Agenda

Introduction
- Objective & Goals

Day 1 (4 Hours)
- Azure Machine Learning Services
  - Overview and Concepts
- Hands-on (Day 1) – AML Components
  - Setup workspace and compute
  - Register a dataset
  - Run automated ML (UI)
  - Designer Interface
  - Compute instance git integration

Day 2 (4 Hours)
- Hands-on AML - Model Training
  - Model training using Notebooks
  - Automated ML (Notebook)
  - Model Interpretability (Notebook)
- Hands-on AML – MLOps
  - Model deployment to ACI
  - Automate training and deployment (Azure DevOps)
- Hands-on AML – R Integration
  - AML and R Integration

Machine Learning on Azure

Domain specific pretrained models
To simplify solution development

Vision Speech Language Search

Familiar Data Science tools
To simplify model development

Visual Studio Code Azure Notebooks Jupyter Command line

Popular frameworks
To build advanced deep learning solutions

PyTorch TensorFlow Scikit-Learn ONNX

Productive services
To empower data science and development teams

Azure Databricks Azure Machine Learning Machine Learning VMs

Powerful infrastructure
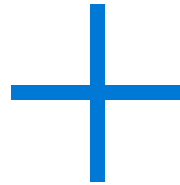To accelerate deep learning

CPU GPU FPGA

From the Intelligent Cloud to the Intelligent Edge

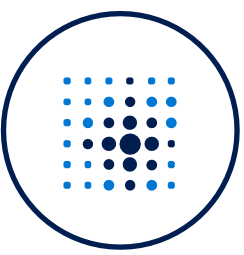# Azure Machine Learning

Set of Azure Cloud Services   **+**   Python & R SDK, CLI, UX

That enables you to:

✓ Prepare Data
✓ Build Models
✓ Train Models

✓ Manage Models
✓ Track Experiments
✓ Deploy Models

Azure ML Studio

For all skill levels

studio web experience

Machine Learning notebooks

- Fully managed cloud-based solution for data scientists to get started with ML machine learning

- Deeply integrated with Azure ML workspaces and datastores

- First-class experience for model authoring through integrated notebooks using Azure ML Python and R SDK.

