Red Hat
OpenShift
Data Science

Introduction to Red Hat OpenShift Data Science

Cloud service for artificial intelligence /machine learning (AI/ML) use cases

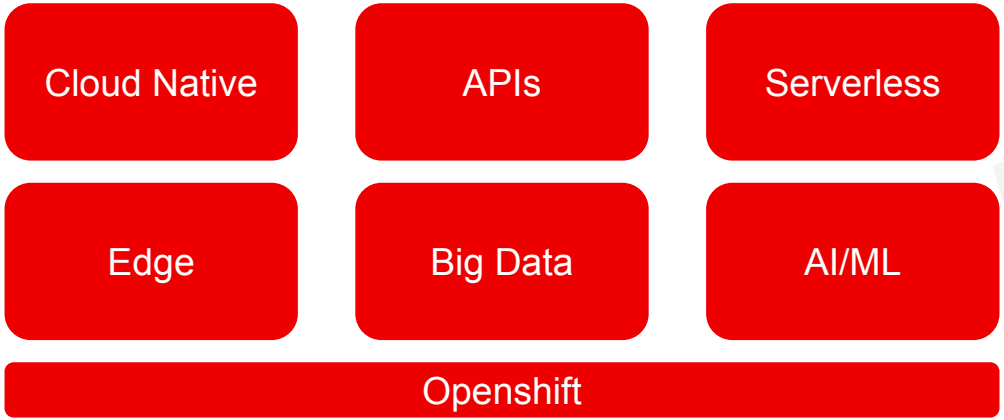
Eoin Crosbie
Technical Partner Enablement Manager

1. Why
2. What
3. Try

Red Hat OpenShift

WHY

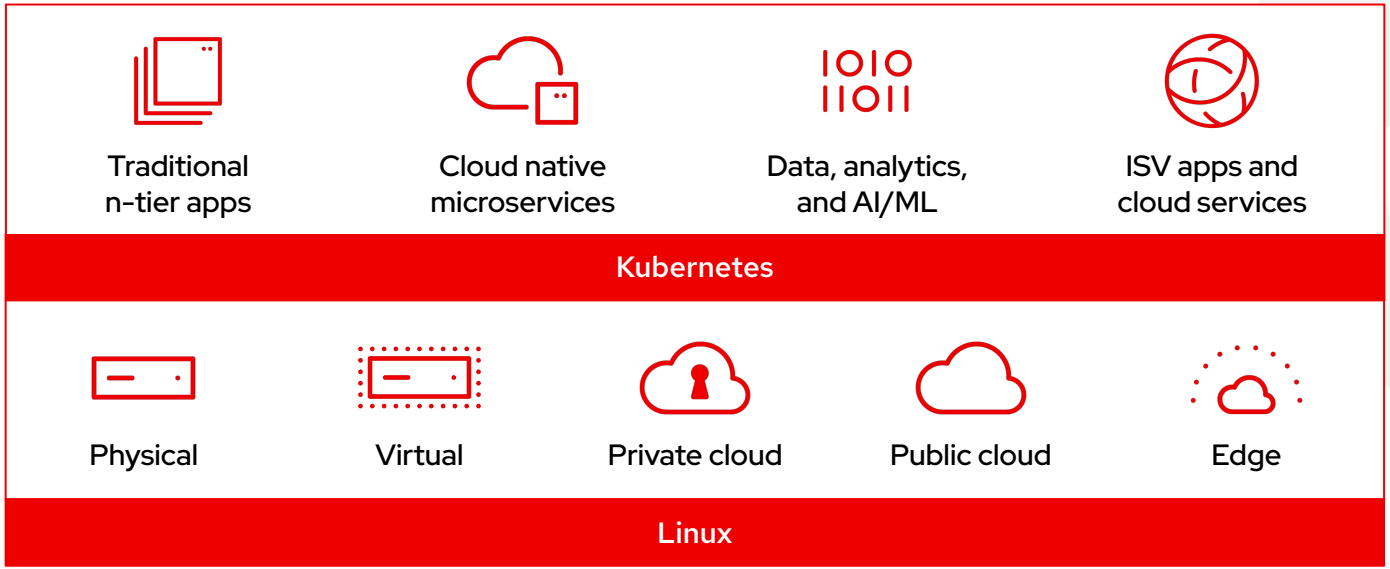
Cloud Native
APIs
Serverless
Edge
Big Data
AI/ML



