Red Hat Summit

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HPE GreenLake | Red Hat

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Connect

AI&ML scalabile con HPE Greenlake e Red Hat

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Hewlett Packard Enterprise

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AGENDA

- HPE STRATEGY
- GREENLAKE OVERVIEW
- HPE | RED HAT PARTNERSHIP FOR HYBRID CLOUD PAY AS YOU GO SOLUTION
- HPE | RED HAT AI&ML AT SCALE WITH OPENSHIFT
- Q&A

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HPE IS THE "EDGE TO CLOUD AS-A-SERVICE COMPANY"

PURPOSE

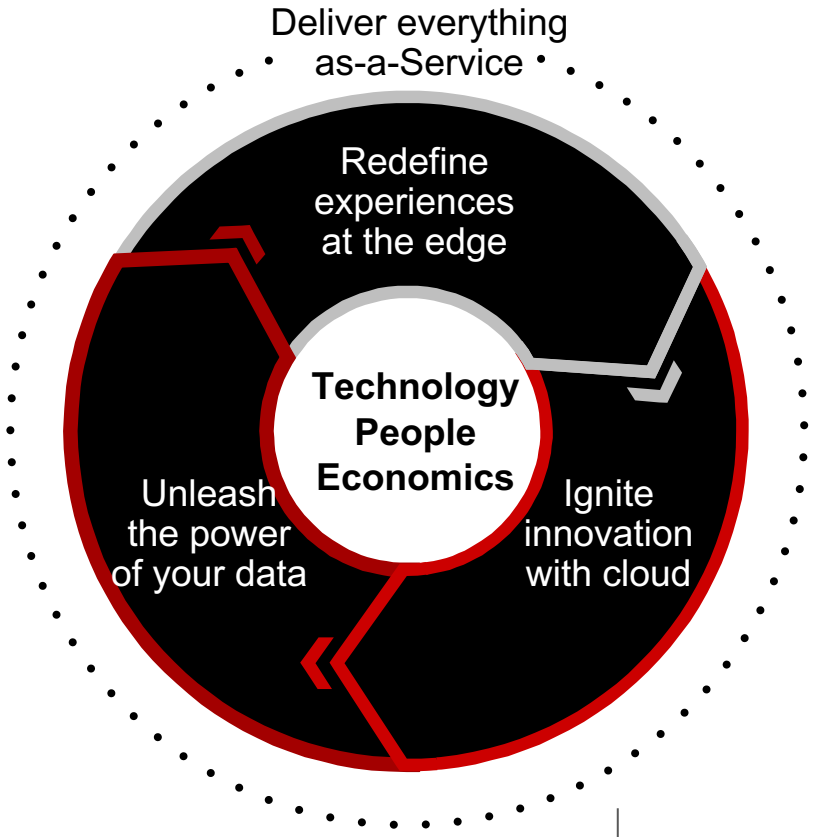
We advance the way people live and work

VISION

The enterprise of the future will be

- Edge-centric
- Cloud-enabled
- Data-driven

STRATEGY



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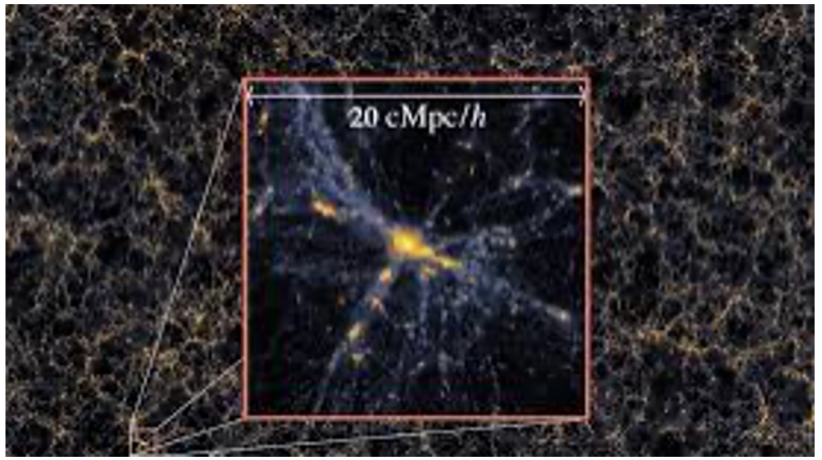
Our Purpose through AI

Self Driving Car

Generative AI from a prompt

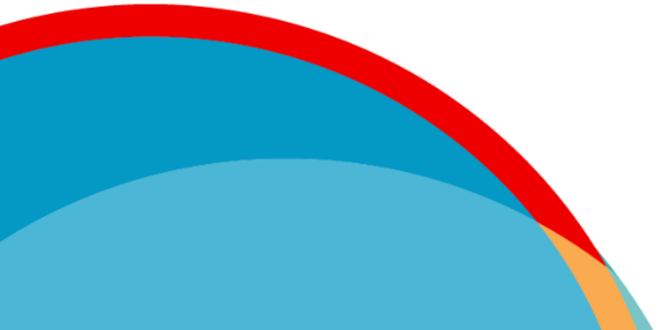
Natural Language Processing(NLP)

