

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

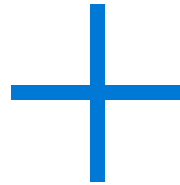


From the Intelligent Cloud to the Intelligent Edge



Azure Machine Learning

Set of Azure Cloud
Services

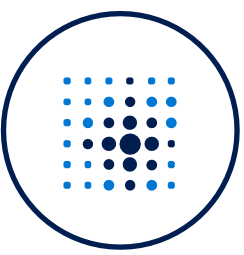


Python
& R SDK, CLI, UX

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

workshop-aml-2020 > Home

Welcome to the studio!

Create new ▾

Notebooks
Code with Python SDK and run sample experiments.
[Start now](#)

Automated ML
Automatically train and tune a model using a target metric.
[Start now](#)

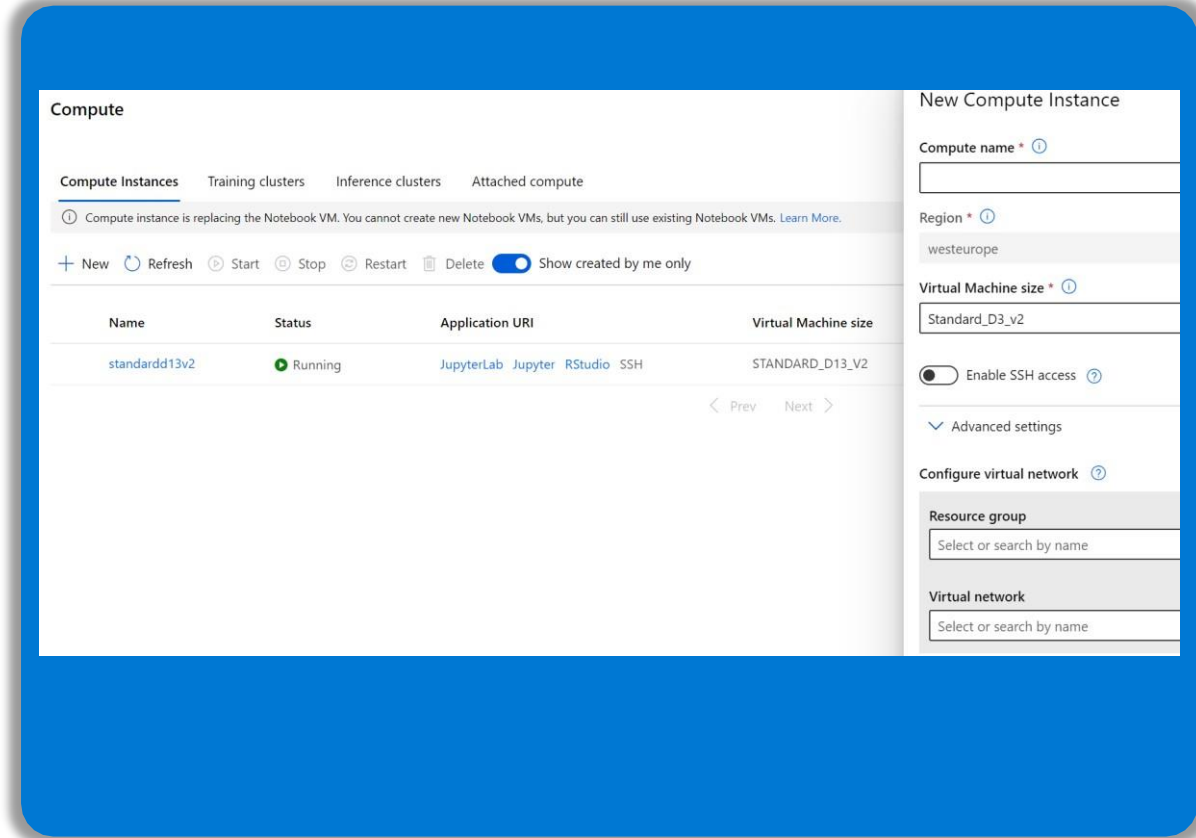
Designer
Drag-and-drop interface from prepping data to deploying models.
[Start now](#)

My recent resources

Runs				Compute
Run number	Experiment	Updated time	Status	Name
2	workshop5-amlcompute	Feb 18, 2020 2:56 PM	Completed	AKSML

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.



