Microsoft

스타트업계의 핫한 서비스, 애저에는?

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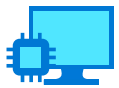
Developer Product Marketing Manager
(a.k.a. Field Developer Relations),
Microsoft

목차

0. Preface

다양한 마이크로소프트 “Azure” Products



Edge devices

Azure Stack Hub | Azure Stack Edge | Azure Sphere | Azure Kinect | HoloLens

Serverless

Web
Mobile
Mixed Reality
Containers
Events + Integration

Databases
Analytics
AI + Machine Learning
Internet of Things
Media

Infrastructure

Compute | Networking | Storage | Security | Identity

Tools

Visual Studio
GitHub
PowerApps
Power BI

오늘 공유드리고자 하는 이야기는…

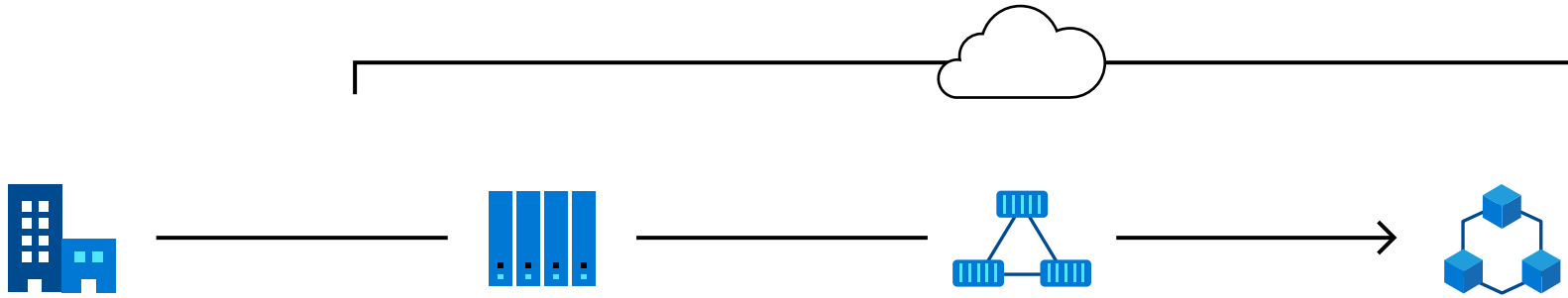
Microsoft Azure

[Divide]
Azure 핫한 분야를 "잘"
나누어 살펴보자

[Conquer]
트렌드와 함께 서비스 이해 (+활용)

1. 클라우드와 함께 하는 여정 & 혁신

클라우드와 함께 하는 비즈니스 **Journey**

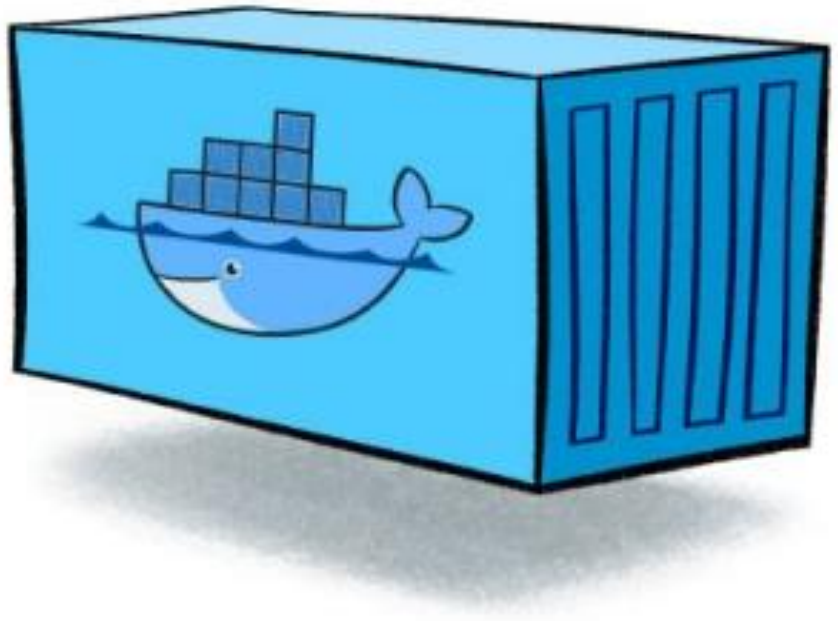


온프레미스	**IaaS (인프라 기반 서비스)**	서버리스	**Less/no code**
인프라 플랫폼	인프라 플랫폼을 “Lift and shift”	관리가 이루어지는 플랫폼 + 컨테이너	응용 프로그램 플랫폼

마이그레이션 — 혁신

혁신과 함께 비즈니스가 성장하는 방법은?!

컨테이너와 혁신?



What are Containers?
컨테이너에 의한 서버 환경 - 개발자들에게 인기 있는 이유

어플리케이션은 어디에서든, 동일하게 동작함

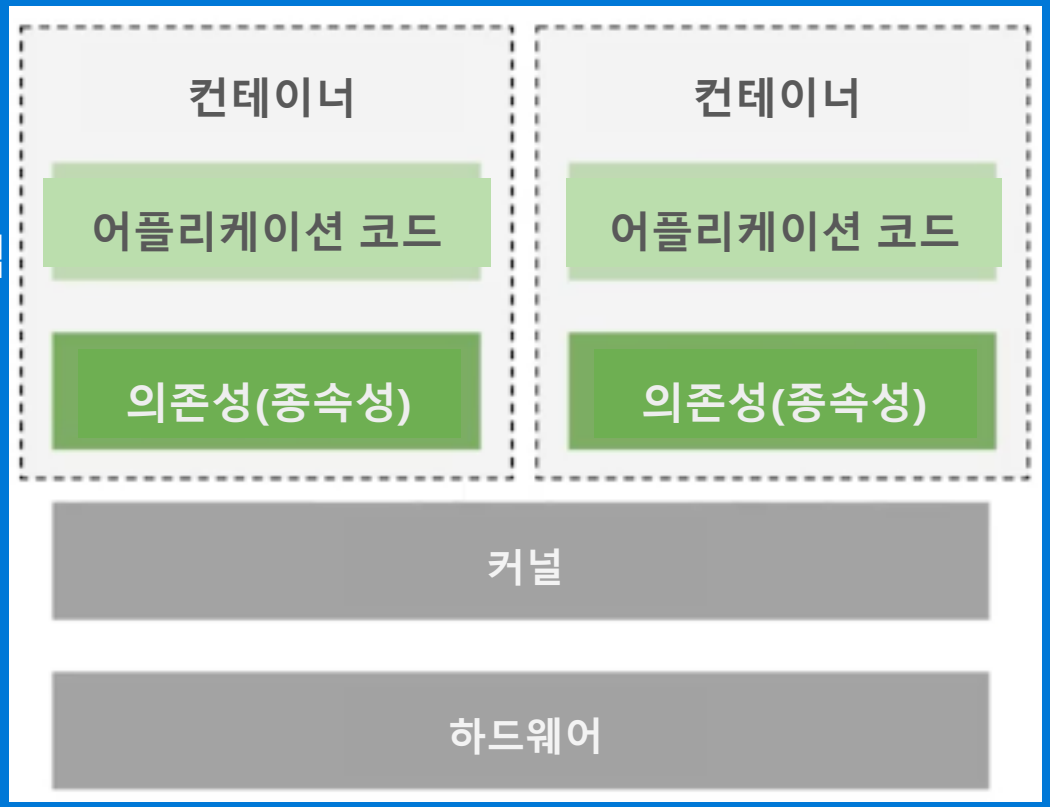
- 개발, 테스트, 프로덕션 어떤 환경에서든
- 베어메탈, 가상머신, 클라우드 어떤 환경에서든

패키지화된 어플리케이션은 개발 싸이클의 속도를 빠르게 회전시킴

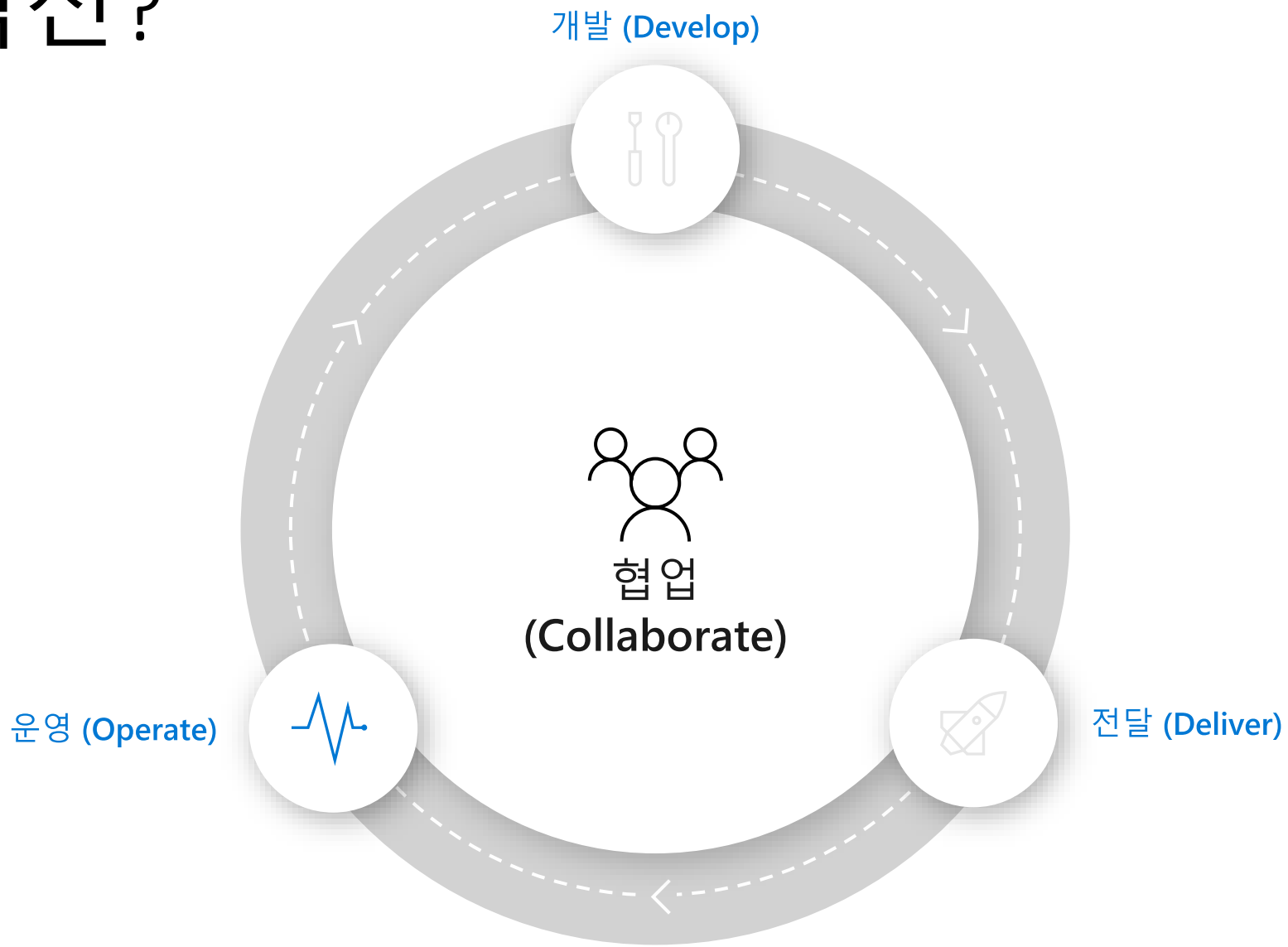
- 애자일한 생성과 배포가 가능
- 지속적인 통합/배포가 가능
- 단일 파일의 복사만으로 이를 가능하게 해줌

마이크로서비스를 가능하게 해 주기 위한 방법을 제공:

- 분석 가능성(introspectable),
  격리성(isolated), 탄력성(elastic)



DevOps와 혁신?



Collaboration Solution

Project Manager

Business Analyst / Product Owner

Quality Analyst

Plan & Track

Portfolio

Storyboards

User Stories

Tasks

Develop

SonarQube

Code Analysis

Architecture

Quality Gates

Commit / Check-in

Source Code

Testing

Test Cases

Bugs

Execute Test

Build/Deploy

Deployment

Approval Pipeline

Build

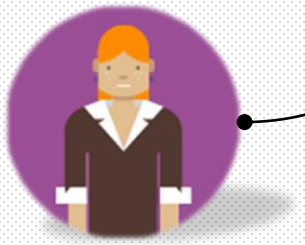
Project Lead

Developer

DevOps

The Enterprise Collaboration Solution

Project Manager



Business Analyst / Product Owner

Quality Analyst

Plan & Track

Develop

Manual Testing

Build/Deploy

Project Lead

Developer

DevOps


MEDICAL
Health Care
Doctor
Hospital
Pharmacist
Nurse
Dentist
First Aid
Surgeon
Emergency
MEDICAL
Health Care
Doctor
Hospital
Pharmacist
Nurse
Dentist
First Aid
Surgeon
Emergency
MEDICAL
Health Care
Doctor
Hospital
Pharmacist
Nurse
Dentist
First Aid
Surgeon
Emergency

Accessibility required by **1+ billion**

AI for Earth

to empower all the people in the world

2. 주요 핫한 애저 (Azure) 내 서비스

대규모 글로벌 네트워크에서 동작하는 클라우드 기반 앱 생성, 관리 및 배포

61

Azure regions

More than AWS &
Google combined

Azure - 컨테이너 기반 서비스

컨테이너는 가볍게 만들어져 동적으로 생성, 확장 및 중단되도록 설계되었습니다.