Drug Discovery



Cosmological Simulation

GREENLAKE OVERVIEW



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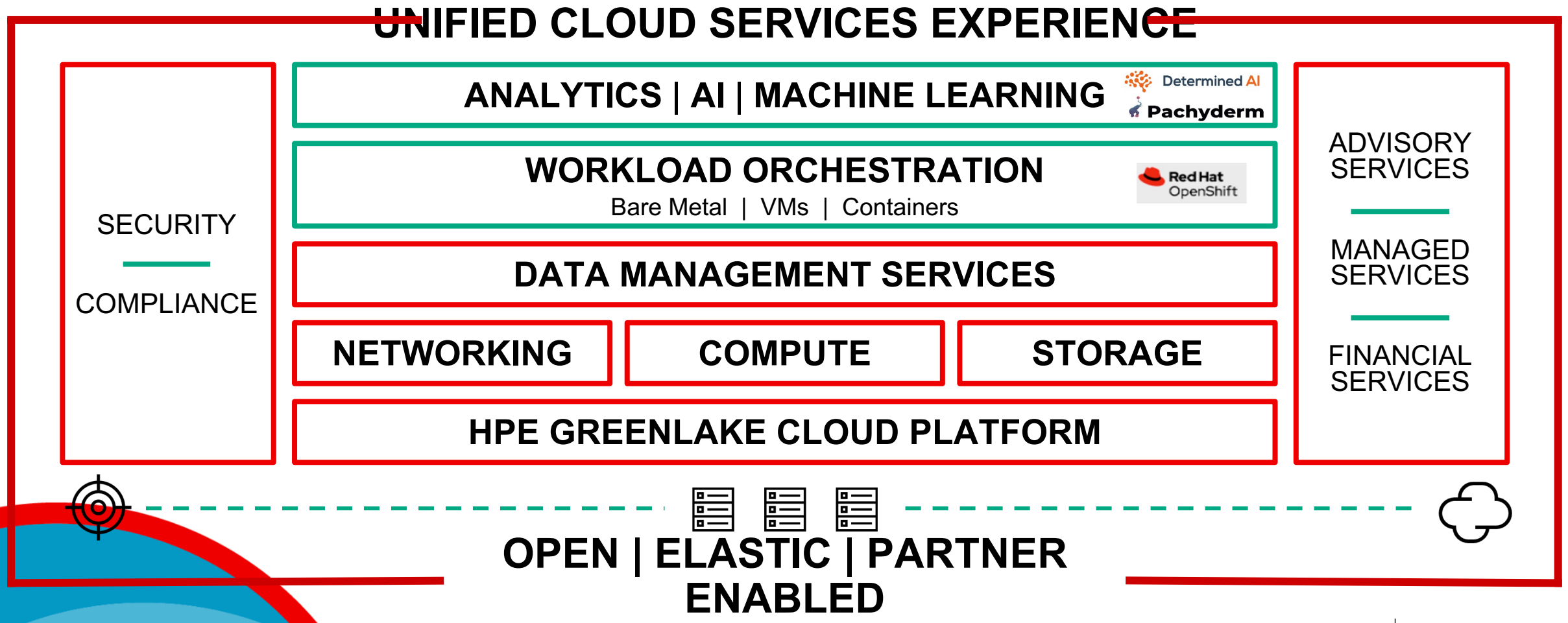
HPE GREENLAKE

Edge-to-cloud platform



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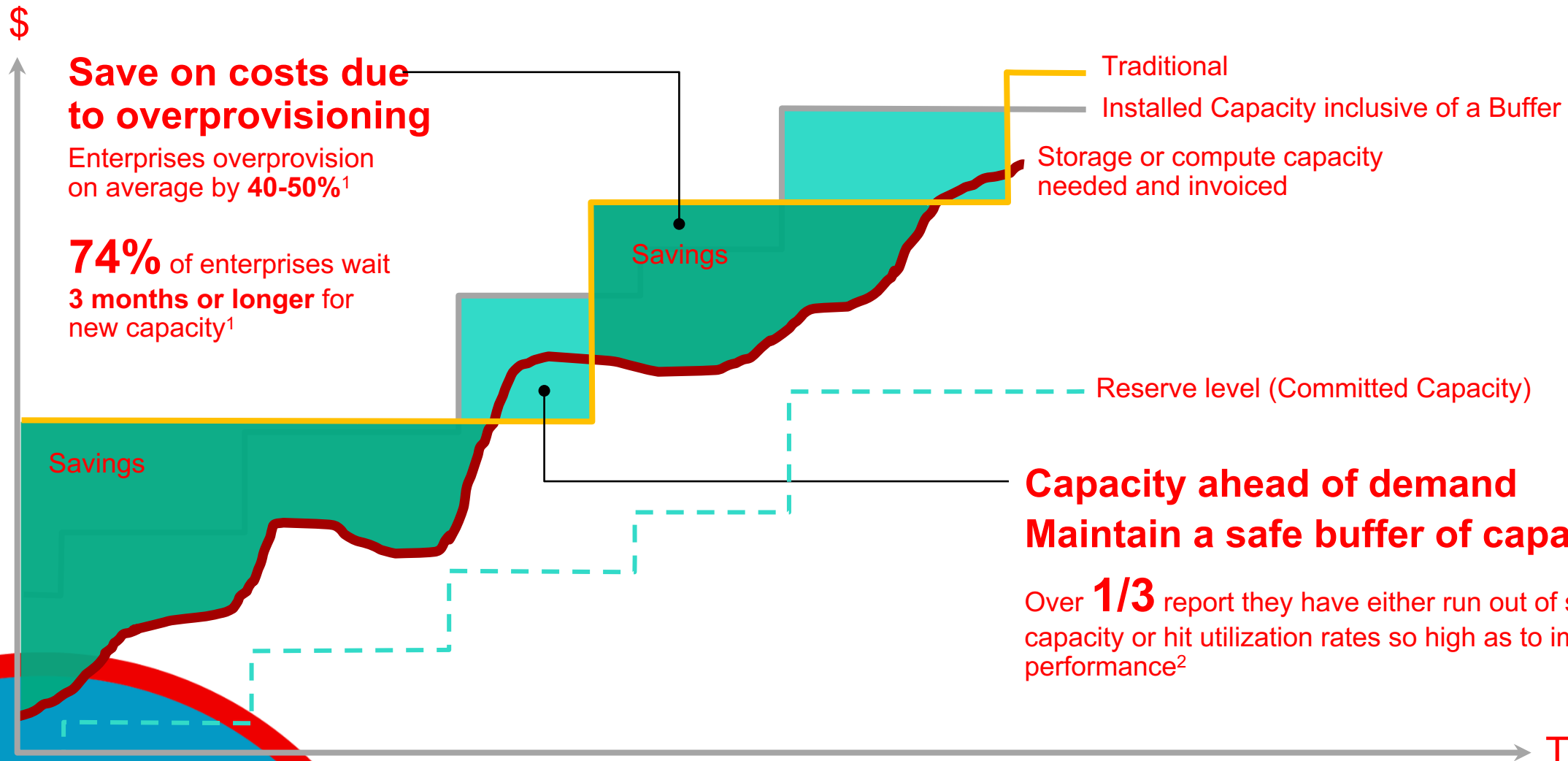
How you save with An as-a-service model



