AMLD EPFL

Applied Machine Learning Days

MLOps on AWS: a hands-on tutorial

Workshop · March 26, 2022
In-person event · STCC, Lausanne, Switzerland

Workshop Organizers







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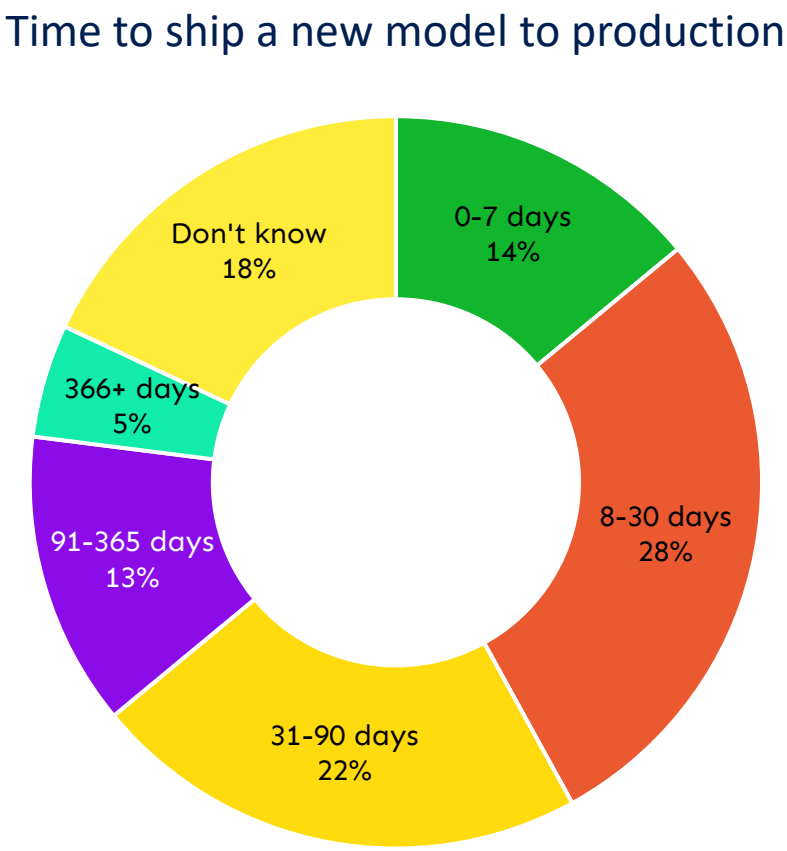
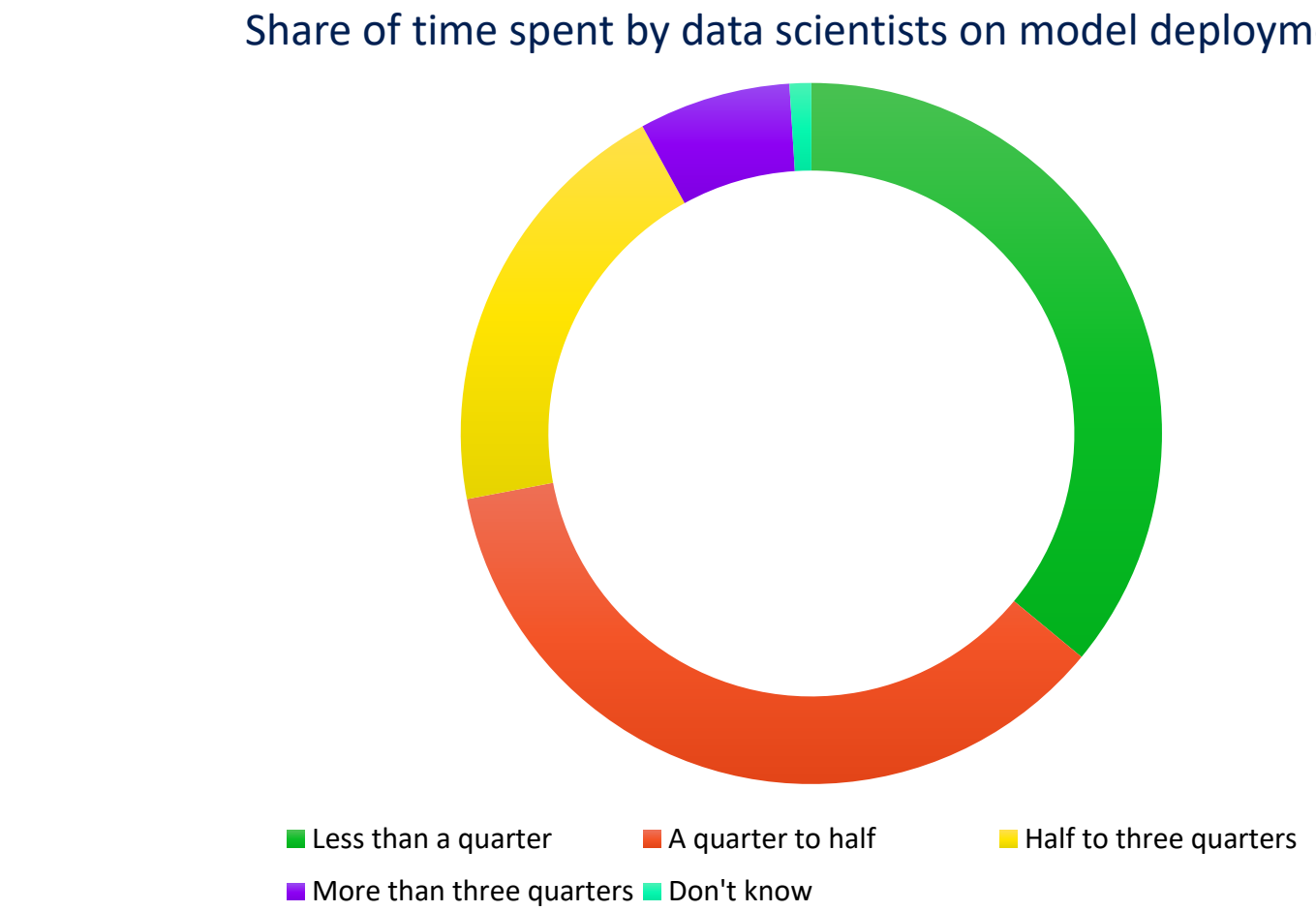
Why
MLOps?

