

DOSAR, Its State of Organization

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Outline

- What is DOSAR?
- History of DOSAR
- Goals and Accomplishments
- Strategy of DOSAR and funding successes
- Conclusions



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What is DOSAR?

- Stands for Distributed Organization of Scientific and Academic Research
 - Community and campus based grid organization
 - Its primary goal is spearheading grid in everyday lives
 - DOSAR in Korean is the God of Marshall Art
- DOSAR stems from the DØ Remote Analysis effort
 - Groups' efforts in DØ simulation and reconstruction production
- Working closely with other disciplines
- Each group plays a leadership role in realization of computing grids in corresponding campuses and states
- This is a way pure science research makes our lives better



DOSAR History

- DØ Remote Computing Era
 - SAM, DØ data management system, in place: pre-2001
 - Formed the DØRACE and DØGrid teams: Sept. 2001
 - DØ Remote Analysis Model Proposed: Nov. 2001
 - Proposal for RAC accepted and endorsed by DØ: Aug. 2002
 - UTA awarded MRI for RAC: June 2002
 - Prototype RAC established at Karlsruhe: Aug. – Nov. 2002
 - Formation of DØ Southern Analysis Region: Apr. 2003
 - DOSAR DØ MC Production begins
 - Activation of 1st US RAC at UTA: Nov. 2003
 - Formation and activation of DØSAR Grid for MC: Apr. 2004



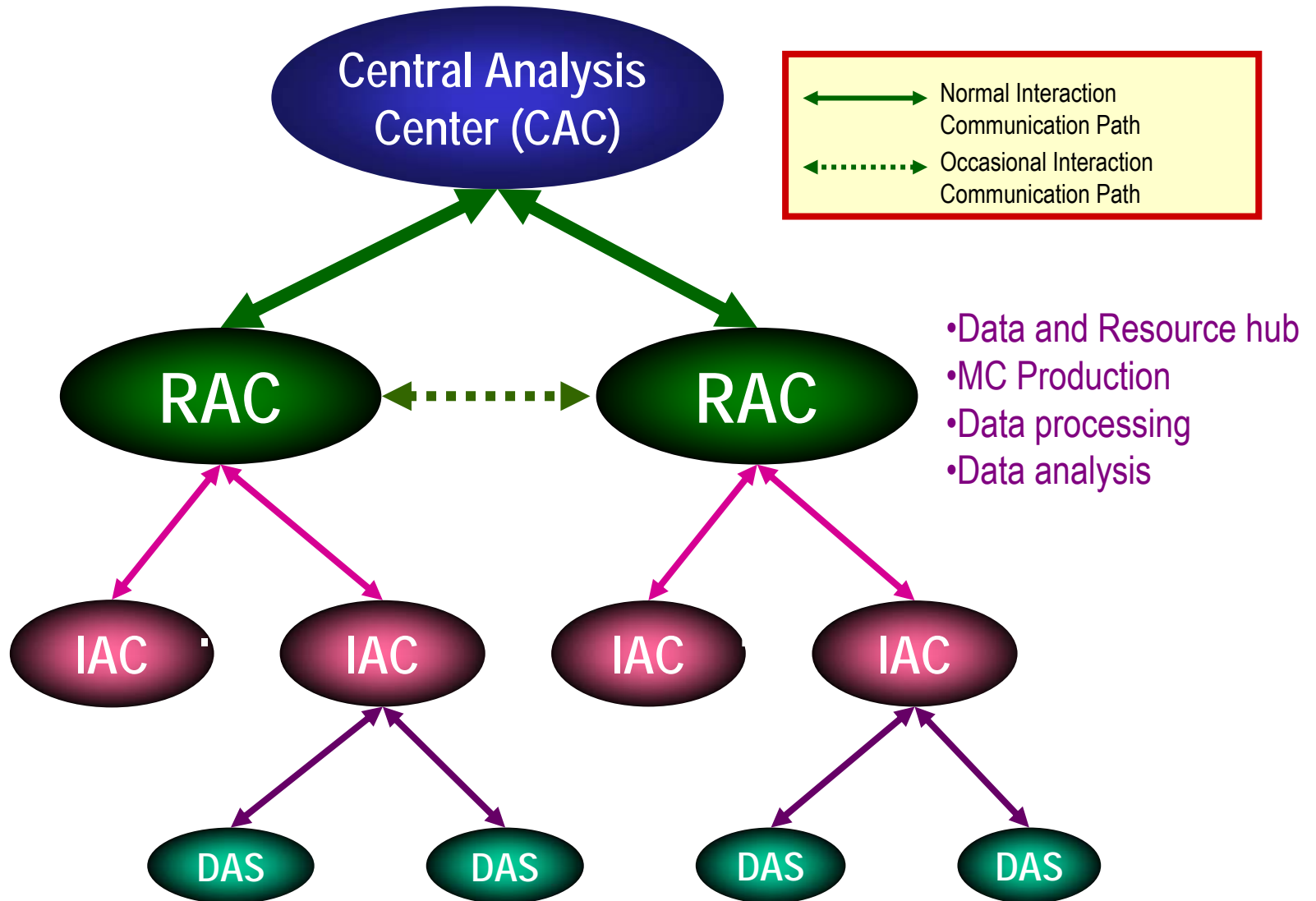
DØ Remote Analysis Model (DØRAM)