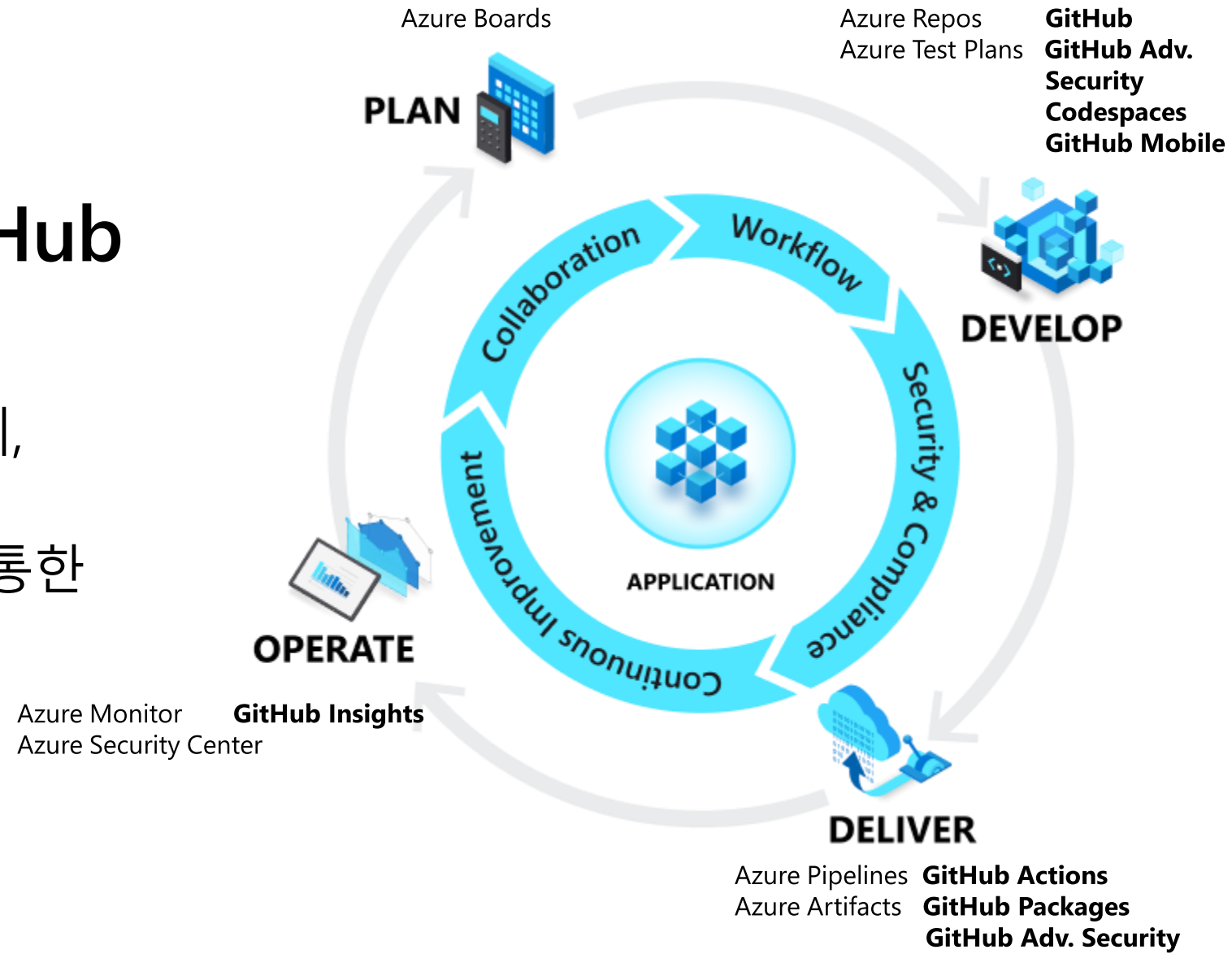
Web App, IoT, 머신 러닝 서비스 등 많은 애저 서비스들이 "컨테이너" 배포를 지원

- Azure Container Instances: 컨테이너를 업로드 할 수 있는 컴퓨팅. 업로드만 하면 컨테이너가 실행됩니다.

- Azure Kubernetes Service: 많은 컨테이너를 관리하기위한 컨테이너 클러스터 관리 서비스

Azure DevOps + GitHub

개발자를 위한 많은 서비스를
포함한 Microsoft Azure 와 함께,
Planet 코드 베이스를 기반으로
빌드가 이루어지는 GitHub 를 통한
진정한 DevOps 플랫폼 실현

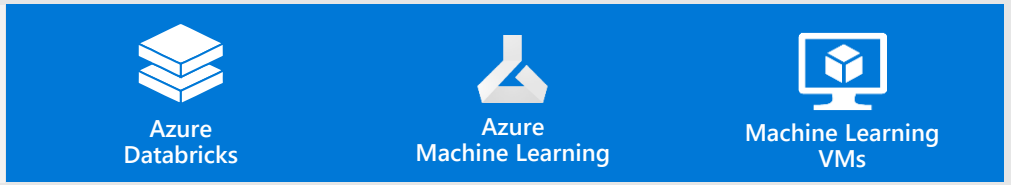


애저 머신 러닝 & AI: 미리 학습된 모델을 API로 or 직접 빌드

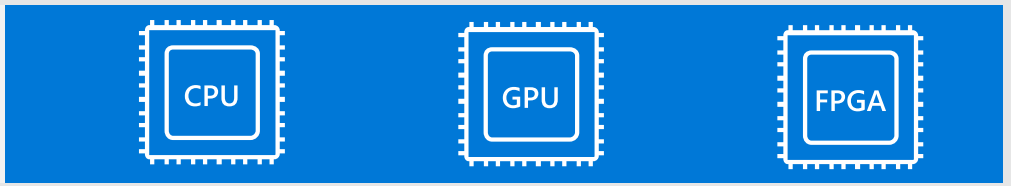
정교하게 미리 학습된 모델
솔루션 개발을 손쉽게 구현하기 위한 방법

유용한 프레임워크 활용
고급 딥 러닝 솔루션을 구축하기 위한 방법

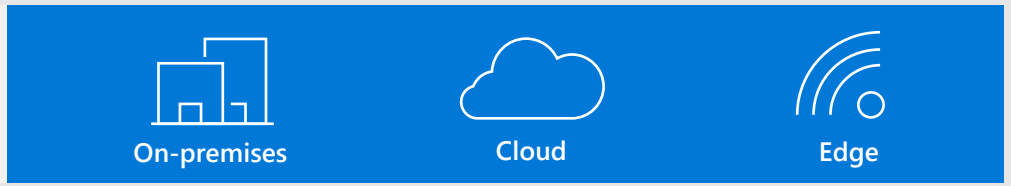
다양한 서비스 활용을 통합 생산성 향상
Data science와 개발팀을 위한 역량 강화



강력한 인프라스트럭처
효율적이고 원활한 딥 러닝 환경제공



유연하고 다양한 배포 모델
인텔리전트 클라우드와 Edge환경 모두 적용가능한 배포 및 관리 지원

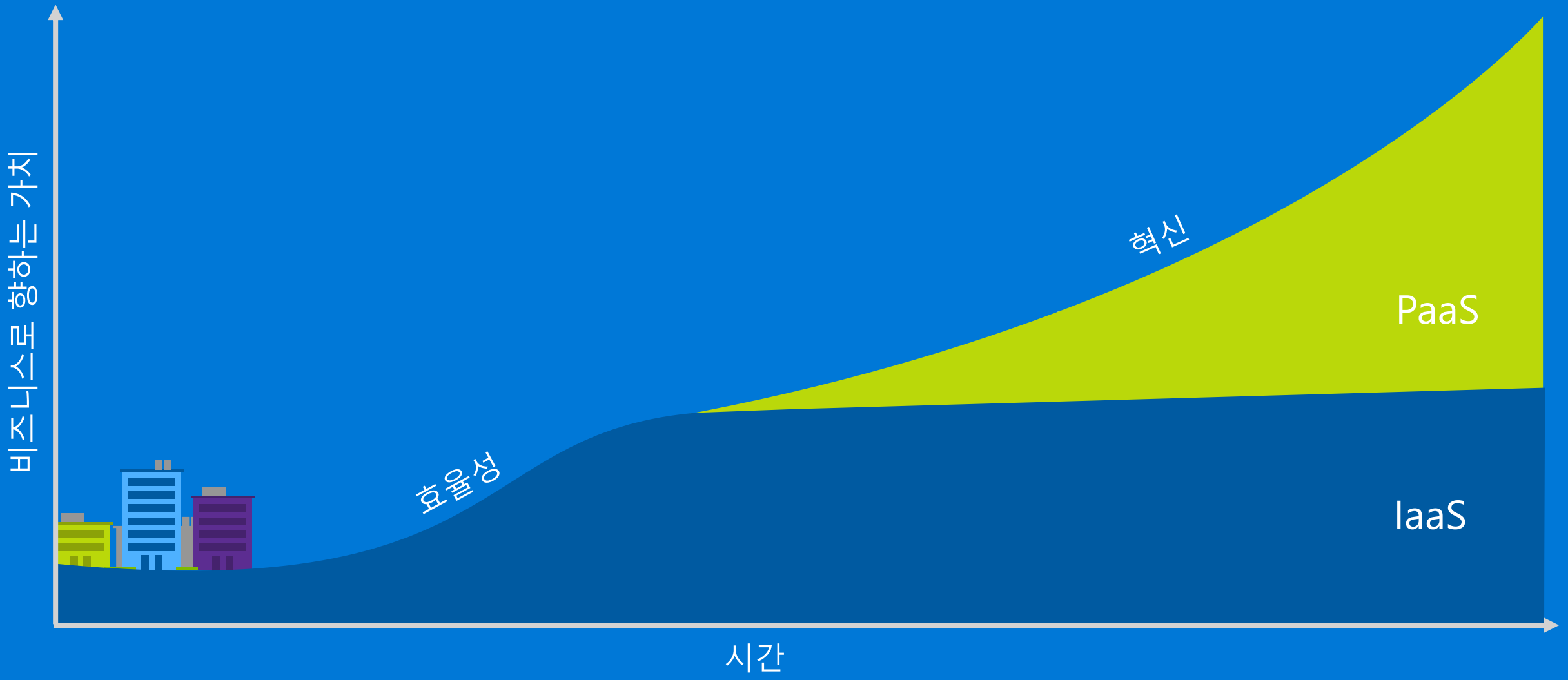


MLOps: DevOps를 넘어선 머신러닝 + Operations

DEVOPS	MLOPS
코드 관리 (소스 파일)	코드 관리 (소스 파일) 데이터 파일, 노트북, README 등 문서 관리
인프라 관리 (as code)	인프라 관리 (as code) 환경 관리 (as code)
소스 코드/버전 제어	소스 코드 제어 실험 결과 추적 데이터셋 관리
실행 파일 빌드 빌드: 짧으면 수 분, 길게는 몇 시간 소요 (대부분) 상용 컴퓨팅 자원 또는 PaaS	모델 트레이닝 모델 트레이닝: 때로는 며칠/몇 주 소요 GPU 컴퓨팅
빌드 버전 관리	모델 버전 관리 재현 가능한 환경 관리
테스트 (deterministic) 코드 버그 수정	테스트 (probabilistic) 코드 버그 수정 and/or 데이터 모델 변경 / 모델 재트레이닝 등

3. 맺음말

인프라 기반으로도 가능한 클라우드



점차 변화하는 앱 개발 방식 세계

Mainframe
Monolithic
Client/Server
3 Tier
Component
RAD
Distributed
SOAP
SOA
Web
REST
Mobile
Microservices
Containers
Serverless

물리 머신

가상 머신

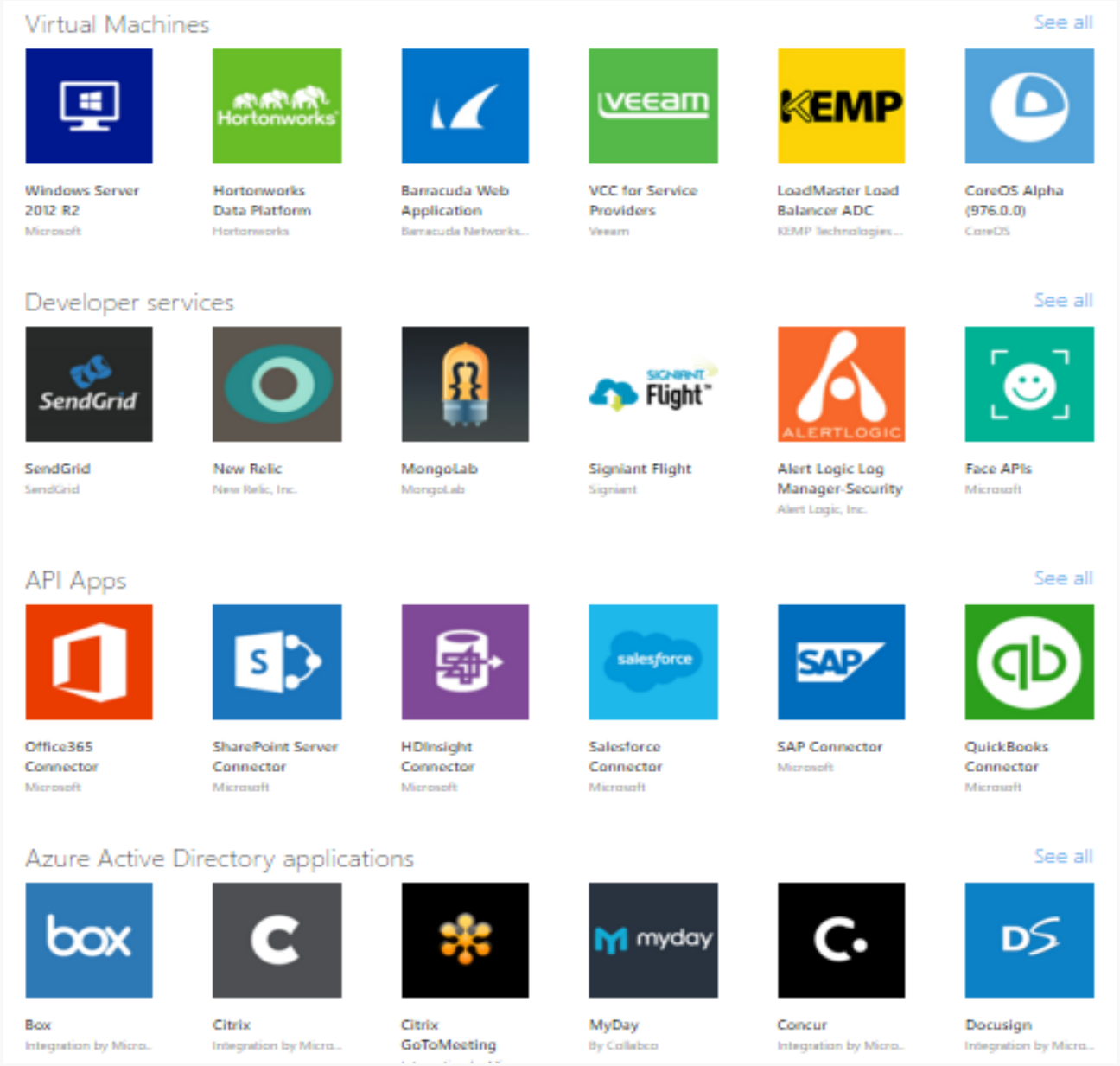
클라우드 인프라

Born in the Cloud

Build on a developer platform (PaaS)

Azure: Open & Easy

마켓플레이스를 통한 Azure 사용 확장 +**직접 올리실 수도**!!