ML Development is slow



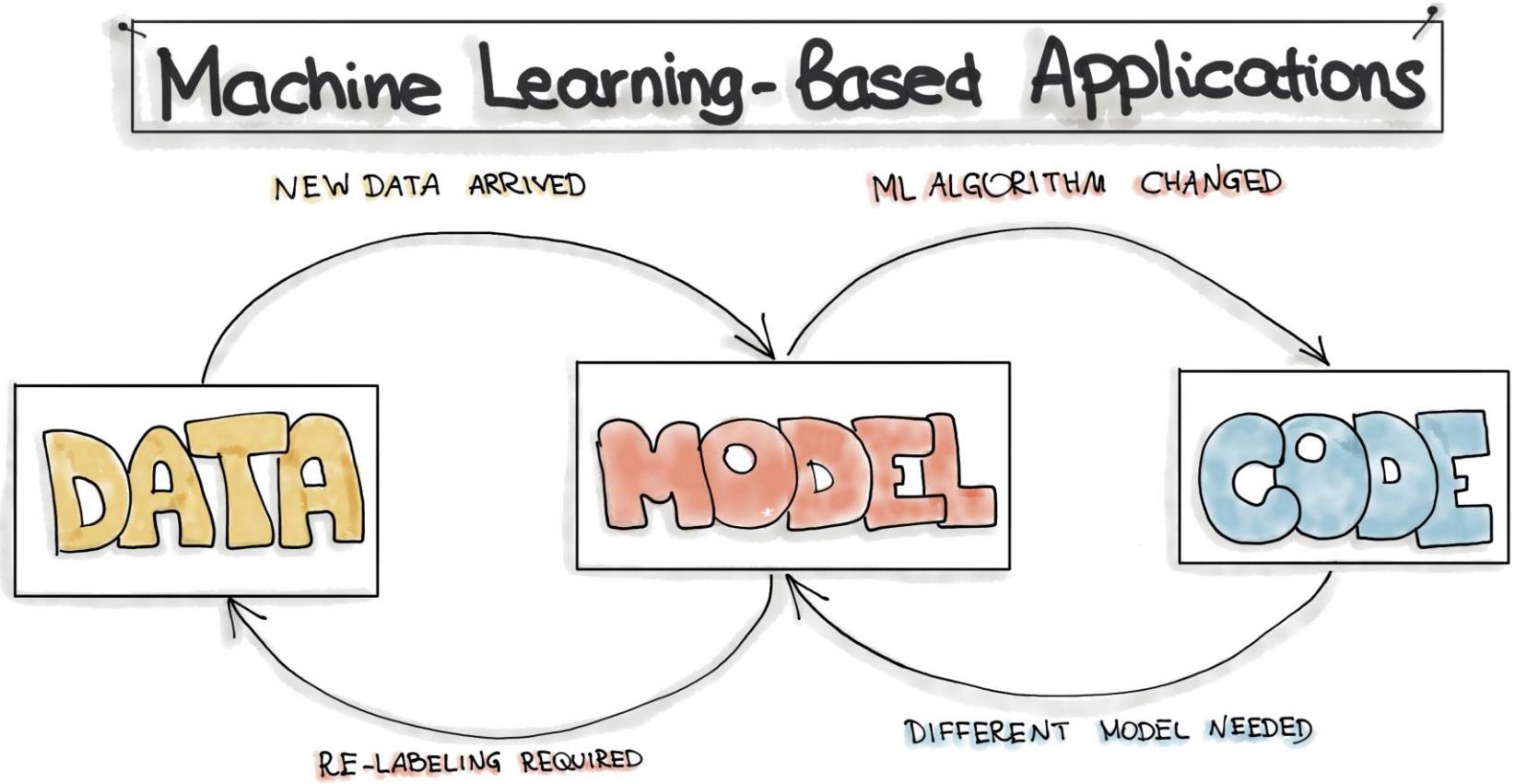
Algorithmia, State of Enterprise ML, 2020

