

# TEAM INDRA



Science gateway to schedule and monitor jobs on Karst super computer

# The Team

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# Design and Implementation

- Technologies Used
  - Spring 4.0.4
  - Spring Security 3.2.3
  - JSCH 0.1.53
  - Maven 2.5.1
  - Bootstrap JS v3.3.4
  - MySql Server

# Design Phases

- The scratch (Milestone 1)

Host  
framework  
(Spring)

SSH  
Connector  
(JSCH)

Sorting  
Application  
Handler

File Handler  
(SFTP)

Config  
Reader

# Design Phases

## ○ Job Submission and Monitoring (Milestone 2)

Host  
framework  
(Spring)

SSH  
Connector  
(JSCH)

Sorting  
Application  
Handler

On Request  
Job  
Monitor

File Handler  
(SFTP)

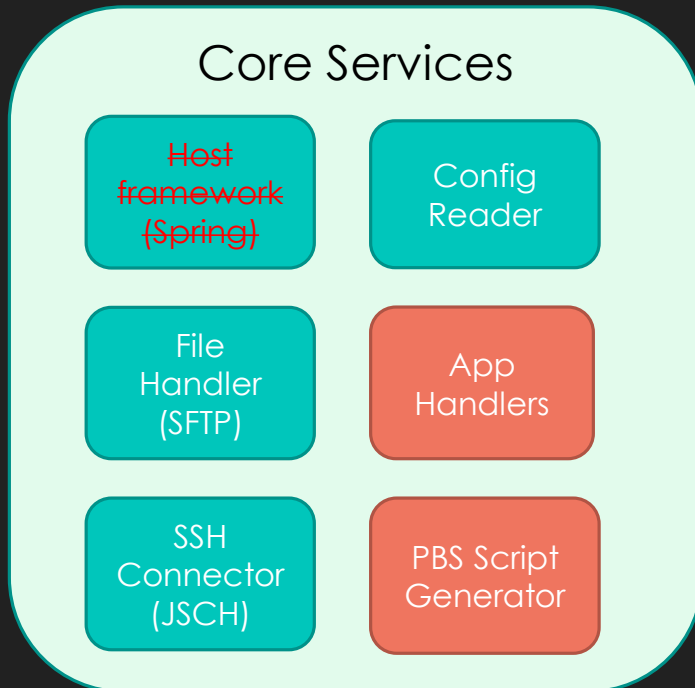
Config  
Reader

MPI  
Application  
Handler

PBS Script  
Generator

