Prof. Dr. Jochen Liedtke †

It is with sorrow that we announce the death of Jochen Liedtke.
He died unexpectedly on Sunday, June 10th, 2001.

In Memoriam Jochen Liedtke (1953 - 2001)

Jochen studied mathematics at the University of Bielefeld, completing his diploma in 1977. The focus of his thesis was the novel programming language ELAN. Jochen's first operating system was a by-product; a run time environment for ELAN was needed on small Z80 micro computers. The result of Jochen's effort, EUMEL, was based on two simple principles: persistent processes and data spaces. All data of the entire system including process control blocks and data space descriptors were contained in these data spaces. They could be copied efficiently and atomically using copy on write and garbage collection techniques. By copying the "data space of data spaces" every few minutes, a complete copy of the entire system state was taken and lazily written out to disk. Thus, process persistence came for free (at least conceptually). Sending around data spaces in synchronous messages was the only means of process interaction which made it easy to build a simple distributed EUMEL system. The paging device was a floppy disk (what else on a cheap computer at that time).

In 1984 Jochen moved to GMD, the German National Research Center to build a "native code" version of EUMEL, called L3. This was the time when microkernel based systems were en vogue. Soon however, many researchers gave up their attempts to build the really fast message passing systems that were needed to run device drivers and other performance critical components at user level. Declaring "The Increasing Irrelevance of IPC Performance for Microkernel-Based Operating Systems", IPC was avoided by co-locating drivers and other components back into the kernel. Jochen however accelerated IPC by factor of 20 over comparable systems. The methods, most based on a thorough understanding of the interaction of modern microprocessor architectures with operating systems, were published in his SOSP 1993 publication ("Improving IPC by Kernel Design"). Still, L3 was not widely used (except in about 3000 installations in German law practices) because of its very special user and programming interface. Consequently, Jochen started close cooperation with Dresden University's operating systems group to build a Unix-like interface on top of L3. During this time, he invented hierarchical external pagers, another important feature that allowed physical memory management to be done in user-level pagers (SOSP 1995, "On Micro-Kernel Construction").

Jochen completed his PhD on guarded page tables in 1996 at TU Berlin. He demonstrated that not only was he a successful operating systems builder, but he also excelled with contributions to computer architecture.

Jochen began working at IBM's T.J. Watson Research Center, NY in 1996. The result was L4, a 12KB extremely fast "second generation" microkernel. During many visits to Dresden's operating systems group, he helped to build L4Linux, a user-level implementation of the Linux kernel that demonstrated the effectiveness of Jochen's approach (SOSP 97, "The Performance of microkernel-based Systems"). His work gave research on microkernel systems fresh impetus and gained him international acknowledgement.

Since 1999, he became professor for operating systems at the University of Karlsruhe. He was an inspirational professor, adept at keeping students deeply interested in his subjects. This was reflected by the high popularity of his lectures among students.

Jochen also continued working on SawMill Linux, a multi-server version of Linux, and other related micro-kernel subjects. Several operating system research groups in Europe, Australia and the US either base their work on Jochen's or draw from his results. He was highly acknowledged for his scientific achievements which are reflected in numerous honourable appointments to program committees.

Those who knew him remember the energy, stamina, and astute analysis with which he not only tackled his own scientific issues but also supported staff and colleagues. Not only expertise, but also friendship and mutual understanding played an important role between him and those he worked with. This cooperation developed numerous friendships over many years and large distances. Many colleagues, staff and students enjoyed his generous hospitality, exceptional culinary skills, and taste for good wine.

Jochen is survived by his wife Adelheid with whom he lived together in harmony. Her constant support was instrumental in his many achievements.

Hermann Härtig
Dresden University of Technology

Kevin Elphinstone
University of Karlsruhe