What is MLOps?

MLOPS CONCEPTS

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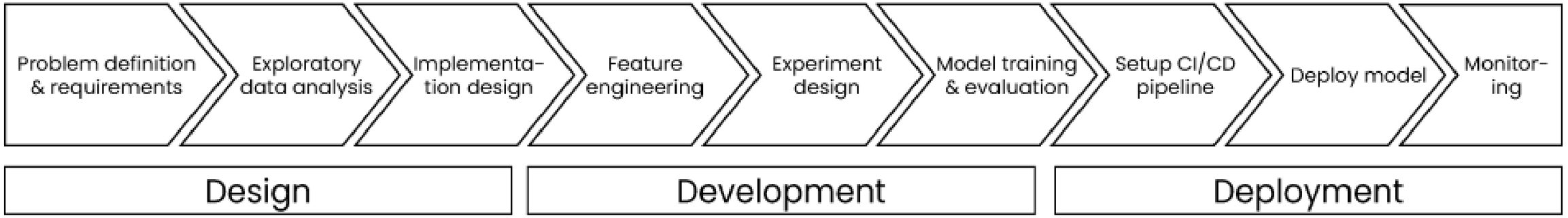
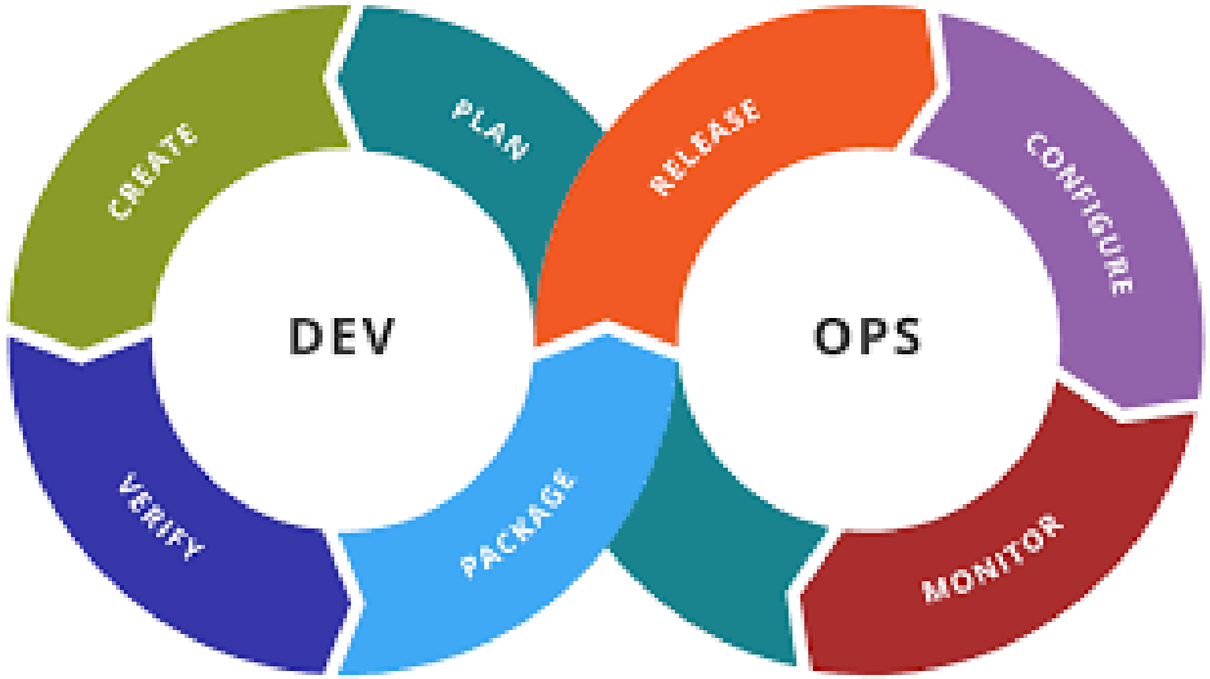
Machine Learning Operations

*...is the set of practices to **design, deploy** and **maintain** machine learning in production **continuously, reliably,** and **efficiently.***

- Focus on machine learning '*in production*'
- The full machine learning lifecycle

