



Sprint 4 Demo

Building Cyber Infrastructure for Researchers

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Project Recap



Create Infrastructure for Earth Science Department at BU that allows researchers to submit code on large data sets and retrieve and display the results.

Last sprint:

- Deployed openwhisk on Kubernetes
- Submit code from the UI that could be run by the back-end.

What we learned this sprint



- Creating a Kubernetes cluster
- DynamoDB vs MongoDB
- Request/Response with OpenWhisk & UI
- Improving security

Kubernetes Progress

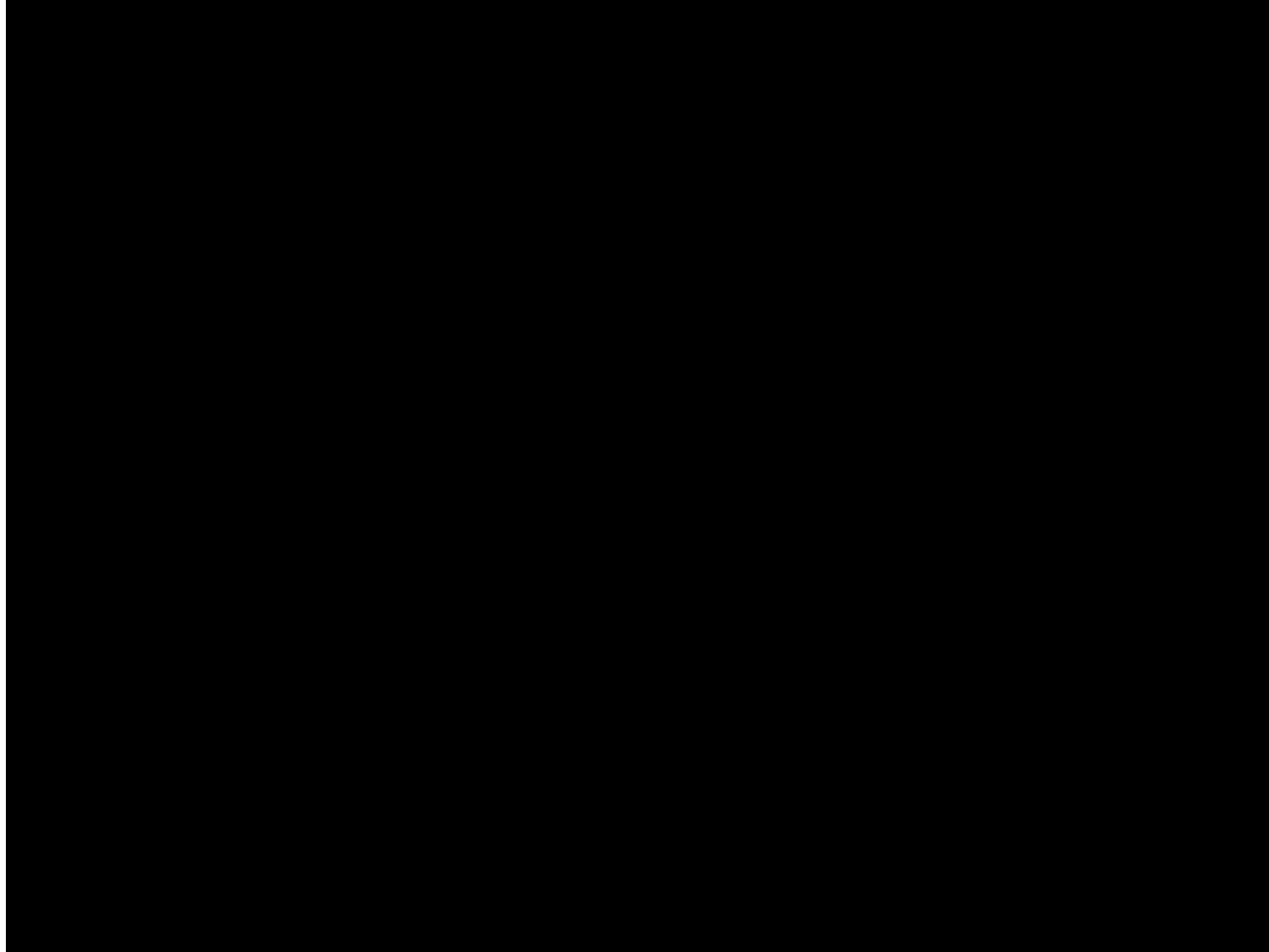
```
ubuntu@cluster-test: ~$ cat kind-cluster.yaml
kind: Cluster
apiVersion: kind.x-k8s.io/v1alpha4
nodes:
- role: control-plane
- role: worker
  extraPortMappings:
    - hostPort: 31001
      containerPort: 31001
- role: worker
ubuntu@cluster-test: ~$ kind get clusters
kind
ubuntu@cluster-test: ~$
```