모든 소프트웨어 요구 사항을 충족시키는 프리미어 스토어

Azure에서 실행하도록 인증 및 최적화

Linux & Windows 기반 솔루션

쉬운 배포

Resources

Azure 피셜 (신상 Azure + 활용 Azure)

: https://www.youtube.com/playlist?list=PLGh_JNxzXsX8b7pYyBPn53-BaD2xU-aqb

Microsoft.Source 뉴스레터 등록

: http://aka.ms/devKR

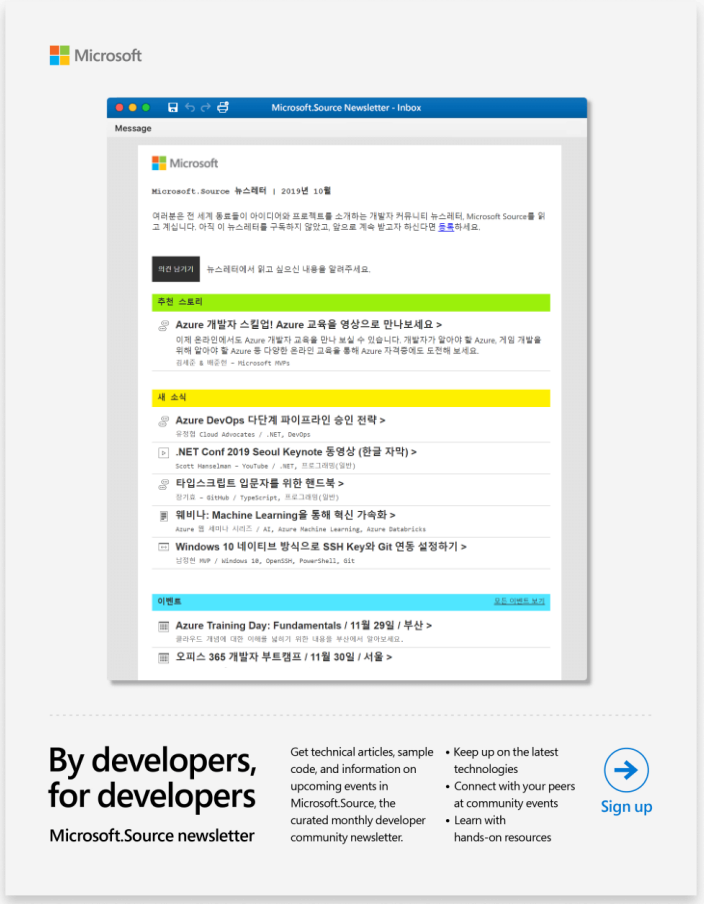
슬기로운 Azure 생활 커뮤니티

: https://www.facebook.com/groups/azurouslife

한국 Azure 사용자 그룹

: https://www.facebook.com/groups/krazure

+ 곧 업로드될 Azure Playlists도 많이 기대해주세요!



Thank you

Salamat Po

متشكرم

شكراً

Grazie

ευχαριστώ

ありがとうございます

Kiitos

Teşekkürler

谢谢

благодаря

Obrigado

شكريه

Terima Kasih

Dziękuję

ขอบคุณครับ

Hvala

Köszönöm

Tak

Dank u Wel

дякую

Tack

Mulţumesc

спасибо

Danke

Cám ơn

Gracias

多謝晒

Ďakujem

תודה

நன்றி

Děkuji

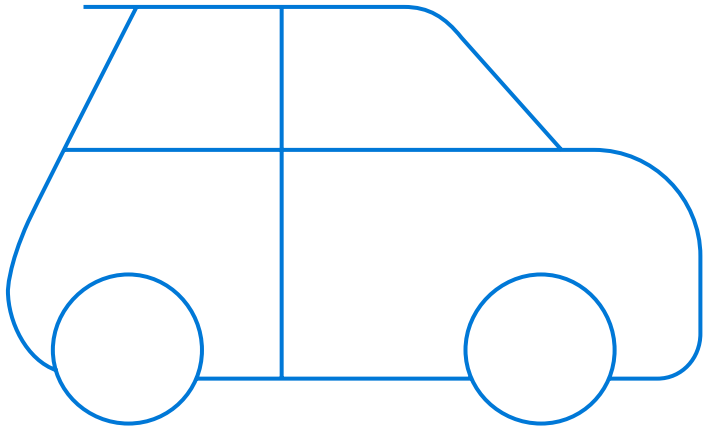
감사합니다

[참고] 변화에 따른 Azure 서비스 활용 예: MLOps

머신 러닝 서비스를 만들기까지 과정을 살펴봅시다

Building your own AI models

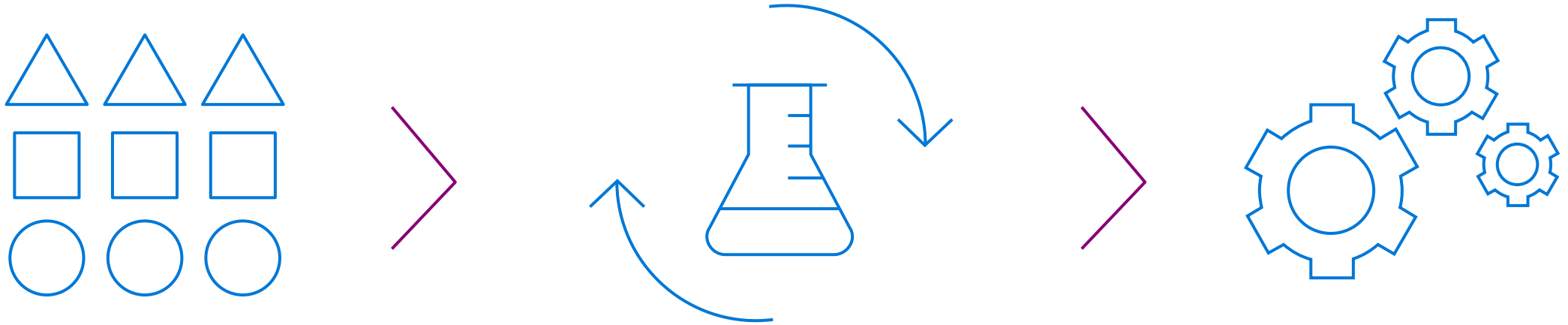
Transforming Data into Intelligence



Q: How much is this car worth?