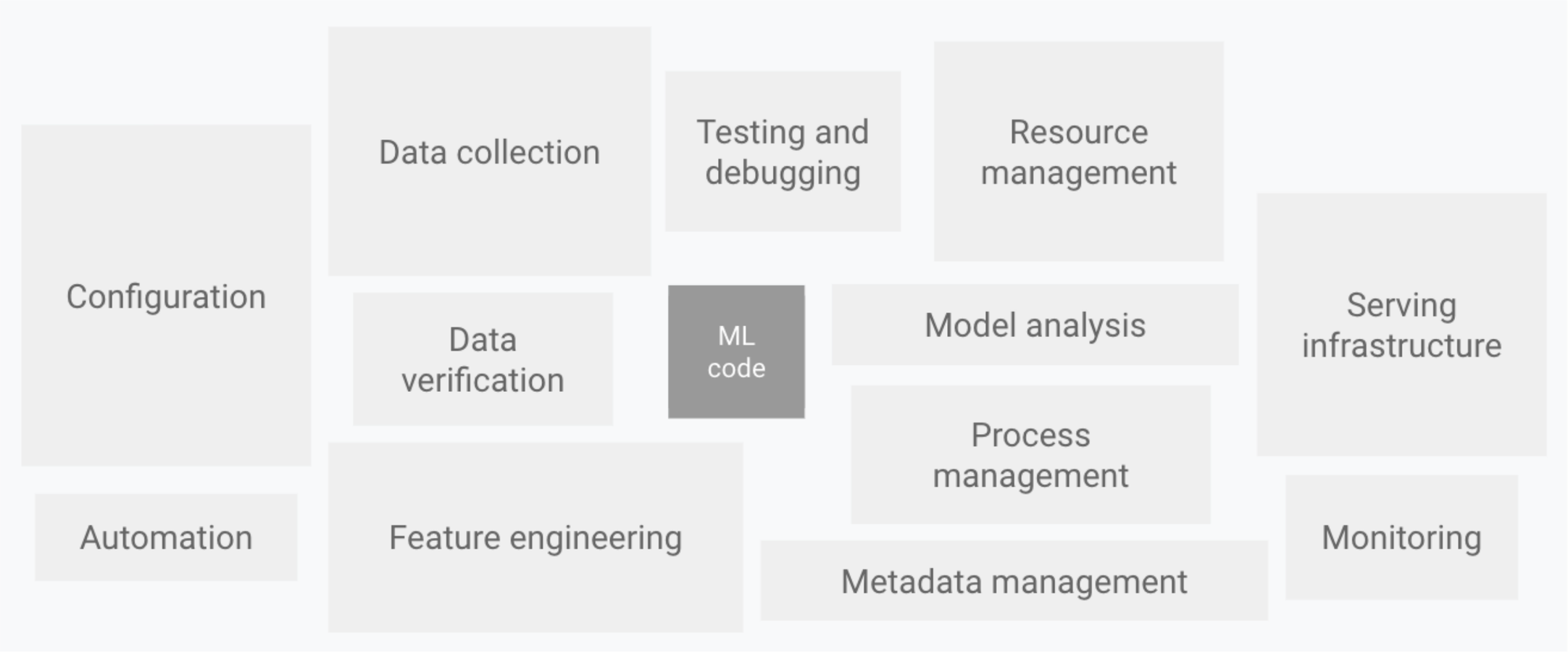


The origin of MLOps



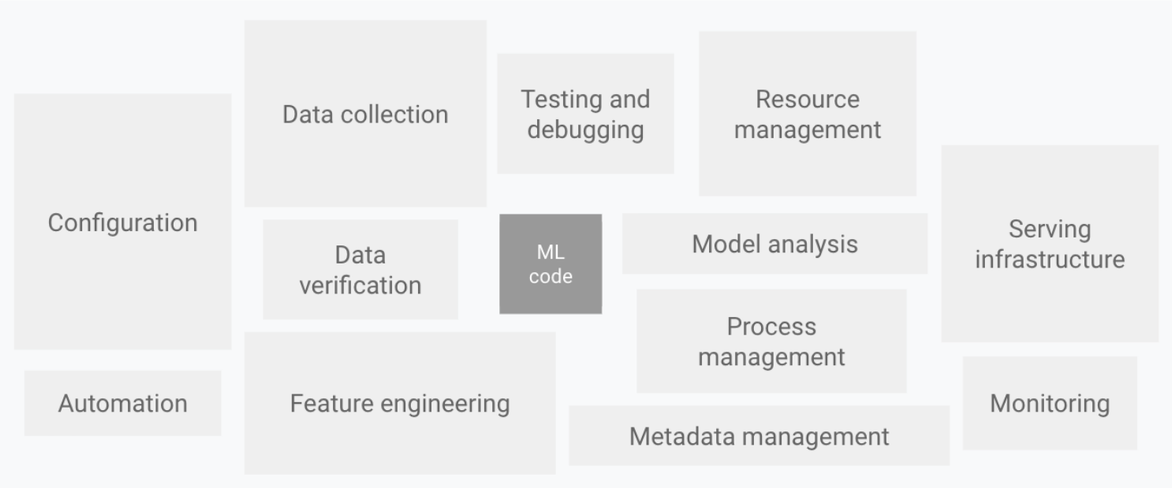
- Practices and tools to deliver software applications
- Development and Operations used to be separate

Why MLOps



[1] https://cloud.google.com/architecture/mlops-continuous-delivery-and-automation-pipelines-in-machine-learning

Why MLOps



- Improved collaboration
- Automation of deployment
- Monitoring of model performance

Let's practice!

