Software Industries In Asia

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Abstract

Singapore enjoys the advantages of a conscientious and highly skilled workforce in the service and manufacturing software industries. Government institutions such as the National Computer Board (NCB) and the Ministry of Defense (MINDEF) have highly qualified in-house software support and development personnel. The majority of software developed in Singapore in the commercial sector is applications software. However, in the commercial sector, the software development industry is still in its infancy. Although multinational companies such as Hewlett-Packard Company have started to establish research and development centres in Singapore, the country must still overcome various obstacles before software development will meet international standards.

Position Statement

The software industry in Singapore is flourishing mainly in the service and manufacturing industries. Major multinational computer companies, including Hewlett-Packard Company (HP), Digital Equipment Corporation (DEC), AT&T, and International Business Machines (IBM) are represented in Singapore and have regional sales and/or manufacturing centres in Singapore. Singapore also has an advantage of a conscientious and highly skilled workforce, dedicated to providing top quality services to clients. The software sales and service industry in Singapore is one of the best in the region, comprising highly skilled and knowledgeable sales and systems engineers, especially from the established software companies.

The quest to upgrade the quality of locally developed software is spearheaded by the government through institutions such as the National Science and Technology Board (NSTB), which provides grants to Singapore companies for conducting R&D. Government institutions such as the National Computer Board (NCB) and the Ministry of Defense (MINDEF) have highly qualified in-house software support and development personnel. Copyright laws are being enforced strictly to protect intellectual property rights and deter software piracy. Local companies are encouraged to improve their software engineering skills through continuing education and training, and to work together with tertiary institutions such as the National University of Singapore on joint R&D applied research efforts. In addition to the local workforce, qualified engineers from the region, especially Malaysia, P.R. China, and India, are recruited to work on software engineering projects ranging from multimedia software development, device driver development, to commercial applications software.

On the whole, however, although the software industry in Singapore is flourishing in the sales service sector, the software development industry in Singapore is still at its infancy. The majority of the software developed in Singapore are commercial software packages for personal computers, such as inventory control systems, payroll and accounting systems, and manufacturing software. One of the problems facing Singapore is the tight labour market, resulting in the difficulty of software development companies to recruit and retain qualified software engineers. Another problem facing the software industry in Singapore is the tendency for both software companies and their clients to prefer fixed-price software development contracts to variable priced hourly contracts that is prevalent in the U.S. software industry. Contract pricing and project schedules for a software project are typically determined jointly by marketing and managerial staff, who may not be familiar with the technical feasibilities of a project when the contract is signed. Since it is very difficult, if not impossible, to predict the costs and schedule in a large software development project especially in the face of customer requirement changes and incomplete specifications, contract pricing is almost always underestimated and client expectations are unrealistically high. Furthermore, the majority of the software engineers in Singapore are relatively recent graduates with little or no industry experience. As experienced software engineers get promoted to managerial ranks, new graduates enter the market to fill the vacancies. Another obstacle that Singapore needs to overcome in its quest to retain highly qualified engineers is to provide an upward career path for engineers who do not wish to ascend to managerial positions.