

## Outside the Box - John Goodhue

Date: Friday, June 15, 2012

From his office at the Massachusetts Institute of Technology, John Goodhue oversees what is widely seen as one of the most important computing operations in the state — one that's halfway across the state in Holyoke. While many computing operations focus almost exclusively on raw number-crunching power, the Massachusetts Green High Performance Computing Center is tasked with handling huge amounts of data in a way that is as environmentally friendly as possible. He recently fielded questions from Business Journal Managing Editor Eric Convey.

What's high performance computing?

Over the past few decades, high performance computing has fundamentally changed the way scientists and engineers do their work. For example, it used to be that the only way to try out a new airplane design was to build a prototype and either fly it or put it in a wind tunnel. This was expensive, time consuming and sometimes outright dangerous. Today, designers use computers to build and fly virtual prototypes using simulation software on high performance computers. This saves time and money, and makes it possible to try out many more design variations before building a prototype. The result is vehicles that are less expensive to build and more efficient to operate.

What's green computing?

Green computing is the art of minimizing the environmental impact of computing. Not long ago, computer center operators began to notice that computers were consuming an increasingly large fraction of the electricity generated on the planet. Currently they account for about 2 percent of all electricity consumed in the United States. As a result, there has been considerable attention paid to the amount of energy needed to run computer centers. For example, the MGHPCC uses cold New England air to cool the facility for most of the year, with no air conditioning at all. This might seem like an obvious move. It was quite unusual until recently. The MGHPCC has gone a step beyond energy efficiency to consider the source of its power. Our computer center is located in Holyoke, Mass., where the municipal power company generates more than 70 percent of its electricity from renewable sources.

What drew you to green, high performance computing?

My interest in green started when I took a college environmental studies course. Our class project was to develop a recycling program for our dormitory — taken for granted today but a relatively new idea at the time. I got interested in computers because I loved science but was never very good at arithmetic. Having a machine do the arithmetic for me seemed like a fabulous idea!

Does doing computers in a green manner mean sacrificing speed/power?

Quite the opposite. Using less energy to power our computers means we can get more work done for less cost.

Do you have, or have you had, a mentor? If so, who?

Probably the most influential was Ed Fredkin, my college adviser, who set a great example as a teacher, a scientist and an entrepreneur. Among the lessons he taught was never to be afraid of making mistakes, as long as you learn from them.

Favorite restaurant?

Kitchen on Common near Cushing Square in Belmont. No trappings, just great food and service.

Most recent book read?

"Connectome," by Sebastian Seung, a neuroscientist who tells a fascinating story about advances in our understanding of the inner workings of the brain, and how much more we have to learn.

Pet peeve?

People who are so intent on getting their own point of view across that they forget to listen to others. This is probably high on the list of my own faults, so the peeve comes with a dose of sympathy.

Do you have a professional or personal motto?

I never thought of having a personal motto. If I had to invent one it would probably say something about making the best use of the time that you have, without getting too anxious about it.



John Goodhue of the Massachusetts Green High Performance Computing Center, Massachusetts Institute of Technology.