Watts Humphrey

The Father of Software Quality
(1927-2010)

Carnegie Mellon Software Engineering Institute

When Watts Humphrey arrived at the SEI in 1986, he made what he called an, "outrageous commitment to change the world of software engineering."

By all accounts, he succeeded. Known as the "Father of Software Quality," Humphrey dedicated his career to addressing problems in software development including schedule delays, cost increases, performance problems, and defects. In 2005, Humphrey received the National Medal of Technology, the highest honor awarded by the President of the United States to America's leading innovators.

"He was a wonderful leader and a wonderful man. He set forth an energizing goal and an inspiring mission that we all wanted to be a part of," said Anita Carleton, director of SEI's Software Engineering Process Management program, who was initially hired by Humphrey.

An Outrageous Commitment

When he arrived at SEI after working for nearly three decades at IBM, he came with a vision: Software could be managed by process.

"Changing the world of anything is an outrageous personal commitment. I felt it needed to be done. I knew I couldn't do it alone," Humphrey explained in a 2010 interview.

"We all understood the importance of things such as version control, configuration management, and methodology, but I don't think anyone knew how to put those into a transferable form," said Larry Druffel, SEI director and CEO from 1986 to 1996.

Working with a team, Humphrey identified characteristics of best practices in software engineering that began to lay the groundwork for what would become the CMM® and eventually, the CMMI®.

After being named the first SEI Fellow—an honor given to individuals who have made an outstanding commitment to the work of SEI—Humphrey focused on the development of the Personal Software Process℠ (PSP) and Team Software Process℠ (TSP) initiatives.

The Beginnings of PSP and TSP

Jim Over, who now leads the TSP initiative at SEI, said Humphrey had begun his work in bringing discipline to the individual software engineer—the basis for the PSP—long before his appointment as an SEI Fellow.

Humphrey first tested his theories on a process that he developed for managing his personal checking account. Next, he tested them on the personal software development process by writing more than 60 small programs in Pascal and C++, Over explained. Humphrey then began working with organizations to pilot this new personal process for software engineers.

Not long after, Humphrey published his first PSP book, "A Discipline for Software Engineering," and developed a course for software engineers. Over, who enrolled in the first PSP course offered at Carnegie Mellon, said it changed his career.

"When you learn how to properly measure your own performance and analyze the result in order to improve, you get real, lasting, behavioral change that leads to performance gains and improvement," Over explained. The class, he said, went from underestimating its work by about 40 % to being within a few points under or over on each assignment. "We had a 10 times reduction in the number of defects that escaped to the unit testing phase by the end of the course. These results were unbelievable. If I hadn't been there, I would not have thought this possible." After the course, Over began working with Humphrey to transition PSP and TSP into software engineering practice.

Humphrey faced many naysayers, Druffel recalled. With each critic, he would listen and adjust his approach, but never once did he give up on the idea that he could teach software engineers the skills that they needed to track their own work, adhere to plans, and develop defect-free software. After PSP was established, Humphrey applied those same concepts to engineering groups as part of TSP. Today, TSP has been adopted by leading software organizations across the globe including Intuit, Oracle, and Adobe.

"What Watts brought is an acceptance of the discipline of software engineering," Druffel explained. "He was working on these ideas when he left IBM in 1986. When he died in 2010, he was still working on related concepts. That's persistence." ❖

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