RESEARCH @ ECLIPSE FOUNDATION

Open Research Webinars

OW2

AI and Machine Learning Automation with Activeeon: from Models to MLOps

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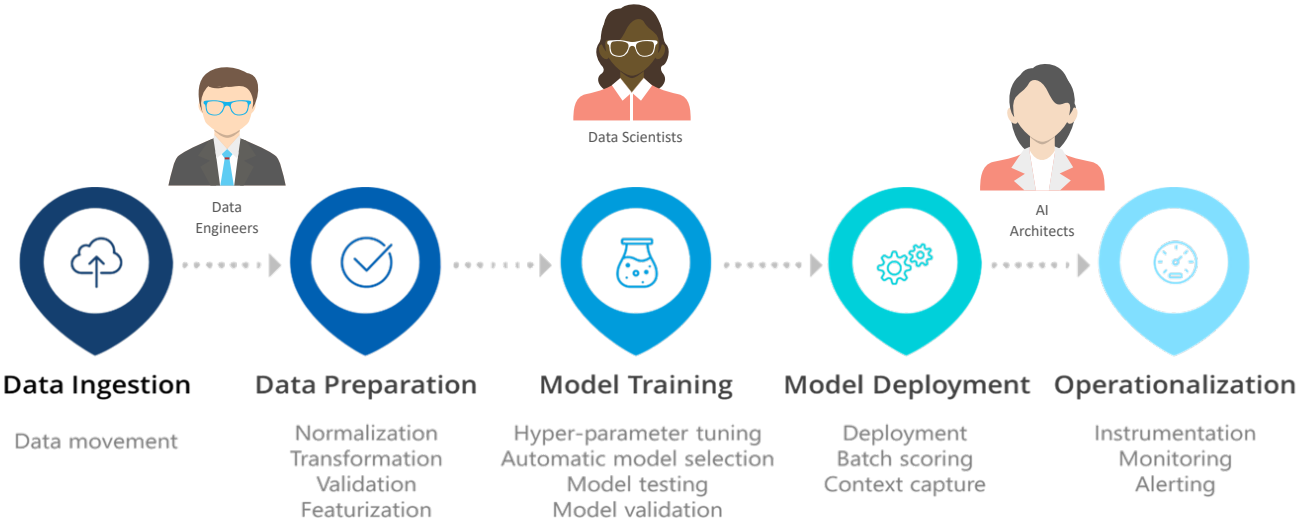
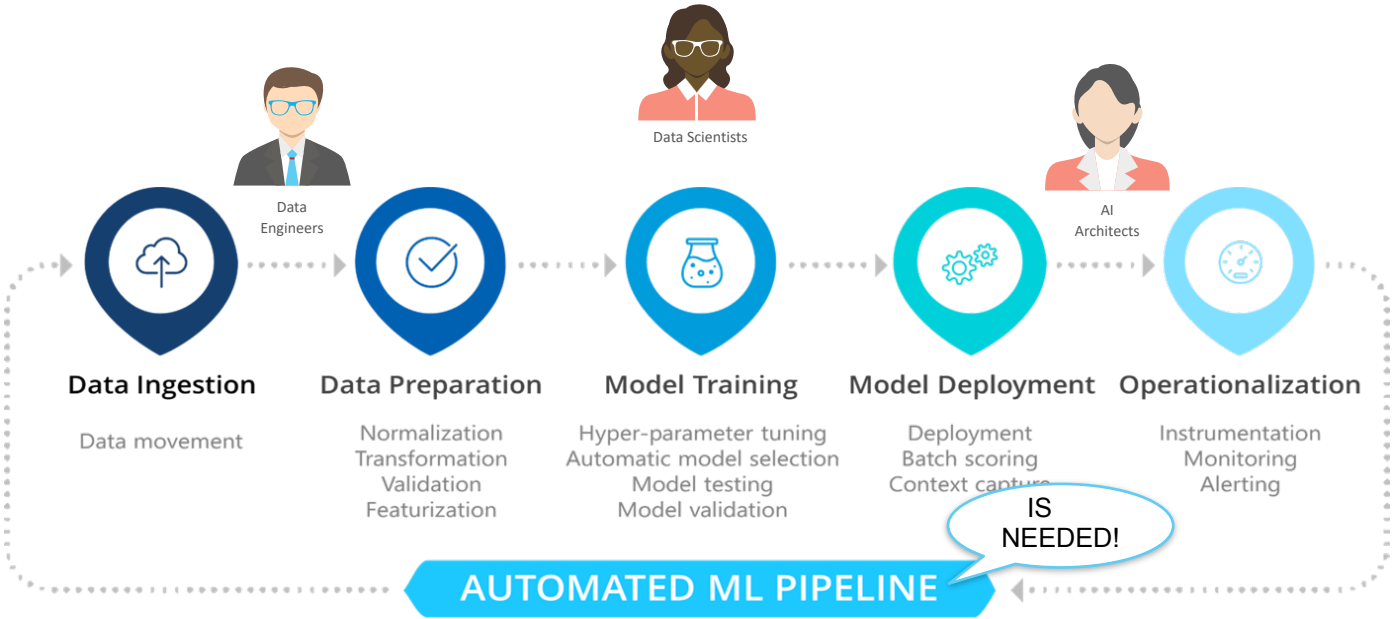
Agenda

- Typical data science project (life cycle, roadmap, challenges, etc)
- What an enterprise level data science project needs?
- The evolution of the MLOps solutions
- Proactive Machine Learning (PML) at the core of data science projects
- Bringing up your data science project maturity level with PML
- Data science project pipelines with PML
- MLOps stack with PML

