

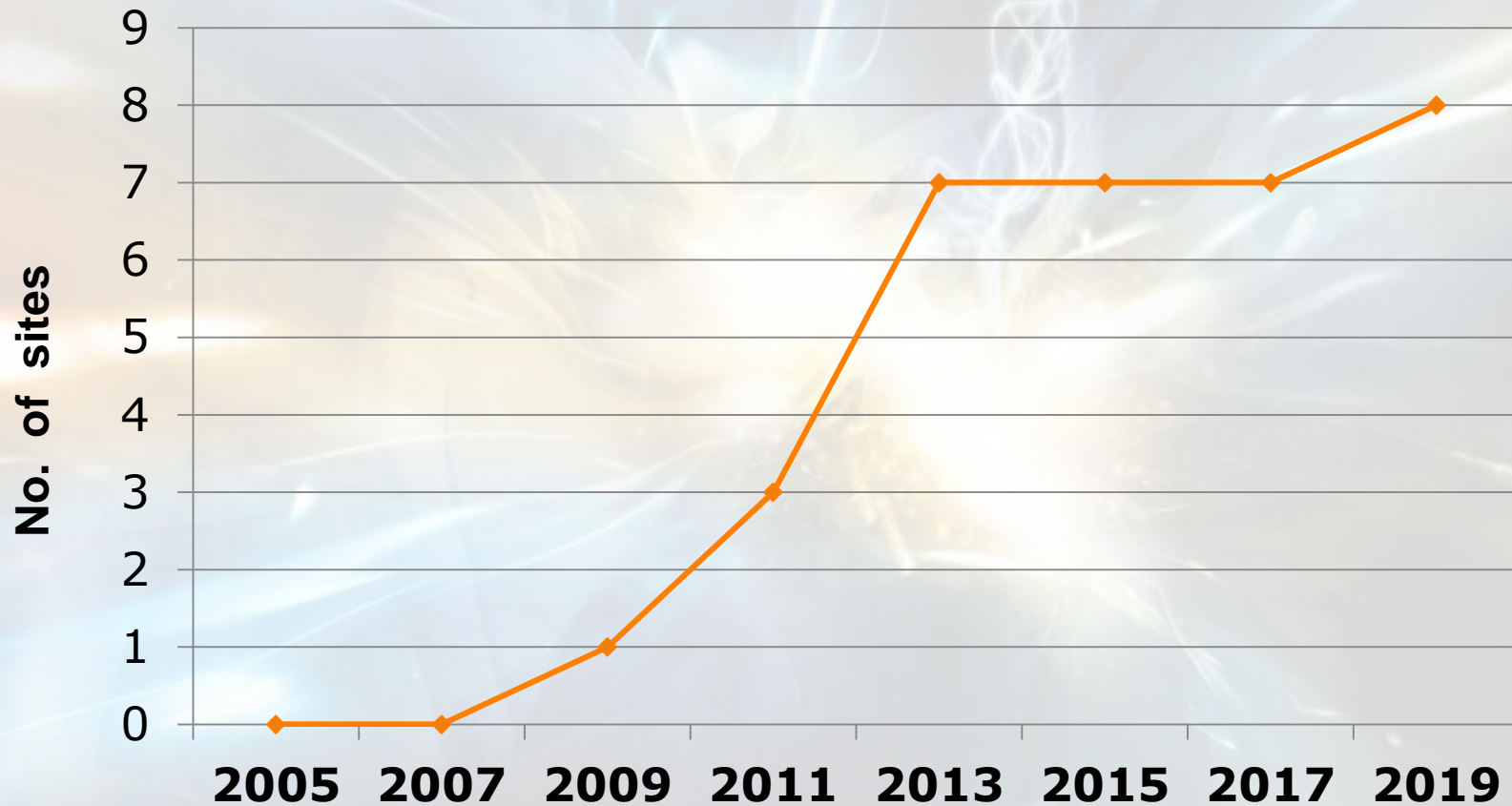


Toward Building A National High Performance Grid in Saudi Arabia

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HPC Clusters Count in Saudi Arabia

