

# GENERAL INTRO TO NET+ GOOGLE CLOUD PLATFORM

John Bailey, Washington University in St. Louis

Joanna Bersin, Google

Doug Burton, Burwood Group

Bob Flynn, Indiana University

Sara Jeanes, Internet2

Oren Sreebny, Internet2

INTERNET<sup>2</sup>



MAY 7, 2020

online

BY COMMUNITY, FOR COMMUNITY

# Agenda

- Welcome
- How GCP's structure differs from other public clouds
- Overview of the NET+ GCP program and its benefits
- Offers, onboarding, choosing a reseller
- How you can participate in the NET+ GCP community of practice
- Q&A

## The GCP Virtual Event Series

- General Introduction to NET+ GCP (May 7) – 90 minutes
- Managing GCP On Campus (May 14) – 60 minutes
- Security in GCP with Andy Chang (May 21) – 60 minutes
- Using GCP in Research (May 28) – 60 minutes

# Logistics

- Participants microphones and video are turned off
- Please submit your questions via the Q&A functionality
  - Questions will be moderated, but we may not have time for all
  - Limited offline follow-up afterwards
- Today's virtual event is being recorded and will be made available on the NET+ GCP Wiki site: <https://spaces.internet2.edu/x/MRCJCQ>



Thank you to today's virtual event sponsor



**burwood** group, inc.

## **John Bailey**

Manager of Cloud Services

Washington University in St. Louis

## **Joanna Bersin**

Partner Sales Manager

Google

## **Doug Burton**

Executive Director

Burwood Group

## **Bob Flynn**

Manager of Cloud Technology Support

Indiana University

## **Sara Jeanes**

NET+ Program Manager

Internet2

## **Oren Sreebny**

Consultant, Internet2 Cloud Programs

Internet2



# **SPEAKERS**

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# Platform Technical Terminology Comparison

	GCP	AWS	Azure
<b>Compute</b>	Compute Instances	EC2 Instances	Azure Virtual Machines
<b>Storage</b>	Cloud Storage, Persistent Disks	S3, Glacier	Storage Accounts, Blob Storage, Disk Storage
<b>Network</b>	VPC	VPC	VNET
<b>Database</b>	Cloud SQL	Aurora, DynamoDB, RDS	Azure SQL, Cosmos DB, SQL Server on Virtual Machines
<b>Container Orchestration</b>	Google Kubernetes Engine (GKE)	Elastic Kubernetes Service (EKS)	Azure Kubernetes Service (AKS.)
<b>App Hosting</b>	Cloud Functions	Cloud Functions	Functions, Logic Apps
<b>Common VDC Boundary</b>	GCP Project	AWS Account	Azure Subscription



# Storage Differentiators

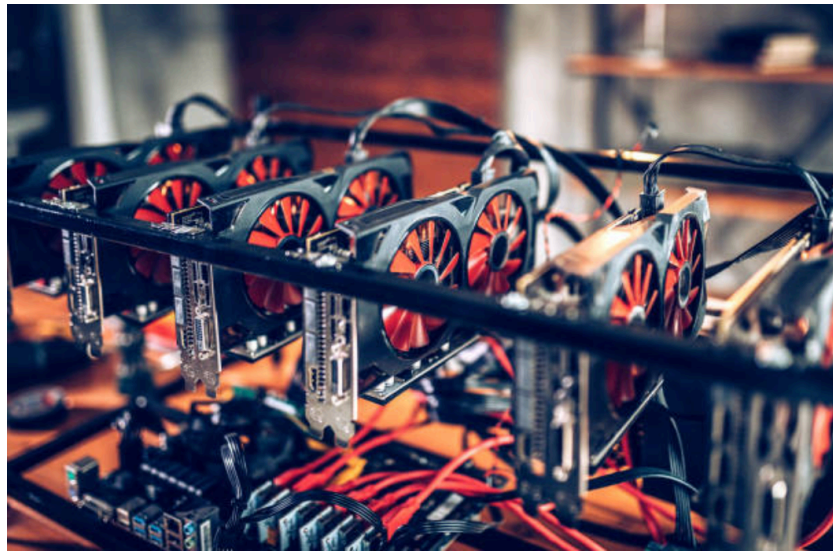
- Block storage for VMs:
  - More flexible in size
  - Simpler to achieve high iOPS on small or large disks
  - Up to 64TB/disk
- Object storage:
  - Classes are unique, but more closely follow AWS than Azure