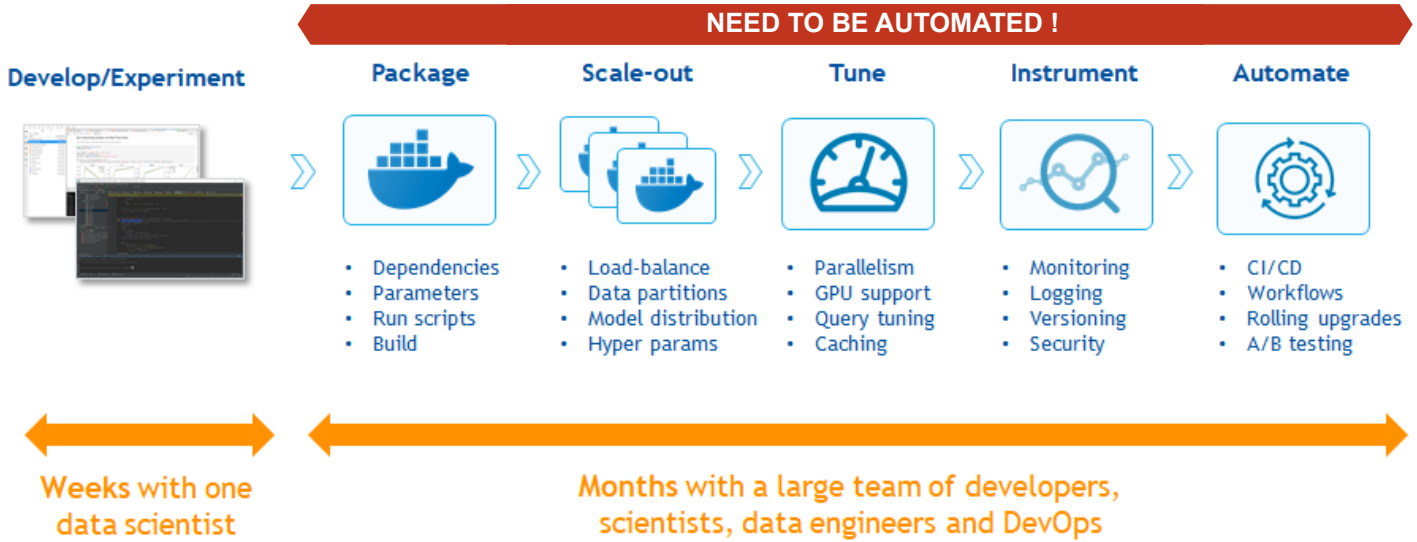
Data science project life cycle



Data science project life cycle

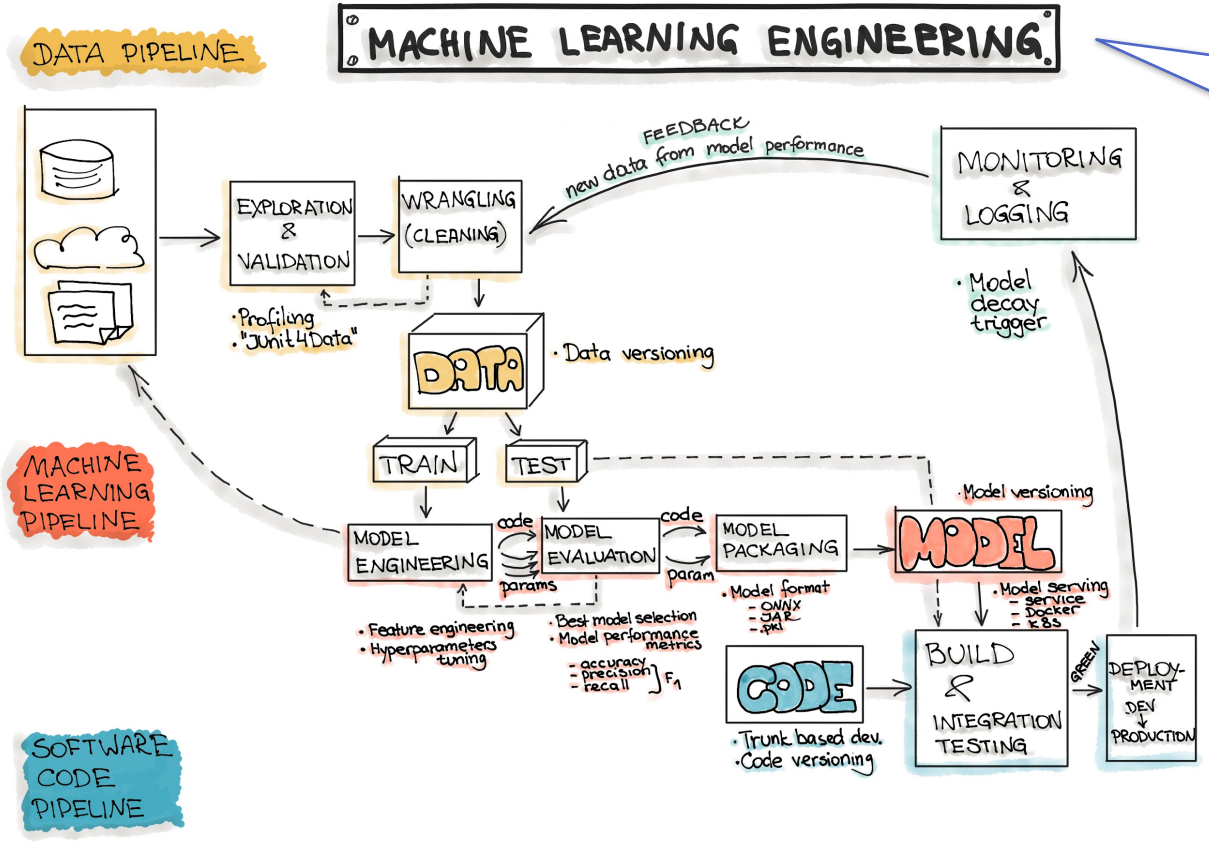


Data science common roadmap



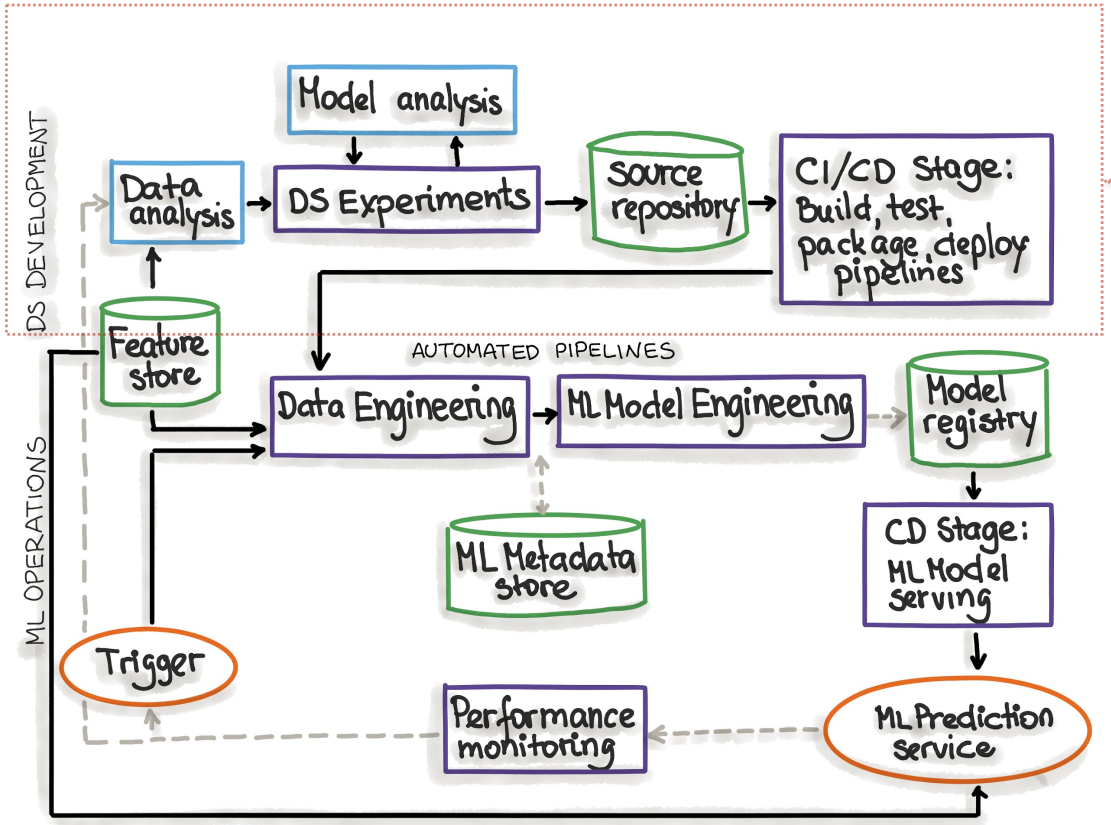
