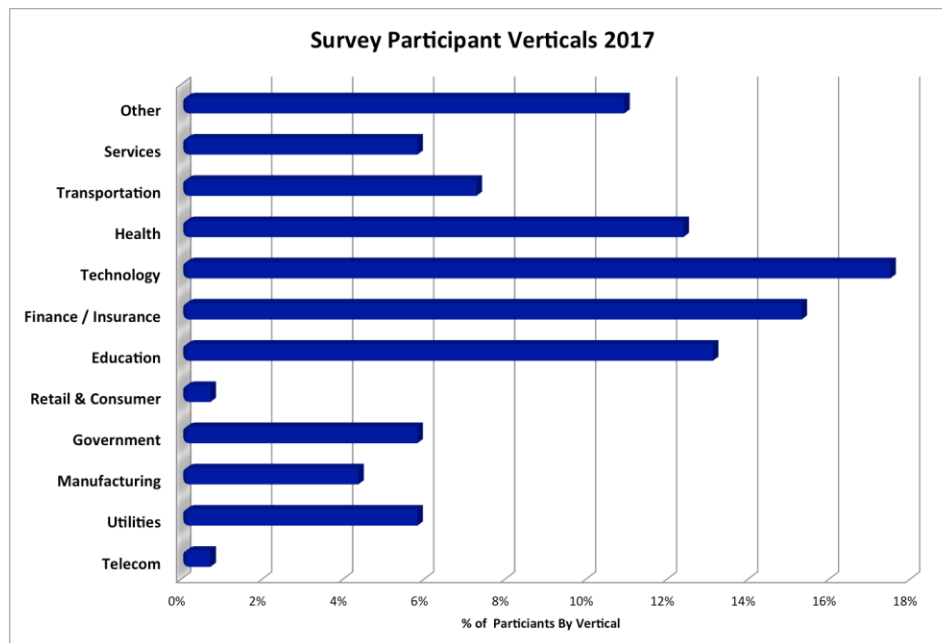
This year's survey was structured around different question formats including binary "A" or "B" type questions.

Multi-select options for current focus areas and eight core statements focused on understanding the level of adoption around specific DevOps CSFs that the PTT identified in a series of planning calls leading up to the face-to-face workshop.

Transforming To DevOps – Go Fast Or Go Home!

The first binary question asked of the survey respondents was to identify what percentage of the respondents were actively and explicitly working on a "DevOps" focused transformation to establish a collaborative-based culture.

Question 1: Are You Actively Transforming Your Organization To A DevOps Culture?

The objective of this question was to understand the pickup on the DevOps language in describing cultural improvement goals. The binary nature of the question was used to identify how many organizations were explicitly focused on improvements they related or mapped to the term "DevOps Culture".
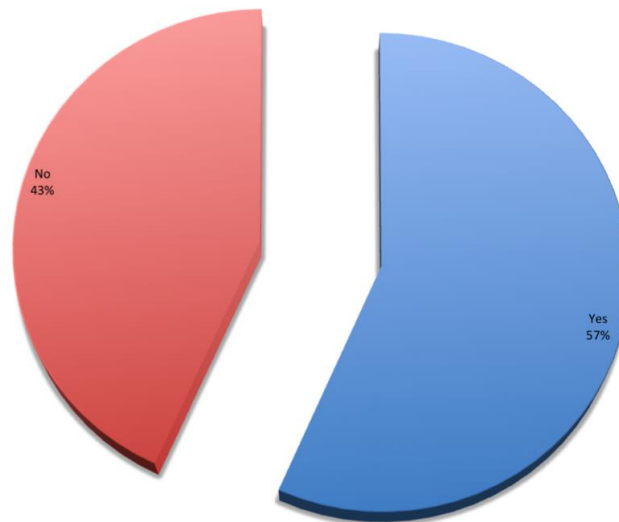
Analysis: What is interesting is the majority of respondents (57%) indicated that this specific goal is indeed a current focus. Outside of the use of the term DevOps to describe this improvement focus, the nature of a DevOps culture is focused on breaking down silos and improving communication and collaboration. It is encouraging to observe that the majority of survey respondents indicate that this is an active focus of their organizations.

Speed Over Maturity

Over the past three decades, the attendees at the Pink conference have been focused on topics and discussions related to the maturity, control and capability of their IT Service Management (ITSM) processes. To test whether this focus has changed based on the market pressures outlined in the introduction, the following question was asked.

