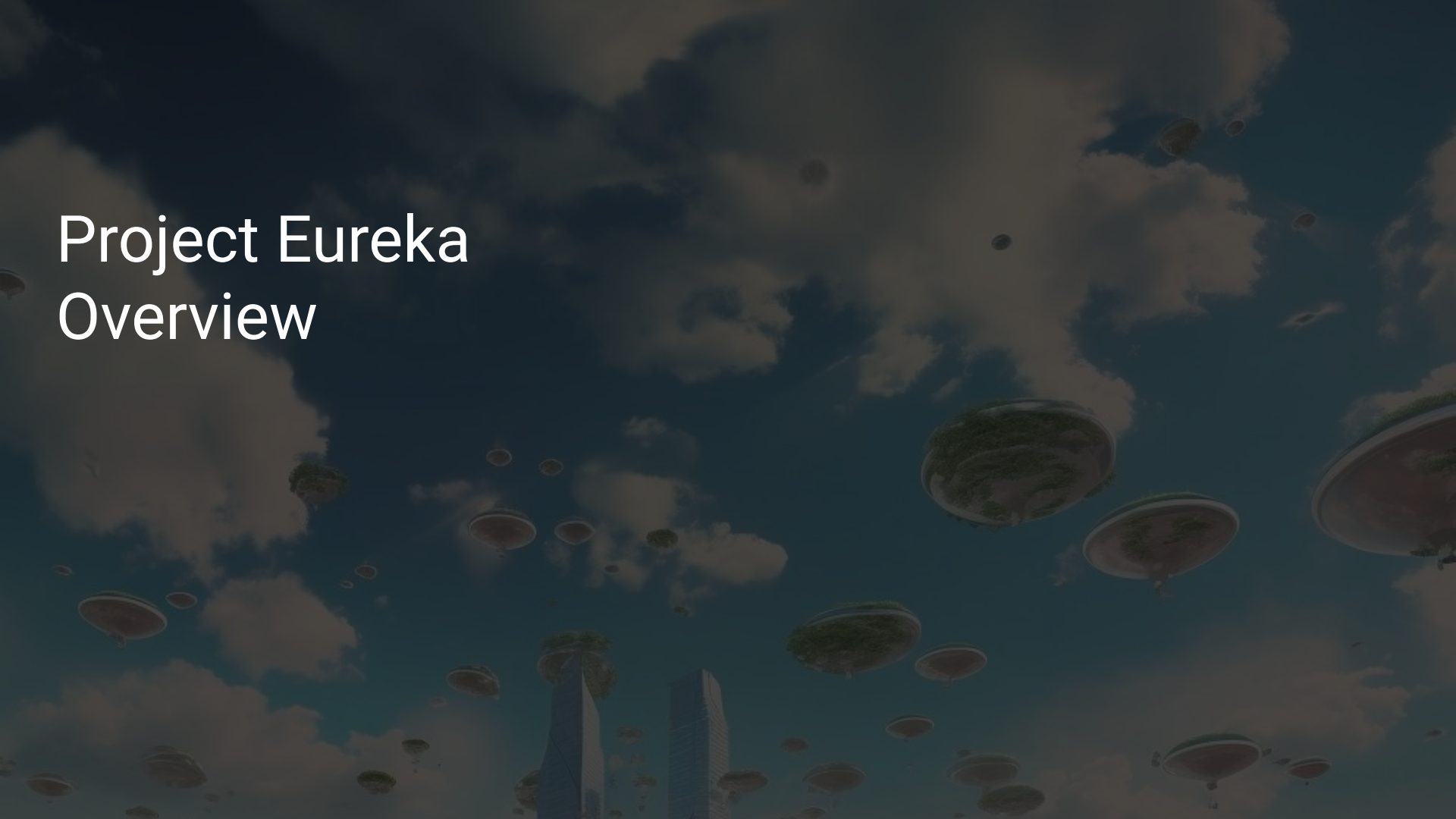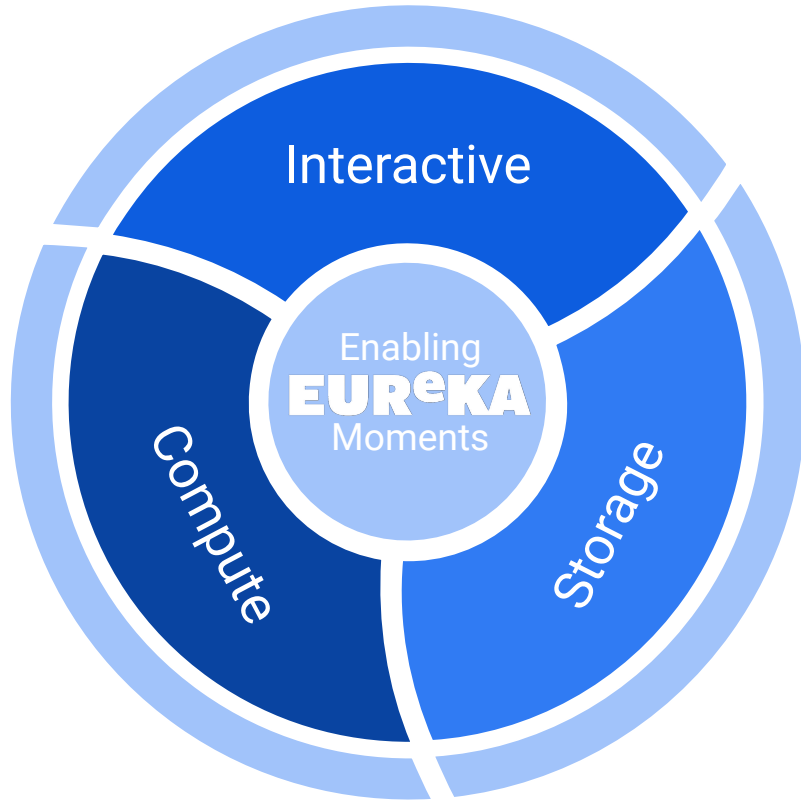# Project Eureka Overview