Red Hat
OpenShift

Open hybrid cloud

Red Hat helps customers build, run, and manage applications everywhere



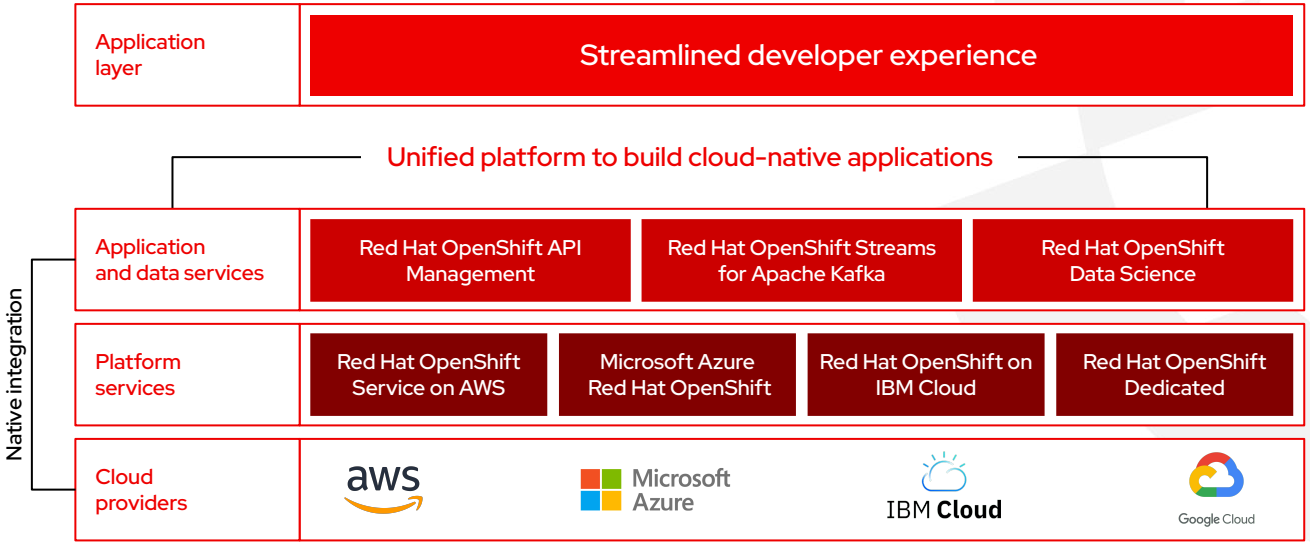
Red Hat OpenShift

Red Hat managed cloud services

Full stack management and unified experience

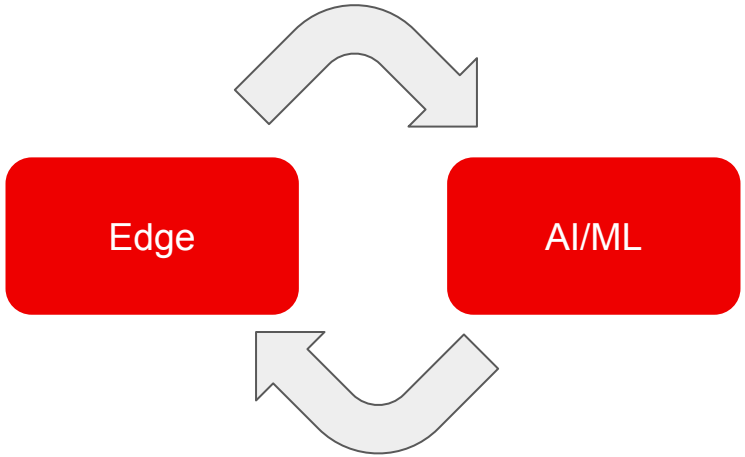
Maximize full value of Red Hat® OpenShift®

Hybrid cloud flexibility



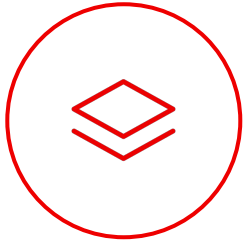
Red Hat OpenShift

What came first,
The chicken or the E(d)gg?