Storage Class	Name for APIs and gsutil	Minimum storage duration
Standard Storage	STANDARD	None
Nearline Storage	NEARLINE	30 days
Coldline Storage	COLDLINE	90 days
Archive Storage	ARCHIVE	365 days



# Compute Differentiators

- Custom VM sizes let you tailor your compute spend:
  - Example: No need to have extra CPU cores if you need a lot of RAM
- Multiple GPU instances can be linked to a small VM:
  - Example: Allows focused spending on expensive GPUs without an expensive VM
  - Ideal for some research workloads



*Getty Images*



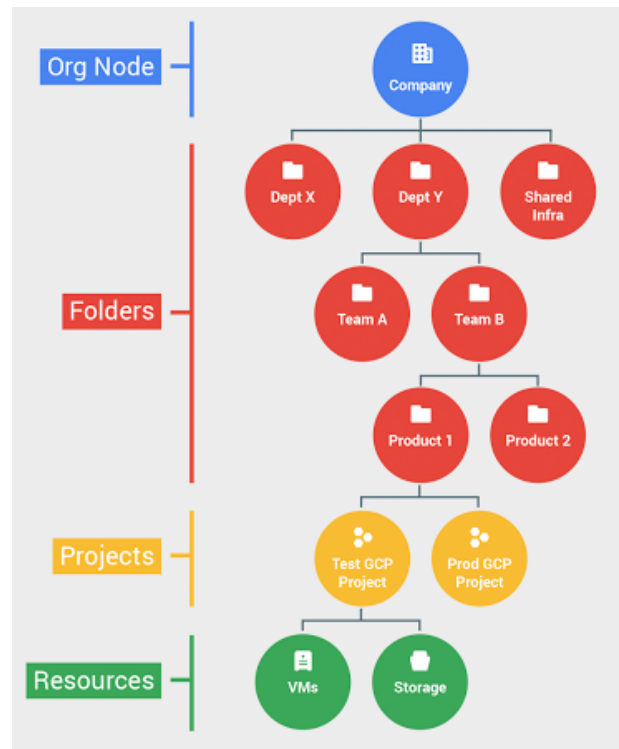
# Platform Management Terminology Comparison

	GCP	AWS	Azure
<b>Enterprise Environment</b>	Organization	Organization	Enrollment
<b>Organizational Container</b>	Folders	Organizational Units	Management Groups
<b>Customer Environment</b>	Projects	Accounts	Subscriptions
<b>Services</b>	Resources	Resources	Resources
<b>Resource Factory</b>	Deployment Manager	CloudFormation Templates	Azure Resource Manager + Blueprints
<b>Policy Container</b>	Folders	Organizational Units	Management Groups
<b>Policy Mechanism</b>	Organizational Policies	Service Control Policies	Policies
<b>Project Segmentation</b>	(Tagging)	Tagging	Resource Groups
<b>Default Billing Endpoint</b>	Billing ID	Account	Enrollment