ML Deployment is time-consuming

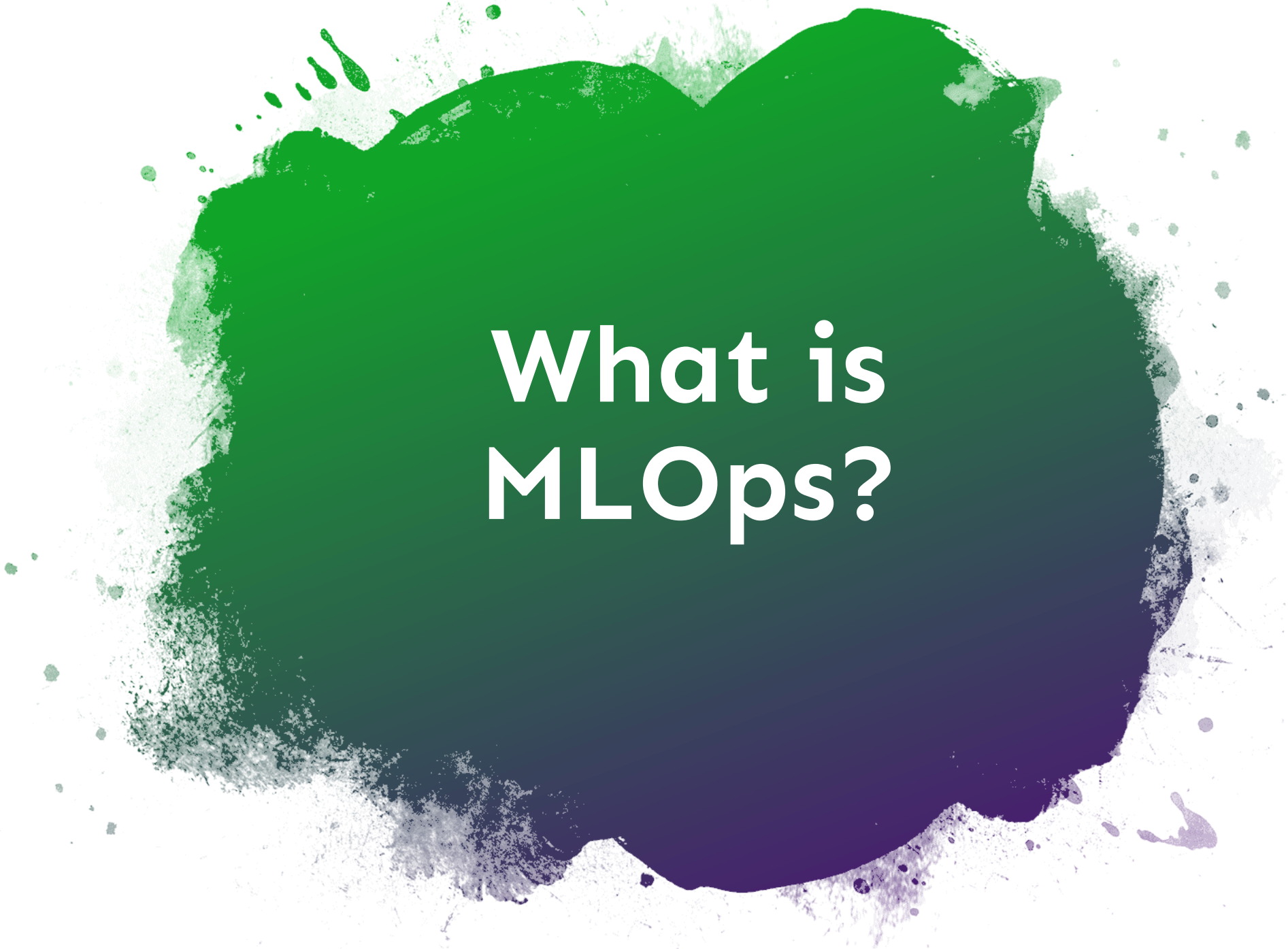


Algorithmia, State of Enterprise ML, 2020

Updates cascade



https://ml-ops.org/content/motivation


What is
MLOps?

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The Machine Learning process