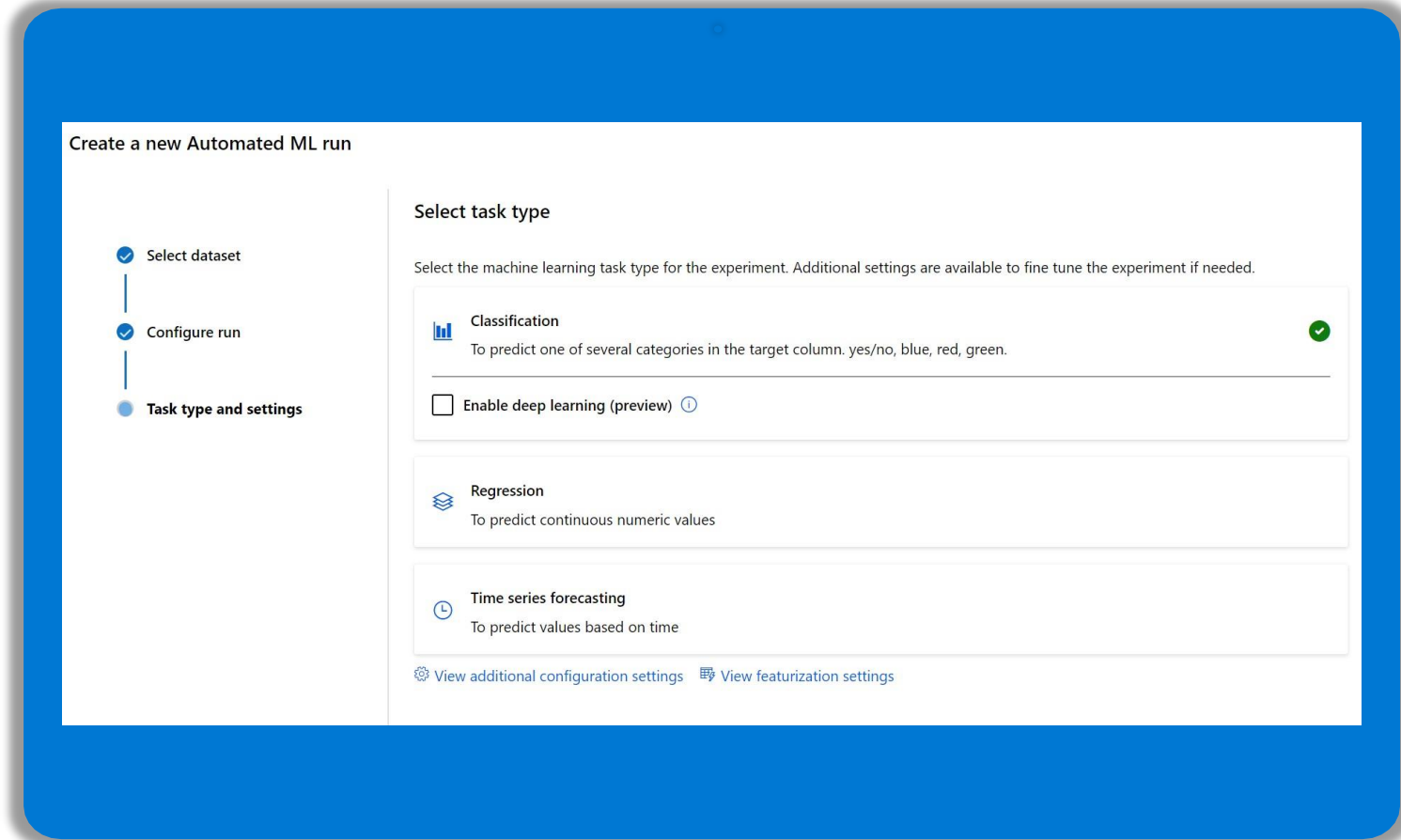- Management and enterprise readiness capabilities for IT administrators.
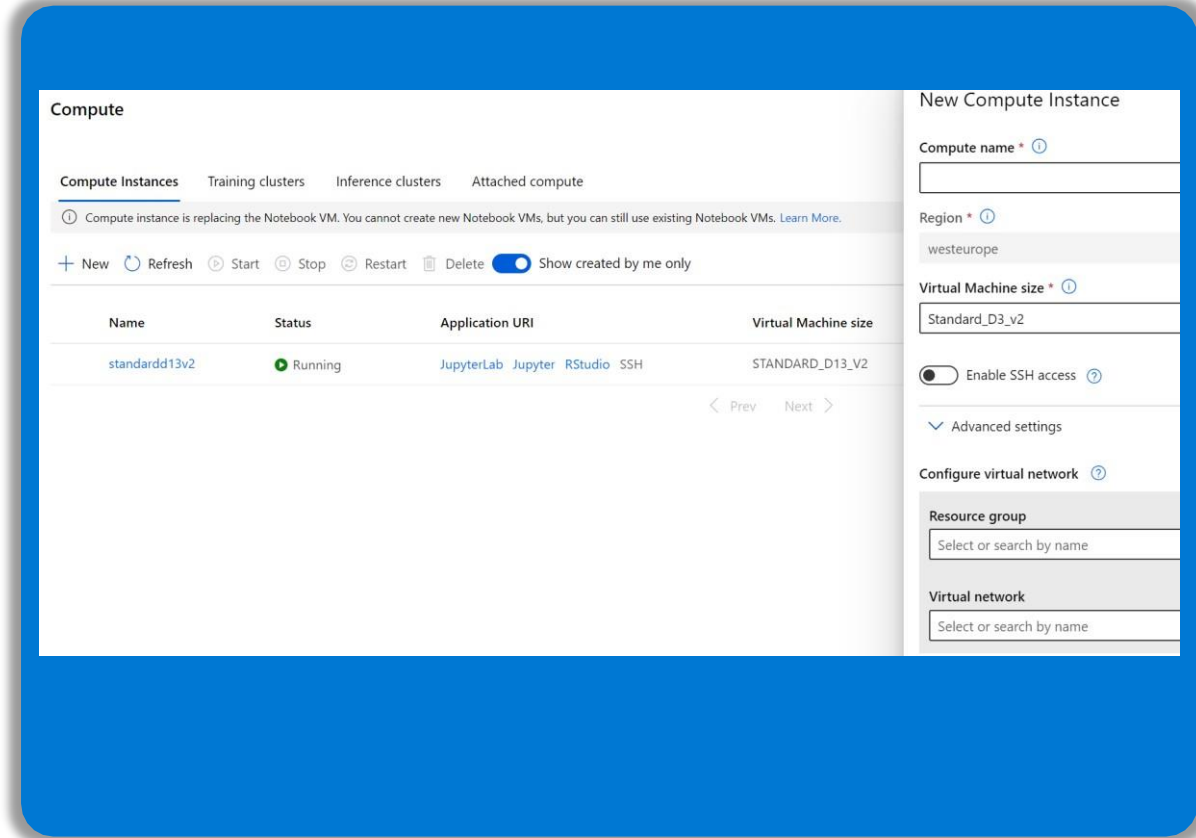
Automated ML

Automatically build and deploy predictive models using the no-code UI or through a code-first notebooks experience.