# GCP Anatomy

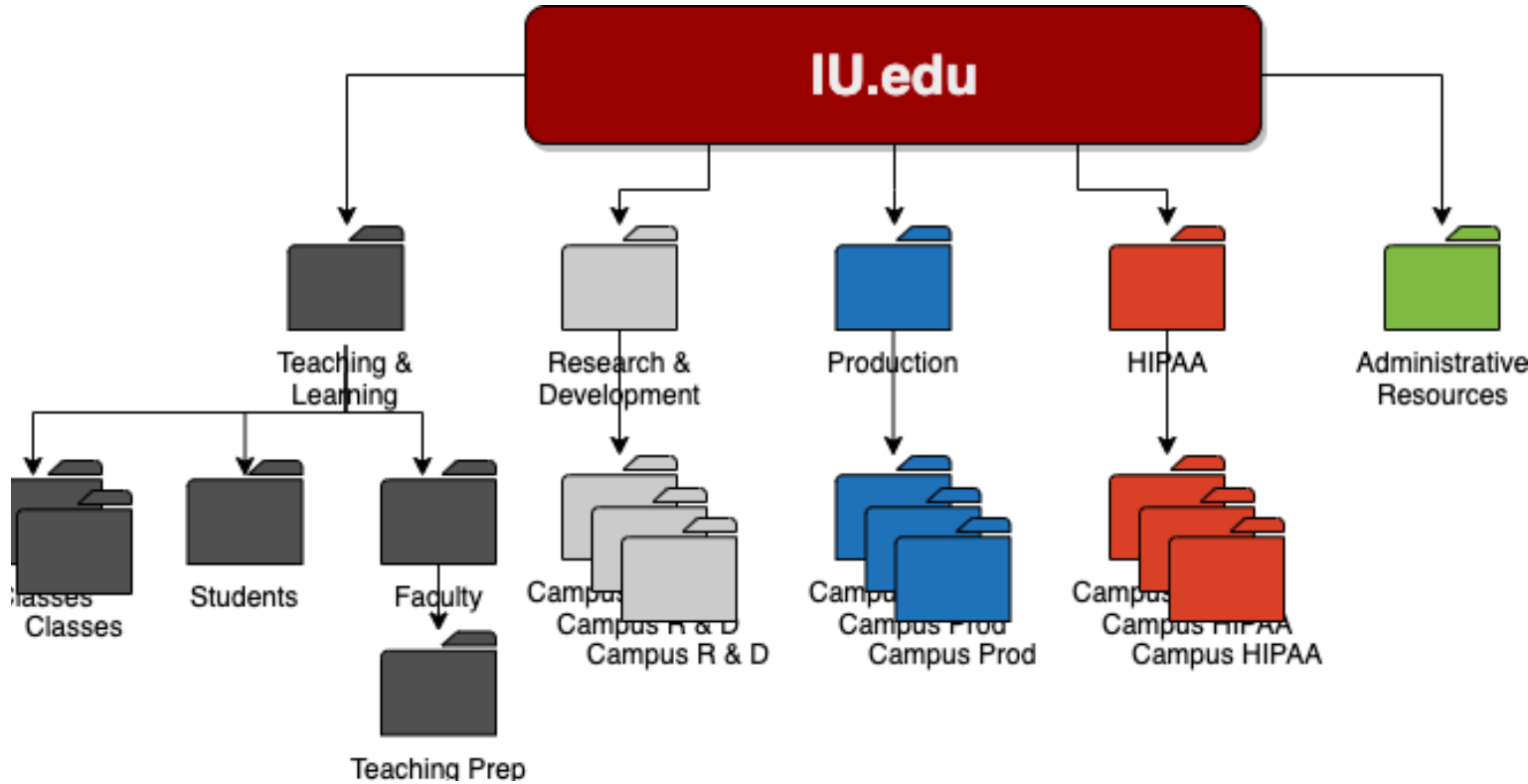
- All **resources** in GCP – your storage, database, VMs, etc. – are contained in a **project**.
- Projects can be organized in **folders**.
- Folders are contained under your **organizational node**.
- Your G Suite domain creates the GCP organizational node.







# Sample Campus Architecture





# G-Suite vs. Google Cloud Identity

- Non-G-Suite schools must choose a path:
- G-Suite:
  - Activate only GCP and Identity
  - Allows rapid provisioning of other G-Suite services down the road
- Google Cloud Identity:
  - Provides only IAM functions
  - Draws a harder line for G-Suite



*Getty Images*



# Other Notable Characteristics of GCP - I

## IAM

- G Suite is most common. G Suite admin is über your überadmin.
- Google Groups can/should be leveraged in GCP for permission assignment.
- Permissions are granted through roles (primitive, predefined, curated and custom)
- Permissions waterfall through the Org



[Charley Gallay/Getty Images for NAACP](#)



# Other Notable Characteristics of GCP - II

## The Benjamins

- Billing IDs are a user's GCP 'line of credit'
- Unlike in AWS, billing is separate from projects. A single billing ID can be used for multiple projects. A user can have multiple billing IDs.
- Google is generous with both teaching and research credits.



*Getty Images by way of The Motley Fool*



# Other Notable Characteristics of GCP - III

## Supporting Roles

- Development and Production roles give interactive support
- Standard support plans are Org-wide.
- Premier support available but designed more for large businesses



*Probably Getty Images by way of Hollywoodnews.com*

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## Benefits of the NET+ GCP Program

- Five percent discount for Internet2 higher education members regardless of initial spending levels (higher discounts available with commitments)
- Waivers for data egress fees
- Orbitera cloud billing reporting and analytics
- Pre-negotiated, custom contract with Internet2 member institutions
- BAA Acknowledgement
- Additional special offers
- Multiple resellers allow for competitive RFP



