PLATFORMATION

Whitepaper

Enterprise DevOps: Marriage between control & agility

How to support and organize DevOps teams in an enterprise and drive productivity

Contents

Introduction

Since its inception during the 00s, DevOps has rapidly gained popularity amongst developers and operations specialists, and, more recently business development and security experts. DevOps has brought great improvements to the successful delivery, deployment and operations of software. But it has proven difficult to ensure all DevOps teams follow the same processes and use the same tools to keep track of progress. The tools DevOps team use typically depend on the developed software framework based on the preferences of teams or individual team members. In large enterprises and organizations with a global reach, this can prove to be a thorny problem.

As a result, individual team members waste time switching between tools. And more importantly, it is hard to gain a clear enterprise overview of the backlogs of individual teams and their interdependencies. To make matters even worse, developers in DevOps teams and Operations Engineers managing ITSM processes use different tools, blocking true collaboration between the teams.

What they need is a single platform that enables all DevOps teams to work in a way that fosters collaboration within and between DevOps teams, whilst eliminating time-consuming manual processes and ensuring a complete overview of all the work. It would be even better if this platform would also enable DevOps teams to smooth the Continuous Integration and Continuous Deployment pipeline to ensure more value is delivered faster, with higher quality and against lower costs.

This whitepaper explains how the ServiceNow platform creates a uniform approach to all things DevOps, allowing DevOps teams and managers to quickly respond to changing customer and organizational needs.

DevOps is much more effective when DevOps teams have access to the same information and plan accordingly, have access to automated provisioning of this information and are enabled to work faster due to advanced automation of the CI/CD pipeline.

Valuable time is lost with tool switching

Chapter 1.

The challenge for enterprise DevOps

Since DevOps brings together specialists with different responsibilities, skills and preferences, this also means individual DevOps teams or team members have their own workflows and use their own tooling to support their work. Developers will want to use different tools than those responsible for operations. Since these tools have limited or no data compatibility (for example, backlogging tools usually aren't compatible, and the same goes for containers, testing, deployment, etc.), pieces of information are stored in multiple systems and are hard to aggregate, if possible at all.

Especially amongst developers, we observe the tendency to use Jira. There are some drawbacks however: such tooling does not support operations and IT Service Management processes well and allows users to choose their own way of working and data collection. We see that large organizations that choose Jira are confronted with the need to build a very high number of integrations. For example, a single ITSM system needs to be integrated to multiple Jira instances, and Jira needs to be integrated multiple times with underlying CI/CD tools. Another big drawback is the lack of possibilities to consolidate data from multiple teams to provide an enterprise overview of the progress of all DevOps teams.

We've put the focus on Jira here because it's a very popular tool amongst developers. What goes for Jira, however, is also applicable to other standalone tooling: the need for integration of information in an enterprise environment could be at odds with developers' needs. The freedom, user-friendliness and easy integrations to the CI/CD pipeline all are big advantages of specific developer tooling. But since it simultaneously limits the degree of insight that can be obtained, they also limit the advantages DevOps can bring to organizations.

What is needed is a framework or platform that is able to integrate the tools developers like to work with, while also ensuring that developers work on releases that support strategic and financial goals of the enterprise as a whole. Could ServiceNow be the platform that combines the best of all worlds?

It is highly recommended to allow DevOps teams to each choose their own tooling for logging, collaboration, CI/CD and other functionality. But enterprises have to be aware that they need a platform where information of all Agile, DevOps and other teams is aggregated to avoid planning problems and a lack of insight in the accomplishment of strategic and financial company goals.

Chapter 2.

A DevOps platform reference architecture

It is clear that DevOps teams need their specialist tools to ensure the work gets done. We should encourage them to choose the best tools for building projects, running tests, bug detection, code analysis and project deployment. A Java, Microsoft or SAP development shop clearly requires a different set of tools to get the job done. But this shouldn't result in a lack of insight, oversight or steering capabilities for higher management. We therefore strongly recommend using ServiceNow as a platform that connects all the dots, all the way from strategic goals to Sprints and from ITOM to ITSM. This chapter eloborates on why ServiceNow is so well-suited for DevOps in enterprise environments.

Autonomy vs. the powers that be

Agile gives DevOps teams more autonomy and allows them to choose their own tools. But in an enterprise setting, different forces are at play. Long-term strategies, goals and maybe even programs that span 10 years or more need to be incorporated in DevOps ways of working to ensure company goals are met. Typically, such goals are top-down, i.e. the board or higher management define these goals and mobilizes enterprise departments and teams to achieve them within a certain time frame. As DevOps teams work bottom-up, at some point these different processes and information flows need to be tied together to ensure teams contribute to company goals while also enjoying the autonomy and flexibility that makes them successful.

