

UC San Diego Launches University-Industry Research Alliance To Address Challenges To Future Shared Networked System Infrastructures

Founding Members include AT&T, Alcatel, Hewlett-Packard and QUALCOMM Incorporated

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The University of California, San Diego and four international technology leaders have committed approximately \$9 million over three years to the Center for Networked Systems (CNS), a new university-industry alliance focused on developing technologies for robust, secure, and open networked systems. The founding members include AT&T, Alcatel, Hewlett-Packard and QUALCOMM Incorporated, spanning a range of technology areas including enterprise computing, networking equipment, and network operations. The contributions leverage more than \$10 million in related research activities already underway at UCSD. CNS is a part of the UCSD Jacobs School of Engineering and the California Institute for Telecommunications and Information Technology [Cal-(IT)²], a partnership of UCSD and UC Irvine.

"Networks and systems have converged, becoming complex systems in their own right. CNS is the first of its kind devoted specifically to understanding the contribution of networks, pervasive computing and grids as systems," said CNS founding director Andrew Chien, who is the Science Applications International Corporation (SAIC) professor in Computer Science and Engineering at the Jacobs School. "CNS will also blaze a new trail in its alliance with member companies, which will work closely with our faculty to address the most important obstacles to large, networked systems in both the consumer and enterprise arenas. We believe that some of these obstacles can only be removed through the deep, shared insights of industry and academic researchers."

Above and beyond their financial contributions, corporate members will inform Center research priorities, monitor breaking research developments, provide research internships, and send researchers to visit UCSD. "Through this collaborative effort, AT&T will be teaming with some of the world's most talented people on a common goal and sharing its unparalleled networking expertise as a catalyst for faster innovation throughout the industry," said Hossein Eslambolchi, president of AT&T Global Networking Technology Services and a key architect in founding the Center for Networked Systems at UCSD. "As more research is done in the university environment in partnership with scientists and engineers from different industry disciplines, their combined efforts will achieve greater results than industry or university researchers working independently."

"Tomorrow's networked system infrastructures will be multi-technology, multi-vendor, and multi-operator environments," said Jacobs School Dean Frieder Seible, host of the CNS launch ceremony. "The university recognizes that the only way to meet the challenge of designing these open, shared infrastructures is a focused, collaborative and multi-disciplinary approach with industry."

CNS builds on UCSD's established reputation in networking, systems and distributed systems, including grids, large-scale and high-speed measurement, and monitoring of worms and denial-of-service attacks. A critical mass of 16 leading faculty and research scientists from UCSD's departments of Computer Science and Engineering, Electrical and Computer Engineering, the San Diego Supercomputer Center, Cal-(IT)² and the Cooperative Association for Internet Data Analysis (CAIDA) are participating in the Center. CNS researchers will undertake fundamental and long-term research on key challenges to the success of networked systems: robustness; system and application security; manageability; and application/end-user quality of service.

"The emergence of grid computing and pervasive connectivity has given rise to complex open, dynamic systems of global reach," said Larry Smarr, Cal-(IT)² director and the Harry E. Gruber Professor of Computer Science and Information Technologies in the Jacobs School. "Understanding the behavior of these networks as interdependent systems requires sophisticated online and offline measurement and analysis, as well as modeling and experimentation in which CNS will excel."

CNS expects to commit funding immediately to half a dozen projects, to be selected together with its industry members. Each project will attack a critical technical problem or framework, and each team will include a mix of experts from distributed systems, networking, and network elements. The first batch of multi-year projects is expected to cover topics ranging from large-scale network modeling and network security measurement, to the development of new routing architectures that take advantage of optical technologies in new ways.

Supplemental Quotes

"Cooperative efforts among industry and academia, such as UCSD's Center for Network Systems, are the cornerstone of developing breakthrough technologies. QUALCOMM Incorporated is proud to partner with CNS to further research on robust, secure and manageable networks. These developments are crucial to the future growth of wireless technologies." **Roberto Padovani**, Executive Vice President and Chief Technology Officer, QUALCOMM Incorporated.

"Collaborations between academia and industry foster an environment of innovation and understanding, and nowhere is that combination more important than in the development of open, secure network systems. The future of technologies such as grid computing and advanced network systems are key elements to our business, and HP is pleased to be a founding member of the CNS program and to be able to contribute to the creation of open networked systems." **Patrick Scaglia**, VP and Director, Internet Computing Platforms Research Center, HP Labs.

"As communications and computing collide to create a new world of public networks, technology leadership is something no one company can achieve in isolation. Alcatel works with research leaders throughout the industry and academia to drive the engineering and technical breakthroughs that will spawn the next round of productivity and lifestyle change. We are excited about the breakthroughs this particular group can generate, and we have committed some of our top contributors to ensure the collaboration is genuinely effective." **Mike Quigley**, Senior Executive Vice President, Alcatel.

"This new center underscores our belief that to address major problems, computer scientists must collaborate with researchers from other disciplines. We are delighted that AT&T, Alcatel, Hewlett-Packard and QUALCOMM also see the value in this approach to engineering breakthroughs in networked systems." **Mohan Paturi**, Chair, Computer Science and Engineering, UCSD Jacobs School of Engineering.

"This is an exciting new venture on the leading edge of industry-academic partnership in co-invention and collaboration. We foresee substantial benefits to society from the Center's research on these secure networked systems that will underpin tomorrow's information economy." **Paul Yu**, Chair, Electrical and Computer Engineering, UCSD Jacobs School of Engineering.

"This new center will benefit from the strong leadership of Dr. Chien and the Jacobs School faculty as well as close engagement between academia and industrial partners. Networking researchers at the San Diego Supercomputer Center, and in particular the CAIDA group, plan to work closely with CNS to achieve new breakthroughs and develop new practices in networked systems." **Francine Berman**, Director, San Diego Supercomputer Center.

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(Note: At the launch ceremony, academic and industry members delivered presentations outlining some of the goals and aspirations they have for the new Center. Those talks are available as streaming video for on-demand viewing, below. RealOne or RealPlayer required.)



