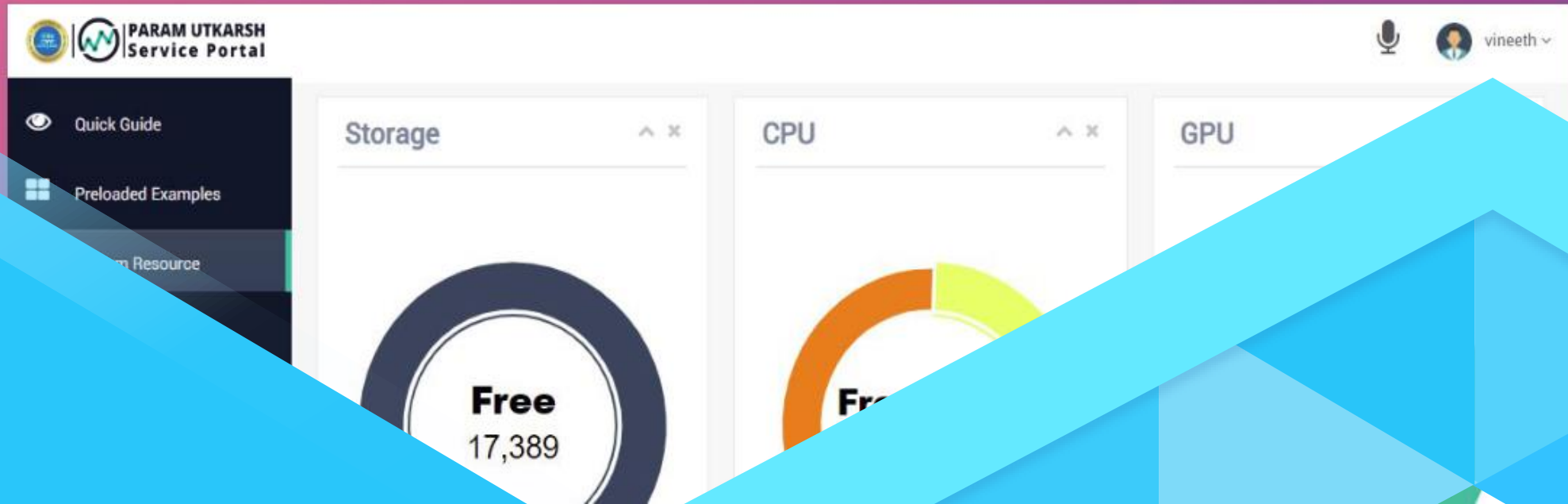


One Portal. Multiple Services



SANTHOSH J



प्रगत संगणन विकास केंद्र
CENTRE FOR DEVELOPMENT OF ADVANCED COMPUTING

HPC Dashboard

Making HPC simple

High Performance Computing (HPC)



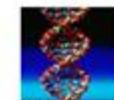
High-performance computing (HPC) supercomputers provide unprecedented computing power for diverse range of scientific applications.

HPC is the use of parallel processing for running advanced application programs efficiently, reliably and quickly.

HPC Applications...



Climate



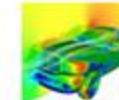
Life Science



Geo Science



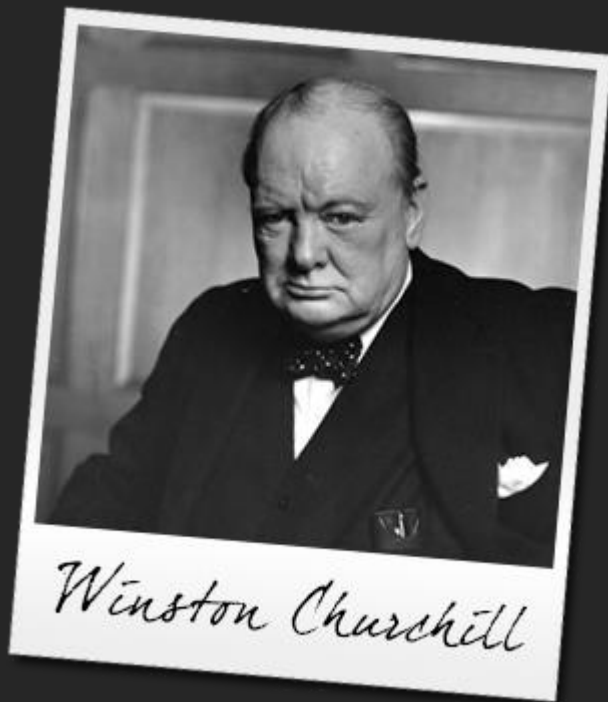
Entertainment



CFD



Nuclear Research



“Out of intense Complexities,
Intense Simplicities emerge”

