MON 1-5pm Technical Workshop
Technical staff who might not otherwise attend the annual meeting should consider attending this session. It will include a case study review of the effects of parallelization making use of MPI and OpenMP in a multi-level parallel programming paradigm. Results will be shared by senior NCSA staff regarding the multi-core efficacy of NASA’s OVERFLOW code on an aerodynamic wing design problem. Three scale cases will be benchmarked on NCSA’s T3 (dual-core) and on Abe (quad-core).

Led by Galen Arnold, (B.S. Mathematics, UIUC), system engineer for NCSA in the consulting group, participants will also enjoy hands-on training in multi-core programming.

MON 4-7pm Machine Room Tours
Meet in the NCSA Lobby at the top of each hour for tours of the Advanced Computation Building machine rooms.

MON 5-8pm Posters, Demos and Opening Reception
A complete description of posters and demonstrations is available in a separate handout. The annual meeting opening reception will be held in the NCSA Atrium. Demos and posters will take place on NCSA Floors 1 and 2.

TUE 9:05am Keynote 1: John Heller, VP/CIO, Caterpillar Inc.
Staying Competitive Through HPC: A Caterpillar Perspective
www.cat.com

John Heller is vice president and chief information officer of Caterpillar Inc. He has responsibility for Caterpillar’s Systems + Processes Division, which includes the corporation’s information technology and dealer business systems. In addition, he has responsibility for global forestry operations. In his most recent position prior to being named a vice president by the Caterpillar Board of Directors in 2003, Heller directed Caterpillar's Global Information Technology (IT) Solutions group.

Heller joined Caterpillar in 1973, holding a variety of accounting, manufacturing and planning positions at the Decatur, Illinois, manufacturing facility. The majority of his more than 30-year career with the company has focused on information technology, including support for finance, manufacturing, marketing and dealer systems. He spent three years as a division information systems manager in Geneva, Switzerland, before returning to the U.S. in technology management assignments with Caterpillar's Corporate Services and Engine Products divisions. In 2001, he was named director of Caterpillar’s Global Information Technology Solutions, then the largest department of the company’s Systems + Processes Division.

Heller earned a Bachelor's degree in Business Administration from Millikin University, Decatur, Illinois, and a Master's of Business Administration from the University of Illinois at Urbana. He also has completed the Caterpillar Advanced Management Program. He is a past member of the University of Illinois Executive MBA Board. He is certified in production and inventory management and a member of the American Production and Inventory Control Society. He chairs Carter Machinery Company Board. Heller is also a member of the Research Board, the Pioneer Machinery Board, the Peoria Zoological Society and sits on the Heartland Water Resources Council.

For more than 80 years, Caterpillar has been making progress possible and driving positive and sustainable change on every continent. With 2006 sales and revenues of $41.517 billion, Caterpillar is the world's leading manufacturer of construction and mining equipment, diesel and natural gas engines, industrial gas turbines and a wide and growing offering of related services.
TUE 10:05am Keynote 2: Dr. Thom Dunning, Director, NCSA and Institute for Advanced Computing Applications and Technologies
Staying Competitive Through HPC: A National HPC Center Perspective
www.ncsa.uiuc.edu
www.iacat.uiuc.edu

Thom Dunning is the director of the Institute for Advanced Computing Applications and Technologies and the National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign. He also holds an endowed position as Distinguished Chair for Research Excellence in Chemistry and professor in the Department of Chemistry. As leader of IACAT and NCSA, Dunning leads a staff of approximately 300 technologists and scientists who provide and support high-performance computing, data-intensive computing, and networking resources; explore innovative computing architectures and techniques to achieve petascale and beyond science; develop cyberinfrastructures tailored to the needs of research communities and software and tools to improve cybersecurity; create artistic visualizations of scientific phenomena; and help prepare the next generation of scientists and engineers.