1. Business Understanding

- Problem statement
- Evaluation metrics
- Literature review

2. Data Gathering

- Source discovery
- Data preparation
- Quality assessment

3. Data Exploration

- Explorative analysis
- Data cleaning

4. Modelling

- Feature engineering
- Model design
- Model implementation

5. Evaluation

- Performance evaluation
- Time evaluation

6. Deployment

- Architecture design
- Execution scheduling
- Performance tuning
- Integration

The Machine Learning process

1. Business Understanding

- Problem statement
- Evaluation metrics
- Literature review

2. Data Gathering

- Source discovery
- Data preparation
- Quality assessment

3. Data Quality

- Data cleaning
- Automated checks

4. Modelling

- Feature engineering
- Model design
- Model implementation

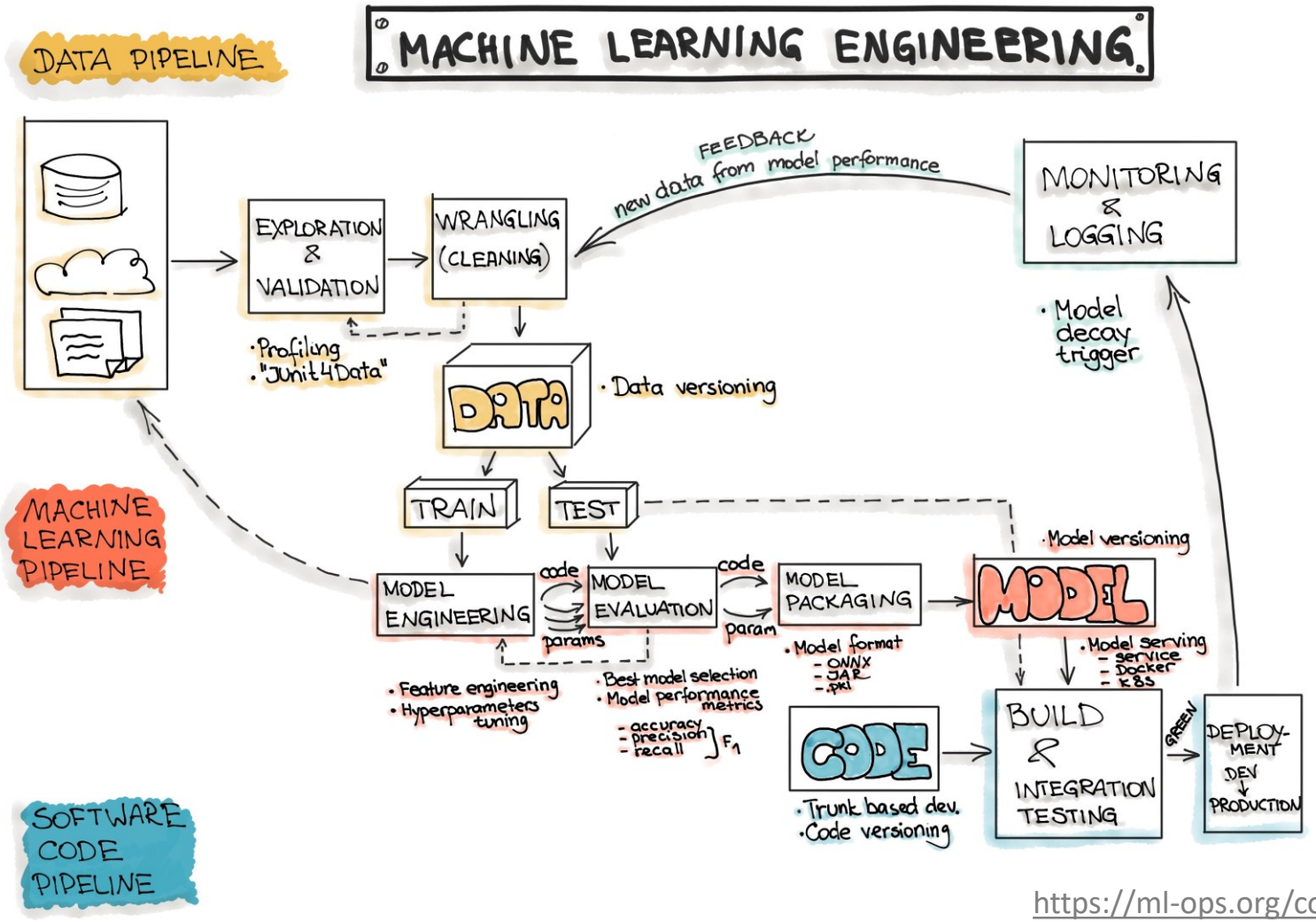
5. Evaluation

- Performance evaluation
- Time evaluation

6. Deployment

- Execution scheduling
- API generation
- Integration

The Machine Learning process



https://ml-ops.org/content/end-to-end-ml-workflow

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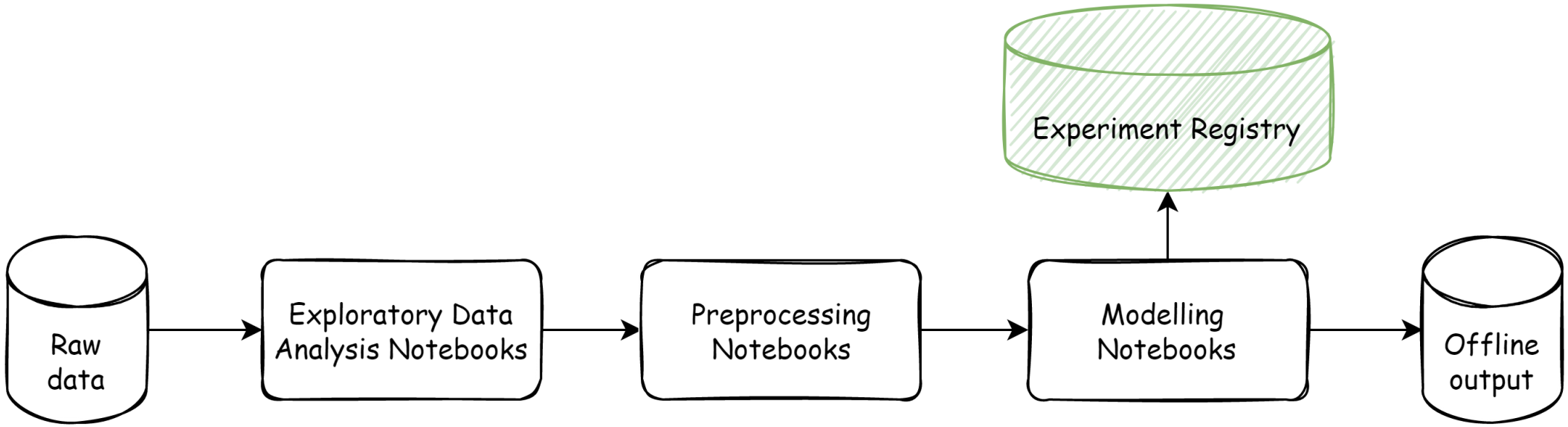
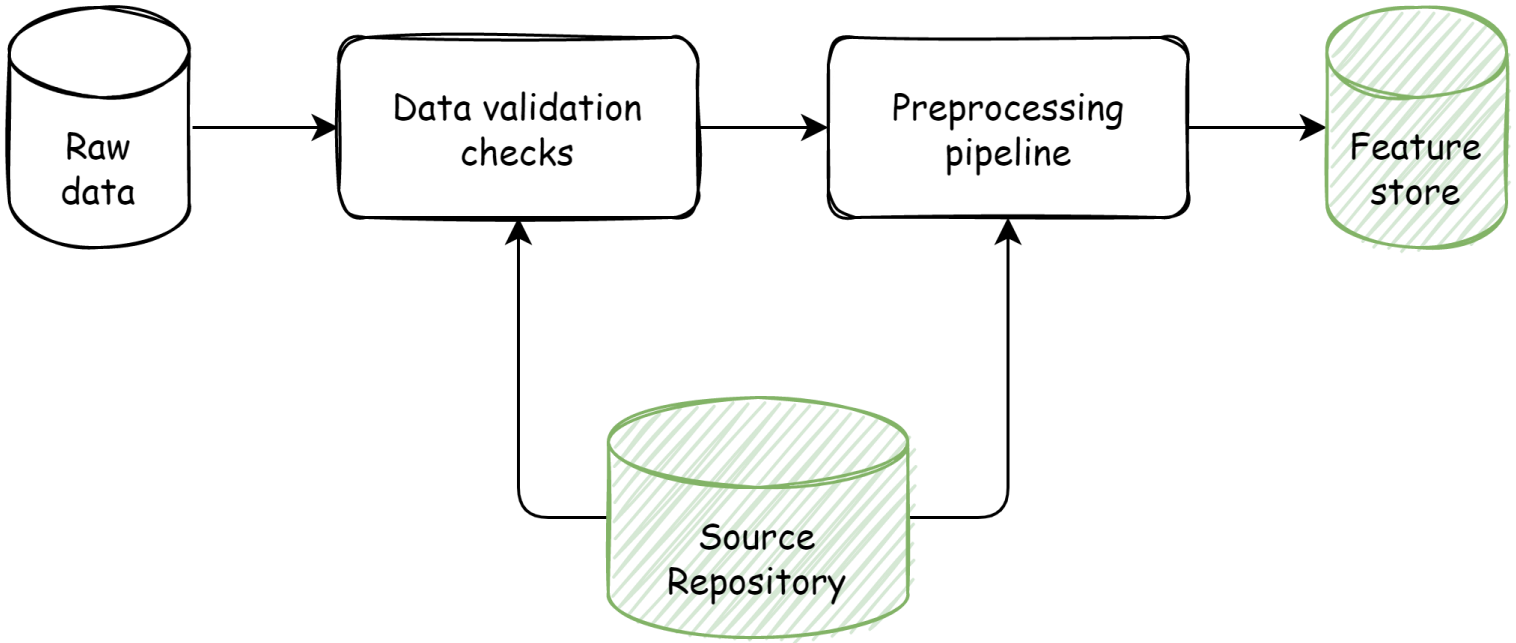
Offline development