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Different phases in MLOps

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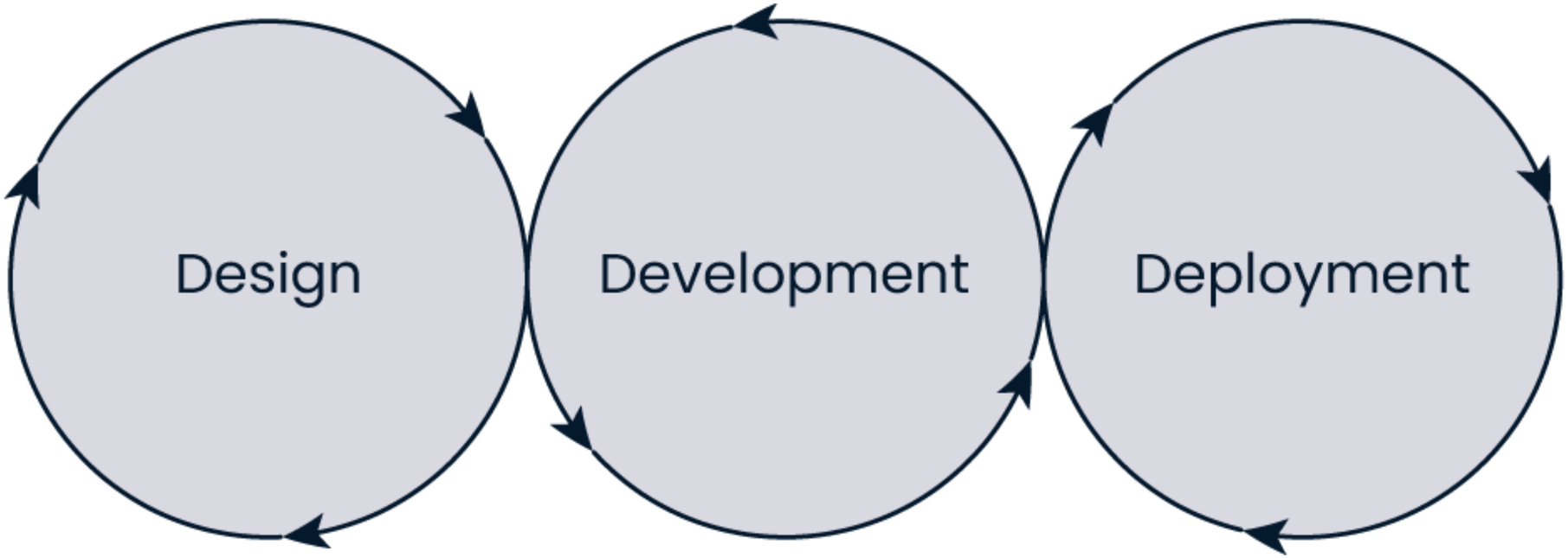
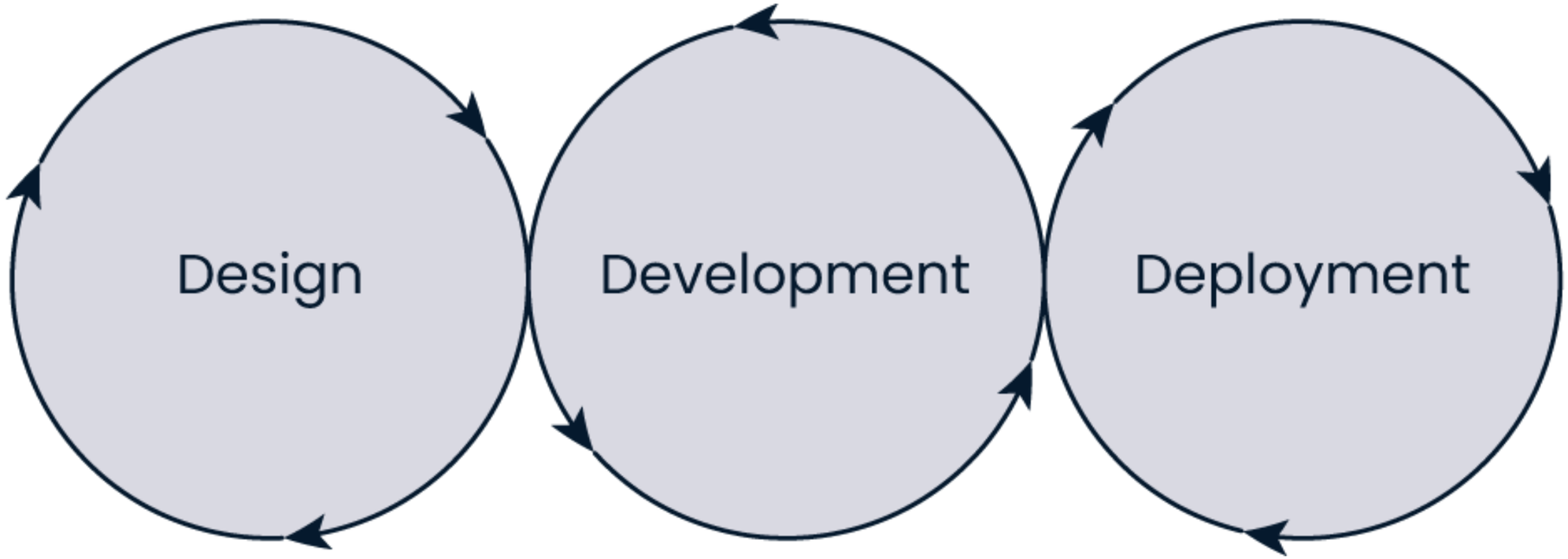
MLOps lifecycle