Dunning previously held leadership positions at the Joint Institute for Computational Sciences at the University of Tennessee and Oak Ridge National Laboratory, the University of North Carolina System, the Office of Science at the U.S. Department of Energy, the Environmental Molecular Sciences Laboratory at Pacific Northwest National Laboratory, Argonne National Laboratory, and Los Alamos National Laboratory. He was instrumental in creating DOE's Scientific Discovery through Advanced Computing (SciDAC) program, the federal government's first comprehensive program aimed at developing the software infrastructure needed for leadership-class scientific computing.

Dunning is a fellow of the American Physical Society and of the American Association for the Advancement of Science as well as a member of the American Chemical Society. He received DOE's E.O. Lawrence Award in 1997 and its Distinguished Associate Award in 2001.

TUE 11:05am Keynote 3: Robert Graybill, Director of Innovation, University of Southern California Information Sciences Institute
Staying Competitive Through HPC: Update on HPC Application Software Consortium for Multiphysics
www.isi.edu

Bob Graybill, representing University of Southern California Information Sciences Institute (ISI) in cooperation with the Council of Competitiveness, is fostering the development of advanced national high-performance computing (HPC) collaborative environments that will help companies, universities and national laboratories share high-performance computing systems and computational science expertise. He will update the audience on the creation of an HPC application software consortium. If formed, this consortium will support the development of a much-needed enabling infrastructure for the application of ISV, open source, and/or proprietary HPC software in a multi-physics simulation environment. In March 2008, more than 100 executives and senior decision makers representing industries that use high-performance computing (HPC), universities, national labs, and hardware and independent software vendors attended. Based on an informal poll taken at the summit a consensus was reached to proceed to the next step of holding a formation meeting for the HPC Application Software Consortium in July/August.

Initially based on recommendations from the Council on Competitiveness' HPC Advisory Committee, chaired by Richard Herman, Chancellor, University of Illinois at Urbana-Champaign and David Shaw, Chairman, D.E. Shaw & Co., Inc., the Council, NCSA, and ISI are leading an effort to explore feasibility and interest in initiating an HPC application software consortium to address this pressing requirement. A consortium should lower, for both developers and end users, the total cost of development and ownership of the critical HPC multi-physics application software and environments needed to accelerate industrial competitiveness.

Graybill has an extensive background in embedded and high-performance computing with over 30 years of experience in the defense, government and commercial industries. Prior to joining ISI, he spent six years at DARPA, where he designed, developed and implemented six new transformational programs in high-end computing architectures and responsive embedded computing hardware, software and network systems. These programs were coordinated with other government agencies, laboratories, federally-funded research and development centers and non-profit organizations. He was a member of the Senior Science Team leading a number of government sponsored studies in high-end computing, includ-
In today’s competitive global marketplace, manufacturing companies like Caterpillar make extensive use of simulation and analysis tools to develop their products as much as possible in the virtual world before physical prototypes are built and tested. For example, simulation tools are used for combustion, structural durability, metal forming, and system and machine performance. Optimization tools are used to explore the design space and determine topology and shape. The continuing advancement of the virtual product development environment that encompasses both software tools (multiphysics) and hardware capabilities (HPC) has permitted companies to explore more alternatives with increasingly realistic (and often more complex) simulation models. These models are typically solved on large HPC Linux clusters in order to take advantage of parallel processing capabilities. However, even with the advancements in software and hardware capabilities, this current environment does not permit companies to explore the desired set of alternatives in their quest for optimal designs within the constraints of ever decreasing product development schedules. The panelists are experts in various disciplines of analysis and simulation at Caterpillar, and they will illustrate, by example, a few of the areas where the current environment fails to provide a framework for maximizing virtual exploration of design alternatives.

Walter Lohmann
Walt joined Caterpillar Inc. in 1974 as a college graduate trainee. In 1975 he transferred to the Research Department as an engineer in the Tribology Group located in Mossville IL. In 1986 he relocated to Caterpillar’s Decatur IL facility as a project engineer in the structural/performance analysis team in product development. In 1994 he became the Analysis Team leader for Articulated Truck product group and coordinated simulation activities in Decatur and Peterlee, England. In 2000 he joined the Technology & Solutions Division as Project Team Leader of the Flexible Body Dynamics team at the Champaign Simulation Center located on the campus of the University of Illinois. In June 2001 he was promoted to Manager of the Champaign Simulation Center. Walt holds a B.S in Engineering Mechanics and an M.S. in Theoretical & Applied Mechanics from the University of Illinois, Urbana-Champaign.

