SIS Board of Visitors
Meeting Summary
September 22-23, 2014

Board members present included:

Raheem Beyah	Gary Byrd	Claudia Gollop
Mary Frances Cooper	Robert Strauss	Michael Macedonia
Alfred Moyé, Chair	Cynthia Richey	Keith Schaefer
James Williams	Patrick White	William Isler
James Matarazzo	Barbara Spiegelman	David Holtzman
Robert Strauss		

Laurie Kirsch, representing the Provost's Office

Industrial Advisory Committee members present included:

Thomas Reinsel	Joseph Trost	James Shaw

Alumni present included: Alexis Macklin

School of Information Sciences faculty and staff present included:

Sheila Corrall	Ronald Larsen, Dean	Carolyn Loether
Michael Depew	Paul Munro	Wesley Lipschultz
Debbie Day	Robert Perkoski	David Tipper
Marci Carothers	Martin Weiss	Sandra Brandon
Jeff Lawson	Peter Brusilovsky	Sharon Bindas
Amelia Acker	Dmitriy Babichenko	Roger Flynn
Eric Hatleback	James Joshi	Elizabeth Mahoney
Nora Mattern	Kostas Pelechrinis	Michael Spring
David Thaw	Masa Koizumi (visiting scholar)	Mary Kay Biagini

School of Information Sciences students present included:

Ryan Champagne	Nathalie Baracaldo	Marcela Gomez

Elliance representatives in attendance: Carmella Manges

Graphical facilitator from Grove Consultants: Giselle Chow

Note on attendance – due to the interactive format of the meeting, some participants came and went according to personal schedule constraints. The attendees list in this report includes those whose attendance was specifically recorded and is likely missing some who participated at various times.

Summary of Meeting

Chair Alfred Moyé opened the meeting at 9:00 am, welcoming those in attendance, noting the purpose of the meeting was to contribute to the School's development of a vision for the future, and inviting attendees to introduce themselves. He then asked **Dean Larsen** to introduce the agenda and to review progress since the last Board of Visitors meeting. Dean Larsen noted that phase 2 of the Elliance project on branding and communications is being launched with this meeting. During phase 1, Elliance developed a conceptual framework for the branding and communications plan, and phase 2 is intended to instantiate that framework within the full SIS context, reflecting the School's actual curriculum, research, faculty, staff, and students. He also introduced Giselle Chow from Grove Consultants, who provided real time graphical facilitation of the meeting. Giselle reviewed the role of visuals and graphics in fostering the development of common goals and discussed the intended outcomes of the meeting. She summarized the roles of the various groups of attendees and reviewed the agenda and ground rules.

Dean Larsen discussed highlights since the November 2013 meeting of the Board:

- The emergence of the iSchools as a growing international organization was briefly reviewed. From the founding group of ten US universities in 2005, the organization now includes **59 universities on four continents** (North America, Europe, Asia, and Australia). It is currently in the process of incorporating as a 501(c)3 in the District of Columbia.
- The ranking of the LIS program and each of its specializations by USN&WR have been consistently in the top ten in the US. More recently, in a survey sponsored by HP of more than 400 information security programs by more than 2000 information security professionals, the **SIS program on information security was ranked seventh**.
- A recent analysis of national data from NCES, BLS, and Indeed.com, revealed some potentially unsettling trends in **enrollment & employment** that need to be considered as we chart the future course of the School. We have noted locally a steady growth in the MSIS program fueled by international students (mostly from China), a substantial drop in MLIS enrollment (mostly domestic), while the TeleNet program's enrollment is now relatively stable, although dominated by international students (mostly from India). The MSIS and MLIS trends are consistent with the experiences of other iSchools in the US. (Aside - A September 2014 report by The Conference Board, "From Not Enough Jobs to Not Enough Workers," R-1558-14-RR suggests librarians will be in greater demand as baby boomers retire. It would be worth the effort to reconcile this report with the NCES and BLS data.)
- We are experiencing an **imbalance in education supply and demand**, particularly for the MLIS and MSIS degrees. Forbes magazine (2012) ranked information science as one of the best degrees (in terms of demand and compensation) and library science one of the worst (but see the note above re The Conference Board report).

