

## IIT alumnus takes software to battlefield and beyond

An Indian expatriate trained at the Indian Institute of Technology (IIT)-Kharagpur is playing a crucial role in taking software to the battlefield.

San Jose-based LynuxWorks is chaired by Inder Singh, the IIT alumnus, and produces embedded operating systems and tools for industrial, networking and military and aerospace uses.

An embedded system is a special-purpose computer system designed for a dedicated function. It often includes task-specific hardware and mechanical parts not usually found in a general-purpose computer.

Singh told IANS: 'LynuxWorks has a history of innovation and technical leadership in the embedded area, and a successful track record of addressing mission critical applications.'

LynuxWorks believes it has got a reputation for lowering lifecycle costs, interoperability, software reuse, and supporting high reliability products.

The software development firm is also taking the Free/Libre and Open Source Software-based operating system GNU/Linux to the battlefield and beyond.

Singh said: 'We continue to see Linux and open standards gain tremendous momentum in mission-critical military systems. Linux is rapidly becoming the leading de-facto open standard embedded platform in systems that require a high degree of interoperability and software reuse.'

He said LynuxWorks has also successfully marketed their products in India and won several key software programmes with both the Indian Navy and Army.

Singh, who received an engineering degree in electronics from IIT Kharagpur and also has a PhD from Yale University, had founded Excelan, an early leader in local area networks in 1982, and the firm later merged with Novell. He also co-founded Kalpana, which pioneered Ethernet switching technology and was one of Cisco's early acquisitions.

At LynuxWorks, he acknowledged that he was 'able to leverage my Indian connections in several ways'.

'We were a pioneer in outsourcing software development in India, working with Wipro in [Bangalore](#) as early as in 1989.'

He said: 'In fact, I believe we were Wipro's first significant American software development customer. Their software engineers helped us in porting our operating system to a couple of key architectures.'

Singh recalls that Wipro head Azim Premji visited their San Jose offices where they had interesting discussions about software outsourcing opportunities and business models.

LynuxWorks offers a suite of operating systems that are either free software and open source GNU/Linux products (BlueCat) or proprietary products that are compatible with GNU/Linux and

support the same software interfaces.

'A few years back, the military was thought to be the last holdout against embracing open source, due to their specialised requirements for mission-critical applications. As it turns out, Linux technology is being widely used today in many military applications, including several weapons and battlefield systems. The adoption of Linux is growing.'

'India is already providing many software services around both embedded application software and open source. There are a growing number of people in India who are very familiar with Linux and the embedded industry,' he said,

'However, I think the real opportunities for Indian companies with experienced developers are not only to provide development services for hiring these applications but to develop products as well,'

In Singh's view, there is tremendous opportunity in the embedded market to take it one step further. Also, there is a need for development tools that can be proprietary or open source as well as middleware meander.

'We have already expanded beyond San Jose and have subcontractors in India. We have been doing business with the Indian military and have several programmes in place. We are seriously looking at opening up a development centre.'

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