devoteam

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DevOps & ITSM: Friends or foes ?

Creative tech for Better Change

CONTENTS

INTRODUCTION

Today's pace of change is relentless; to keep up with the market, adoption of DevOps is inevitable, but what does this mean for IT Service Management (ITSM) practices? With ITSM seen as focussing on stability and predictability and DevOps driving change and disruption, are they mutually exclusive? And with tensions running high between the two camps, how can they possibly collaborate? At Devoteam, we believe not only that **ITSM** and **DevOps** can co-exist in harmony; we believe that through cultural integration and common language and data models, they can share a collaborative, symbiotic relationship.

IT service management (ITSM) is an **operating framework** that allows organisations to effectively build, manage and operate a portfolio of Information Technology (IT) Services at scale to enable achievement of business objectives. It drives business value by ensuring technology services are available, reliable, performant and cost effective. It uses the principle of continual improvement to ensure services and processes are improved and enhanced on an ongoing basis to meet the changing needs of the business.

DevOps is a **cultural framework** that combines software development (Dev) and IT operations (Ops) practices with the aim to shorten the systems development life cycle and enable the business to have a quicker route to market. It uses the principle of continuous delivery to launch products and services in an iterative and incremental manner rather than in a big bang approach.

CONTINUOUS CHANGE

The world around us has been changing continuously as human civilizations have evolved over thousands of years. The pace of change increased with the Industrial Revolution as humans invented new technologies to help with mass production of goods. However, since the invention of information technologies, this pace of change has significantly accelerated and we are currently in the Digital Transformation era. Any new technology has the potential to disrupt the status quo and with digital technologies, this disruption has been evidently significant.

As described very eloquently by Jonathan Smart in his article titled "A Sense Of Urgency: Surviving In The Age Of Digital", the rate of disruption is now faster than ever. In 1964, a firm listed on the S&P 500 Index could expect to remain on the index for thirty-three years. By 2016, that tenure had fallen to twenty-four years. By 2027, companies can expect to spend no more than twelve years on the index before they're replaced. At the current churn rate, between 2018 and 2028, about half the index will have changed. With companies growing and shrinking faster than ever before, there is a need to be on the right side of change in order to survive and thrive.

A look at the current set of companies listed on the Dow Jones provides one clue to the source of the dramatic turnover on the S&P 500. An economy that used to be dominated by oil and repetitive mass production has given way to one dominated by a continuous stream of information technology innovation and unique product development.

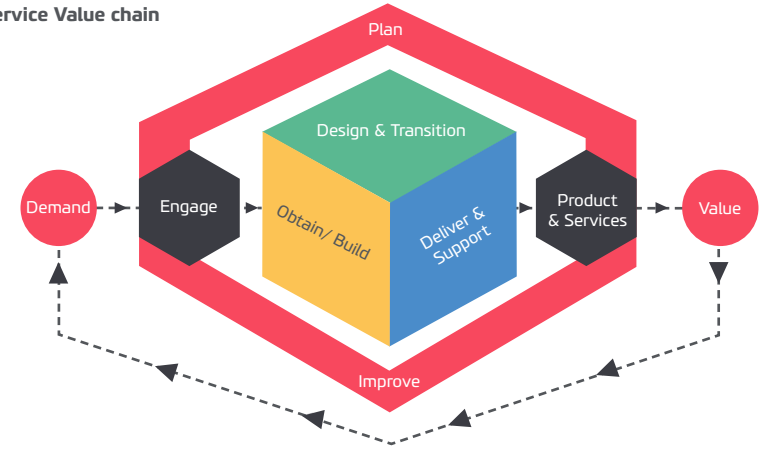
Incumbents must keep innovating or they risk being displaced. "Disruption" has gone from having negative connotations to being something businesses aspire to. In this age, every company is a digital company, whether they know it or not. Mature companies are scrambling to "transform digitally". Every organisation wants to be the first to deliver a differentiated service to a customer. If new ideas take months to reach the customer the business in question will not be the first and will have lost the advantage. Delivery of value through associated technology change has to be quick for the business to win.

Technology is key to the success of businesses today. Customers increasingly rely on technology to interact with the organisations they do business with, such as the move to online retail and banking and access via mobile apps. Businesses stay ahead by leveraging the power of the data they have within their control, for example, to identify how to grow and deepen their customer relationships. The potential for business transformation has never been greater and technology enables those who embark on that journey. But to make that journey successful, IT departments and the business units they support need to act together and remain focused on delivering value to customers. And to stay competitive they need to do this faster, better and safer.

