MLOps Foundations on Azure

Helping customers accelerator their path to insights and build for tomorrow.

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Solving Together™

Unrivaled Azure Technical Powerhouse

TOP TALENT BACKED BY RECOGNIZED EXPERTISE

Microsoft Azure

2,300+
Microsoft Certifications Worldwide

800+
Microsoft Azure Certifications

17
Azure Competencies

5x
Microsoft Partner of the Year

Azure Expert MSP

with expertise across 17 competencies

- Messaging
- Cloud Productivity
- Collaboration and Content
- Small and Midmarket Cloud Solutions
- Project and Portfolio Management
- Security
- Datacenter
- Data Analytics
- Enterprise Mobility Management
- Business Applications
- Windows and Devices
- DevOps
- Application Development
- Application Integration
- Communications
- Data Platform
- Enterprise Resource Planning

Gartner

Leader

Magic Quadrant for Public Cloud Infrastructure Professional and Managed Services, Worldwide

> *The unique aspect of our relationship is expanding all things we're doing here at Microsoft, it's all about coming together to deliver the best managed services for the customer globally. We've really come together with Rackspace Technology to team up where it counts.* ***We trust Rackspace Technology*** *and deeply value the partnership here at Microsoft.*

Judson Althoff
Executive VP, WW Commercial Business

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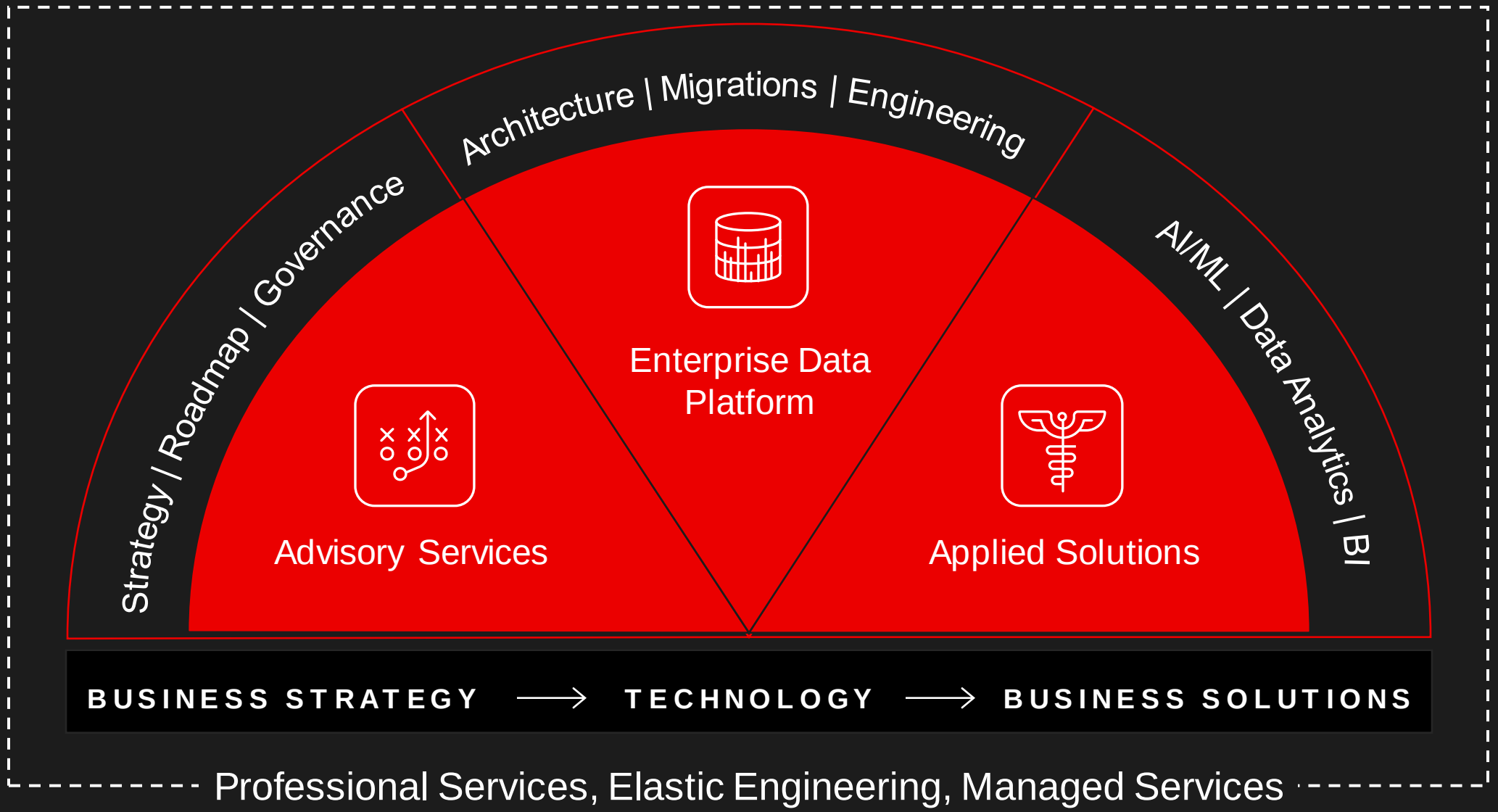
Portfolio Approach