Chris Ha
Chris is a senior engineering project team leader and a research program manager in the virtual product development group at Caterpillar’s Champaign simulation center offering 10 years of industry experiences in both mechanical and nuclear industries. He holds a doctoral degree in Civil Engineering from University of Illinois specializing in computational mechanics. At Caterpillar, he has a corporate responsibility to implement advanced optimization and reliability-based analysis technology to achieve a long-term business goal by applying them to practical applications. He is a certified 6 sigma black belt and ran many corporate VPD projects. His expertise is in formulating a well posed practical optimization problems for structural and multi-disciplinary optimizations as well as Robust/Reliability Based Design Optimization. His previous experience includes nonlinear FEA (Material, Geometry and Boundary), durability analysis (Weld Fatigue and Machine Component Fatigue), dynamic analysis (Vibration, Transient and Frequency). He is currently working with three different professors at University of Illinois to develop new optimization and reliability-based analysis techniques. He has multiple ASME/AIAA/SMO publications, and his latest conference publication has been accepted for Journal of Structural and Multidisciplinary Optimization.

Keven Hofstetter
Keven joined Caterpillar Inc. in 1988 after earning a B.S. in Mechanical Engineering from Purdue University. Keven completed a one-year training program and then joined the Performance Analysis section within Caterpillar’s Technology and Solutions Division. He has spent most of the last 20 years in the area of virtual product development. Keven is currently a Research Program Manager responsible for the VPD-Research program. He develops technologies such as large-scale rigid and flexible multi-body dynamics, implement-earth interaction models, tire and track-soil interaction models and virtual operator models. His primary focus is the development of virtual tools that can be used to drive product development.
Rick Huff
Rick joined Caterpillar’s Technical Center in August 1997 in the Advanced Materials Technology Division as a Research Engineer working primarily in the area of metal forming simulation. In June 1999, Rick transferred to the Champaign Simulation Center as the Team Leader of the Materials Processing Simulation Group. In 2006, Rick became the Engineering Supervisor of the CFD and Materials Simulation Teams. His groups use advanced computational tools to help provide optimal solutions for thermal and fluid flow applications and for metal forming, casting, and heat treatment processing applications. Rick earned a B.S. and M.S. in mechanical engineering from Wright State University, Dayton OH.

Khaldoon Tahhan
Khaldoon began his career with Caterpillar in 1998 as on site design engineer in Track Type Tractor group, in 1999 he moved to Caterpillar’s Decatur IL facility to work in structural analysis group. In 2001 he accepted a full-time Caterpillar engineering position in structural analysis team. He transferred to the Technology & Solutions Division in 2003 where he established a Rollover Protective Structure analysis team at the Champaign Simulation Center. Later on he accepted the responsibility of leading the system component team as well. Khaldoon holds a B.S. in Mechanical Engineering from University of Damascus, Syria and a Master of Science degree in Mechanical Engineering from Bradley University, Peoria IL.

Madhavan Narayanan
Madhavan is currently an Engineering Manager in Technology and Solutions Division of Caterpillar Inc. He is responsible for providing all CAT Diesel Engine and Aftertreatment Simulation support for current and new product development. He is passionate about deploying his simulation team with the product design groups at the start of concept designs and integration of Simulation-Design-Test as a way to improve the product validation efficiency. Madhavan holds a Masters Degree in Aerospace Engineering. Prior to CAT, Madhavan had 11 years of Simulation/Test engineering and technical leadership position in Detroit automotive industries.