ml-ops-challenges-solutions-and-future-trends

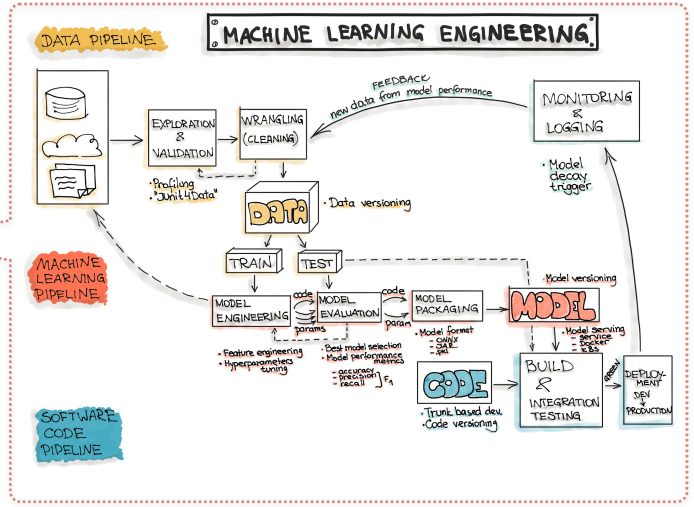
Data science is…complex!



How do we find the AI pipeline that provide the best AI model

Data science is…complex!