Automated data pre-processing



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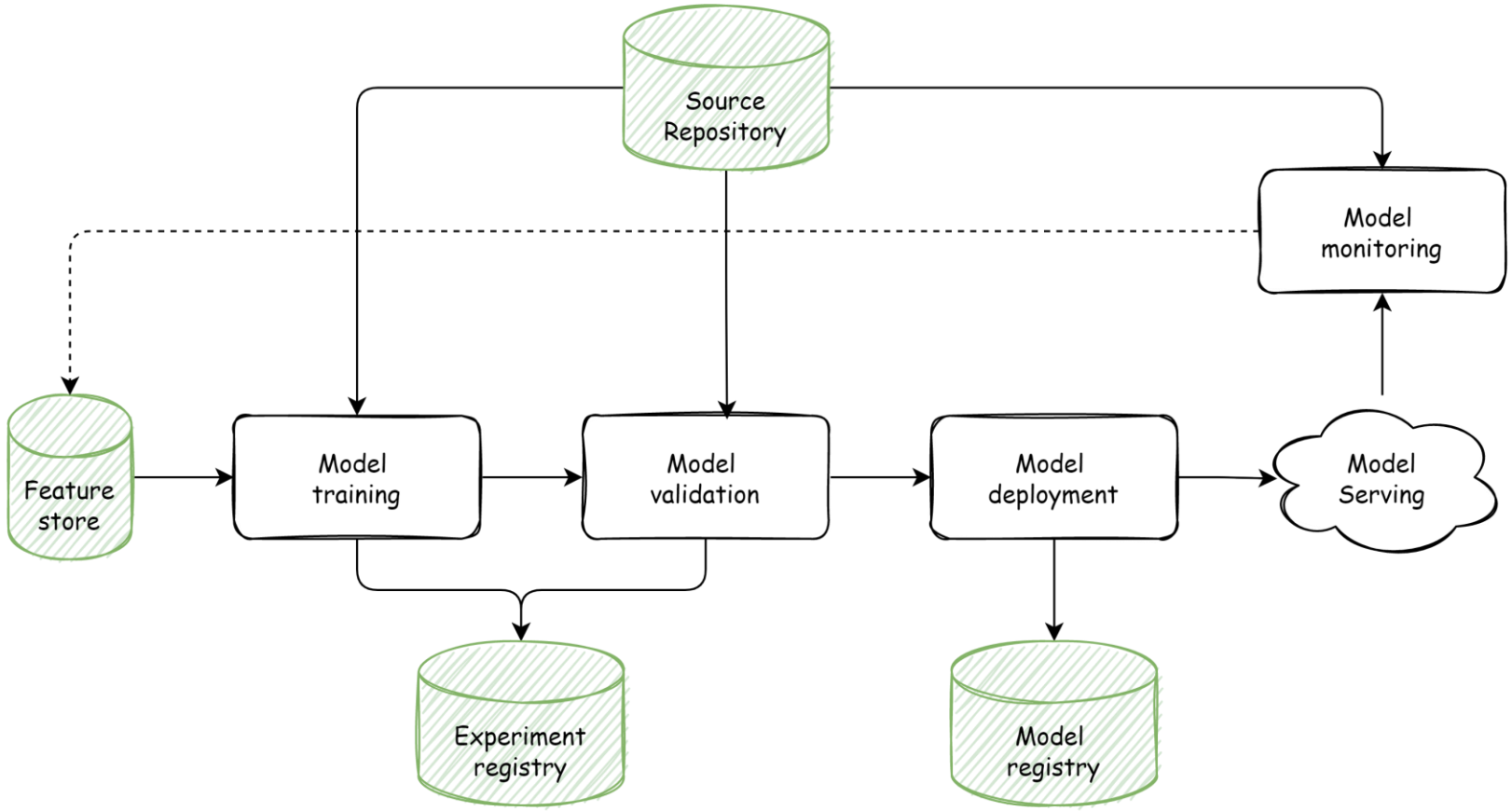
Automated model lifecycle