Project Eureka Vision


- **Interactive Applications**
  - **Applications & Launchers**
  - **API Applets & Saas Apps**
  - **Project Focused**
- **Computational Apps**
  - **Compute Anywhere** (HPC, AI, & Beyond)
  - **Enable Cloud Specialties**
  - **Simplify Compute and Storage Interactions**
- **Storage Integration**
  - **Integrate Diverse Storage Resources**
  - **Collaborate First**
  - **Project Level Data Lifecycle**

The Omni-Scheduler Approach

Expand meta-scheduler concept (OmniSched) to handle:

- Dynamic Scratch
  - Driven by job Directives
- Data Staging
  - Driven by Job Directives (Input Data & Results)
- Beyond HPC
  - Data Science & Engineering Apps
  - HPC adjacent (publishing, websites, etc..)
  - Generative AI
  - Enable Apache Spark
  - K8s
- Scheduling Data Movements
  - iRODS integration
- Cross Cloud - leveraging Constellation / TerraForm
  - Enable On-Prem (TF -> kvm)
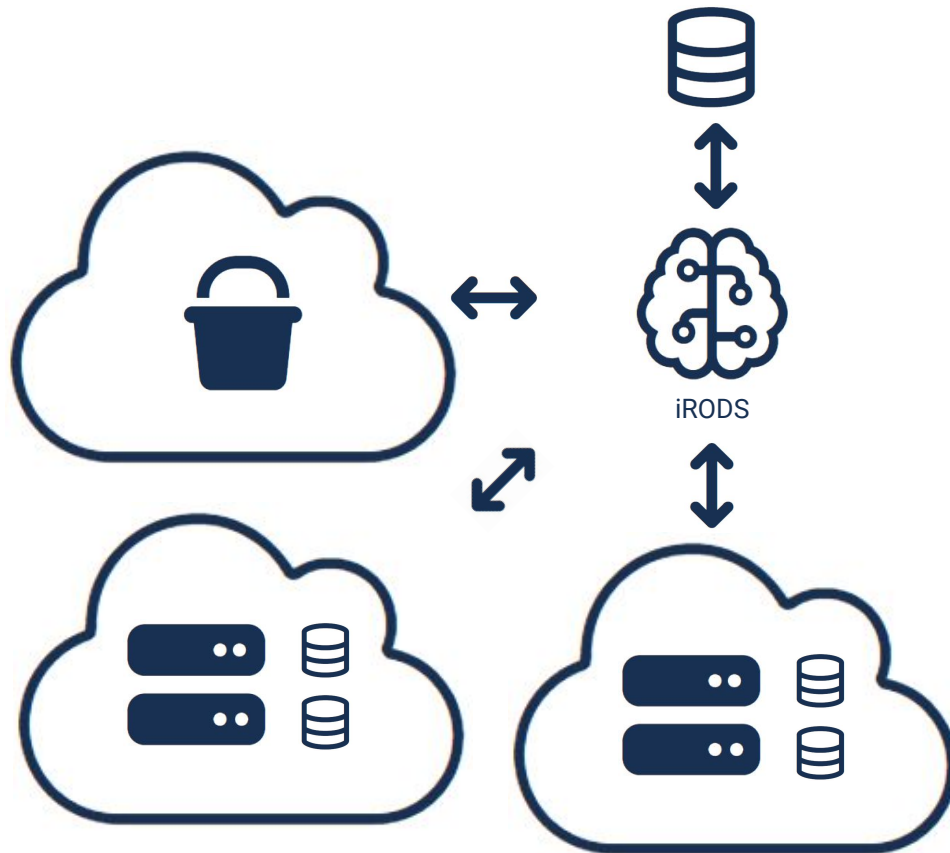- Job routing between locations

Omni-Sched
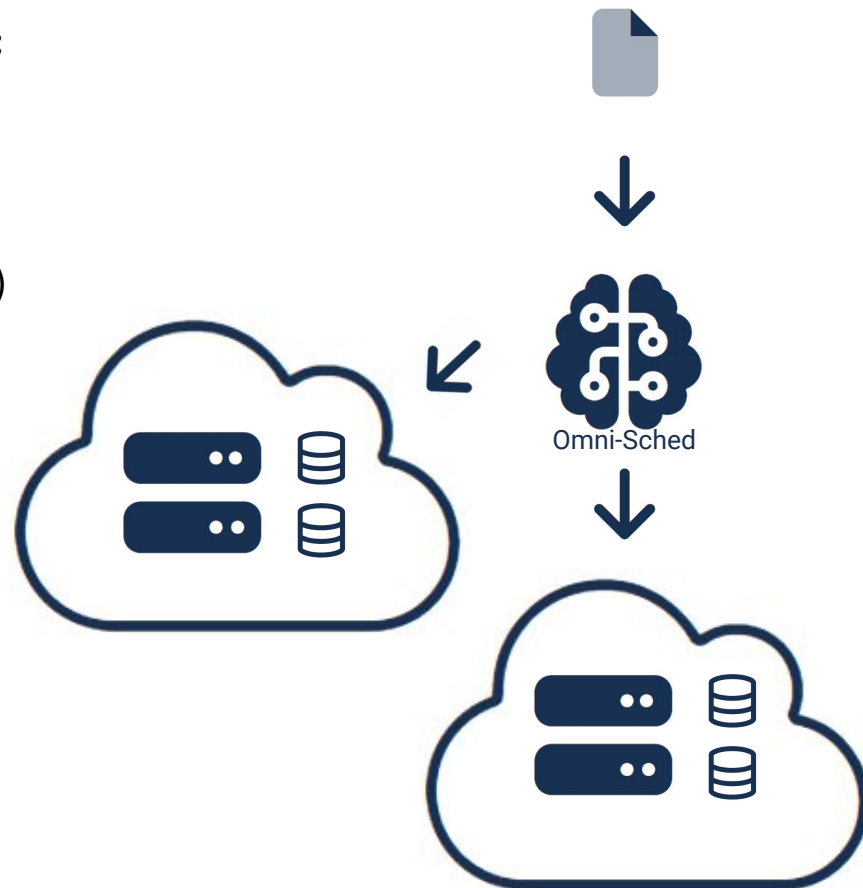
In addition to job based directives