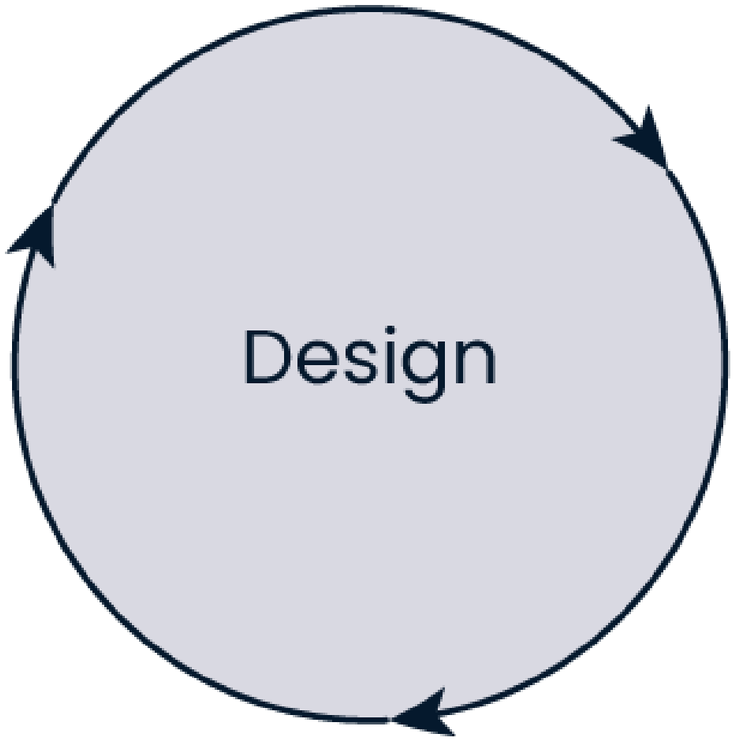


Why the machine learning lifecycle?



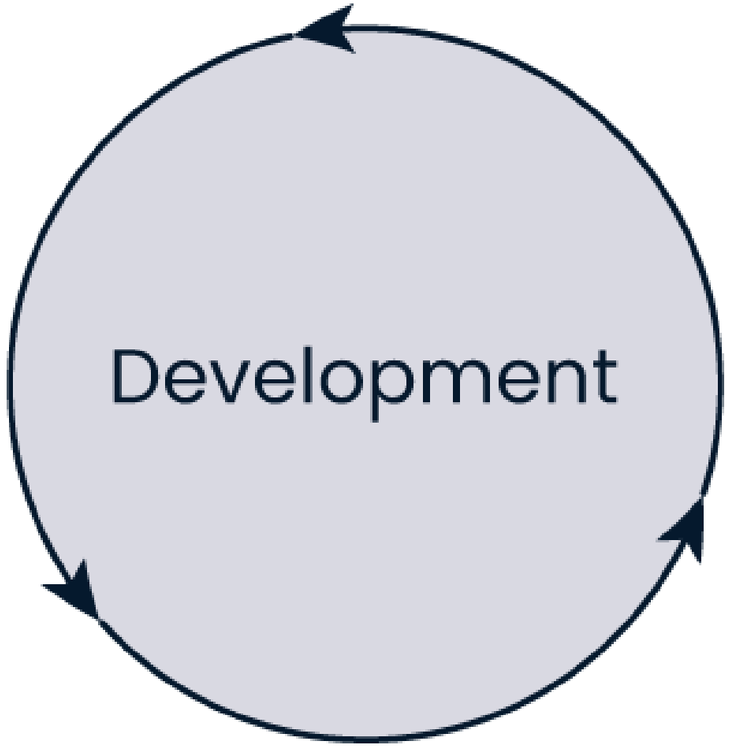
- Structures the ML process
- Defines key players at each stage
- Toolkit for optimization

