



# Sprint 1 Demo

## Building Cyber Infrastructure for Researchers

### Mentors:

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### Team Members:

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# Visions & Goals



**Vision:** Develop cloud based infrastructure that runs code over specified data sets to create and compare ecological forecast models

## **Goals:**

- Provide web service with simple user experience
- Develop Infrastructure on cloud using VM or Containers to run code and balance workload
- Provide user interface that allows for comparisons between multiple models

# Users & Personas Administrator



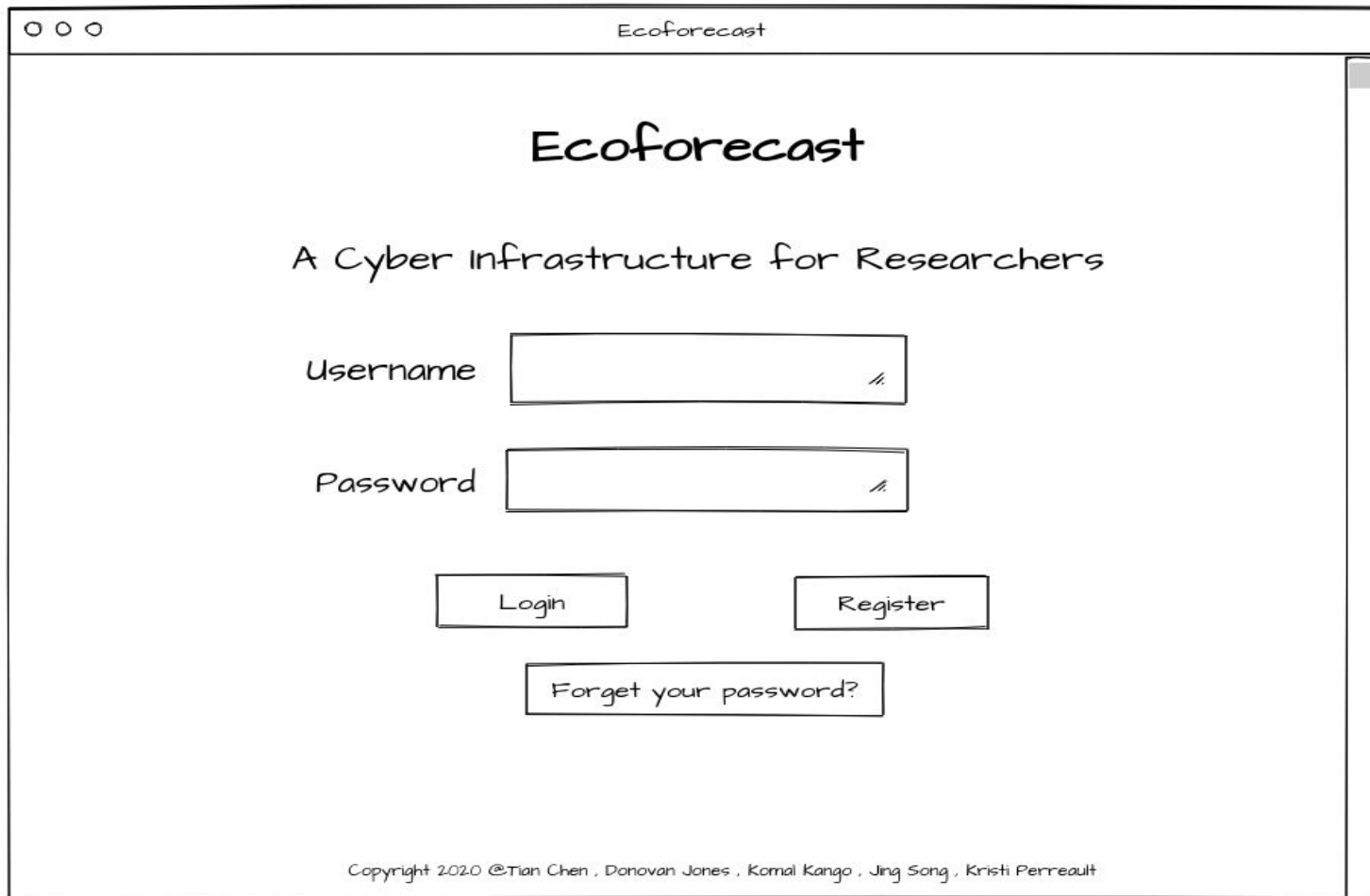
## System Targets:

- End-users, specifically ecological researchers in the BU Department of Earth & Environment

## Does Not Target:

- Non-ecological researchers
- Advanced users with complex requirements beyond of the scope of the project.

# Scope & Features - UI - Homepage



○ ○ ○ Ecoforecast

## Ecoforecast

A Cyber Infrastructure for Researchers

Username

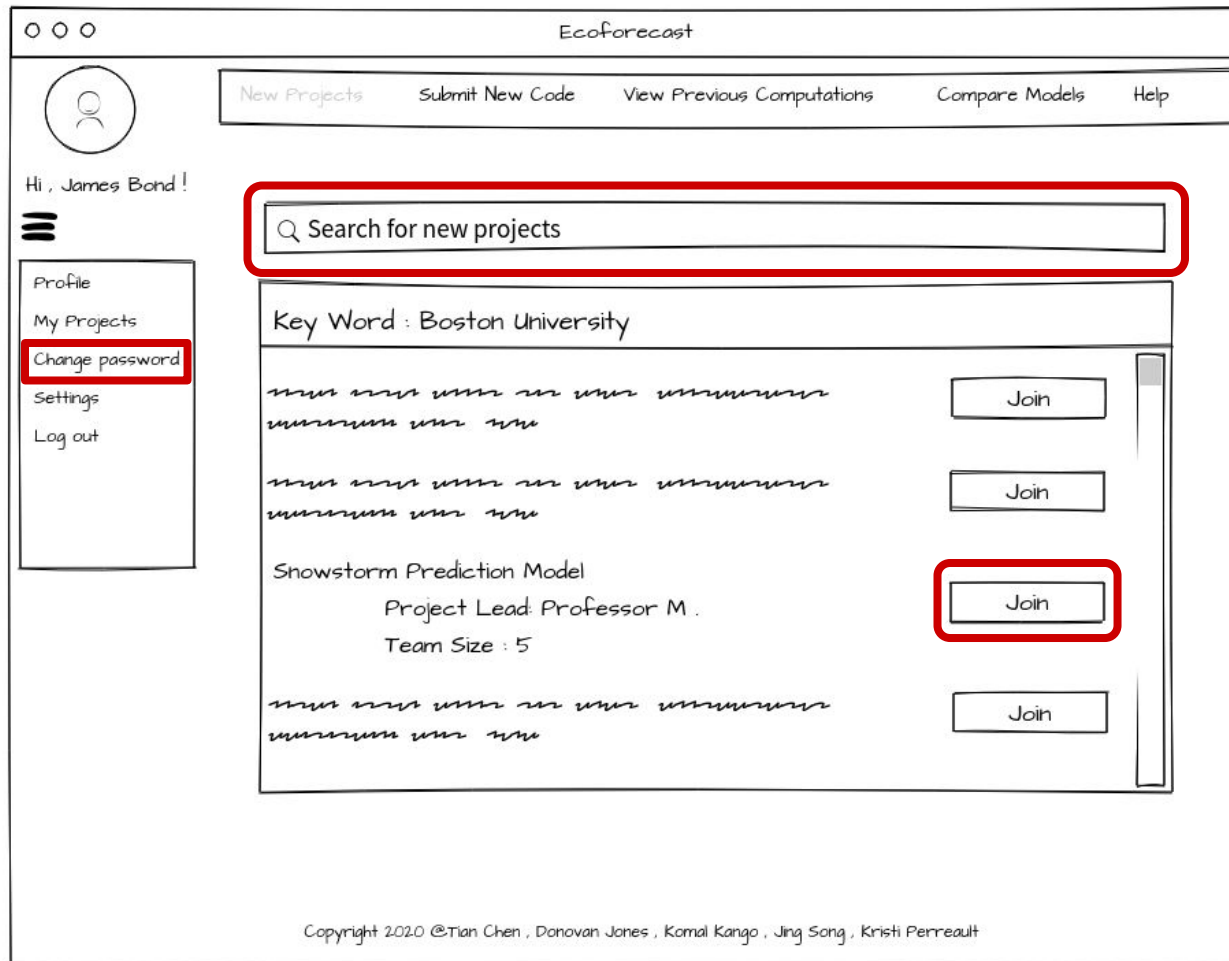
Password

Login Register

Forget your password?

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# UI - Team Members : Join New Projects



# UI - Team Members : Submit New Code

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Ecoforecast



Hi, James Bond!