# Design Phases

## ○ Dawn of REST (Milestone 3)



Spring MVC  
Hosting  
Framework

Tomcat for  
Hosting

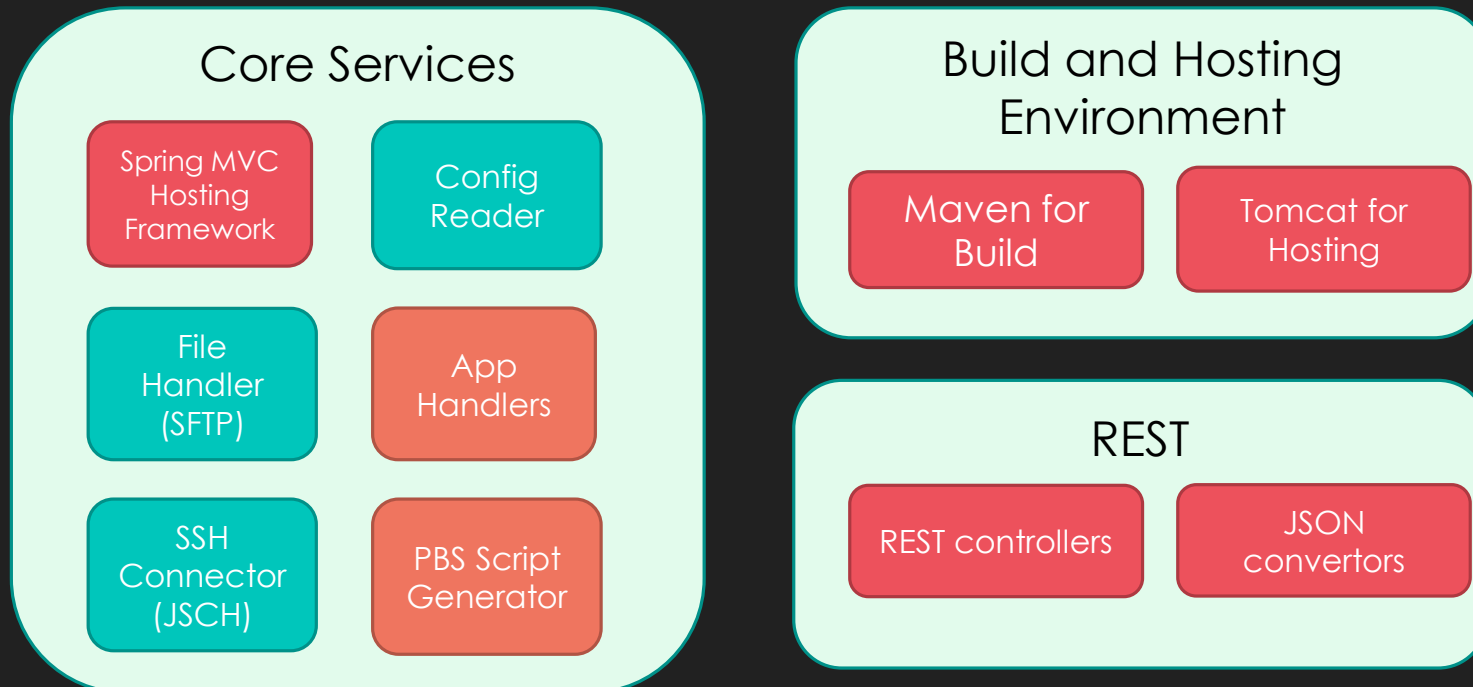
JSON  
convertors

Maven for  
Build

REST  
controllers

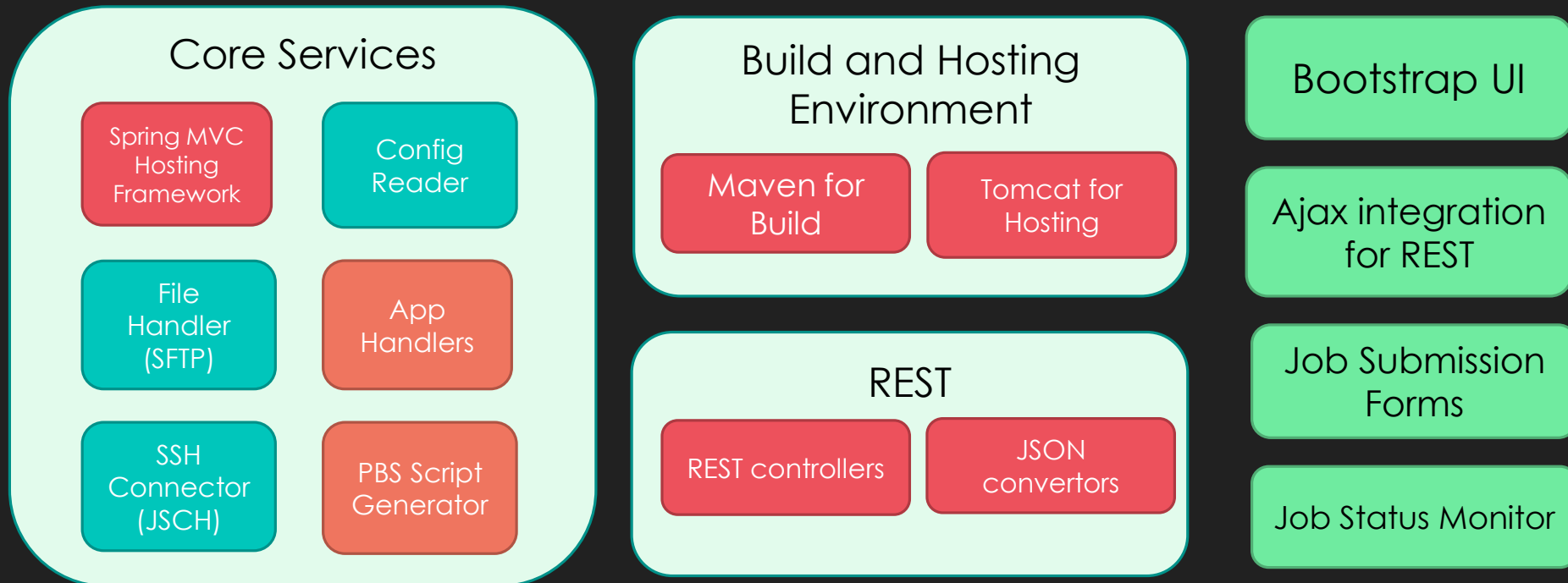
# Design Phases

- Dawn of REST(Milestone 3)
- Grouping the modules



# Design Phases

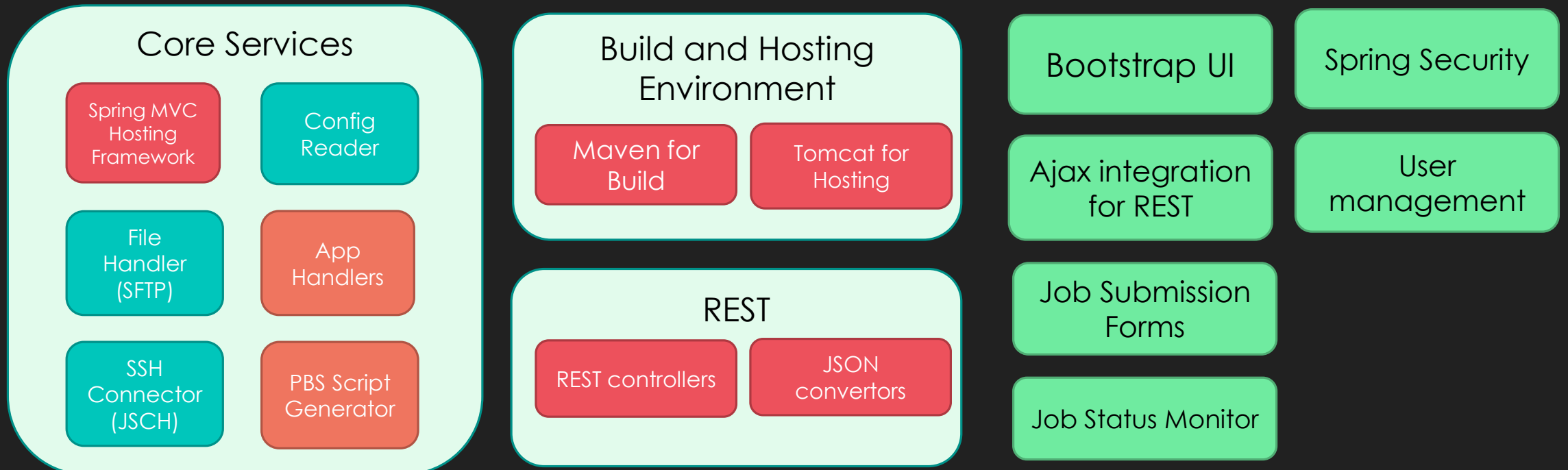
- Revamping the Gateway (Milestone 4)
- Adding UI