Understanding complex
HPC environment

Multiple endpoints making it difficult
for user to find & use

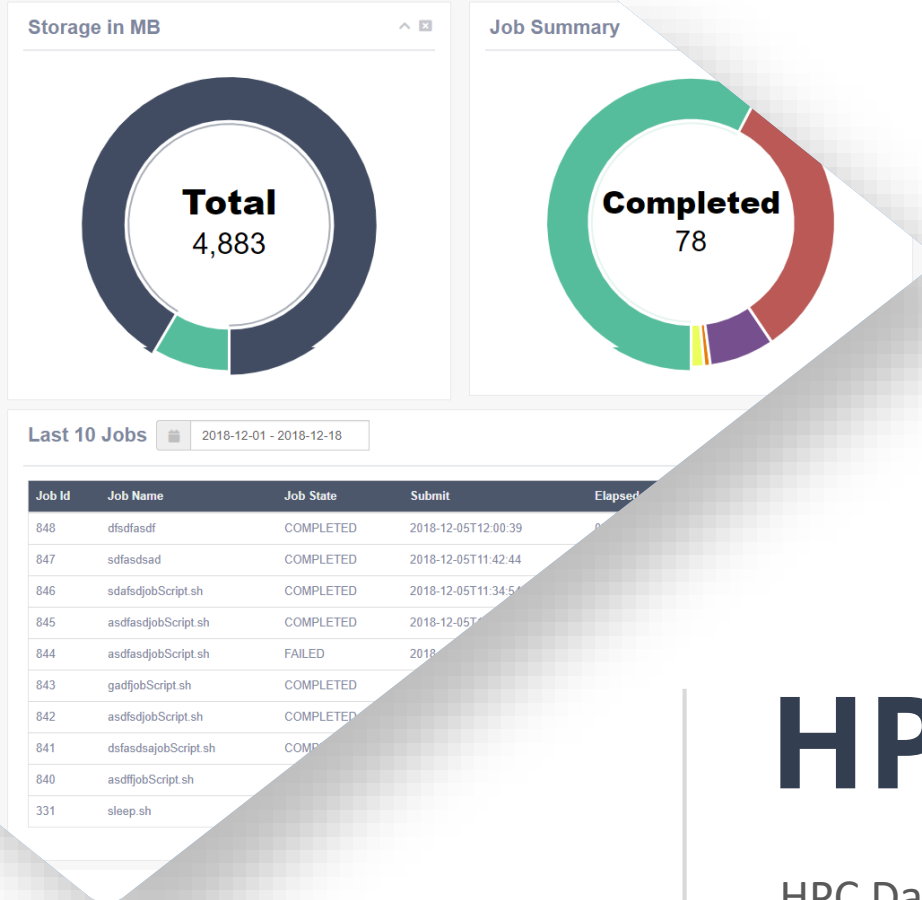
Time to Solution

HPC management is
inherently complex

Being continuously connected is
becoming important in HPC.

End-users have a deep
scientific knowledge in
their domains but not
necessarily in HPC