UI Progress

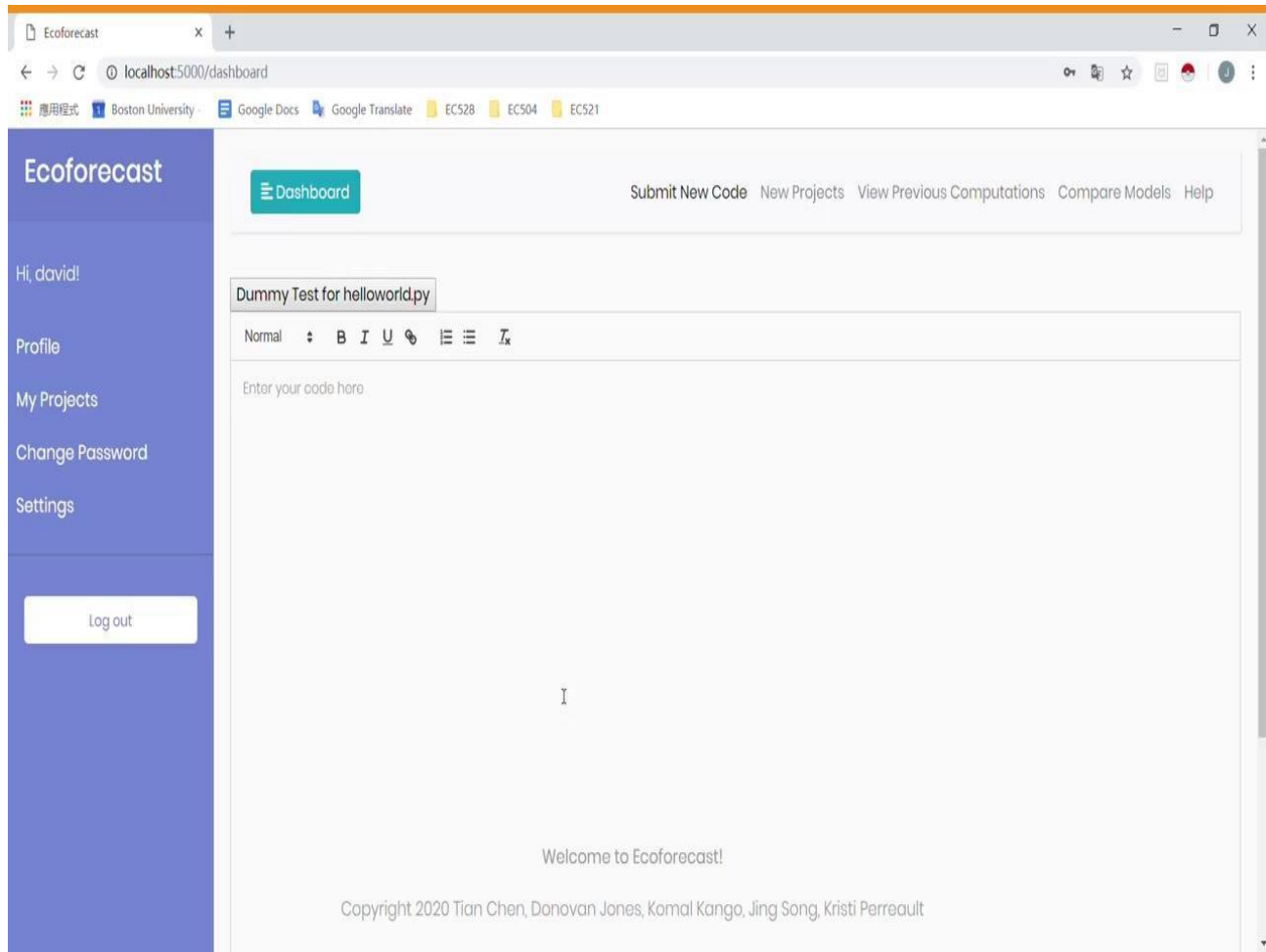


- User Hierarchy (Part 1)
 - System Administrators
 - Project Leads
 - Student/ default users
- Run a simple function Openwhisk
- Display and store response from Openwhisk