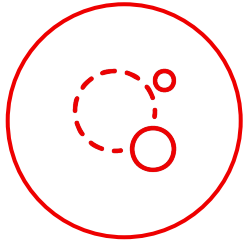
Red Hat
OpenShift

Our approach to AI/ML



Hybrid cloud

Represents a workload requirement for our platforms across hybrid cloud.



Open source efficiency

Applicable to Red Hat's existing core business in order to increase open source development and production efficiency.

Intelligent platforms

Valuable as specific services and product capabilities, providing an intelligent platform experience.

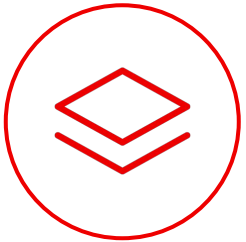
Intelligent apps

Lets customers build intelligent apps using Red Hat products and our broader partner ecosystem.

Data as the foundation

Depth and scale without lock-in

Capabilities delivered through the combination of Red Hat and partner ecosystem

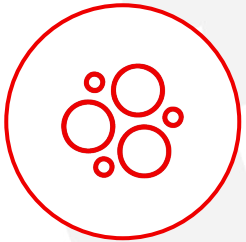


Managed cloud platform

Deployed on Red Hat OpenShift and managed on Amazon Web Services providing access to compute and accelerators based on your workload

Red Hat portfolio and services

Complement common data science tools in Red Hat OpenShift Data Science with other Red Hat products and cloud services



Partner ecosystem

Access specialized capabilities by adding certified ISV ecosystem products and services from Red Hat Marketplace

WHAT

Conceptual machine learning architecture

Gather and prepare data	Develop model	Deploy models in an application	Model monitoring and management
Data storage Data lake Data exploration Data preparation Stream processing	ML notebooks ML libraries	Model lifecycle CI/CD	Monitor / alerts Model visualization Model drift

Hybrid, multi cloud platform with self service capabilities

Compute acceleration

Infrastructure

Red Hat OpenShift

Key features of Red Hat OpenShift Data Science

Addressing AI/ML experimentation and integration use cases on a managed platform

Cloud Service

Available on Red Hat OpenShift Dedicated (AWS) and Red Hat OpenShift Service on AWS

Core data science workflow

Provides data scientists and intelligent application developers the ability to build, train, and deploy ML models

Increased capabilities/collaboration

Combines Red Hat components, open source software, and ISV certified software available on Red Hat Marketplace

Rapid experimentation use cases

Model outputs are hosted on the Red Hat OpenShift managed service or exported for integration into an intelligent application

Red Hat OpenShift Data Science

Tools and capabilities

Building on the foundations of data science

Jupyter notebooks

Conduct exploratory data science in JupyterLab with access to core AI / ML libraries and frameworks including TensorFlow and PyTorch.

Source-to-image (S2I)

Publish models as end points via S2I for integration into intelligent apps. Rebuild and redeploy based on changes to the source code.

GPU Acceleration (post-initial release)

Accelerate your data science experiments through the use of GPU acceleration on the Red Hat OpenShift Dedicated platform.