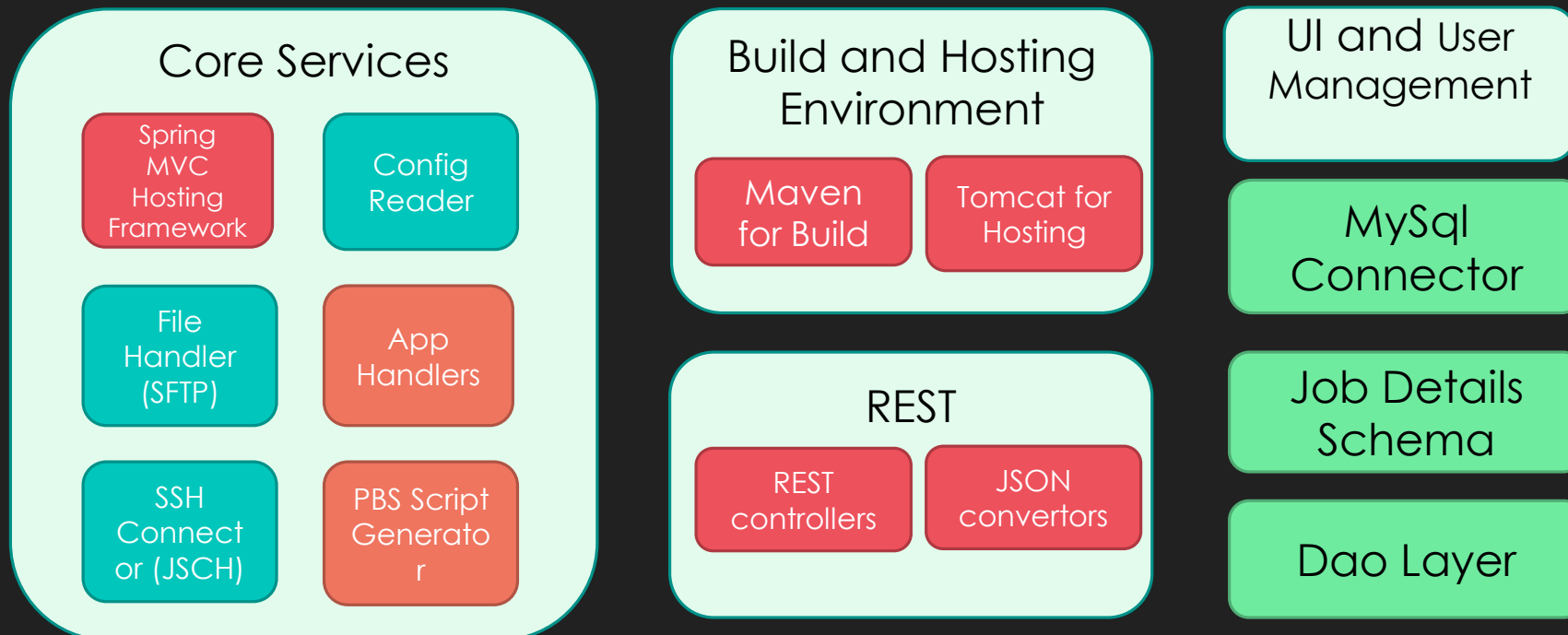
# Design Phases

- Revamping the Gateway (Milestone 4)
- Login and access control



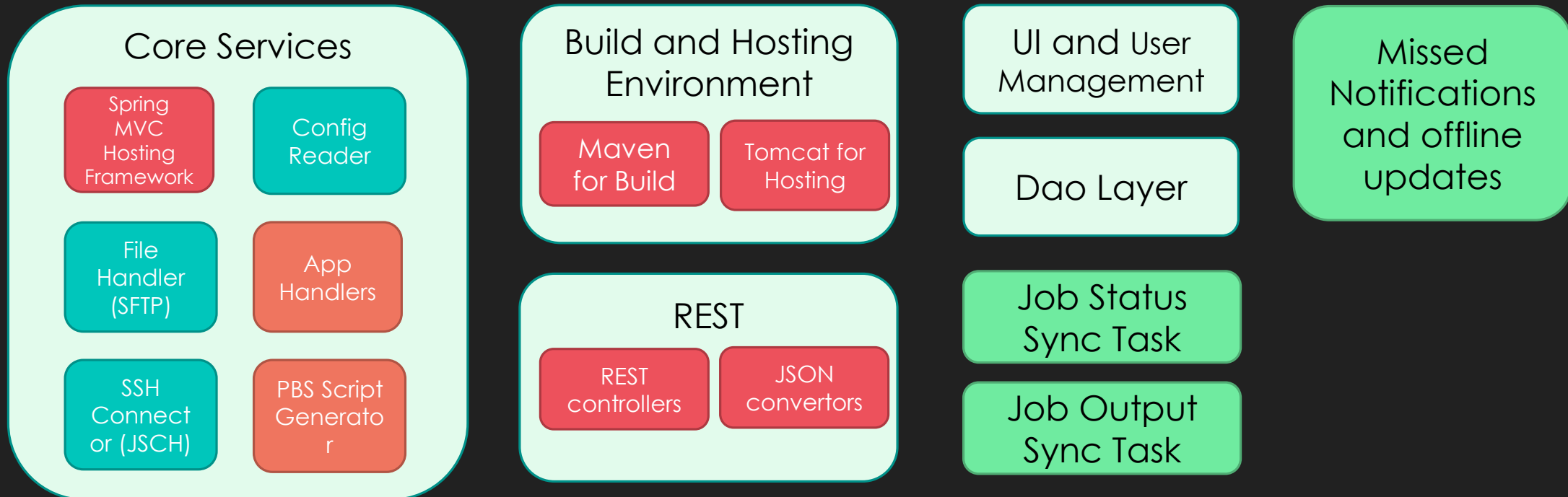
# Design Phases

- Revamping the Gateway (Milestone 4)
- Database Layer

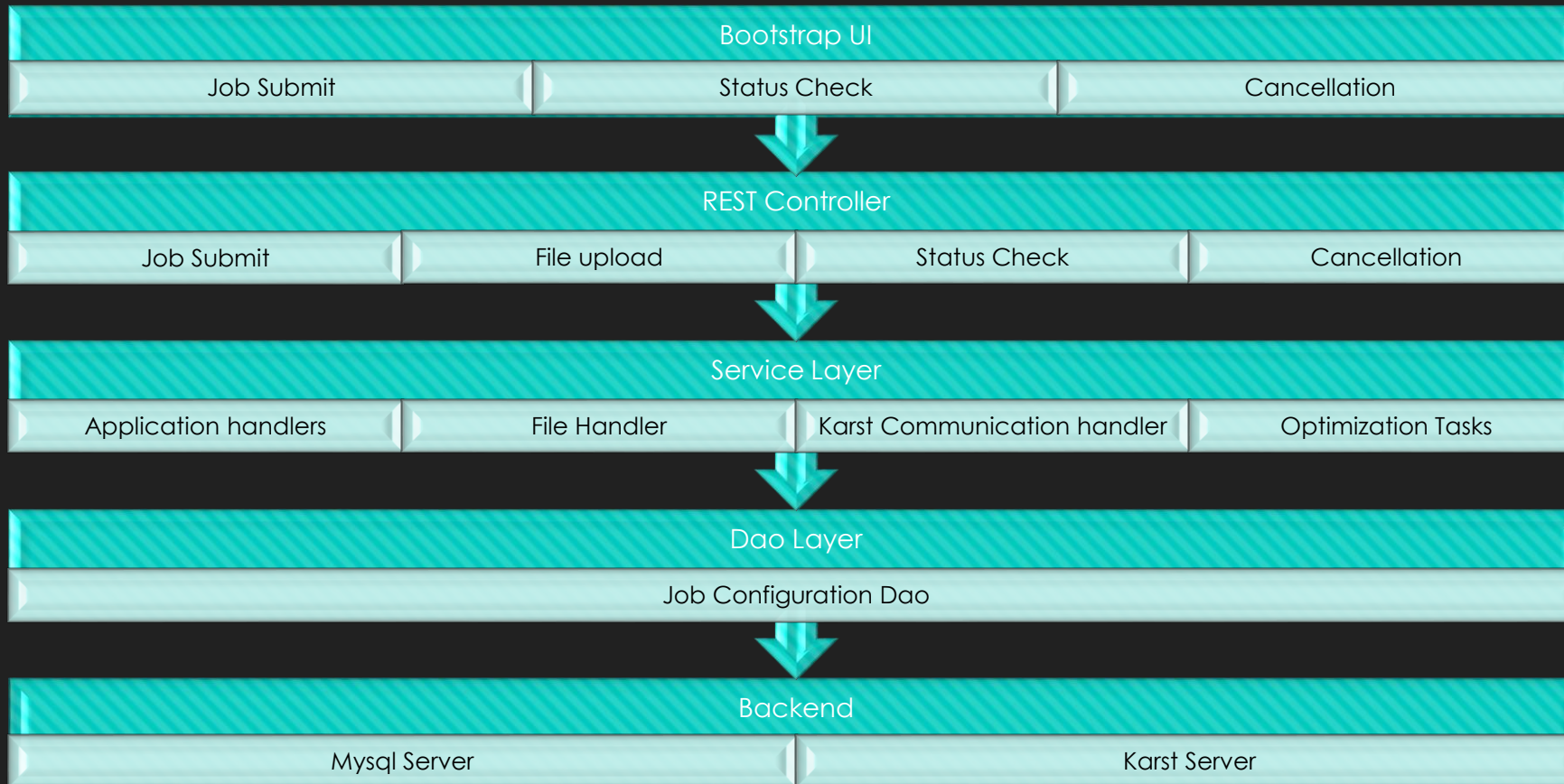


# Design Phases

- Revamping the Gateway (Milestone 4)
- Optimization



# Overall structure and flow

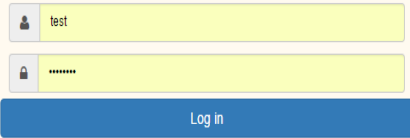


# Implementation Key Points

- REST API for decoupling client
- Use of MVC to separate business logic from view
- Decoupled modules
- Use of design patterns
- Easy integration of new application
- Externalized configuration through properties and xml files
- Open Source third party libraries

# Initial Screen – Log In

Team Indra Portal to schedule job and check job status



A login form centered on a light yellow background. It consists of two input fields: the first for a username with the text 'test' and a user icon, and the second for a password with masked characters '\*\*\*\*\*' and a lock icon. Below these fields is a blue button labeled 'Log in'.