Data Management Capabilities

- Replicate
- Archive
- Ingest
- Tier
- Publish
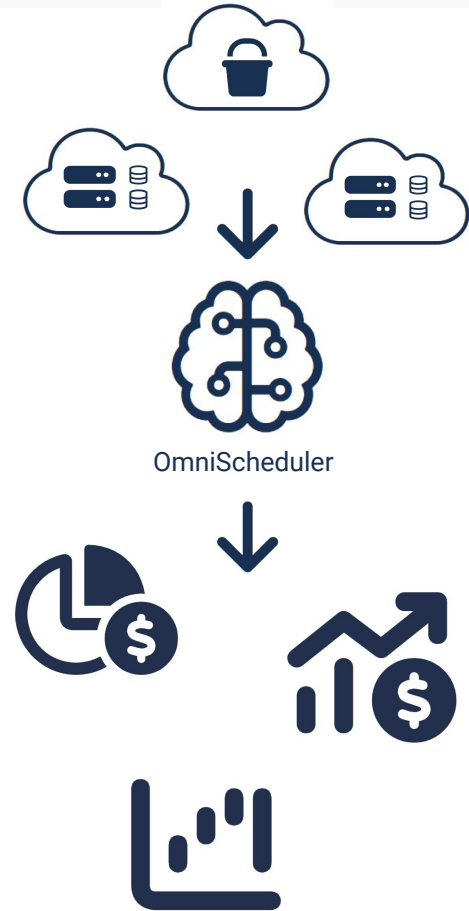
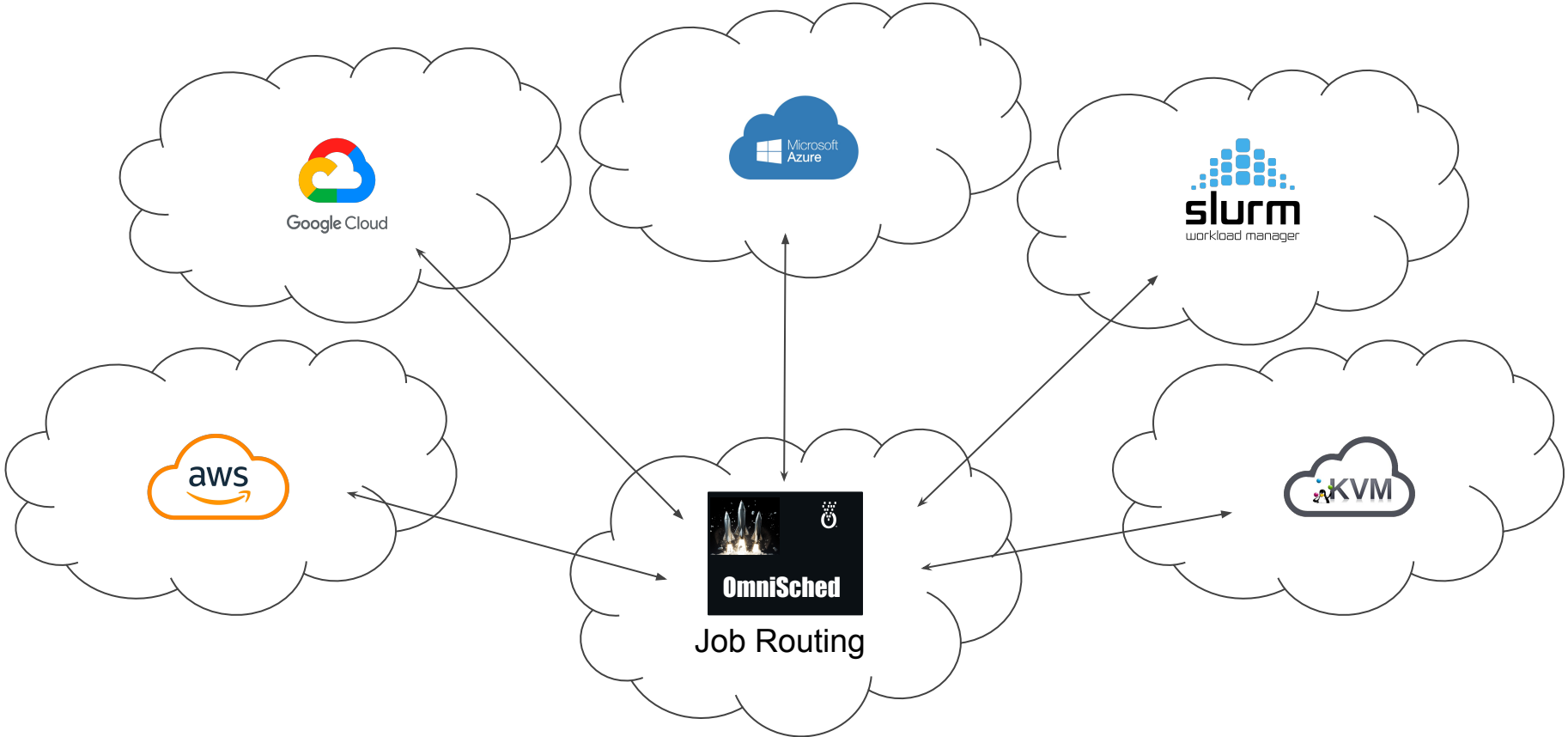All configured in Eureka/OOD
 with iRODS