1 451 Research, November 2019
2 Futurum Research July 2019

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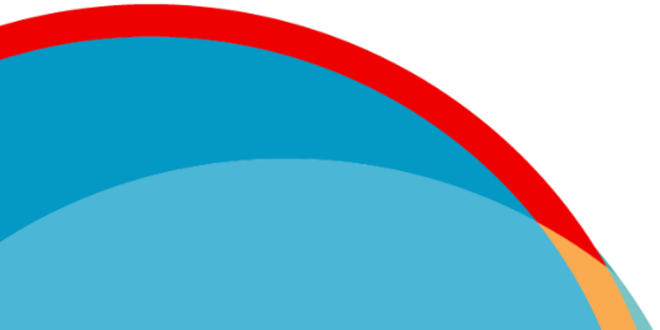
HPE | RED HAT PARTNERSHIP FOR HYBRID CLOUD PAY AS YOU GO SOLUTION



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Turning insights into actualities
Future-focused solutions from partners you trust

Two companies, one vision for open hybrid cloud, working together for you

HPE GreenLake with Red Hat Open Hybrid Cloud offers the best of both worlds.
HPE GreenLake brought cloud economics to you from edge to cloud.
Red Hat Open Hybrid Cloud is a truly scalable platform that seamlessly runs workloads on any footprint at scale.

Evolution of HPE | Red Hat Partnership

ISV-as-a-Service experience

- **The OEM partnership between HPE and Red Hat goes back a long way.**
- **Red Hat software have been certified on most HPE hardware.**
- **Various HPE delivery organizations have implemented Red Hat software on HPE hardware.**

In 2022, Red Hat software is part of HPE

Greenlake consumption economics

Consumption Economics

- **Initially applied to only Hardware, now it includes Red Hat software**
  - Pay per use
  - Reserve and on-demand

Red Hat

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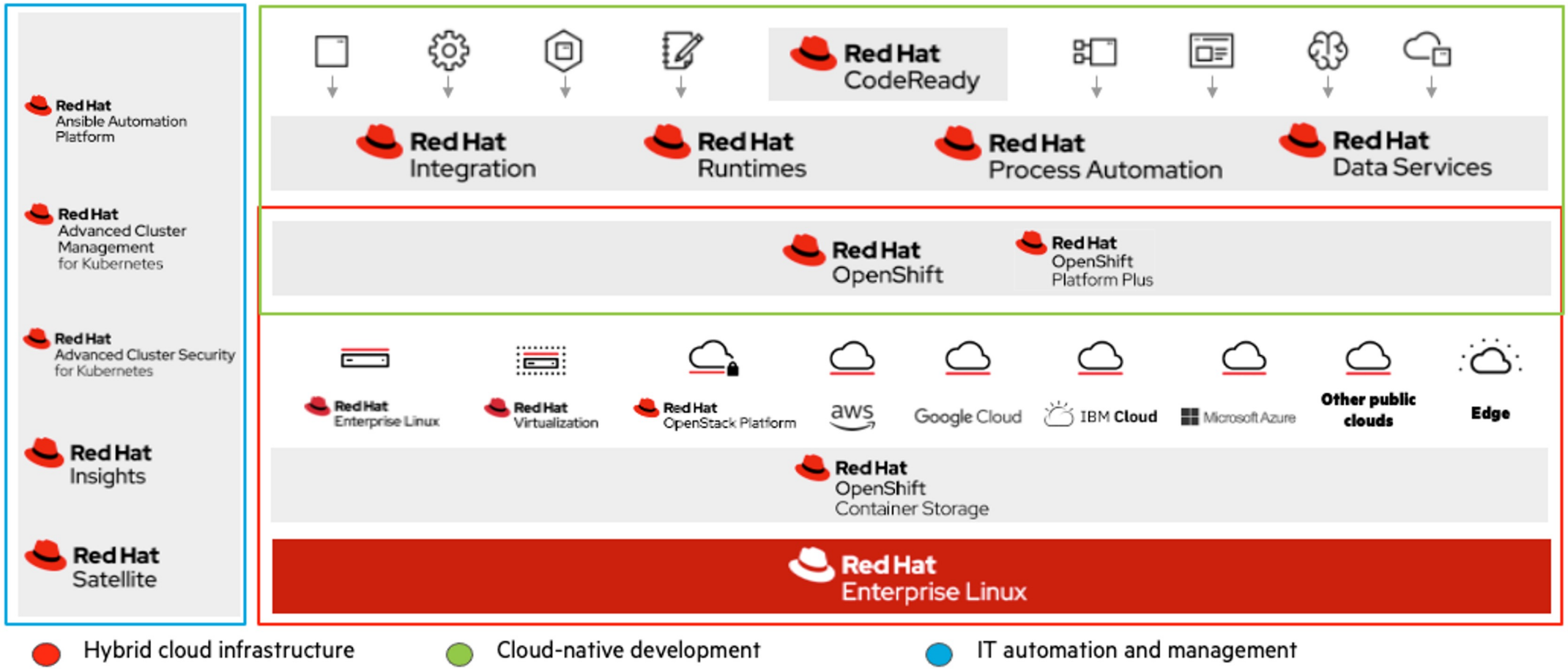
RED HAT PORTFOLIO