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Rackspace Data Services for Azure

A new model to help customers build for tomorrow

CONSULTING

- Data Discovery Session
- Data & Analytics Workshop
- AI Ideation Workshop
- Data & AI Strategy Assessment

IMPLEMENTATION

- Data Migrations
- DB Transformations
- Data Platform Engineering
- Dashboards & Reporting
- ML Model Development
- MLOps Foundations

MANAGE & OPERATE

- Rackspace Elastic Engineering for Data
- 24x7 Data Pipeline Management
- Proactive Database Management
- Advanced Database Tuning

SOW-BASED PROFESSIONAL SERVICES

MONTHLY SUBSCRIPTION

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Rackspace data estate modernization accelerators for Azure

Data & Analytics Workshop

Duration: 2 days

Uncover the possibilities and learn about various modern data solutions enabled by Azure analytics services.

Azure SQL Migration Business Case Workshop

Duration: 5 days

Analyze your current IT infrastructure and develop a broad roadmap to move your SQL servers and apps to Azure.

Synapse Analytics MVP

Duration: 8 weeks

Engagement to help you envision your modern analytics systems through a minimum viable product implementation.

Azure AI/ML Ideation Workshop

Duration: 1 day

Work with a Rackspace Technology data scientist to uncover the possibilities when leveraging Azure AI & ML.

MLOps Foundations

Duration: 6 weeks

A framework built on Azure that enables rapid development, training, scoring and deployment of models.

Rackspace DataOps Implementation

Duration: 4 weeks

Improve the quality and speed of data analytics on Azure with elastic engineering for data.

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MLOps Foundations

MLOps

Model reproducibility | Model validation | Model deployment | Model retraining

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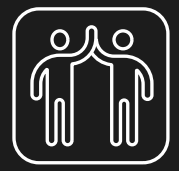
Key challenges to leveraging machine learning

