EU-US HPC Summer School in South Lake Tahoe

Report by Elizabeth Leake, former TeraGrid External Relations Coordinator

The second EU/US Challenges in High Performance Computing Summer School was held last week in South Lake Tahoe, California. Last year PRACE sponsored the event in Catania, Sicily. This year it was XSEDE's turn to host it in a US location. It is anticipated that the event will continue to be hosted in alternating EU and US locations every year.

This has been a year of transition for the global cyberinfrastructure (CI) community. In Europe, DEISA became PRACE, and EGEE became EGI. This summer, the US National Science Foundation's TeraGrid transitioned to XSEDE, and the Open Science Grid will soon embark on a new phase. From a student's point of view, CI politics may seem convoluted and inconsequential. Every country is experiencing economic hardship—some more than others. Many students are financially strapped and some may not return to school this fall. Therefore, it is more important than ever that the global CI community work together to provide the best possible research environment. Through the sharing of ideas and resources during events like the EU/US HPC Summer School, we will achieve more, help each other navigate the global financial crisis, and foster the process of innovation and discovery for the benefit of humanity.

Although I do not work for the XSEDE project, I volunteered to serve as point facilitator in South Lake Tahoe. After all, as TeraGrid's External Relations Coordinator, I had served on the planning committee for the Catania event and could share my experience. This year's planning committee was led by Scott Lathrop (XSEDE) and Hermann Lederer (PRACE). Others included Simon Wong (PRACE); John Towns (NCSA-XSEDE); Barry Schneider (NSF); Lennart Johnson (University of Houston-PRACE); Galen Arnold

(NCSA-XSEDE); Jim Ferguson (NICS-XSEDE); Amy Szczepanski (NICS-XSEDE); and Phil Blood (PSC-XSEDE). We invited 2010 summer school participant Ben Payne, (Engineering and Chemistry, University of Minnesota) to return as technical assistant, student mentor, and to assist with extra-curricular activities. We recruited the best possible faculty from EU and US institutions. All of the pieces of an excellent academic program were there, but the pressure was still on. It would be hard to top the beauty of Catania, Sicily and the amazing food provided by Santa Tecla Palace. Most importantly, we knew that people would be forming first impressions of the US—its people, culture, and geography. We wanted to make sure it was both valuable and memorable for everyone.

When I arrived at Chicago's O'Hare International airport, I saw John Towns (NCSA), TeraGrid Forum Chair and the principal investigator of XSEDE. Mr. Towns was to provide an overview of the XSEDE project, and serve as mentor to student-participants. Our flight was delayed, and as we waited, we talked about technology. A man sitting nearby overheard us, and introduced himself. Summer school faculty member Britton Smith (Cosmologist from the University of Michigan, Lansing) was waiting for the same plane. Dr. Smith was a bit pensive, not knowing what to expect. He had never presented content to a multidisciplinary community of learners before. He was concerned that a Biologist wouldn't have a take-away from a presentation about Cosmology. I assured him that we, as humans, are visual creatures. The most effective communication includes a visual interpretation. Therefore, researchers from all domains must know how to convey information visually. Biologists, engineers, chemists, and atmospheric scientists can learn a lot from a Cosmologist who has mastered the art of simulation and the visualization of results.

Because of this discussion with Dr. Smith, in opening remarks, I urged students to attend every session, and search for elements of value to them, no matter how foreign the content presented may seem in the beginning. The cross-pollination of ideas breeds innovation. Later, Folker Meyer (University of Chicago-US, Metagenomics) shared with me that he was pleased to meet Ulrich Rist (University of Stuttgart, Germany—CFD Engineering). Dr. Meyer believed he could leverage some of Ulrich's engineering methods and tools for biomedical research.

When we arrived in Reno, we rode together to South Lake Tahoe. The trip was just over an hour--steadily rising 2,000 feet in elevation, passing Carson City, Nevada and traveling south to the Lake Tahoe region. The lake and surrounding mountains were formed by tectonic faults that heaved shelves of Earth into varied juxtapositions, leaving a deep lake basin with an average depth of 1,000 feet—1,600 at its deepest point, and an elevation of 6,225 feet at the water's surface. The lake is fringed by mountains, the tallest being Mt. Rose, 10,778 feet. The lake's depth gives it a rich cerulean blue color. As you approach Lake Tahoe from Reno, the scenery is progressively greener. The air smells of pine and wood smoke, and it is cooler there—a welcome respite from Nevada's high desert. In August there is still snow on the highest peaks and the area receives between 20 to 30 feet of the white stuff each season. Consequently, there are nine ski resorts located on the lake and 15 in the area. Wildlife is abundant due to the dense forest habitat. There is evidence of 6,000 years of Washoe Native American culture. More recent American history found Lake Tahoe on the path to riches taken by west-bound prospectors during the Gold Rush of the 1850's.