TUE 1:30pm Concurrent Session 1-B: Next Generation Data Centers
William Kosik, Chicago Managing Principal, EYP Mission Critical Facilities, Inc.  
John Melchi, NCSA Administrative Directorate Lead  
www.eypmcf.com  
www.ncsa.uiuc.edu/BlueWaters

Reducing power consumption in computing devices while simultaneously increasing performance are fundamental parameters in the development of computing systems - the same is true for data center facilities. Next generation data centers will enable interoperability between the facility power and cooling infrastructure and the computer systems themselves. This transfer of operating parameters and real-time performance data is critical to reaching the full potential in optimizing energy use and lowering the environmental impacts of the IT enterprise. The high performance computing model lends itself particularly well to this optimization strategy. This core idea, where the data center becomes the computer, will begin to manifest itself within the next decade through industry-generated metrics as high performance computing models become more widely used. NCSA’s petascale computing effort is a prime example of this next generation.

William Kosik
William is the Chicago managing principal at EYP Mission Critical Facilities (EYP MCF) and a member of the firm’s Technology Council, EYP MCF’s R&D organization. Kosik is a licensed professional mechanical engineer, LEED Accredited Professional (LEED AP) and a Certified Energy Manager (CEM). He is the leader of “Moving Towards Sustainability,” one of eight corporate pillars at EYP MCF, which is focused on the research, development, and implementation of sustainable, energy-efficient, and environmentally responsible design strategies for data centers and other high-performance building types. As one of EYP MCF’s resident experts on high-performance computing, Kosik is also collaborating with multiple SC500 clients, developing innovative design strategies for cooling high-density environments, and creating scalable cooling and power models for 10sTeraFlop to 100sTeraFlop to 10sPetaFlop scenarios.

Kosik has presented on the topics of data center optimization and building performance simulation at venues including AFCOM, Data Centre Dynamics, and the Liebert Users Conference. Also among his 50+ articles and speaking engagements are presentations to AFCOM, the American Institute of Architects, ASHRAE, Data Center Dynamics, IFMA, Labs21, NeoCon, ULI and 7x24, as well as articles in the ASHRAE Journal, Energy & Power Management magazine, Building Operations Management, Engineered Systems, Consulting Specifying Engineer and R&D Magazine. Kosik worked as a consultant for the U.S. Green Building Council on the launch of the LEED Core & Shell Pilot Program and presented at multiple USGBC conferences, as well as at the World Forum for Building Innovation in the UK and the Sustainable Buildings Conference in Finland. He also worked with the city of Chicago in developing city-specific environ-
mental criteria. Kosik’s projects have earned 19 ASHRAE Awards. He has his degree in engineering mechanics from the University of Illinois at Urbana-Champaign.

**John Melchi**
John Melchi leads the administration directorate at the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign. He oversees the center’s facilities planning and management, finance, human resources, internal infrastructure, and public communication units. He is also the NCSA lead on the design and construction of the new Petascale Computing Facility which will house the center’s Blue Waters computing system and related infrastructure.

**TUE 3pm Concurrent Session 2-A: Value Engineering and Tomorrow’s Product Design Cycle: The New HPC Challenge**
*Jon Riley, Manager, Composite Body Solutions Engineering & Development*  
*Dr. Steve Reagan, Simulation Director, L&L Products, Inc.*  
*Seid Koric, NCSA*  
*www.llproducts.com*

This presentation will draw from many years of experience with large degree-of-freedom systems and people who spend much of their design process in a virtual product development environment. The example customer base consists of current automotive manufacturers heavily pressured due to the competing demands of time-to-market and performance expectations. Our use of computationally intensive concept testing, design evaluation, and performance validation of nonlinear dynamic systems allows a shortened design cycle while increasing the value (performance/cost) passed to our customers. The coupling of optimization and high performance computing is found to be an essential pathway that must be balanced with both design iteration throughput and system capacitization if true value is to be realized. Value innovation has been said to be the metric for long term enterprise success; high performance computing will be seen to be one of its key languages, connecting a broad base of previously excluded inventors with an expectant market.

