

State of XSEDE

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XSEDE

Extreme Science and Engineering
Discovery Environment

XSEDE13

Gateway to Discovery



Welcome to XSEDE13 !!

Challenge: By the end of the meeting, talk with 5 people you have never met before for at least 15 minutes each

State of XSEDE

- What is XSEDE?
- Highlights of the past year
- Annual Review: How have we been doing?
- Objectives for the coming year+



XSEDE

XSEDE – *accelerating scientific discovery*

XSEDE aspires to be ***the*** place to go to access advanced digital research services

Driven by community needs, XSEDE accelerates open scientific discovery by enhancing the productivity of researchers, engineers, and scholars and making advanced digital resources easier to use



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XSEDE's Goals (1/2)

1. **Deepen and extend the impact of eScience infrastructure on research and education**
2. **Prepare the current and next generation of researchers, engineers, and scholars in the effective use of advanced digital technologies**
3. **Collaborate with institutions to ensure a more seamless use of the advanced technology capabilities to enhance the productivity of researchers, engineers, and scholars**



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XSEDE's Goals (2/2)

4. **Create an open and evolving environment** that facilitates integration and sharing of heterogeneous digital services
5. **Expand the environment** through the integration of new capabilities and resources
6. **Deepen and expand the array of technical expertise and support services** provided to the community
7. **Raise awareness** of the value of eScience infrastructure and, in particular, the critical technical expertise and support services



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Motivation for XSEDE:

- Scientific advancement across multiple disciplines requires a *variety of resources and services*
- XSEDE is about increased productivity of the community and providing expanded capabilities
 - leads to more science
 - is sometimes the difference between a feasible project and an impractical one
 - lowers barriers to adoption
- XSEDE provides a *comprehensive eScience infrastructure* composed of expertly managed and evolving advanced *heterogeneous digital resources and services* integrated into a general-purpose infrastructure



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Innovation: proactively looking to expand scope of capabilities

- Striking a balance between providing stable, reliable services and fostering innovation
 - both in *what* we are doing and *how* we do it
- Campus Bridging use cases are mostly for capabilities we have not traditionally supported
- Novel and Innovative Projects team is seeking out new communities and identifying new capabilities necessary to support them
- Architecture design processes explicitly support innovation by the project
 - more importantly, facilitate innovation by the community

Our goal is to deliver new capabilities – and thus new science – faster



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XSEDE Factoids: high order bits

- 5 year, \$121M project
 - plus \$9M, 5 year Technology Investigation Service
 - separate award from NSF
 - option for additional 5 years of funding upon major review after PY3
- No funding for major hardware
 - coordination, support and creating a national/international eScience infrastructure
 - coordinate allocations, training and documentation for >\$100M of concurrent project awards from NSF
- ~140 FTE funded across 18 partner institutions



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Some Unexpected Challenges:

XSEDE is a socio-technical ecosystem

- Highly distributed organization
 - challenges in managing a project that involves staff at 18 partner institutions
- A completely virtual organization
 - breaking new ground from an organizational structure and management point of view
- Highly distributed engineering project
 - developing new methodologies to adapt traditional practices to the unusual context of XSEDE



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Highlights from Past Year

Transitioning from a project in “start-up” mode to regular delivery of value to a broad community of researchers

- Facilitated broad range of ground-breaking research
- Provided in-depth support contributing to improved user productivity
- Added powerful new resources and transitioned users smoothly
 - integrated/coordinated documentation
- Initiated storage allocations in resource request process
- Initiated development of undergraduate and graduate certificate and degree programs



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Highlights from Past Year (cont'd)

- Campus Champions reached new heights
 - 200 Champions at 147 institutions
- Delivered new or improved software, services and capabilities on a regular basis
 - GPFS wide area filesystem deployment, new POPS user interface, new GridFTP version, xdusage utility, new RT ticket system, UNICORE client and server, Globus Online services
- Fully integrated the separately awarded Technology Investigation Service (TIS) into the main XSEDE project
- Improved publications tracking with extended profiles in XSEDE User Portal
 - first work from TAS group to calculate citation-based indices, e.g. H-indices, based on XSEDE-supported publications



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Current Status:

excellent production operations, improving new services

- Recent annual review held in June
 - very strong review from panel
 - either doing well or on the right track to address issues
- Clear objectives of the panel
 - make sure XSEDE is successful in major review next year
 - position XSEDE as a leader in the community
 - beyond the scope of an NSF project
 - develop sustainability for XSEDE for the long term



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Objectives for Coming Year+

Accelerating the realization of the XSEDE vision

- Deliver new or improved software, services and capabilities on a regular basis
 - XSEDE Wide Area Filesystem moving to production and allocation via the XRAC; Global Federated Filesystem for broader data sharing and supporting campus bridging, enhanced single sign-on, science gateway APIs, Canonical Use Case components
- Campus Bridging will promote "XSEDE Compatible" cluster build tools and use of Globus Online and GFFS for data movement and access
- Augment online training with new features to educate more (and more types of) users



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Objectives for Coming Year+ (cont'd)

- Incorporate the third cadre of under-represented students into the XSEDE Scholars program
- Expand Champions Program to include Regional, Student, and Domain Champions
- Redesign and implement a new allocations request system
- Complete baseline architecture and expanded set of defined Use Cases



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Objectives for Coming Year+ (cont'd)

- Increase the registrations and TIS evaluations of technology products in the XSEDE Technology Evaluation Database (XTED)
- Develop joint activities with industry
- Further develop relationships with other resource, service and infrastructure providers




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XSEDE14: see you in Atlanta next year!!

- July 13-18, 2014 @ Atlanta Marriott Marquis
- Contact Scott Lathrop to volunteer!
 - lathrop@illinois.edu





Our reach will forever
exceed our grasp, but,
in stretching our horizon,
we forever improve our world.

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