Building your own AI models

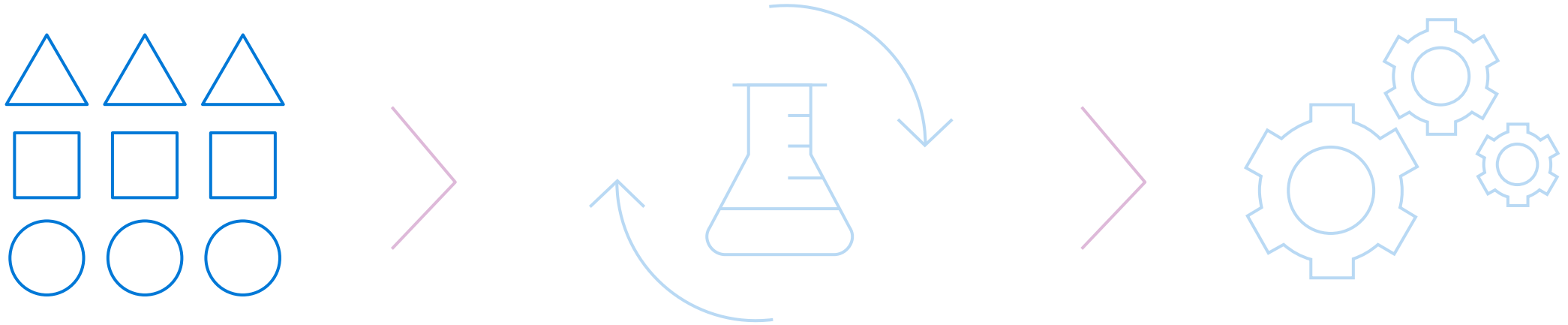
Transforming data into intelligence



Prepare data **Build and train** **Deploy**

Building your own AI models

Transforming data into intelligence



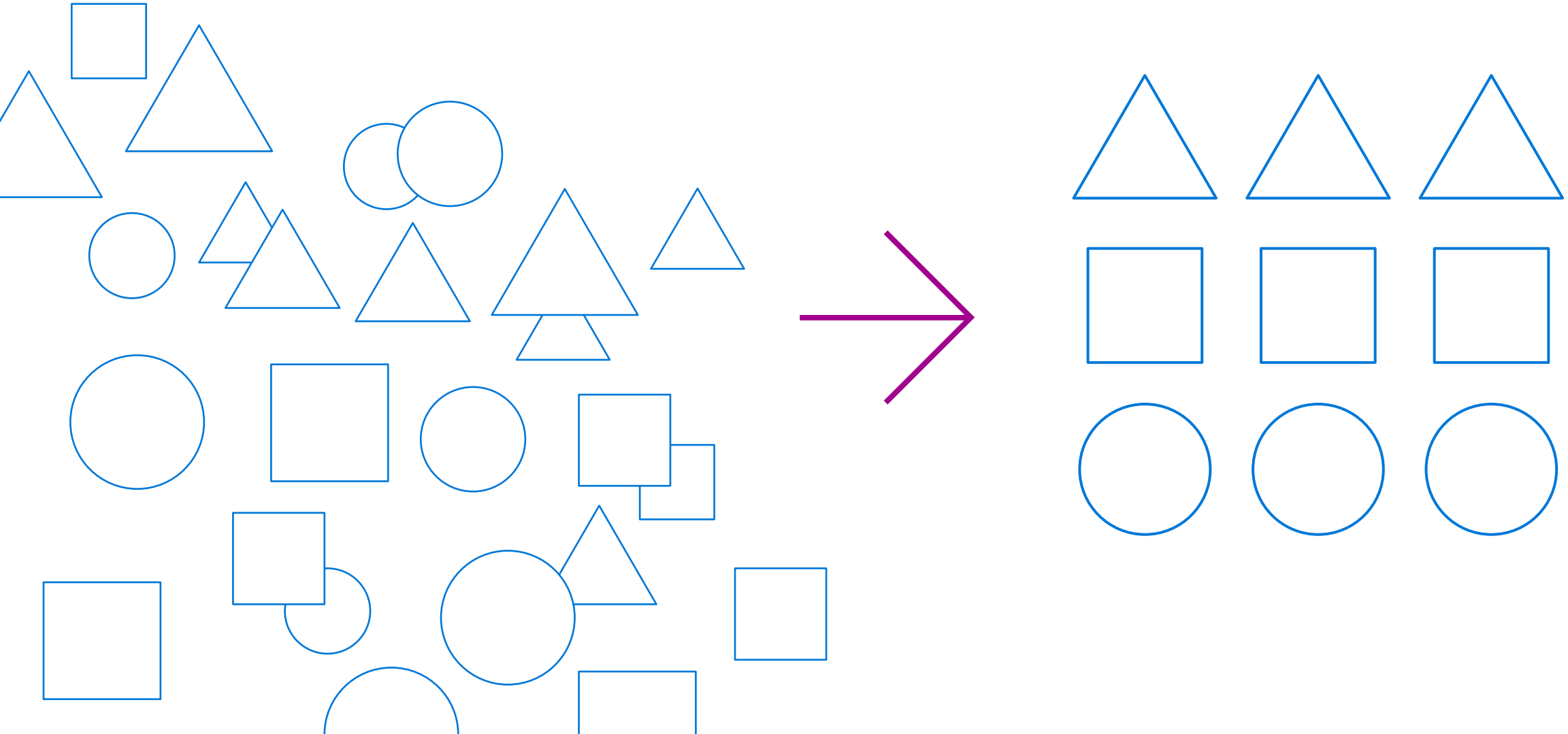
Prepare data

Build and train

Deploy

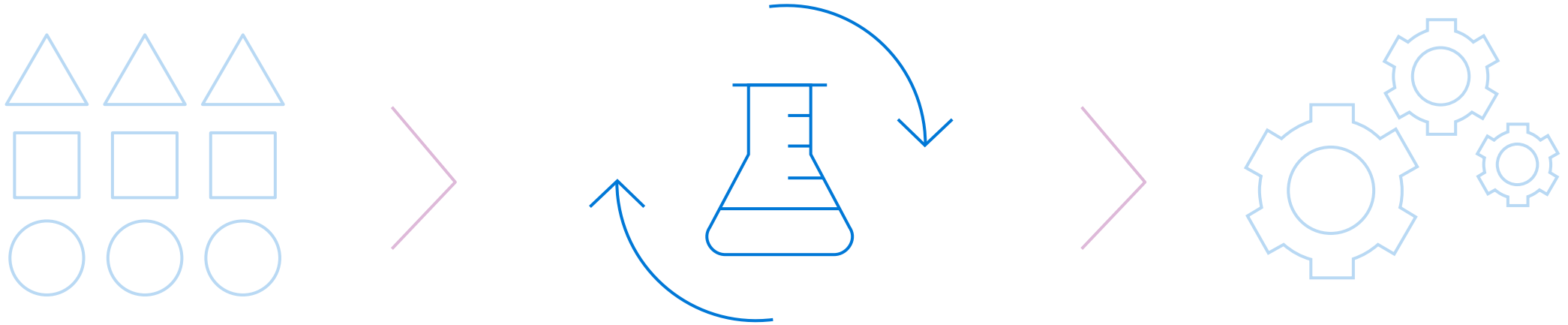
Building your own AI models

Step 1: Prepare data



Building your own AI models

Transforming data into intelligence



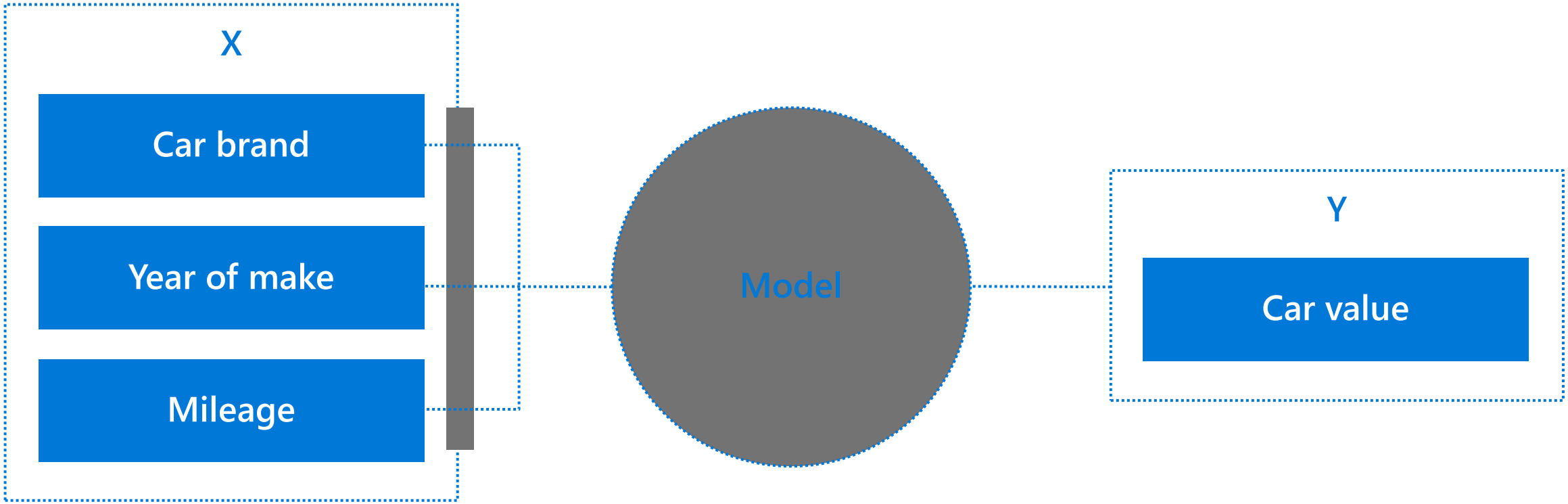
Prepare data

Build and train

Deploy

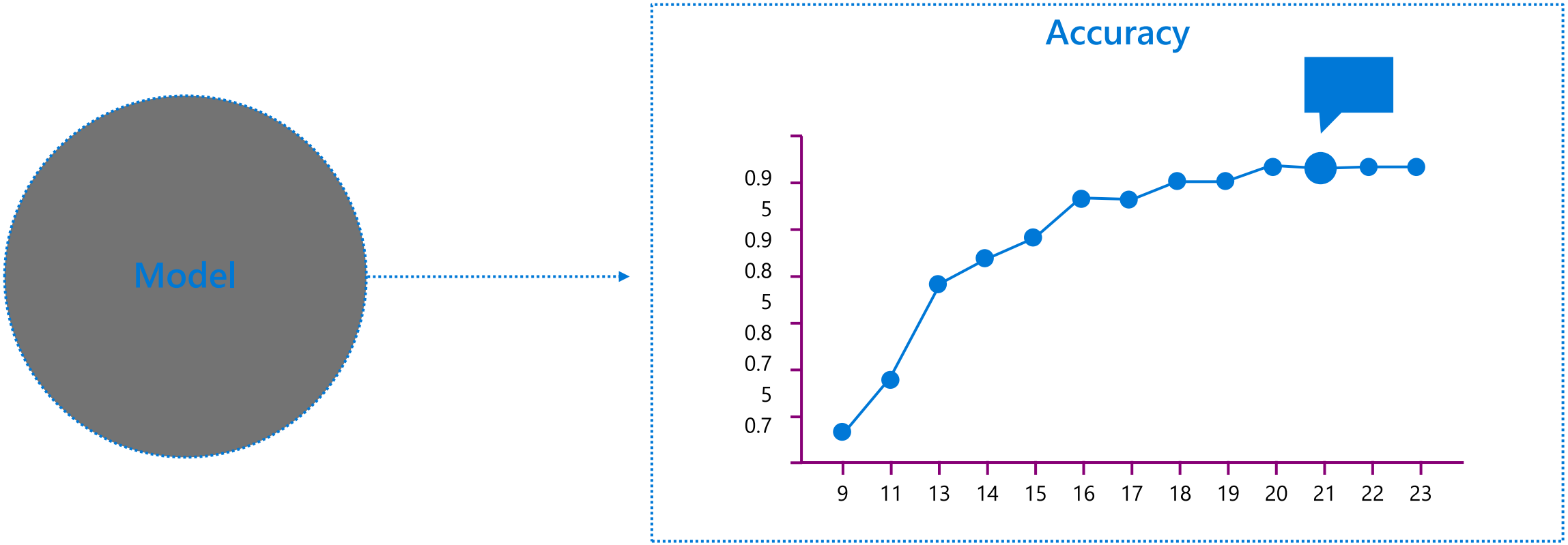
Building your own AI models

Step 2: Build and Train



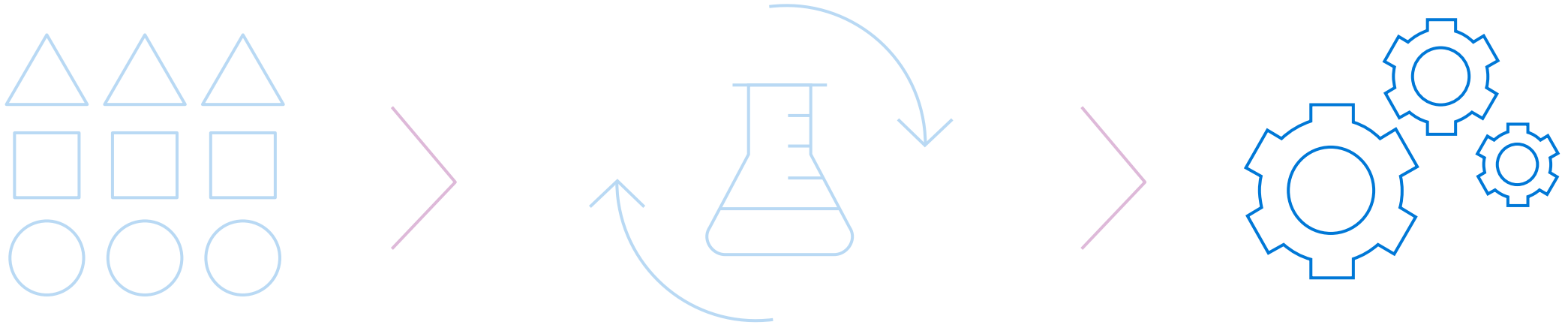
Building your own AI models

Step 2: Build and train



Building your own AI models

Transforming data into intelligence



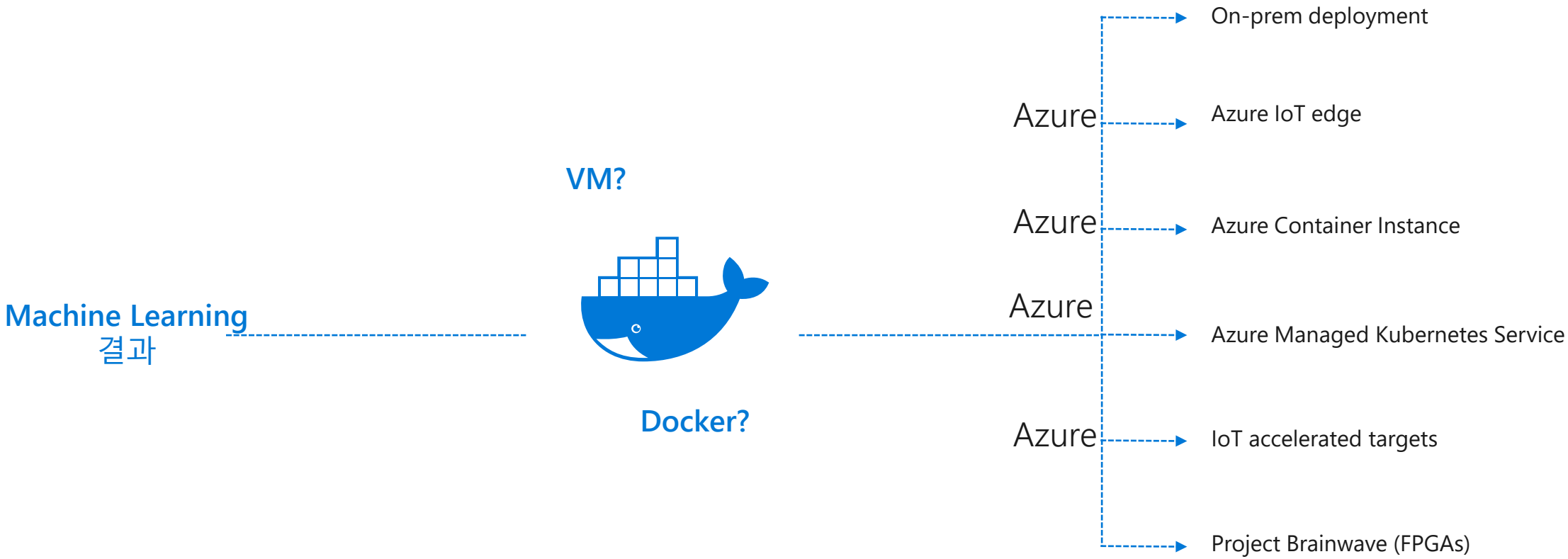
Prepare data

Build and train

Deploy

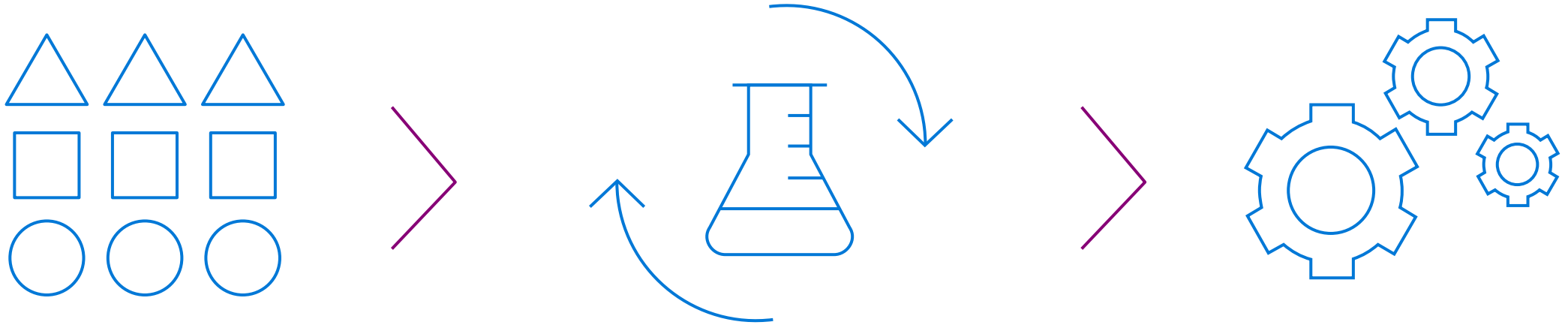
Building your own AI models

Step 3: Deploy



Building your own AI models

Transforming data into intelligence



Prepare data **Build and train** **Deploy**

Building your own AI models

Transforming data into intelligence

SQL DB

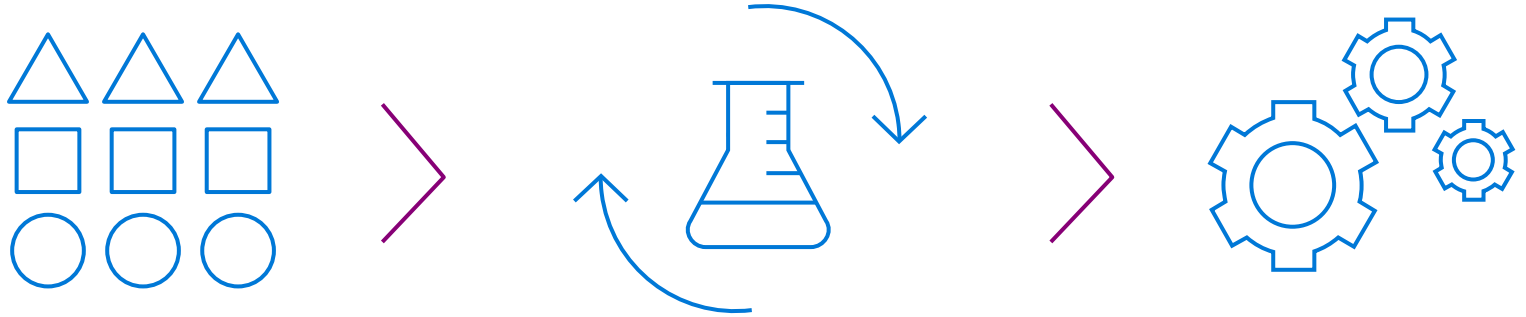
Cosmos DB

Datawarehouse

Data lake

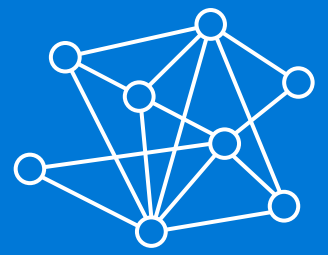
Blob storage

...



Prepare data **Build and train** **Deploy**

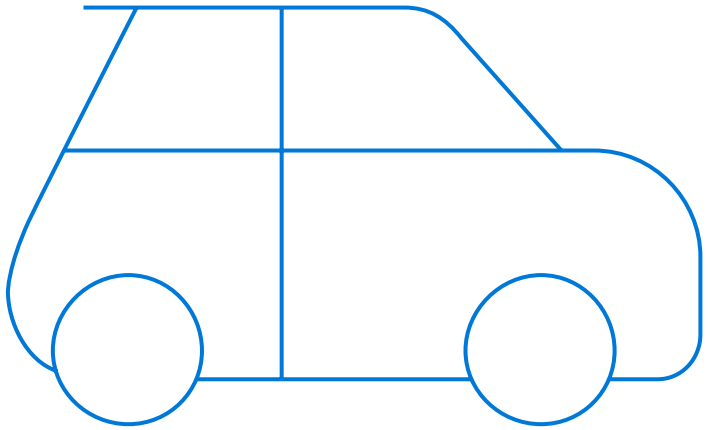
실제 프로덕션에 사용하고자 할 때 머신러닝/AI에서 무엇을 생각해야 할까요?