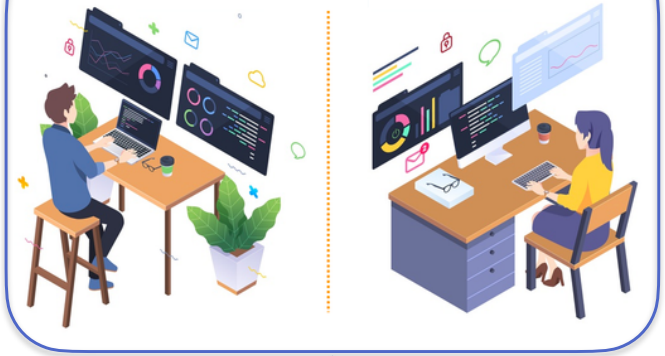




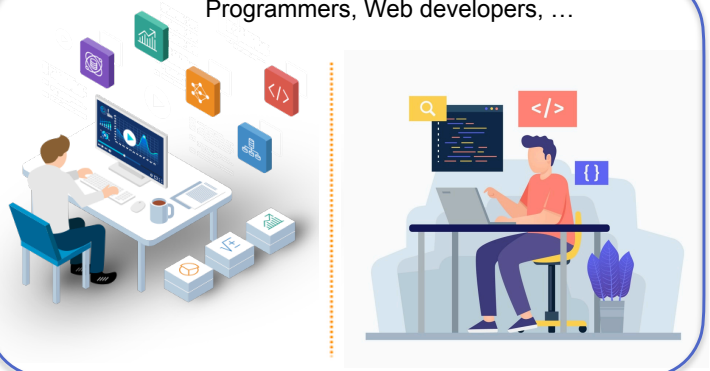
Data science is…complex!

Activeeon
SCALE BEYOND LIMITS

Data Scientists, ML Engineers, …



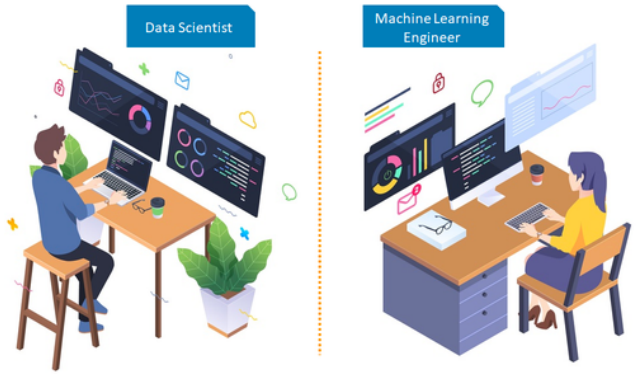
Programmers, Web developers, …



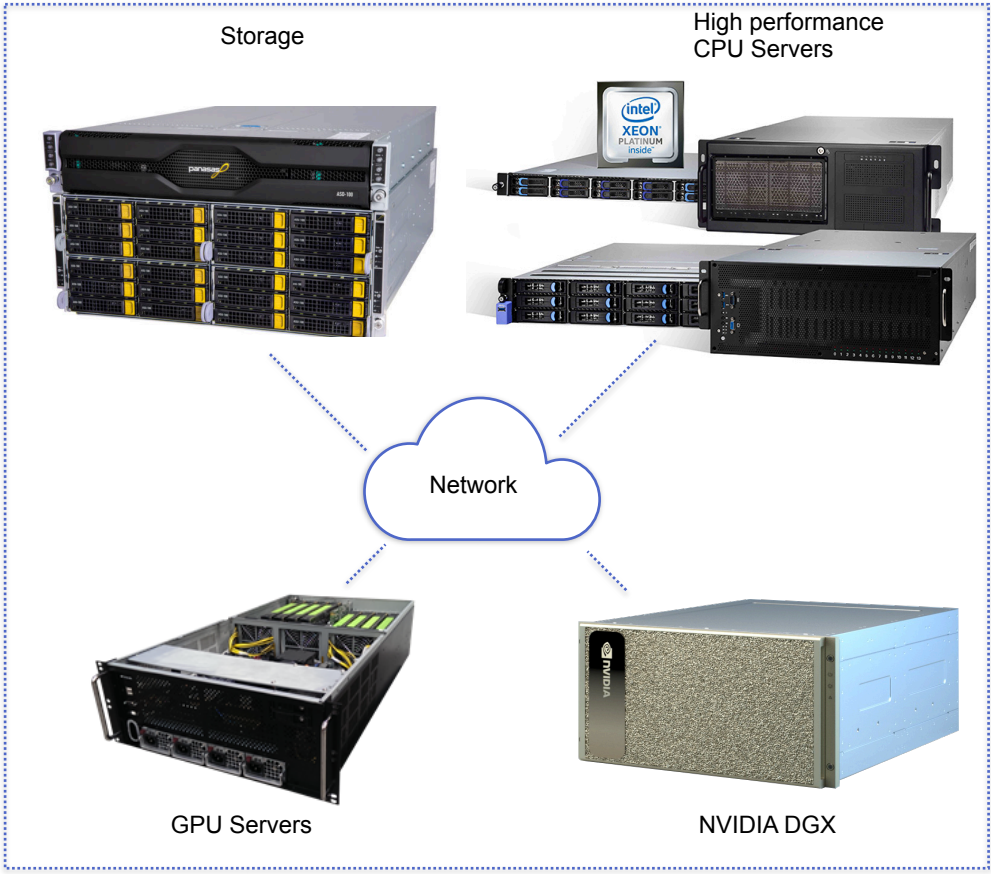
How do we bridge gaps between teams?

IT Specialists, System Administrators, …

Data science is…complex!

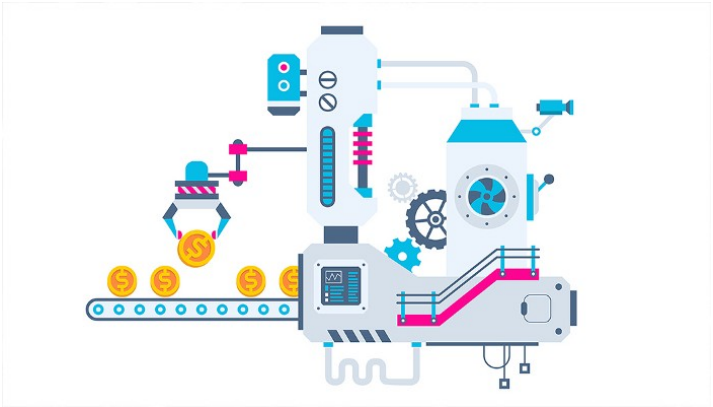


Hardware Abstraction Layer is needed!