## Custom Contract Terms

- FERPA protection - Google acts as a “school official”
- School protected from actions of students (“non-ES users”)
- Google has higher aggregate liability cap
- Individual employees (“ES users”) are protected
- Google will reimburse out of pocket costs for data incidents not caused by customer



# GCP Terms of Service Flow

## Provider

*Provides the technology*

## Distributor

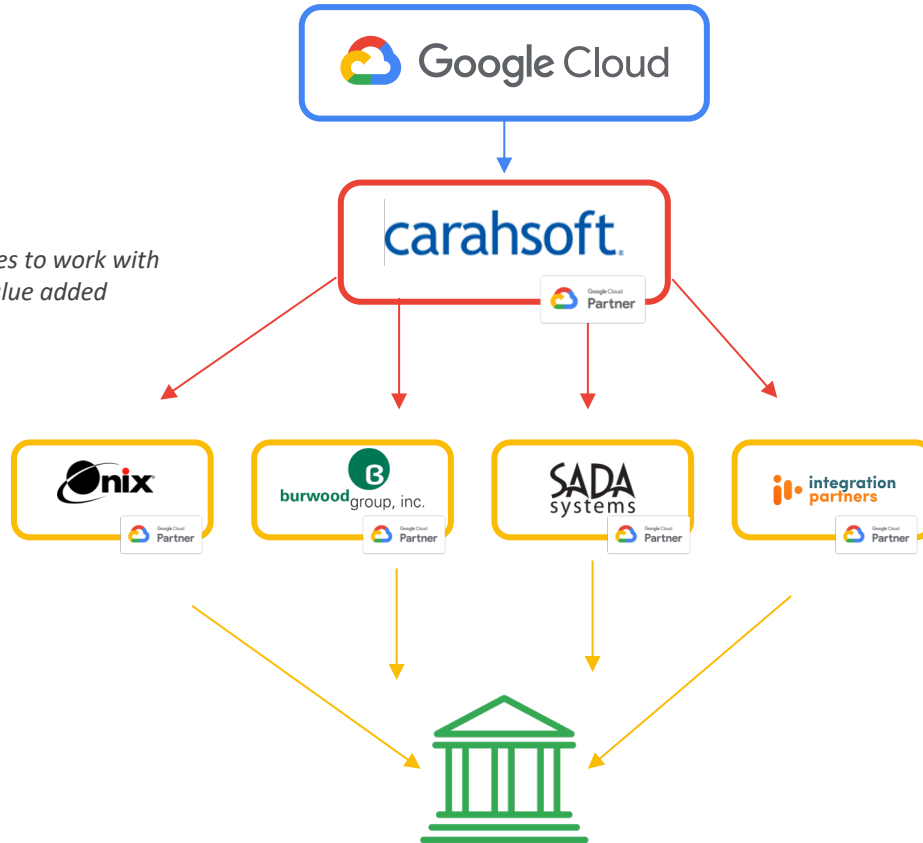
*Enables flexibility for campuses to work with multiple resellers; provides value added services like billing reports*

## Resellers

*Manages billing and usage; provide technical guidance & architectures*

## University

*Consumes the technology*



## Context:

Favorable EDU terms were pre-negotiated between 4 universities (Service Validation Committee) & Google, and then flowed down

The 12 favorable terms flow down through Carahsoft via each reseller.

The terms are signed between the customer and the reseller, through the Reseller Service Order.

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# NET+ Google Cloud Platform

Free GCP Benefits for Internet2 Members

## Better Pricing:

- 5% discount
- Egress Waiver

## Contract Features:

- Pre-negotiated terms
- HIPPA BAA Available
- Accessibility working group commitments

## Onboarding Package:

- On-site training & comprehensive onboarding package
- GCP support credits
- Research consultation

## Learn More:

[See Our Blog](#)



# Internet2 Offers

## Google is invested in enabling our Internet2 community!

- Full package valued at over \$40,000 in investment from Google
- Eligible schools must have signed the Internet2 NET+ GCP contract
- Limited funding - While supplies last

All customers receive both:

[Offer 1](#) - Comprehensive GCP Training

[Offer 2](#) - Role-Based Support & Services for GCP

Customers then choose between:

[Offer 3](#) - Comprehensive GCP Partner Onboarding

[Offer 4](#) - Research Support for GCP

# Internet2 Offers: Get started with GCP

All customers receive offers 1 and 2, plus choose between offers 3 or 4



## 1 - Comprehensive GCP Training

Full day trainings including presentations, demonstrations, & hands-on labs.