1. 자동화된 머신 러닝

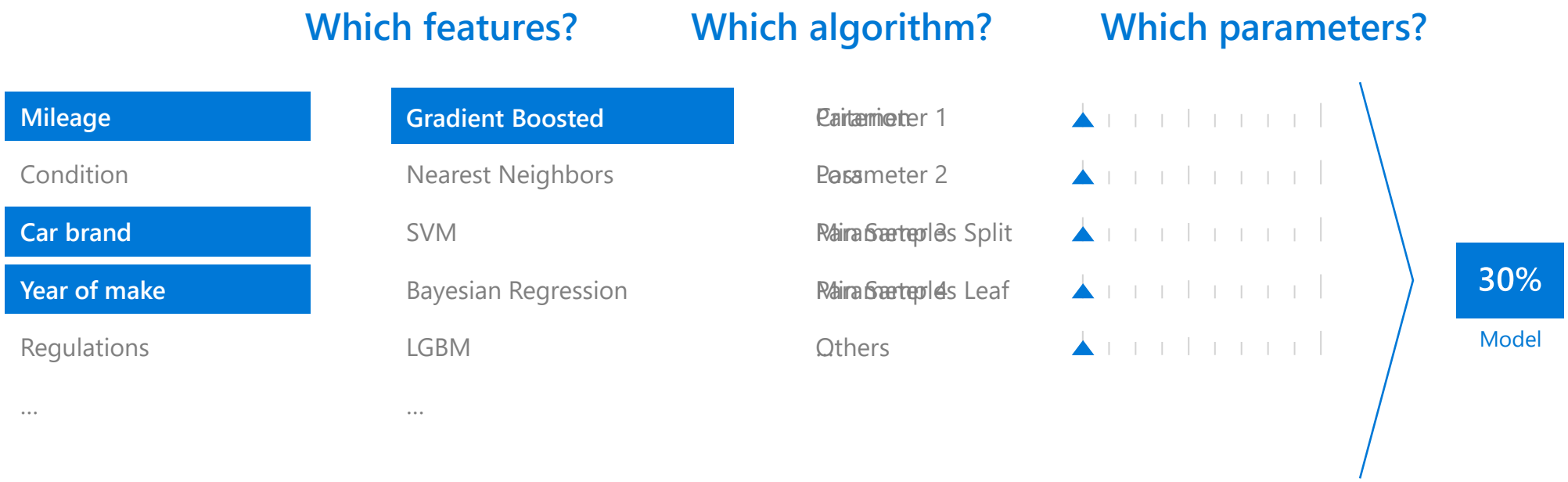
Azure Machine Learning

Automated machine learning



How much is this car worth?

Model creation is typically a time consuming process



Model creation is typically a time consuming process

Which features?

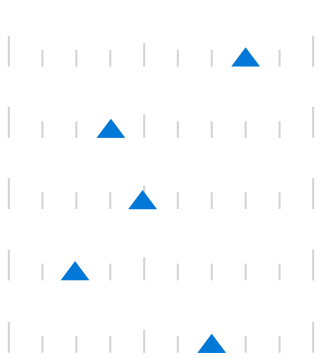
- Mileage
- Condition
- Car brand
- Year of make
- Regulations
- …

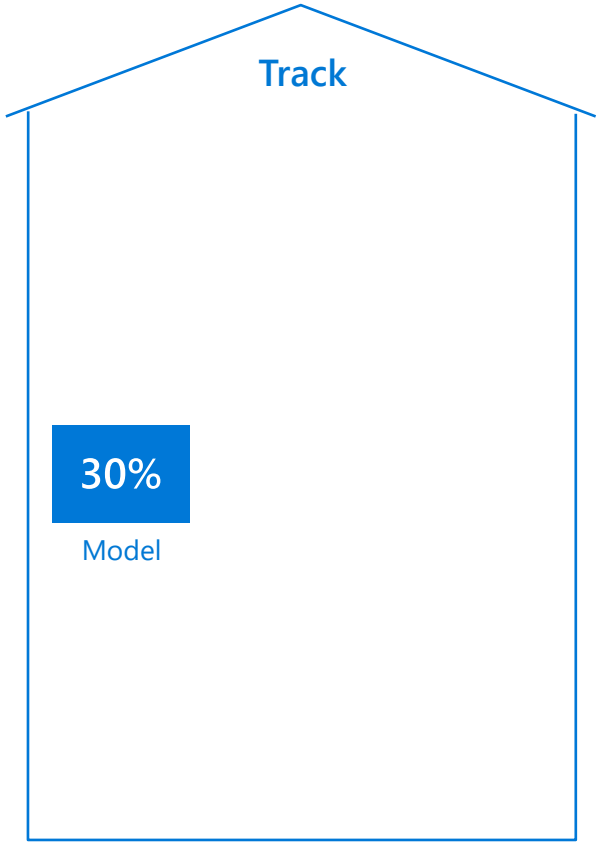
Which algorithm?

- Gradient Boosted
- Nearest Neighbors
- SGD
- Bayesian Regression
- LGBM
- …

Which parameters?

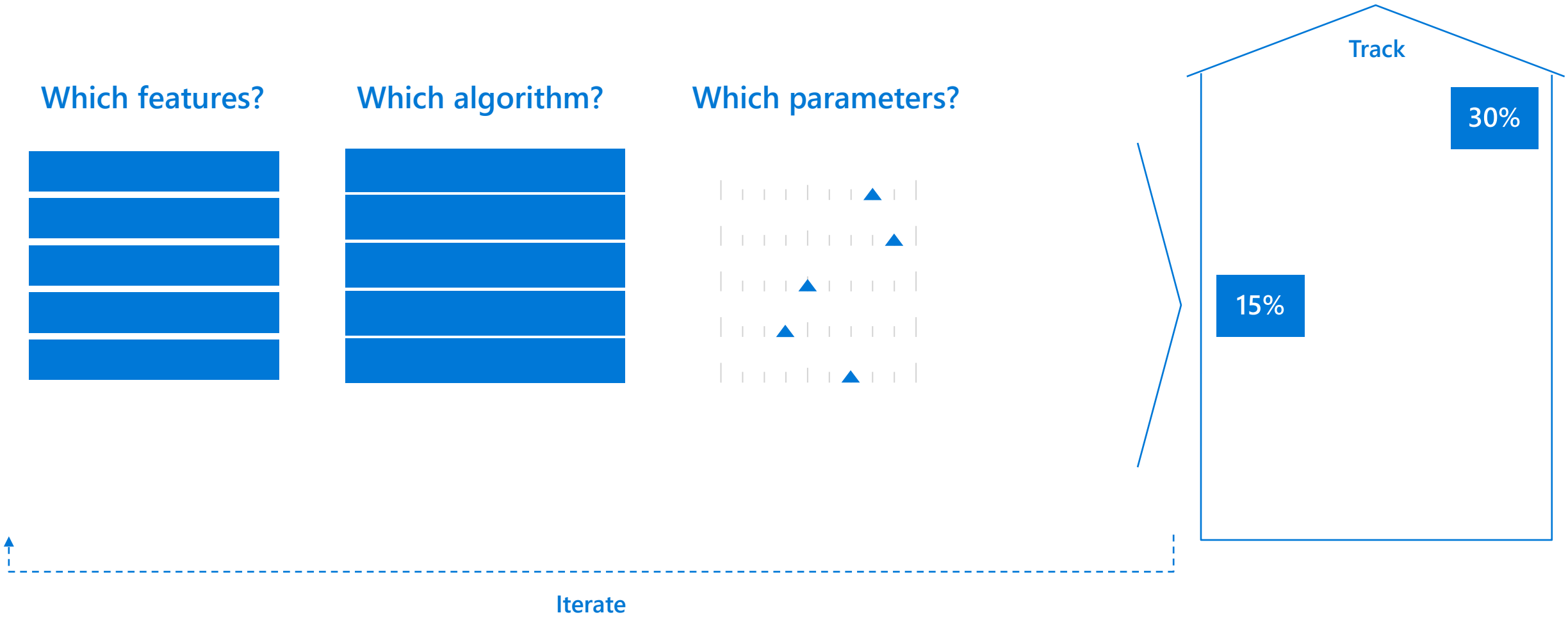
- Number of Neighbors
- Weights
- Min Samples Split
- Min Samples Leaf
- XYZ



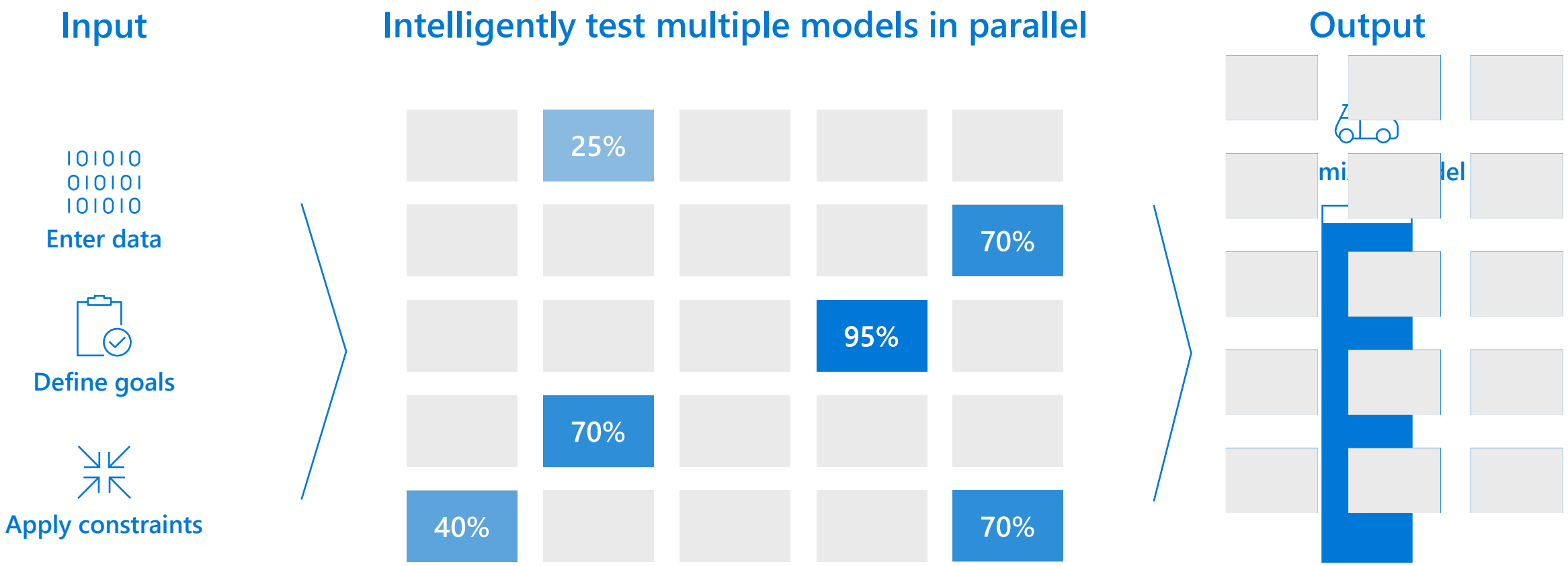


Iterate

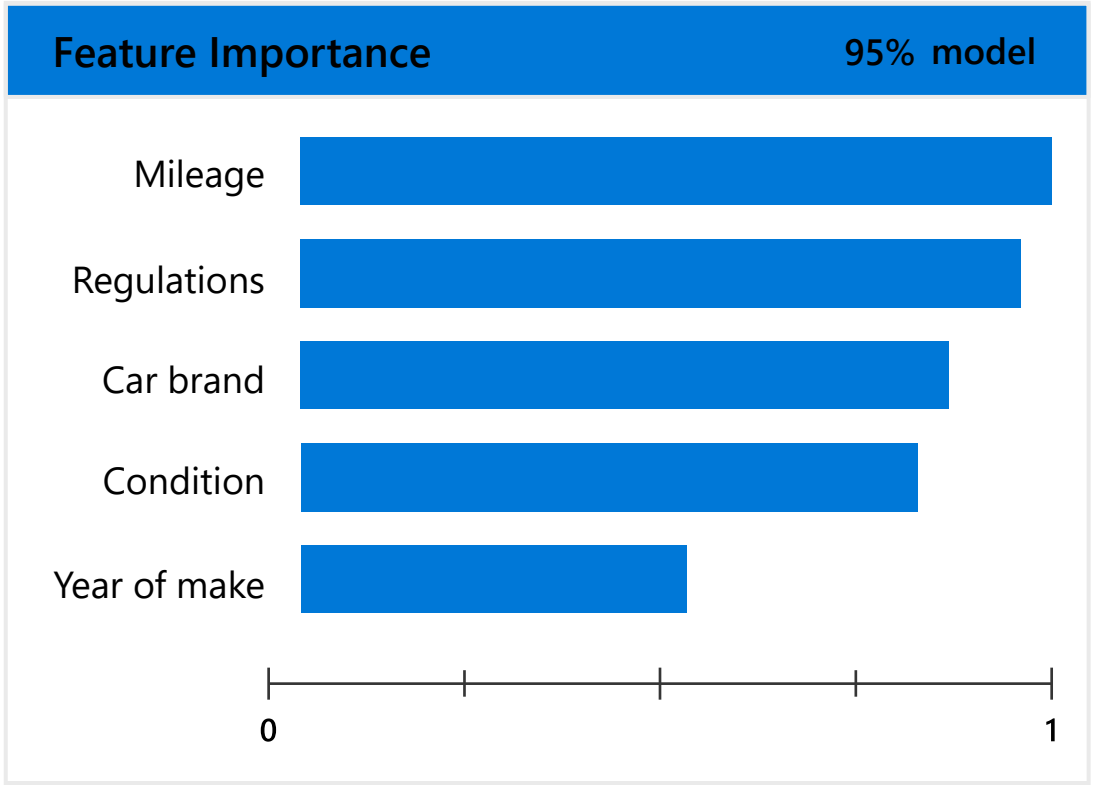
Model creation is typically a time consuming process