IT SERVICE MANAGEMENT

IT services are conceived, designed, developed, deployed, maintained, supported and decommissioned. In order to take services through that lifecycle, common activities are required across all organisations regardless of size, maturity or complexity. For stakeholders to communicate effectively when supporting IT services a common language is required; the ITIL framework is the most widely adopted service management framework. In earlier versions of ITIL, processes were aligned to a service lifecycle, however in the Agile world that we now live in activities which were once sequential can happen in parallel such as design, build, transition and support, this is embodied by ITIL 4, as illustrated in Figure 3.

Service Value chain



ITIL 4 provides a set of guiding principles and practices that, along with governance will enable an organisation to focus on delivering value via the Service Value Chain, it is now understood that this is a continual and iterative process. ITIL is not, and never has been, prescriptive and does not specify how activities should be performed. Individual organisations can determine which ITIL practices they wish to use and what level of maturity, automation and investment is appropriate for their situation.

ITIL focuses on delivering value to the business. However, this focus on delivering value can be obscured and sometimes lost when you get down into the weeds and mechanics of how an IT department operates. ITIL 4 has gone some way to address this by focussing on value creation, however ITIL 4 was only published in 2019 and adoption is understandably limited.

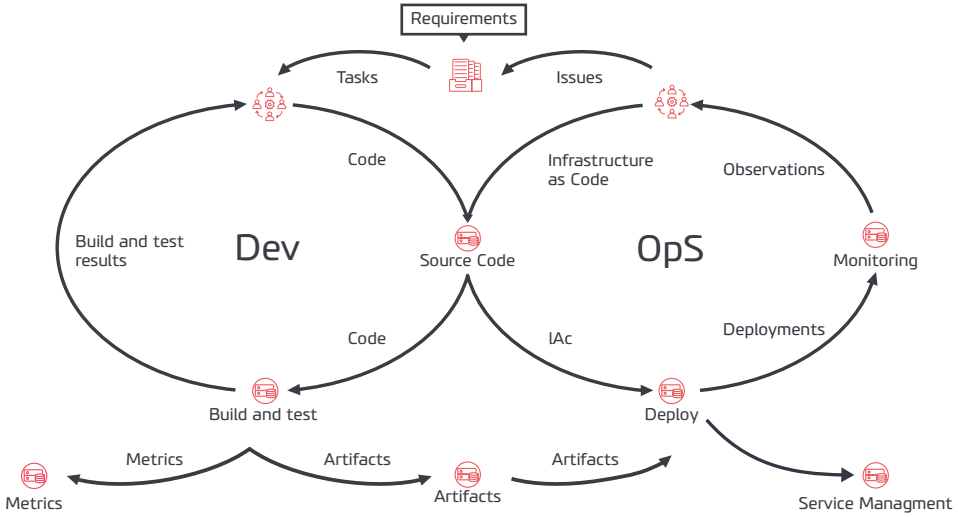
Individuals responsible for the instantiation of ITIL processes within the organisation can be seen to implement ITIL for the sake of the process, having lost sight of the overarching needs of the business. Where such disconnect exists, symptoms are plain to see - for example, incorrect prioritisation of incidents may result from a lack of insight into business impact. Other symptoms, however, may not be so clear, such as the prioritisation of projects, blanket testing policies or overly cumbersome governance processes.

ITIL provides the flexibility to adapt the framework to meet your organisation's objectives and adopt it in such a way that it seamlessly fits within the organization's cultural fabric and operating model. However, many organisations fall victim to the misconception that they have to implement the entire framework exactly how it is described in the ITIL textbooks. This unfortunately has given ITIL an incorrect reputation of being very rigid and process heavy, especially in the DevOps fraternity.

DEVOPS

DevOps evolved to bridge the cultural divide between developers who are incentivised to change and operations who are incentivised for stability and security. DevOps can bridge that gap by bringing together the capabilities of Development and Operations into a single team responsible for both developing and operating IT services. Redefining and in some cases combining the role of the developer and sysadmin has been made possible through increased automation of both roles in testing, deploying and monitoring the software and the underlying cloud infrastructure. Bridging the divide between these roles removes issues around ownership and handover. Figure 4 below illustrates our DevOps operating model, showing the continual cycles of development and testing activities on the left (Continuous Integration), with the continual cycles of supporting operational infrastructure activities on the right (Continuous Deployment).

Through the continuous integration and deployment processes, organisations are now able to release changes at dizzying speeds; for Amazon that rate is a release every 11 seconds! By delivering little and often DevOps reduces the risk associated with the individual changes being made.