Making HPC Simple & Smarter
>>



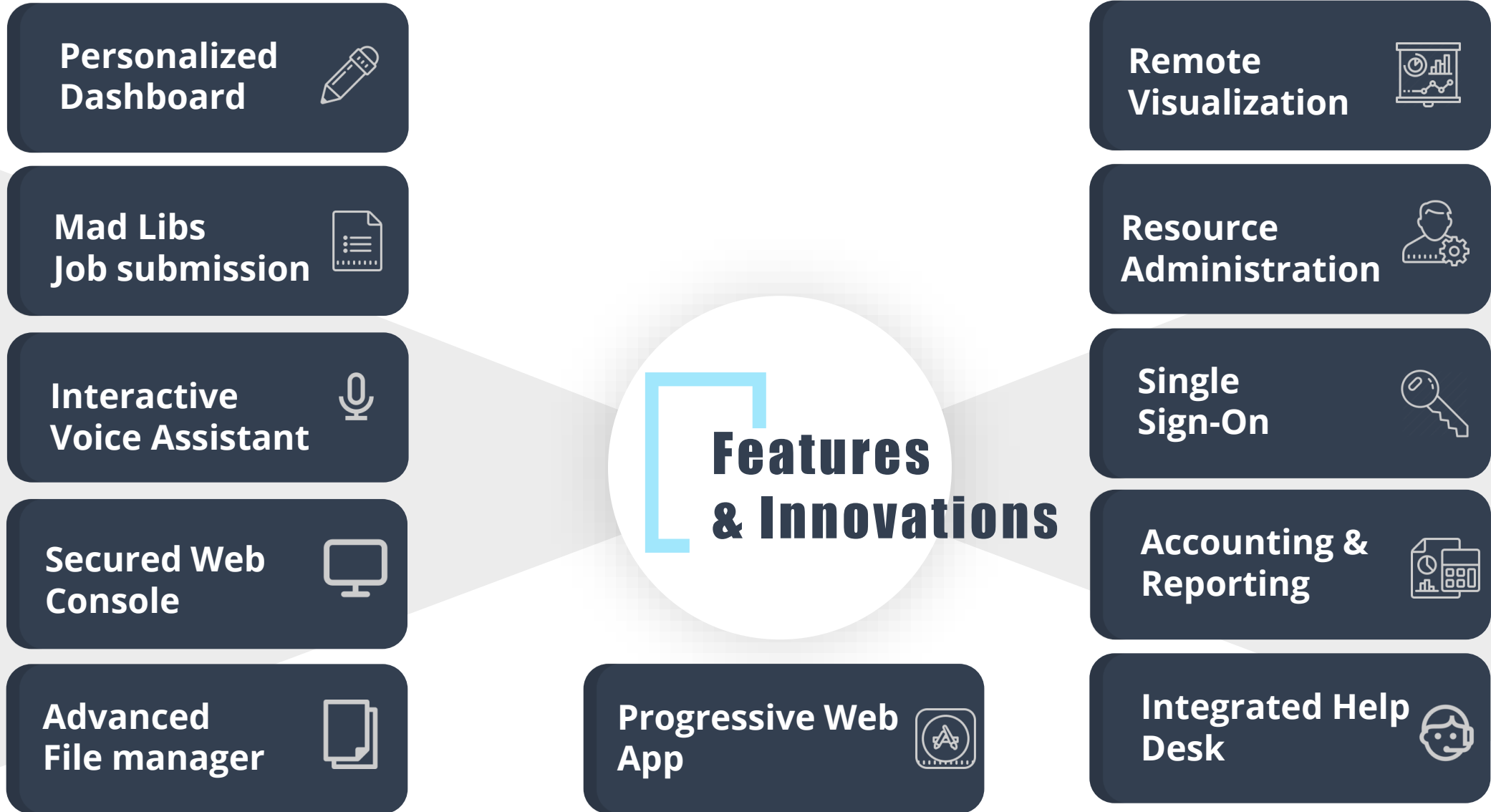
About

HPC Dashboard

HPC Dashboard hides the complexities of high performance computing (HPC). It has a rich, easy to use interface for end-users and administrators, designed to increase productivity through its visual web-interface, powerful job submission and management feature, remote visualization, accounting & reporting, secure web console, file manager, administration panel and other workload functions

