Bringing Governance to an Existing Cloud at NASA’s Jet Propulsion Laboratory

Jonathan Chiang, Matt Derenski – NASA/JPL

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Introductions

• Jonathan Chiang – IT Chief Engineer
• Matthew Derenski – Cyber Security Engineer
Agenda

• Provide a brief background of JPL
• Understand JPL use cases for AWS
• Describe JPL’s early engagement with AWS
• Review JPL’s implementation of its governance plan
• Utilizing governance to achieve organizational efficiency
• Measure the value
What is JPL?

- We are a Federally Funded Research and Development Center (FFRDC) managed by Caltech
- We have 21 spacecraft and 9 instruments conducting active missions
- We manage NASA’s Deep Space Network (DSN)
- We “dare mighty things”
How JPL uses AWS
HPC/Data Processing

Europa Clipper Model Payload

CARVE
Carbon in Arctic Reservoirs Vulnerability Experiment
How JPL uses AWS

Public Outreach

Mars Exploration Program
Mars.jpl.nasa.gov

Eyes on the Solar System
Eyes.jpl.nasa.gov

Night Sky Network
Nightsky.jpl.nasa.gov

Night Sky Network
Nightsky.jpl.nasa.gov
How JPL uses AWS
Storage, Backup, and Disaster Recovery

Mars Exploration Rovers
Station Fires
How JPL uses AWS
Collaboration

Rapid Development

Enterprise Applications
Early AWS Engagement

- Issued 60+ root level AWS accounts to various project teams
- Added all accounts to consolidated billing
- Associated a single project/task number for chargeback and bill back
The Problem
Key Principles of JPL’s Governance Model

✧ Understand your users and their use cases
✧ Apply policy and accountability
✧ Provide auditing and traceability
Organizational Efficiency (DevOps)

• Automated Configuration Management
• Monitoring, Notification, Escalation
• Networking
• Verification and Validation
Measure the Value

• Calculate the cost of implementing governance along with the cost of cloud resources
• Consider the benefits of organizational efficiencies gained by cloud and governance
We are sincerely eager to hear your feedback on this presentation and on re:Invent.

Please fill out an evaluation form when you have a chance.