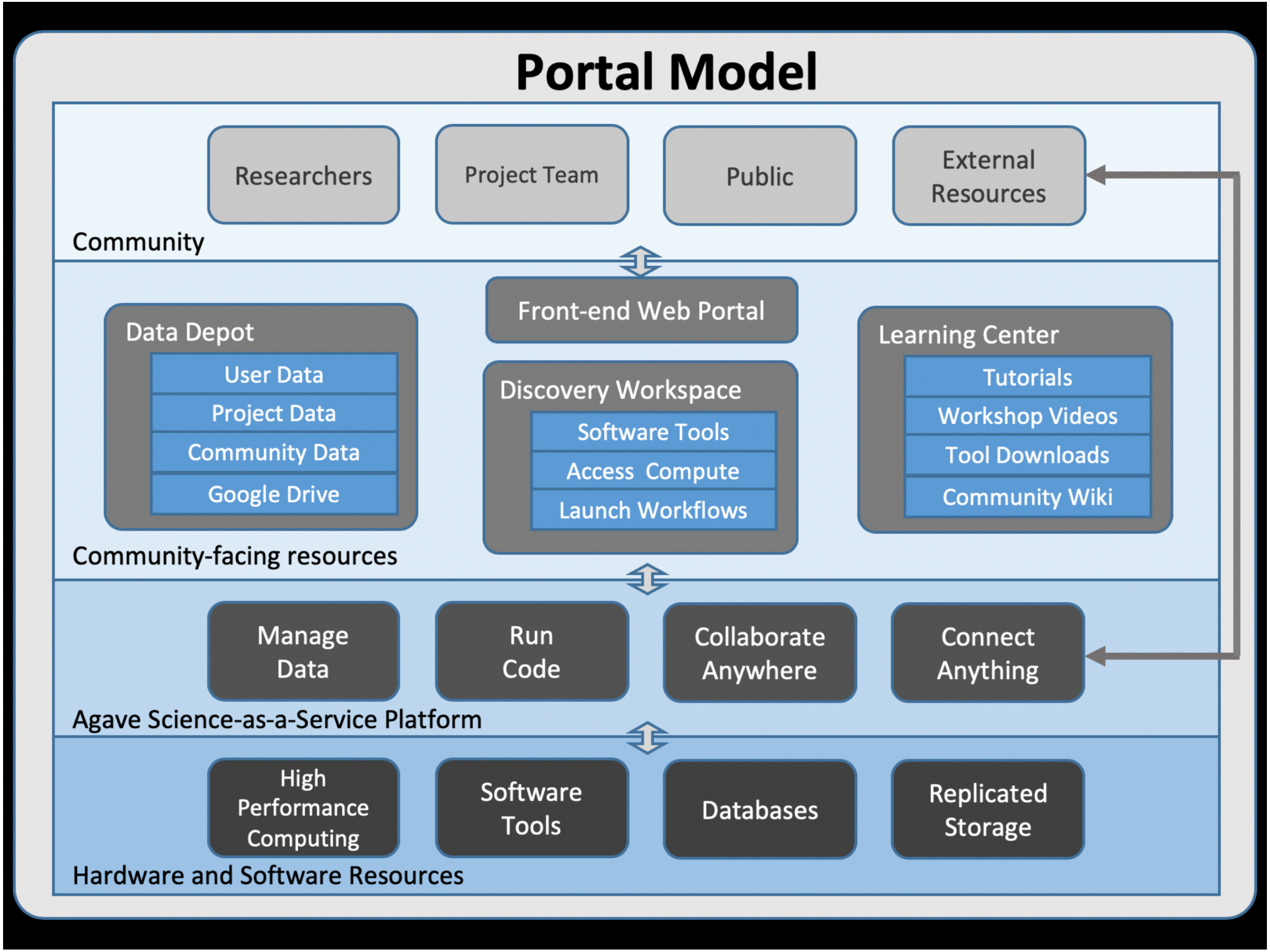

Portal Model
Researchers
Project Team
Public
External Resources
Community
Front-end Web Portal
Data Depot
User Data
Project Data
Community Data
Google Drive
Discovery Workspace
Software Tools
Access Compute
Launch Workflows
Learning Center
Tutorials
Workshop Videos
Tool Downloads
Community Wiki
Community-facing resources
Manage Data
Run Code
Collaborate Anywhere
Connect Anything
Agave Science-as-a-Service Platform
High Performance Computing
Software Tools
Databases
Replicated Storage
Hardware and Software Resources