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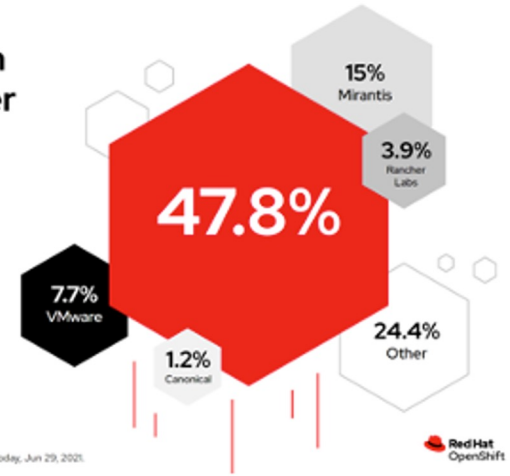
RED HAT OPENSHIFT CONTAINER PLATFORM

OpenShift is the platform built for cloud native application development and deployment across the hybrid cloud

RED HAT OPENSHIFT

Container platform market share leader

"Red Hat commanded 47.8% of the market based on container software revenues of $460.7 million. To give one perspective on how commanding a market position that is – the next four companies in the top five container software vendors hold only 27.8% of the market – combined. The remaining 24.4% market share is held by all other companies below the top five."



Source: Who's Winning in the Container Software Market, IT Pro Today, Jun 29, 2021.

Red Hat OpenShift

Fortune Global 500

64%

of the top 25 companies on the Fortune Global 500 list use **Red Hat® OpenShift®**

Source:
Fortune Global 500 subscription data as of 20 January 2021

Red Hat OpenShift

Red Hat OpenShift is for every innovator

Ready for IT operators

- Automate processes. Reduce complexity.
- Operate more securely from end to end.

Empowering developers

- Code fast with familiar tools.
- Rapidly deliver without roadblocks.

Proven for business leaders

- Choose a platform to power business today.
- Create a cloud strategy for the future.

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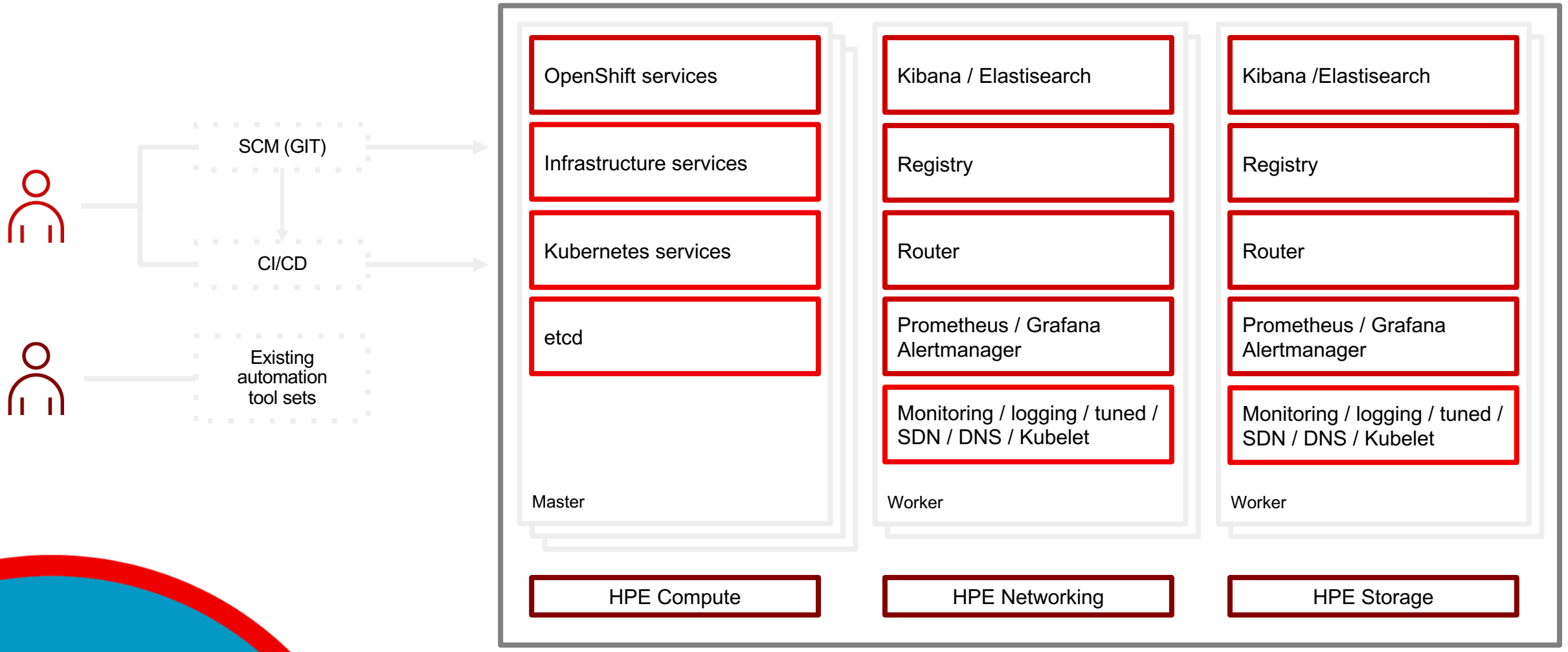
Red Hat OpenShift is hybrid enterprise Kubernetes on HPE GreenLake