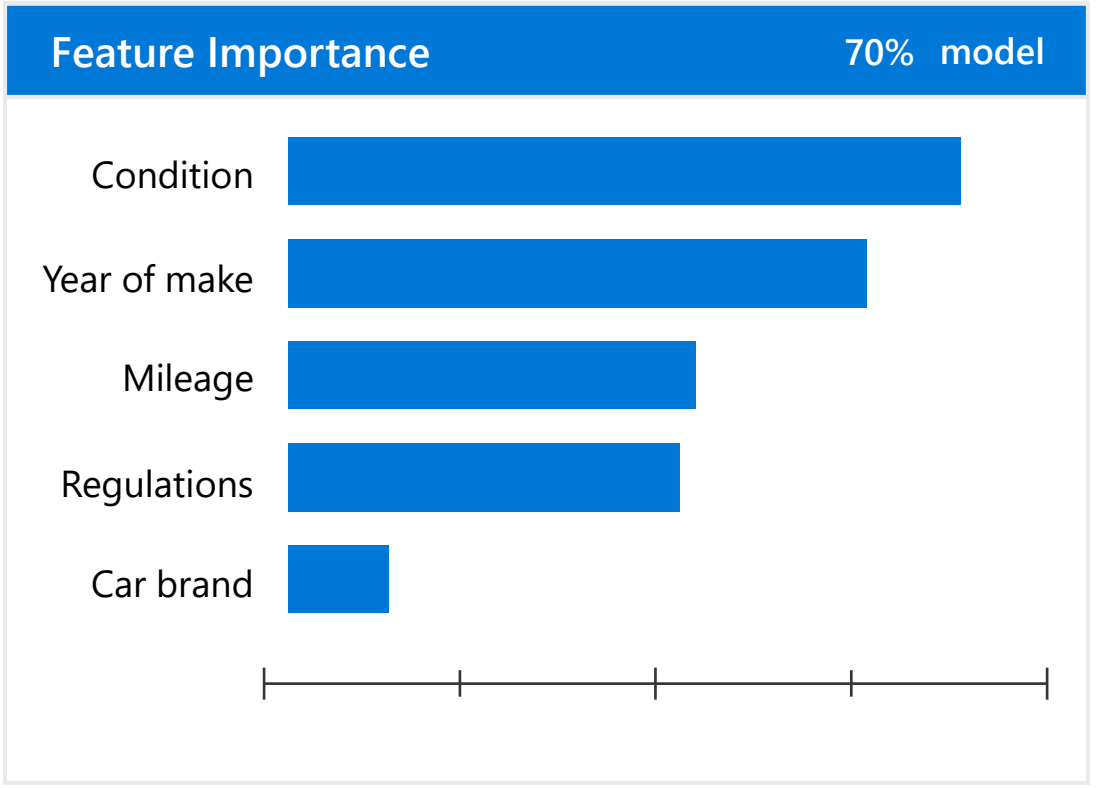


Automated Machine Learning accelerates model development

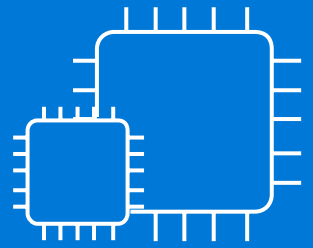


Understand the inner workings of ML by analyzing feature importance



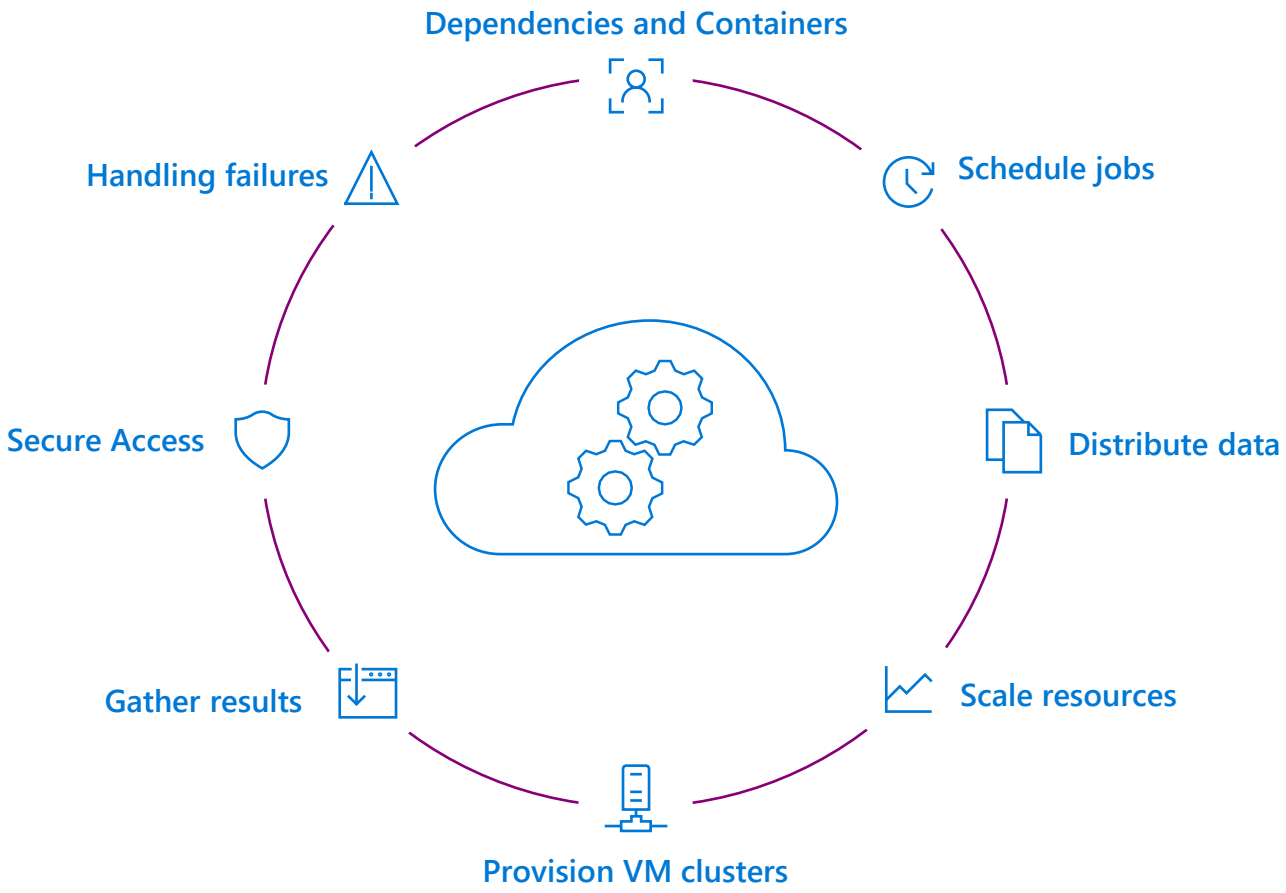


Enable model explain-ability for every automated ML iteration, not just the optimal model



2. 관리가 되는 컴퓨팅 자원 환경

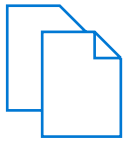
Distributed training on managed compute



Training infrastructure

Dependencies and Containers

Leverage system-managed AML compute or bring your own compute



Distribute data

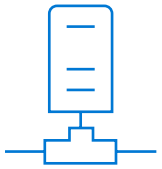
Manage and share resources across a workspace

Schedule jobs

Train at cloud scale using a framework of choice

Scale resources

Autoscale resources to only pay while running a job



Provision clusters

Use the latest NDv2 series VMs with the NVIDIA V100 GPUs

Powerful infrastructure

Accelerate deep learning

CPUs

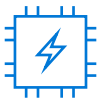
General purpose machine learning

D, F, L, M, H Series

GPUs

Deep learning

N Series



FPGAs

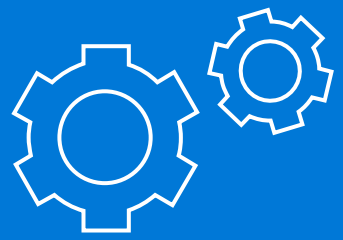
Specialized hardware accelerated deep learning

Project Brainwave

FPGA NEW UPDATES:

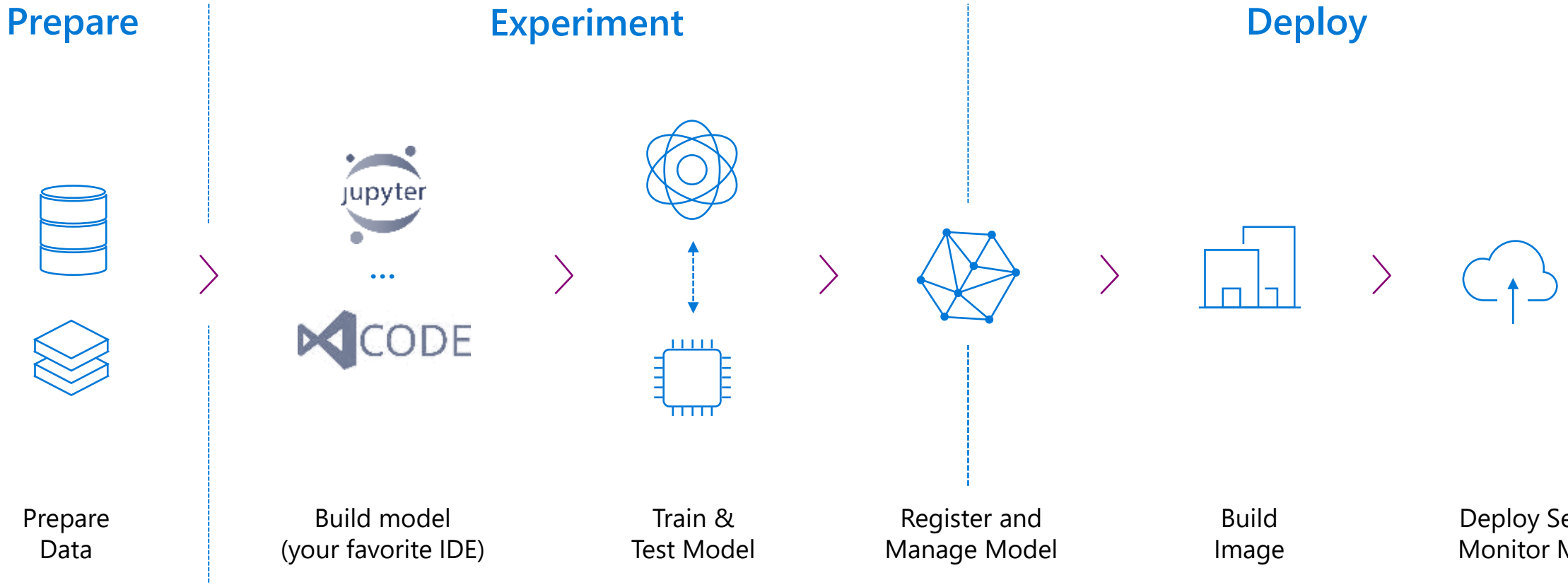
Support for image classification and recognition scenarios