Question 2: This Year, Process "Speed" Is More Important Than Process "Maturity".

No
41%

Yes
59%
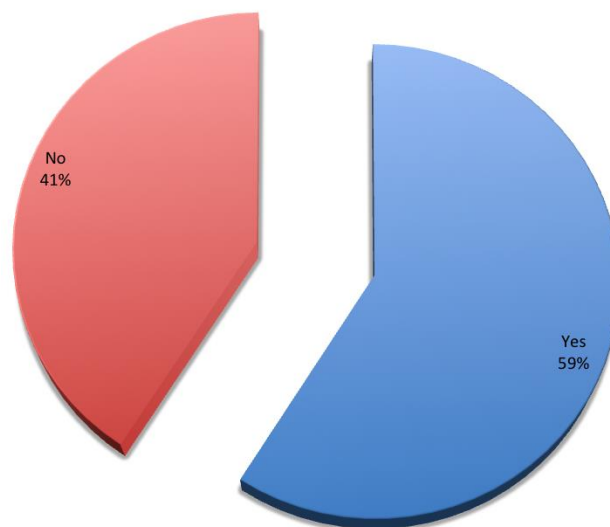
Analysis: Again, it is interesting to note that the survey respondents answered this question with a very similar response breakdown to the previous question. Understanding the relationship between DevOps and speed to market goals is not surprising and allows us to establish the hypothesis that those organizations, which are actively pursuing a DevOps transformation, are doing so with the goal to increase the speed of their value creation capability in order to enable higher levels of business agility.

Framework Adoption

The next question focused on framework and methodology adoption and was purposely kept consistent over the two survey years. The goal of this question was to observe differences over a two-year period regarding key focus areas. The question format was presented to the survey respondents as a multiple check box option with the direction given to "select as many as are relevant". The data from this question provides an interesting year-to-year comparison in respect to which approaches are changing in regards to organizational focus. It is important to note that the question does not

indicate that that previous focus areas are less important but rather is intended to understand current priorities.

Question 3: What frameworks or methodologies are currently a focus?
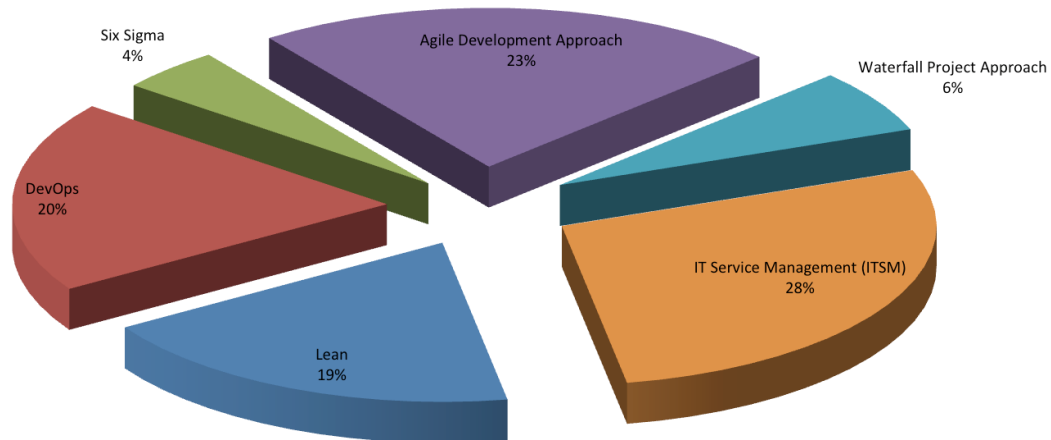
Analysis: Earlier in this paper, the statement was made that based on the growing pressures related to the speed of delivery, organizations have been adopting improvement methods focused on efficiency. This has led in the growing popularity of models and improvement methods focused on increased process efficiency and flow such as Agile, Lean IT and DevOps. Interesting to note from the data on the next page is that the majority of surveyed organizations are rapidly adopting these emerging models.

A key observation is that DevOps is not a framework or specific methodology but rather refers to a collection of practices, teaming structures and automation strategies which collectively deliver faster flow and speed to market.