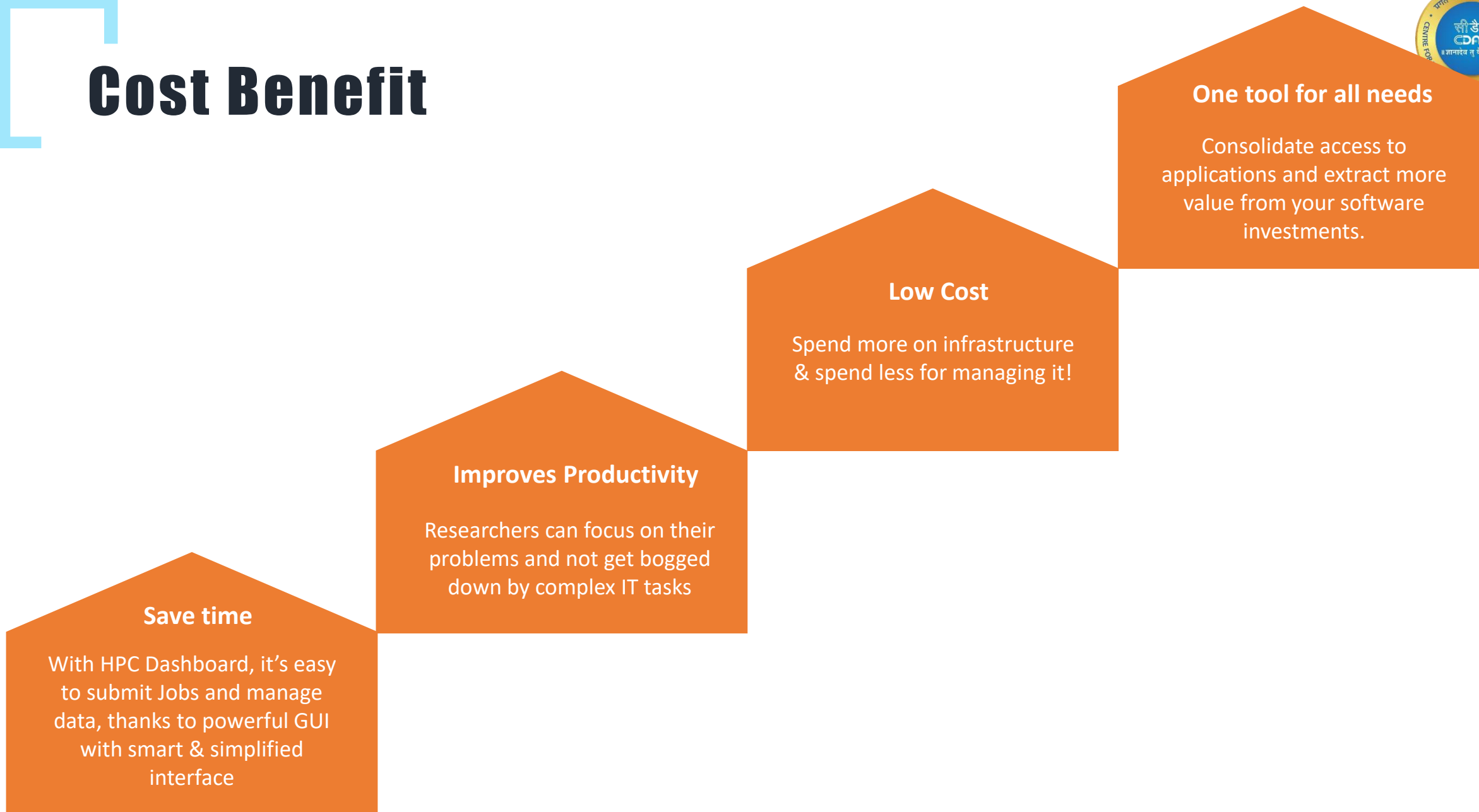
Before & After

- | | |
|---|--|
| <ul style="list-style-type: none">• For a user, HPC is a big learning curve | <ul style="list-style-type: none">• HPC Dashboard simplifies the user's access to HPC resources and hides all the complexities. |
| <ul style="list-style-type: none">• No single point of access | <ul style="list-style-type: none">• HPC Dashboard provides a unified interface to access all services in HPC. |
| <ul style="list-style-type: none">• HPC Administration is time consuming & painful. | <ul style="list-style-type: none">• An easy to use interface allows administrators to manage HPC resources remotely. |
| <ul style="list-style-type: none">• Visualization of large data sets is expensive. | <ul style="list-style-type: none">• Integrated remote visualization allows exploration of huge data sets directly within HPC Dashboard. |
| <ul style="list-style-type: none">• Most HPC portals are not mobile friendly | <ul style="list-style-type: none">• Responsive design & use of Progressive Web App technologies allow users to access HPC on the go using any device, from anywhere and at any time. |





