South Africans have always embraced computers, according to Professor Barry Dwolatzky, CEO and Director of the Joburg Centre for Software Engineering (JCSE) at the University of Witwatersrand (Wits) in Johannesburg, South Africa.

“The Computer Society of South Africa was formed in 1957. That’s the second one to be formed in the world,” Dwolatzky explained, adding that South Africa stayed at the forefront of the international IT industry until the 1970s when sanctions were imposed because of the government’s apartheid policies. “In 1994 when Nelson Mandela became president, and we were no longer isolated, we were exposed to this new, highly-competitive world of information technology.”

When South Africa reemerged onto the international scene, Dwolatzky said that it could not compete with India, which had “really refined quality and predictability.” As a result, many South African companies and government departments that are replacing legacy systems are outsourcing the work to countries like India because it offers greater predictability.

“There is a well-established and local industry, but we are facing huge problems because we are unpredictable,” Dwolatzky said. “It’s important for South Africa to be a player. It’s a huge potential source for creating jobs locally. We have to become competitive and world class, and that’s what we are trying to do.”

Dwolatzky is leading this effort through the JCSE, which he likens to the SEI in that it is a university-based center trying to transition software engineering best practices into the public domain. According to its website, http://jcse.org.za/, JCSE is a three-way partnership between government, academia, and industry. The JCSE is multifaceted with various programs and facilities positioning it as a focal point of a software development industry for South Africa and the rest of the continent.

As part of this effort, Dwolatzky has been leading efforts to pilot the SEI’s Personal Software Process (PSP) and Team Software Process (TSP) in two companies in South Africa. TSP and PSP teach software engineering teams to plan and track their work, establish goals, and take greater ownership of their processes and plans.

“We found that companies in the United States and Mexico were using it very effectively to drive predictability and quality,” Dwolatzky said. Last year, he led efforts to launch TSP teams at two companies, one of them Nedbank, one of the four major banks in South Africa. At Nedbank, one of the TSP pilot projects involved a large maintenance effort that included a team of nine developers and one manager working on a large number of very small COBOL programs that had to work in a complete system. In system testing, there were no defects; and when the software went live in January, there were two production defects, but none traceable to the TSP team. Instead, they were the result of preexisting problems, according to Dwolatzky.

“This is the first time that Nedbank has seen this level of quality with a large COBOL project. It’s also been very predictable. They’ve made their time targets perfectly,” he said.

In the immediate future, Dwolatzky hopes to use TSP as a means for more companies to adopt the SEI’s Capability Maturity Model Integration (CMMI) framework.

“We want to grow CMMI, but really first track it through TSP,” he said. “We are also very keen to look more broadly at other best-practice models like architecture and the People Capability Maturity Model to see if they can be used to complement TSP and CMMI.”

Over the long term, he hopes to make South Africa a player in the global software industry.

“While we could never aspire to compete with a huge player like India, we could look for niche markets and become a world player in terms of niche areas,” he said.

Dwolatzky graduated from Wits with a degree in electrical engineering in 1975. He completed his doctorate in this field at Wits in 1979. He has published extensively in more than 40 research journals. He has also written numerous articles on South Africa’s IT development issues.

In 1989, after spending a decade in the United Kingdom, he returned to Wits to continue researching and promoting the growth and development of the software industry in South Africa. Since re-joining Wits, he established a new degree program in information engineering and developed a new course-based master’s program in software engineering. That program has now become a part of the South African government’s skills development framework. In 2005, he was named a finalist for the prestigious Computer Society of South Africa’s “IT Personality of the Year.”

Through his work with the SEI, he has become a certified CMMI instructor and a PSP instructor. Dwolatzky said that he became an SEI Member because many of the people with whom he works on JCSE’s mission are also members.

“We looked very carefully around the world at the groups and universities that were promoting best practices,” Dwolatzky said. “All the fingers pointed to Pittsburgh.”

To view a video featuring Dwolatzky discussing South Africa’s IT Sector, please visit www.softwareengineer.org.za/video-promoting-the-sa-ict-sector/129/