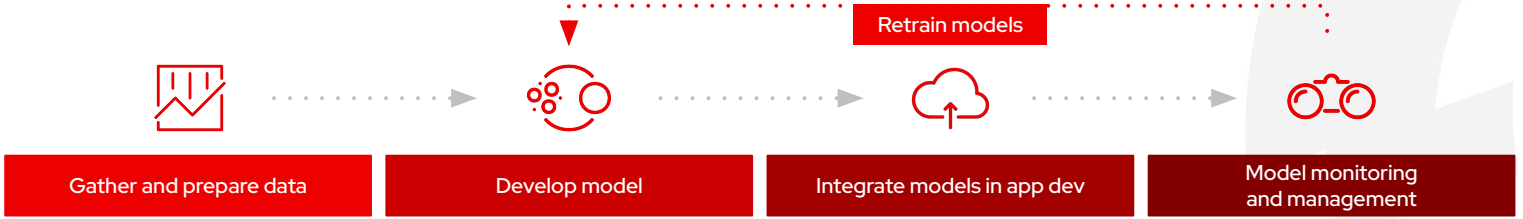
Initial release components

	Gather and prepare data	Develop model	Integrate models in app dev	Model monitoring and management
Customer managed ISV software		oneAPI · IBM Watson · intel OpenVINO · SELDON DEPLOY		
ISV managed cloud services	Starburst Galaxy · ANACONDA. COMMERCIAL EDITION			
Red Hat managed cloud services	Red Hat OpenShift Streams for Apache Kafka	Red Hat OpenShift Data Science: TensorFlow · jupyter · PyTorch	Source to image	Red Hat OpenShift API Management
Red Hat managed cloud platform	Open hybrid cloud platform with self service capabilities	Red Hat OpenShift Dedicated	Red Hat OpenShift Service on Amazon Web Services	
	Accelerators	NVIDIA. *		
	Cloud infrastructure	powered by aws		

*post initial release

Red Hat OpenShift

… and integrating our partner ecosystem



Customer managed ISV software

Customer managed applications

elastic · Microsoft · mongoDB. · PerceptiLabs · crunchydata · CLOUDERA · oneAPI · H2O.ai · redislabs · IBM Watson · SAS · c3.ai · OpenVINO · CognitiveScale · SELDON · DEPLOY · avanseus · cnvrg.io

ISV managed cloud services

Starburst Galaxy · ANACONDA. COMMERCIAL EDITION

Red Hat managed cloud services

Red Hat OpenShift Streams for Apache Kafka — Red Hat OpenShift Data Science — Source to image — Red Hat OpenShift API Management

Red Hat managed cloud platform

Open hybrid cloud platform with self service capabilities — Red Hat OpenShift Dedicated — Red Hat OpenShift Service on Amazon Web Services