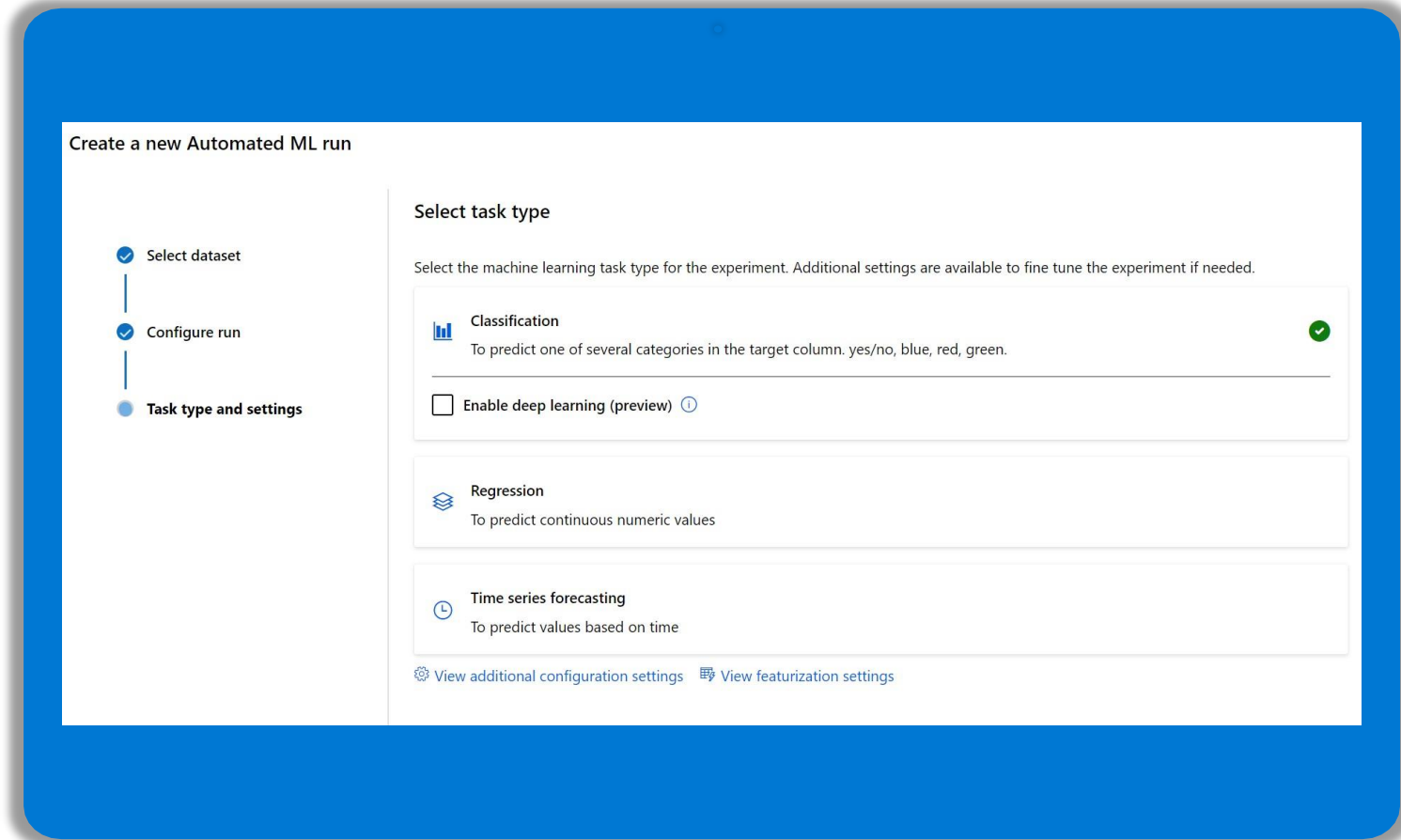
Automated ML

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.