Design phase



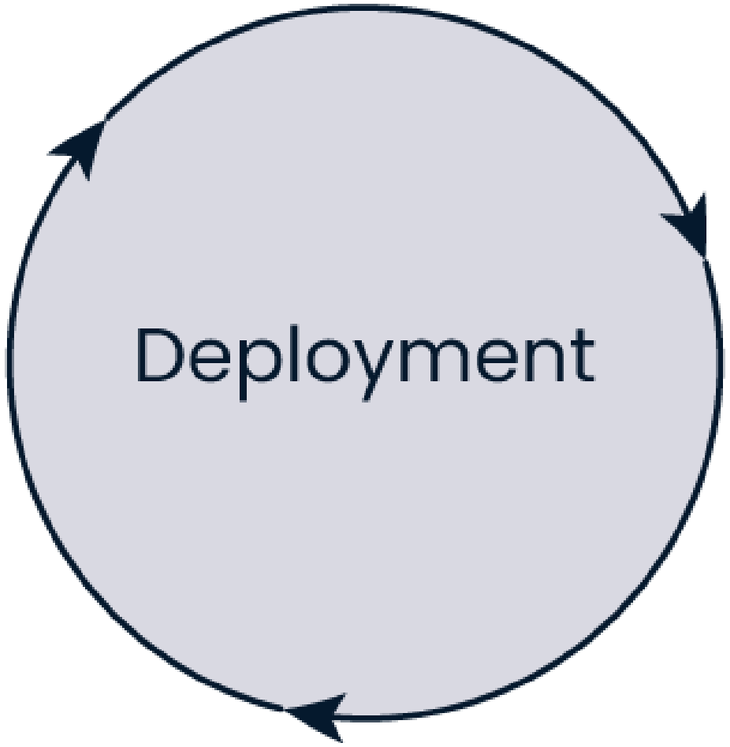
- Context of the problem
- Added value
- Business requirements
- Key metrics
- Data processing

Development phase



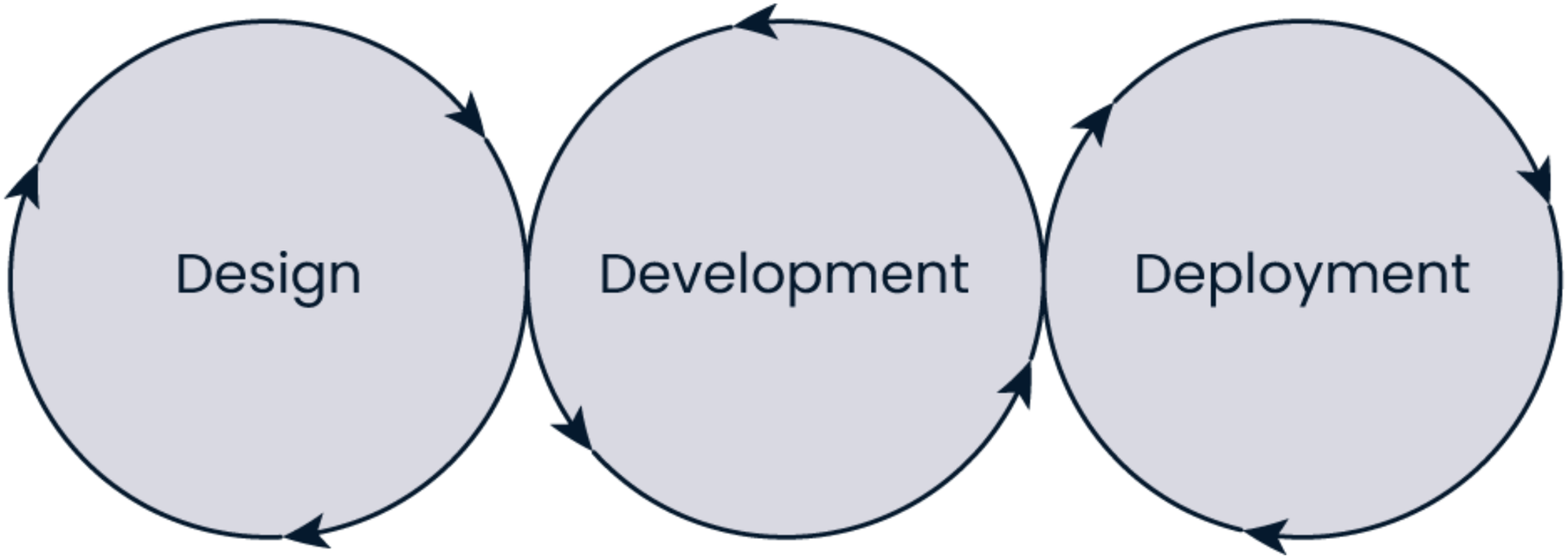
- Develop machine learning model
- Experiment with data, algorithms, and hyperparameters
- Model ready for deployment