**Jon Riley**
Jon is the Composite Body Solutions’ Engineering & Development Manager at L&L Products, Inc. He brings nearly 20 years of experience in the area of structural design for crashworthiness and NVH. Prior to L&L he worked as a dynamics technical specialist in the aerospace industry and in the vehicle safety group at Ford Motor Company. He earned his B.S and M.S. degree in Aeronautical & Astronautical Engineering from the University of Illinois, Champaign-Urbana.

**Steve Reagan**
Steve grew up in North Carolina where he studied Mechanical Engineering at North Carolina State University, graduating with B.S. and M.S. degrees in 1991 and 1993, respectively. After graduation he joined Applied Research Associates of Raleigh, NC, where he led modeling efforts for blast propagation, human lethality assessments, and structural reliability. In 1995, Steve moved to Charlottesville, VA to attend the University of Virginia and continue to invest in his knowledge of computational modeling and solid mechanics. While in Charlottesville, he met his wife, Janice, where they were married in 1999 and he later graduated with a doctoral degree in Mechanical Engineering. Steve joined Ford Motor Company in 2000 where he contributed in their Advanced Vehicle Engineering, Office of General Counsel, and Scientific Research communities. Steve currently works for L&L Products in Romeo, MI.

**Seid Koric**
Seid Koric has more than 11 years of professional experience at NCSA, conducting cutting edge applied research and user support for the national academic and industrial computational mechanics communities on the high performance computing platforms, which has resulted in numerous journal and conference publications. He earned his B.S. in mechanical engineering from the University of Sarajevo, M.S. in aerospace engineering and Ph.D. in mechanical engineering from the University of Illinois at Urbana-Champaign.

**TUE 3pm Concurrent Session 2-B: HPC Multi-Core Productivity**
*John Towns, Directorate Lead, NCSA Persistent Infrastructure*  
*www.ncsa.uiuc.edu/UserInfo*

This session is a follow-on from the Monday afternoon technical workshop which reviewed the effects of parallelization using MPI and OpenMP in a multi-level parallel programming environment and the effect of multi-core processors on scalability and performance. After a short review of the technical findings it is anticipated that session participants will begin a shared dialogue about the possibilities and the challenges to multi-core programming, multi-level parallelism and
their impact for industrial applications.

John Towns is Director of Persistent Infrastructure Directorate at the National Center for Supercomputing Applications (NCSA) at the University of Illinois. He is the Principal Investigator (PI) on the NCSA Resource Provider/HPCOPS award for the TeraGrid Project, and co-PI on the Computational Chemistry Grid Project led by the University of Kentucky. His background is in computational astrophysics making use of a variety of computational architectures with a focus on application performance analysis. At NCSA, he provides leadership and direction in the support of an array of computational science and engineering research projects making use of advanced computing resources. He is a co-founding member of the Steering Committee of the LCI (linuxclustersinstitute.org). Mr. Towns plays significant roles in the deployment and operation of computational data and visualization resources, and Grid-related projects. These projects embody the deployment of technologies and services to support the establishment of a Grid computing infrastructure. He is a frequently invited presenter on high-performance computing and enabling science and engineering through the use of computational, data and Grid-based resources. He earned M.S. degrees in Physics and Astronomy from the University of Illinois in 1990 and 1991 respectively and a B.S in Physics from the University of Missouri – Rolla in 1987.

**TUE 4:30pm Keynote 4: Dr. William Magro, Director of Cluster Software & HPC Technologies, Intel**

*Staying Competitive through HPC: An Intel Perspective*

William Magro manages the Intel Cluster Software and HPC Technologies Group. He holds a B.Eng. degree in Applied and Engineering Physics from Cornell University and M.S. and Ph.D. degrees in Physics from the University of Illinois at Urbana-Champaign.

**WED 8am NCSA Update**

*Merle Giles, Director, NCSA Private Sector Program*

http://industry.ncsa.uiuc.edu

Merle is Director of the Private Sector Program at NCSA. Through this program industry can engage intellectually with applied and theoretical researchers, leverage today’s technological innovations and access NCSA’s leadership class computational systems. The world’s leading companies have profited tremendously by decreasing time-to-solution and increasing the fidelity of their most complex science, engineering and mathematical problems. With petascale computing PSP partners can soon leverage HPC resources at scales many times that of today’s capabilities, seeking breakthrough solutions and sustainable competitive advantage in their industry domains.