The screenshot displays a user interface for creating a new Automated ML run. It features a progress bar on the left with three steps: 'Select dataset' (completed), 'Configure run' (completed), and 'Task type and settings' (current step). The main area is titled 'Select task type' and includes a descriptive sentence: 'Select the machine learning task type for the experiment. Additional settings are available to fine tune the experiment if needed.' Below this, there are three task options: 'Classification' (selected with a green checkmark), 'Regression', and 'Time series forecasting'. The 'Classification' option includes a sub-description: 'To predict one of several categories in the target column. yes/no, blue, red, green.' There is also a checkbox for 'Enable deep learning (preview)' with a help icon. At the bottom, there are two links: 'View additional configuration settings' and 'View featurization settings'.

Create a new Automated ML run

☒ Select dataset

☒ Configure run

☐ Task type and settings

Select task type

Select the machine learning task type for the experiment. Additional settings are available to fine tune the experiment if needed.

☒ **Classification**
To predict one of several categories in the target column. yes/no, blue, red, green.

☐ Enable deep learning (preview) ⓘ

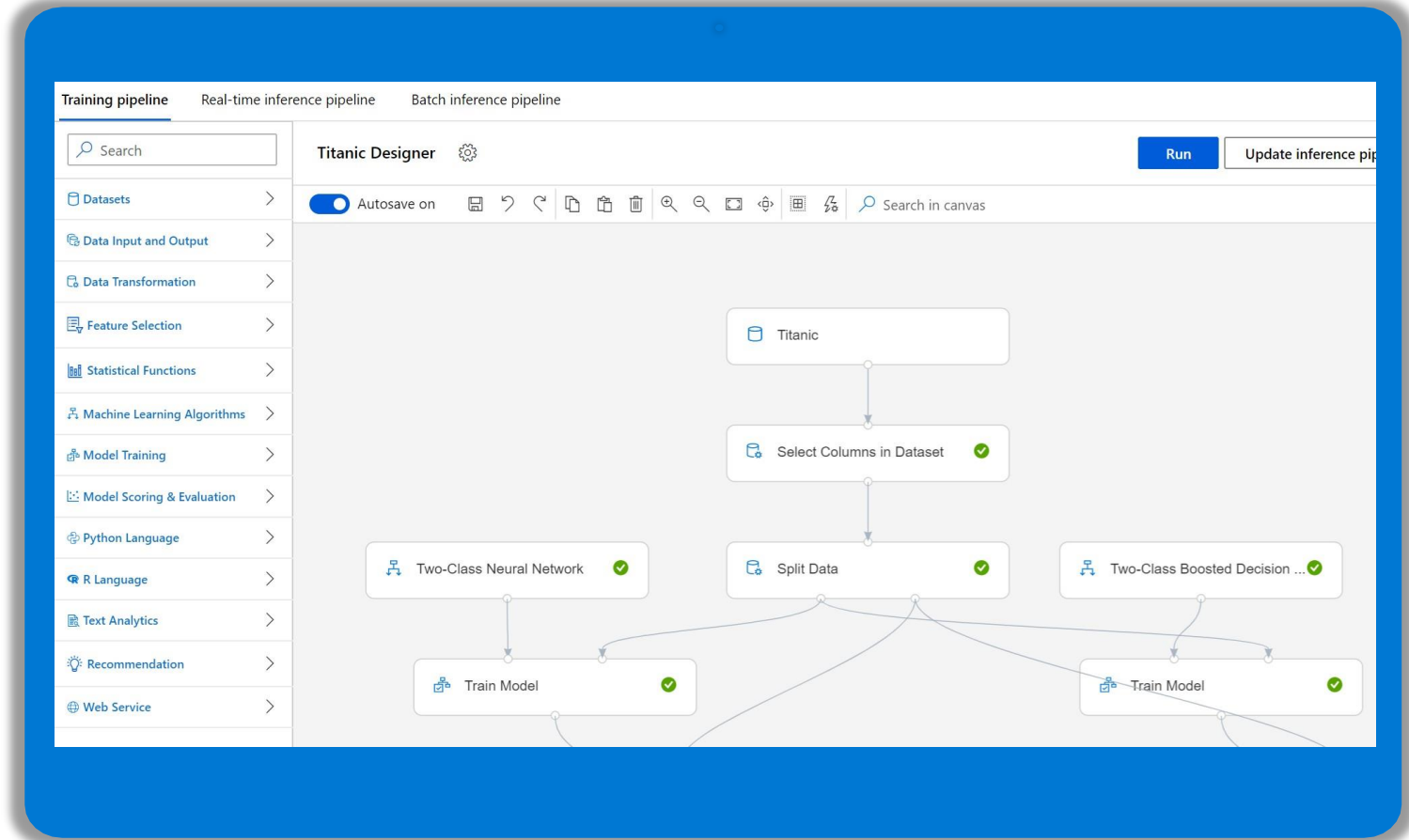
☐ **Regression**
To predict continuous numeric values

