

# Top 5 ways to implement MLOps successfully in your organization

Building a successful Machine Learning Operations (MLOps) practice within your organization requires specific considerations that take into account security, workflows, flexibility, and how developers, operations managers, and data scientists work together. Here are 5 key points to focus on as you implement your MLOps approach.

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## 1 Start with a flexible foundation

Suppose you are using multiple environments to train and process artificial intelligence (AI) models. In that case, it is best to apply a flexible foundation that supports your on-premise, cloud, and hybrid cloud environments and makes migrating among services more efficient.

Open source provides the flexibility you need because it offers freedom of choice and the option to take advantage of innovative solutions. The global open source community is where innovation is happening in AI and ML. Opting for software developed within that community gives you the chance to choose from advanced technology and applications that suit your unique needs (including third-party commercial products). You can also select the features you want without worrying about paying additional costs.

Plus, you can build on the platform as your needs change. You can create custom notebooks, add technologies, and stay ahead of the rapid changes taking place. You can partner with an expert in tracking open source solutions as they mature, so you do not deploy technology too early in its life cycle. In short, you can create a launchpad for your growing MLOps program while getting exactly what you need.

## 2 Set your data scientists up for success

Use an open source foundation to build a technology toolkit to supply your data scientists with the innovative tools they need to succeed. Tools you may want to consider include:

- ▶ Jupyter
- ▶ PyCharm
- ▶ PyTorch
- ▶ scikit-learn
- ▶ TensorFlow
- ▶ Anaconda
- ▶ RStudio

Providing data scientists with the opportunity to experiment is equally essential. Create an environment that allows them to experiment with upstream tooling, so they can mix and match technologies to see what works best for analysis and modeling.

Finally, give your data scientists a chance to put their modeling to use in deployable situations. Let them see how their efforts add value to your company and customers. Seeing how their work affects real-world operations will give them a better perspective on how they are contributing to the organization.

### 3 Bring developers onboard

Developers are another key ingredient in your MLOps program. Equip them with the tools necessary to create applications that can help readily incorporate the models being created by their data science colleagues.

Allow them to use technology they are already comfortable using, and assure them they do not need to worry about the data side. For example, a developer could do application logic in Quarkus and have it make an application programming interface (API) call to a representational state transfer (REST) endpoint. Your data scientists can then handle the actual data processing and predictions.

### 4 Encourage and support collaboration

The success of an MLOps program will heavily depend on the ability of developers, data scientists, and data engineers to collaborate with one another. Providing them with a common platform and tools that encourage collaboration is key.

Once again, choosing open source is your best option. For instance, an open source tool like Pachyderm, which provides automatic data versioning and access to data lineages, allows data scientists, engineers, and developers to track changes to models more effectively. This can open up dialog between the 3 teams while keeping all parties better informed of the status of models from inception to production.

Using an underlying open source platform also increases the availability of the tools used in an MLOps environment. Data scientists, engineers, and developers can access and share tools depending on the projects they're working on, accelerating the development of intelligent applications.

### 5 Plug security holes

An open and flexible platform allows you to shift workloads more efficiently between clouds, but you must always be aware of potential security vulnerabilities as data passes between on-premise and cloud environments.

Select a trusted application platform that has security baked in and is regularly patched. A modern, cloud-native application platform based on Kubernetes that has been security-hardened and is continually updated is a good option.

Then, create air-gapped environments to protect your data wherever it resides. Separate areas housing your most proprietary or critical data by using isolated networks or disconnected environments.

Disconnected environments are especially important for organizations with a lot of sensitive information, like government agencies or healthcare providers. They are also critical for complying with data-sharing laws like the General Data Protection Regulation (GDPR), the Health Insurance Portability and Accountability Act (HIPAA), and other government regulations.

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