Fermilab

Regional Analysis Centers

Institutional Analysis Centers

Desktop Analysis Stations



9/21/2006



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DOSAR History

- Beyond the DØ experiment boundary era
 - Transition to Distributed Organization of Scientific and Academic Research, DOSAR: Apr. 2005
 - Active engagements with LHC experiments begun
 - Three DOSAR sites start participate in DØ data reprocessing: May 2005
 - DOSAR VOMS installed at UTA: May 2005
 - DOSAR registered as a VO in OSG: July 2005
 - ATLAS distributed production and analysis system, Panda, implemented at OU and UTA: Jan. 2006
 - All groups engaged in LHC experiments



DOSAR Consortium

➤ First Generation IAC's

- ✓ University of Texas at Arlington
- ✓ Louisiana Tech University
- ✓ Langston University
- ✓ University of Oklahoma
- ✓ Tata Institute (India)

• Second Generation IAC's

- Cinvestav, Mexico
- ✓ Universidade Estadual Paulista, Brazil
- ✓ University of Kansas
- ✓ Kansas State University

• Third Generation IAC's

- Ole Miss, MS
- Rice University, TX
- University of Arizona, Tucson, AZ

Iowa University State!!

WELCOME JIM!!!



What's the vision of DOSAR?

The Day Everyone Uses Grid
Technology for Their Lives on
Campus and at Home!!



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Primary Goals of DOSAR and Achievements

- Harness for common grid use a diverse set of human and computing resources previously unavailable
 - LTU brought in Super-Mike and additional resources for DØ and ATLAS
- Empower offsite remote users with desktop data analysis capability as if they are at the experiment
- Prepare all involved institutions to perform data analysis using grid technology on DØ and future HEP experiments such as the LHC experiments, CMS and ATLAS
 - OU, LTU & UTA are members of SWT2 physics analysis group
 - SPRACE plays a leading role in CMS remote analysis



Primary Goals of DOSAR and Achievements

- Collaborate to use cutting edge grid technology to promote a wide range of interdisciplinary and educational activities within the member regions
 - UTA plays leadership role in HiPCAT, Texas Grid community; Leading BioTex grid, working with chemists, geologists and medical professionals
 - LTU Working as a leading institution in LONI, Louisiana Grid community, Working with storm trackers?
 - OU and LU have been working toward creating “THE” Okie state grid, working closely with meteorologists
 - SPRACE leads Brazilian national grid effort w/ funds!!!