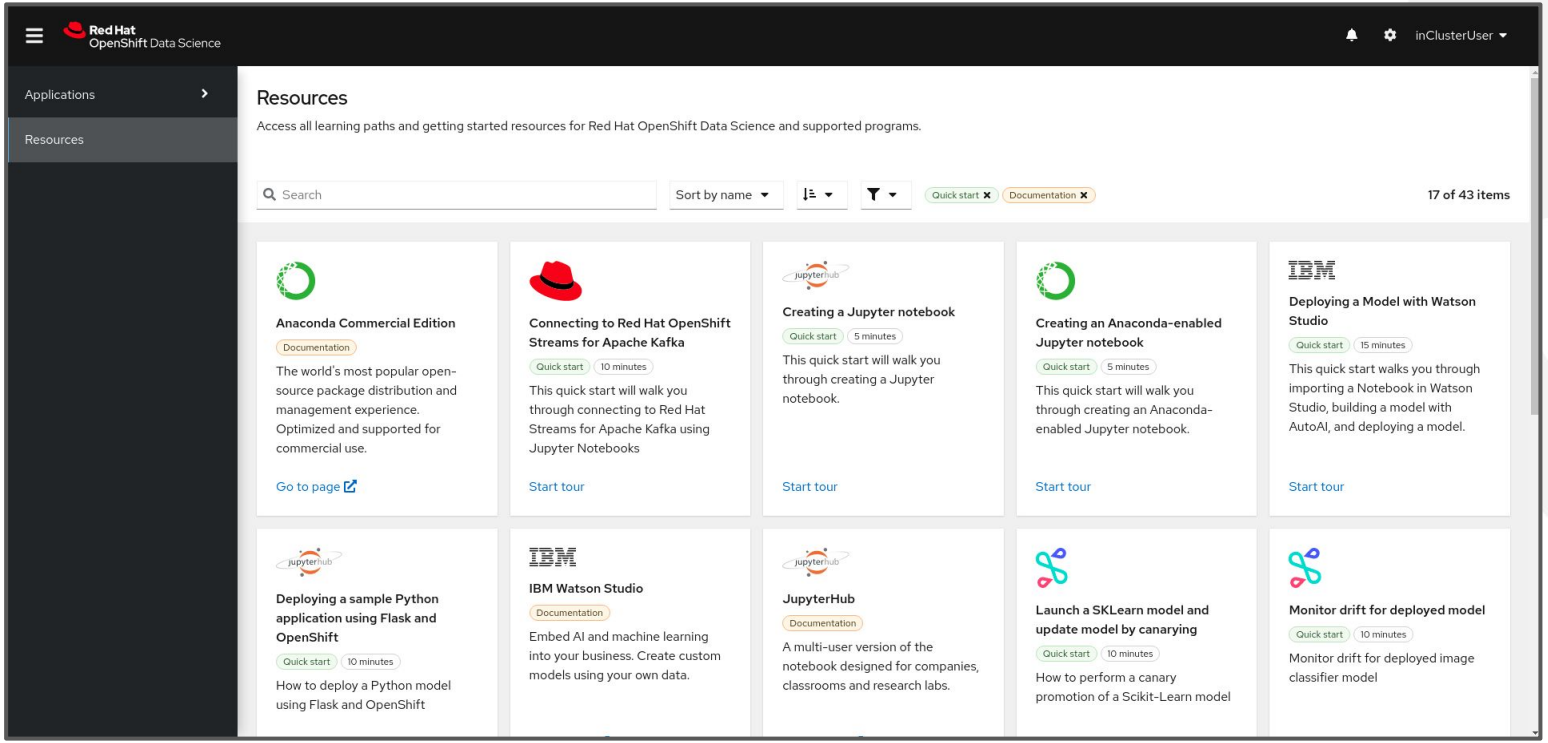
Accelerators — NVIDIA. *

Cloud infrastructure — powered by aws

*post initial release

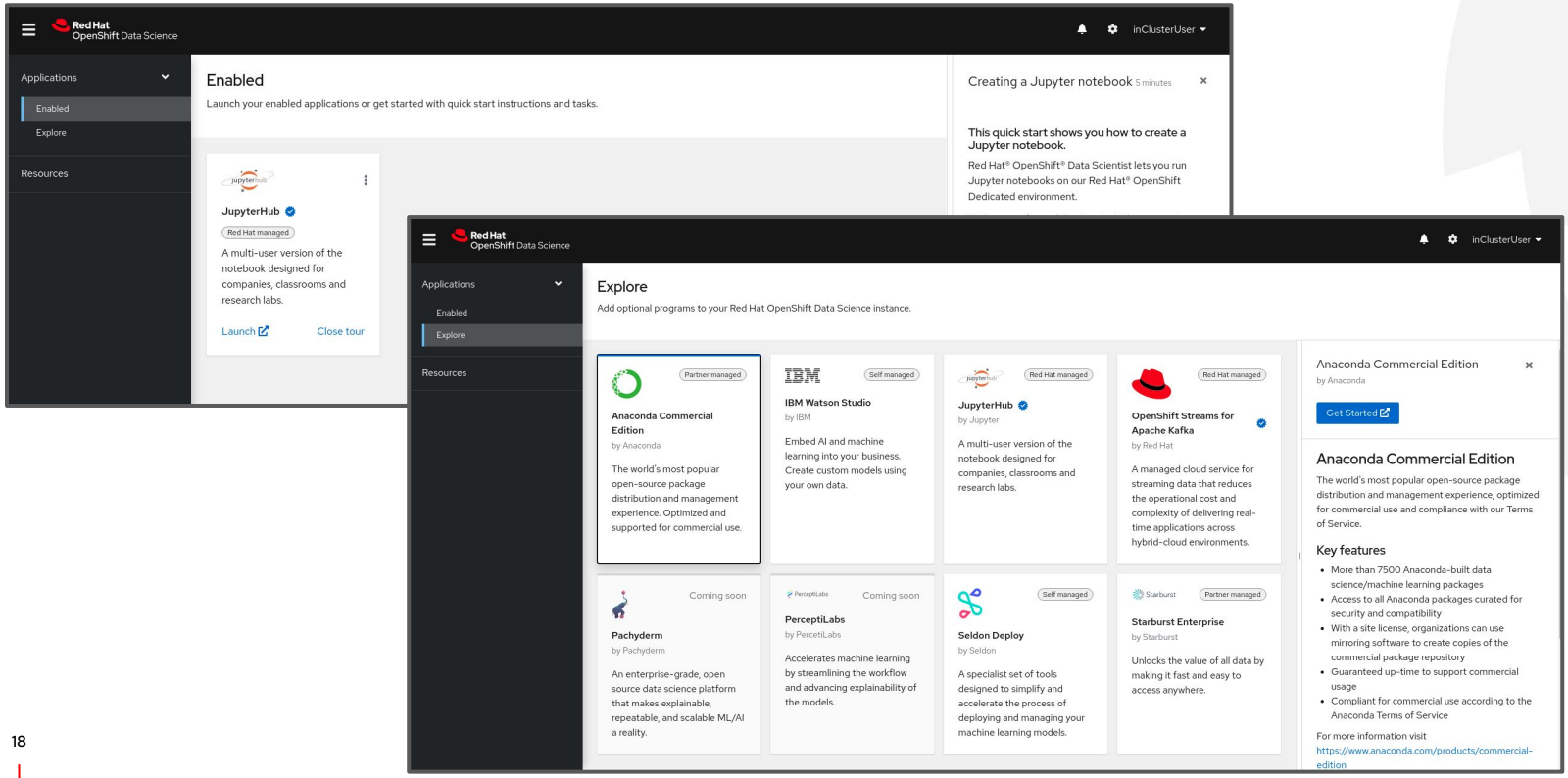
Red Hat OpenShift

Dashboard resources



Red Hat OpenShift

Dashboard user interface



Red Hat OpenShift

The Red Hat Marketplace difference

Any cloud. On-premise. Anywhere OpenShift runs.

Build once, deploy to any environment with software that allows for workload portability across clouds.

Certified enterprise software

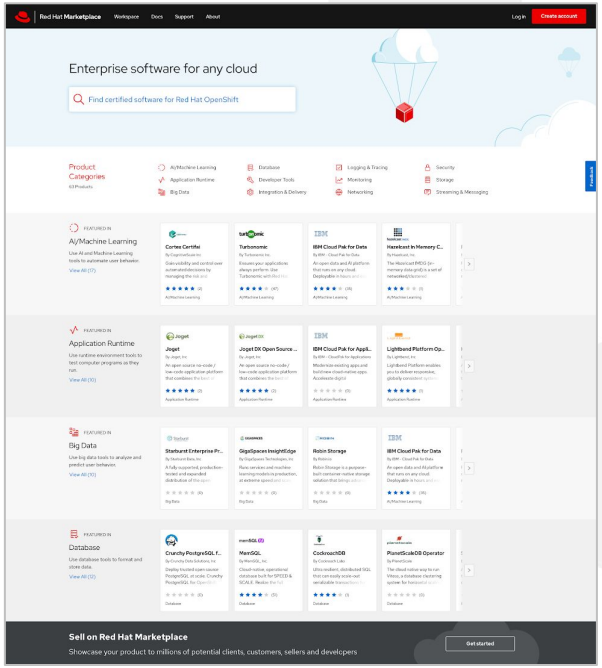
All software is certified for Red Hat OpenShift and uses Kubernetes operators for built-in management logic.

Continuous support

Central support portal offers a single point of entry for any software purchased in the marketplace.

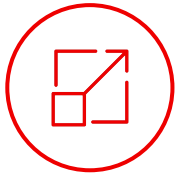
Consolidated usage tracking & spend optimization

Pool spending across clouds. Monitor license usage, expiration, and renewals on a single dashboard.



Red Hat OpenShift

How we differentiate versus alternatives



Hybrid cloud

Deploy models in containerized format for intelligent apps on-premise or in cloud

Fully managed cloud service

Management of entire Kubernetes stack, application services, and Jupyter-as-a-service

Open source innovation

Track changes and fixes to core open source AI/ML tooling and get access to upstream innovation

Partner ecosystem

Choice of over 30+ AI/ML technology partners as alternative to many monolithic frameworks

Red Hat OpenShift Data Science is HIPAA compliant

Ensure your cloud journey has the necessary privacy and security safeguards

Products that are HIPAA compliant are:

