



# **National Research Agenda in File Systems and IO from the HECURA/IWG FSIO Advisory Group**

**October 25 2010**  
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# Role

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- **Is an ad-hoc advisory group on file systems and IO (FSIO) research in high-end computing (HEC)**
  - HEC is broader in scope than high-performance computing
- **Track state of the art and current research in FSIO**
- **Maintain and update an agenda**
- **Disseminate same to governmental funding bodies**



# Why an FSIO focus?

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- **FSIO research is not sexy**
  - In common operating system calls for proposals FSIO loses
- **More than evolutionary research often can't be demonstrated quickly enough**
  - Typical grant period is 3 years
  - A reasonable FS demonstration can take 5
    - Much mundane engineering is required to wedge the thing into an existing OS



# History

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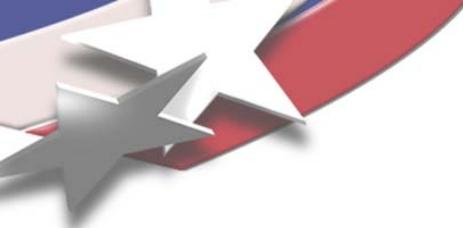
- **~2002; Worries surface that meaningful research in FSIO is non-existent and unlikely to resume**
  - Experienced, well established researchers fleeing to other areas
    - Can't compete, need multiple grants
    - Continuity always at risk so can't attract PhD candidates
  - No “new blood” in the field
- **2003 - 2004; White paper circulates at U.S. agencies on these FSIO worries recommending targeted, 5 year calls**
- **2005 – present; Annual workshop to craft research agenda**
  - NSF, DOE, DoD generate calls and BAAs with FSIO specific line items
- **2005, 2010; NSF holds FSIO-only calls, awards \$20M+ to date**



# Product

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- **Annual workshop**
- **A (lengthy) journal of activity**
  - Updated each year immediately after the workshop
  - Summarizes major discussion
  - Discusses new topics and rationales for any change of focus in proposed research agenda
  - Gives workshop participants continuity
- **The annual executive summary, or “roadmap”**
  - Our useful product
  - A (theoretically) easy to read chart conveying status of the major topic areas; needs research, sufficient research in progress, ready to be incorporated into product
  - A summary of latest annual workshop
- **Documents at <http://institute.lanl.gov/hec-fsio>**



# Primary Partners

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- **National Science Foundation**
  - Established a programmatic focus on FSIO and point of coordination
  - Primary funding source
  - Almadena Chtchelkanova
- **Departments of Energy and Defense**
  - In various guises
  - Funding and FSIO advocacy in calls
  - In-kind contributions
- **National Aeronautics and Space Administration**
  - In-kind contributions
  - Advocacy
- **HECURA/IWG**
  - Parent body



# Workshop

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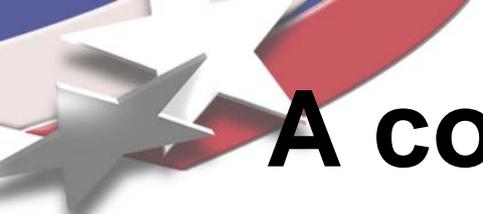
- **Held annually, in August, at Arlington VA**
  - Invitation only
  - Participants drawn from government, academia, and industry
- **Topics; metadata, measurement and understanding, QoS, security, next-gen, management and RAS, archive, assisting research**
- **Each topic handled in a breakout**
  - One hour session of discussion followed by voting on agenda items
- **Votes**
  - Are weighted, primarily in favor of government participants



# Organization

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- **There's organization? It's just a group**
  - Gary Grider, DOE via LANL; Grand Pooba
  - Marti Bancroft, DoD via <censored>
  - John Bent, DOE via LANL
  - James Nunez, DOE via LANL
  - Rob Ross, DOE via ANL
  - Ellen Salmon, NASA
  - Steve Poole, DOE via ANL and DoD via <censored>
  - Evan Felix, DOE via PNNL
  - Lee Ward, DOE via Sandia
- **I dunno, seem a little DOE-heavy to you?**
  - To be fair, it's all volunteer and these are they
  - You can change that if you aren't from DOE
    - Beware, it's not a small amount of work



# A couple of Tips and Tricks (for winning a grant)

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- **From NSF**

- The ‘U’ in HECURA stands for “University”
  - The motivation here is to foster *academic* research
  - If you have a joint appointment don’t use it to hide your primary affiliation
    - Use it if it lowers overhead or has some other benefit
    - Make your primary affiliation plain or look really bad ☹

- **From any relevant call**

- Read the long document
  - I know, it’s boring but we didn’t write it for the entertainment value
- Then, tie your proposal to a problem or insufficiently researched topic mentioned there
  - Awfully hard for a reviewer to ding you for lack of impact if the “community” thinks it’s important
  - Cheat! Wangle an invite to the workshop and convince the community of a need, then propose to research it in a later call 😊