Primary Goals of DOSAR and Achievements

- Communicate and disseminate accumulated experiences with real large-data analyses to the grid community for the benefits of future HEP experiments and society as a whole.
 - OU, LU and OUT provide expertise in DØ simulation and reconstruction
 - OU, LU and UTA leaders in getting ATLAS Panda implemented and operated
 - SPRACE plays leading role in Brazil for CMS



Primary Goals of DOSAR and Achievements

- Strongly participate in global grid efforts such as OSG or EGEE to contribute to the development of grid resources and technology, utilizing a mixture of dedicated and desktop resources.
 - Met with OSG leadership to discuss DOSAR's contribution
 - We bring something many OSG institutions lack → Direct contact to states and campuses built upon the strong collaboration between groups working closely together
 - LTU accomplished first implementation of IMMO w/ OSG stack
- Exploit grid projects and international research collaborations to develop a highly trained technical workforce within the member regions.
 - Met with OSG leadership to discuss DOSAR's contribution



Primary Goals of DOSAR and Achievements

- Exploit grid projects and international research collaborations to develop a highly trained technical workforce within the member regions.
 - Each institution provides enormous opportunities to students from other disciplines to work in DOSAR
 - Created exchange programs for CSE students
 - DØ, OSG and ATLAS
 - 10 CSE students graduated from the exchange programs and plays leadership role in the grid community



What did we accomplish in DØ?

- ✓ Construct end-to-end service environment in a smaller, manageable scale
- ✓ Train and accumulate local expertise and share them
- ✓ Form a smaller group to work coherently and closely
- ✓ Draw additional resources from variety of funding sources
 - ✓ Promote interdisciplinary collaboration
- ✓ Increase intellectual resources for the experiment
 - ✓ Enable remote participants to be more actively contribute to the collaboration
- ✓ Form a grid and use it for DØ and LHC experiments
 - ✓ MC production
 - ✓ Re-processing
 - Analysis → Will not be in DØ's time scale
- ✓ Promote and improve IAC's group stature



Working with OSG

- We accomplished virtually everything we wanted in DØ
 - Joel is the leader in MC production
- While working in LHC experiments to bring DA closer to our effort to work with OSG to bring the grid closer to the earth
- Bring fresh expertise to OSG
- Expertise in monitoring solutions such as Ganglia and MonALISA → UTA working on Panda ATLAS monitoring together with CMS experiment



Contributions to OSG

- Testing of framework, middleware, and user interfaces.
- Active participation in OSG integration and deployment activities.
- Partner with high-speed optical network initiatives
- Help implement and utilize grid computing technology for educational use.
- Participate and test grid-based HEP data analysis and disseminate the experience to OSG



DOSAR Strategy

- Maximally exploit existing software and utilities to enable as many sites to contribute to the DØ and LHC experiments
 - Continue participate in DØ MC and Reco activities in opportunistic manner
 - Focus on positioning well in LHC experiments
 - Implement OSG to move into the new, global grid framework
 - Engage in and contribute significantly in OSG
- Engage in realization of computing grid beyond HEP to Society
 - Work closely with campus and state computing people to bring grid onto campuses
- Bring DOSAR specific computing jobs to the grid
- Want to make everyday lives better



Some Successes in Funding at DOSAR

- Funds from NSF MRI for UTA – RAC: 2002
 - Construction of the first U.S. university based RAC
- EPSCoR + University funds for LTU – IAC: 2003
 - Increase IAC compute resources
- Brazilian National Funds for SPRACE: 2003 & 5
 - Construction of an extensive RAC for
- EPSCoR funds for OU & LU: 2004
 - Compute resources for IAC
 - Human resource for further development
- LTU at part of LONI wins support from State of LA: 2005
- OU, LU and UTA, together with UNM, won a joint ATLAS Tier 2 site: 2005
- LTU won a joint MRI funds: 2006



Conclusions

- DOSAR an example of successful, small guys' grid
 - Critically important asset to DØ
- All groups actively engaged in LHC experiments
 - Yet DOSAR crosses the experimental boundary
- Using DOSAR for DØ and LHC data analyses and production
 - Much easier in LHC experiments
- Closely engage in OSG activities w/ emphasis on our unique effort
- Time to increase our effort bringing grid onto campuses
- Should play larger leadership role in state-wide grid
- We work toward accomplishing the vision