- Google Cloud Fundamentals
- Google Cloud Big Data & Machine Learning



## 3 - Comprehensive GCP Partner Onboarding

One week of hands-on guidance from onboarding partner of your choosing to get started on the recommended scope of deliverables.



## 2 - Role-Based Support & Services for GCP

Receive GCP credits back for equivalent value of up to 2 users' 6-month role-based support costs.

Up to \$250/month value

Offer applies to Development or Production level role-based support  
Enterprise support is not eligible



## 4 - Researcher Support for GCP

40 hrs. of research consultation  
Access technical SMEs through a certified Google partner  
Apply for \$5,000+ in available research credits

# Internet2 Offer 3 - Comprehensive GCP Partner Onboarding

## Recommended Scope of Deliverables

Cloud Discovery (Architecture Review)	Directory Synchronization	Organization Set-Up	Access Management (IAM)	Security	Cloud Networking Design	Billing Design & Implementation for I2
Understand current cloud deployment(s)	Identify SSO requirements	Define organization administrators & groups w/ Central IT	Create Folders	Enable Cloud Security Command Center & relevant integrations	Are there Hybrid Cloud Networking requirements? (Avoid Overlaps)	Workshops
	Determine if Cloud Identity is needed	Create or re-use org administrator group for assigning roles	Work w/ Central IT to define folder admins & groups	Configure StackDriver log forwarding for SIEM	Discovery	Implementation (Creating billing accts, quota planning, alerts, etc.)
	Identify users & groups to be synced	Review organizational policy constraints w/ Central IT	Create groups & roles for folder admins	Review CSCC findings	Design & Recommendations	
	Develop on-prem directory sync methodology	Apply organizational policy constraints	Apply roles to folders	Recommend & implement changes as appropriate		
	Implement on-prem directory sync methodology	RBS admin/user onboard for support ticketing (\$500/mo. credits)				
	Sync POSIX Fields into Directory (if needed)					



# IU Experience with NET+GCP Offers







# WashU Experience with NET+GCP Offers







# GCP Reseller for Higher Education

Doug Burton, Burwood Group Executive Director

# Agenda

## Onboarding

- Organization Setup
- Identity Management Integration
- First Projects Enablement



# Burwood Group's Cloud Enablement Framework

Cost and security are the most common reasons cloud transformation efforts get stalled. Our Cloud Enablement Framework ensures that Governance, Automation, Cost Management, and Security are built into your program from day one.

## Cloud Orchestration

### Governance

- Policy Management
- Account Controls
- Naming Standards

### Automation

- DevOps Tool Chains
- Infrastructure Deployment
- Config Management

### Cost Management

- Forecasting
- Cost Optimization
- Charge / Show Back
- VM Right Sizing

### Security

- Governance, Risk, Compliance
- Vulnerability Management
- Identity Management
- Network Control

## Cloud Migration

**DISCOVERY**

**PLANNING**

**MIGRATION SPRINTS**

**OPERATIONALIZE**

## Organization Enablement

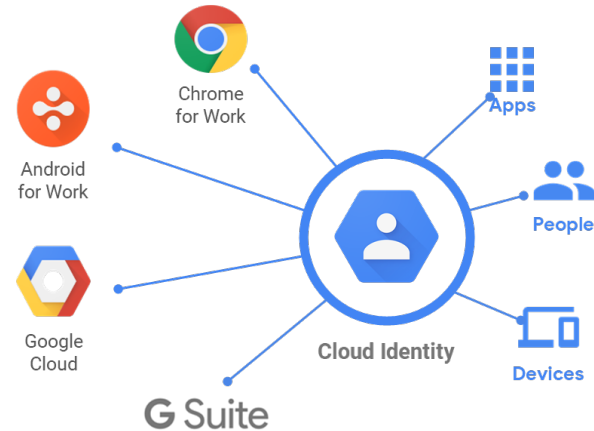
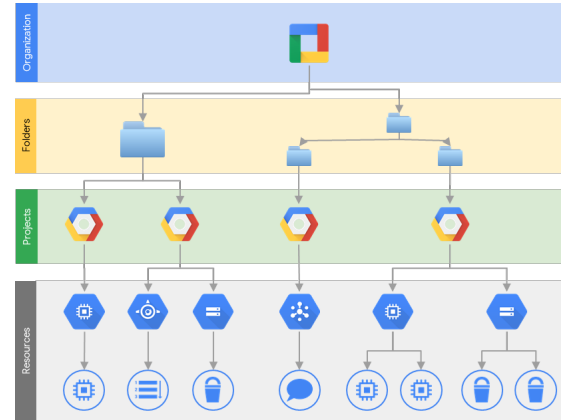
# Onboarding Checklist