Giles previously led UIUC’s Executive MBA to international stature, achieving a #1 ranking among US public university EMBA programs in London’s 2002 FINANCIAL TIMES. As Executive MBA director, he and teams of executives and faculty consulted at major international companies, including BASF, Bertelsmann, Caterpillar, Deere, Disney, Deutsche Telekom, Lufthansa, Porsche, Procter & Gamble, Siemens, Volkswagen and others. Giles earlier served as president and CEO of Sheridan Bank of Peoria IL (later First of America Bank-Peoria), as CFO of Star Transport, Inc. in Morton IL and as a real estate broker/owner. Giles earned an MBA from the University of Illinois at Urbana-Champaign and a BS in accounting and business administration from Illinois State University. He is an alumnus of the Stonier Graduate School of Banking at the University of Delaware and holds a CPA certificate.

**WED 8:30am Concurrent Session 3-A: The Computational Microscope**

*Dr. Klaus Schulten, Swanlund Professor of Physics, UIUC*

www.ks.uiuc.edu

This session will illustrate how advanced computational methods offer today new microscopic views of living cells and bionanotechnological devices not available through experimental microscopy. The computational microscope guides the development of new drugs, assist bioengineers in constructing and using nanosensors, and advances biomedicine through unprecedented views of machines in living cells. The software for the computational microscope, developed over two decades at cost of $20 million, is used today by over 100,000 registered users. The NCSA/NSF petascale computer will greatly advance the use of the computational microscope.

Klaus Schulten received his Ph.D. from Harvard University in 1974. He is UIUC’s Swanlund Professor of Physics and is also affiliated with the Department of Chemistry as well as with the Center for Biophysics and Computational Biology. Pro-
Professor Schulten is a full-time faculty member in the Beckman Institute and directs the Theoretical Biophysics Group. His professional interests are theoretical physics and theoretical biology. His current research focuses on the structure and function of supramolecular systems in the living cell, and on the development of non-equilibrium statistical mechanical descriptions and efficient computing tools for structural biology.

Klaus Schulten's group at the Beckman Institute of the University of Illinois utilizes advances in physical theory and computing to model organisms across many levels of organization, from molecules to cells to networks. The research has been driven by problems in biomedicine, such as understanding neural development and processing, solving the mechanisms of bioenergetic proteins like bacteriorhodopsin or light harvesting complexes, the recognition and regulation of DNA by proteins, unraveling the molecular basis of the body's lipid metabolism and of the mechanical properties of cells, and most recently determining transport through aquaporins.

**WED 8:30am Concurrent Session 3-B: Data Exploration & Management**

*Larry Koenen, IT Architect, State Farm*

www.statefarm.com

Larry is an IT Architect at State Farm in the data arena. His career has taken him from coding in the Home and Commercial policy lines to technical support in our database organization to leading the overall data design for State Farm’s policy and claims systems. During his career, he led the efforts for diversification of the database management systems used at State Farm. During that time, he was the technical lead and project manager for the implementation of what was then the 8th and 14th largest supercomputers used to segment markets and support risk management. He was the driving force in the creation of an organization in State Farm focused on delivering solutions for Business Intelligence and unifying State Farm’s various data warehouse efforts.

Today Larry works on State Farm’s development initiatives. He is responsible for the overall data direction within their Property and Casualty Systems and is leading the Information Management efforts for the deployment in State Farm’s claims management area.