Reproducibility

Configuration issues from multiple environments, versions and datasets

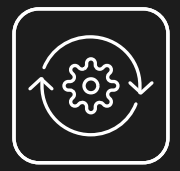
Reusability

Models running across different environments using various datasets



Manageability

Manual hand-offs between various teams and no UI tracking system



Automation

Whole lifecycle could take months with 25+ steps and manual deployment process

"More than 60% of ML Models never make it to production." *–Gartner, 2019*

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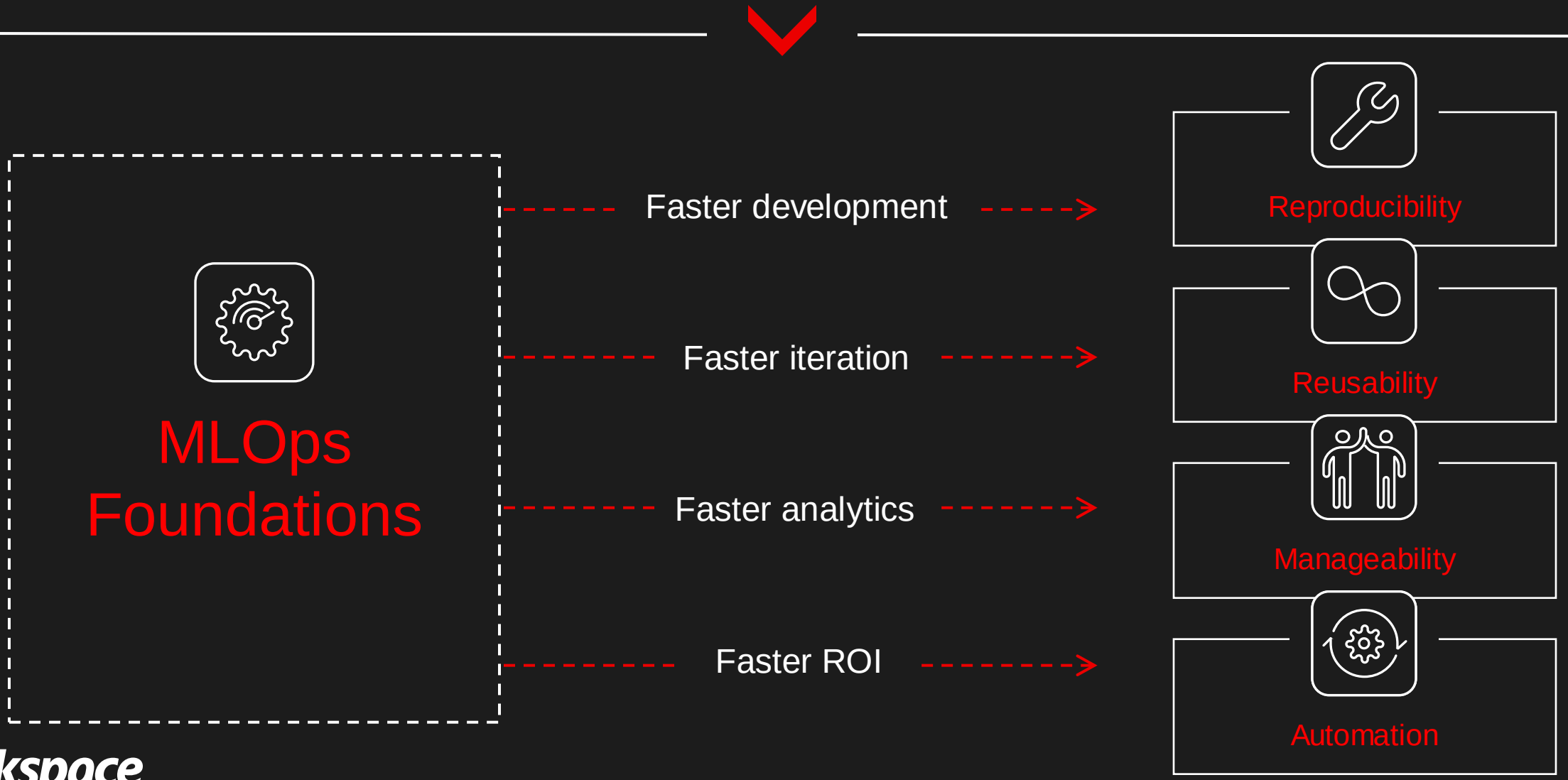
Accelerate the path to production



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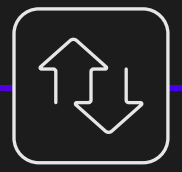
MLOps Foundations

Fast track operationalizing the model development lifecycle with our Model Factory Framework and proven accelerators so your team can build new revenue streams, increase efficiency and deliver incredible experiences.

