Harnessing the power

NCSA’s Private Sector Program affords business and industry the opportunity to use the center’s resources. Merle Giles, director of PSP, talked with Access’ Barbara Jewett to explain how NCSA interacts with the business world.
Q: What is the Private Sector Program?
A: The Private Sector Program (PSP) is all about enabling companies to gain competitive advantage by leveraging NCSA resources.

Q: What companies can use NCSA?
A: We can work with companies of all sizes. Increasing demand for simulations means that many small companies that were using desktop computers to do their simulations now have datasets that are too large to run, so they need access to supercomputers. We have small entrepreneurial companies and we have very large companies and everything in between.

Once a company becomes a member—and that membership is simply a contract and paying a modest fee based on company size—that gets them into the house, so to speak. Then we can spend time together, dream together, talk about the opportunities—and that has value. They can talk with other business partners, hire our consultants, and access our resources. NCSA can also be a portal for them to the university. We’ve got many, many connections with other campus units and that is perhaps a little misunderstood or underestimated—what power this entire campus can give to a company simply by their coming to NCSA.

Q: Most of the private sector projects are proprietary, but are there any examples you can share that illustrate how you work with the PSP partners?
A: Every company will have some proprietary issues, absolutely. We are an open university, but we are set up contractually and with non-disclosure agreements to conduct business in a proprietary manner.

We have one company that uses us for consulting on code and chasing some things with the technologies that we have here and providing them some solutions, but then they run everything on their own supercomputers. There are others that use us for cycles on our machines. Another PSP partner was using eight and 16 processors on some clusters of their own. Some of these runs would take a week; they wanted to know how we could help them. We did a test, ran some code and simulations and found that sweet spot for this client in terms of number of processors, taking the run down from a week to about 10 hours. When industry is under time demands—under competitive bid situations, for instance—to be able to run a solution overnight is quite an advantage over taking a week to run it and then maybe having to run it again. So we will help this partner, and as they produce product for their clients they can be more responsive.

Simulation is also an area where we can help companies because of our computational capability. As the number of variables increase, the ability of the user to get increased fidelity grows phenomenally. For instance, if we had a simulation that involved statistical processes and sampling, the user would have to put together multiple samples to then try to extrapolate what an entire production line might look like. As computers get larger and we approach petascale computing, the ability to run more variables will mean that statistical sampling will be used less and less, and more variables will be run—could even run real time, perhaps—but also there will be huge runs with millions of variables to increase the fidelity and granularity of the results. So that will be a very exciting thing—to run an entire project without the need to rely solely on sampling. It’s a huge impact to industry to be able to run a complex dataset and know exactly what an entire production would look like, and not just a piece of it. With petascale computing coming we’ll have to dream even bigger and figure out how we can harness that kind of power.

Q: And isn’t that really what the PSP program is all about, helping businesses be more successful?
A: To be successful, to have quicker turnaround, ultimately to be more competitive and more profitable. But the ability to be more profitable, more competitive, can come in quicker turnaround or increased fidelity—there are two ways to really improve the product, and time to solution is one of them.

There was a fascinating article in The Wall Street Journal in July 2007 on how business has been through management-by-objective, and by TQM (total quality management), and the article claimed that it’s time for the latest trend in business methodology: which is management by data. This is no surprise to NCSA partners—they’ve been managing by data for years.

Data drives decisions in many, many companies. The conversation I’ve had with partners is they have more data than they ever used to have and they’re trying to figure out how to analyze it. There’s valuable information in that data that may or may not change how they produce the product, but it may change how they run the business. So the very large datasets—terabytes every night that come into retail organizations, or off production lines—how does one manage that much data and get through it? Well, you do it with large computers. Data management, data mining, and data analytics are some of our strengths at NCSA. We deal with structured data, we deal with unstructured data. We have solutions for mass storage challenges, for large data sets—we have many tools and solutions we can offer.

More information: www.ncsa.uiuc.edu/AboutUs/Directorates/psp.html