

## ML Life Cycle

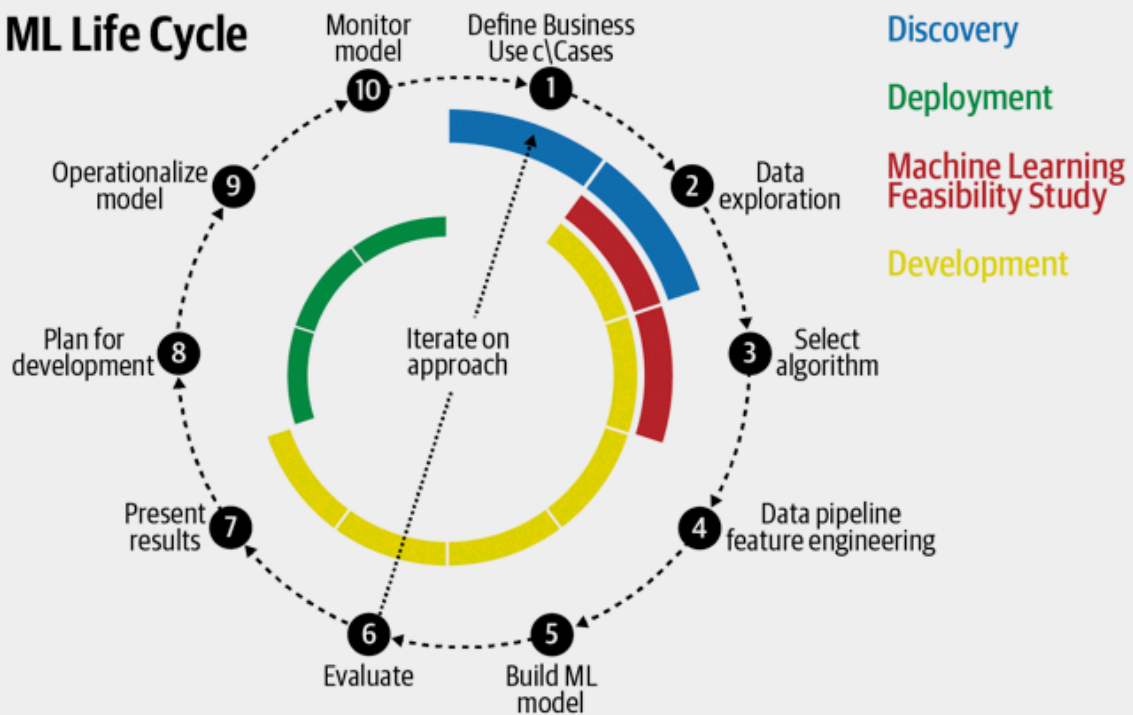


Figure 8-2. The ML life cycle begins with defining the business use case and ultimately leads to having a machine learning model in production that benefits that goal.

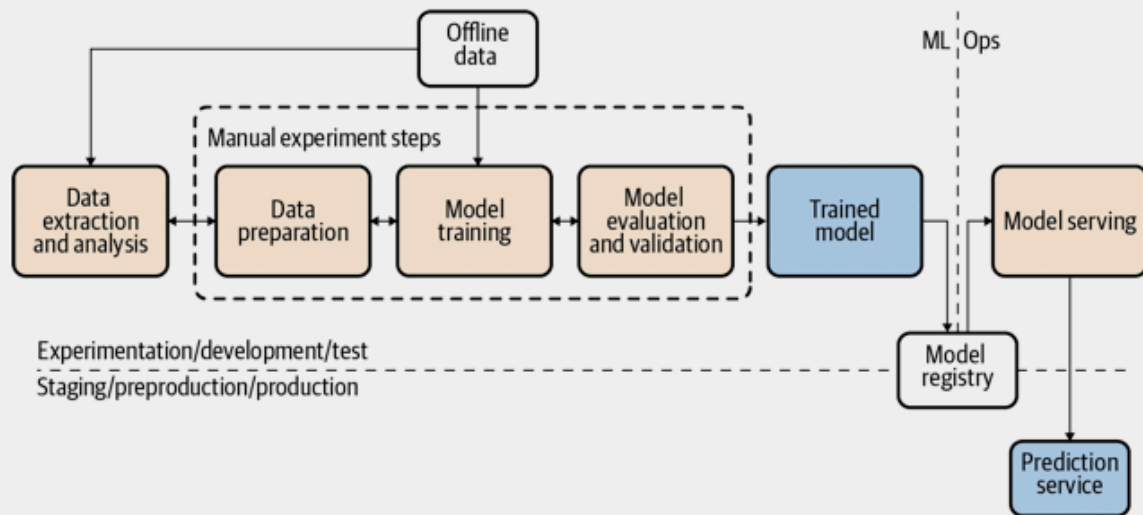


Figure 8-4. Manual development of AI models. Figure adapted from Google Cloud documentation.