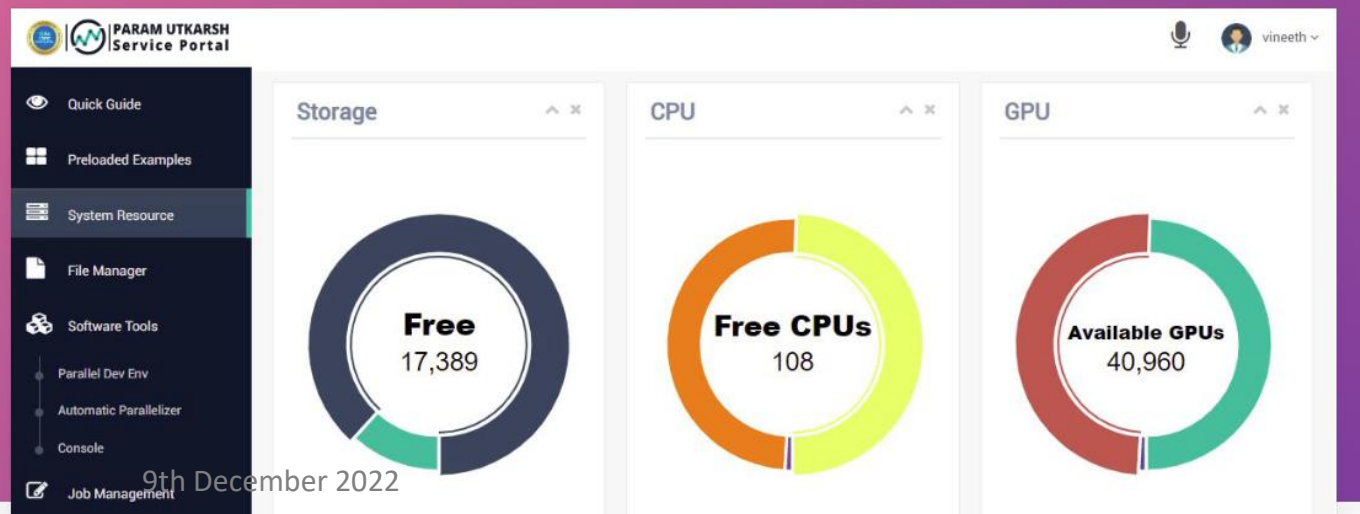
Cost Benefit



Screenshots

One Portal. Multiple Services

PARAM UTKARSH Service Portal (PUSP) is a unified interface to access services offered in PARAM UTKARSH. It also provides a bird's eye view of various functionalities and services of the PARAM UTKARSH HPC ecosystem, job submission interface with ready-to-use application templates, self-explanatory and intuitive UI helping end-user with ease-of-use experience.



Features

MORE POWER

- Customizable Dashboard**
 Provides instant visibility into cluster's health status and resource availability.
- Job Execution**
 Simplified & yet powerful job submission interface allows user to submit jobs using a conversationally styled interface.
- Ready to use Application templates**
 The user can use the readily available HPC application templates such as Blast, Star-ccm+, Gromacs and Gaussian-Linda for faster job submission.
- Resource Reservation**
 Reserve Nodes for dedicated usage of resources to your job submission.
- Secured remote console**
 Provides Command Line Interface to HPC Cluster
- Interactive voice assistant**
 That offers faster and easier access to various features of dashboard
- Advanced File Manager**
 For extensive file management operations, just like pro FTP tools.
- Automatic code parallelizer**
 Allows users to convert their sequential code to parallel code with a click of a button.
- Remote visualization**
 Integrated remote visualization allows exploration of huge data sets directly within the dashboard.

Friendly and Helpful Support

Ask any question, send a screenshot of your problem and our caring experts will answer or solve your inquiries as quickly as possible

Can you help me to install Lammmps application?

Good Morning, James!
We would love to help you :)
Faithfully yours, NSM support

Screenshots

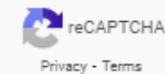
Login

Features

Below are the features of version 1.0.