ResNet 50, ResNet 152, VGG-16, SSD-VGG, DenseNet-121

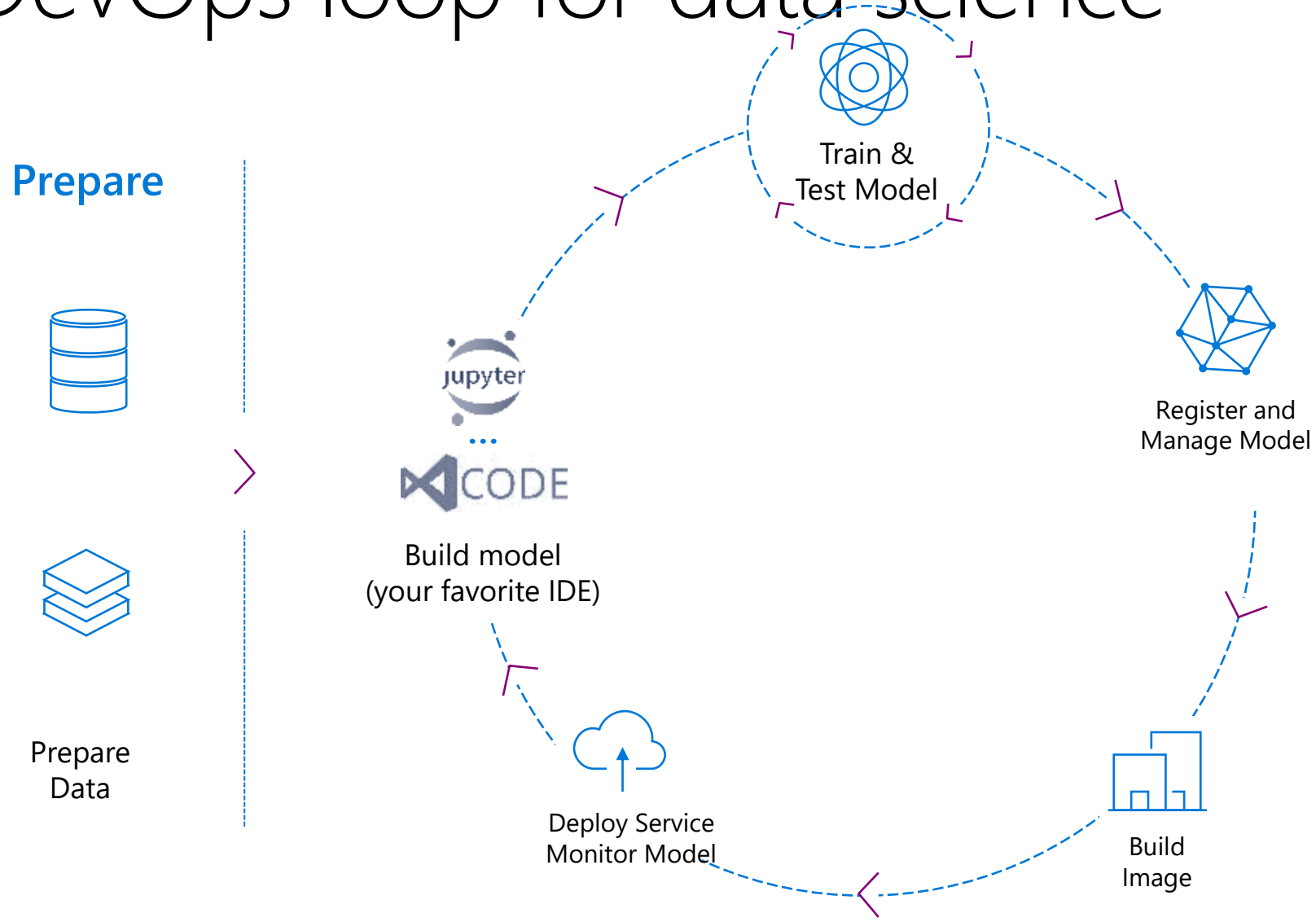


3. DevOps에 대한 고려

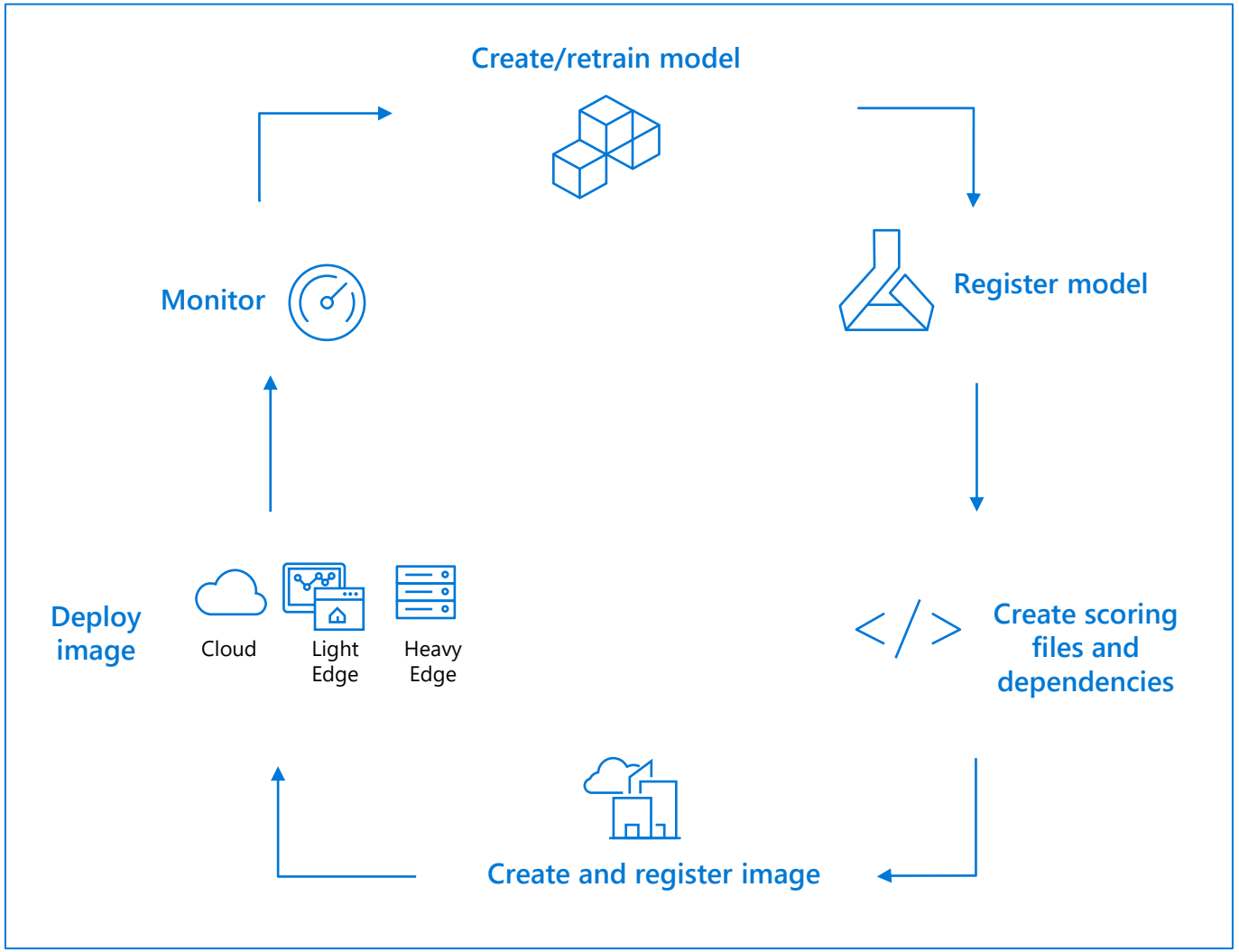
DevOps loop for data science



DevOps loop for data science



Model management in Azure Machine Learning



Model management in detail

Create/Retrain Model

Enable DevOps with full CI/CD integration with VSTS

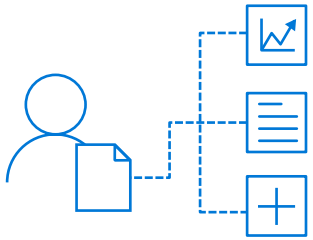
Register Model

Track model versions with a central model registry

Monitor

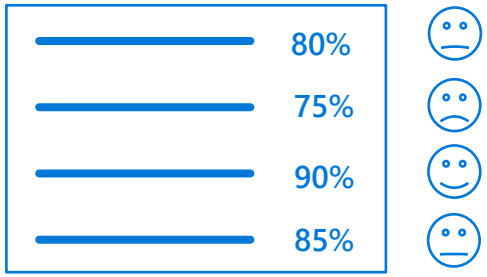
Oversea deployments through Azure AppInsights

Experimentation

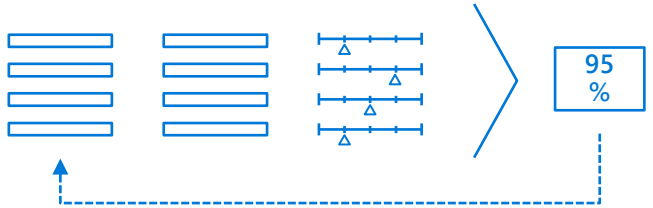


Leverage service-side capture of run metrics, output logs and models

Manage training jobs locally, scaled-up or scaled-out

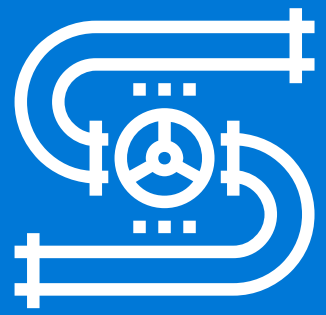


Use leaderboards, side by side run comparison and model selection

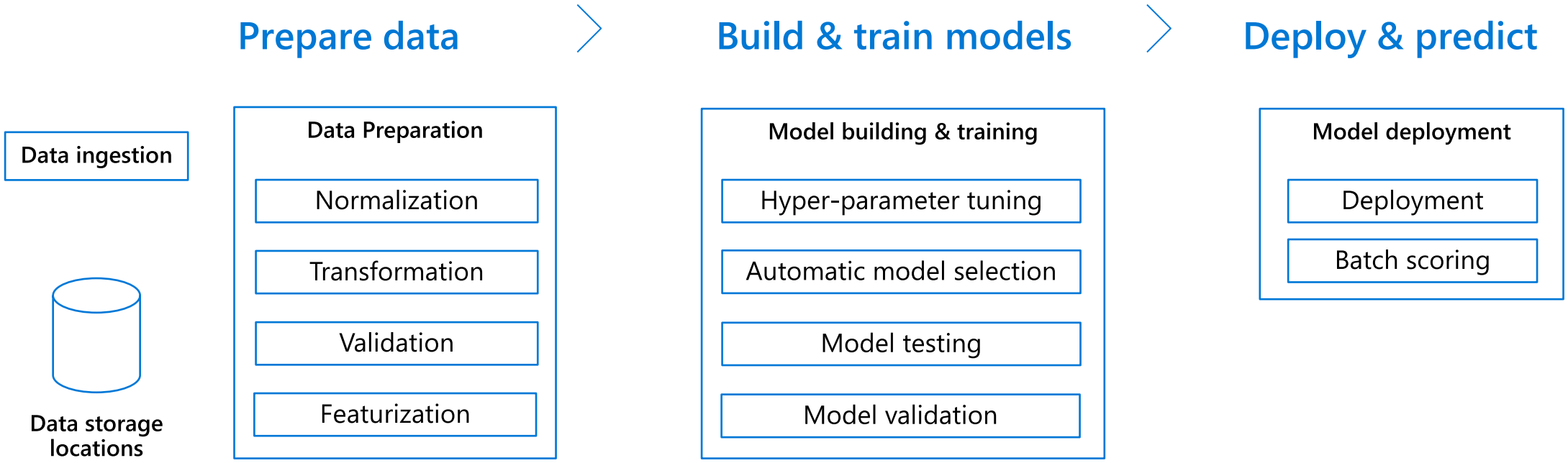


Conduct a hyperparameter search on traditional ML or DNN

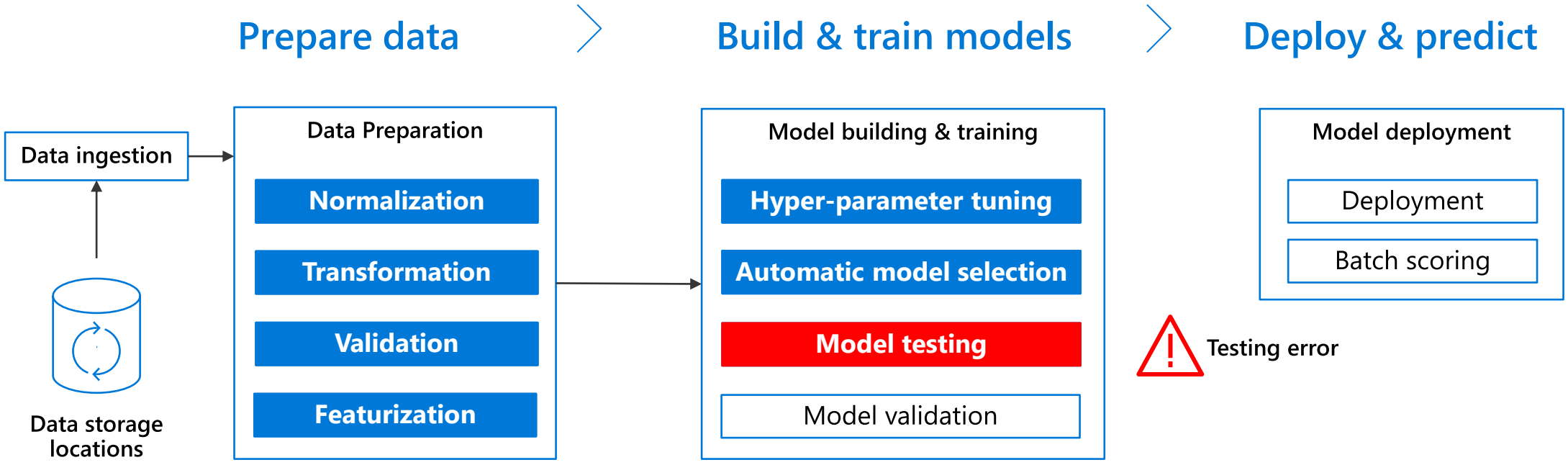
4. 학습 파이프라인에 대한 고려



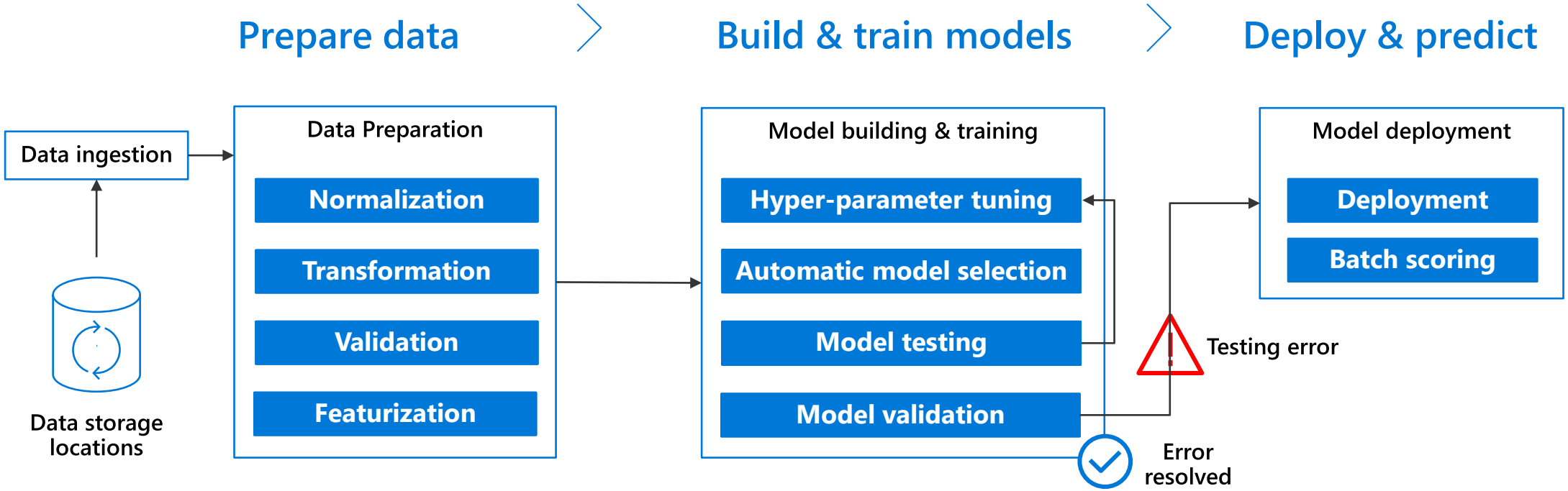
Azure Machine Learning pipelines



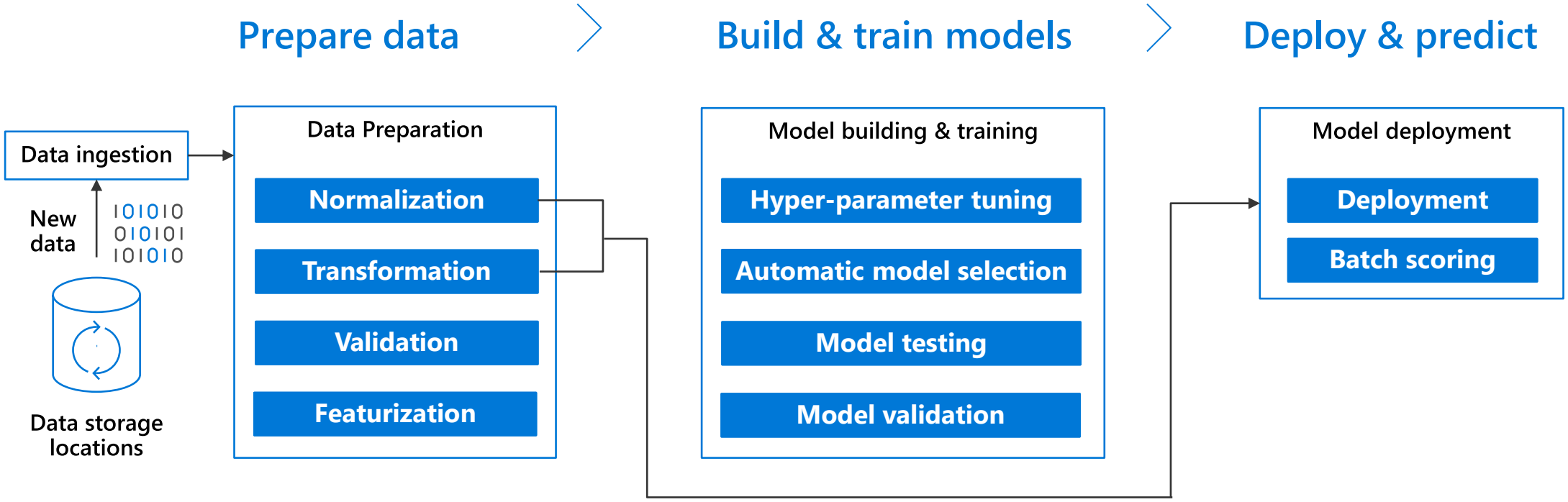
Azure Machine Learning pipelines



Azure Machine Learning pipelines



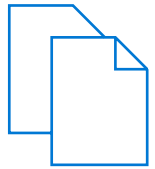
Azure Machine Learning pipelines with new data