Increase productivity with easy data exploration and profiling and with intelligent feature engineering.

Easily create accurate models customized to your data and refined by a wide array of algorithms and hyperparameters.

Build responsible AI solutions with model interpretability, and fine-tune your models to improve accuracy.

Designer

- Drag-n-drop workflow capability
- Simplify the process of building, testing, and operating machine learning models
- Create new pipelines
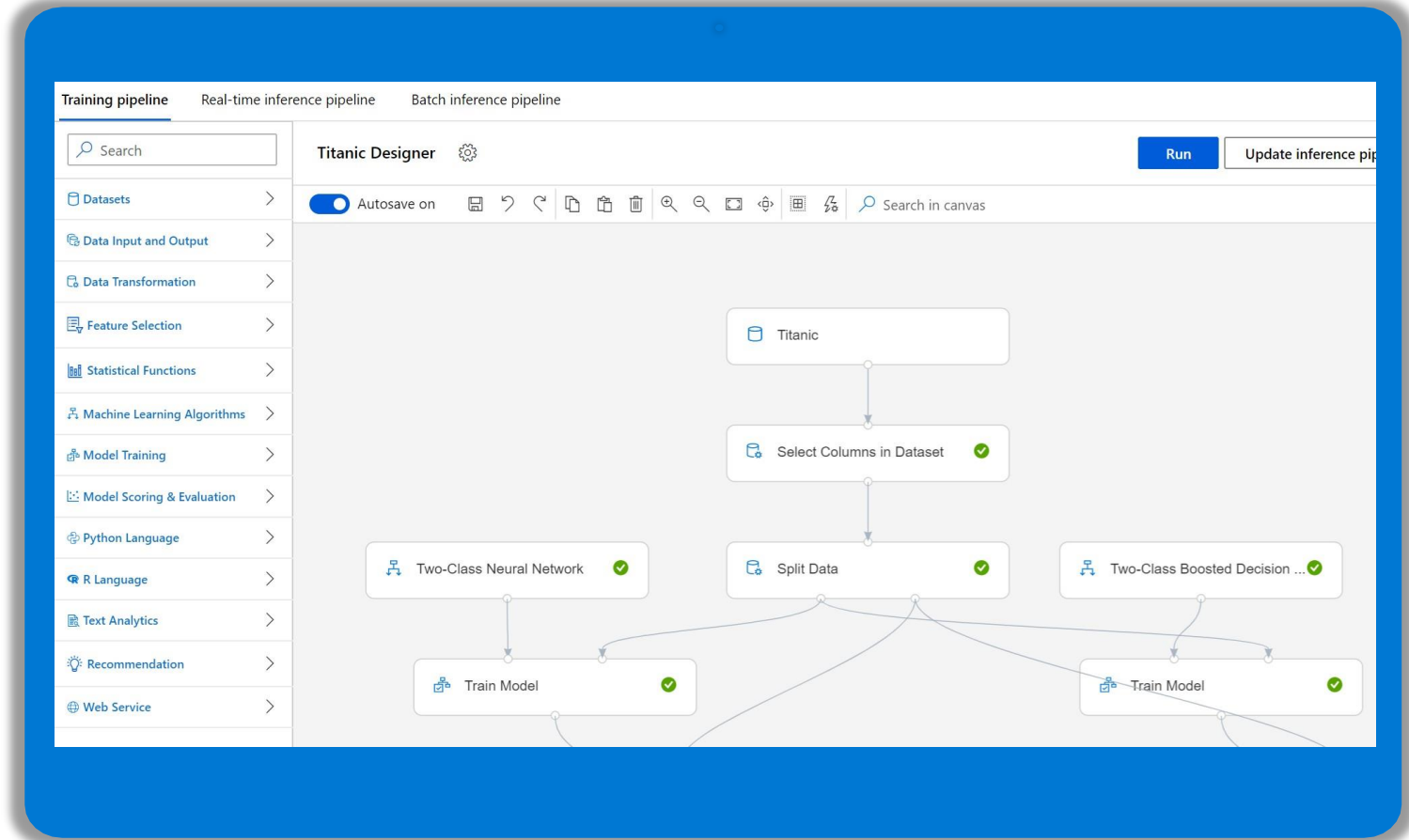
Azure Machine Learning

