

Keynote Lectures

Day 1: Seamless Mobility: In Pursuit of the Holy Grail

Presenter: M. Satyanarayanan, Carnegie Mellon University & Intel Research Pittsburgh

Effortless access to one's uniquely customized computing environment at any location is an old but enduring vision in computer science.

The earliest realization of this concept dates to the early 1960's, when multiple "dumb" terminals attached to a timesharing mainframe allowed users a modicum of mobility. The four decades of computing progress since then have not dimmed the luster of this vision. Today, many researchers in universities and industry labs are exploring how seamless mobility can be achieved in the pervasive computing environments of tomorrow.

Why is this capability so important? Why has it engaged our attention for so long? Why has it eluded our grasp until now? What forms will it take in the future? I will address these and related questions in my talk, focusing on a specific approach called "Internet Suspend/Resume (ISR)." ISR is a mechanism that rapidly personalizes and de-personalizes anonymous hardware for transient use. As its name implies, ISR mimics the closing and opening of a laptop. A user can suspend work on one machine, travel to another location, and resume work on another machine there. The user-visible state at resume is exactly what it was at suspend. ISR enables a form of mobile computing in which a user carries no hardware, yet sees functionality and performance as if carrying a laptop. Our work confirms that ISR can be effectively implemented by layering virtual machines on a location-transparent distributed file system with aggressive caching.

Day 2: Labscape: Pervasive Computing in the Biology Laboratory

Presenter: Larry Arnstein, Affiliate of the University of Washington,
CTO of Teranode Corporation

The Labscape project was based on the observation that computing is poorly integrated into the practice of biology, and that this lack of integration exacts a high toll on the progress of science. Our aim was to make laboratory work more efficient and to make the results more accessible so that large teams of biologists could collaborate on complex problems, just as engineers do today. From a pervasive computing standpoint, our goal was to understand and overcome the conceptual and physical barriers that prevent the fluid utilization of information technology within the laboratory environment, focusing on the design, execution, and documentation of laboratory procedures. The presentation will include some history of the Labscape project, report on some surprising lessons that we learned about the design of pervasive computing systems; and a demonstration of the commercial design tools for life-sciences from Teranode Corporation that were inspired by this work.

Day 3: Centrino® Technology: Blending Low-Power and Wireless into Novel Mobile Computing Devices

Presenter: Jim Kardach, Principal Engineer, Mobile Products Group, Intel Corporation.

Intel's Pentium-M(TM) processors are a new generation of CPU that bring a significant improvement in computing performance to a mobile computer in a fuel efficient implementation. The Centrino® platform combines this computing engine with an extremely power efficient system and further integrates wireless networking as a standard feature. These ingredients are enabling new devices and form factors, which will allow users to work more freely in today's connected environment. This talk presents the details of Intel's latest mobile platform and the technology behind it, and reviews some of Intel's future mobile platform concepts that demonstrate how this technology can be used to create innovative pervasive computing solutions.

Banquet Lecture: A Retrospective on Pervasive Computing Applications

Stefan Hild, IBM