Ideally, a platform is used to monitor, manage and support five discrete functional areas that are inspired on the IT4IT and ITIL methodology. Both signal the need for:

1. **Strategic portfolio processes**
2. **Design and requirements collection processes**
3. **Transition, delivery and deployment processes**
4. **Service monitoring and fulfilment processes**
5. **Analytics and insights**

In the remainder of this chapter, we will briefly elaborate on these five areas, and why they are important to master to succeed with enterprise DevOps.

Strategic portfolio processes

Agile and DevOps teams, due to their self-steering nature and focus on short-term results, seem to be a bad fit in an enterprise organizational hierarchy. The challenge is to successfully incorporate Agile DevOps teams in an enterprise environment without limiting their flexibility or effectiveness.

One way to do this is defining strategic objectives within the portfolios of DevOps teams. This enables them to respond to market demand while simultaneously working on long-term goals. Ideally, teams are supported by a platform that enables them to break down strategic themes and portfolios into smaller bits, maintaining the ability to deliver new functionality in an agile way.

Design and requirements collection processes

When it comes to developing certain functionality, there will always be a phase where design and requirements need to be collected. Without the right consolidation of information from all stakeholders, you run the risk of developing a product that doesn't match business requirements and/or market demand, or is a poor fit to company goals, or maybe is impossible to develop within the targeted time frame. Whatever the case, in an enterprise environment, access to the right information is key to translating business requirements into technical designs in the right way.

ServiceNow acts as a single pane of glass

Transition, delivery and deployment processes

When implementing DevOps in an enterprise, you will have to cover all transition, delivery and deployment processes. Because you need access to your strategic long-term goals and functional requirements used to build a new product, committed code has to be put into the version control system, and changes linked to Stories and automatic testing have to be fed back into ServiceNow. Plus, if you control deployment from ServiceNow, you need monitoring too - and the list goes on and on.

In other words: ServiceNow in an DevOps enterprise environment acts as a single pane of glass, providing key insights as well as a central point of control supported by strong integrations with a varied and flexible DevOps toolset.

Service monitoring and fulfilment processes

Once new software is in use, it needs to be monitored and maintained. That's where IT Service Management (ITSM) comes into play. Service mapping, predictive monitoring and other measures that need to be taken to ensure smooth operation are also directed from the single pane of glass. As it happens, ServiceNow is second to none when it comes to ITSM.