UI Demo: User Hierarchy



UI Demo: Send helloworld to Openwhisk



Response: Json

UI TO-DOs



- More User Hierarchy
- Data Visualization

What we still need to learn



- Using helm to deploy OpenWhisk on the Kubernetes cluster (minikube doesn't support multiple nodes)
- Running more complex function on OpenWhisk
- Best way to store & display results from OpenWhisk
 - Data visualization and plotting for user
- How to work with Chameleon/GENI
 - Add/remove nodes with Kubernetes

Release Planning



Release #4 (due week 8) - DONE

- Kubernetes cluster created
- Submit simple code to OpenWhisk & return response in UI
- User Hierarchy Part I
- Join Projects feature - carrying over

Release #5 (due week 10)

- OpenWhisk on Kubernetes cluster
- User Hierarchy Part II
- Submit “real” code to OpenWhisk
- Data from OpenWhisk stored in database
- User can visualize and plot result data from code submission in UI

Sprint 4 Problems

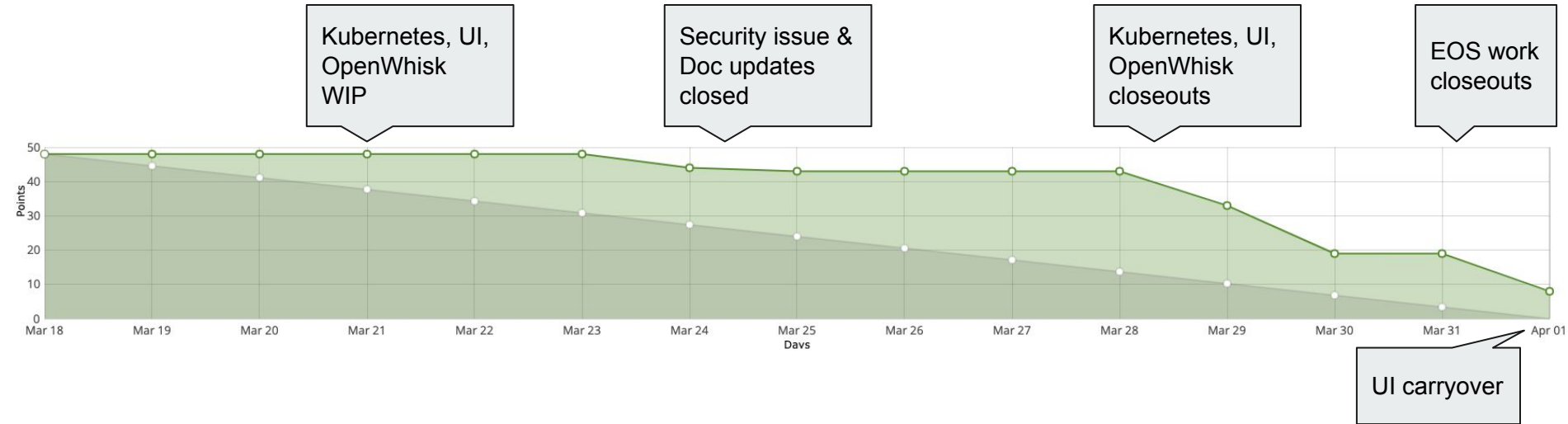


- Still grappling with working remotely
 - Communication & meeting times are tough
- Our week to present Dynamo paper
- Security issue with the MOC

Anticipating for Sprint 5:

- OpenWhisk to a Kubernetes cluster on MOC
- Displaying results complexity
 - Figuring out how to parse/store data in MongoDB
 - How to plot results
- Chameleon & GENI

Sprint 4 Burndown Chart





Questions?