The summer school venue, Embassy Suites, South Lake Tahoe, is located on the California side of the Nevada/California state line. Last week, European visitors got a glimpse of an American subculture that is not often seen. A nearby casino held rock music concerts by the band *Pfish* on Tuesday and Wednesday nights in an outdoor arena across from the hotel. Many of the fans stayed in the hotel. *Pfish* fans are called "Pfish Heads" in tribute to the *Grateful Dead*, whose fans are known as "Dead Heads" and whose music they were known to emulate. Adorned in counter-culture fashion, many of the Pfish Heads evidently partied all night, and slept in late—missing breakfast. It was necessary to aggressively protect our lunch buffet and afternoon break food from Pfish-Head passersby who, oblivious to the "PRIVATE PARTY" signs, helped themselves to whatever they wanted. In addition to stealing cookies, a few Pfish fans wreaked havoc on the hotel—a lobby planter was smashed at 2:00 a.m. and koi fish in the hotel lobby pond were terrorized. In the end, the hotel staff grew to appreciate summer school attendees all the more. For the most part, we were aware of, but not threatened by, their presence--they added some spicy color to the cultural spectrum.

When we arrived at the hotel, my room wasn't ready, so I went to the lobby where I found a group of students, one female, and several males. Each was in their mid to late 20's or early 30's; slender, dark, wearing jeans, tee shirts, and carrying backpacks. As I approached them, they looked at me and smiled. They recognized me as the leader of our FaceBook community that had been active for weeks prior to the event. After introductions, I asked them how they had found each other in the crowded lobby filled with families, a few early-arriving Pfish Heads, and others. Someone said "we look alike—like we belong to the summer school." Yes, they were similar. I said, "Do I look like I belong?" They looked at me expressionless. I am fifty,

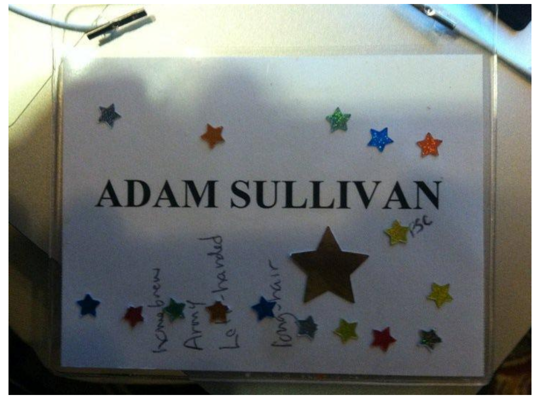
female, Caucasian, 6' tall, well fleshed, and was dressed in a bright-colored long summer dress. My guess is they thought I didn't look like I fit in.

With 86 participants from 17 countries (58 students and 28 faculty and staff) the community in which they were about to engage comprised multiple levels and dimensions of diversity. Judging from appearance, there was no way to determine who belonged or who didn't. Rest assured they all belonged—they were carefully chosen from a pool of around 200 applications. Each participant was selected by US and EU planners for their ability to contribute to the synergy derived from such diversity. Represented were 30% female; most domains of science; specialists in multiple research arenas; varied abilities; all races; many religions; and multiple and disparate political persuasions. Some had been born to affluent families, and others hadn't been so lucky. At the end of the experience, we hoped each would have been inspired and any negative preconceived biases dispelled—misconceptions about other disciplines, nationalities, races, genders, and abilities. Most importantly, we hope they continue to relate with each another and form future multidisciplinary and multicultural research collaborations and friendships.

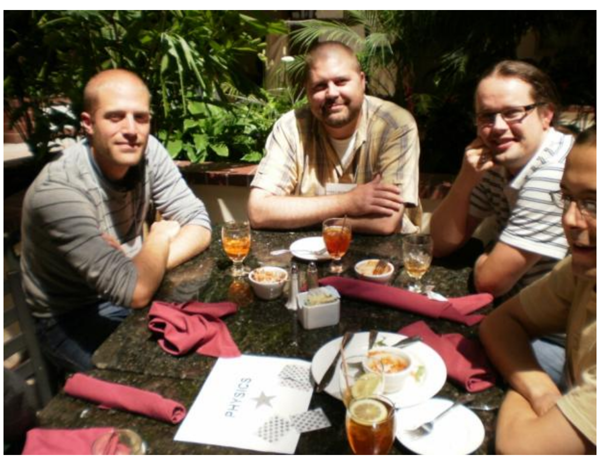
One student told me that he enjoyed the bed—he had never slept in such a wonderful bed, with so many pillows! The rooms were quite generous and mid-week two students who had never met before, opted to share a room. They were not accustomed to having so much space all to themselves, and welcomed the opportunity to extend the community experience into the evening and night. After

session, while hiking with Olaf Lenz (University of Stuttgart, Germany), and David Henty (University of Edinburgh, Scotland), hikers we passed on the trail greeted us, and smiled. Dr. Henty remarked "Americans are so friendly—and they really mean it!" It made me happy to know that a positive impression of Americans had been formed, in part, on a mountain trial in Lake Tahoe.