SHADOW DEVOPS

The business units know they must keep pace with the market and therefore there is a strong desire to recognise the benefits of DevOps. But in larger enterprises DevOps services may not be readily available. Central DevOps teams may be prescriptive, under-resourced, dysfunctional or non-existent. In these cases business units and their IT teams may embed their own DevOps practices, use their own sets of tools and establish direct relationships with cloud providers and tooling vendors. This can be referred to as Shadow DevOps. They are able to realise the benefits of continuous deployment while running under the radar of the central IT department. While the product is in the development and pilot phases this solution may be highly productive and appear seamless.

Once the product is moved into production environments these teams may be forced to comply with enterprises policies. Issues then arise. We have heard of users calling the service desk about their business critical application going down only to find that the central IT department has never heard of the application! Engaging multiple cloud providers, or the same cloud provider in a fractured manner, across the enterprise presents challenges in how to manage those suppliers effectively and efficiently. The organisation will face challenges in licence and vendor management due to an inability to understand the scale of the DevOps estate. Shadow DevOps may place the organisation at increased security risk.

How do we avoid the pitfalls of Shadow DevOps? How do we give teams autonomy and the ability to innovate and deliver customer value quickly and safely, and to do all of this within the context of necessary Service Management controls and governance?

DEVOPS VS ITSM

As discussed above, ITSM is an operating framework, whilst DevOps is a cultural framework. In other words, an organization looking to get the best out of both these frameworks should use ITSM to define the 'what' and DevOps to define the 'how'. However, because this distinction between the 'what' and the 'how' is not often understood and both frameworks use different nomenclatures, it often results into contention between the two fraternities.

There is a lot more synergy between DevOps and ITSM than widely perceived as most of the contentions can be resolved by having a more open dialogue and understanding how each of these fraternities operate. For example, the ITSM process of Problem Management to identify the root cause of an incident directly links to the DevOps practice of conducting post-mortems following a service failure. Similarly, the ITSM process of Incident Management links to the DevOps practice of automating service restoration using concepts such as Self-healing and AI-Ops. Change Management is one major area where DevOps and ITSM often find themselves at odds against each other. So, let's dive a little deeper into this.

DEVOPS & ITSM

WORKING TOGETHER IN CHANGE MANAGEMENT

The key objectives of change management can be summarised as follows:

A. To facilitate business change through safe deployment of IT system changes in a way that their risk to disrupt business operations is minimized.

B. To allow the business to take informed decisions on overall business risk against the benefits.

C. To govern all system changes consistently at an enterprise level by ensuring that the portfolio of changes are effectively prioritised, scheduled, planned, tested, implemented, documented and reviewed in a controlled manner.

D. To ensure that all system changes are recorded and evaluated appropriately for audit purposes.

If we keep sight of all of the above objectives, a change assessment weighs up the level of risk against the need for change. The level of assurance and authorisation required would reflect the level of risk perceived. However, if we lose sight of the business alignment and need for change and focus on minimising disruption through the activities listed in point c) above, a meticulous, burdensome and potentially officious change process emerges.

Change management is one of the most widely adopted service management processes and is usually one of the most mature ITSM processes in an organisation. The process allows for the definition of standard changes: changes which are well understood and have been implemented previously with success and are allowed to pass through the change management process without intervention. There is a need to log and understand the standard changes that have been made but there is not necessarily a need to review and approve manually every change. Few organisations use standard changes to their full potential. In some organisations a significant proportion of changes which could have been treated as standard changes are treated as normal changes which are routed through the CAB (change-advisory board). Some organisations operate a virtual CAB, which allows members to approve changes remotely but still requires a manual approval in the ITSM tool. In other organisations, CAB is a physical meeting where the group reviews and approves every change; usually meeting weekly.

DevOps has been honed to make best use of today's technologies, automating what was once manual and allowing for releases to happen at speed. However, at the point of being ready to deploy they may then need to take their change to the CAB (change-advisory board). To do this the DevOps engineer will need to log a ticket manually into the ITSM toolset, which then gets added to the agenda for the next CAB. All being well it will be discussed and approved at the next CAB but if there are higher priority changes it could be pushed back another week. This could result in a high volume of changes for the CAB, is frustrating for the DevOps engineer, and could potentially become crippling for the organisation as a whole. Some would argue that the CAB and DevOps are at a fundamental level incompatible. This is where ITSM should guide the 'What', i.e. ensuring there is Change Management governance in place, but DevOps should guide the 'How', i.e. ensuring there is a flexible and automated capability built to speed up the Change governance. CABs may still be required as enterprises transition to a more automated world, particularly to cover legacy and/or less well-maintained systems. We discuss this further in the "Building Trust" section below.