Profile

My Projects

Change password

Settings

Log out

New Projects

Submit New Code

View Previous Computations

Compare Models

Help

Raw code | Libraries

B

I

U

Style

Normal

Font

Size

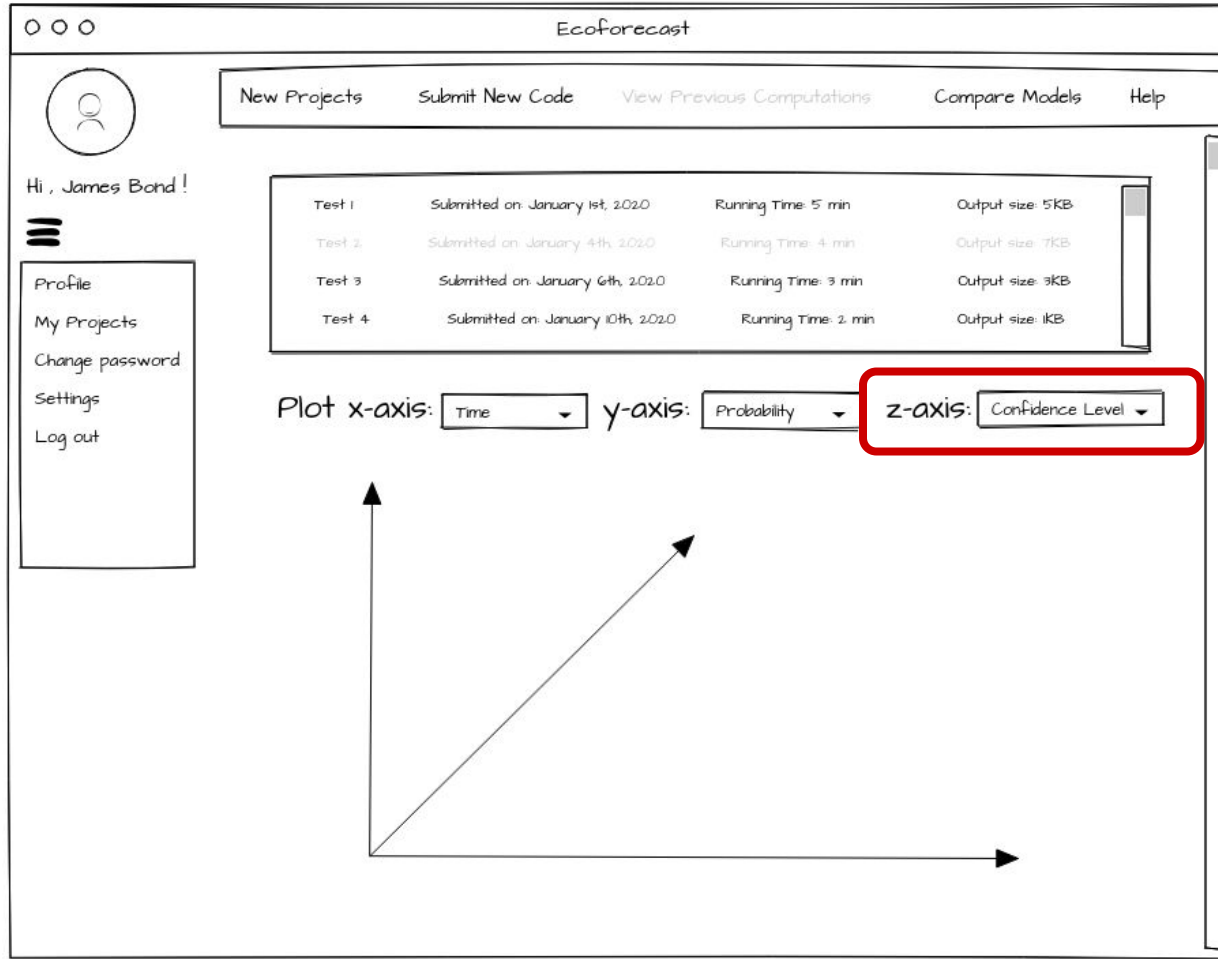
A

A

Or enter :

Run Code


# UI - Team Members : View Previous Computations



# UI - Team Members : Compare Models

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Ecoforecast



Hi, James Bond!

Profile

My Projects

Change password

Settings

Log out

New Projects

Submit New Code

View Previous Computations

Compare Models

Help

Plot

Test 2

x-axis:

Time

y-axis:

Probability

z-axis:

Confidence Level

against

Real data

x-axis:

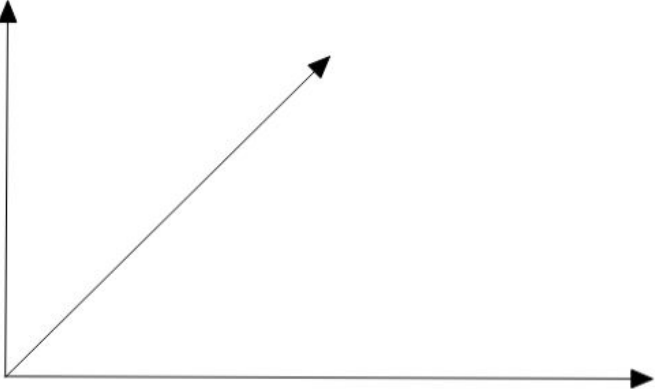
Time

y-axis:

Probability

z-axis:

Confidence Level






# UI - System Administrator

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Ecoforecast



Hi, System Admin!

Profile

Manage Projects

Manage Users

VM Cluster Info

My Projects

Change password

Settings

Log out

New Projects

Submit New Code

View Previous Computations

Compare Models

Help

All Project

Snowstorm Probability Prediction Model

Project Leads: Professor M.

Team Members: James Bond

Edit Project

Create New Project

Project Name:

Project Leads:

Select User

Team Size:

1

Team Members:


Select User

Add

# UI - Project Leads

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Ecoforecast



Hi, Professor M.!

