

# UbiCom Series

## TCG Software LP

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## [ MARK WEISER: FATHER OF UBIQUITOUS COMPUTING ]

Mark Weiser is known to be a father of ubiquitous computing. He initiated the research field of Ubiquitous Computing in 1988 at Xerox PARC. He was a kind hearted, friendly and intelligent person with a great impressive personality. Due to his remarkable work, it is always a desire of everyone to know about him. This document describes Mark Weiser's life, how his work has influenced others and what others say about him, and his accomplishments, achievements and publications details.

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# Mark Weiser: Father of Ubiquitous Computing

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Mark Weiser's name will never be forgotten due to his remarkable work and visionary ideas in the field of Ubiquitous Computing. He is renowned as a father of Ubiquitous Computing who opened up new revolutionary research paths with the idea of providing computers everywhere in everyone's life by making them invisible with the more effective and efficient characteristics. He has a strong belief that this research area will tend to an era of "calm technologies" which will help us to focus on what is important for us instead of making us panic by providing complex architecture and interfaces. Due to tremendous and unbelievable work in the field of Ubiquitous Computing, it has been always a desire of everyone to know about the life of Mark Weiser. Therefore, some inspiring details about the life of Mark Weiser are highlighted in this paper.

## **Mark Weiser**

Mark Weiser was born on July 23, 1952 in Chicago, Illinois and spent his childhood in Stony Brook N.Y. Instead of doing bachelor studies he started two companies in early 1970s. After getting a lose in business, he started Computer and Communication Science studies in University of Michigan, Ann Arbor and received M.A in 1977 and Ph.D. in 1979.

After completing Ph.D., he joined Computer Science department in University of Maryland, College Park, where he worked as assistant, associate professor and associate chair from 1979 to 1987 and in the later years had become a tenured professor. During that time, he taught graduate and under graduate courses on human factors, systems, and programming. In 1987, He joined Xerox Palo Arto Research Center (PARC) as a research scientist. Following the year, he was appointed as a head of Computer Science Laboratory at Xerox. He directed the laboratory until 1994, when he founded third company. After two years, he rejoined Xerox Palo Arto Research Center (PARC) as its Chief Technologist and remained on a position until his death. In 1999, after a short time illness, he died due to cancer at the age of 46. His uncertain quick death was a big shocked for the computer industry, but the work he initiated will never die and will be continued for ever.

Furthermore, Mark Weiser was a popular speaker at scientific symposia and conferences, and a frequent subject of media interviews. He was also known for his music. He played drum regularly in the rockband called "Severe Tire Damage," the first live band on the internet. He was married and had two children.

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In same year of his death, many of Mark Weiser's friends, including Randy Katz (Berkeley), Leonard Kleinrock (UCLA) and Dave Johnson (CMU) nominated him for the 1999 ACM SIGMOBILE award "Outstanding contributions to the field of mobile computing". After his death, his eldest daughter, Nicole, received the award at the Mobicom '99 conference held in Seattle, August 17<sup>th</sup> [3].

*Information taken from [1] [2] [3]*

## What others say?

By nature, Mark Weiser was a kind hearted and friendly person. He always liked to talk with everyone without making any discrimination among them on the basis of rank, designation and biasness. Along with the natural aptitude, he had very impressive personality which always motivated others to work with him in a very friendly environment. Due to his inspiring personality, people always wondered to get a chance of working with him. People who worked with Mark Weiser, says:

"Mark was a friend since college. I never heard him say anything remotely unkind. He was generous, modest and caring, with this Zen-like calm. He taught me many things, but most of all he showed me, by his way of being, how to be a better person. It seems to me he did this to people and to ideas, finding ways they could improve. He had a lasting influence on my life, and I will always be grateful." --Tom Newman [6].

"Mark talks about his work with passion; rather than a mosaic of labs and at times conflicting personalities, he sees PARC as one--a living, breathing organism." --Giuliana Lavendel, Xerox PARC newsletter, 1989 [5].

"Mark has touched the lives of many "students" both directly and indirectly. His work was truly inspired and he inspired the same energy into those around him. He used to say that a true programmer was someone who would develop computer software no matter what the pay because they loved the sheer thrill of programming." --John R. "Jack" Callahan [5].

