Cloud Resources, Technologies, and Use Cases

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Cloud Providers

* NSF-Funded

  * CyVerse `http://www.cyverse.org/`

  * Jetstream `https://jetstream-cloud.org/`

* Commercial Cloud

  * Amazon Web Services (AWS) `https://aws.amazon.com/`

  * Google Cloud Platform (GCP) `https://cloud.google.com/`

  * Microsoft Azure Cloud `https://azure.microsoft.com/`

Cloud Services

- Compute
  - "App" Engine
  - Container Engine
  - Virtual Machines
  - Bare Metal Servers

- Data Storage
  - Database
  - Object Storage
  - Persistent Disk
  - Files Service (Azure Files)
- Local Storage
  - Local SSD

Cloud Technologies

- ✤ Docker

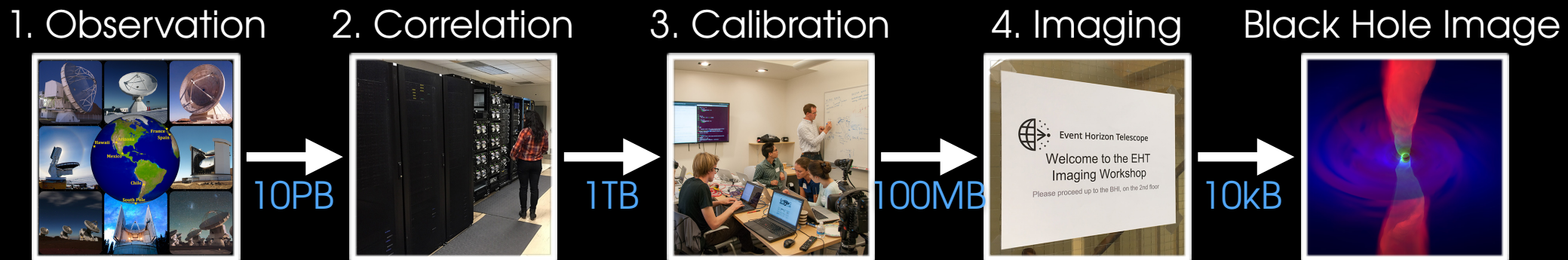 - ✤ Cloud Portability

  - ✤ "Version Control" Software Platform

- ✤ Kubernetes

  - ✤ Container Orchestration

  - ✤ Parallel Processing

  - ✤ Failure Recovery

Use Case: EHT

1. Observation   2. Correlation   3. Calibration   4. Imaging   Black Hole Image

10PB   1TB   100MB   10kB

❖ The Event Horizon Telescope (EHT) is using GCP for Calibration and Error Analysis

❖ Goal: keep and process everything above TB storage scale in the Cloud

Docker Tutorial

https://github.com/chanchikwan/howto-docker-astroML