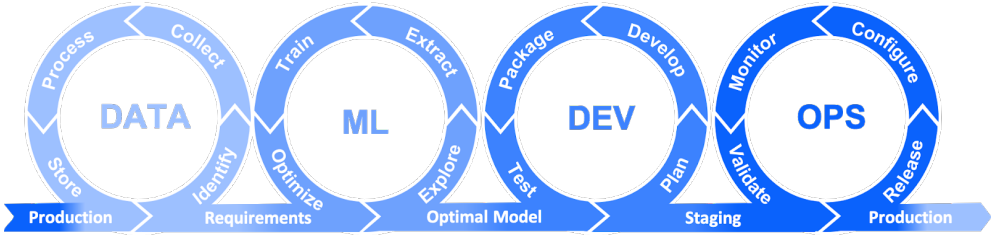


Data science needs…

A Modern Automation Platform

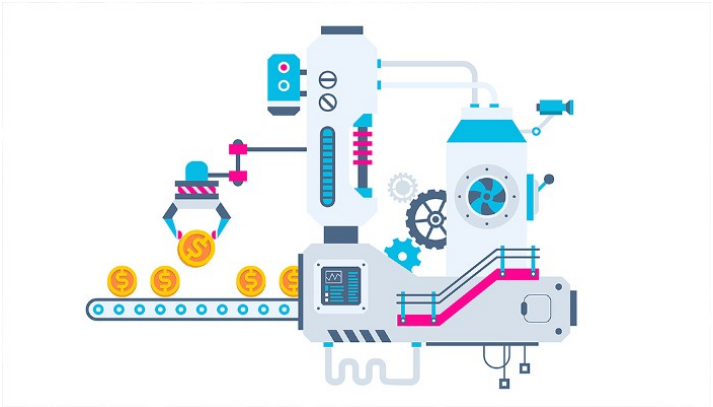


A Modern Methodology

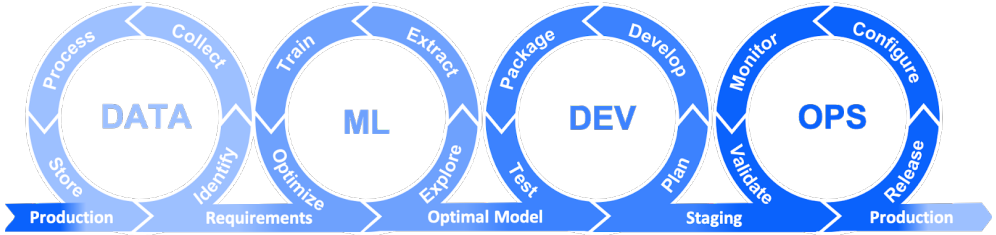


Data science needs…

A Modern Automation Platform



A Modern Methodology



MLOps is the DevOps for data science projects

- **MLOps** aims to unify the release cycle for machine learning and software application release.
- **MLOps** enables automated testing of machine learning artifacts (e.g. data validation, ML model testing, and ML model integration testing)
- **MLOps** enables the application of agile principles to machine learning projects.
- **MLOps** enables supporting machine learning models and datasets to build these models as first-class citizens within CI/CD systems.
- **MLOps** reduces technical debt across machine learning models.
- **MLOps** must be a language-, framework-, platform-, and infrastructure-agnostic practice.
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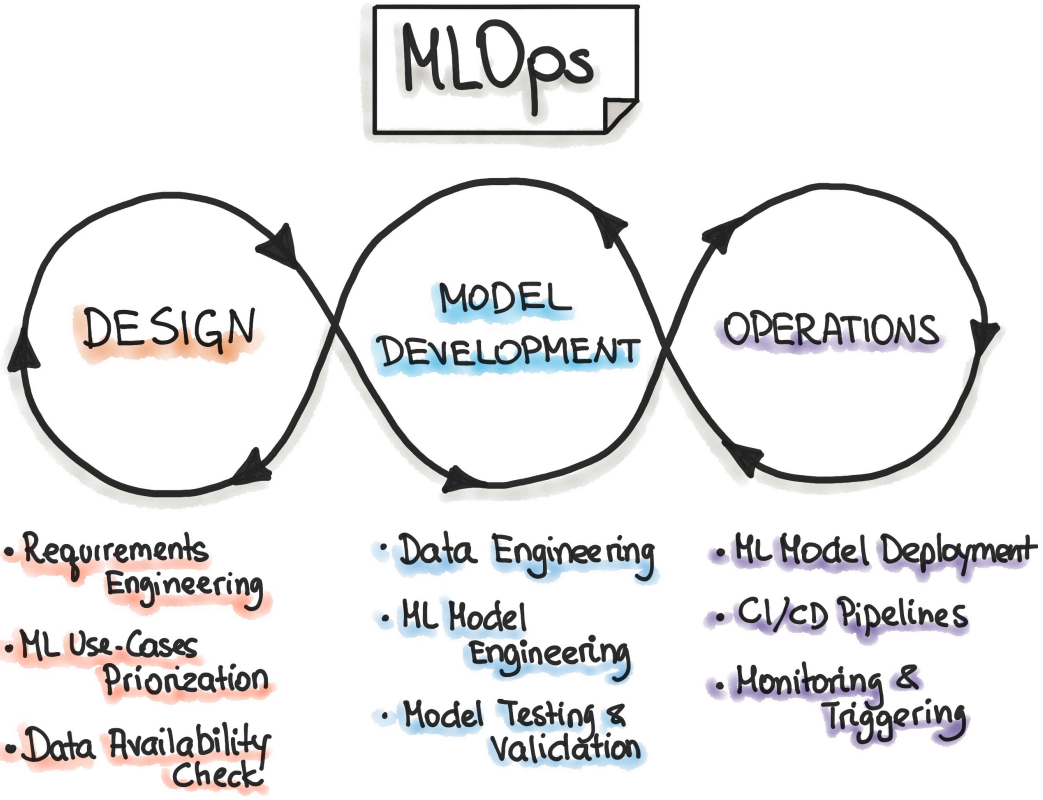