- Billing Account Setup
- Organizations, Folders, Project Setup
- Identity Integration
- Role Creation & Mapping to GCP Groups
- Networking and Security
- Logging & Monitoring
- Project Standards
- Project Automation (optional)
- Legacy cleanup approach (if applicable)
- Invoicing & charge-backs / show-backs

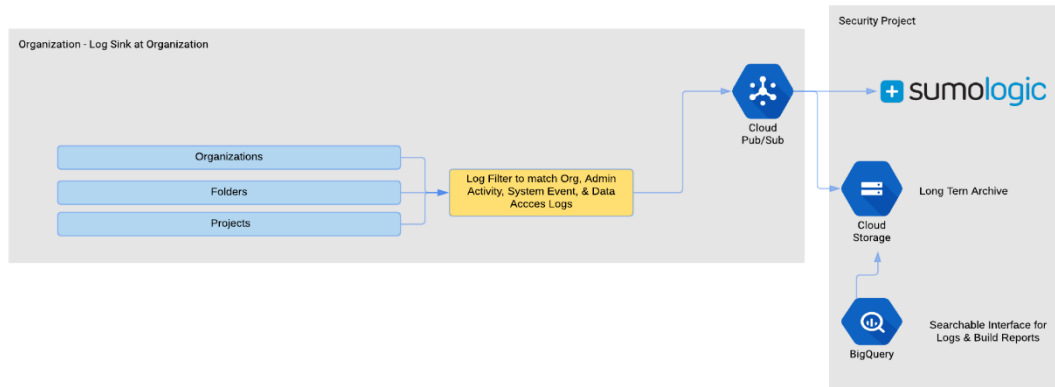
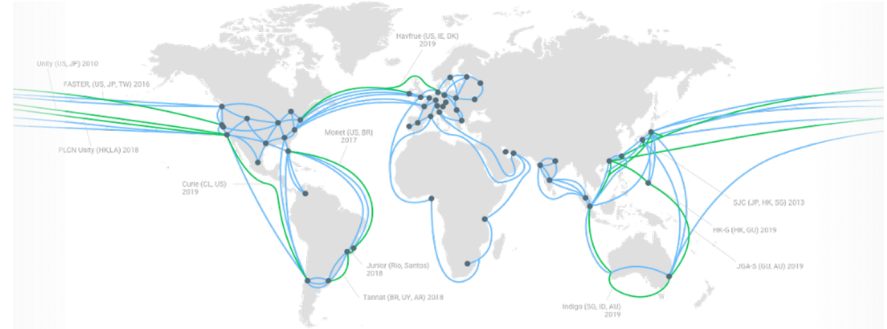
# Onboarding Detail

- ❑ Billing Account Setup
- ❑ Organizations, Folders, Project Setup
- ❑ Identity Integration
- ❑ Role Creation & Mapping to GCP Groups



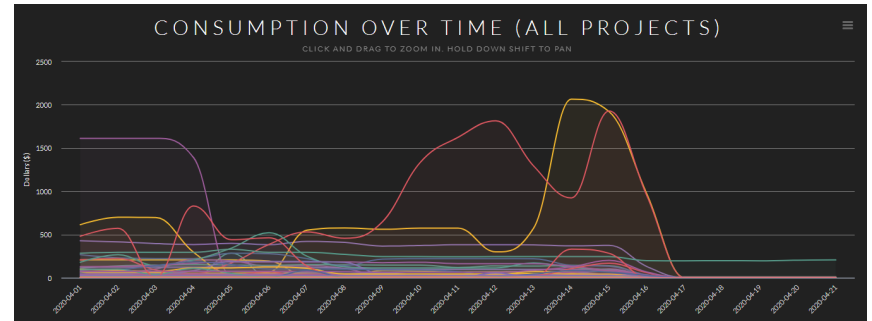
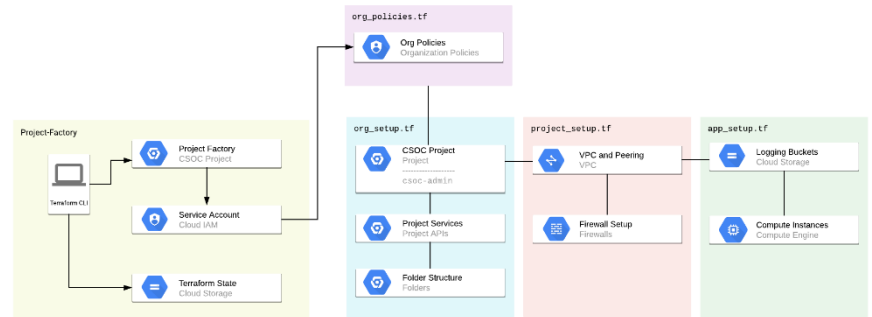
# Onboarding Detail