Advantages of Azure ML Pipelines

Unattended runs

Schedule a few steps to run in parallel or in sequence to focus on other tasks while your pipeline runs

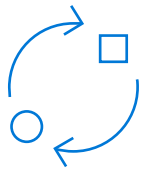


Tracking and versioning

Name and version your data sources, inputs and outputs with the pipelines SDK

Reusability

Create templates of pipelines for specific scenarios such as retraining and batch scoring



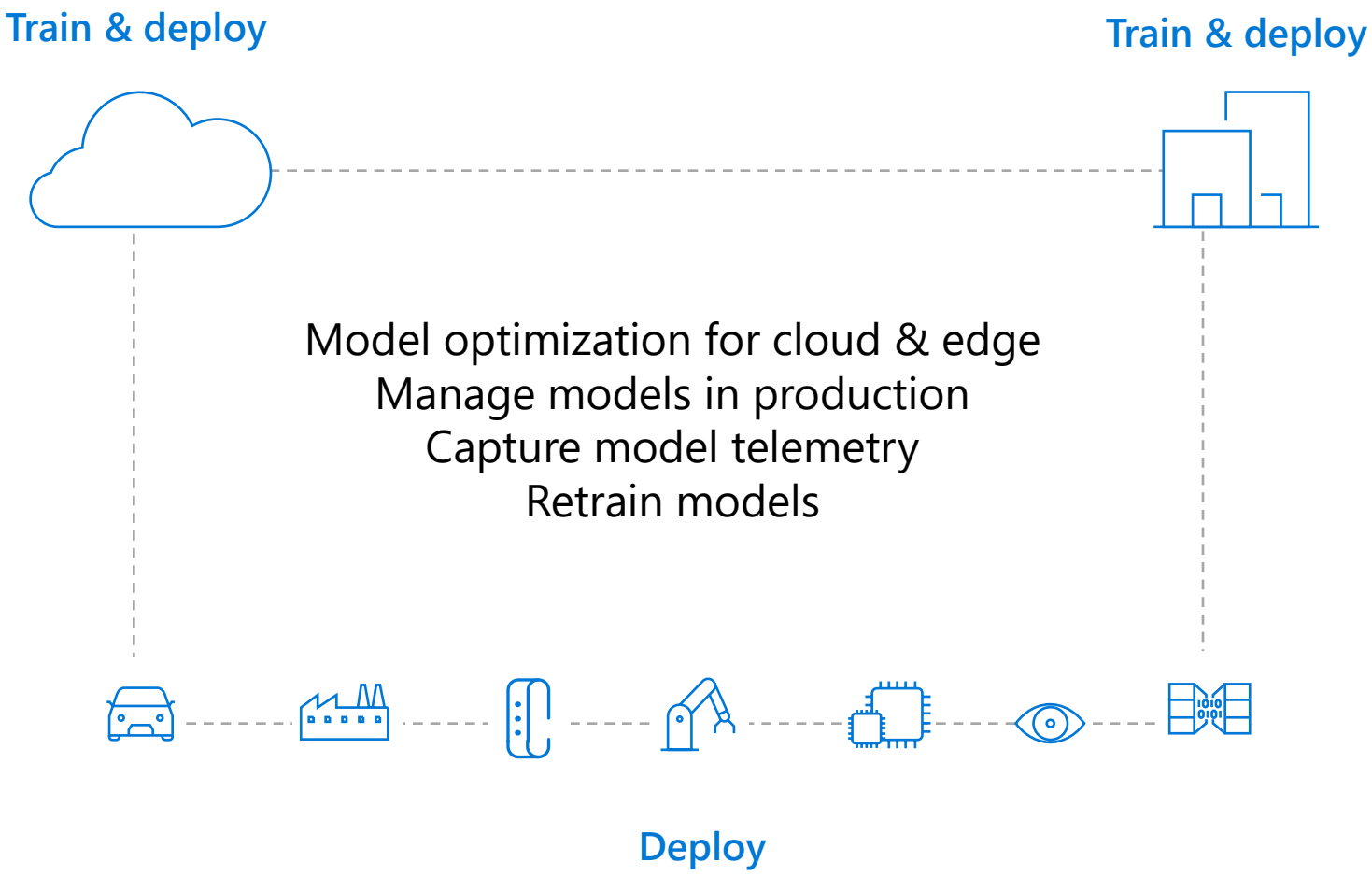
Mixed and diverse compute

Use multiple pipelines that are reliably coordinated across heterogeneous and scalable computes and storages

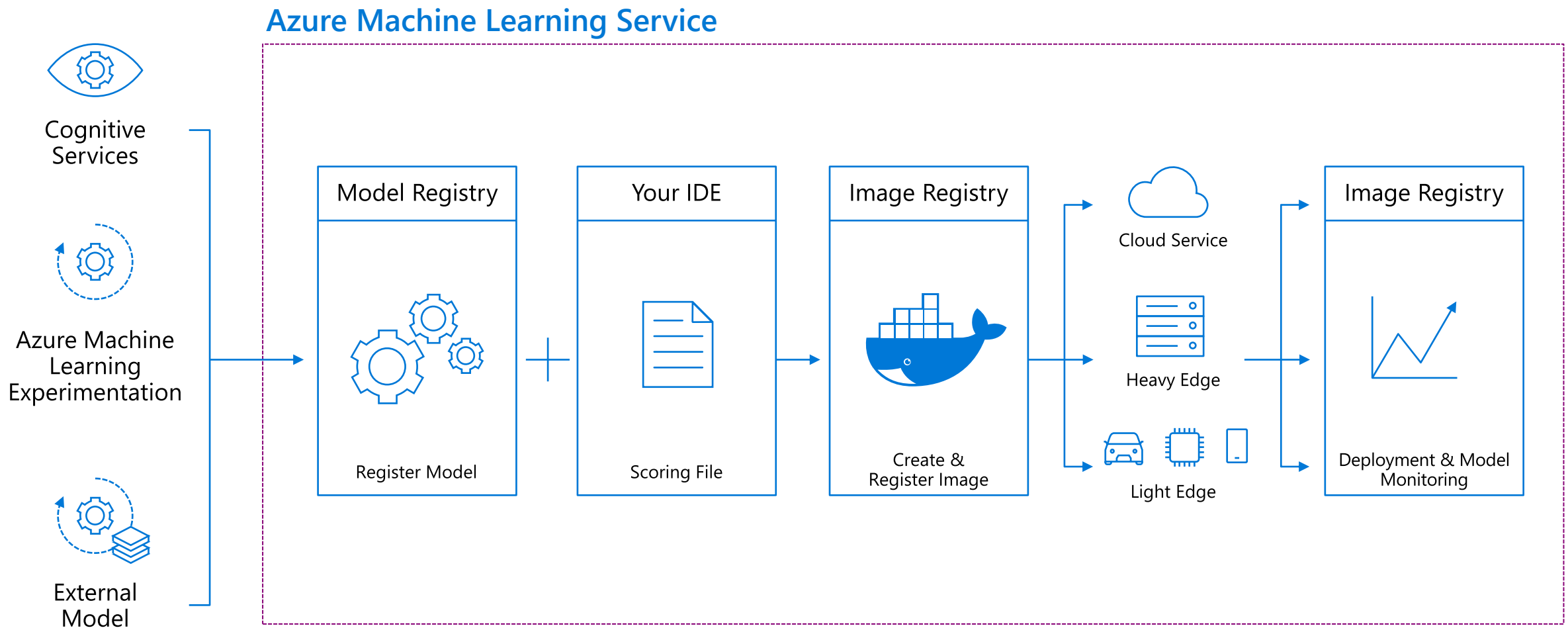
5. 단순한 배포

Flexible deployment

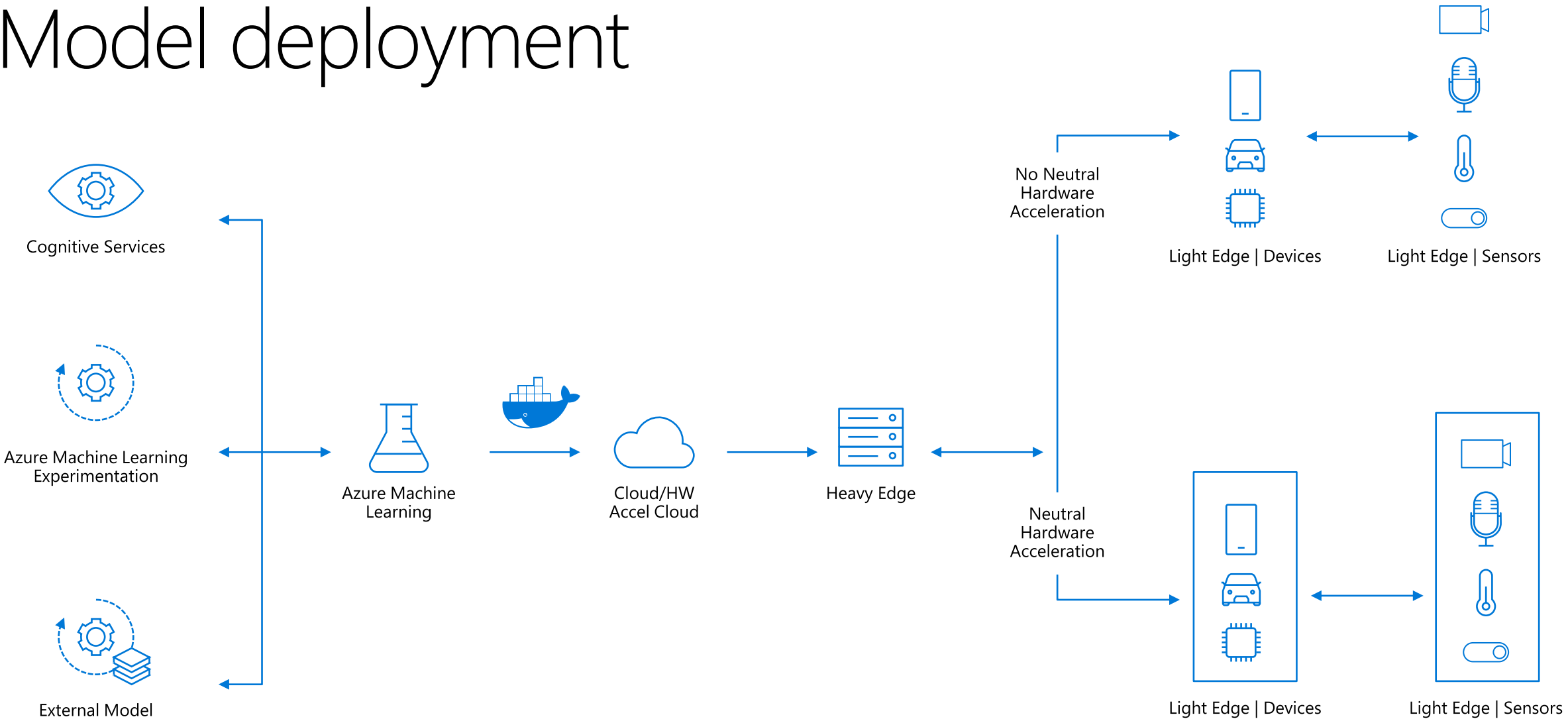
Deploy and manage models on intelligent cloud and edge



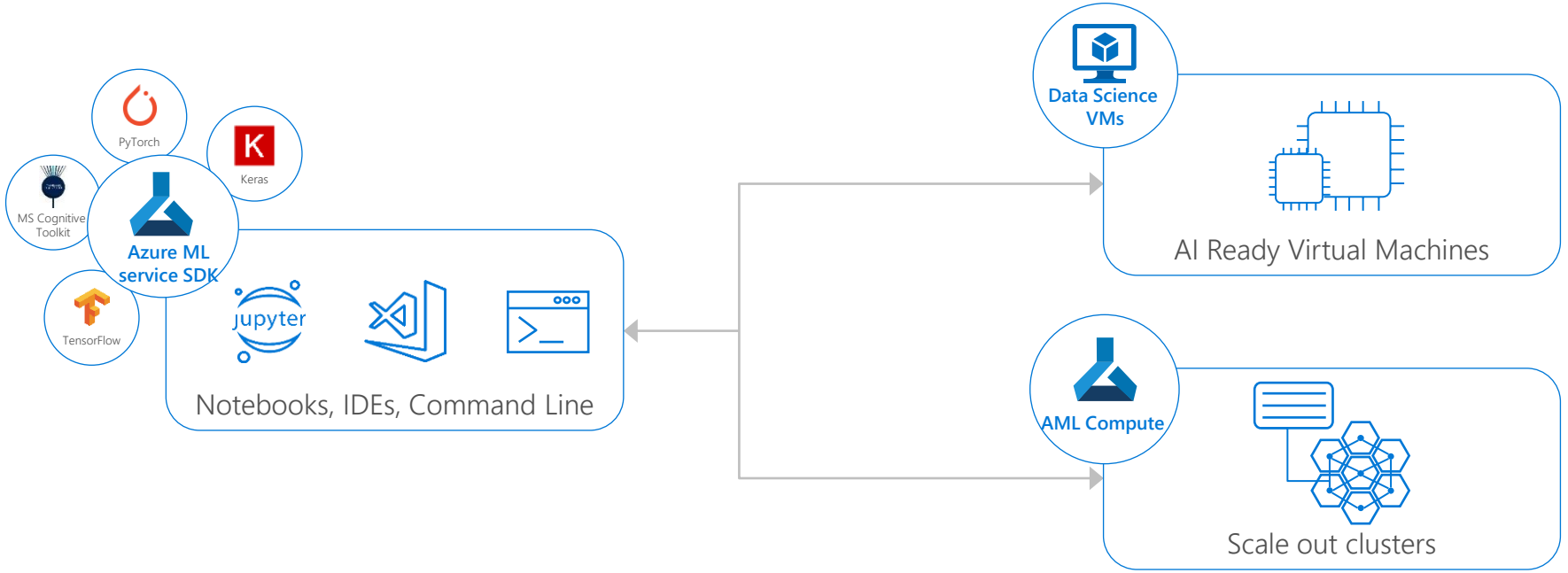
Deploy Azure ML models at scale



Model deployment



Build and deploy deep learning models



Streamline AI development efforts

- Leverage popular deep learning toolkits
- Develop your language of choice

Scale compute resources in any environment

- Choose VMs for your modeling needs
- Process video using GPU-based VMs

Quickly evaluate and identify the right model

- Run experiments in parallel
- Provision resources automatically

Deploy Azure ML models at scale