- In an analysis of 8-year recruitment data from Indeed.com, there is evidence that traditional areas of MLIS employment are either flat or declining. **New and non-traditional positions (e.g., digital curation and information steward), however, appear to be growing**, as measured by terms showing up in job postings. Supply and demand data indicate that the nation may be overproducing LIS graduates by about 2000 per year, while workforce demand for information science graduates may exceed supply by about 10,000 per year. How do we adapt our curriculum to leverage this situation and turn this to our advantage? There could be a more expansive role for those with information-related education, and particularly those with MLIS degrees.
- Elements of our current plan include:
    - Increasing the rigor and depth of the undergraduate program
    - Adapting professional Masters specializations to workforce trends
    - Further developing the School's signature research areas
    - Improving the building's facilities

Planning considerations include understanding our local, national, and global context; capitalizing on our strengths; and recognizing new opportunities.

Associate Dean Weiss updated the Board on the state of the school's research, noting that our research funding has run between $1.5-2.5M over the past four years, with most of it coming from the federal government and the Andrew W. Mellon Foundation. Attracting substantial corporate funding remains a challenge. Faculty are publishing about 130 articles per year, and by the performance metric used for annual faculty reviews, **research productivity this year increased nearly 10% over last year**. This is at least partially a result of recent faculty hires that include highly productive researchers.

Academic Program Updates

Undergraduate Program (Perkoski)

- In a comparison with peer programs with which we compete, the BSIS program is at the low end with regard to the required IS credits to graduate (30). Most other institutions are higher, typically closer to 40.
- The program is increasingly emphasizing **project-based work**, including work with companies and non-profit organizations. Students work in teams. A recent example is a project for Mazda marketing, where students developed a website and provided related technical support.
- We are also considering students working with start-up firms; this is a relatively new area for the program, and we are still working out how to do this effectively. Cooperation with local venture capitalists could become a vital partnership.
- We have created a green wall studio on the 7th floor, "**Studio 721**," to enable students and faculty to create professional-looking video recordings.
- The **types of jobs open to BSIS graduates are expanding**. Our curriculum needs to be deeper and broader to address the expanding employment opportunities and requirements. The curriculum

should enable our students to work with new tools and in teams to prepare them for a wider array of jobs.

GIST Program (Brusilovsky)

- More than half of the INFSCI graduate students are enrolled in program specializations (big data analytics, database & web systems, geoinformatics, human-centered computing, information security, and telecommunications & distributed systems).
- This year's **enrollment is the highest ever**
- **Nearly all of our students are international**, with the majority of them from China. We currently have only 14 domestic students. We are launching two new 15-credit-hour Certificates of Advanced Study (CAS) that we hope will attract domestic students. With the large number of Chinese students, this year we started offering specialized English language classes.
- As with the undergraduate program, we are also increasing the emphasis on group projects in order to better prepare students for the job market.
- Our PhD program was less successful this year than it has been in the past in attracting highly qualified applicants. While a substantial number applied and the best were admitted, most of them chose other universities.

Telecommunications and Networking (Tipper)

- This graduate program is addressing some of the same issues as the GIST program. The enrollment is almost entirely international (mainly from India). Most of the domestic students are part-time students who already have jobs.
- Over the past year, nearly every student who wanted an internship got one.
- **All of the PhD students who were offered admission, accepted**.
- The CAS for security will be the first certificate offered online for the Tele program. This will be offered through Pitt Online and will be available beginning with the spring 2015 term. As with GIST, this is in part an effort to increase our enrollment of domestic students.
- We are also seeking **closer collaboration with industry**, particularly on research, but issues such as intellectual property rights protection continue to pose obstacles.

Library and Information Sciences (Corrall)

- There has been a continuing **decline in new student intake** over the last few years, with another 15-17% decline this year. This is happening fairly consistently across all LIS programs in the US.
- Some LIS faculty expertise is highly relevant to the education of students in other SIS programs, and particularly the undergraduate program as it grows in depth, breadth, and rigor.
- Program faculty are engaging in some **curriculum redevelopment** and exploring new directions, such as establishing a curriculum to train the data scientist.