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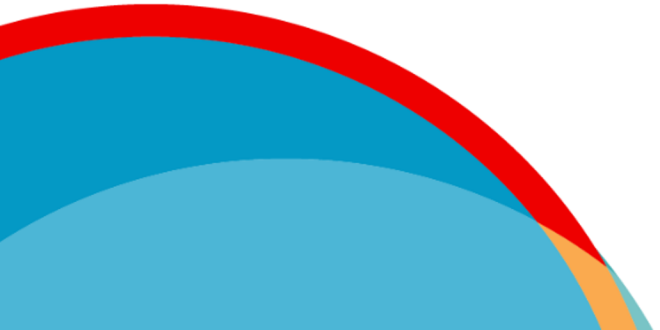
HPE | RED HAT AI&ML AT SCALE WITH OPENSHIFT



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AI at scale Challenges

On day one…small and simple

TensorFlow

GPU

- Small experiments on a single machine
- Simple infrastructure to manage
- No need to share resources or productionize results
- Ad hoc experiment tracking is sufficient

On day two….complex and complicated

TensorFlow Keras PyTorch

GPU GPU GPU

- GPU sharing and infrastructure management
- Hyperparameter search ad hoc, time-consuming, often no tool support
- Experiment tracking for reproducibility and collaboration
- Distributed training; hard to configure, fragile, not multi-user by default

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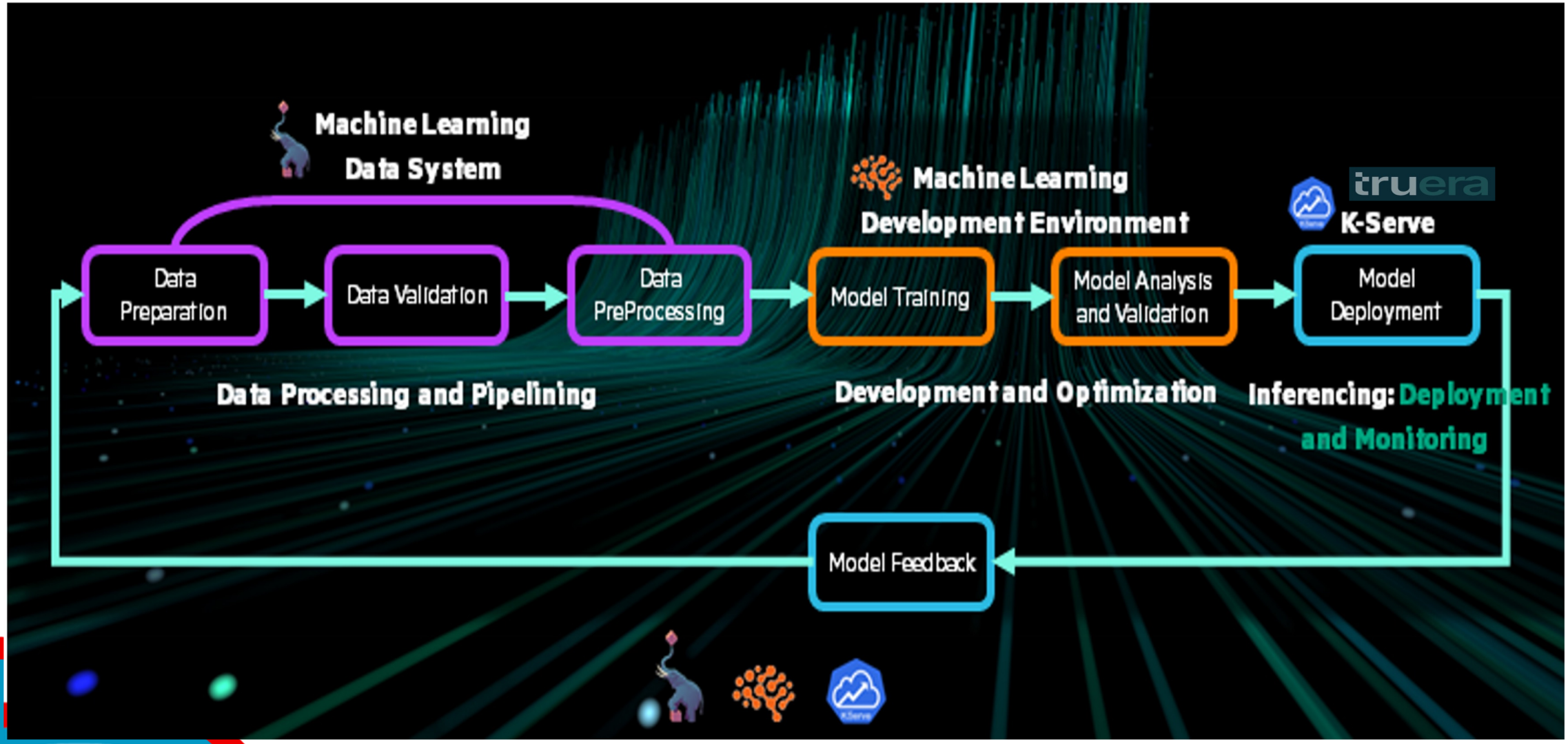
HPE AI AND MACHINE LEARNING OPERATION



