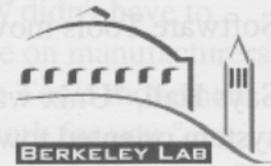

Overturning the Old Order: Software Tools Founders Honored

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BERKELEY -- Almost two decades ago, three computer scientists at the Ernest Orlando Lawrence Berkeley National Laboratory popularized a suite of software tools that many computing professionals considered revolutionary and maybe even subversive. This week, their work is being recognized with Lifetime Achievement Awards by one of their profession's most prestigious associations.

It was 1978, a time when mainframes ruled the world. As Dennis Hall, one of the software "revolutionaries" recalls, "These were the days when people practically bowed down to computers." Computer operating systems were designed to squeeze the maximum efficiency out of the computer. Never mind that they did not maximize the efficiency of the people using the machine. The machine was master.

Hall and two of his Berkeley Lab colleagues, Deborah Scherrer and Joseph Sventek helped to change that, presumably forever. They founded the Software Tools Project. Over several years, Software Tools blossomed into a movement that helped to transform computer operating systems by empowering the people that use these computers.

January 24, Hall, who remains with Berkeley Lab, and Scherrer and Sventek who are former Lab employees, were presented with Lifetime Achievement Awards by the USENIX Association. USENIX is the Unix and advanced computing systems technical and professional association. Since 1975, it has linked the community of software engineers and computer scientists working on the cutting edge of the computing world.

In honoring Hall, Scherrer, and Sventek, USENIX said, "Before the general availability of Unix, the Software Tools project popularized a new vision of operating system software, offering a bridge to portability and power for those beleaguered by limited, proprietary operating systems. With its extraordinary focus on building clean, portable, reusable code shared amongst multiple applications and runnable on virtually any system, the Software Tools movement established the tradition of empowering users to define, develop, control, and freely distribute their computing

environment."

USENIX also recognized Brian Kernighan and P.J. Plauger for having inspired the Software Tools movement.

Says Hall, "Unix was developed (1969-1974) by its Bell Labs creators as an operating system oriented toward the people who had to use it. When it came to maximizing efficiency, Unix favored the software developer rather than the hardware. This was controversial. It was part of the reason that Unix quickly gained a reputation as being academic in nature and not suitable for commercial usage."

Not long after the debut of Unix, Kernighan and Plauger authored an instructional manual for writing software called "Software Tools." Hall bought the book along with an accompanying tape of development tools. He says mastering what was contained in this package inspired the Software Tools project.

In 1978, Hall, Scherrer, and Sventek moved the Software Tools development code onto a Berkeley Lab Control Data Corp. mainframe, the CDC 6600. The 6600 was not running Unix but with Software Tools, it now looked like it was Unix-based. Suddenly, without any loss of efficiency of the machine, the 6600 became more user friendly and says Hall, more efficient for the people using it. The experiment was repeated for DEC machines running both VMS and (for completeness) Berkeley Unix. Berkeley Lab's Van Jacobson and Bob Upshaw added many new tools to the collection, and Joe Sventek added an electronic mail system.

The three developers followed up by writing a paper, "A Virtual Operating System," (*Communications of the ACM*, Vol. 23, No. 9, September 1980) that helped spread the word about Software Tools. They also formed the Software Tools Users Group. Within several years, the users group had some 2,000 participants internationally.

Through the users group, the Software Tools were eventually installed on a wide range of systems -- everything from Cray, IBM, Hitachi, and CDC, to Data General, DEC and IBM XTs running DOS and CP/M. By the late 1970s and early 1980s the Software Tools spanned more than 50 distinct machine architectures and their operating systems. Apollo, later bought out by Hewlett Packard, took the tools and developed their first operating system from them. They got to market in months rather than the years it took everybody else.

Like all things in computers, the era of Software Tools passed. Viewed from a historical perspective, Software Tools helped pave the way for Unix to enter the mainstream.

"Over its five-year heyday," says Hall, "the Software Tools movement trained many,

any people in Unix that would otherwise not have had this exposure. This influenced the evolution and improvement of Unix, and contributed to the eventual success of Unix in the commercial world. Once users realized they didn't have to suffer with proprietary systems, they exerted considerable pressure on manufacturers to adopt Unix or a Unix-like system. And it worked. The Software Tools movement was fun. It definitely felt like a revolution. It put the machine to work for you."

Berkeley Lab conducts unclassified scientific research for the U.S. Department of Energy. It is located in Berkeley, California and is managed by the University of California.

Where are they now?

Dennis Hall currently heads Berkeley Lab's Information Systems Projects group. Joe Sventek is Hewlett Packard's Distinguished Engineer for Distributed and Object-Oriented Computing, based at Hewlett Packard's Corporate Research Laboratories. Deborah Scherrer went on to become President of Mt. Xinu, one of the first UNIX software companies.

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