- Red Hat OpenShift Dedicated (AWS & GCP)
- Red Hat OpenShift Service on AWS
- Red Hat OpenShift API Management
- Red Hat OpenShift Streams for Apache Kafka
- Red Hat OpenShift Service Registry
- Red Hat OpenShift Data Science

Red Hat

Timeline

Beta

- Red Hat Summit announcement and demo
- Start Beta program with small group of customers
- Announce aligned consulting services

Future (Enhancements TBD)

- Support other cloud platforms
- Custom notebook images
- Additional AI / ML ISVs
- Enhance MLOps: KServe, Kubeflow Pipelines

April 2021 *Early customer adoption* **2H 2021** **TBD**

First release: Version 1

- As a cloud service add-on to OpenShift Dedicated (on AWS initially) or Red Hat OpenShift Service on AWS
- Initial AI / ML ISV partners
- Available via Red Hat Developer Sandbox

TRY

- Dev Sandbox

  https://developers.redhat.com/products/red-hat-openshift-data-science/overview

- License Plate Detection

  https://redhat-scholars.github.io/rhods-lp-workshop/rhods-lp-workshop/index.html

Red Hat OpenShift Data Science

Partner Enablement Event 31st May

Red Hat OpenShift Data Science

Learn more ▸

Contact us ▸

Thank you

Red Hat is the world's leading provider of enterprise open source software solutions. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.

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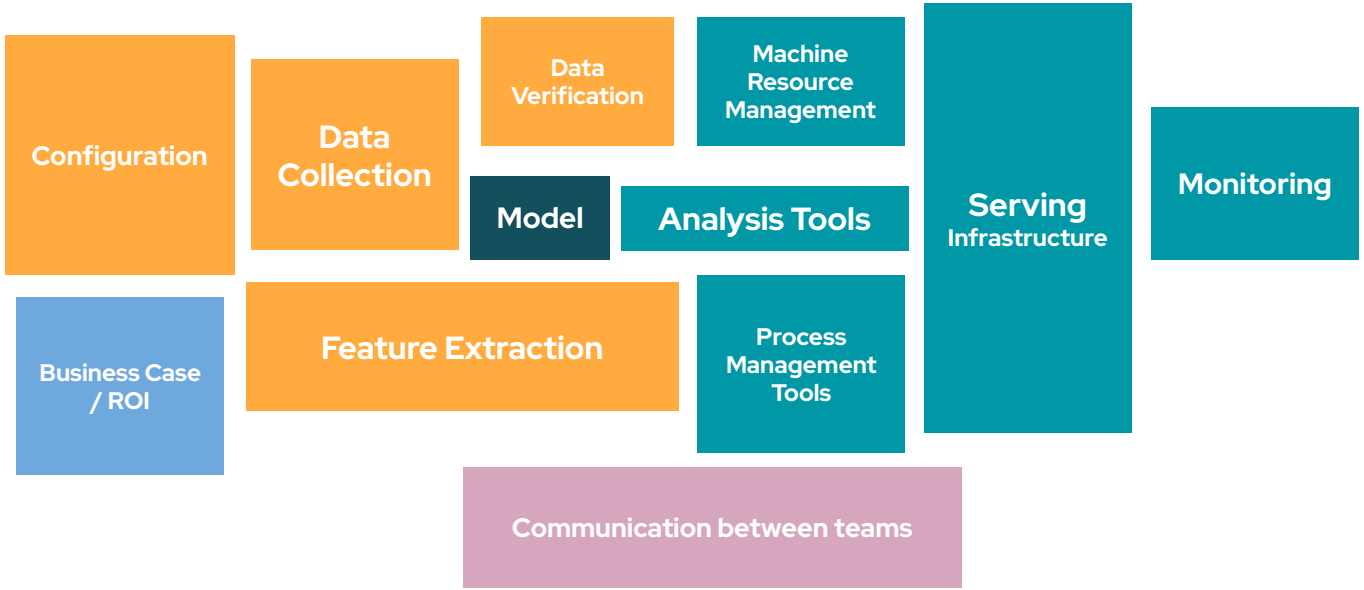
Red Hat

The surrounding **infrastructure platform** and **processes** to support ML models are complex



Hidden Technical Debt in Machine Learning Systems, Google Inc.

Red Hat