Changes Year Over Year (2016 - 2017)

Approach	Survey Year – 2016	Survey Year – 2017
IT Service Management	27%	28%
Waterfall Project Management	18%	6%
Agile Development	22%	23%
Six Sigma	7%	4%
DevOps	13%	20%
Lean IT	13%	19%

From this year-to-year comparison, it is interesting to see the three highest variances from the previous year's survey. The most striking point is the change in focus away from classic sequential activity based project management, which has been in recent years termed "Waterfall Project Management". While this remains a primary method for managing projects in most organizations, the investment in its development declined by 66% from the previous year. Also, what is very telling is that the highest areas of positive change have been in the adoption of DevOps with a 7% positive growth rate and Lean IT showing a 6% improvement year-over-year. An additional observation is that aside from the ongoing focus on ITSM, which you would expect based on the context of the conference, Agile has the second highest adoption of all the frameworks and methods listed.

The growth in adoption and investment of DevOps and Lean approaches focuses on process efficiency and the decline of waterfall project management is in harmony with the early finding regarding speed over maturity. This is another metric that identifies that the majority of organizations have indicated that speed is a more important indicator for value than maturity or compliance.

DevOps Critical Success Factors

The next section of the report focuses on a set of CSFs for DevOps which the PTT team identified prior to the workshop. These CSFs were presented on the survey in the form of a positive statement and the survey participants were asked to rate the statement in relationship to its reality within their own organization using the following scale:

1. **We Plan To Start:** There has been discussion around the question but agreement on approach and actual work has not yet been achieved or begun
2. **We Have Started:** An approach has been agreed and actual work has begun
3. **It Is In Place:** The approach has been put in place and is used at a basic level
4. **It Is In Place, Measured & Managed:** The approach has been adopted and the results are reviewed for continual improvement
5. **It Is Considered An Indispensable Asset:** The approach is deemed critical and the results provide a strategic advantage to the organization
6. **N/A – Unknown:** The survey respondent is unaware of the current state of the approach or work being done in regard to the question

Note: The response scale for this survey year did not include an option for "**We do not plan to start"** and this is recognized as an improvement for future surveys. Our assumption is that respondents who select the N/A option will have used this aspect of the scale for both Unknown and No Plans.

The survey respondents were asked to react to and rate **the following eight statements:**

Critical Success Factor 1: The Term DevOps Is Understood

A basic success requirement for any transformation is that there is a clear understanding of the terms and concepts being presented as part of the goal. As suggested earlier, this is a challenge for DevOps in general, as the term DevOps does not refer to a specific framework or method but is a term that is used loosely to describe a collection of practices, teaming structures and automation approaches. This is not helped by the fact that the DevOps community describes the approach as emergent, or that it's evolving over time.

There are core principles and practices, which have emerged as the basis for describing what DevOps is and its current scope. Based on the challenge this represents, the survey asked the respondents the following question to gauge the understanding and agreement around the term DevOps.

Survey Statement 1: The term DevOps is understood within our organization
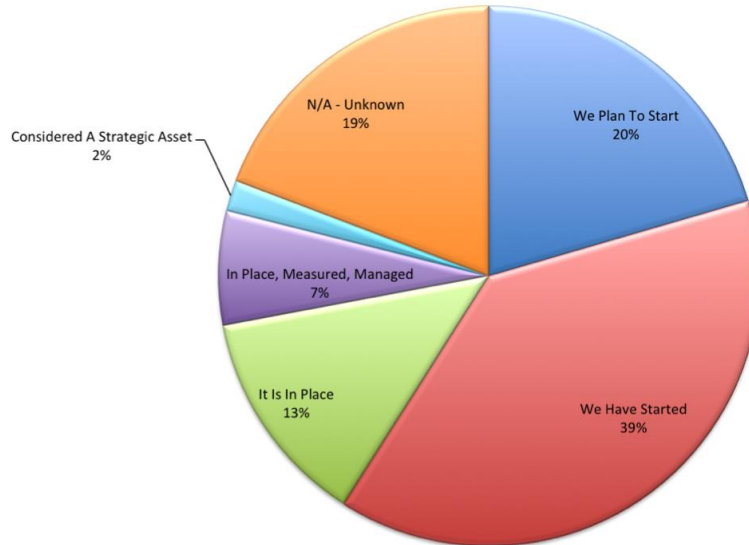
Analysis: Based on the emergent nature of the DevOps movement, it is not surprising to see that the definition of the term DevOps is at an early stage. Only 22% of respondents scored this question at a level where it would indicate that their organization has a good understanding of the scope and definition of the term.

