Science Gateways: Helping Communities Lead the Way

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Researchers World Wide

• ~7 million researchers world wide

Number of Researchers per million inhabitants by Country

http://chartsbin.com/view/1124
Internet2 - Global International Reach

For further information regarding the international programs of Internet2, visit http://international.internet2.edu/ or contact Heather Boyles, International Relations Director, heather@internet2.edu.

A listing of networks reachable via the Internet2 Network is found on the back of this page.
Researchers in the US

- ~1.17 million researchers in the US

Number of Researchers per million inhabitants by Country

http://chartsbin.com/view/1124
State-of-the-Art

• Data-intensive and compute-intensive problems
• Sophisticated tools and methods available
• DCIs (Distributed Computing Infrastructures) available
• Workflow systems available
• Distributed data management available
• High-speed networks (maybe) available

How do researchers use the tools and distributed environments on a large scale?
“A Science Gateway is a community-developed set of tools, applications, and data that is integrated via a portal or a suite of applications, usually in a graphical user interface, that is further customized to meet the needs of a specific community.”

TeraGrid/XSEDE
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Tools developed and provided by ICTBioMed

ICTBioMed consortium groups partners with a long record of delivering information sciences research.

The joint capacity of the consortium is reflected through the spectrum of informatics tools and could potentially be used in biomedical research. This tab contains a list of tools and resources in research communities.
Science Gateways

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TeraGrid/XSEDE
Science Gateways

Why Science Gateways?

• Modeling and analysis of data on a large scale with DCIs
• Usability of computational tools, applications, and DCIs is limited
• Scientists are generally not IT specialists

→ Need for intuitive and self-explanatory GUIs
Science Gateways

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Solution: Science gateways

Characteristics of science gateway
• Convenient access to data and tools
• Single point of entry for multiple organizations
• No firewall issues
• Diverse frameworks and APIs
Usability

"After all, usability really just means that making sure that something works well: that a person ... can use the thing - whether it's a Web site, a fighter jet, or a revolving door - for its intended purpose without getting hopelessly frustrated."

(Steve Krug in “Don't make me think!: A Common Sense Approach to Web Usability”, 2005)

Reusability

“The key to productivity is reusability. The easiest way to produce code is obviously to have it already!"

Examples for Science Gateways

- Science gateway frameworks
  - Static layout
  - Layout extendable
  - Workflow-enabled
- Portal frameworks
- Content management systems
- Libraries for implementation
- APIs for implementation
Information on Science Gateways

• Center for Research Computing at Notre Dame
  http://crc.nd.edu

• IEEE Technical Area on Science Gateways
  http://ieeesciencegateways.org

• Science Gateway Institute
  http://sciencegateways.org

• XSEDE Science Gateways
  https://www.xsede.org/gateways-overview

• Science Gateway Workshops (partner workshops)
  Europe: IWSG - http://iwsg.info/
  USA: GCE - http://sciencegateways.org
THANK YOU

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