Industry leading MLOps

Azure Machine Learning

| Train Models | Manage ML Assets | Package & Validate | Deploy & Serve | Monitor |

GitHub and Azure DevOps integration

CI/CD and model retraining
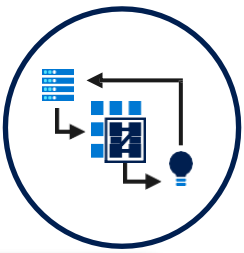
DevOps Framework for Azure AI Solutions

Plan and track | Code | Build and test | Deploy | Operate | Monitor
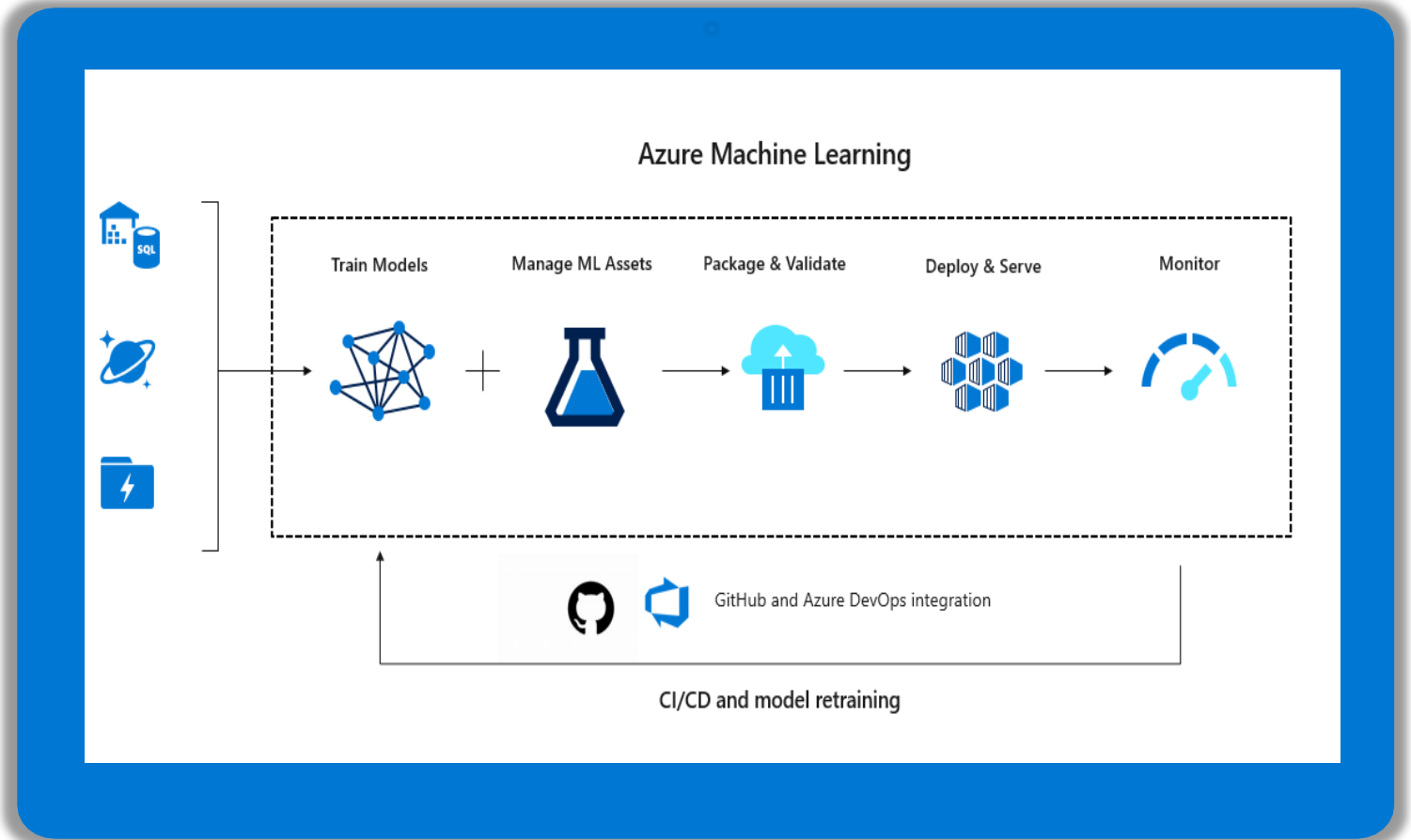
Boards
(Azure DevOps)