iRODS

Budget Management

- Person

- Project

- Department

- Limits with Actions

- Tag Integration with Cloud
  Providers Billing

OmniScheduler

Google Cloud

Microsoft Azure

slurm
workload manager

aws

OmniSched
Job Routing

KVM

Technology

- **Project UI with Open OnDemand**
  - HPC Industry Standard
  - Project-UI - Simplify & Empower
- **iRODS**
  - Metadata Driven Data Management & Movement
  - Designed for Diverse Storage
- **Constellation Driven Terraform**
  - Vendor Supported Interfaces
  - Multi-Cloud Enabler
- **Omni-Scheduler**
  - Coordinates UI, Storage, & Compute
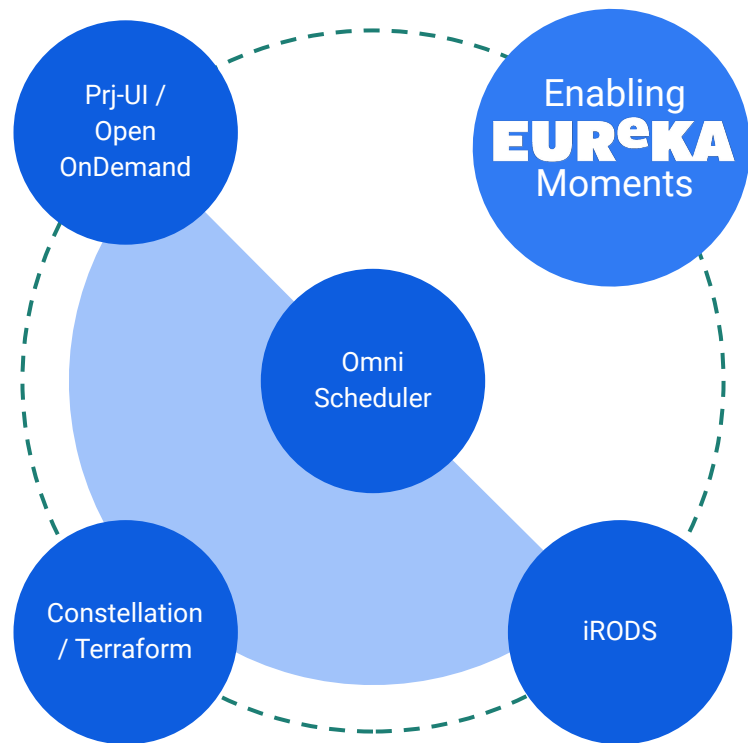
Overarching Architecture
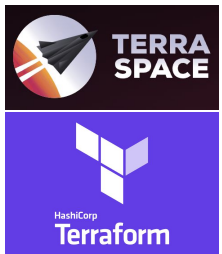
Eureka User Experience