API Access Model

Private
Accessible to creator

Creator-supported
Pre-publication methods, code, results, data
Largely un-validated

Shared
Creator grants access

Creator-supported
Unpublished, but shared among friends
Sharing drives validation

Public
Accessible to anyone

Program-supported
Assets are published with static reference IDs
Demonstrably validated

A Private-to-Public Continuum for Research Data, Results, and Code

Agave Science-as-a-Service API

- **Run scientific codes** — your own or community provided codes
- **...on HPC, HTC, or cloud resources** — your own, shared, or commercial systems
- **...and manage your data** — reliable, multi-protocol, async data movement
- **...from the web** — webhooks, rest, json, cors, oauth2
- **...and remember how you did it** — deep provenance, history, and reproducibility built in

* Work supported by grant #1450459 from the US National Science Foundation.

Abaco Functions

Docker + Actor Model = Functional Computing Platform

- “Serverless” - users only interact with API
- Focus on research computing, not enterprise web services

Three Primary Capabilities

- “Reactors” for event-driven programming
- “Asynchronous Executors” for parallel function executions
- “Data Adapters” for building data services from disparate sources of data.

* Work supported by grant #1740288 from the US National Science Foundation.

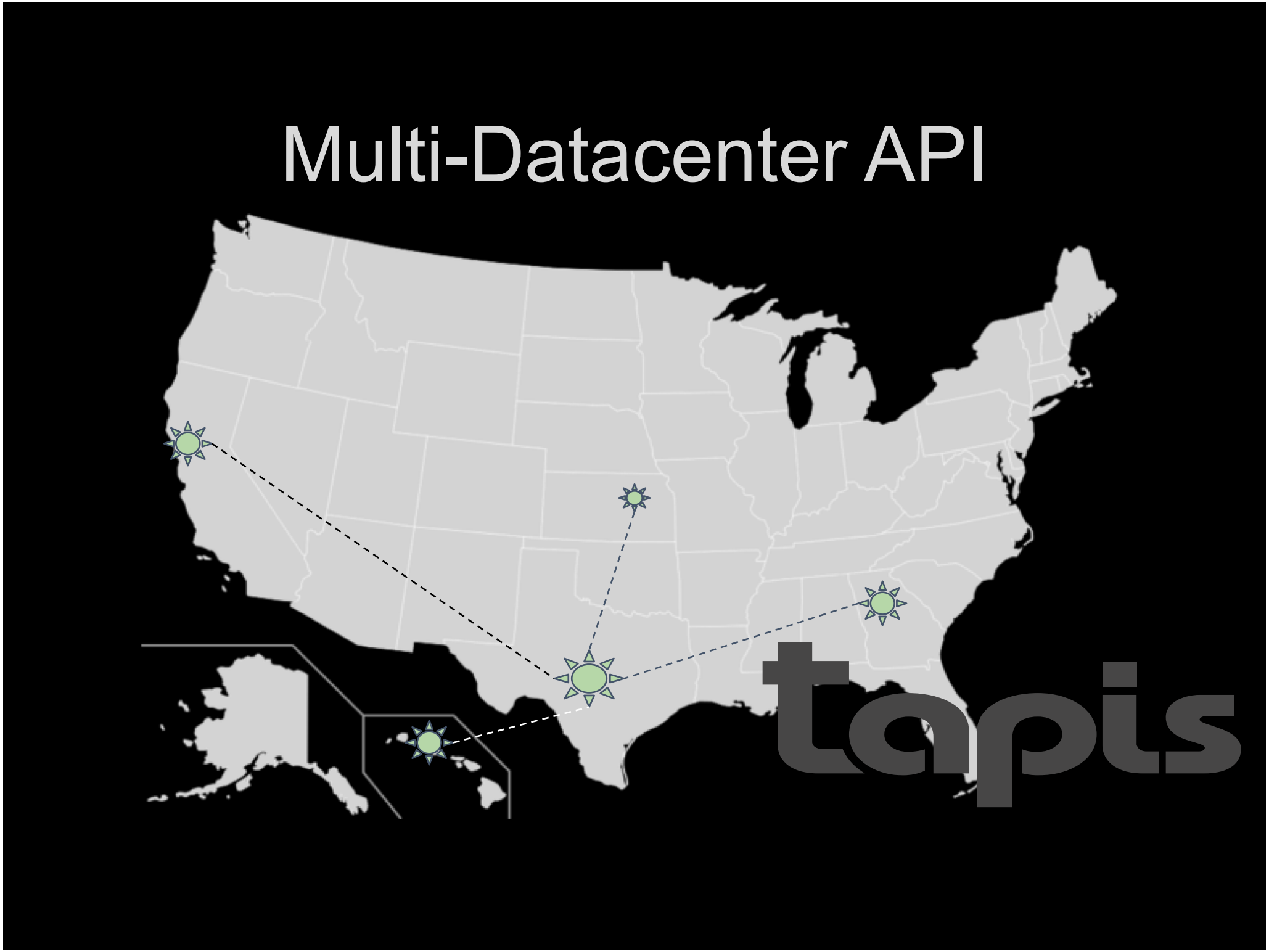
Project Tapis

Next generation API Platform for distributed research computing

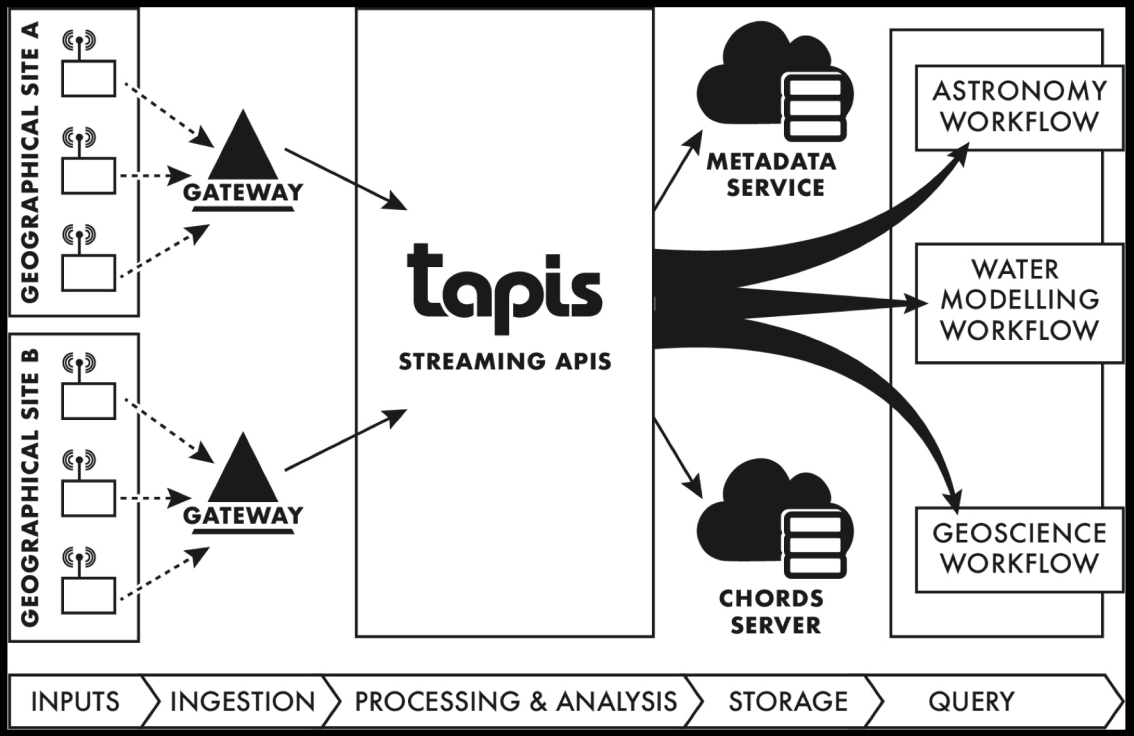
- Multi-datacenter: Decentralized security kernel
- APIs for streaming data
- Batch and event-driven workloads
- Containers as first class citizens and smart scheduling of workloads

