# DOSAR, Its State of Organization

*Jae Yu*
*Univ. of Texas, Arlington*

*7th DØSAR (3rd DOSAR) Workshop*
*University of Oklahoma*
*Sept. 21 – 22, 2006*

## Outline

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

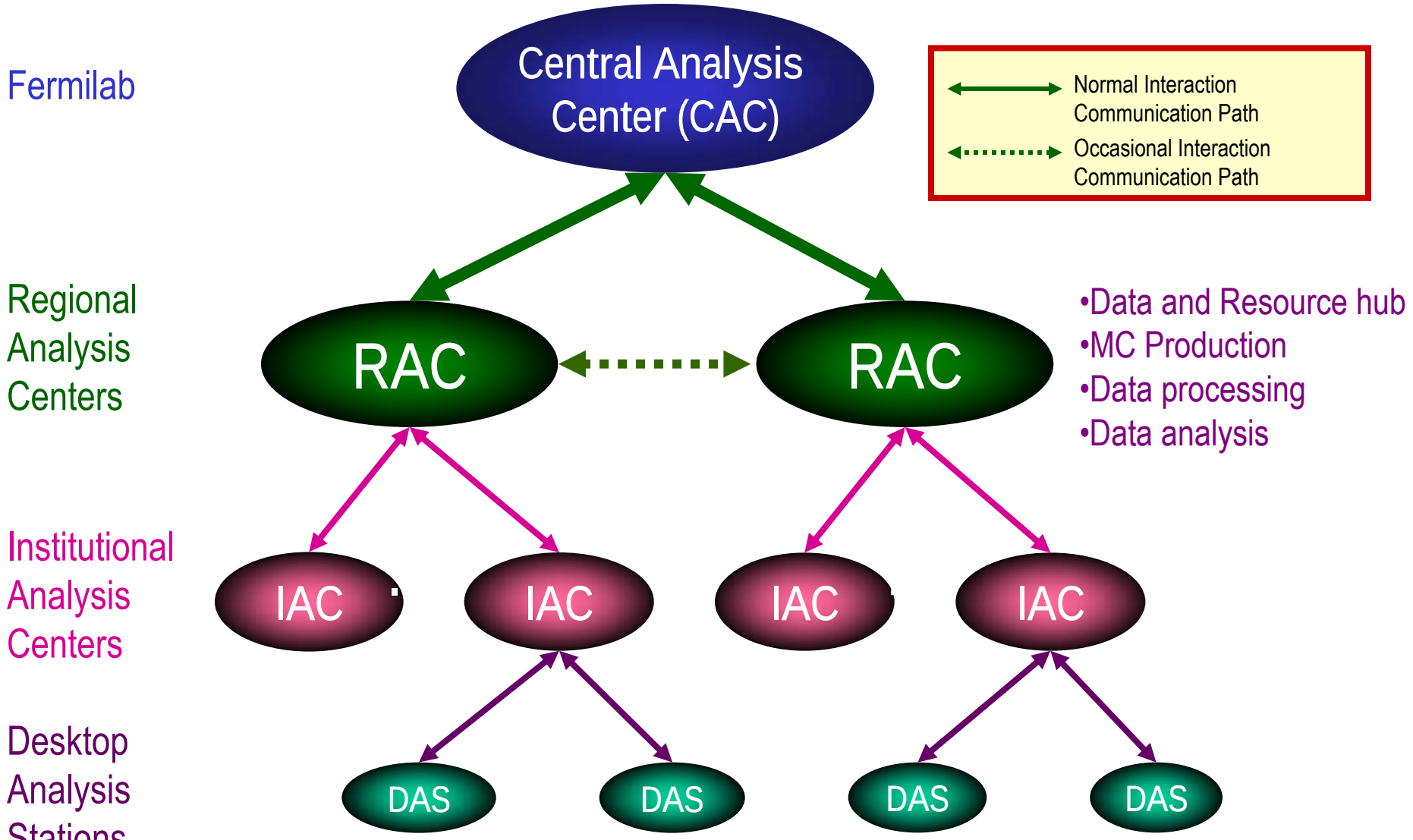
# What is DOSAR?

- 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)



# 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!!**

# 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 meteorologiests
  - →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 collabotation 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