Deployment phase



- Integrate the machine learning model in business
- Deploying the model in production
- Monitoring the performance

MLOps lifecycle



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Roles in MLOps

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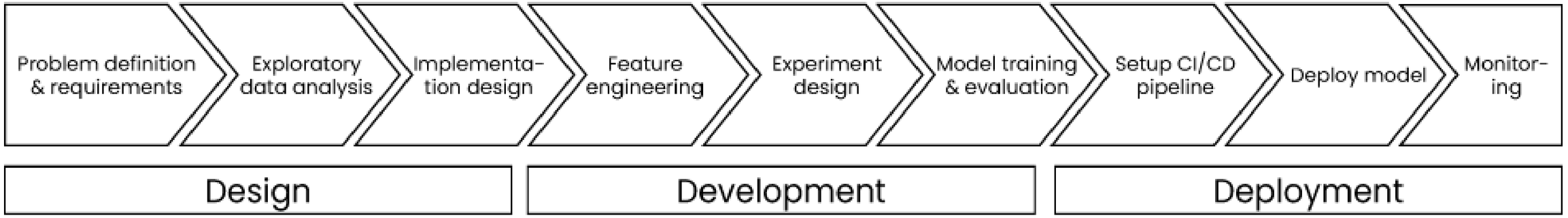
Machine learning lifecycle