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Addressing common customer needs

Data

HPE Machine Learning Data Management

- Structured & unstructured data versioning
- End to end data lineage
- Privacy & data governance

Pachyderm

Decisions

truera

- Explainability / Conceptual soundness
- Model Robustness (performance, stability, overfitting)
- Fairness / Prevention of unjust discrimination

Models

HPE Machine Learning Development Environment

Determined AI

- Experiment tracking, peer collaboration, and outcome reproducibility
- Centralized Model Registry with versioning and model retention

Monitoring

truera

- Model performance tracking, drift detection, observability, & audit
- Up-to-date model risk management
- Data quality problems

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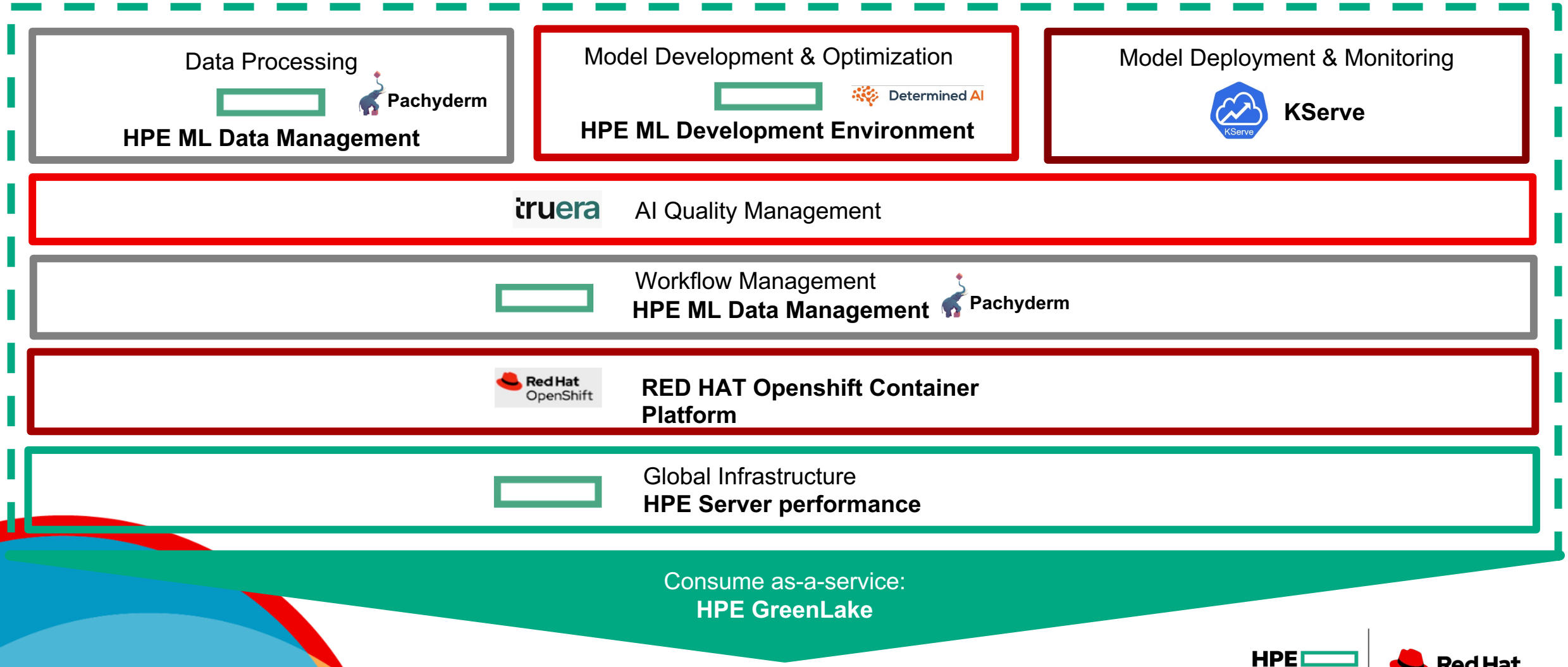
The Enterprise Machine Learning Platform for Trustworthy AI