- Interactive Voice Assistant
- Mad Libs Job Submission
- Remote Visualization
- Resource Administration
- Single Sign-on
- Advanced File Manager
- Secure Web console
- Accounting & Reporting
- Personalized Dashboard
- Integrated Help desk

Sign In

☐ I'm not a robot

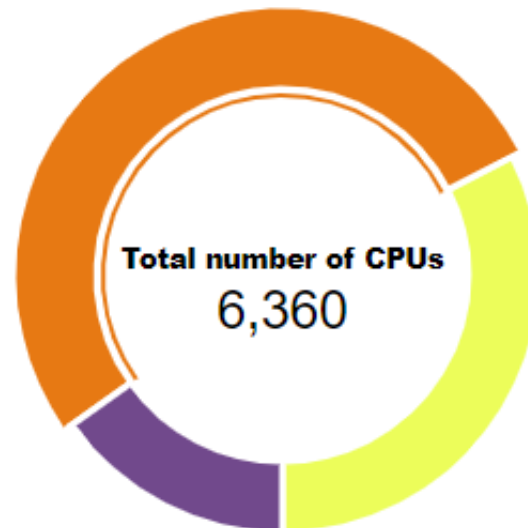
LOGIN

Screenshots



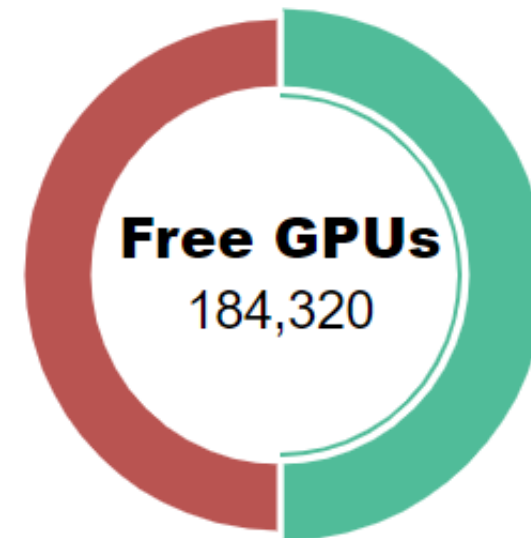
- Quick Guide
- Preloaded Examples
- System Resource
- File Manager
- Software Tools
 - Parallel Dev Env
 - Automatic Parallelizer
 - Console
- Job Management
 - Job Submission
 - User Job Status

CPU



**cores

GPU



**GPU cores



Screenshots



-  Quick Guide
-  Preloaded Examples
-  System Resource
-  File Manager
-  Software Tools
 - Parallel Dev Env
 - Automatic Parallelizer
 - Console
-  Job Management
 - Job Submission
 - User Job Status
 - Applications
 - Visualization
-  Reservation
-  FAQs
-  Report Bugs
-  Contact Us

Filemanager

35

Directories

42

Files

8MB

Files Size

-  New dir
-  New file
-  Upload
-  Move
-  Delete
-  Rename
-  Chmod
-  Download
-  Zip
-  Unzip
-  Search

All	Name	Type	Size	Perms	Mod Time	Actions
	Up ..					
☐	Public	Directory	4096	drwxr-xr-x	2022-11-23 10:35:49	
☐	.ssh	Directory	4096	drwx-----	2022-10-17 14:13:19	
☐	Downloads	Directory	4096	drwxr-xr-x	2022-11-23 11:42:26	
☐	Documents	Directory	4096	drwxr-xr-x	2022-03-30 10:21:39	
☒	openfoamico	Directory	4096	drwxrwxr-x	2022-11-07 14:52:08	
☐	SantOpenFoam	Directory	4096	drwxrwxr-x	2022-11-03 10:05:03	
☐	Desktop	Directory	4096	drwxr-xr-x	2022-10-17 12:51:23	
☐	.config	Directory	4096	drwxrwxr-x	2022-10-11 17:50:32	
☐	openfoamico1	Directory	4096	drwxrwxr-x	2022-11-07 14:54:55	
☐	Santhosh1	Directory	4096	drwxrwxr-x	2022-11-11 14:16:57	
☐	santhosh	Directory	4096	drwxrwxr-x	2022-08-23 12:00:27	
☐	Music	Directory	4096	drwxr-xr-x	2022-03-30 10:21:39	
☐	.cache	Directory	4096	drwxrwxr-x	2022-10-17 16:00:55	
☐	jobInfo	Directory	12288	drwxr-xr-x	2022-11-11 14:19:50	
☐	.VESTA	Directory	4096	drwxrwxr-x	2022-10-17 15:02:19	
☐	ondemand	Directory	4096	drwxr-xr-x	2022-10-17 12:19:42	





Screenshots



Remote console

Connected (encrypted) to: mgmt01:10 (santhoshj)

Send CtrlAltDel

[santhoshj@login01 ~]\$

9th December 2022

12

Screenshots

Mad Libs Job Submission

I'd like to submit Parallel job with 2 no. of process using exec from Cluster caco3_water-1.restart