tapis

Multi-Datacenter API



Streaming Data Service

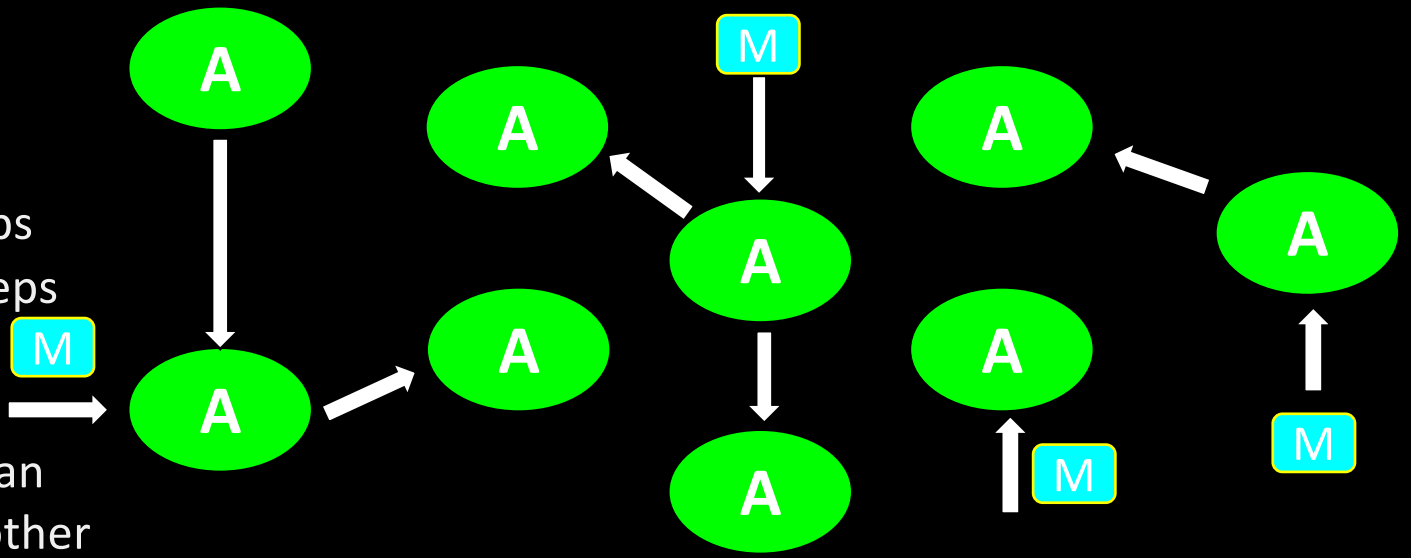


- Stream data from geo-distributed sensors
- Search/slice data using geospatial and temporal indexes
- Process alerts with
  - Web hooks
  - Abaco functions
- Process data streams with
  - Batch jobs via Agave apps
  - Relay streams to 3rd party engines

tapis

Complex Workflows

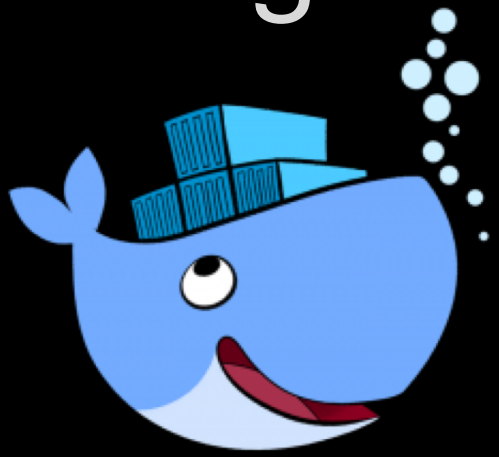
- Events can trigger workflow processing in one data center
- Results from initial steps informs subsequent steps in the workflow
- Workflow processing can leverage resources in other datacenters
- Workflows can mix realtime, batch, cloud, HTC and HPC resources



tapis

Containers and Smart Scheduling

- Support for Docker and Singularity container images and runtimes
- Registry of system capabilities to formalize hardware and system libs
- Schedule workloads to run near data and on resources with availability
- Minimize time to solution, maximize computational reproducibility



tapis

Used Across Various Domains