The FAANG companies (Facebook, Amazon, Apple, Netflix and Google) laud themselves on the speed of their delivery and their ability to add new services and features for customers at a dizzying rate. This speed of change is not possible without automating change management and integrating it with DevOps processes.

In the same way that we would expect the level of testing to reflect the level of change and risk, we should tailor the change approvals process to reflect the level of risk being taken. DevOps and microservice-based approaches reduce the risk associated with changes and reduce the need for change management by removing inter-dependencies between components of applications. DevOps attempts to make releases boring through frequent, small and safe deployments. By continuously delivering small changes, DevOps de-risks each individual change. This is unlike a Waterfall approach where large, infrequent, complex releases are delivered into production. It is now time to evolve the governance processes to reflect the updated delivery approach. Tailoring governance to reflect the associated risk allows effort to be placed where effort is due. It permits adherence to the change process without causing unnecessary delays.

Change management must define standard changes and allow these changes to pass through the process seamlessly with no manual intervention. For changes that are not standard, a mechanism is required to allow the level of governance applied to reflect the level of associated business risk. Changes should be rated depending on business value and risk of business impact if the change goes wrong. Some considerations could be:

- **What value is it adding to the business?**
- **What is the impact of service degradation or downtime?**
- **How many components have changed?**
- **How much code has changed?**
- **How much changed code is covered by automated tests?**
- **How does it impact integrated services downstream and upstream?**

BUILDING TRUST

Both fraternities need to work hard to build trust with each other. This will require both to understand each other's objectives and working practices with an open mind. Both need to be flexible to adopt their working practices to support each other's goals.

ITSM teams have traditionally been very process focused, but they need to think about the wider business context. Is their process adding value to the organization or is it actually impeding them? They need to start thinking in terms of 'Minimum Viable Processes' and being agile by enforcing 'just enough' control.

DevOps teams have traditionally considered governance as unnecessary and as something that slows them down, but they need to think in terms of the wider business stability. Have they got the right balance between speed, agility and business risk? They need to appreciate that the risk of business impact by preferring speed over governance differs by the type of business. For example, the risk impact to a single product start up business is very different to a large enterprise with a long history and complex legacy.

Automating the service management processes will require building trust: trust between developers and operations and trust between DevOps engineers and service management colleagues. Building trust takes time and will require changing enterprise culture.

Some organisations grade developers based on their experience and success of their previous releases. At Facebook, for example, all developers are given five stars when they start out and are given a high level of trust. If they then introduce a release that causes issues they get a star taken off their rating. Developers with fewer stars are offered less autonomy and their work is subject to increased levels of scrutiny. This places the onus on the individual developer to ensure they deliver quality work and thereby reduce the need for external oversight. While they are given greater autonomy they also have greater responsibility. This star rating drives the desired behaviours in individuals and the desired outcomes for the organisation, avoiding time and effort placed in external assurance.

Other organisations may use internal accreditation for teams and individuals (such as gold, silver, bronze) based on success in releasing to production, low incident counts, high code quality and levels of test automation. Higher accreditation allows higher levels of automation with service management systems.

INTEGRATING DEVOPS & ITSM

Integration and collaboration between DevOps and ITSM can be achieved by aligning their mindsets to a common goal. This common goal would act as an anchor for them to assess their working practices. Both fraternities need to invest time in learning about each other's objectives and finding a common goal that will motivate them to collaborate. Both must be willing to be flexible in their approach to be able to seamlessly integrate. This mindset shift has to start from the top leadership as often it is the leaders who are not aligned in their approach which then cascades down to their teams. Providing cross-training, creating cross-functional teams, having joint team away-days and having common performance objectives are some of the other ways for them to get an understanding of each other's working practices and drive mutual respect.

There are several examples where a previously contentious relationship between these groups have successfully been transformed into a trusting and mutually complementary relationships. A well documented example is of Spotify. Spotify has been seen as an organization pioneering the adoption of DevOps practices. An earlier attempt to enforce ITSM governance in Spotify had failed as it was seen by the DevOps teams as a top down governance model that would slow them down. When Spotify decided to go public, it had to ensure that its governance frameworks are robust for a publicly listed company. This is when Spotify attempted to implement ITSM governance the second time, but this time, rather than enforcing it top-down, it was introduced through collaboration. This allowed Spotify to implement a well integrated framework between DevOps and ITSM that met the requirements of both the teams.