MLOps on AWS

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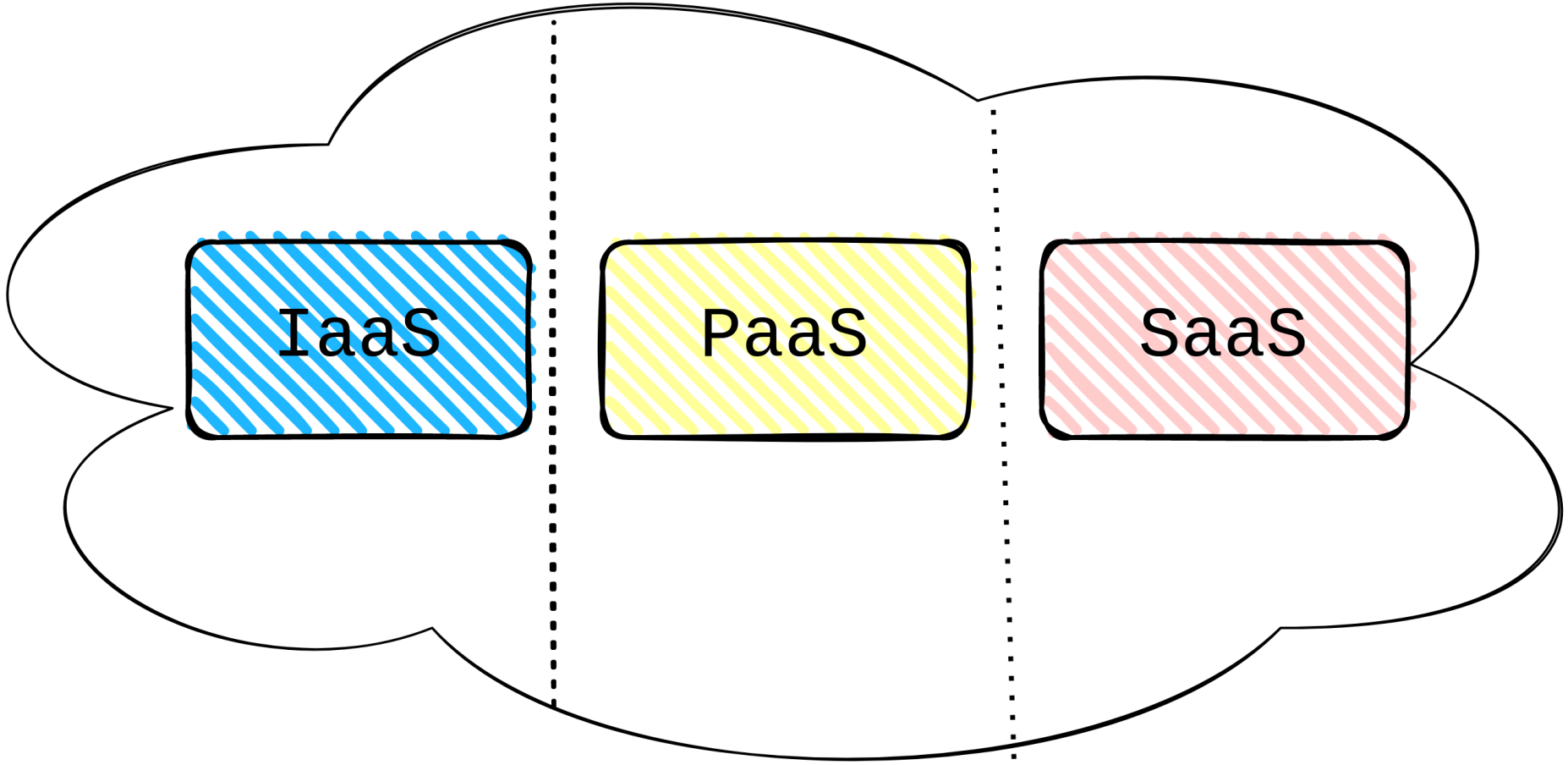
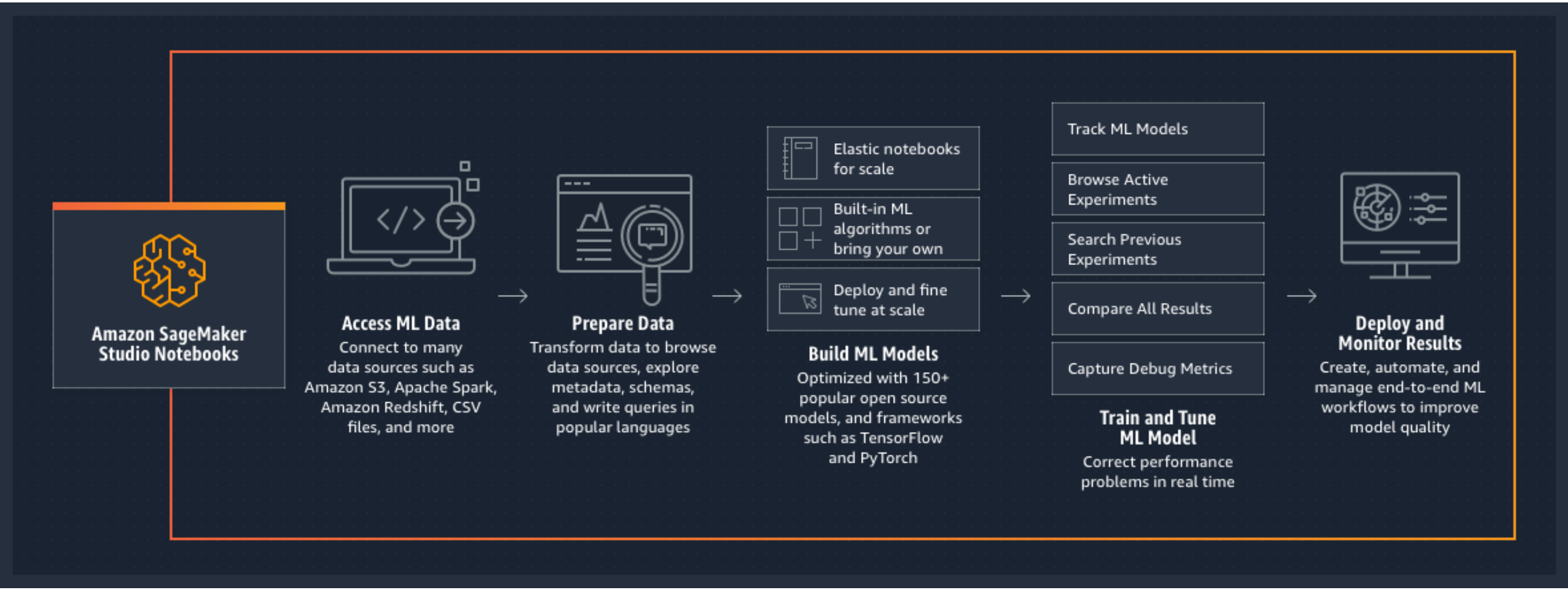
AWS Cloud basics