→ Submit

Advanced Job Submission

Application Template

☒ Generic ☐ Molecular Modeling ☐ NAS Benchmark BT

Job Name

Job Type

☒ Parallel ☐ Hybrid ☐ Hybrid MPI ☐ Sequential

Resource selection (Partition: Queue and Node info)

No. of Process

Reserved Resources

☒ Not Reserved ☐ Advanced Reserved Resources

Wall time (Hours:Minutes)

Executable

☒ Cluster ☐ From desktop

Overall Job Status

2022-11-01 - 2022-11-30

Running

Completed

Failed

Pending

Click for more details of the job

Job Id

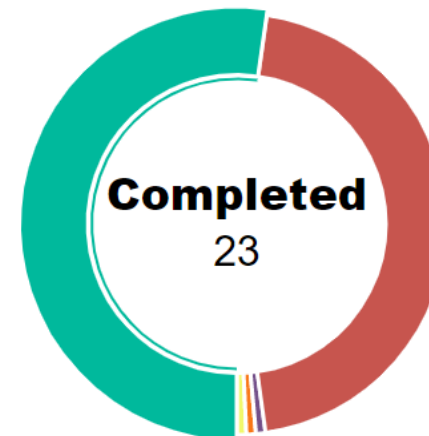
Job Name

Submit

Download

Data is not available

Job Summary





Screenshots



Applications

CP2K



OpenFOAM

OpenFOAM

CP2K Template

Job Name

No. of Cores

CP2K Version

Input files

No file chosen

[Click for Input file](#)

[Download a sample input file](#)

Arguments

Reserved Resources

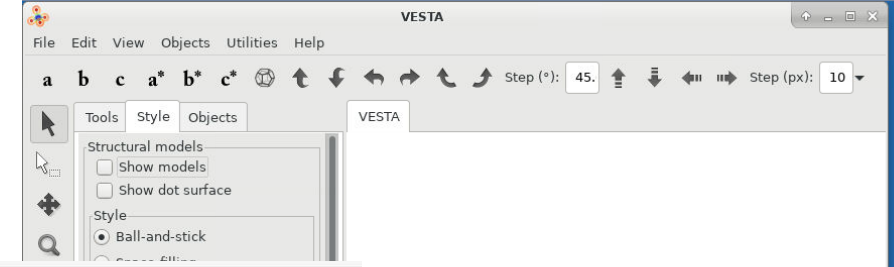
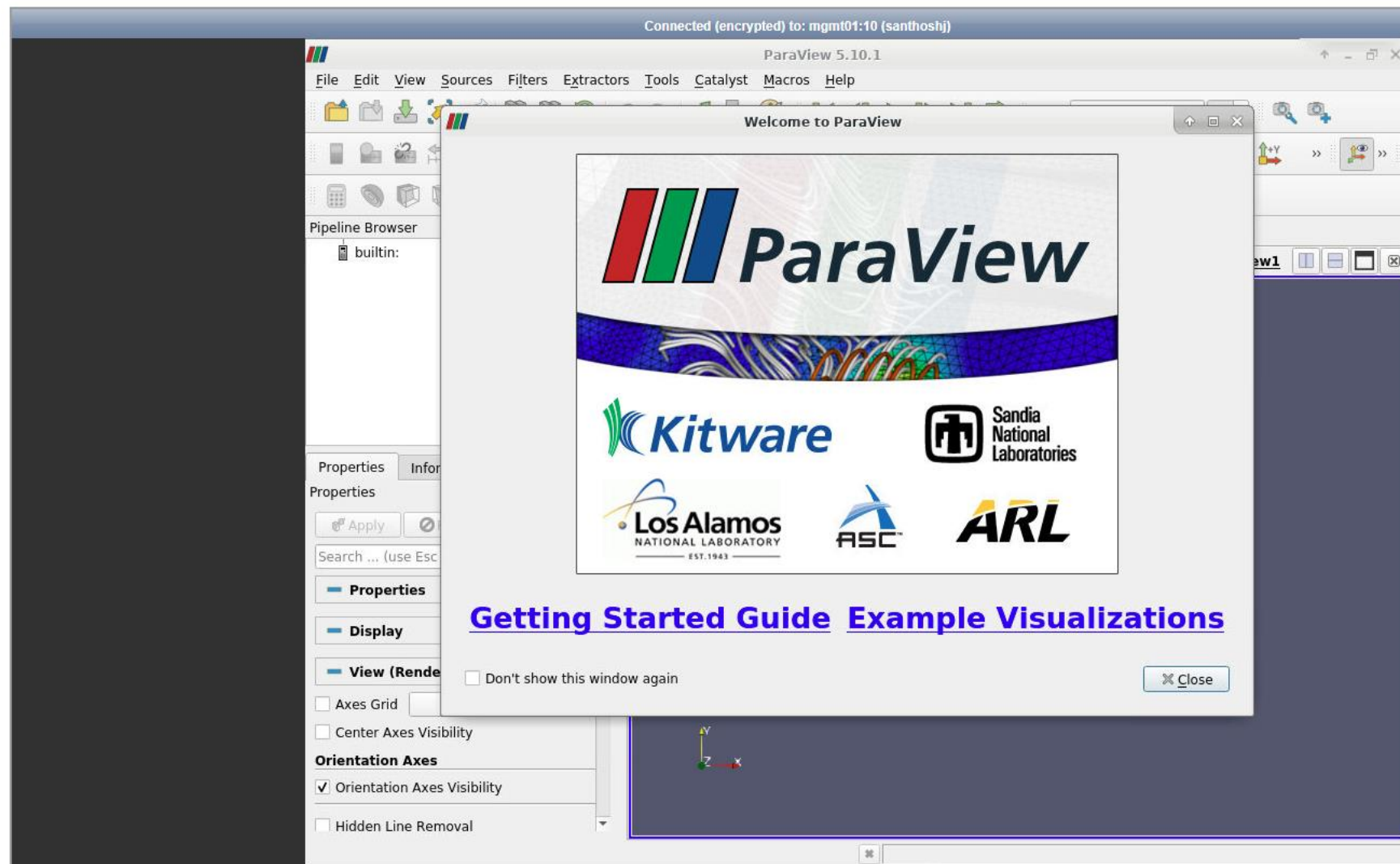
☒ Not Reserved ☐ Advanced Reserved Resources