The challenge this poses for DevOps adoption is that over two-thirds of the organizations surveyed have yet to start or have just begun defining what the concept and term DevOps means to their own context and environment. As part of the recommended next steps covered in the conclusion, the closure of this gap represents a quick-win for successful DevOps transformation.

Critical Success Factor 2: The Service & Product Owner Role

DevOps, Agile, Lean and ITSM all share a focus on managing outcomes (products and services) from a customer value-based perspective. A CSF for moving from a technology to a service outcome mindset is the establishment of a Product or Service Ownership role. These roles can oversee and manage the lifecycle of the service from within the context of the overall service portfolio. A key function of these roles in support of accelerating business value delivery is the prioritization of the backlog of requests, enhancements or improvements, which align with business priorities and objectives.The following statement was selected to understand the degree to which organizations have established this role and their function in prioritizing work.

Survey Statement 2: Our organizational structure includes Product and/or Service Owner roles, which prioritize work based on business value.
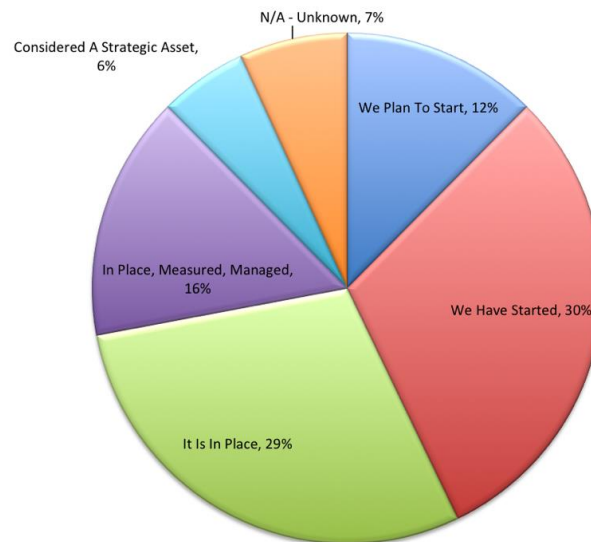
Analysis: It is encouraging to note that 51% of organizations indicated that these roles are in some form established within their organization. It is not surprising that this statement scored higher than the previous statement in that both ITIL® and Agile have promoted this concept and have been historically adopted for several years by many of the organizations which responded to this survey.

**Critical Success Factor 3: DevOps Teams Established**

A major cultural and structural success factor of the DevOps movement is the focus on the creation of cross-functional teams, which have membership from both the Development as well as the Operations groups. Building on the Agile Scrum concept of a self-managed cross-functional development team, a DevOps team has an expanded membership to include stakeholders from non-development groups. The goal of the DevOps team is to increase collaboration through improved relationships and shared objectives. DevOps teams are typically oriented around a specific service or product line and have responsibility for both the development as well as the support of the service. The positive impact of this teaming structure is that collaboration and team results greatly increase even when there are elements of their processes, which are less mature or repeatable.

The fact that these teams own not just the development work but also support what they put into production also has a major positive impact on the attitudes, behavior and culture of the individual members. The result is that work is completed at faster rates

and the percentage of defects escaping into production decreases dramatically and that the transition to operations is much more seamless than in the days of waterfall or "throw it over the wall." To test this CSF the survey respondents were asked to rank the following statement:

Survey Statement 3: We have established teams made up of key stakeholders from both "Dev" and "Ops" departments.
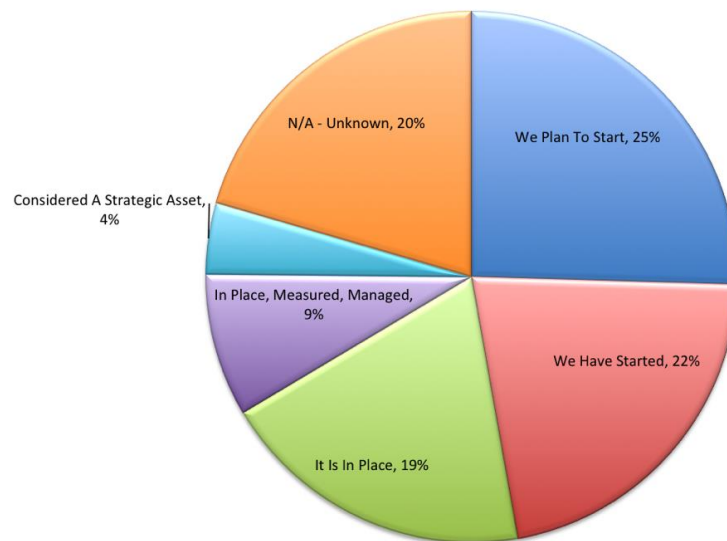
Analysis: The results of this statement demonstrate that the formation of cross-functional teams, which include both Dev & Ops stakeholders, is at a very early stage of its evolution. This is not surprising in that the adoption of this teaming structure is a major change from traditional top-down management models. In this new way of organizing work, functional managers no longer dictate the daily work to their team members once they have been assigned to a self-managing team. Instead, the manager focuses on the function's overall skills development in support of the service/product team's goals and objectives. An interesting note is that 47% of organizations see the value in moving in this direction and either plan to start or have recently started this teaming approach.

