

Antennas for Wireless Computer Interconnects: Good Things DO Come in Small Packages



The stub loaded double helix antenna offers signal strength of traditional helical antennas at one-third the diameter and half the length. Shown here, the antenna is mounted for testing in the anechoic chamber.

Often the easiest and fastest way to commercialization is the old fashioned way — licensing to a company. When department researchers developed a stub loaded double helix antenna, they knew it had commercial value. The new antenna offered the signal strength of traditional helical antennas at one-third the diameter and half the length.

“Its small size made it ideal for wireless applications,” said Warren Stutzman, director of the Virginia Tech Antenna Group (VTAG). It had taken four years to develop, using both internal and external funding. “Then, the company that had initially wanted the antenna chose not to license the technology, in spite of considerable pressure from me, CIT, and the university,” he said.

“We submitted the patent anyway, and received the patent last year. It was licensed by Turbowave a couple weeks after notification of patent acceptance. Turbowave is a company that produces and markets wireless computer interconnects. They found the antenna on the VTAG web site.”

At the same time Turbowave was licensing the technology from VTIP, Stutzman was teaching a short course at a conference. “A fellow who was taking the course came up to me to talk,” Stutzman said. “He opened his attaché case, and there was a collection of items he had built, including an antenna. He had developed a unique manufacturing process. So, we teamed up with him,” he said.

“I was able to put together the ultimate product company with the manufacturer.” The Antenna Group did the design and test evaluation.

“It has worked very well,” Stutzman commented. “VTIP negotiated excellent royalties and terms. They paid the license fees. The graduate student, Mike Barts, and I get royalties at no risk, and the department gets money from it also,” he said.

“I consider this to be the primary entrepreneurial model. Students do research. Once in a while it turns out to be very valuable to industry, and everybody is happy.”

Most license agreements do not have large percentage royalties and are measured in the thousands, of dollars — not millions, like successful start-ups, Stutzman acknowledged. “However, when comparing university royalty potential versus university equity positions in faculty-owned companies, it always boils down to success stories,” he said. “So far Virginia Tech has not hit the really big patent. It will come someday, and not too far off.”

When comparing the lower income stream of

licensing royalties to equity in a successful IPO, universities need to consider that licensing is lower risk, he said. “The large income potential of equity in a company is accompanied by large investment and large risk. In this case, the investment includes faculty and graduate student time. We must ask ‘what is the probability that the small company will really make it big, and what will it cost the university?’”

Stutzman said that in some cases, there might be reasons to start a company to commercialize a technology. “However, there are so many problems in that,” he said. “People get confused as to whom they are working for. When they start a company and have financial risk, they will do whatever it takes to protect that risk — even if it means putting in more time at the company than originally promised. Working part time at the company invariably ends up taking much more time. In a university, nobody keeps a

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time clock and accountability is difficult.”

There is definitely a place for university involvement in companies if these issues are addressed properly through formulation of general policy and by examining each company carefully.

The university holding an equity share in a company is a more open and acceptable approach, he said. “However, it still has accountability problems. I also worry about students getting into the companies, getting detached from the university, and getting off track from their educational goal. Their progress toward a degree can suffer.”

In spite of these concerns and issues, Stutzman said universities should continue to be involved in research, development, consulting, and sometimes commercial activities. “The faculty is the university,” he said. “The more that faculty members are involved in diverse activities, the more enriched their classrooms are...Why are the better teachers the better researchers? They are more exciting. They are bringing all that into the classroom.”

When commercially valuable technology is developed in university laboratories, however, he believes that the faculty should first turn toward the traditional licensing model.