Profile

Manage Projects

Change password

Settings

Log out

New Projects

Submit New Code

View Previous Computations

Compare Models

Help

My Projects

Snowstorm Probability Prediction Model

Project Leads: me

Team Members: James Bond

Edit Project

View Work Progress

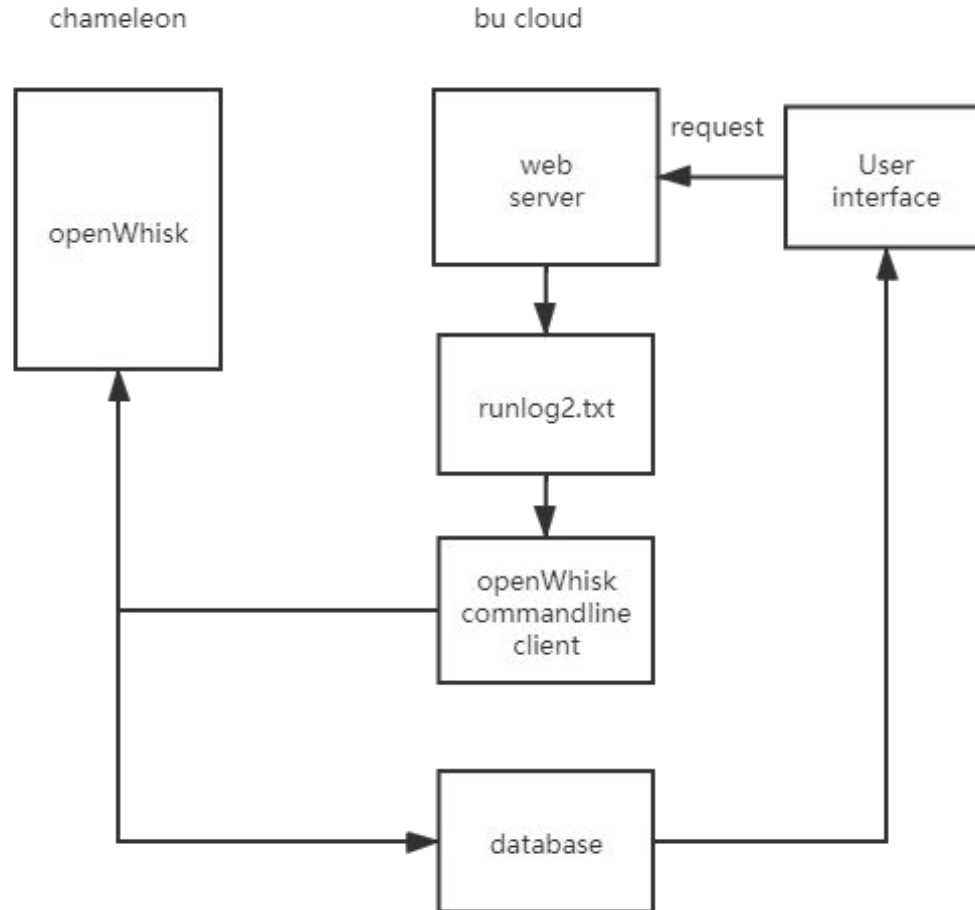
Propose New Project

Project Name:

Attach your project description here:

Submit

# Scope & Features - O&S, VM and database



# Scope & Features - O&S, VM and database

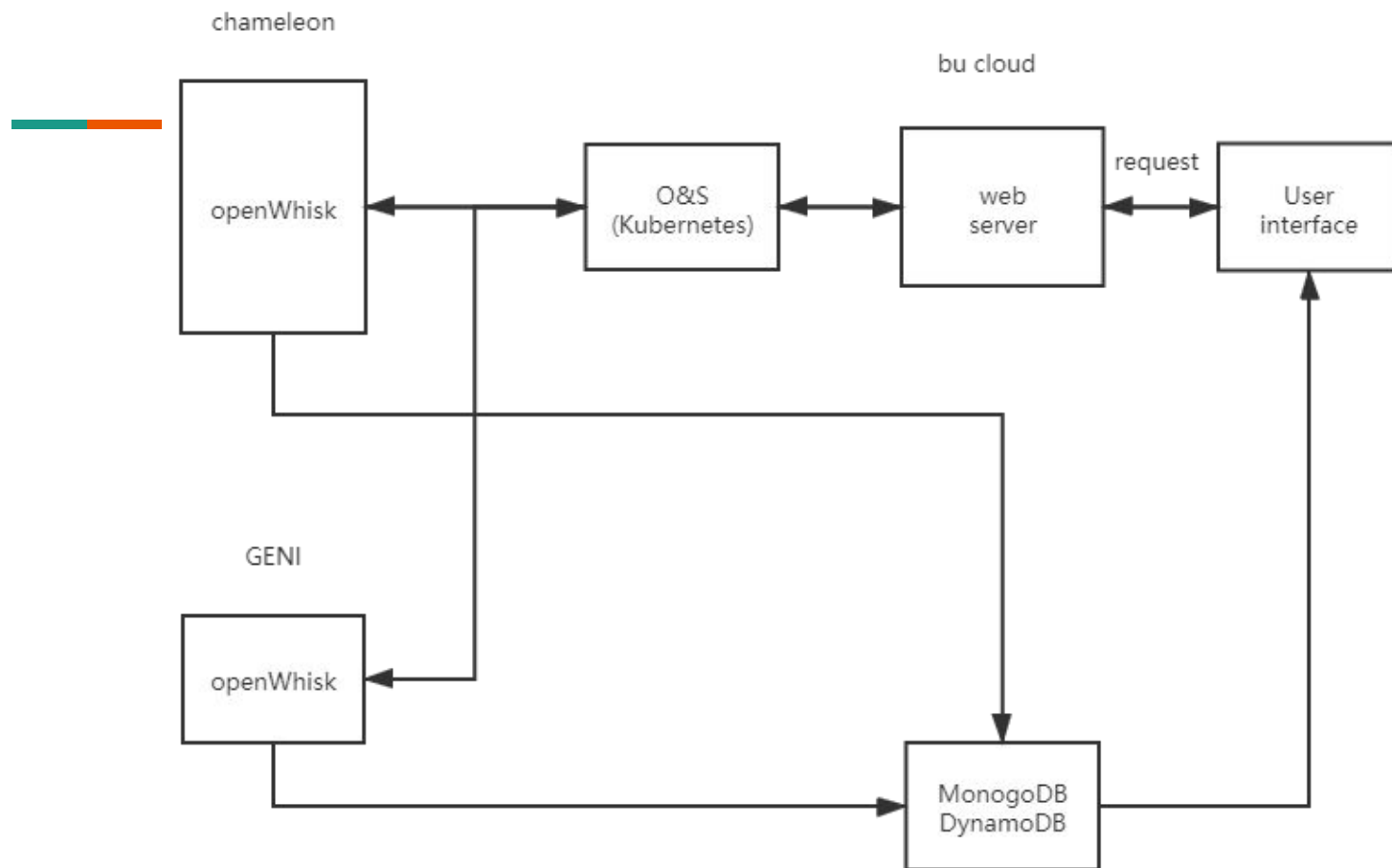


The new system will have two cloud servers:  
GENI and Chameleon

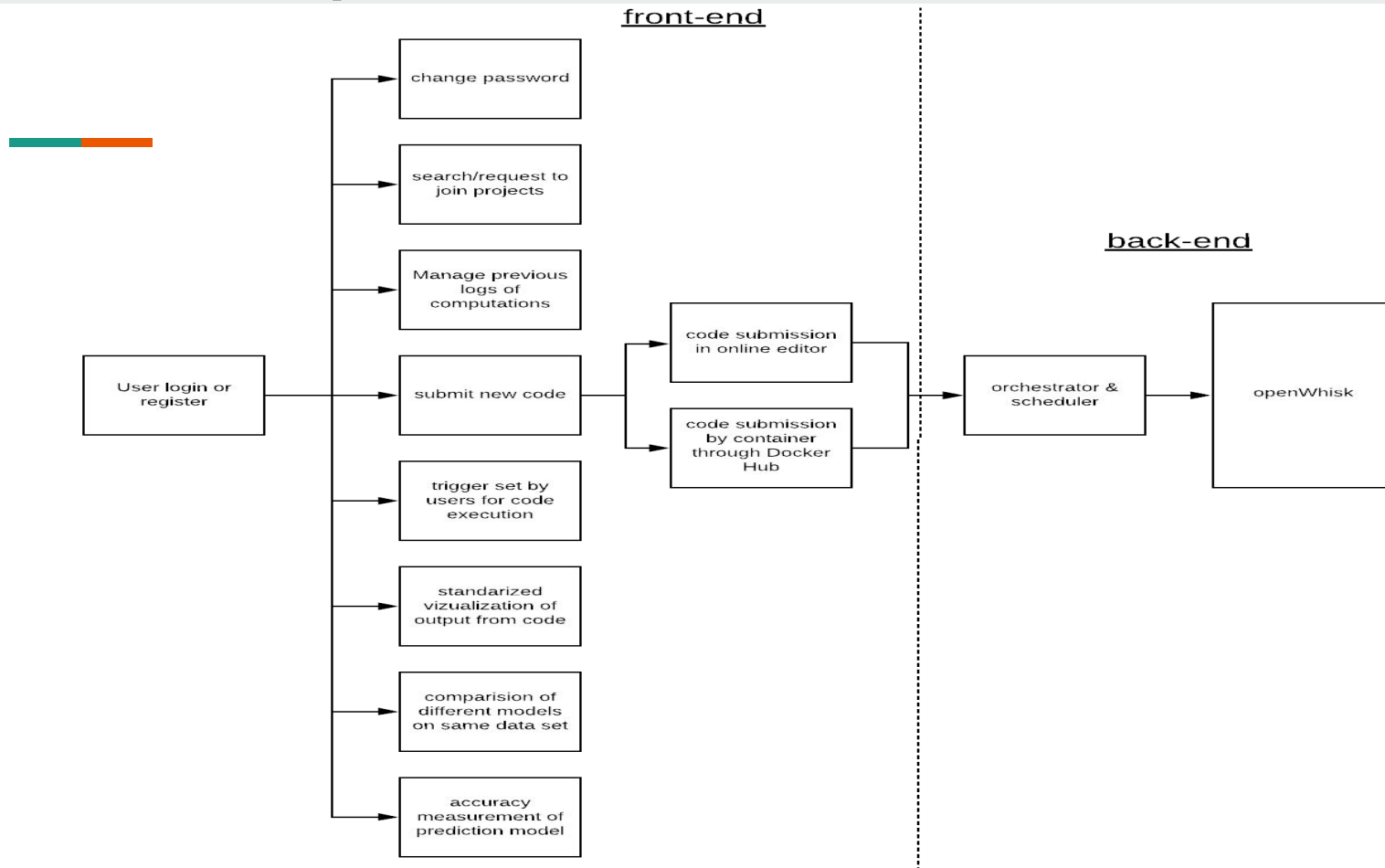
O&S:

- 1.Install code dependencies
- 2.Find the best cloud platform to run the code
- 3.Determine the best configuration of running the code
- 4.Build on Kubernetes

# Scope & Features - O&S, VM and database



# Solution Concept



# Acceptance Criteria



The minimum acceptance criteria is a single-running process which the code submitted by the user is taken by Openwhisk and distributed by O&S to run across different cloud serverless platforms and the output of computation is shown to the user on UI. Stretch goals are:

- More visualization functionality for showing the computation output
- Parallel Code Execution

# Release Planning



## Release #1 (due week 2)

- Project goals determined and understood
- Front end framework determined
- Registered in the old system

## Release #2 (due week 4)

- Submission portal
  - User can upload code in R in text box or file upload
  - Create DynamoDB to store data & results
- User registration/login
  - User able to register for an account with email
  - User data saved to MongoDB table, user able to login
- Admin system
  - Ability for admins to approve/deny registration requests
- VM environment
  - Install Openwhisk on a cluster (Kubernetes)

For full release plans, please visit the team's project space:

<https://tree.taiga.io/project/mosayyebzadeh-building-cyber-infrastructure-for-researchers/timeline>