- ❑ Networking and Security
- ❑ Logging & Monitoring



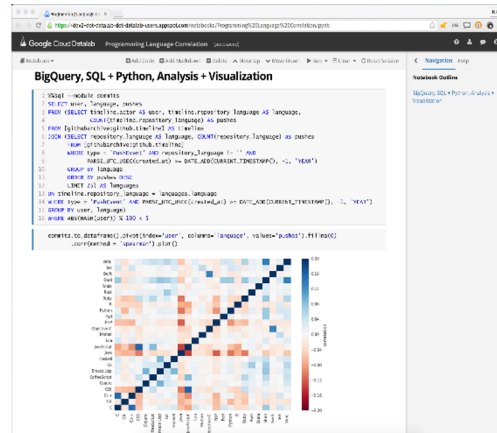
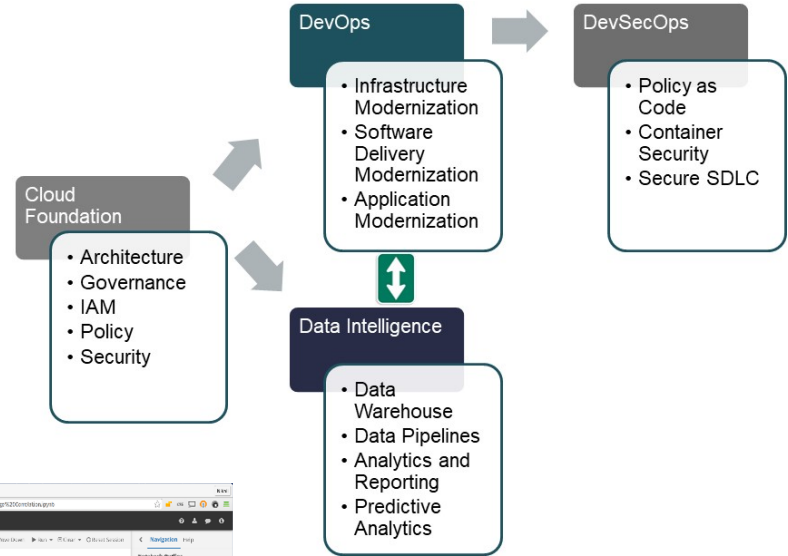
# Onboarding Detail

- ❑ Project Standards
- ❑ Project Automation (optional)
- ❑ Legacy cleanup approach (if applicable)
- ❑ Invoicing & charge-backs / show-backs



# After Onboarding: What's Next?

- ❑ DevOps
- ❑ Automation
- ❑ Researcher Assistance, HPC
- ❑ Student Enablement (Jupyter Hub, etc)
- ❑ Analytics





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# Supportive Communities

- NET+ GO  
  - Listserv
  - Slack
  - Service A
- Extended Family  
  - EDUCAUSE  
Community
  - Google HED  
Board
  - Cornell Cloud
  - Other Commu



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## Please tell us how we did today!

- Take our survey:
  - <https://bit.ly/I2IntroGCP>

One last special thank you to today's virtual event sponsor



**burwood** group, inc.

## Resources

- Internet2 NET+ GCP Wiki space - <https://spaces.internet2.edu/x/MRCJQC>
- NET+ GCP email and Slack - email [netplus@internet2.edu](mailto:netplus@internet2.edu)
- Cloud Community Conversation - <https://tinyurl.com/cccg-resources>
- Burwood Group - <https://www.burwood.com/>
- Google Cloud for Higher Education - <https://edu.google.com/programs/>
- Indiana University GCP Configuration whitepaper - <https://iu.box.com/s/5h6zj9l5dawie8crigc8m1v647kksw20>

## Want to follow up with one of our speakers?

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