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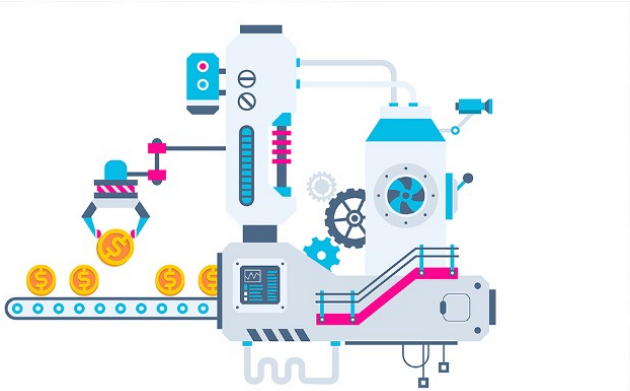
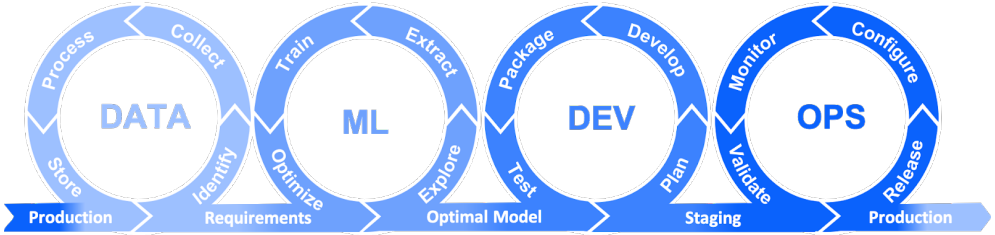
Data science needs…