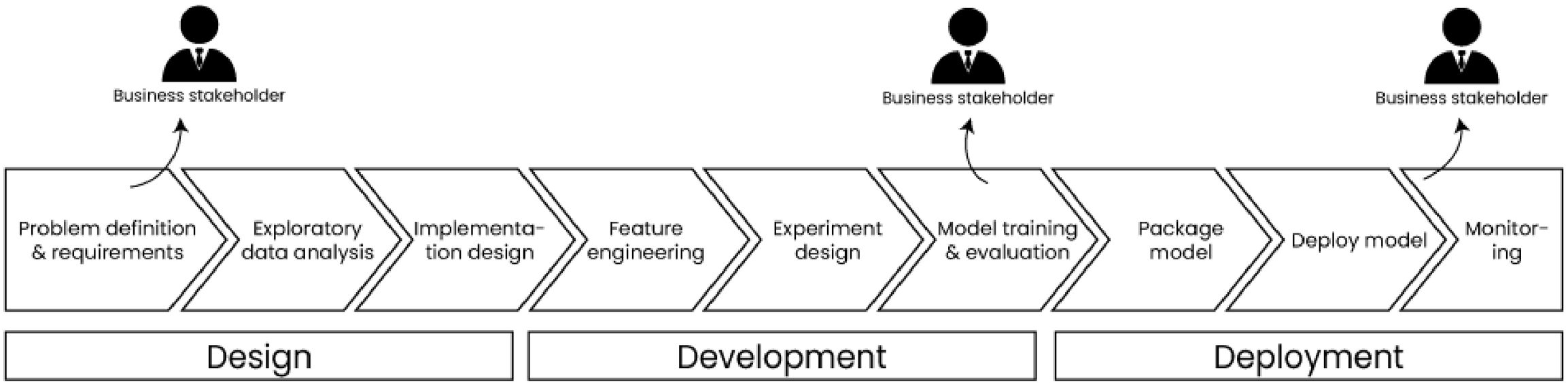


- Business roles
- Technical roles

Business roles

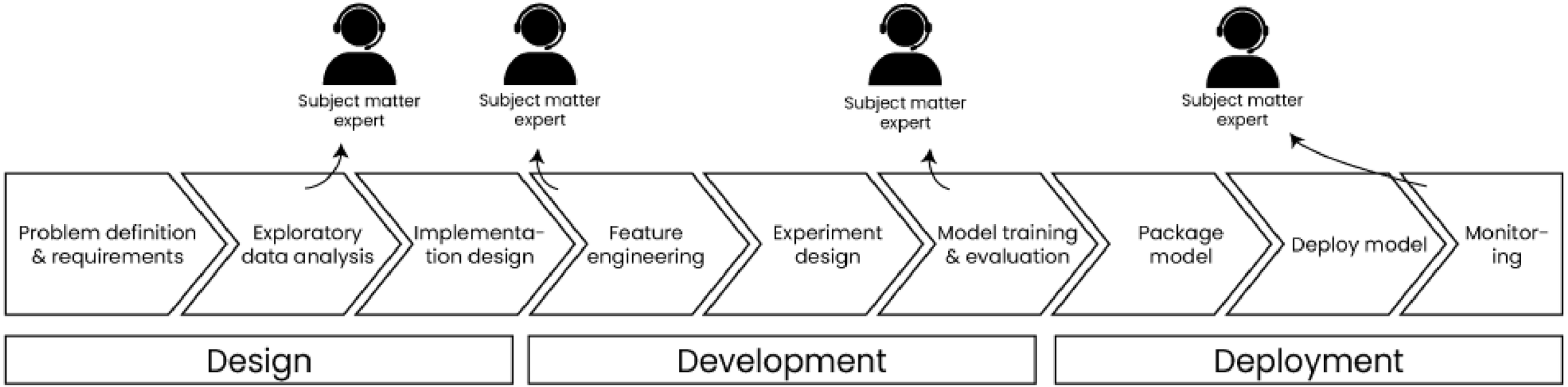
- Business stakeholder
- Subject matter expert

Business roles: business stakeholder



- Budget decisions
- Vision of company
- Involved throughout the lifecycle

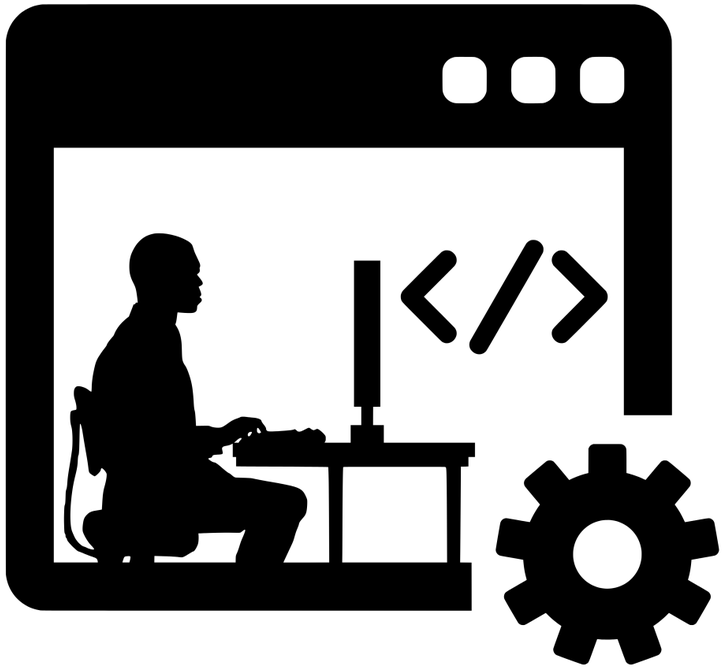
Business roles: subject matter expert



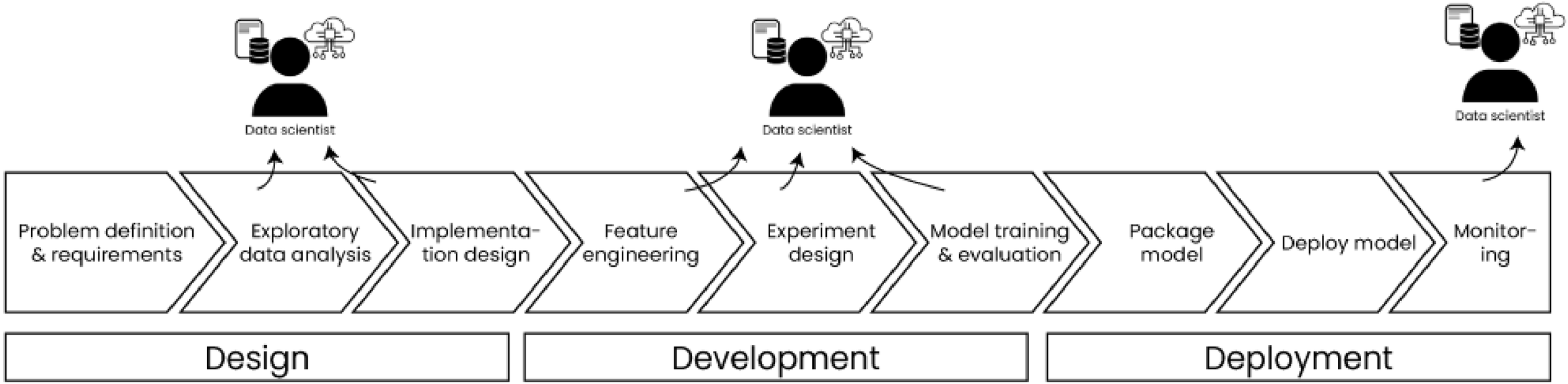
- Domain knowledge
- Involved throughout the lifecycle
- Interpret and validate data

