



Q+A

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of Computing and Information
Technology at Clemson University

The coalition builder



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Technology at Clemson University, which is ranked as one of the top 25 public universities in the United States according to *U.S. News & World Report*. With a background in high-performance computing, Bottum is also on the board of trustees at Internet2, an advanced

networking consortium of more than 200 organizations led by U.S. universities.

Q: *Is there a push-pull between what upper management expects and what your end users expect? How does it affect your IT to be in a sea of 18-year-olds?*

A: In my role I have to cover many fronts, developing

partnerships with a mix of people across academia and research while also managing the expectations of 1,200 faculty and 19,000 students.

To meet if not exceed those expectations, we set priorities. But we also try to bring users into the process and let them help us invent the future. We try very hard not to say, "Oh, we don't have

money to do that." Instead, we find ways to be creative and entrepreneurial.

One way we bring in the input of our users is through the Academic Technology Council. The Council is helping us figure out what the next generation of important technologies will be. IT is not working behind closed doors and then simply throwing the result over the

fence. Our constituents want leadership but they also want to be involved.

Working with students keeps us young. Don't forget that Mosaic and Telnet were developed, in their time, by undergrads. The ability to work with young people who will pretty much try anything—that's very exciting. It's what has kept me in higher education.

Q: *What are undergrads at Clemson working on now?*

A: This past semester, we've worked with Dell to set up a social media listening center. If you don't know what that is, just think *business intelligence through social media*. The listening center scrapes publicly available social media sites to answer questions about particular areas of interest. It looks at what real

people are actually saying. For example, we see a tweet such as, “I got accepted by Clemson and _____,” and then we can see how a potential student fills in the blank.

The content is public domain information. But the undergrads who are working on it, they’ve used the data to come up with new technologies—like figuring out ways to anticipate the stock market.

Q: *Where are you in your progression toward the cloud?*

A: About five years ago, I was brought in to build up computing infrastructure for the university and in particular, high-performance computing. As we progressed on the project and started aggregating resources for faculty and students, other universities started knocking on our door. They asked, “Can we get access

to your high-performance computing? Could we put some applications or data in your data center for disaster recovery?” Clemson had been running the South Carolina Medicaid IT Services system for quite a while, so we were used to partnering with outside organizations. But the new demand was unexpected.

In response, we pulled a small consortium of in-state groups

together, and we called it the South Carolina Cloud. That was about five years ago. As we were building this consortium, I realized that we were putting a laboratory of sorts together. So I started reaching out to half a dozen or more companies and their CTOs to see if we could learn about the cloud from this laboratory we were building, without the buzz and marketing hype.

I asked, "Can we really learn how to build a cloud infrastructure, not just hype it? Can we do outsourcing and that kind of thing?" Dell was the one company that really stepped up, and it's been a wonderful partnership.

The cloud thing, I know a lot of people poke fun at it. But it's definitely real. And it's coming faster than anyone expects.

IT departments are scared to death, because they fear it's just another way to lose their jobs.

But if we jump in and engage instead of fighting it, our focus changes.

Q: *How are Dell and Clemson working with the Internet2 coalition to bring members cloud-based computing solutions?*

A: Internet2 is a consortium of universities with private-sector involvement. It's an international consortium, coming together to build a high-end research and education network. That's something the commercial sector doesn't provide. We've partnered with Dell to offer access. There are tons of applications. For example, consortium members can use the power of the cloud to simulate storms and help predict hurricanes.

Q: *There's a nice metaphor in that. Most people who would go deeper into the cloud aren't already as deep into cloud computing as you are. It's like you've climbed a higher hill than the rest of us, and now you can see a horizon that the rest of us can't see.*

A: I'm more excited now than I was a few years ago about this stuff.

Q: *What's the Next Big Thing?*

A: Software-defined networking. It's an element of the cloud. Think virtualizing networks. It's the transition of protocol-based hardware networks, which we've had for 35 years. The architecture of the Internet is that old. And the whole notion of programmable networks is going to transform everything. It's a huge dislocation in

the marketplace for many, many people.

Dell is on the front end of many new technologies through acquisitions and internal transitions. As one analyst said at a Dell conference earlier this year, Dell has all the pieces in place to build the Frankenstein.

Q: *What challenges does your business face?*

A: We're a public university, so state funding is going to go in one direction. We hope it stays level, but if it goes in any direction, it's not going to be up. Tuitions have already been stretched to the limit. So what can we do? By becoming more entrepreneurial, and more relevant in addressing society's issues, we hope to attract funding.

Additionally, even though we're in higher education,

we have to become more businesslike. As part of that, we have to figure out business models; that's the biggest potential trip-up. Anybody can make a business model, but it's tricky to come up with one that works.

Also, you have to bring resources to the table. You can't come with an empty sack.