Reproducibility of models and predictions in multiple environments

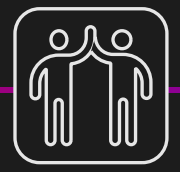
Standardized environment for model development among data science teams

Tools for diagnostics, performance monitoring and addressing model drift



Automated deployment of models across Dev, Q/A & production environments

Model lineage for governance and regulatory compliance



Collaboration platform so data science teams no longer work in silos

Accelerated return on investment (ROI) and faster time to insights

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What is the Model Factory Framework?

The Model Factory is a ML Operations framework built on Azure using open-source tools that enable rapid development, training, scoring and deployment of models.

Process Automation

Fully Automated CI/CD Pipeline Deployment Process (Jenkins/ Github/Code Pipeline)

Azure Tooling

Utilizing the power of Azure infrastructure and orchestration tools

Cloud Agnostic

Register, package, train and deploy models from anywhere (cloud)

Version Control

Project packaging for easy source/version control. Resolves reproducibility/ reusability issues

FEATURES

- Experiment Tracking
- Supports major ML frameworks such as TensorFlow, Scikit-Learn, Spark ML, spaCy, Pytorch, etc.
- Multiple Deployment Backends
- Integration with automation and orchestration tools like Airflow, Jenkins, Code*, etc.
- Tracking UI
- CI/CD
- Project packaging for easy source control and reproducibility
- Solution can be tailored to specific workflows and business needs through building customization around primary architecture pattern

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ML Model Integration and Pipeline Development

Integration of open source platforms

MLFlow Tracking UI

Visualize, search, and compare runs or download run artifacts for analysis in other tools

Experiment Tracking

Log and view parameters, metrics, and artifacts for each model/experiment

Breadth of Expertise

Support for major ML frameworks (TensorFlow, Spark ML, SCikit-Learn, spaCy, PyTorch, etc.)

Lifecycle Management

End-to-end solution for managing the lifecycle of ML models

CAPABILITIES

- Reproducible ML Pipelines
- Reusable Code
- Easy Source Control
- Performance Check
- Team Collaboration

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Azure MLOps Foundations

Significantly reduce the ML lifecycle in weeks with a solution that brings tailored agility to your machine learning models and maturity to operational processes.

	WEEK 1 Discovery & Planning	WEEK 2 Environment Implementation	WEEK 3 & 4 Model Integration & Onboarding	WEEK 5 Knowledge Transfer
Activities	- Review current state and design environment deployment	- Design, build, test, and validate environments and integrations	- Onboard, integrate, test and validate models into the ML Pipelines	- Provide documentation and training to customer's teams
Outcomes	- Environment deployment scope and design	- Dev, QA, and production environments complete	- 1-2 working models and pipelines	- Customer's data science teams enabled to on-board new models

Deliverables

- Complete Dev/QA/Production environments
- CI/CD pipelines and deployed models
- Automation, integration code and scripts
- Architecture diagrams and documentation