"When Mark taught his computer science courses at College Park in the '80s, he would typically begin by asking the class "What's been good"? The responses from each student in turn were often funny, and so each session started with a sunny atmosphere. This was all a part of his great talent for encouraging optimism and creativity in those he worked with...." --Glenn Pearson [5].

"I was shocked to hear of Mark's passing. Mark and I interacted only a few times per year over the last 10 years or so, but I always found myself resonating with his ideas, which continue to have a profound influence on me in my pursuit of ubiquitous computing at Sun Microsystems in the Java world. Of course, it was also easy to resonate with his drum playing in Severe Tire Damage, but that was a much

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more physical and visceral "resonating" :-) I already miss him a lot. We needed him in this valley. I feel privileged to have shared time and ideas with him" --Jim Mitchell [4].

## Accomplishments

The following are highlights of his career accomplishments. For more details, please see <http://www.ubiq.com/weiser>.

- 1999 recipient of the Association for Computing Machinery (ACM) Sigmobility award, in recognition of his outstanding contributions to mobile computing.
- 1996 - 1999 Chief Technology Officer, Xerox PARC.
- Dec. 1995 Program Chair for the Association for Computing Machinery (ACM) Fifteenth Symposium on Operating System Principles.
- June 1993 Severe Tire Damage became the first band to broadcast live video and audio worldwide on the Internet.
- 1993 ACM & IEEE, International Conference on Software Engineering "Best Paper Ten Years Later" award for "Program Slicing."
- 1992-1994 Associate Editor of Transactions on Software Engineering.
- 1992-1994 elected to board of the Computer Research Association. Founder of the CRA series of annual conferences for heads of industrial computer science research laboratories.
- Sept., 1991 seminal article, *The Computer of the 21st Century*, appeared in "Scientific American" magazine. It remains essential reading for people entering the field.
- 1988-1995 Manager of the Computer Science Laboratory, Xerox PARC.
- 1988 became Principal Scientist, Xerox PARC.
- 1987 joined Xerox PARC as Member of Research Staff.
- 1979-1987 C.S. Dept., University of Maryland (Associate Chairman, 1986-1987).
- 1979 received Ph.D. from University of Michigan, Computer and Communication Sciences.
- 1976 received M.S. from University of Michigan, Computer and Communication Sciences.
- 1973-1976 Co-founder and President, Cerberus Inc., Ann Arbor, MI.

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*Information taken from [7]*

## Other Activities

- Principal Investigator on grants and contracts with ARPA, AFOSR, NSF, and NASA.
- Professional Societies: Association for Computing Machinery, IEEE Computer Society, AAAS.
- Reviewer of papers and proposals for International Conference on Software Engineering, IEEE, Transactions on Software Engineering, Journal of Systems and Software, National Science Foundation, Communications of the ACM, Software-Practice & Experience, Acta Informatica, IEEE Software, and others.
- Public Software: PCR - AutoTetris - game for Sun workstations, 1992; Portable Common Runtime system providing threads, garbage collection, I/O and symbol table management for multiple languages and operating systems, 1989; SDI - game for Sun workstations, 1987.

*Information taken from [7]*

## Publications

Mark Weiser published over 80 papers on the psychology of the programming, program slicing, operating systems, programming environments, garbage collection, technological ethics, and new business incubation [1].

After 1988, Mark Weiser focused on ubiquitous computing, the area which he initiated. He wrote a number of articles on ubiquitous computing, all distinguished by clarity of mind and purpose, and fluent command of language. His 1991 *Scientific American* article, "The Computer for the Twenty-First Century," provides an excellent introduction to the key concepts of ubiquitous computing. "Designing Calm Technology," which he coauthored with John Seely Brown, introduces the seductive notion of good information technologies being "calm technologies." A summary of Mark's keynote speech at CoBuild98, "The Invisible Interface: Increasing the Power of the Environment through Calm Technology," explains the relationship between ubiquitous computing and calm computing. More recently, he published the accessible "Open House," in the online journal ITP Review. His Web page introducing the concept and research at Xerox PARC contains a useful precise and links to technical papers, discussions of prototypes, and more. The more technically-minded can consult a list of research reports published between 1991 and 1995 [2].