Educational HPCs in Saudi Arabia



Saudi Aramco HPC Donation Program Objectives

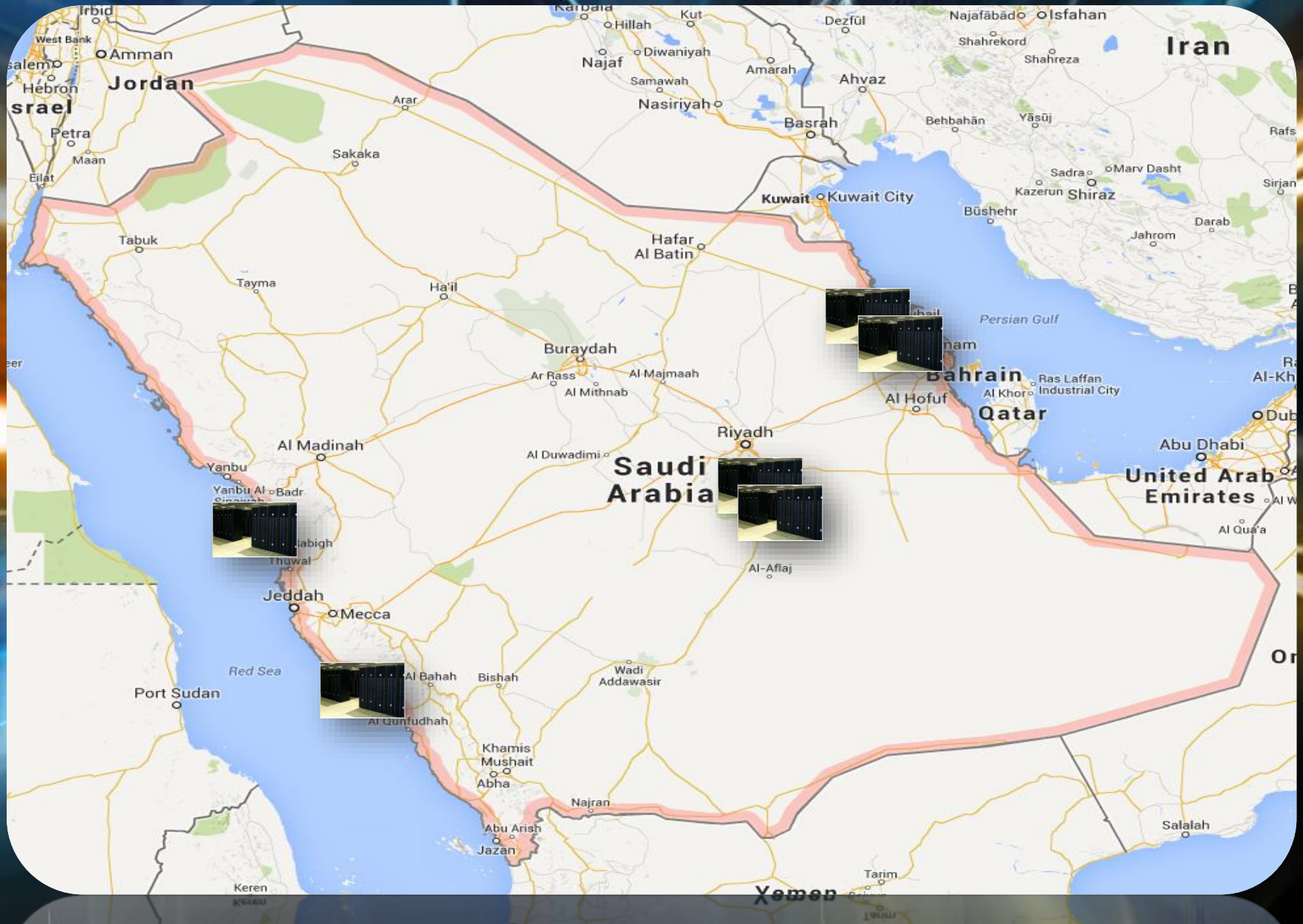
Promote the use of High Performance Computing in Saudi Arabia.

Contribute to the awareness and research advancement in the field of High Performance Computing.