# User Interface – Common Dashboard

Team Indra

Portal to schedule job and check job status

Submit Job

Job-name:

Enter name for job

IU Email:

Enter IU email

Node count:

Enter node count

Max memory:

Enter max memory

Wall Time:

Enter wall time

Core count:

Enter core count

☒ Send notification

Submit

Job Status Monitor

Q

Search

10

Job Id	Job Name	Status	Download
1284131.m2	Test_JobS	C	
1285866.m2	T E s t	C	
1285873.m2	Naya_Test	C	
1285874.m2	NewFile	C	
1285876.m2	Last_Time	C	
1285877.m2	Test_JobS	C	
1285878.m2	Last_test	C	
1285879.m2	Last_try_w...	C	
1285886.m2	SecondLas...	C	
1285887.m2	SecondLas...	C	

«

<

1

>

»

Showing 1 to 10 of 10 entries

Cancel Job

Enter Job ID

Cancel Job

Input File Upload

Choose File

No file chosen

Upload

# Submit Job

Submit Job

Job-name:

Enter name for job

IU Email:

Enter IU email

Node count:

Enter node count

Max memory:

Enter max memory

Wall Time:

Enter wall time

Core count:

Enter core count

☒ Send notification

Submit

Submit Job

Job submitted to server. JobId: 1322381.m2