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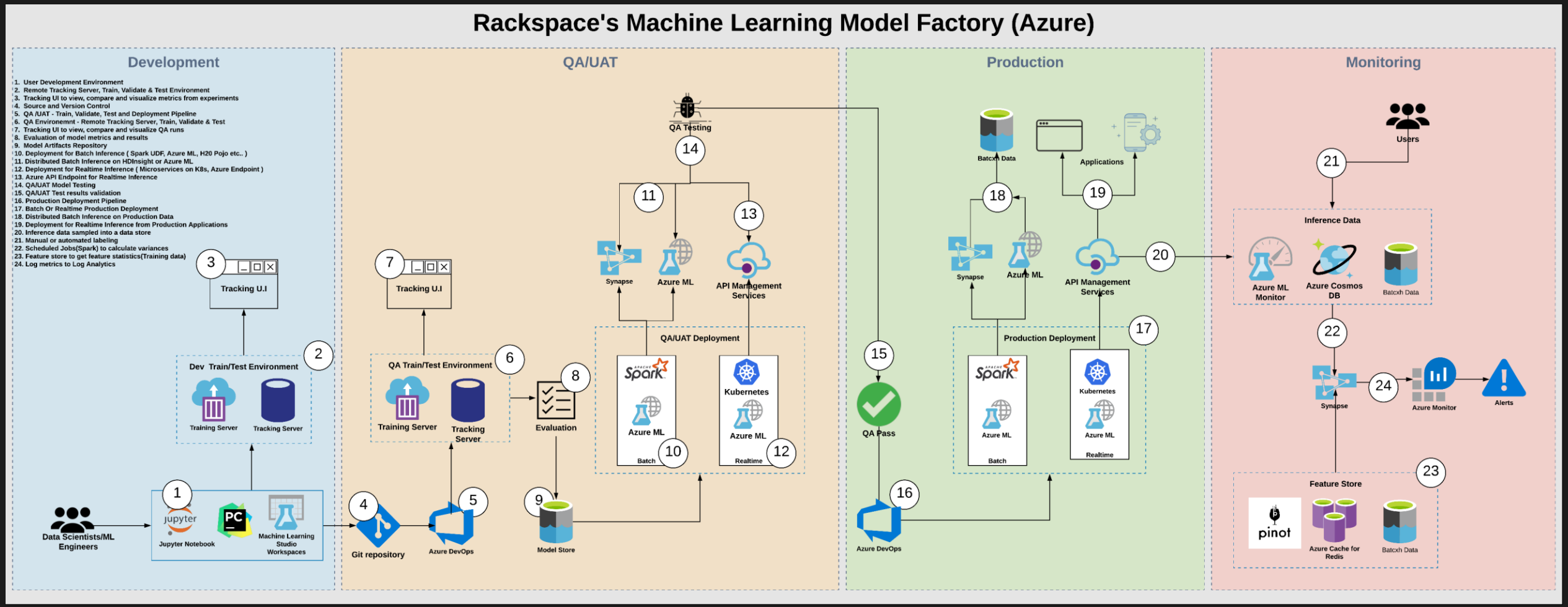
MLOps Foundations on Azure



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Water & Utilities Company can now develop and deploy machine learning models at scale

Challenge

With several ML models implemented in various environments, the customer was seeking a consistent mechanism to quickly track the best experiment runs as well as a managed hosting platform with automated deployment and promotion pipelines.

Solution

Rackspace Model Factory Framework integrating cloud services and 3rd party applications and solutions including Python, MLflow, Tensorflow, Horovod, and Petastorm.

Achievement

By implementing Model Factory Framework, the customer was able to package and deploy all the models they had consistently with a quick turnaround time to pre-processing, training and testing the models. They are now able to track and compare their parameters and accuracy metrics across different experiments irrespective of the ML framework utilized.

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Why Rackspace Technology for your Azure workloads?

We unlock the value and potential of your data

Customers' needs…

Actionable, real-time insights

Resource & cost efficiency

Data governance

Microsoft Azure

…are met by combining leading Cloud products…

Architecture & platform services

Next-gen tools & products

Improved security and compliance

…with unique Rackspace Technology solutions

Deep Cloud technology expertise

End-to-end transformation

Fully managed environment

DEEP INTEGRATION WITH PARTNER

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Why choose Rackspace for data solutions?

- Deep expertise for all major database, analytics, and AI/ML technologies
- Operational data management with 24x7x365 global support
- Simplified approach combining an agile delivery model and automation
- With leading alliances and partnerships for full environment coverage

All wrapped in
Fanatical Experience™

Get Started – Data Discovery Session

Take advantage of a complimentary strategy session to learn how Rackspace can accelerate your path to becoming a truly data-driven business.

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