Repos
(Azure DevOps / GitHub)

Pipelines & Test Plans
(Azure DevOps)

Artifacts & Pipelines
(Azure DevOps)

Azure ML Compute +
Azure Kubernetes Service

Azure **Monitor**

Training Pipelines
(**Azure ML**)

Model Management
(**Azure ML**)
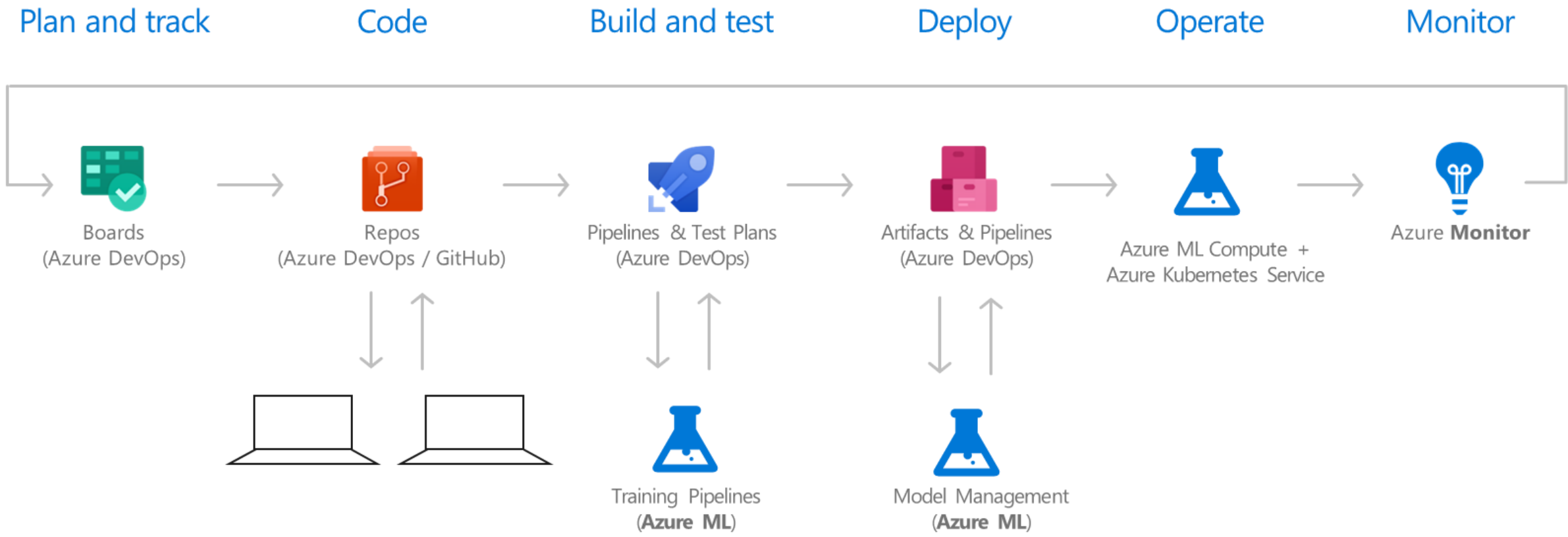
Azure Machine Learning – Key Concepts
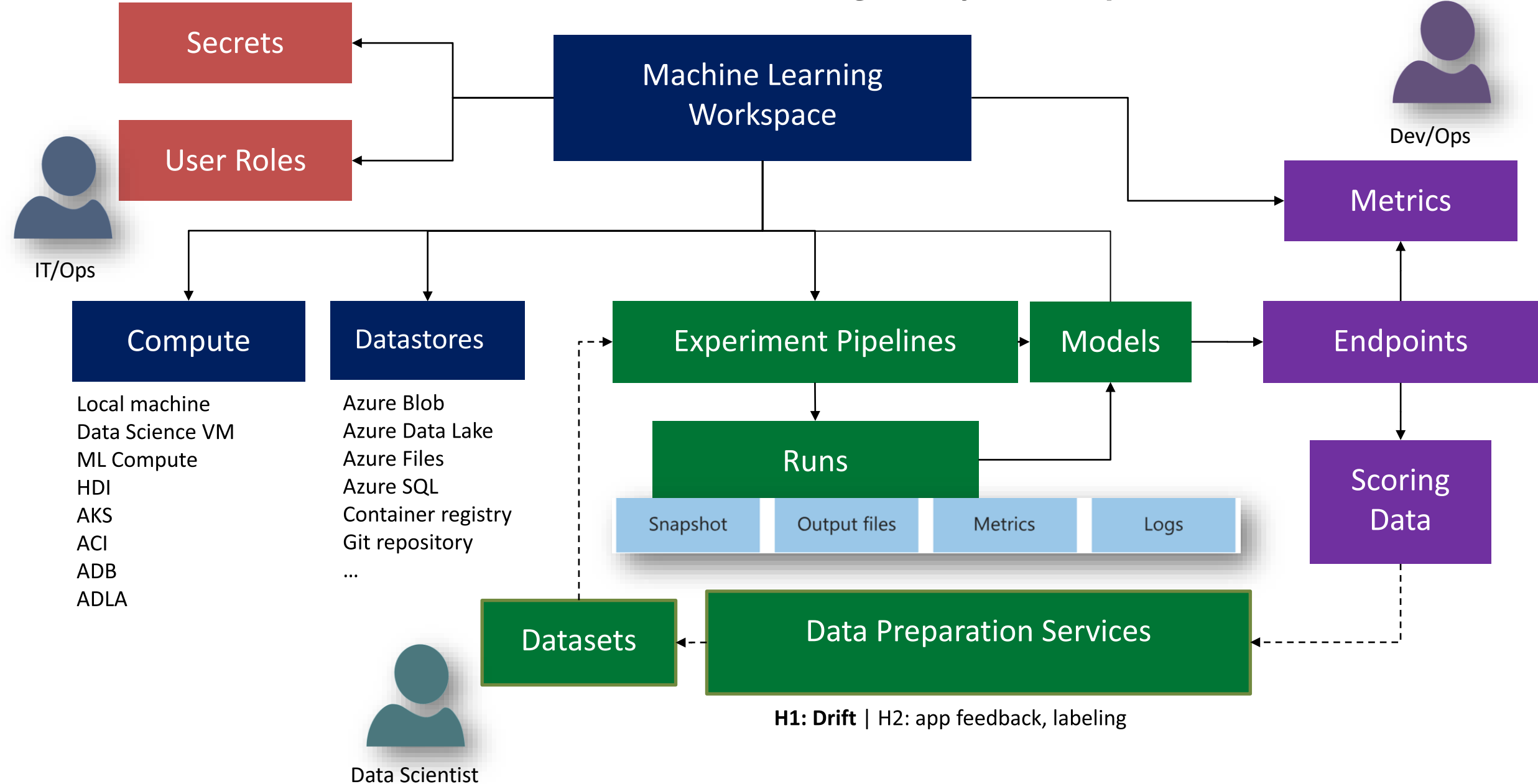
Azure ML – The Workspace

Top-level resource for the Azure Machine Learning service.

Centralized place to **work with all the artifacts** you create when using Azure Machine Learning service.

Models are registered with the workspace.

Each workspace can be shared by multiple people.
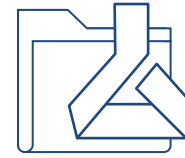
Required resources:

Azure Container Registry

Azure Storage

Azure Application Insights

Azure Key Vault

What's in the workspace?

Datasets

ML Pipelines

Run History

Models

Deployments

Computes

Datastores

Use-case

Key Goals

- Understand the core concepts of Azure ML
- Understand how to use Azure ML in end-to-end scenario
- Serve as a reference for common scenario

Scenario

Uncover the factors that lead to employee attrition using the fictional data set created by IBM data scientists. The workshop helps you

1. Understand using the Azure Machine Learning Designer to train and deploy a machine learning model that predicts employee attrition
2. Use automated ML to create classification model without writing a single line of code using AML autoML interface
3. End-to-End process from building models to deployment using Python SDK
4. MLOps end-to-end scenario operationalizing ML workflows with Azure Machine Learning, integrated with Azure DevOps.