**WED 10am Concurrent Session 4-A: Granularity: How Much is Too Much?**

*Dr. Paul Fussell, Senior Manager, Applied Mathematical Modeling, Boeing*

*Dr. Tim Gatzke, Associate Fellow, Advanced Systems Concepts & Exploration, Boeing*

www.boeing.com

**Paul Fussell**

Paul is manager of the Mathematical Modeling group in Boeing Technology. This group comprises physicists, engineers, and mathematicians sharing an underlying mathematical philosophy while focusing on design, analysis and modeling, virtual-integration and optimal sensor fabrics. All of these topics are founded on computation, and Paul is leading an advanced computing strategic effort within Boeing's technology organization. The work requires frequent interaction with National Labs, Universities, other government personnel, and advanced companies. Paul completed his PhD at Carnegie Mellon University. Paul has been with Boeing since 2001, serving as senior manager. He has also served on the Mechanical Engineering faculty at Arizona State University, Alcoa Technical Center, and Advanced Robotics Corporation. He is a member of the AIAA, IEEE, and Sigma Xi.

**Timothy D. Gatzke**

Timothy is a Boeing Associate Technical Fellow working in the Advanced System Concepts & Exploration (ASC&E) group within the Boeing Integrated Defense Systems organization. This group applies design and analysis tools in aerodynamics, propulsion, and structures along with geometric modeling, mission simulation, and optimization tools to a variety of conceptual design problems. Tim has a M.S. in Aeronautical and Astronautical Engineering from the University of Illinois and a Ph.D. in Computer Science from Washington University in St. Louis. Tim also has expertise in Computational Fluid Dynamics (CFD), particularly geometric modeling and grid generation. He has developed tools for creating parametric geometry, visualization of geometry and data, and automating processes within the Unigraphics and CATIA V5 CAD environments. In ASC&E, he applies these skills to integrate components into the conceptual design process and to increase the fidelity of the analyses where appropriate.
**WED 10am Concurrent Session 4-B: 20 Years of Internet CyberSecurity: Lessons Learned and the Path Forward**

*Randy Butler and Von Welch, Co-Directorate Leads, NCSA CyberSecurity*

http://security.ncsa.uiuc.edu

Discussed will be NCSA’s experiences from the past twenty years of network security operations, research and development, and a description of NCSA’s vision for the evolution of cybersecurity.

**Randal Butler**

Randy has been with NCSA since 1987. He is Co-Director for NCSA’s CyberSecurity Directorate and a member of the NCSA Steering and Management Committees. Butler has many years’ experience in leading and/or collaborating on large, complex R&D and infrastructure projects, including the NSF George E. Brown, Jr. Network for Earthquake Engineering and Simulations NEESGrid, where he served as deputy director; he has also led several NSF-funded cyberinfrastructure development projects. He currently serves as Principal Investigator and Co-Director for the Office of Naval Research-funded National Center for Applied Secure Systems Research (NCASSR) as well as a number of other smaller projects. Several years ago Butler formed both the production security team and the security research and development team at NCSA.

**Von Welch**

Von is Co-Director for CyberSecurity at the National Center for Supercomputing Application (NCSA)/University of Illinois. In this role he leads development and application of security technology for clientele spanning the science, engineering, law enforcement and corporate communities. Mr. Welch has worked in cybersecurity for the past decade, developing new standards and methodologies for distributed and federated security architectures. Prior to working in cybersecurity, Mr. Welch worked on high-performance networking and networking applications. Mr. Welch is a 1992 graduate of the University of Illinois with a degree in Computer Engineering.

**WED 11:30am Keynote 5: Dr. Robert Pennington, NCSA CTO & Blue Waters Petascale Project Director**

*Staying Competitive Through HPC: An NSF Track 1 Award Recipient Perspective*

www.ncsa.uiuc.edu/BlueWaters

NCSA was selected to build the nation’s first NSF-funded petascale computing system, seeking to achieve at least one sustainable petascale floating point operation per second (petaflop/s). Mr. Pennington will provide an update on the progress with NSF and with IBM and share how industry can leverage the capabilities of this petascale computing environment.

As NCSA’s Deputy Director and CTO, Rob oversees the activities in all of NCSA’s directorates to ensure that the scientists and engineers using NCSA’s resources and services see a unified, seamless environment that brings the most advanced technologies to bear on their problems. He is also responsible for coordinating major campus- and region-wide efforts to build an integrated cyberinfrastructure and he continues to lead the center’s Innovative Systems Laboratory.