- Faculty are also considering a clearer labeling of the MLIS degree to communicate the more broadly-based skills that our graduates acquire, opening up a wider range of opportunities for our graduates. Some of our competitors have already done this.
- Several of our **competitors require 42 or more credits** to graduate with a Master's degree. Is our current 36-credit program sufficient to educate students for the professional opportunities currently available and projected for the future? Would a longer program enable them to engage in a more immersive program? Can we build in more substantial practical experience – possibly increasing the program to 4 terms? Would this be required of everyone or just offered to those interested? The overriding challenge is the total cost of such a program. Many of the students that do not accept our admission offers cite financial considerations for their alternate choice. They indicate they are getting more favorable financial terms from other schools.
- One of the problems with substantially reengineering an operating academic program is the time involved. Even with reduced enrollment, there remains unreduced time involved in teaching the courses. Other places have shut down for a whole year in order to make major change happen quickly.
- How are we going to recruit the type of students that we need to fill the available jobs? And what type of students do we need to recruit?

Director of Administration (Brandon)

- Last year we were able to support a substantial amount of travel for students and faculty to present papers and attend conferences. This year is very different. We are invested heavily in GSAs, TAs, TFs, and adjuncts, which is consuming much of our discretionary budget.
- Brandi Belleau has been moved into a student advising role.
- We have received approval to recruit for the **internship support staff position**, and we have scheduled interviews with three candidates.

Introduction of New Faculty

- **David Thaw** – Assistant professor in School of Law with a secondary appointment with SIS. *Cybercrime* is his specialty.
  - Cybersecurity is a very broad field of study. How can we maintain secure cyber systems? One of the greatest challenges is not a lack of proper algorithms, but the fact that people are not "locking the front door."
  - We are attempting to collect empirical data that will help develop standards in how cyber-security is handled.
- **Eric Hatleback** – Michael Spring is launching a program in collaboration with SEI/CERT on the *science of cybersecurity*. Many of our graduates work at CERT. The project is co-funded by a three year grant from Pitt's Office of Research and by SEI/CERT.
  - It builds on the work from and the reputation of Pitt's Department of History and Philosophy of Science.
  - The goal is to establish Pittsburgh as the research hub for the science of security.
  - Initial activities are to include:

- A NIST workshop on standards to be held at Pitt in November
- Establishing a Journal on "Situational Awareness of Digital Threats"

- **Nora Mattern** has accepted a three year postdoctoral appointment jointly with the iSchool and ULS to launch a project called the ***digital observatory***.
  - Nora's research focuses on archival studies, stewardship of evidence, and ethics.
  - During her postdoc, she will develop support for and enhance services around digital scholarship (research and teaching), raising the visibility of digital projects on campus and helping to support those efforts.
  - This is an opportune time for academic libraries to become critical think-tanks relating to evolving forms of scholarship and scholarly communication.
  - A component of her work will be to establish a physical demonstration space at Hillman Library. This will be a pilot project that provides space and facilities for students and faculty to work on digital projects and to receive informed guidance.
- **Amelia Acker** is a new assistant professor who received her PhD from the UCLA iSchool. She is teaching in the LIS program, specializing in archives, and holds a joint appointment with the Tele program, conducting research related to mobile communications.
  - Her area of research recently has focused on the ways we create and preserve records created by cell phones and related mobile devices.
  - More generally, her **research addresses questions surrounding the new digital records** that we are going to have to deal with now and in the future.
  - In response to an inquiry as to why she chose Pitt, Dr. Acker noted that the composition of SIS faculty reflects all the different ways to study information, and Pitt arguably has the # 1 archives program among all of the ALA accredited programs.

Afternoon Sessions (Summaries of break-out group discussions)

Environmental Scan

In breakout groups, participants engaged in a discussion of environmental factors (internal and external) that impact the School's and the University's activities. The following is a merged summary of the discussions within these groups. The more detailed graphical notes are included as an attachment (see five pages labeled "The iSchool at Pitt Context Map").

