

Building ModelOps with intelligent automation for cloud-native apps accelerates growth with digital transformation initiatives

The 451 Take

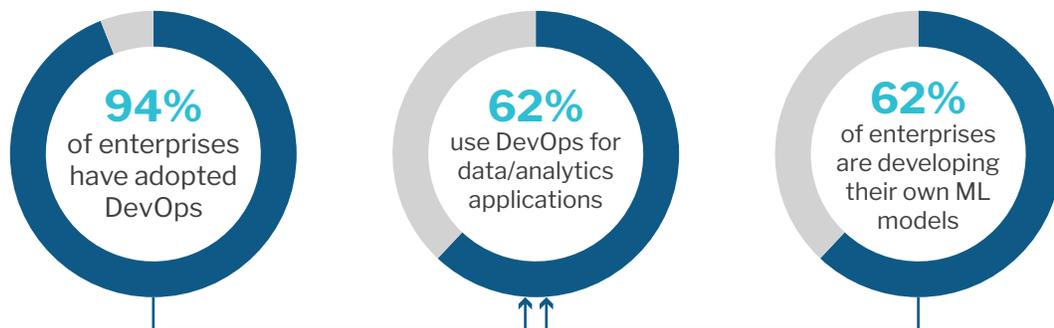
The most successful enterprises have embraced modern software as a primary differentiator and the rapid development and delivery of applications and features as key to succeeding in the hypercompetitive modern digital environment. DevOps has revolutionized application development to enable transformational initiatives, and adoption of DevOps is widespread – only 1% of respondents to 451 Research’s Voice of the Enterprise: DevOps, 2H 2019 survey said they had not implemented DevOps and have no plans to do so.

As DevOps has become mainstream, many enterprises are evolving even further to focus on the benefits of model-driven approaches to provide the fuel for automation, prediction and optimization that can further accelerate transformational initiatives. The use and variety of models is expanding – involving not just routine machine learning (ML) models, but also operational models, optimization models and transformational models. Success requires investment not only in data science and analytics to create predictive and prescriptive models that automate business processes and agile decision-making, but also DevOps-driven development of new applications that incorporate the results of model development.

As a greater variety of models become ingrained in the development of cloud-native applications, it has become increasingly important to ensure that the development and deployment of both applications and models is continuous, automated and synchronized. What is required is an approach – ModelOps – that operationalizes model deployment and management throughout the application development and deployment lifecycle, with a goal of operationalizing models in production. Equally critical is ensuring that the models are governed, trusted and explainable and deliver measurable outcomes that are fit for purpose, compliant and evolve as business requirements change.

The Confluence of DevOps and Model Development

Source: 451 Research’s Voice of the Enterprise: DevOps 2H 2019/Voice of the Enterprise: AI and Machine Learning, 2H 2018



ModelOps represents the confluence of several industry trends that support transformational agility. Platform-independent cloud-native architecture based on loosely coupled microservices – a critical technology for DevOps implementations – enables the rapid development and deployment of applications, as well as workload portability as data volumes grow and data processing needs evolve.

Data processing and analytics applications are the most popular focus of a DevOps approach, while analytics, automation and AI/ML are among the most important technology trends (along with hybrid multi-cloud) that support DevOps implementations. Intelligent automation enables the application of AI to automate and accelerate model development, deployment, monitoring and improvement, as well as DevOps workflows and processes.

Business Impact

THE USE OF MODELS TO DRIVE TRANSFORMATIONAL INITIATIVES CAN SEPARATE THE LEADERS FROM THE LAGGARDS. There is already a clear correlation between the use of machine learning models and success with digital transformation. Enterprises need to consider the use of models beyond machine learning to gain the full advantages of a model-based approach.

MODELS ARE BECOMING INCREASINGLY INTEGRAL TO THE DEVELOPMENT OF CLOUD-NATIVE APPLICATIONS, requiring the development and deployment lifecycles of both applications and models to be continuous, synchronized and automated to align with DevOps' continuous integration and continuous delivery (CI/CD) pipelines.

DEPLOYING THE RESULTS OF AI EXPERIMENTS INTO OPERATIONAL SYSTEMS IS A BARRIER TO SUCCESS. However, the synchronization of the application development lifecycle with the model development lifecycle can ensure that models are successfully deployed into modern applications and that the results are fed back into the retraining of models and development of application updates.

THE USE OF AI TO AUTOMATE AND ACCELERATE DEVOPS WORKFLOWS AND PROCESSES CAN FACILITATE MODEL OPERATIONALIZATION, creating a virtuous circle that increases the potential for successful AI model deployment into operational systems.

SCARCITY OF TALENT IS A CONCERN FOR ORGANIZATIONS. Tools that can fully or partially automate data science tasks can empower developers, DevOps engineers and ModelOps engineers while enabling a new generation of data scientists and analysts.

Looking Ahead

Cloud-native approaches based on microservices have had a profound impact on the business landscape by enabling the rapid development and deployment of modern applications. Unlike more traditional monolithic approaches, microservices architecture supports the decoupling of model development from deployment, allowing for greater business agility and architectural flexibility and accelerating model and application development times. As the results of AI model development are increasingly integrated into the delivery of AI-driven cloud-native applications to exploit the advantages of microservices architecture, there will inevitably be a significant interdependency between the model development and DevOps lifecycles.

ModelOps, as a framework for the automation of models as part of the DevOps lifecycle, will become a key discipline that will enable the synchronization and continual coevolution of model and application development lifecycles. Enterprises that are successfully able to combine microservices architecture with agile and automated approaches to the development and deployment of both applications and models will be at an advantage in accelerating the development of AI-infused applications and driving transformational change.



Enabling this virtuous cycle with ModelOps can be better implemented on a unified, scalable platform where the outcomes from a multitude of tools can be fed to the rest of operational systems. Such a platform empowers contributors and stakeholders to maintain visibility of the activities at the intersections of models and apps.

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