Critical Success Factor 4: Focus On Security In DevOps

When assessing the capability of a given product or service it is critical that both functional (feature/utility) and non-functional (warranty) attributes are considered in design and ongoing service delivery. A limitation of Agile development methods has been that it primarily focuses its user stories on feature requirements. Conversely, ITIL has traditionally had a stronger emphasis on warranty or non-functional requirements typically represented as part of a service design package. In theory, DevOps balances

both perspective of value and places equal weighting on the importance of both function and non-functional aspects of release requirements. The premise being that a balanced perspective is derived from the expanded stakeholder membership of the DevOps team described above. From this perspective, we can view security and cyber resilience criteria as one of the most visible examples of non-functional product requirements and potentially one of the pitfalls where the DevOps teams move so fast that they ignore activities that manage risk. A key part of the goals of DevOps is the standardization of environments and architectures. This discipline simplifies security reviews and improves flow.

The following statement was tested to understand the level of consideration and integration that security requirements are included in DevOps product design considerations.

**Survey Statement 4:** We consider security and compliance a major influence in our DevOps strategy.
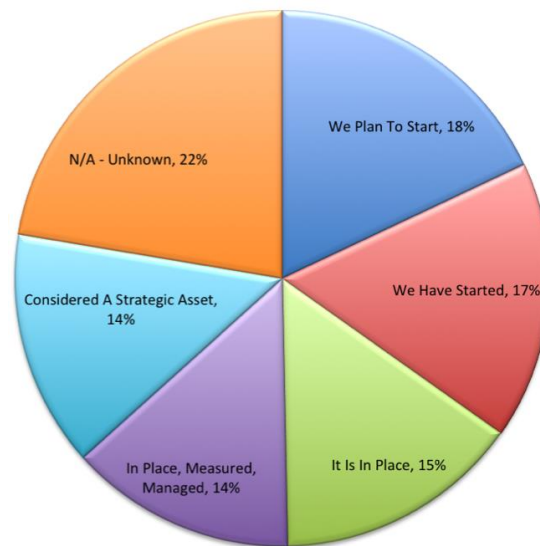
Analysis: It is interesting to note that the response to this statement was divided; 43% of respondents stated that security was a major influence and voice in their DevOps strategy. However, 57% of respondents listed this as either N/A, plan to start or have recently started. Clearly there is room for improvement in this CSF.

Critical Success Factor 5: DevOps Includes Functional & Cross-Functional Requirements

Building on the importance of security within the DevOps approach, the PTT team also wished to test the expanded scope of non-functional requirements further by understanding to what extent the DevOps teams considered the larger context of systems thinking principles. The basis for the following test statement was to understand to what extent DevOps considerations included the full set of system or environmental variables in their build and move to production processes.