Job-name:

Test\_Job

IU Email:

pmmmercha@iu.edu

Node count:

2

Max memory:

8

Wall Time:

00:10:00

Core count:

16

☒ Send notification

Submit



# Job Monitor Status

Job Status Monitor			
<div><div><div></div></div><div>Search</div></div> <div>10<div></div></div>			
Job Id	Job Name	Status	Download
1284131.m2	Test_JobS	C	<div></div>
1285866.m2	TEst	C	<div></div>
1285873.m2	Naya_Test	C	<div></div>
1285874.m2	NewFile	C	<div></div>
1285876.m2	Last_Time	C	<div></div>
1285877.m2	Test_JobS	C	<div></div>
1285878.m2	Last_test	C	<div></div>
1285879.m2	Last_try_w...	C	<div></div>
1285886.m2	SecondLas...	C	<div></div>
1285887.m2	SecondLas...	C	<div></div>
<div><div><div></div></div><div>1</div><div></div><div></div></div>			Showing 1 to 10 of 10 entries

# Cancel Job

Cancel Job

Enter Job ID

Cancel Job

Cancel Job

1322381.m2

Job successfully cancelled

Cancel Job

# Input File Selection

Input File Upload

Choose File

No file chosen

Upload

Input File Upload

Choose File

Personal Info.txt

Upload

You successfully uploaded ConfigFile !