☐ **Time series forecasting**
To predict values based on time

[⚙️ View additional configuration settings](#) [📊 View featurization settings](#)

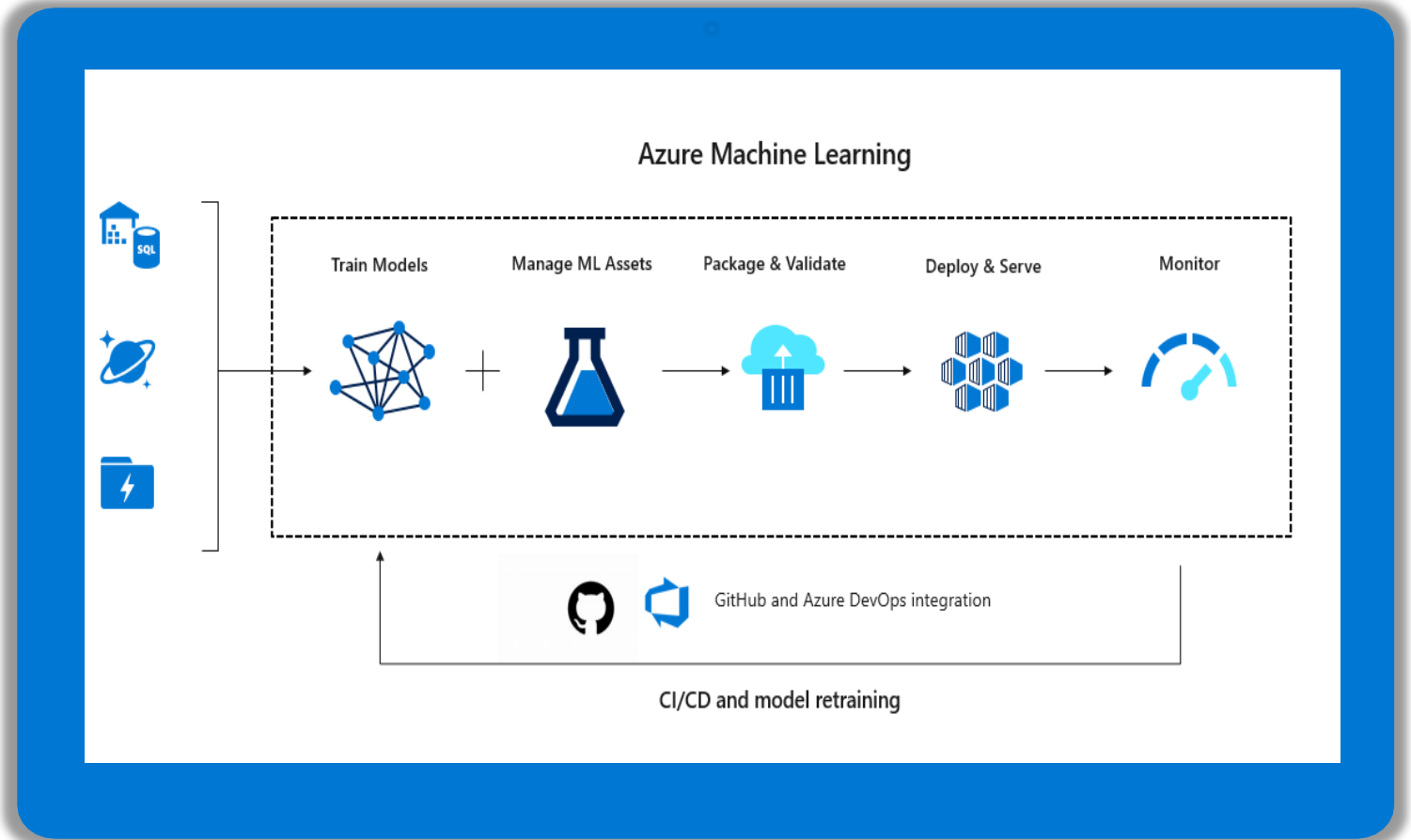
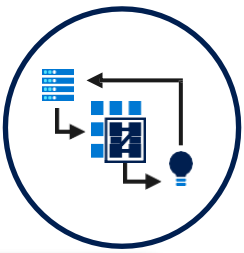
Designer