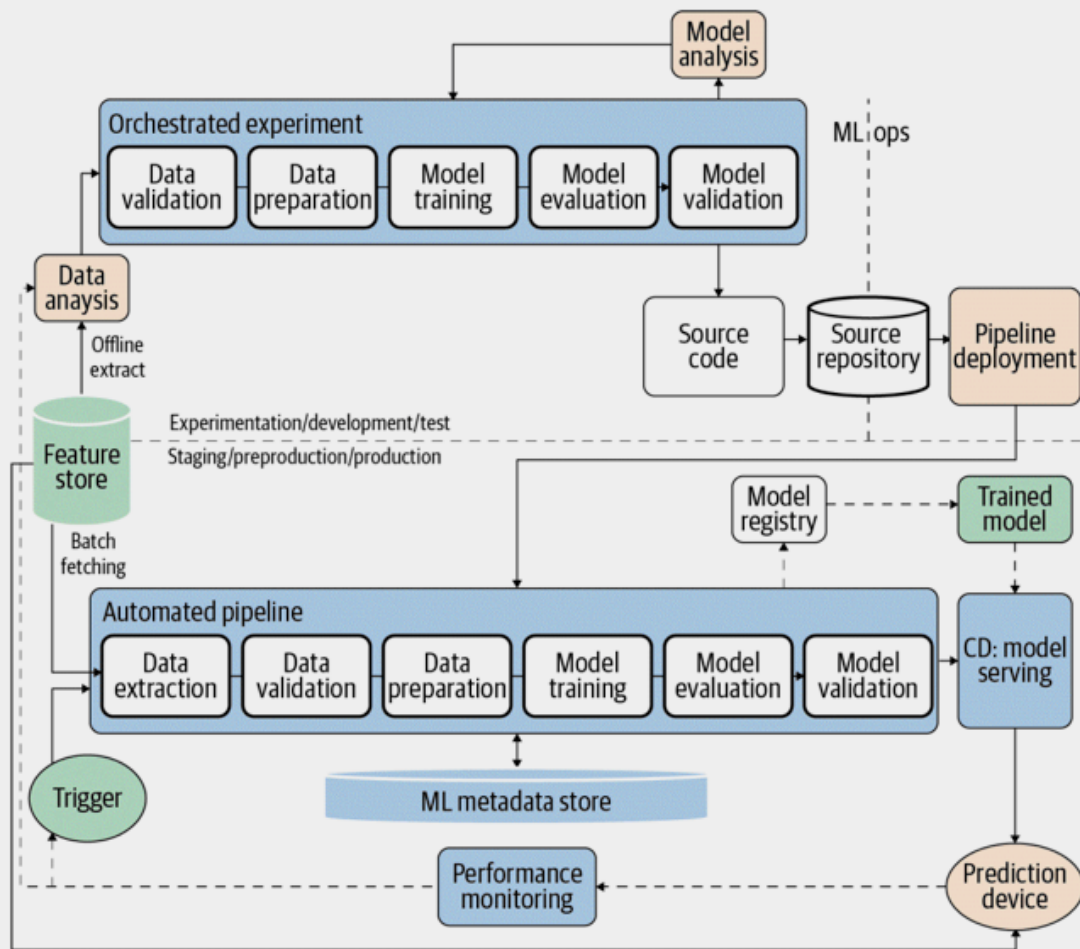
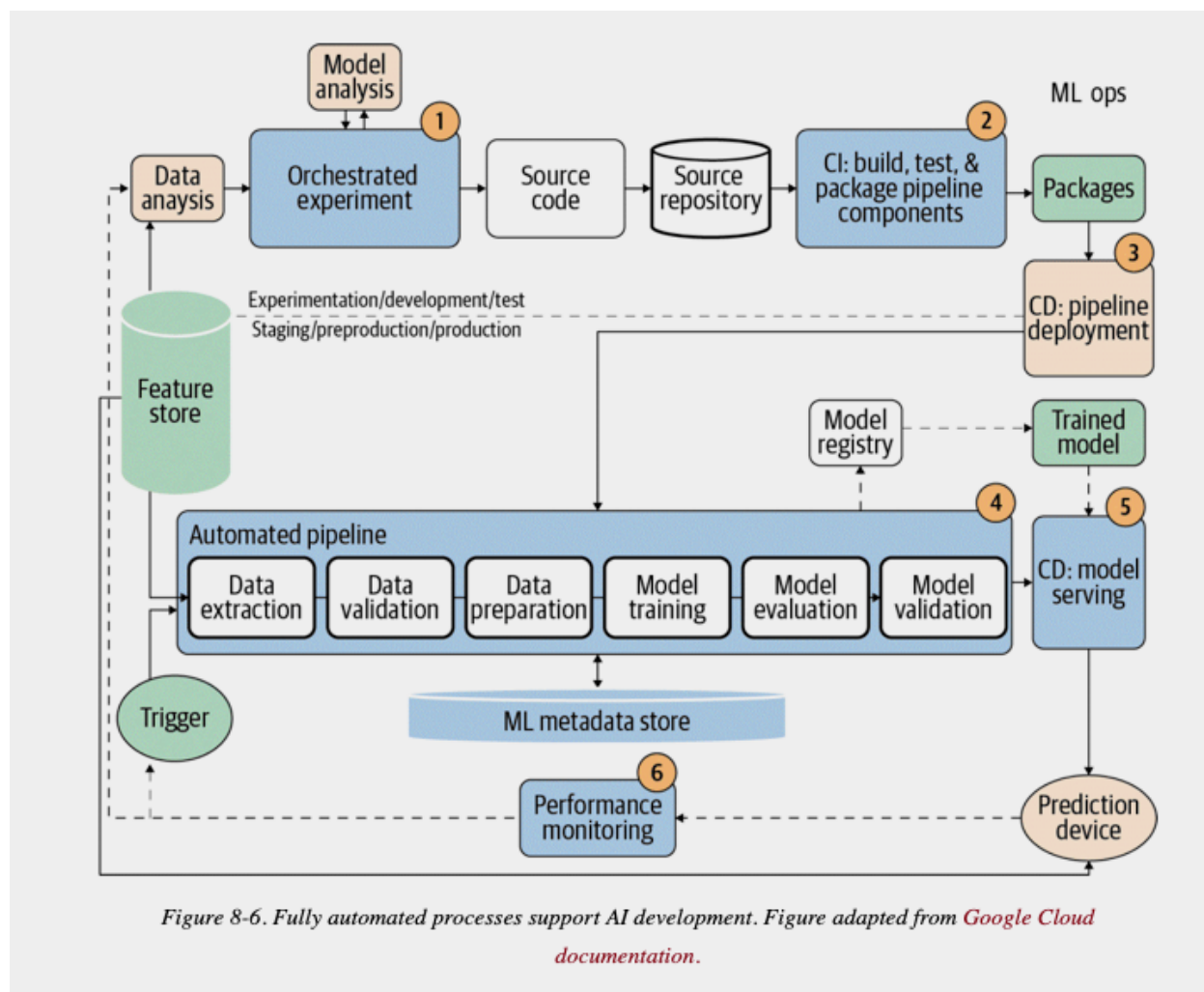