- Societal Trends
  - Increasing dependence on computing and mobile technology
  - "Democratization" and increased sharing of personal data and information
  - Geometric growth of data, now sufficiently large to be labelled "big data"
  - Diminished public interest in education (increasingly questioning its "value")
  - Changing roles for libraries
  - Rapid growth in video, e.g., in personal storytelling
- Socio-Economic Factors
  - Costs of higher education shifting from state (public good) to student (private good)
  - Imbalance between graduation rates and workforce needs

- o Addressing issues of diversity
- o Economic inequality produces disparity in access to education
- o Decreasing support for graduate study among industrial employers
- Technology Factors
  - o Increasing use of mobile technologies and social media, particularly by students
  - o Increasing collection of private data for commercial use
  - o Increasing risks from inappropriate use of private data, including but not limited to cybercrime
  - o Decreasing cost of information technologies
  - o Ubiquitous sensors (including, notably, cameras in public places)
- Trends in Higher Education
  - o Increasing experimentation and implementation of online education for both credit and non-credit
  - o Increasing interest in cross-disciplinary opportunities
  - o Increasing focus on globalization
  - o Increasing cost pressure
- University Climate
  - o Traditionally risk averse and slow to evolve
  - o Change in leadership
  - o Subject to increasing federal and state oversight and regulation
  - o Tuition-dependent
  - o Encouragement toward collaboration across campus
  - o Interest in greater industry engagement
  - o Still struggling with Intellectual Property Rights issues (particularly related to industry engagement)
  - o Balance of faculty time for teaching and research
  - o Pittsburgh region gets positive reviews for quality of life and economic growth
- Student Characteristics
  - o Declining domestic enrollment in SIS graduate programs
  - o Increasing international enrollment in technology-driven graduate programs
  - o Full-time working professionals
  - o Generational & demographic differences
- Uncertainties
  - o Sustainability of international enrollment (e.g., visa policies, currency exchange rates, international conflicts)
  - o New methods of ranking educational programs
  - o Public perception of the changing role of libraries and librarians
  - o Future funding source for research (public and private)

Strengths, Problems, Opportunities, Threats

With this common understanding of the iSchool context, participants in plenary proceeded to conduct a "SPOT" analysis. The following summary captures the highlights of that discussion. The more detailed graphical notes are included as an attachment (see page labeled "SPOT Matrix iSchool at Pitt").

- Strengths
  - o Quality of research, with a federal grant award rate around 20%

- o Nationally ranked curricula and certifications
- o Emerging sense of vision
- o Self-awareness
- o Attention to issues of ethics, equity, and diversity
- o Increasing collaborative work across the university (and with medical school)
- o Strong placement record for graduating students
- o Increasingly strong international relationships and student enrollment
- o Support from Chancellor's and Provost's offices

- Opportunities (these were voted on by participants placing red dots next to those opportunities they felt were most significant to the progress of the School; the top four are listed here)
    - o Clearly communicate our value proposition… who we are and what we do
    - o Articulate synergies among SIS programs
    - o Continue to build strong, multidisciplinary faculty
    - o Champion understanding of the emerging role of the information field

- Problems
    - o Risk of becoming complacent in areas of current strength
    - o Need to expand the conventional understanding of "librarian"
    - o Not clear how all of the SIS pieces fit together as a whole
    - o Attracting highest quality graduate students
    - o Programs do not accommodate needs of those employed full time
    - o Limited real collaboration across program boundaries
    - o Research interests and curriculum have relatively little overlap

- Threats
    - o Uneven employment prospects across disciplines
    - o Visa processing (limited number, delays, …)
    - o Failure to clearly distinguish SIS from other university parts
    - o External assessment policies and processes
    - o Competitive peers have far better physical facilities
    - o Dependence on international enrollment

Exploring a Programmatic Shift (What did we notice?)

