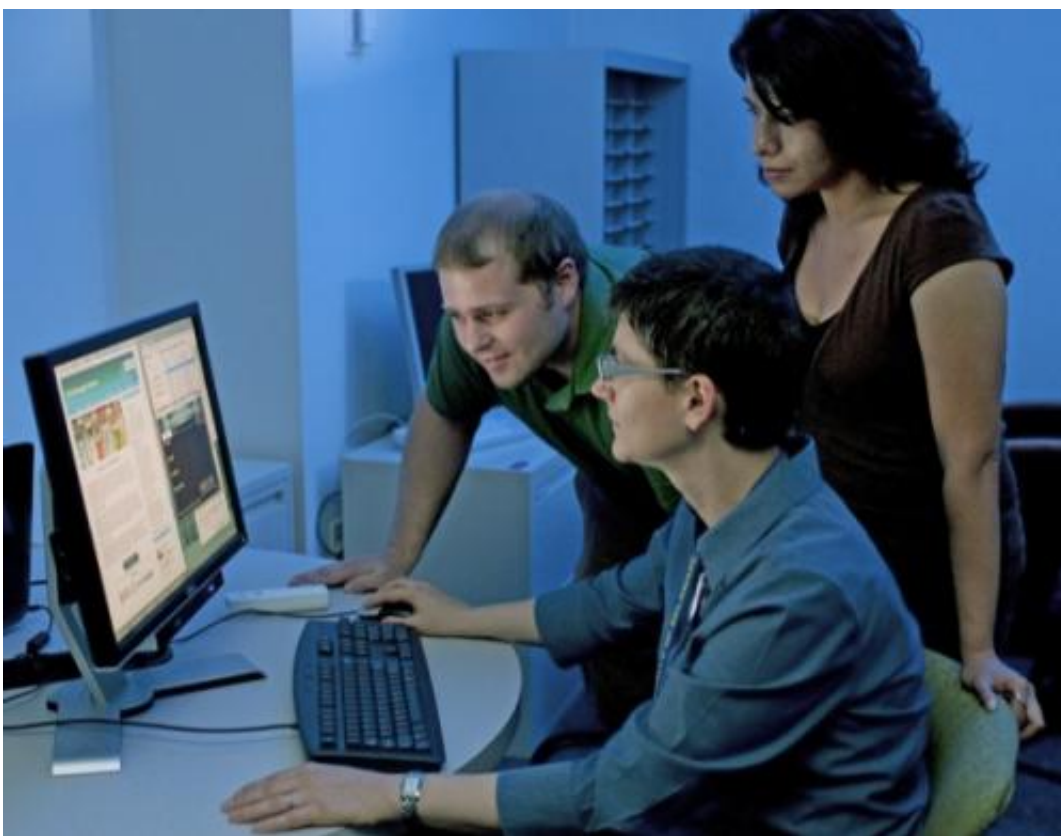# Cloud improvements: Professor receives NSF grant to develop more efficient cloud computing

April 30 2013, by Gregory Holt

Michela Taufer (seated) works with students, including Trilce Estrada (right). Credit: Evan Krape

From Apple to Dell and Google to Facebook, companies around the world are turning to cloud computing to aid in shaping the future of

technology.

"It is a time of transformation," said Michela Taufer, the University of Delaware's David L. and Beverly J.C. Mills Chair of [Computer](link) and [Information Sciences](link), referring to the current state of cloud computing.

Taufer and her post-doctoral researcher, Trilce Estrada, are teaming up with Rajmohan Rajaraman and Arnold Rosenberg at Northeastern University to develop a transformative computing paradigm to make cloud computing more accessible and efficient.

The cross-institutional team's research will benefit scientists and researchers who require a way to access vast amounts of [computing power](link) to run complex simulations while eliminating expensive onsite-computing hardware.

In order for a scientist to run complex simulations using the cloud's power, a schedule of tasks must be generated and executed. Shared computer (cloud) networks, however, may slow down or speed up due to unpredictable changes in workloads.

"Our [new paradigm](link) increases opportunities for these tasks which were once executing independently to be executed simultaneously, thereby completing computations faster," commented Taufer.

The work is supported through $500,000 in grant funding from the National Science Foundation. If successful, the new approach could potentially offer a fast, reliable, cost efficient cloud [computing platform](link) to the scientific community, alleviating the headache and expense of maintaining large data-centers.

The idea behind the cloud is to implement a "pay-as-you-go" option for consumers. "Similar to pumping gas or paying for electricity, you would

pay based on the amount of computing you do. More or less computing costs more or less dollars," said Estrada.

"Having complementary teams on the same project enables us to each play to our strengths. The team at Northeastern comes up with great ideas of how our computing paradigms could work, and it's up to us to try and make them work as closely to their ideas as possible," commented Taufer.

Ultimately, the researchers hope the improvements will convince traditionally hesitant users, like researchers and scientists, to use this novel technology.

Provided by University of Delaware