High-level architecture



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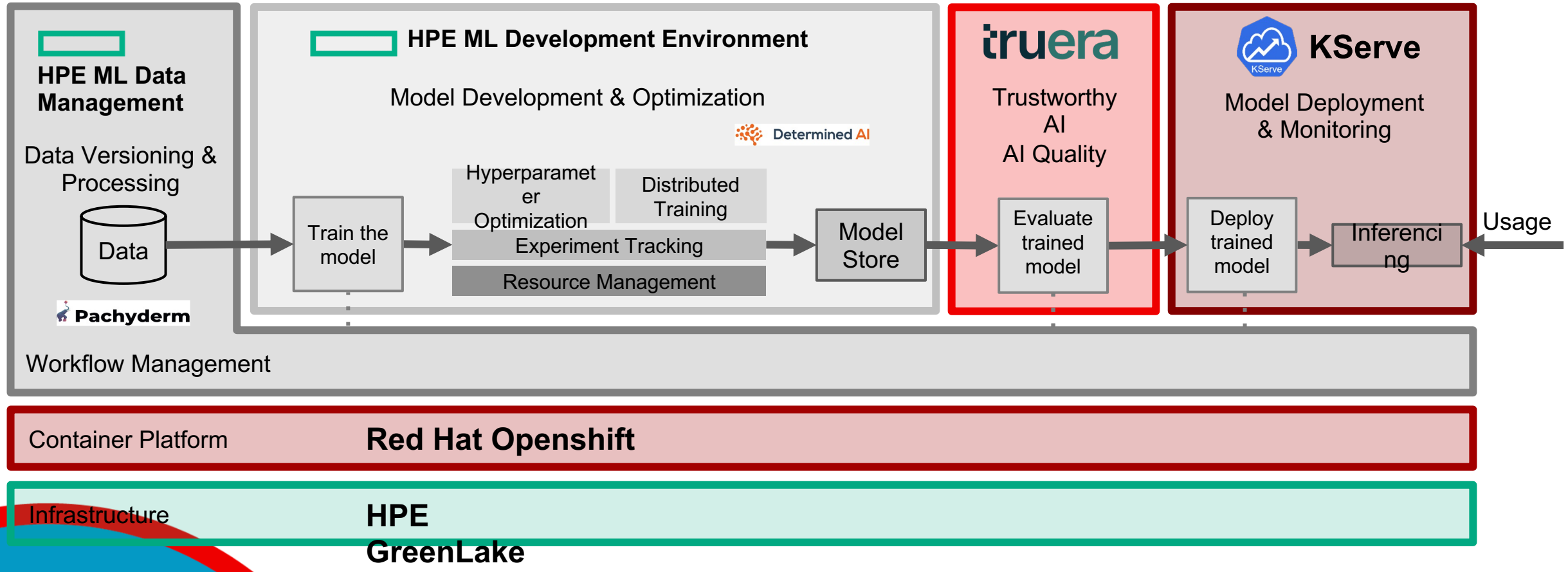
The Enterprise Machine Learning Platform for Trustworthy AI

Component Stack & Workflow



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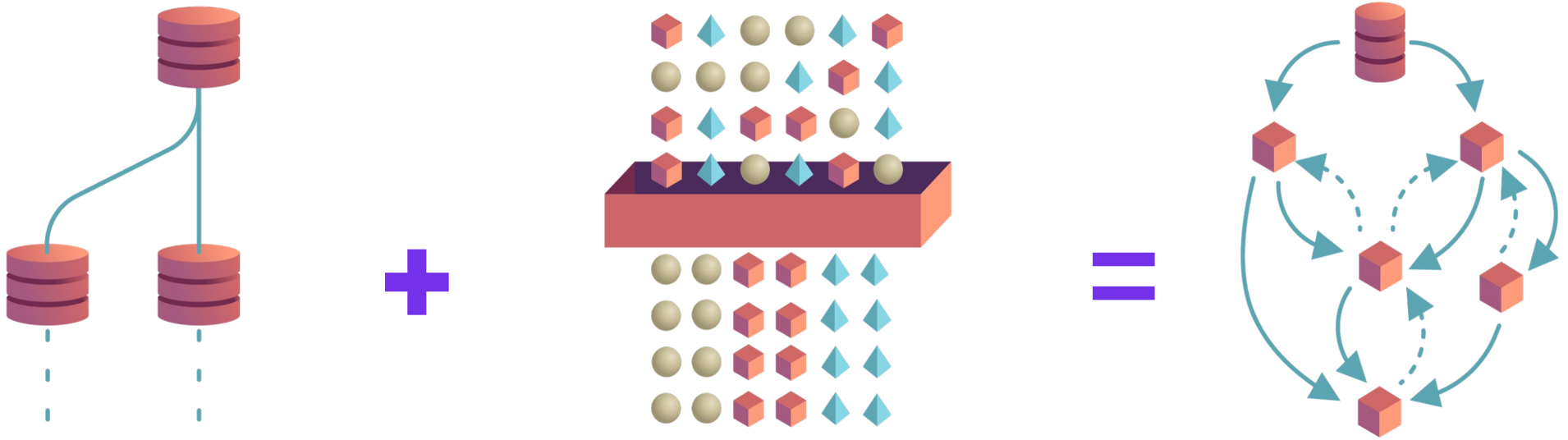
Key Aspects of MLDM

Introduction to Machine Learning Data Management (aka Pachyderm)