Concluding this section of the meeting, participants were invited to reflect on findings, with the following standing out (See the attachment "What Did We Notice?" for the detailed graphical notes).

- Financial drivers continue to dominate attention (tuition, grants, financial aid, …)
- Increasing competition among universities to provide quality facilities and amenities
- Rate of change across society outpaces universities' adaptations
- New sets of personal concerns (privacy, security, sharing of data, intellectual property, …)
- Shifting demographics are having widespread impact
    - o Generational changes among domestic students
    - o International students (many requiring ESL assistance)
    - o Accommodations for newly identified disabilities
- Articulating the societal benefits of higher education

- Supporting faculty in a period of rapid change
    - Institutional desire for innovation and a culture of entrepreneurship
    - Expanded training requirements (e.g., compliance training for new policies)
    - Uncertainties regarding intellectual property rights

What do we want for students as they graduate from SIS?

Five breakout groups addressed this question. The merged summary follows, with the detailed graphical notes attached.

- Habits of the mind
    - Life-long learner
    - Creative
    - Motivated
    - Innovative
    - Curious
    - Disposition toward design
    - Socially engaged
    - Disruptive
    - Analytical
    - Entrepreneurial
    - Collaborative
    - Systematic
    - Self-aware
    - Flexible
    - Tolerant of ambiguity and uncertainty
    - Metacognitive (thinking about thinking)
    - Goal-oriented
    - Action-oriented
- Skills
    - Problem solving
    - Modeling
    - Critical thinking
    - Leadership
    - Management
    - Communication (oral and written)
    - Teamwork
    - Interdisciplinary
    - Self-assessment
    - Context-aware
- Curricular components that support these goals
    - Theory
    - Programming
    - Project management
    - Project-based work
    - Group projects
    - Research design
    - Case studies

- o Internships & field work
- o Writing & presenting
- o Ethics
- Underlying values
  - o Respect
  - o Courage
  - o Integrity
  - o Openness
  - o Focus
  - o Persistence
  - o Commitment to excellence
  - o Commitment to diversity
  - o Global awareness
  - o People + Information + Technology are most powerful together
  - o Open access
  - o Privacy & individual rights

Exploring an Expanded Degree

Participants were asked to consider what an expanded or unconstrained educational program in *information* might look like, and how such a program might be developed over time. A sample of some of the ideas suggested follows.

- First steps – preparatory considerations
  - o Analyze existing resources
  - o Conduct benchmarking and competitive analysis
  - o Identify potential partners who have synergistic interests
  - o Identify target audience (this could, for example, include influential employers)
  - o Seek administrative approval & development funding
  - o Develop a course on "Introduction to the iField"
  - o Develop a course on "Introduction to information in society"
  - o Critical thinking, critical writing
  - o Expand the undergraduate major to 45 *information* credits over three years
  - o Expand the Master's degree requirement to four terms (48 credits)
- Develop the core
  - o Theoretical foundations
  - o Research design
  - o Ethics & values
  - o Problem solving & computational thinking
  - o Introduction to information technology
  - o Introduction to applications & programming languages
  - o Data & Information organization
  - o Quantitative and qualitative analysis
- Develop the specializations and electives
  - o Social network analysis
  - o Information behavior
  - o Information security
  - o Information visualization

- o   Data analytics
- o   Data curation
- o   Curation & preservation
- o   Data / information life cycle
- o   Information technology & networking
- o   Statistics
- o   Economics
- o   Project management
- Fill out the degree program with professional development
  - o   Public policy, legal & regulatory issues
  - o   Entrepreneurism
  - o   Assistive technologies
  - o   Case studies
  - o   Capstone
  - o   Internships
- Establish metrics of progress and success measures
  - o   Job placement
  - o   Start-ups created
  - o   Recognition of projects and research
  - o   School-wide project fair
  - o   Comparative rankings
  - o   Selectivity of admissions

What to Carry Forward (Rethinking SIS Programs)

In the work conducted by Elliance for SIS, a revised mission statement was proposed:

> "The mission of SIS is to support and advance the mission of the University through the discovery, development, management, dissemination, and utilization of information as a resource, which is both the foundation upon which all human endeavors are built and the greatest driver of advancement and change in societies, states, organizations, and our lives and our livelihoods in the future."