# Snapshot of actual files on server

```
drwxr-xr-x 2 pmmercha students 4096 Mar 10 22:52 074e3492-c56c-41b1-848d-978b690dcf68
drwxr-xr-x 2 pmmercha students 4096 Mar 10 23:03 29dca7cc-5a65-4027-8a7f-24d3828b9eac
drwxr-xr-x 2 pmmercha students 4096 Mar 10 23:14 83314708-a142-4afb-adcb-d45840ee40b4
drwxr-xr-x 2 pmmercha students 4096 Mar 11 00:26 849cf1d6-545a-4211-90e9-810b5143b5f6
drwxr-xr-x 2 pmmercha students 4096 Mar 11 18:07 68d57767-31b7-4eb2-94ea-944a9010cf65
drwxr-xr-x 2 pmmercha students 4096 Mar 11 18:17 15eaa6f3-ed4c-4d42-a610-662a7849965e
drwxr-xr-x 2 pmmercha students 4096 Mar 11 18:28 dbf7be29-c2d3-43e2-8ee7-e39035bf9d5c
drwxr-xr-x 2 pmmercha students 4096 Mar 11 18:28 d007dd1b-d6b2-4d04-82f9-25956dd7c455
drwxr-xr-x 2 pmmercha students 4096 Mar 11 18:29 2e03b730-15f9-441b-abec-fc8071f0f443
drwxr-xr-x 2 pmmercha students 4096 Mar 11 18:30 a9f12e2c-b44a-4bda-899f-9f7d50ecf0b6
drwxr-xr-x 2 pmmercha students 4096 Mar 11 18:49 8ef32f5b-2880-4969-b239-ef63cfb9129e
drwxr-xr-x 2 pmmercha students 28672 Mar 11 18:57 dadab584-aa16-40aa-a6f2-15cb40943cda
drwxr-xr-x 2 pmmercha students 28672 Mar 11 19:04 c5b9cf48-99a2-403b-9eac-d4be6a6679b3
drwxr-xr-x 2 pmmercha students 4096 Mar 21 00:28 1f096560-683c-4abe-83a5-ad56a0fcf1d2
[pmmercha@h3 c5b9cf48-99a2-403b-9eac-d4be6a6679b3]$ ls -lrt | wc -l
394
[pmmercha@h3 c5b9cf48-99a2-403b-9eac-d4be6a6679b3]$
```

# Changes and updates

```
# connection parameters  
host.url=karst.uits.iu.edu  
host.username=  
sshkey.key_path=  
sshkey.passphrase=|
```

# Team Organization : Team Meetings

- We scheduled meetings thrice a week.
- One meeting typically lasted 45 mins .
- Agenda of meetings involved review of last meeting(10) , strategies and planning (10), challenges (15) , further work (10).
- Discussions were done and conflicts were resolved through votes , being a 3 member team.

# Team Operations : Git Commit Startegy

- We used the commit to master strategy.
- We collectively decided to push main code to master branch after developing and testing the code locally.
- The code would then be peer reviewed by any one team member for bugs and updated if found one.
- We pushed code to a different branch creating Milestone events when achieved.

# Task Distribution

- Sagar Bhandare
  - Overall architecture, File Transfer, SFTP handler , Login functionality, Job Monitoring , Bootstrap UI and Custom CSS
- Pratish Merchant
  - Input File Upload, Job Cancel , PBS Script generation, Status Parser ,Gromacs Application Configuration
- Sanket Mhaikar
  - QSub and Job Status, MySQL Database connectivity , Config File properties , File Compression