Sagemaker Components

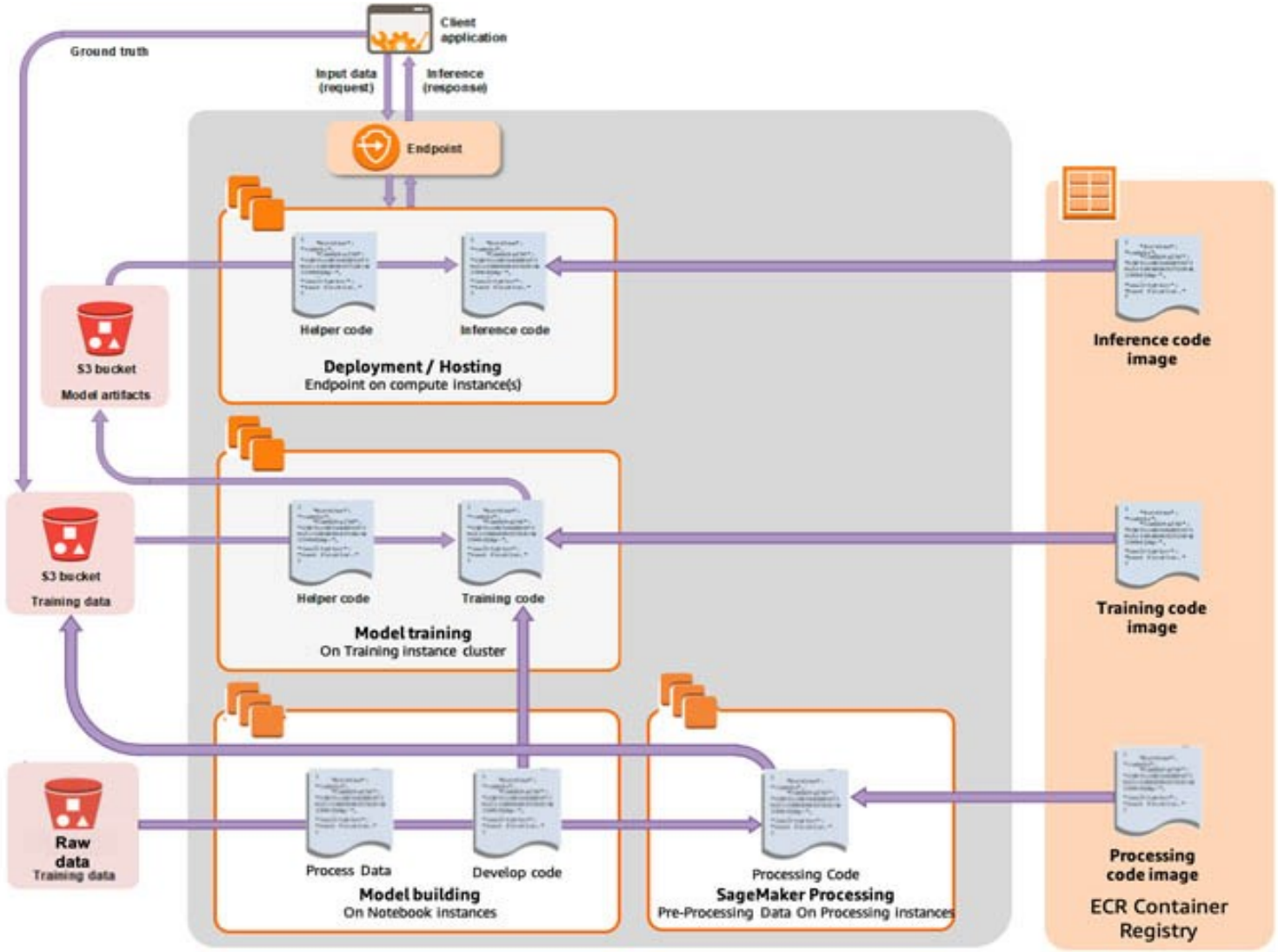


Sagemaker Training

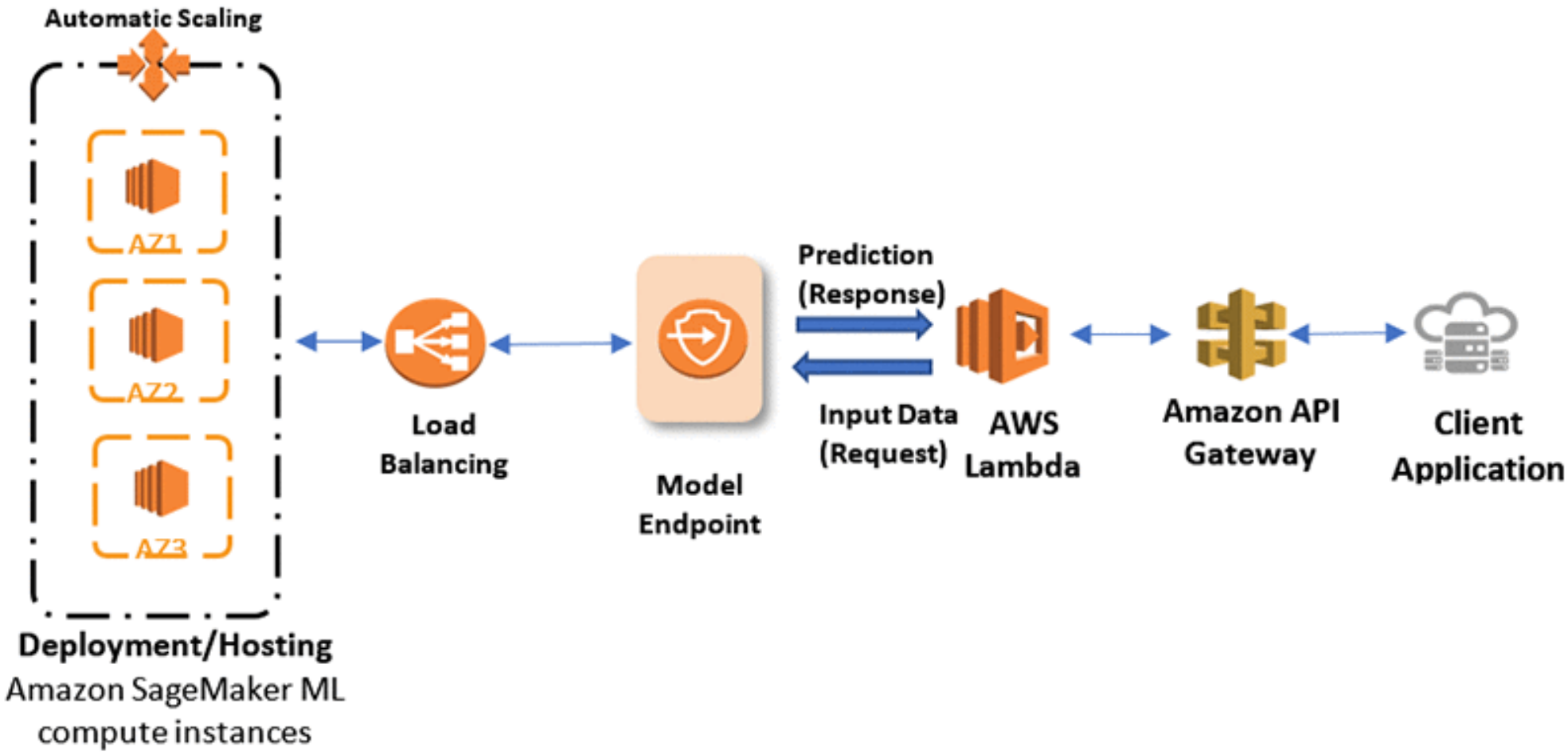
And then you deploy your model to production for real-time inference (or you use Batch Transform for batch inference*)

Then you train and tune your model

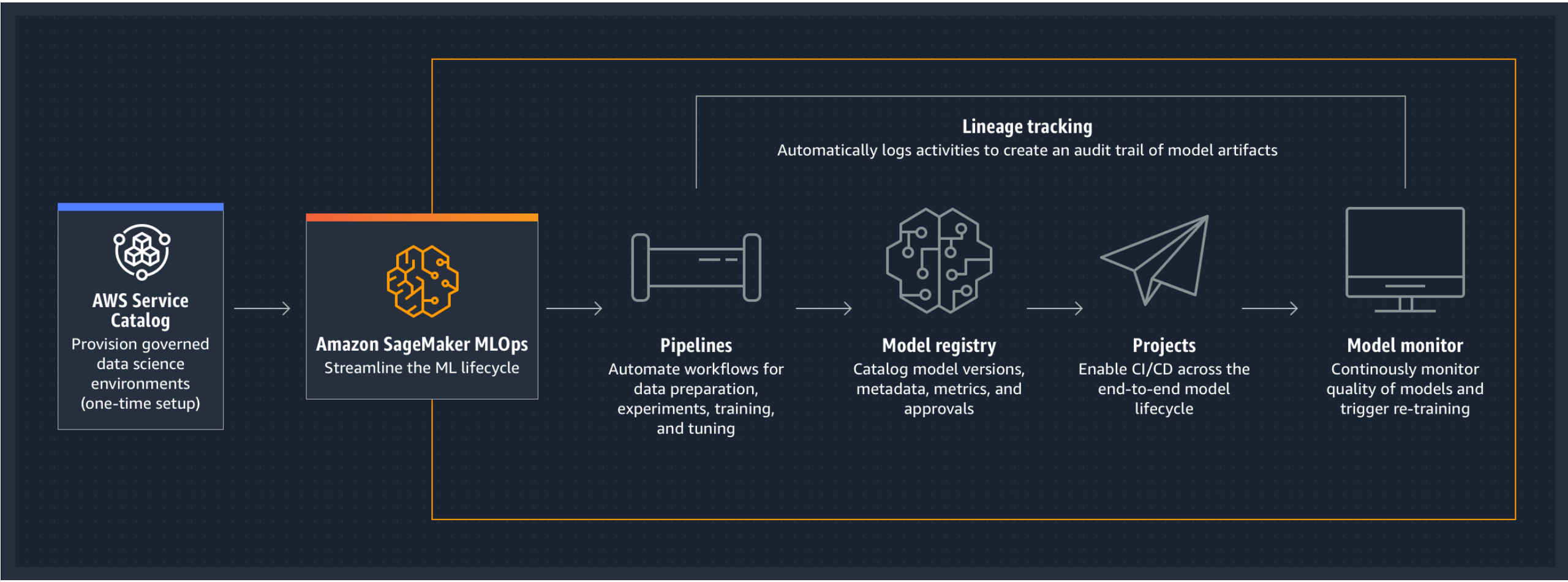
You start by building your model and processing raw data, developing your training data



Sagemaker Endpoint



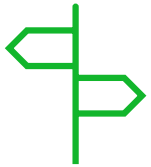
AWS MLOps: Sagemaker Studio



Before we begin...

This is a simplified version of the reality – we have taken some shortcuts: we will highlight which ones along the way.

We will use very simple models; we will talk briefly how to improve them.



We will not cover all the features of SageMaker and AWS, often there are multiple ways of achieving the same goal. We will comment on this whenever possible.


Check the billing!!
Always.
All the time.


Jump
on
AWS