

AVIATION WEEK

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Outsourced Onshore

Software design 'boutique' targets avionics contracts

DAVID HUGHES/WASHINGTON

While some avionics software development is being outsourced by U.S. aerospace companies to India, one small American company maintains that dozens of firms like it are handling a large portion of the more specialized contracts.

Timothy A. Bigelow, CEO of Per-

formance Software Corp. in Phoenix, said his firm is focused primarily on commercial avionics software development projects for airframe and avionics companies. Bigelow isn't at liberty to discuss specific projects due to contracts that stipulate confidentiality. The company also develops software for military avionics programs, telecommunications and other markets.

Performance Software Corp. in Phoenix, said his firm is focused primarily on commercial avionics software development projects for airframe and avionics companies. Bigelow isn't at liberty to discuss specific projects due to contracts that stipulate confidentiality. The company also develops software for military avionics programs, telecommunications and other markets.

Performance has grown to 50 employees from just a handful a few years ago, and was ranked 88th among the

top 500 privately owned U.S. companies by *Inc.* magazine in 2003. Performance had \$7 million in sales last year.

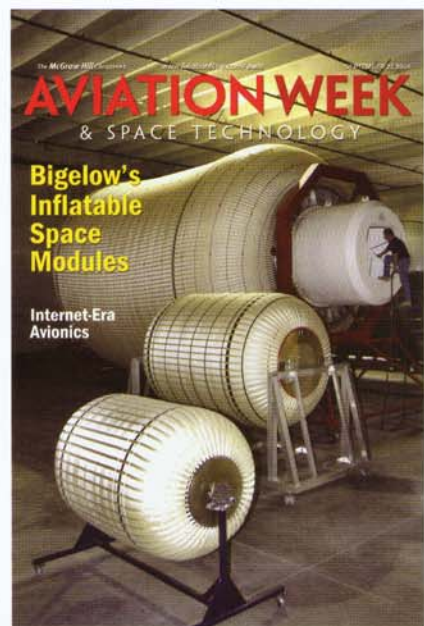
The average salary for a software engineer at Performance is about \$80,000 per year, compared to \$20,000-\$30,000 per year in India, Bigelow says. Performance hires mostly senior engineers who develop "do-

main" expertise at the company by specializing. The company has experts on developing software requirements or writing code for flight management systems, data links, operating systems and displays. Many employees have systems and software engineering expertise, and so can do much more than just write code. Most of the company's projects involve embedded software either for use in the cockpit or in military vehicles, he says.

Bigelow maintains that in the past few years U.S. industries have been

sending less software development work offshore. U.S.-based "boutique" software development companies like Performance can meet aggressive schedules and are often selected, he says, for portions of work critical to the delivery of a program. Other, less crucial software development tasks that can be easily segmented from the overall effort, such as verification and testing, are more suitable to being

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done "half a world away," he says. While India has an advantage in labor costs, Bigelow says companies like his can develop specialized avionics software faster.

"I read about work going offshore, but these reports don't focus on this other trend that is a sleeper. The growth [of outsourcing to U.S. companies like Performance] is unbelievable, and we can hardly keep up with it," Bigelow says.

Airframe and avionics companies benefit from outsourcing software development to a company like Performance because it means they don't have to ramp up employment to meet an aggressive schedule on a major program. Performance focuses on developing quality software quickly, which Bigelow says is becoming increasingly important as major avionics program development schedules become more compressed. "The only way to continue this trend


is to find ways to develop [quality] software faster, not just cheaper," he adds.

Often on large software development projects, the prime contractor starts to fall behind schedule part of the way through the effort. The solution frequently chosen is to add more programmers in-house, sometimes even doubling them in number. However, training the newcomers is time-consuming, particularly for the most capable software engineers, who are the best teachers.

Performance prefers to work up front with clients and to tackle those parts of a software development job that match the strong points of a small, specialty shop. They usually provide a "firm fixed quote" because they know their own productivity for a given amount of software. "If we get into trouble, we absorb the risk," Bigelow says.

Performance has its own software

quality system in place and has not applied for a rating on the standards set by the Software Engineering Institute (SEI) at Carnegie Mellon University, run by the Defense Dept. Most U.S. defense contractors have their software development and systems engineering rated under SEI criteria. "In general, there are a lot of questions about whether SEI has value for avionics projects," he says. Instead, Bigelow's company relies on what he calls an "agile and lean" software development process based on concepts provided by consultants.

Bigelow said Performance has had no problem finding talented software engineers who want to work for a small company. Word has spread that the company is doing some innovative programming for avionics systems, and that has helped. But many people go to work for Performance because its focus is on doing things correctly and expeditiously. 



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