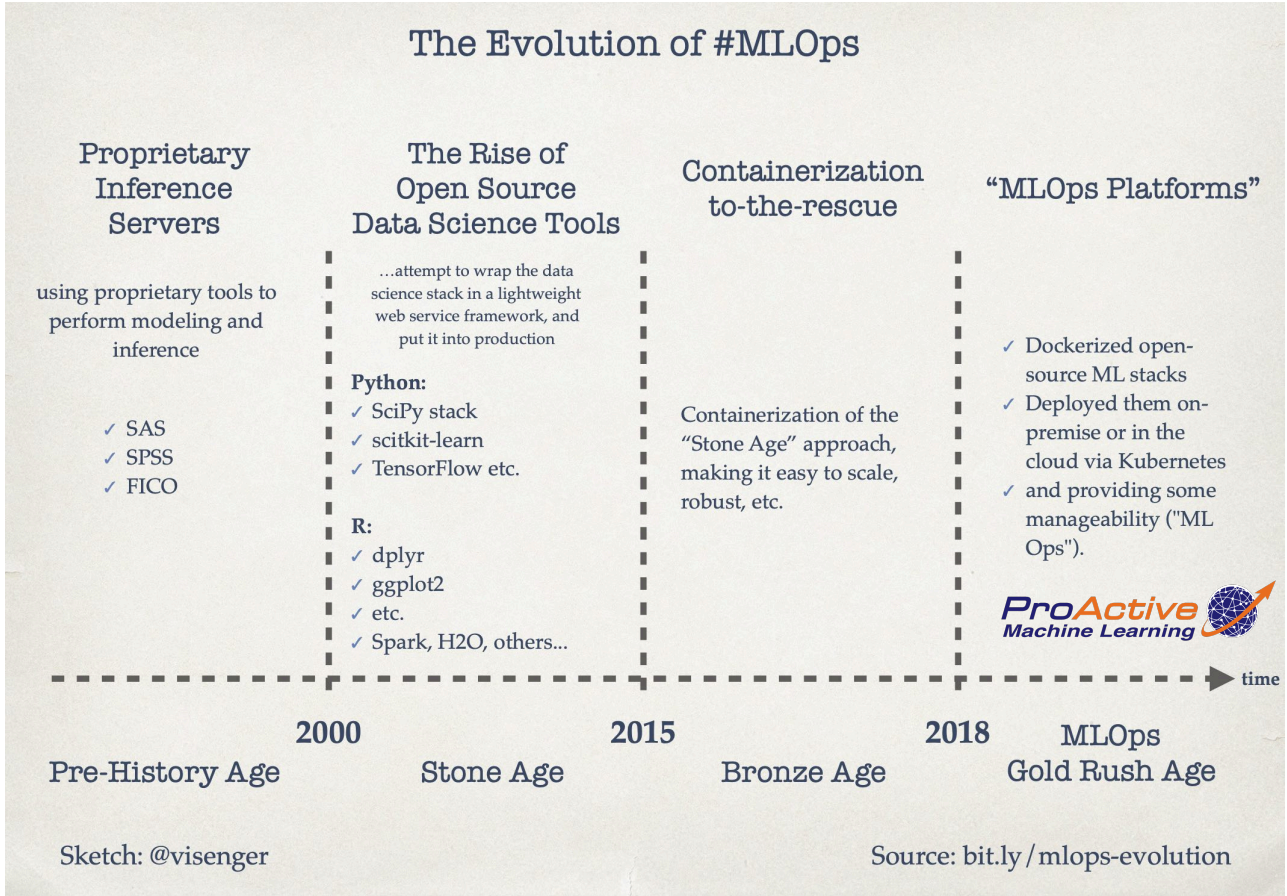
A Modern Automation Platform



A Modern Methodology

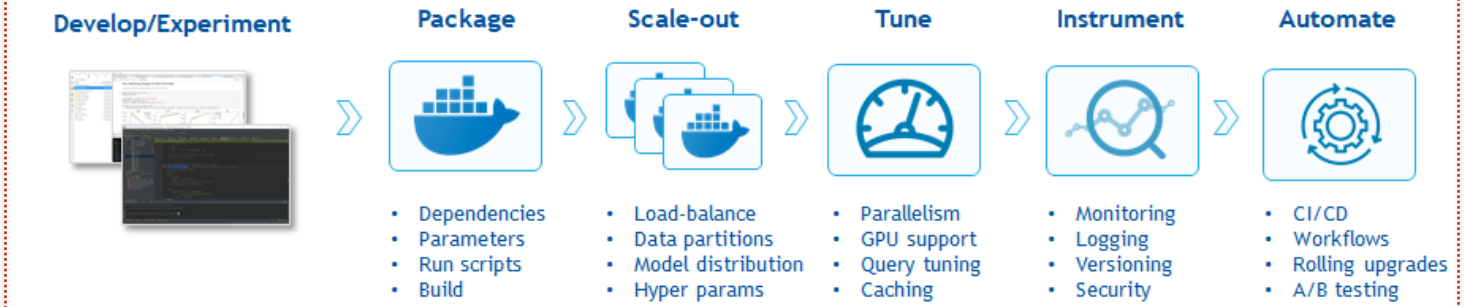


MLOps evolution



PML at the core of data science projects

ProActive Machine Learning



Proactive Machine Learning helps you to:

- Automate the complete Data Science lifecycle,
- Remove silos by creating a bridge between teams: Data, ML and Operations,
- Use your favorite tools by integrating a vast array of solutions,
- Use your infrastructure by linking heterogeneous working environments,

At last, you can industrialize your data science lifecycle project
and scale-up seamlessly when needed

PML at the core of data science world

Data science project maturity level

Stage 1 **Manual process.** This is a typical data science process, which is performed at the beginning of implementing ML. This level has an experimental and iterative nature. Every step in each pipeline, such as data preparation and validation, model training and testing, are executed manually. The common way to process is to use Rapid Application Development (RAD) tools, such as Jupyter Notebooks.

More than **80%** of the data science projects stays here!

Stage 2 **ML pipeline automation.** The next level includes the execution of model training automatically. We introduce here the continuous training of the model. Whenever new data is available, the process of model retraining is triggered. This level of automation also includes data and model validation steps.

Less than **20%** of the data science projects comes here!

Stage 3 - **CI/CD pipeline automation.** In the final stage, we introduce a CI/CD system to perform fast and reliable ML model deployments in production. The core difference from the previous step is that we now automatically build, test, and deploy the Data, ML Model, and the ML training pipeline components.

Less than **5%** of the data science projects comes here!