Figure 8-5. Pipelines phase of AI development. Figure adapted from *Google Cloud documentation*.

1.



Common patterns by use case and data type

Natural Language Understanding

1. Embeddings
2. Hashed Feature
3. Neutral Class
4. Multimodal Input
5. Transfer Learning
6. Two-Phase Predictions
7. Cascade
8. Windowed Inference

Computer Vision

2. Reframing
3. Neutral Class
4. Multimodal Input

5. Transfer Learning
6. Embeddings
7. Multilabel
8. Cascade
9. Two-Phase Predictions

#### Predictive Analytics

1. Feature Store
2. Feature Cross
3. Embeddings
4. Ensemble
5. Transform
6. Reframing
7. Cascade
8. Multilabel
9. Neutral Class
10. Windowed Inference
11. Batch Serving

#### IoT Analytics

1. Feature Store
2. Transform
3. Reframing
4. Hashed Feature
5. Cascade
6. Neutral Class
7. Two-Phase Predictions
8. Stateless Serving Function
9. Windowed Inference

#### Recommendation Systems

1. Embeddings
2. Ensemble
3. Multilabel
4. Transfer Learning
5. Feature Store
6. Hashed Feature
7. Reframing
8. Transform
9. Windowed Inference
10. Two-Phase Predictions
11. Neutral Class
12. Multimodal Input
13. Batch Serving

## Fraud and Anomaly Detection

1. Rebalancing
2. Feature Cross
3. Embeddings
4. Ensemble
5. Two-Phase Predictions
6. Transform
7. Feature Store
8. Cascade
9. Neutral Class
10. Reframing