CSU ISTeC IAC (Industrial Advisory Council) Spring 2013 Retreat  
Wednesday, April 10, 2013, 11 a.m. to 4:30 p.m.  
Hosted by IBM in Boulder, Colorado

Retreat Agenda

1. **Retreat Check-in** (11:00 – 11:15 a.m.)
2. **Lunch Distribution** (11:15 – 11:35 a.m.)
3. **Host Welcome** – Dave McAllister, IBM Global Technology Services (11:35 – 11:40 a.m.)
4. **Introduction of Attendees** – All (11:40 – 12:00 p.m.)  
   Who you are, what your company does, and what you do for your company.
5. **Host IAC Member Presentation** – Dave McAllister, IBM Global Technology Services, and Pete Lorenzen, IBM Boulder Senior Location Executive (12:00 – 12:20 p.m.)  
   Company overview of IBM, focusing on Colorado operations.  
   (15 minute presentation, 5 minutes for IAC questions)
6. **ISTeC Cray Cooperation with Woodward** – Barry Brinks, President, Brinks Engineering, Inc. (12:20 – 12:40 p.m.)  
   CSU and Woodward have collaborated in a joint effort in the area of high performance computing. Specifically, Woodward and CSU collaborated to expand the CSU ISTeC Cray to 2,016 cores, filling the entire ISTeC Cray cabinet. The strategic partnership gives HPC access to Woodward and Brinks Engineering employees, and adds capacity to CSU’s HPC environment – a win-win situation. This talk will include a presentation on the use of ANSYS for solving engineering problems on the ISTeC Cray.  
   (15 minute presentation, 5 minutes for IAC input and discussion)
7. **IT Topics Required at CSU** - Prof. Steven Fassnacht, ISTeC Education Advisory Committee Co-Chair (12:40 – 1:00 p.m.)  
   The skills that a university graduate has or achieves do not necessarily line up with those that industry needs. The ISTeC EAC is working to better align the “need” and “have.” We are soliciting input from the IAC to give the CSU students what industry “needs” from its new employees. At the Fall 2012 ISTeC IAC Retreat, we received initial input about needed skills from the IAC and at the Spring 2013 IAC Retreat we will further refine these skills through an iterative yet fun game show style exercise. We look forward to the IAC’s insight.  
   (10 minute presentation, 10 minutes for IAC input)
8. **Break** – 20 minutes (1:00 – 1:20 p.m.)
9. **IAC Member Presentation** – Scott Evans, Arrow Electronics, Inc. (1:20 – 1:40 p.m.)  
   Company overview of Arrow Electronics, Inc., including Colorado operations.  
   (15 minute presentation, 5 minutes for IAC questions)
10. **ISTeC Events for High School Students** – Prof. Michael De Miranda, CSU ISTeC Education Advisory Committee Member, and Prof. H. J. Siegel, CSU ISTeC Director (1:40 – 2:00 p.m.)  
    As we approach the 10th Annual ISTeC High School Day event, we are fortunate to have multiple possibilities for how to achieve our goal of attracting high school students to study
IS&T related topics at CSU. We want to discuss these with the IAC and gather their input. Possibilities include any combination of:

(a) the contest/demonstration/career-fair/ full-day “High School Day Event” (similar to last year);
(b) the TSA\TEAMS national event, Test of Engineering Aptitude, Math and Science. Information can be found at http://teams.tsaweb.org/ - CSU ISTeC is hosting this event for the first time this year as a pilot test;
(c) summer camps: these structured summer activities can be day camp or week-long residential programs.

Collectively, the ISTeC Executive Committee, ISTeC Education Advisory Committee, and the ISTeC IAC need to consider what options we feel will have the most success in reaching our goals, while providing the best return on our investment of time and money. We need to know what the IAC thinks of the efficacy of these alternatives, how the IAC can participate in each, and other alternatives the IAC would suggest.

(10 minute presentation, 10 minutes for IAC feedback and discussion)

11. **ISTeC NSF Networking Grant** - Scott Baily, Director, CSU Academic Computing and Network Services (2:00 – 2:20 p.m.)

We will describe the $486,937 NSF grant ISTeC has received for a “Data-Driven Network Infrastructure Upgrade for CSU.” We will discuss our plans for using these funds, and get the IAC feedback on these plans. We also want to explore how the IAC can get involved with this effort. We want to examine with the IAC if we can go to 100 Gbits with this budget.