Once this cultural and mindset integration is achieved, then the teams can be further brought together through tooling integrations. Integration between DevOps and ITSM tools allow DevOps engineers to deliver information to ITSM teams without manual intervention. CMDBs (configuration management databases) within ITSM tools generally include business units, services, applications and infrastructure components. While DevOps tools use other terminology such as products, code repositories, applications and teams. How do we relate, for example, a Git code repository to an ITSM service or application? Does such a relationship exist? Does one Git code repository relate to one service, or one application? Is it a one-to-one, one-to-many or many-to-many relationship?

To enable integration between DevOps and ITSM processes we need to map the terminology used by the two parties to reach a common language and ultimately a data structure which enables the seamless sharing of information between the toolsets. All modern DevOps and ITSM tools expose APIs that allow automated interactions between systems. Automated application deployment tools integrate with ITSM tools to allow change requests and change approval automation.

In the interaction between DevOps and ITSM there are many processes we may want to automate, and many possible tooling integration points. To highlight a few possible interactions:

- Integrating releases in a task management tool such as Jira, with change management in ITSM.
- Automating the deployment gates within a continuous deployment tool and the approval process in ITSM.
- Integrating incidents raised in an ITSM system with issue tracking systems like JIRA.
- Correlating deployment velocity and incidents due to change in ITSM systems with code quality and automated testing levels in a code base.

Done in the right way, within a framework of trust as described above, automation and integration of DevOps and ITSM processes can enable everyone to achieve their objectives and co-exist harmoniously.

A SYMBIOTIC RELATIONSHIP

ITSM and DevOps should definitely be the best of friends. They both serve the common goal of driving business value by providing a quicker route to market whilst providing appropriate governance to protect the business from the resultant risks. They are symbiotic in the sense that both DevOps and ITSM practices attempt to build continual learning and improvement into their ways of working. Not only they can co-exist and complement each other, but also getting the right integration and synergy between them can provide a formula for success to an organization looking to succeed in the digital first economy.

Like any other friendship, it requires commitment and investment from both sides to make it a mutually fulfilling relationship. It is more about aligning the mindset and less about aligning the processes. By fusing both practices effectively and adopting it to your organisation's needs, you can create a unique cultural fabric and operating framework that could provide a strategic advantage over your competitors. Tooling integration takes this friendship to the next level by bonding them together forever. Integrating the ITSM toolset with DevOps tooling provides the developers with additional insight into the impact of the releases they are making, including metrics such as the number of incidents associated with their release, the severity of the incidents and the mean time to recover from these incidents. This allows DevOps teams to understand how incidents correlate to source code quality and test code coverage and ultimately both to address any immediate issues and to develop continually their processes to reduce the occurrence of further issues. By integrating the toolsets used by the parties both are able to perform their roles in an expeditious manner and work collaboratively.

HOW DEVOTEAM CAN HELP

At Devoteam, we support our clients throughout their digital transformation journeys by shaping the overall transformation strategy and implementing it through a coherent roadmap in an iterative manner. With our key differentiator of 'Tech for people', we focus more on the human and cultural elements of digital transformations to ensure any technology implementation provides significant value and a great customer experience to the stakeholders. We understand the challenges and opportunities of digital transformations and are able to convert strategy into realized benefits through a set of optimized accelerators to drive business value right from the beginning.

In Devoteam UK, we have significant experience of designing and implementing Target operating Models (ToM) that seamlessly integrate the ITSM operating framework with the DevOps cultural framework to help their business achieve strategic competitive advantage. We have proven experience in driving maximum business value through an effective ToM implementation that would allow our clients achieve the right cultural fabric, an optimal organization design, a balanced sourcing strategy, a fully integrated tooling ecosystem, a flexible process framework with 'just enough' controls and a robust data model.

We act as client-side advisors supporting organisations that are evolving their DevOps and ITSM practices and we also offer DevOps as a service. We bring our integration expertise to bear for clients who wish to automate the interactions between their systems. And we help customers transition to cloud-native, microservice-based models of product development and delivery. With these collective capabilities we are uniquely positioned to help our clients address their ITSM and DevOps challenges.

ABOUT DEVOTEAM

Devoteam is a leading consulting firm focused on digital strategy, tech platforms and cybersecurity. By combining creativity, tech and data insights, we empower our customers to transform their business and unlock the future.

With 25 years' experience and 8,000 employees across Europe and the Middle East, Devoteam promotes responsible tech for people and works to create better change.

Creative Tech for Better Change

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Let's Create Together!

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