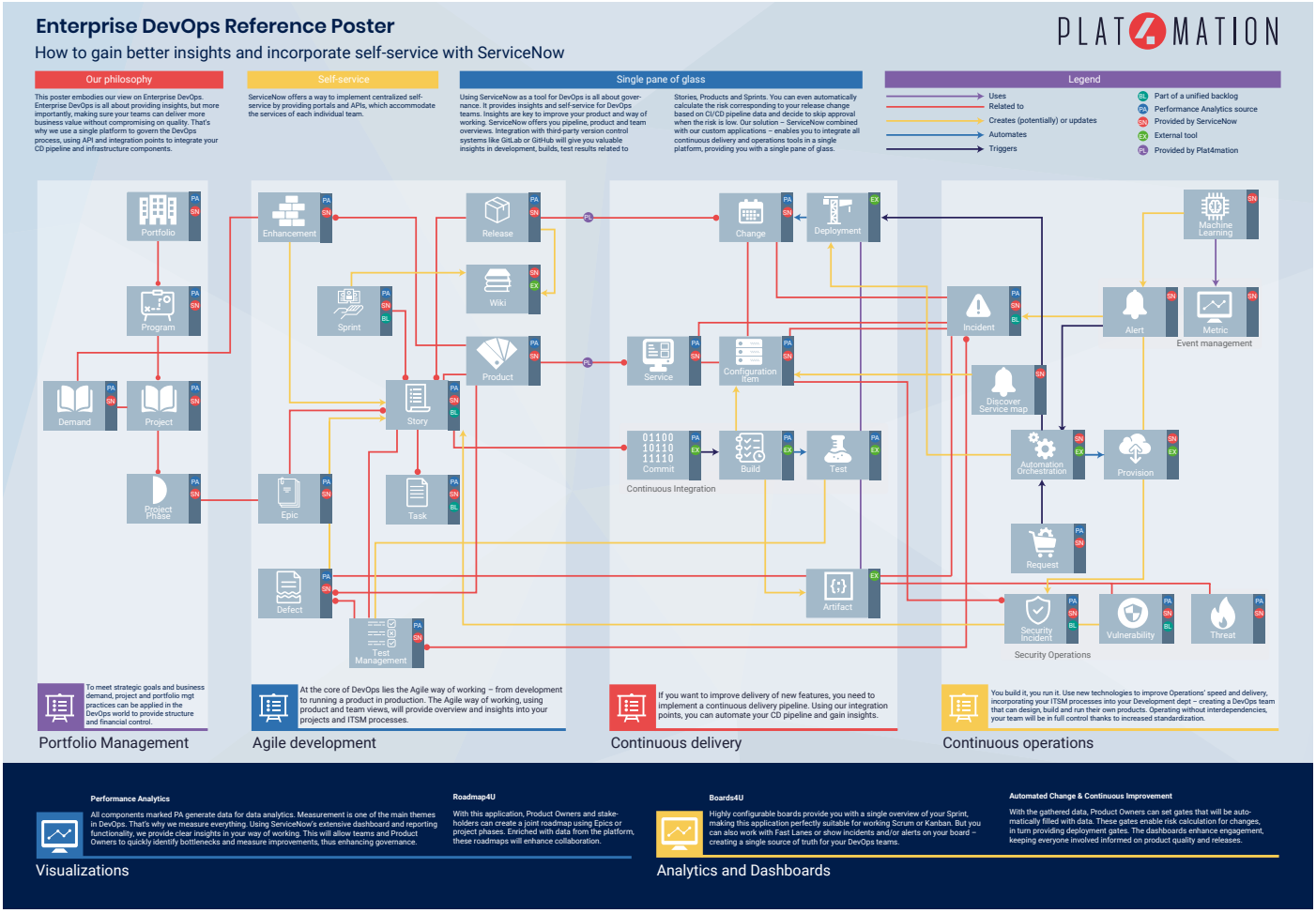


Figure 1. Enterprise DevOps Reference Poster based on ServiceNow

Analytics and insights

The amount of information gathered from all processes provides unique opportunities for reporting. An IT manager, for example, has complete control over his processes. Reporting helps to inform teams about what is important, where their focus should be and how to work efficiently.

Although ServiceNow conquered the market with its ITSM suite, its strength lies in the platform capabilities when it comes to enabling DevOps teams to flourish. The freedom of use, flexibility and easy integrations for CI/CD pipelines are easily realized on the ServiceNow platform, opening up a whole new world of possibilities.

ServiceNow can bring DevOps to the next level as the platform is built to extract data from all kinds of processes, including software testing, deployment and delivery. In addition, when it comes to incidents or business demands, ServiceNow offers an easy way to convert tickets to items in backlogs, on a plan board of the DevOps team's preference. ServiceNow could be the missing link in organizations that use DevOps at scale. With the right platform integrations DevOps teams will be able to work faster, have more control while at the same time making a better contribution to overarching organizational goals.

Chapter 3.

Enhancing the CI/CD pipeline

Next to granting more autonomy to DevOps teams and ensuring a uniform way of working, ServiceNow can also enhance the test and deployment cycle and help automate planning. For example, it can trigger provisioning of a test environment in a public cloud for freshly developed code, or trigger automatic deployment of code after it has been accepted.

This doesn't mean coding has to be done in the ServiceNow environment. The platform enables advanced automation of the CI/CD pipeline after code is written. As each team develops with a different framework, ServiceNow's flexibility comes in handy to provide the right tooling. See Figure 2 to get an impression of the DevOps tooling that can be integrated in the Now platform.

For continuous integration, it is important that functional requirements that are in Stories in ServiceNow can be linked to technical specifications by means of a commit in the code repository. In this way, the most important input for your documentation is gathered automatically. To enable continuous delivery, a team should be able to deploy releases in a streamlined way. By levering all the information captured about the features and code changes in a release, a hassle-free and highly automated change process allows for compliant, controllable and continuous delivery. Committing, merging, building, testing, provisioning and deploying may all happen in different toolsets, but monitoring and controlling is done in ServiceNow.

At a higher level, it is possible to define a standard for information input from all tooling that is being used. For example, as testing tools generate information on code performance or bugs, this data needs to meet certain criteria to be useful on an enterprise level. By enforcing quality control on the ServiceNow platform, the information that flows back from the CI/CD pipeline is far more useful.

In this way, ServiceNow functions as a platform that allows for full control on all aspects of DevOps development. It sequences automated testing, validation and deployment of code, without delays caused by provisioning of infrastructure or acceptation by testers. In addition, ServiceNow notifies monitoring tools that a new deployment has been realized, which OS it runs, what the hardware specs are and which limits there are to workloads to ensure performance and availability.

ServiceNow not only connects DevOps teams more consistently to the organization as a whole, it also enables DevOps teams to test, integrate and deploy software much faster.