Survey Statement 5: Our DevOps approach focuses on more than just the application features, but considers the functional and non-functional requirements from a Systems and Service Lifecycle perspective (applications, databases, network, infrastructure, service level, etc.).
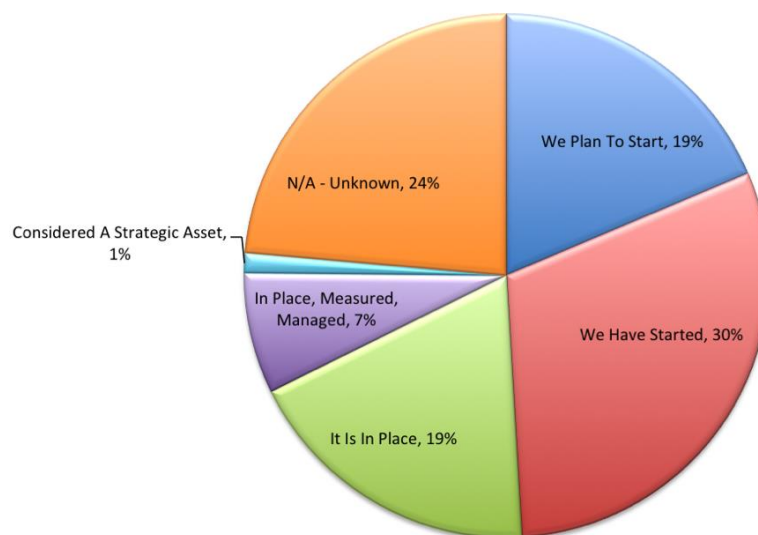
Analysis: Based on the experience of several of the PTT members, many DevOps teams are still primarily and narrowly focused on the application and database elements of a system release. Few organizations have extended their release and automation considerations to a full set of system and non-technical requirements. This assumption is validated in the response to this test statement where only 26% of respondents ranked this statement as currently in place or higher. The observation can be further correlated to the low rating given to the previous statement related to the creation of cross-functional teams, which include both Development and Operation stakeholders.

However, as we can also see, the increased system perspective is something that is being improved based on 49% of the respondents indicating they are planning to or have recently started to consider a full set of functional and non-functional requirements.

Critical Success Factor 6: Uses DevOps Practices Of Continuous Integration & Deployment

While the principles and practices of DevOps cover a wide range of subject areas addressed by other frameworks the relatively new elements DevOps brings to the table are the practices, architectures and automation techniques of Continuous Delivery, which include a focus on increased automation of Continuous Deployment. These practices include the standardization of processes related to software configuration management, de-coupled application architectures, automated provisioning and software deployment. To deliver on the promises of continuous delivery, organizations typically adopt an iterative Agile development methodology with the discipline of daily code integration, test-driven development coding practices and a focus on delivery automation. These practices along with the standardization, integration and automation of 'best of breed' point solutions into an integrated DevOps tool chain, represent a major and unique contribution from DevOps practices to the goal of accelerated value delivery. The following statement tests to what degree these practices have been pursued within the surveyed organizations.

Survey Statement 6: We use the DevOps principles of continuous testing, continuous integration and/or Continuous Deployment to automate how changes are made to production.
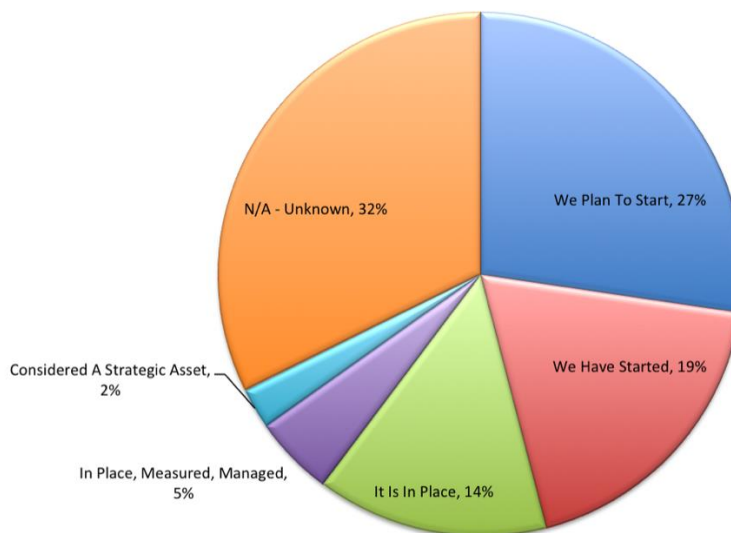
Analysis: The practices and tooling strategy of Continuous Delivery represents a major change in respect to behavior, culture and IT tool management procurement practices. In short, for organizations to realize the benefit of a Continuous Delivery tool chain, several behavior and organizational change factors need to be considered:

1. A variety of stakeholders in different functional silos agree on standard practices and processes
2. A standard tool strategy has to be agreed
3. Existing or newly acquired point solutions need to be integrated

Each of these basic steps can pose significant organizational challenges, so it is not surprising that this area of DevOps is still very early in its adoption with only 21% of organizations indicating they have made progress in this area. Many organizations are taking baby steps in this area by focusing on a reduced scope of automation such as continuous integration or software deployment. Alternatively, they are developing complete tool chains based on a single or limited product or service line.