(15 minute presentation, 5 minutes for IAC questions and feedback)

12. **Plans for Spring 2014 Future Visions Symposium** – Prof. Steven Fassnacht, ISTeC Education Advisory Committee Co-Chair, and David Ramsay, Director of Strategic Relations, CSU Libraries (2:20 – 2:40 p.m.)

The fifth biennial ISTeC Future Visions symposium will be held on April 18, 2014, at CSU. This event brings in speakers from a variety of disciplines to present their vision of their area of expertise five years in the future, and as such topics could include “the 50th anniversary of the Internet in 2019.” There will be a morning and afternoon plenary session with two breakout sessions of three topics each in between. Plenary topics are being chosen incorporating in-depth student feedback, and we are asking the IAC help us identify speakers for the event.

(10 minute presentation, 10 minutes for IAC inputs)

13. **Break** – 20 minutes (2:40 – 3:00 p.m.)

14. **Introduction of New Director** (3:00 – 3:15 p.m.)

On June 30, 2013, H.J. Siegel, Founding Director of ISTeC will pass on the gavel after over 10 years of service. The incoming Director will be introduced, and will present a brief autobiography.

(10 minute presentation, 5 minutes for IAC questions)

**NOTE:** The following two “Big Data” presentations, based on biology-related applications, will be followed by an industry panel and time for IAC discussion of these presentations.

15. **Next Generation Sequencing and High-Performance Computing Driving Big Data** – Dr. Richard Casey, ISTeC Cray System Administrator, and CSU Infectious Disease Research Center, Sequencing Facility Coordinator (3:15 – 3:25 p.m.)

Revolutionary Next Generation DNA sequencers often require high-performance computing
resources and large-scale database queries for data analysis. An example from the field of metagenomics will be presented that shows the integration of Next Generation sequencing, supercomputing, large-scale database queries and the need for Big Data management strategies.
(8 minute presentation, 2 minutes for IAC questions)

16. **Economics and Practicality of Data Management Associated with Biological Data Acquisition** – Scott Novogoratz, CIO, CSU College of Veterinary Medicine and Biomedical Sciences (3:25 – 3:35 p.m.)

Instruments used in biological research, such as genome sequencers and confocal microscopes, produce large datasets from a single experiment. Managing and manipulating these large datasets poses unique challenges for both biological and computer scientists. This analysis focuses on the economics and practicality of various data storage possibilities.
(8 minute presentation, 2 minutes for IAC questions)

17. **Industry Panel: Big Data** (3:35 – 4:05 p.m.)

*Panelists*: Bruce R Lenell, Northrop Grumman (Moderator); Steve Shattuck, Hitachi Data Systems; Dan Foley, Lockheed Martin Space Systems.

Our industry panel will discuss issues in “Big Data” (however you wish to define the “Big Data” problem). Each panelist will have five minutes to speak (with or without visual aids). We hope the industry panelists can address a subset of the following questions, in addition to other comments they wish to make:

(a) Describe your “Big Data” environment, including numbers, sizes, and types of information.
(b) Describe the formats prevalent in your “Big Data” environment (e.g., text files, images, multimedia, structured vs. unstructured (database) data)
(c) Discuss the distinction between “vanilla” “Big Data” (i.e., datasets) vs. “Big Data” analytics (data analysis)? What “Big Data” challenges does your company face? What “Big Data” solutions does your company offer?

(5 minutes for each of three panelists, 15 minutes for IAC discussion)

18. **CSU Highlight: High Performance Computing Programming Courses at CSU** – Pat Burns, CSU VP for Information Technology, and Chris Wilcox, Computer Science Dept. Instructor (4:05 – 4:25 p.m.)

We will talk about the set of HPC programming courses we have taught and plan to offer at CSU, including the topics we cover and how we teach them. We will solicit feedback from the IAC for what we should be teaching, and how, about HPC programming. Are there IAC members interested in being guest lecturers? Are there IAC members (or people in their companies) interested in coming to CSU to learn about this in the regular class (typically 4-5 MWF)? Is there any IAC interest in a CSU summer short or online course? How about IAC sponsors for class projects for the students? Is the IAC interested in programming or just use of applications?

(15 minute presentation, 5 minutes for IAC questions and comments)

19. **Fall 2013 IAC Retreat Agenda Ideas** – Prof. H. J. Siegel, CSU ISTeC Director (4:25 – 4:30 p.m.)

Suggestions for agenda items for our next ISTeC IAC retreat. (5 minutes for IAC suggestions)

20. **OPTIONAL: Tour of IBM Global Operations Command Center and Leadership Data Center** (4:30 – 5:30 p.m.)