Data Versioning

Manage data with the same production practices as code

Data Pipelines

Developers need to be empowered with choice, not restricted

Data Lineage

Be able to instantly reconstruct any past output/decision

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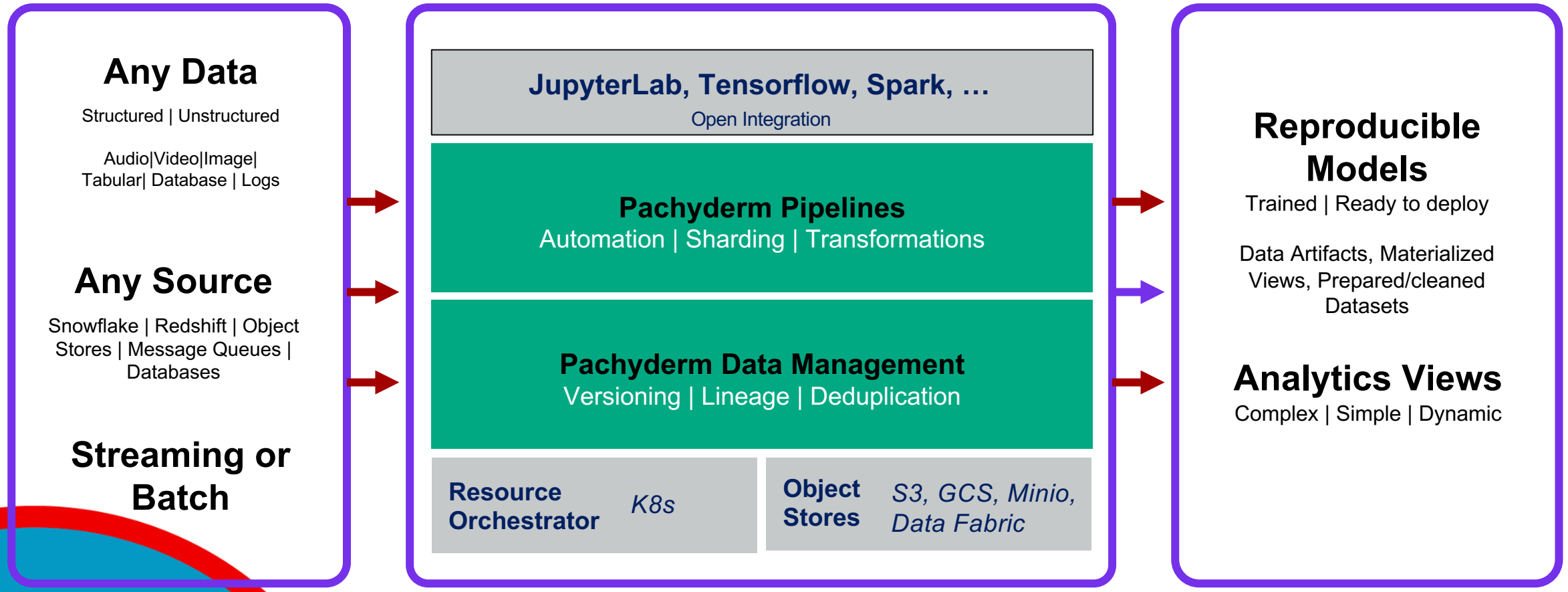
Overview: MLDM Platform

Introduction to Machine Learning Data Management (aka Pachyderm)



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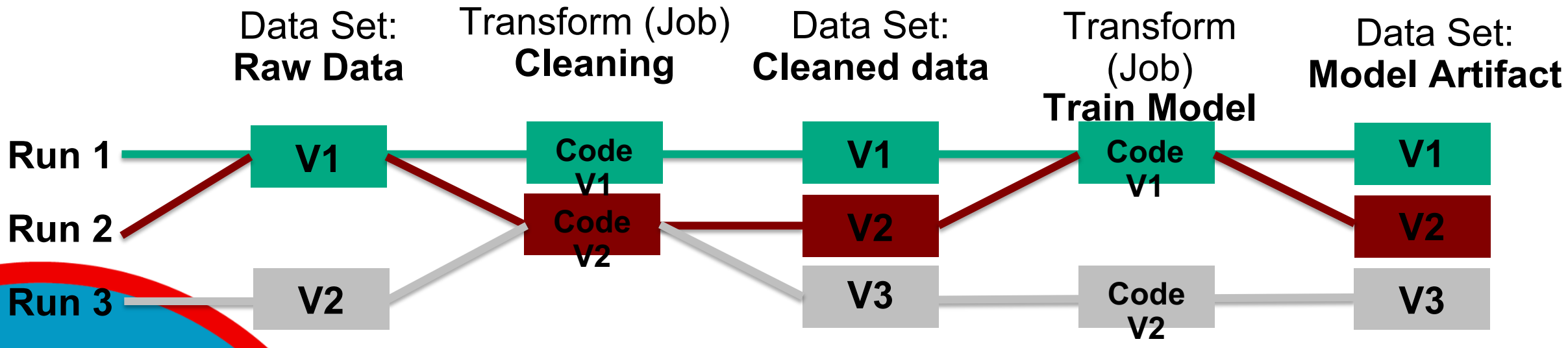
REPRODUCIBILITY WITH IMMUTABLE DATA LINEAGE & VERSIONING

Solves the reproducibility crisis by providing:

Data Lineage: All data and pipeline code is versioned providing an immutable record.

Data Versioning: Automatic and intelligent versioning of unstructured and structured data.

Auditability: Uses git-like structure of commits, branches, rollbacks for full visibility.



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Q&A?

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Grazie!

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