Critical Success Factor 7: Understand The Relationship Between Lean, Agile & DevOps

An area of confusion for many organizations is how the various emerging frameworks are connected or work together. In many companies, activities related to ITIL, Lean, Agile and DevOps are all being pursued but few organizations have realized the connection or integrated these various pockets of improvement. Rather, in many situations these various groups compete for resources, are threatened by each other's use of different terms and are often territorial versus collaborative.

The following statement was chosen to gain insight into the level of organizational knowledge and messaging in respect to how the various frameworks work together.

Survey Statement 7: We understand how Lean, Agile and DevOps relate to each other and how these models integrate with other frameworks such as ITIL.
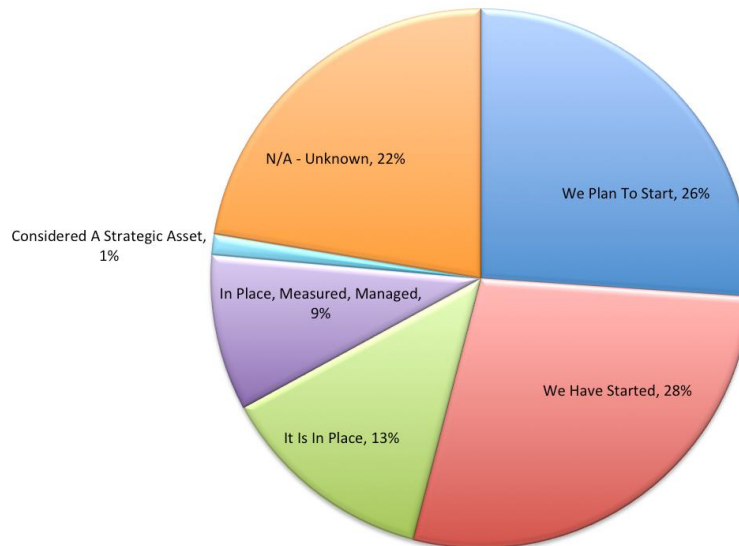
Analysis: The number of organizations, which understand and are able to articulate the relationships between the various frameworks and models is limited to 23%, however 28% see the value in doing so and have started this journey. As indicated above, this poses a risk to the successful adoption of any of the improvement models listed on the survey since in many cases internal conflict and silo based cultures will work against the goals of improved DevOps collaboration and improved speed of value delivery. This gap can be corrected quickly and represents a quick win for organizations considering DevOps CSFs.

**Critical Success Factor 8: Metrics Focused On DevOps**

A critical enabler for the success of any transformation effort is the identification and measurement of key performance indicators, which focus on the goal. As DevOps draws from many of the Lean principles and practices related to improving process flow and measuring overall system velocity, many of the metrics to measure DevOps success are derived from Lean and Agile practices. These key metrics include:

- **Lead Time:** The measurement of time between the customer request and the delivery of value
- **Cycle Time:** The measurement of end-to-end process performance or throughput, focused on measuring the time from start of work until "Ready for Delivery"
- **Escaped Defects:** Represents the number of errors or defects that make it to production and are discovered by the users or customers of the service

These types of metrics get to the heart of the question in terms of increasing the speed of value delivery, based on the people, process and automation improvements identified by DevOps. The following and final statement was placed in the survey to understand the adoption of end-to-end customer measurements.