Resource selection (Partition: Queue and Node info)

Wall time (Hours:Minutes)

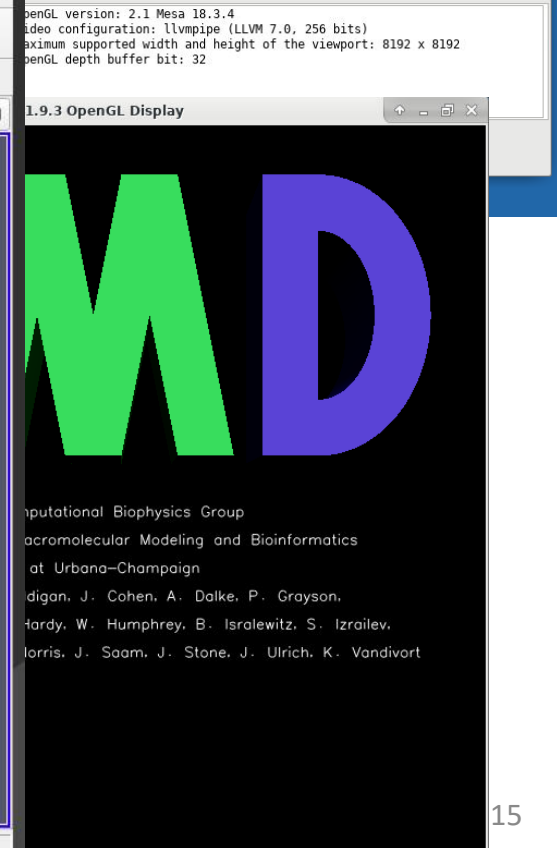
Screenshots

Visualization



VESTA

Visualization for Electronic and Structural Analysis



Conclusion



Worldwide HPC revenue expected to reach over \$49.9 billion by 2027



DA, DL, ML and HPC requirements tend to converge



HPC Dashboard is a step towards it!

"There is an entirely new class of users who do not know they are using HPC. We call it 'implicit HPC.'" – Raj Hasrah, VP & GM



We anticipate that current HPC portals will soon evolve to address all of these domains