Technical roles

- Data scientist
- Data engineer
- ML engineer

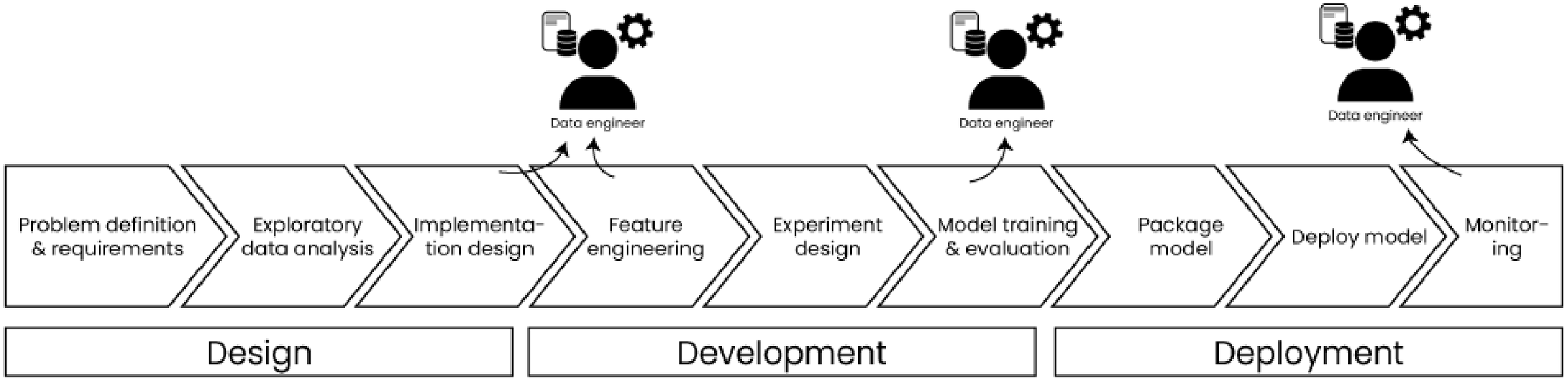


Technical roles: data scientist



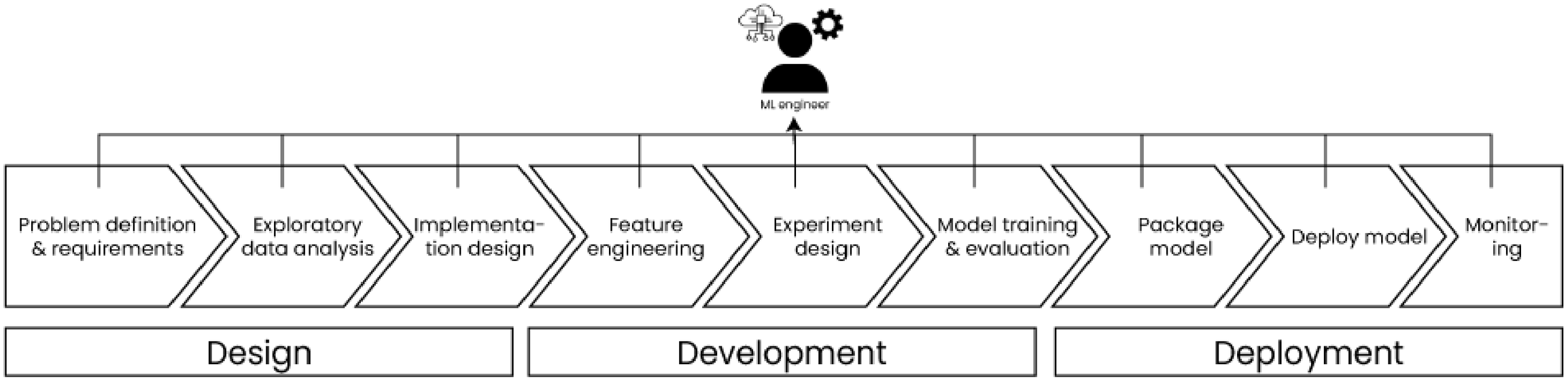
- Data analysis
- Model training and evaluation

Technical roles: data engineer



- Collecting, storing, and processing data
- Check and maintain data quality

Technical roles: ML engineer



- Versatile role
- Specifically designed for complete machine learning lifecycle

Additional roles involved in ML

- Data analyst, developer, software engineer, backend engineer
- Responsbility of roles can vary depending on application of machine learning
- Startup is different from a large enterprise

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