Release Orchestration	Cloud	AiOps	Analytics	Monitoring	Collab	Security
AWS CodePipeline	AWS	Splunk	New Relic	Nagios	Jira	SonarQube
	Azure	Prometheus	Dynatrace	Sensu	Slack	HashCorp Vault
	Google Cloud		Datadog	AWS CloudWatch	OpsGenie	
	OpenShift		AppDynamics	Zabbix	Pagerduty	
	Openstack		ElasticSearch			
	Cloud Foundry		New Relic			

Source Control	Continuous Integration	Testing	Configuration	Deployment	Containers
GitLab	Jenkins	Selenium	Chef	XL Deploy	Docker
GitHub	Bamboo	Cucumber	Puppet	Octopus deploy	Kubernetes
Artifactory	Travis CI	JUnit	Ansible	GoCD	
Nexus	VSTS	JMeter	Terraform	Deployment	
BitBucket	TeamCity	TestNG			
Source Control		Mocha			
GitLab		Karma			
		Jasmine			
		SoapUI			

Figure 2. Overview of DevOps tools compatible with ServiceNow

Afterthought:

A consolidated platform for enterprise DevOps

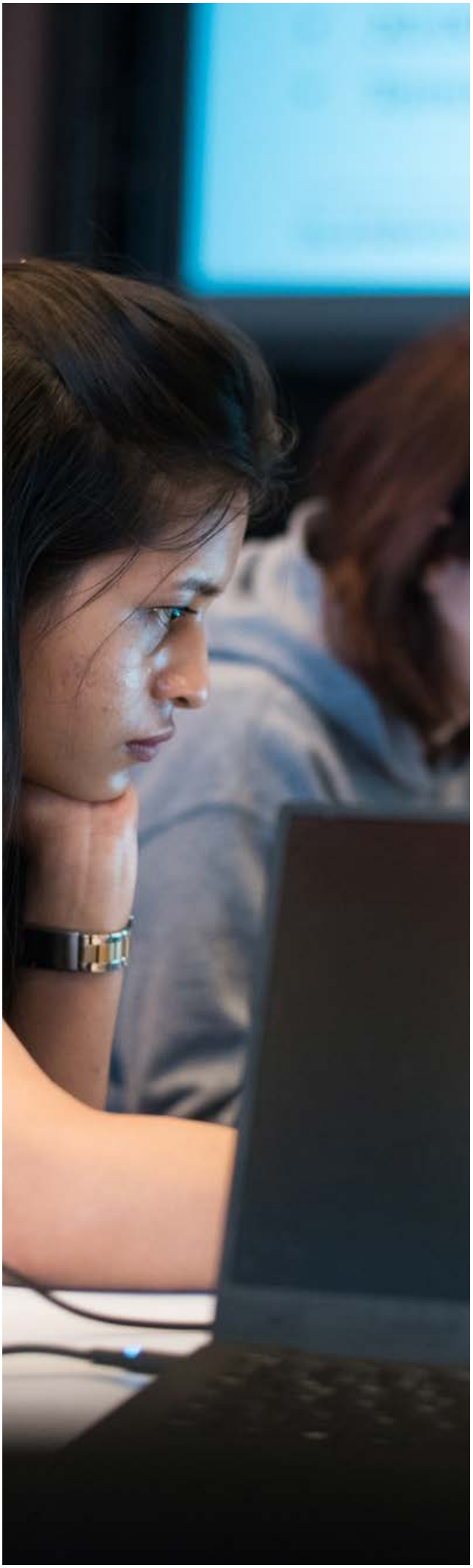
DevOps at an enterprise level is nothing less than challenging. As we have seen, the principle of self-steering teams with a large amount of autonomy seems to be at odds with the hierarchical organizational structure many enterprises have. To tackle the issue of aligning strategic and financial company goals with a DevOps way of working, a platform is needed that is able to support executives with the right information and enables DevOps teams to use the tooling and gain the insights they need.

Individual tooling is often failing in one way or another. A glance at the tool overview in Figure 2 already tells you that most of these tools are very limited in their functionality.

That's actually a good thing, because it helps teams to solve specific needs. But in an enterprise environment, aggregating information from dozens of tools is a real pain, unless all information is automatically fed into an overarching framework in a structured way.

DevOps at enterprise scale is challenging

We believe ServiceNow is the platform for DevOps at enterprise scale (Agile at Scale, for that matter). The flexibility of the platform, the possibility to integrate an enormous amount of tooling, the ITSM, Agile, Project Management, ITOM and Analytics features and a uniform information overview make the platform ideal for enterprise DevOps.



About Plat4mation

Based in The Netherlands, Belgium, Germany, USA and India, we are an Elite ServiceNow Partner dedicated to delivering world-class products and services for the ServiceNow platform. We are driven to realize maximum value in the IT, employee, and customer workflow experiences for each one of our customers. We do this by providing a flawless customer experience utilizing our extensive expertise.

Since our inception in 2013, we have grown to more than 200 employees globally, and we are still growing strong! With a team of specialized consultants, we aim for the highest possible results while creating jaw-dropping experiences for our customers.

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