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ACM and IEEE Computer Society Honor the Late Charles P. Thacker with 2017 Eckert-Mauchly Award

NEW YORK, NY & LOS ALAMITOS, Calif., June 21, 2017 – ACM, the Association for Computing Machinery, and IEEE Computer Society have jointly announced that the late Charles P. "Chuck" Thacker is the recipient of the 2017 Eckert-Mauchly Award. Thacker was selected for the award in mid-May, but passed away on June 12 before the public announcement was made. The award committee cited Thacker's fundamental contributions to networking and distributed computing, including Ethernet, the Xerox Alto, and development of the first tablet computers. Often hailed as an "engineer's engineer," Thacker made contributions across the full breadth of computer development, from analog circuit and power supply design to logic design, processor and network architecture, system software, languages, and applications.

In 1970, Xerox opened its Palo Alto Research Center (PARC) and hired several leading computer scientists and engineers, including Thacker. Early on, the staff at Xerox PARC was using a time-sharing approach in which various terminals were connected to a single computer. Because time sharing was a slow and cumbersome process, leaders at Xerox PARC conceived the idea of developing personal computers as part of a network that would be used for communication as well as computation.

Mainframe computers in the early 1970s were so large that they took up whole rooms, and their expense made them relatively scarce. Under the paradigm at the time, computer architecture needed to be either scaled up (more hardware) for better performance, or scaled down (less hardware) for lower cost. Thacker realized that a personal computer would need to be designed differently from a standard computer to address space constraints, maintain strong performance, and be inexpensive if it was to become pervasive.

At the same time, the idea of a "personal" computer that would be geared more toward human-paced activities called for the engineers to prioritize input/output (I/O) functions rather than application functions, as had traditionally been the case.

The new design feature Thacker employed as the Lead Engineer in what would become the Xerox Alto Computer was a central processing unit (CPU) microprocessor that used microcode for most of the

computer's I/O functions, rather than hardware. The microcode controlled various tasks, including executing the normal instruction set, memory refresh, and network and display functions. The Xerox Alto was therefore not simply a mini-version of existing computers, but had a novel architecture that allowed it to deploy new kinds of software.

Today the Alto is recognized as being the first modern personal computer. The initial architecture of the Alto gave rise to other important inventions developed by engineers at Xerox PARC including WYSIWIG (What You See Is What You Get) editing, laser printing, drawing and painting, email, mouse-driven graphical user interfaces, and many other features that are commonplace in personal computers today.

Another critical innovation of Thacker's that was an outgrowth of his work on the Alto was the development of hardware for Bob Metcalfe's invention of the Ethernet Local Area Network (LAN), which facilitated communication among computers.

Twenty years after the development of the Xerox Alto, Thacker made another foundational contribution to personal computing with the development of the Lectrice, a laboratory prototype for today's portable PCs. He went on to develop a prototype upon which Microsoft Tablet PC software was developed, as well as a system for reading electronic books that laid the groundwork for many of today's e-readers. One of Thacker's most recent contributions is the design of AN3, a low-cost, efficient circuit-switched data center network.

Most recently, Thacker was a Technical Fellow at Microsoft Research, Palo Alto. He held 29 patents in areas including computer architecture, displays, networks, switches, synchronization, and encryption. During his career he received the ACM A.M. Turing Award, the IEEE John von Neumann Medal, the ACM Software System Award (together with Butler Lampson and Robert Taylor), and the Charles Stark Draper Prize (together with Alan Kay, Butler Lampson and Robert Taylor), among many other honors. Thacker received a BS in Physics from the University of California, Berkeley.

The Eckert-Mauchly Award is known as the computer architecture community's most prestigious award. The designation of Thacker as the posthumous recipient will be formally announced at the ACM/IEEE International Symposium on Computer Architecture (ISCA) to be held June 24-28 in Toronto, Canada.

ACM and IEEE Computer Society co-sponsor the Eckert-Mauchly Award, which was initiated in 1979. It recognizes contributions to computer and digital systems architecture and comes with a $5,000 prize. The award was named for John Presper Eckert and John William Mauchly, who collaborated on the design and construction of the Electronic Numerical Integrator and Computer (ENIAC), the pioneering large-scale electronic computing machine, which was completed in 1947.

About ACM

ACM, the Association for Computing Machinery **www.acm.org**, is the world's largest educational and scientific computing society, uniting computing educators, researchers and professionals to inspire dialogue, share resources and address the field's challenges. ACM strengthens the computing profession's collective voice through strong leadership, promotion of the highest standards, and

recognition of technical excellence. ACM supports the professional growth of its members by providing opportunities for life-long learning, career development, and professional networking.

About IEEE Computer Society

IEEE Computer Society, www.computer.org, is one of the world's leading computing membership organizations and a trusted information and career-development source for a global workforce of technology leaders including: professors, researchers, software engineers, IT professionals, employers, and students. IEEE Computer Society provides high-quality, state-of-the-art information on an on-demand basis. The Computer Society provides a wide range of forums for top minds to come together, including technical conferences, publications, a comprehensive digital library, unique training webinars, and professional training. IEEE is the world's largest professional association for advancement of technology and the Computer Society is the largest society within IEEE.

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