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

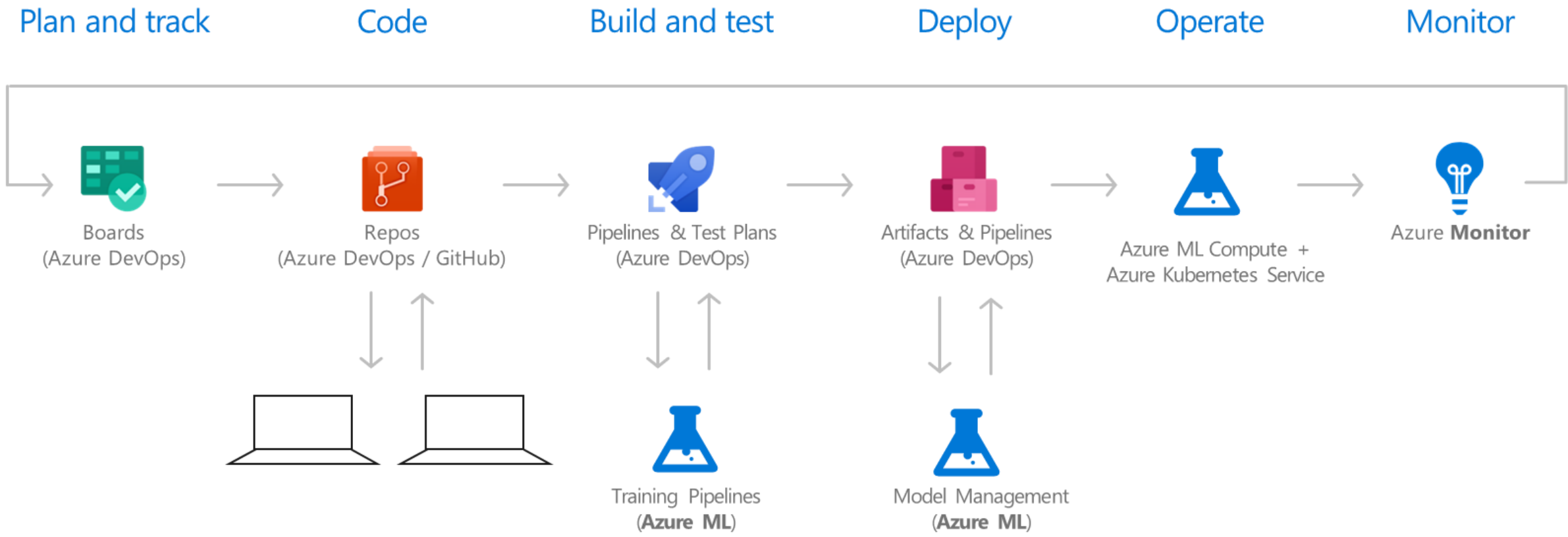


Azure Machine Learning

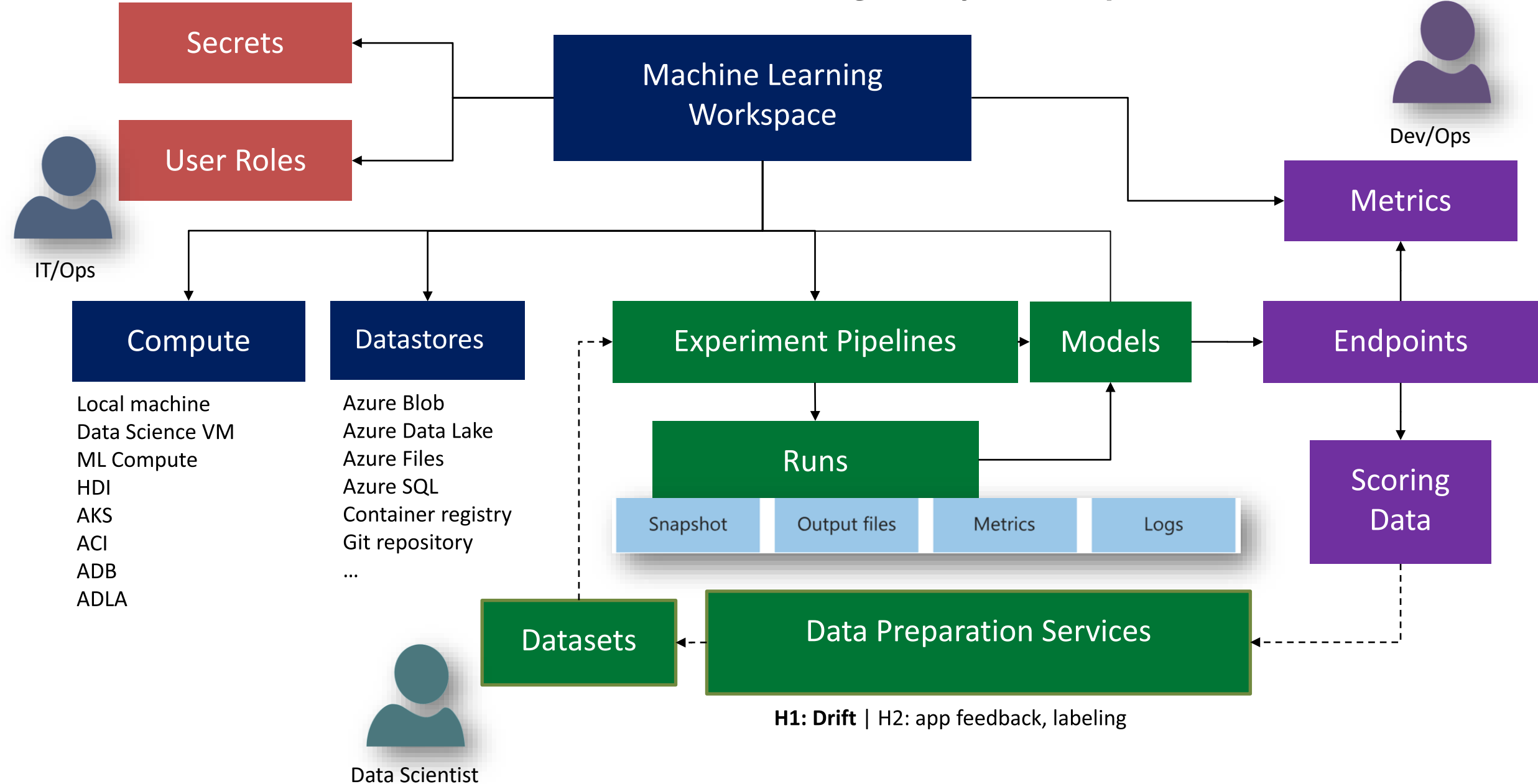
Industry leading MLOps



DevOps Framework for Azure AI Solutions



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.

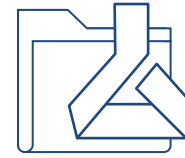
Required resources:

[Azure Container Registry](#)

[Azure Storage](#)

[Azure Application Insights](#)

[Azure Key Vault](#)



What's in the workspace?



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.