Survey Statement 8: We have actionable metrics in place to measure the business value of our DevOps initiatives such as Product Availability, Escaped Defects, Cycle Time and Lead Time.
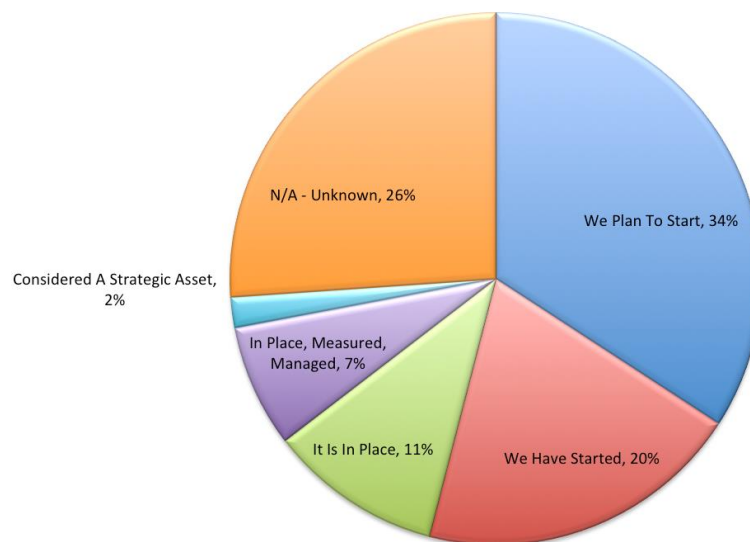
Analysis: Considering the response to the last statement and the general maturity of measurement as a practice in our industry, it is clear that measurement of customer value delivery timeframes or the reduction of escaped defects have not been widely adopted by the surveyed organizations with 20% indicating that they have at this point put in place metrics that focus on DevOps goals.

Conclusion

As was stated in the introduction, what makes the DevOps movement unique in the sense of urgency and adoption is the fact that the drivers for change are external and market driven. Past improvement cycles have typically been driven by a customer improvement focus or have often been driven by the emergence of a trendy new topic or for brief periods of time, by compliance and audit requirements, as was the case for SOX legislation in the US.

For many of the more technically or culturally challenging DevOps statements approximately one-third of the organizations have responded stating that the practice is in place at some level of adoption. Another one-third have indicated that they either plan to start or have started. The remaining one-third of the participants either do not know or have not planned to start activities related to DevOps adoption.

At a high level, this breakdown could be used to approximate that the percentage of organizations, which have already adopted DevOps, practices or are planning to in the near future represent roughly two-thirds of the survey respondents.

Another key observation is that DevOps is not a framework in its own right but refers to a collection of best practices. In fact, a unique and positive aspect of DevOps is that it has been responsible for validating and pointing to the integration of many frameworks and models that have previously been adopted in isolation. The other unique factor that the DevOps community and Continuous Delivery brings to the table is the focus based on cloud and virtual technology advancements where the virtualization of hardware makes automation of the full IT environment possible. For those organizations wishing to make progress towards DevOps goals, this paper illustrates several enablers and CSFs that can be put in place and practiced to begin your journey of accelerated value.

Recommended next steps:

1. Begin building awareness about the true scope of DevOps and its relationship to Lean, Agile and ITSM to draw these practices together in your organization. (Question 3, Statement 1)
2. Establish customer-oriented performance metrics on your service delivery throughput such as Lead and Cycle Time. (Statement 8)
3. Establish the Product/Service Owner role supported by self-managing cross-functional teams. (Statement 2 & 3)
4. Establish the primary steps of your delivery process and perform Lean Value Stream analysis to identify opportunities for increased efficiency. (Question 3)

These initial four steps will lead to additional improvements you will be able to tackle over time such as:

- Standardize your delivery and move to production processes
- Agree on common tools for automated service delivery addressing the full life cycle of Plan, Build, Run
- Establish Agile development practices to reduce the size, complexity and risk of releases while increasing overall velocity
- Increase the scope of non-functional requirements for go live assessment and automation by tying in ITIL Service Design and transition considerations

As a fitting way to end this first paper I would like to quote Jack Welch, "If the rate of change on the outside exceeds the rate on the inside, the end is near."

Change is the only constant in our universe and you either manage it or it manages you! Look for the second white paper from the Pink Think Tank to follow, where we will share the insights which came out of the one day face-to-face working session.

Troy DuMoulin
VP Research & Development
Pink Elephant

About Pink Elephant

We Lead The Way!

A premier global training, consulting and conference service provider, Pink Elephant has an undisputed reputation for leading the way. We're proud of our pioneering and innovative spirit, which has enabled us to introduce and spearhead many revolutionary concepts and programs since our inception forty years ago.

About The Author

Troy is considered by many to be one of the world's foremost ITIL® and ITSM experts. A passionate and experienced Executive Consultant, Troy is always willing to use his rich and extensive background to share what he knows, and is always on the hunt for more knowledge. Troy always has his finger on the industry's pulse – if there's a question about what the latest trends in ITSM, Lean, Business Relationship Management or Organizational Change Management are, he has the answer! Troy is a frequent speaker at ITSM events, a contributing author for several books focused on ITSM and Lean IT concepts, and his blog is one of the industry's most popular and informative.

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