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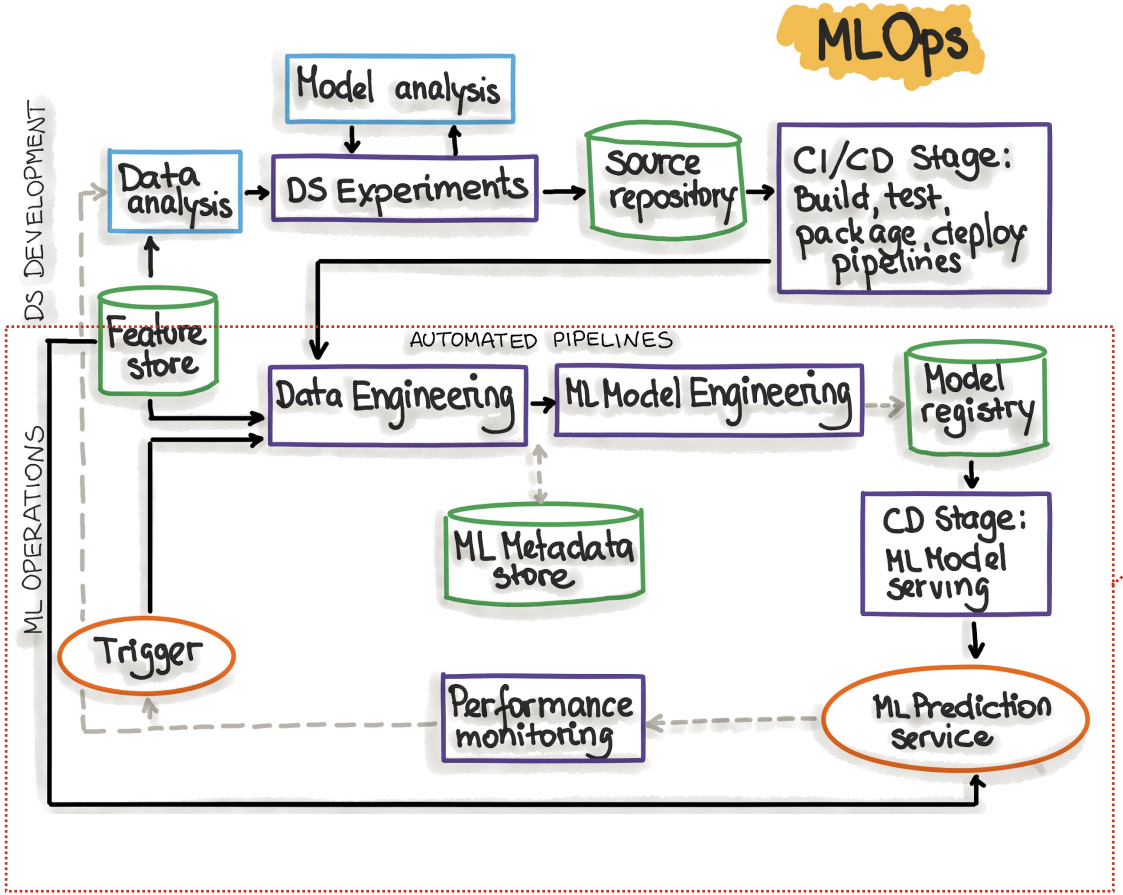
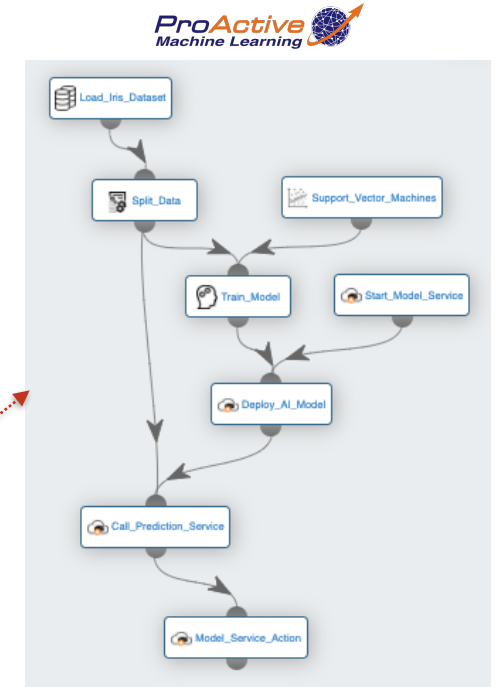
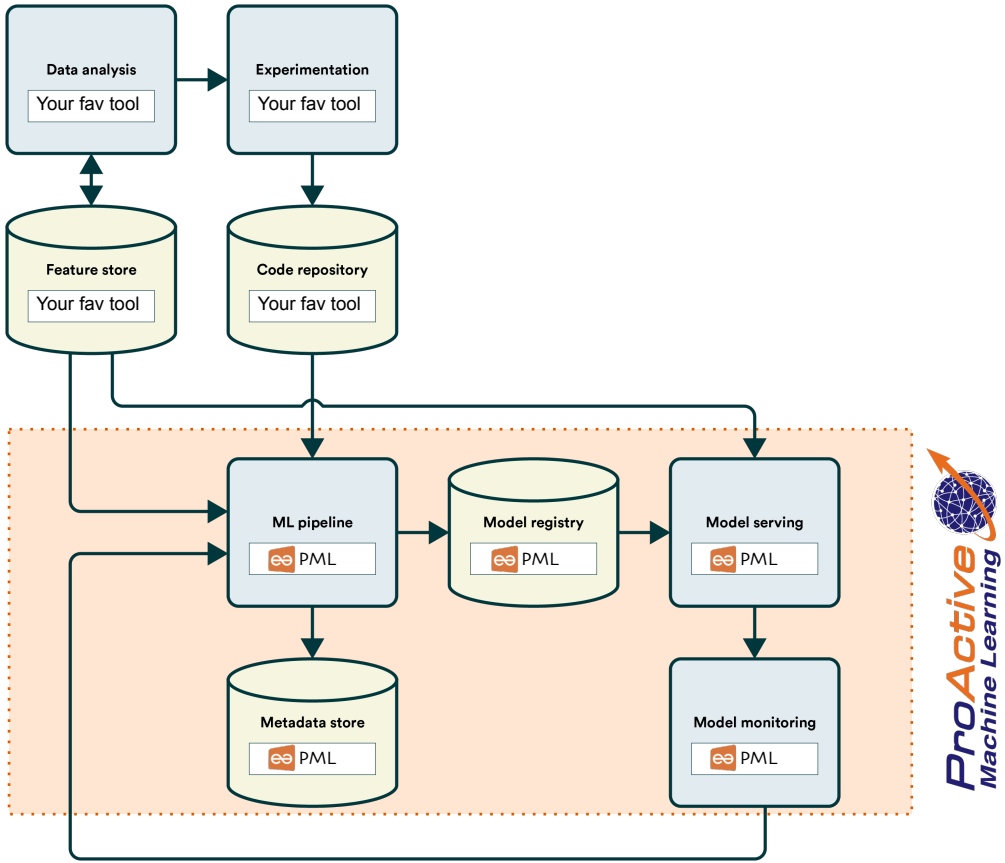
Data science project pipeline





Automated pipeline for model deployment

The MLOps stack with **PML**



Thank you for watching

ProActive Machine Learning (PML)

Accelerate the development and deployment of AI models with scalability

www.activeeon.com/products/proactive-machine-learning