Who Has HPC Clusters in Saudi Arabia?

| Site | Cluster Type | CPU Compute Power | No. of Nodes |
|--|----------------------------------|---------------------------------|--------------|
| Imam Abdulrahman bin Faisal University | Infiniband, x86 | 86.1 Tflops | 896 |
| Imam University | 1Gbit, x86 | 57.1 Tflops | 242 |
| KACST | Infiniband, x86, GPGPUs | 532.6 Tflops | 244 |
| KAUST | Infiniband, x86, PowerPC, GPGPUs | 34.5TF + 9.31TF + 5.5PF+ GPGPUs | 359+ |
| KFUPM | 10G, x86, | 8.9+ Tflops | 130 |
| Taif University | 1Gbit, x86 | 30.7 TFlops | 130 |

Who Has HPC Clusters in Saudi Arabia? - Geographically



The Saudi National Grid - Objectives

- **Share Resources**
- **Allow for HPC R&D in real Environments.**
 - Hands-on. No more unrealistic simulations.
 - Initiate graduate-level courses on HPC, Distributed computing, peer-to-peer computing.

Research Ideas

- HPC over WANs
- HPC scheduling on heterogeneous processors with different workloads.
- Peer-to-peer computing
- Intelligent routing algorithms for heterogeneous HPC workloads
- GPGPU computing (WAN, applications, ..etc)

Some Open Issues

- **Network connectivity**

- National Research and Education Network (Maeen)
- KACST public fiber links with all Saudi universities.
 - 30G total bandwidth
 - 5-20% utilization during non-prime times.

- **Data shipment:**

- Might be not of an issue for now
 - The Grid is intended for R&D with minimal datasets, minimal input.

- **Scheduling**

- Central vs. distributed.

Extending the Invitation

It is also an Invitation to the HPC Service Providers !

Consultation

Public HPC Courses

Non-commercial
licenses

The Way Forward ...

Service Catalogue

| Name | Description | Provider | Access |
|------------|---|----------|--|
| Private | Private service | Member2 | schacHomeOrganization: (Member1.local, Member2.local) |
| Drupal | Content Management System for members. | Member2 | Any |
| FileSender | FileSender is a web-based file transfer service provided by Maeen that allows users share large files (up to XGB per file) to other users or groups | Maeen | Any |
| HPC | HPC Web portal service | Maeen | Any |
| Moodle | Moodle is the suite of technologies and applications that support learning and teaching | Maeen | Any |

The Way Forward ...

Open OnDemand

Files ▾

Jobs ▾

Clusters ▾

Help ▾

Logged in as aai1

Log Out

Maeen HPC Portal Lab

Under Development



OnDemand provides an integrated, single access point for all of your HPC resources.

Message of the Day

The HPC Portal provides you with web tools that allow command line access and ability to manage files and jobs from a web browser. The HPC Portal also provides custom web applications that allow you to submit jobs from a web interface.

powered by

OPEN **nDemand**

The Way Forward ...

Open OnDemand / Job Composer Jobs Templates

Jobs

+ New Job ▾

☆ Create Template

Edit Files

Job Options

Open Terminal

Submit

Stop

Loading

Delete

Show 25 ▾ entries

Search:

| Created | Name | ID | Cluster | Status |
|----------------------|---------------------------------|-----|---------|-----------|
| March 5, 2019 3:01pm | (default) Simple Sequential Job | 651 | linux | Completed |

Showing 1 to 1 of 1 entries

Previous 1 Next

Job Details

Job Name:

(default) Simple Sequential Job

Submit to:

linux

Account:

Not specified

Script location:

/lab/users/aa11/ondemand/data/sys/myjobs

Script name:

job01.sh

/ondemand/data/sys/myjobs/projects

/ondemand/data/sys/myjobs/projects/default

/ondemand/data/sys/myjobs/projects/default/1

/slurm-648.out

/slurm-649.out

The background is an abstract composition of light and color. It features a central horizontal band of solid orange. Above and below this band are dark blue and black areas filled with dynamic, glowing light streaks and bokeh effects. A bright, multi-colored light source is visible in the center, creating a lens flare effect that radiates across the image.

Thank You.