Many who excel in science, technology, engineering, and mathematics are socially introverted by nature. The work they do on a day-to-day basis typically doesn't involve interaction with humans,



especially large groups of them. When they are thrust into a situation where they must interact with new people on a daily basis, it can be stressful. Because I am about as extroverted as they come, it was a goal of mine to engage them in activities that would mix things up. By the end of the fourth day, I hoped that everyone had met each other. To accomplish this, I arranged birds-of-a feather lunches each day, including disciplines, activities, and technical themes. Participants were encouraged to share a colored star that represented their research focus with people they met, and conversely collect multicolored stars from others. In the end, they would need to be able to recall facts about each person (represented by a colored star). On Tuesday, Russian-born Maria Minakova (University of Wisconsin, Plasma Physics/Nuclear Fusion Power) said she realized she had talked for two days straight. In her daily environment, she doesn't talk much at all! She thought this was a good thing because she had met people she would never have had the opportunity to meet otherwise. She did, however, seek the opportunity to visit the beach alone on Tuesday evening to find a brief respite from human interaction—time to process and reflect in Lake Tahoe's beautiful surroundings. In the future, it would be beneficial to allow students who must travel overseas to have two more days at the beginning of the experience, to decompress from their busy lives, acclimate to the time zone, and altitude, if necessary. I noticed most of our EU guests, by Tuesday were either ill (about 1/3 were sick), or falling asleep in class. An extra two days is needed so that they are refreshed and ready to learn.



Some struggled with health or communication challenges you couldn't see on the surface that prevented them from gleaning as much information as others. For example, from the externally healthy appearance of one student, it was difficult to tell that she had been desperately hoping to avoid a trip to the emergency room last week from complications arising from critical dietary needs were not being met. Not wanting to trouble anyone, she didn't make me aware of this until the fourth day—long after she had begun to feel ill. Another student who is deaf could read lips well, and hear some sounds via cochlear implant, but was unable to benefit from a large percentage of the auditory experience—classroom discussions, side-bar conversations, and social banter, not to mention the eclectic music mix I made from student choices for evening social events. Yet, he didn't complain, and was an active participant in all sessions and evening gatherings.

At breakfast one morning, I joined presenter Amy Szczepanski (NICS-XSEDE) and participant Alex Wiltschko (Harvard, Neuroscience). The discussion ranged in topics, including the importance of the sense of smell, and how Amy hoped to see more utilization of NICS' visualization and data analysis system, *Nautilus*. The next day, Alex entered a startup allocation request for 30,000 SU's on Nautilus for a Harvard project entitled "Understanding the Genetics of Fear." On Thursday, I used Alexs' extraordinarily nice camera to take our group photo. Another great group photo (above) was taken by participant Anil Kapahi (Chemistry, University of California, Los Angeles).

This week the Perseid Meteor Shower began, reaching its peak on Friday. Unfortunately, the light of the waxing moon was making meteors appear lighter. I saw the first one when I wasn't even looking—viewed from my bedroom window as I retired for the night on Sunday. I wished for a successful event, and that nobody would be injured hiking or swimming in the off-hours.

By Thursday evening, following four days of intensive academic instruction, most were ready for some extra-curricular fun. I accompanied a group of 19 on the Queen of the Lake River Boat Sunset Dinner Cruise around Emerald Bay. Thirty students opted to hike with Ben Payne, also at Emerald Bay, and three decided to venture out on their own for a ten-minute helicopter ride over the lake. On the final leg of the dinner cruise, participants Terri Foster (University of New England, Pharmacy) and Mohammed Ali ElSaadani (University of Louisiana, Civil Engineering) joined presenter Britton Smith (University of Michigan, Cosmology) and me on the darker upper deck of the turn-of-the century era paddle wheel boat, where we were scanning the sky for meteors. I asked them to honor my next wish, that I might be lucky enough to help plan this summer school again in the future, whether for the EU or US planning committees. Dr. Smith saw a meteor, and assured me that he honored this wish on my behalf. I hope it comes true!