Following is a partial list of Mark Weiser's selected publications:

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- Dan Russell and Mark Weiser. "The Future of Integrated Design of Ubiquitous Computing in Combined Real and Virtual Worlds." Proc. CHI-98, Los Angeles, CA, pg 275-276, 1998.
- Mark Weiser and John Seely Brown. "Center and Periphery: Balancing the Bias of Digital Technology," Blueprint for the Digital Economy, pp317-335, Edited by Don Tapscott, McGraw-Hill, 1998.
- Mark Weiser and John Seely Brown. "Riding on a Sea of Calm", World Link, pp48-50, January/February 1998
- Mark Weiser and John Seely Brown. "Designing Calm Technology", PowerGrid Journal, v 1.01, <http://powergrid.electricity.com> , July 1996. Also appeared as Chapter 6 - "The Coming Age of Calm Technology" in the book "Beyond Calculation - The Next Fifty Years of Computing" by Peter J. Denning and Robert M. Metcalfe, Copernicus/An Imprint of Springer-Verlag.
- Mark Weiser. "Open House," Review, the web magazine of the Interactive Telecommunications Program of New York University. March 1996,
- Roy Want, Bill Schilit, Norman Adams, Rich Gold, David Goldberg, Karin. Petersen, John Ellis and Mark Weiser. "An Overview of the Parctab Ubiquitous Computing Experiment," IEEE Personal Communications, December 1995, Vol 2. No.6, pp28-43
- Mark Weiser and Andy Garman. "Bleeding Edge Technology – From Lab Coats to Market Caps," Red Herring, August 1995
- Mark Weiser. "The Technologist's Responsibilities and Social Change," Computer-Mediated Communication Magazine, V2N4. April 1, 1995
- Mark Weiser, Alan Demers, Brent Welch, Scott Shenker. "Scheduling for Reduced CPU Energy", Operating System Design and Implementation (OSDI) Conference, Monterey, CA. November, 1994
- Vicky Reich and Mark Weiser. "Libraries are More than Information: Situational Aspects of Electronic Libraries," CSL Technical Report 93-21, June 1994. Also Serials Review, 1994, V20N3, pp. 31-38.
- Mark Weiser. "The World is not a Desktop," Interactions; January 1994; pp. 7-8
- Christopher A. Kantarjiev and Alan Demers and Ron Frederick and Robert T. Krivacic and Mark Weiser. "Experiences with X in a Wireless Environment," Proceedings USENIX Symposium on Mobile & Location-Independent Computing, August 1993.

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- Mark Weiser, "Some Computer Science Problems in Ubiquitous Computing," Communications of the ACM, July 1993. (Reprinted as "Ubiquitous Computing". Nikkei Electronics; December 6, 1993)
- Mark Weiser, "The Computer for the Twenty-First Century," Scientific American, September 1991
- Mark Weiser, Alan Demers, and Carl Hauser, "The Portable Common Runtime Approach to Interoperability," ACM Symposium on Operating Systems Principles, December 1989
- Hans Boehm and Mark Weiser. "Garbage Collection in an Uncooperative Environment," Software: Practice and Experience, September 1988
- Glenn Pearson and Mark Weiser. "Exploratory Evaluations of Two Versions of a Foot-Operated Cursor-Positioning Device in a Target Selection Task," Conference on Human Factors in Computing Systems 88, May 1988
- Jack Callahan, Don Hopkins, Mark Weiser, and Ben Shneiderman. "Experiments with Pie Menus," Conference on Human Factors in Computing Systems 88, May 1988
- Mark Weiser. "Program slicing," IEEE Transactions on Software Engineering, vol. SE-10, no. 4, July 1984
- Mark Weiser and Chris Torek. "The Maryland Window System," Proceedings of the 1984 Unix Users (Usenix) Conference, pp. 166-172, Salt Lake City, Utah, June, 1984

*Information Taken from [7]*

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- [2] <http://www-sul.stanford.edu/weiser/Bio.html>
- [3] Want, R. Remembering Mark Weiser: Chief Technologist, Xerox PARC. IEEE Personal Communications, Vol: 7, No: 1, (2000), pp 8-10, ISSN: 1070-9916
- [4] <http://www-sul.stanford.edu/weiser/Ubiqforum.html>
- [5] <http://www-sul.stanford.edu/weiser/Careerforum.html>
- [6] <http://www-sul.stanford.edu/weiser/Lifeforum.html>
- [7] <http://www2.parc.com/csl/members/weiser/mwbkgd.htm>