Participants were invited to reflect on this mission statement with an eye towards what they would carry forward from today's discussions and develop plans for the School's future. Suggestions included:

- Expand the undergraduate program course requirements
- Explore the feasibility and affordability of a 4-term Master's degree (Information Management?)
- Expand opportunities for collaboration across existing programs
  - o   Bring program specializations together at some point in their studies
  - o   Develop opportunities for cross-disciplinary student projects
  - o   Consider (again) the desirability and feasibility of a common introductory course
  - o   Consider *one* program with multiple specializations or tracks
- Raise the visibility of student work (e.g., through a projects fair)
- Develop the linkage between traditional librarianship and the management of data
- Integrate ethical considerations throughout the curriculum

<u>Adjourn day one.</u>

The workshop part of the meeting was adjourned at the end of the afternoon, to be followed by dinner and remarks from the Chancellor and the Provost.

Chancellor and Provost Remarks (Dinner)

Chancellor (Pat Gallagher)

BOVs are a vital and important way to get important input into university programs.

I've been talking to faculty, staff and students, as well as external stakeholders, to understand the momentum of the University and the opportunities available to help sustain that momentum. In particular, I'm learning about the core strengths within the university and of its core partners. A major driver will be to capitalize on the university's promise for economic development. The greater Pittsburgh area is exceptionally well poised in a number of key areas including:

- Health care
- Energy
- Education and related knowledge economies

One of the most significant enablers we are facing is coming from the information industries. The amount of embedded data and information, for example, is increasing exponentially. This positions the iSchool to be an important part of Pitt's moving forward. Cybersecurity is another issue that crosses traditional silos, requiring attention not only to technology but also to issues such as privacy, law, usability, etc. Clearly, the work that we are doing here at the iSchool is going to be vital to the University's future.

Provost (Patricia E. Beeson)

The new chancellor's transition to Pitt has been remarkably smooth. Chancellor Gallagher brings the same values but a different perspective from former Chancellor Nordenberg. The overall goal, of course, is to be the very best in everything that we do. Our priorities for 2014 have been established by the Board of Trustees to include:

- Consistently deliver excellence in education
- Make contributions of impact through pioneering research
- Build community strength
- Consistently deliver top value
- Secure an adequate resource base
- Extend our global reach

Moving forward, there are several initiatives underway to signal Pitt's future directions and priorities, including:

- Brain Institute
- Living Globally
- Innovation institute, supporting entrepreneurship, commercialization, economic development, and corporate partnerships
- Sustainable Pitt

Reconvene for day two.

Cover Story Vision

Participants were divided into five teams, asked to consider a time when the School's progress has been sufficiently noteworthy to garner a story in a major magazine, and invited to imagine what that story might include.

The first team, focusing on defining value, imagined a cover story "Enabling a Data-Driven Society" that described the impact of the School's research on a wide array of human activities, including travel, transportation, health, security, education, and civic empowerment. The emphasis of the School's role was expanding the use of **data to expand knowledge and develop an informed society**.

The second team (also focusing on value) took an entrepreneurial approach, envisioning a Bloomberg story, "Pitt iSchool #1 in Startups Globally," describing cross-disciplinary ventures fueled by private and federal funding. Imagined story lines involved using **information research to address a broad range of societal concerns** that produce new industries.

The third and fourth teams, focusing on articulation of the School's multiple programs, both chose Forbes for a cover story. One proposed the title "The Information Phoenix" to describe how information management was becoming the most attractive profession in the 21st century, and how SIS had developed an **integrated curriculum and research program across its multiple disciplines**. The other chose a theme "From the Cloud to the Community: The New Digital Natives are Made, not Born," describing **personalized, student-centered, project-focused learning**.

The fifth team, emphasizing growth of a strong faculty, selected The Atlantic for a cover story "Pitt Faculty Make the Leap: Data – Information – Knowledge." SIS faculty were portrayed as championing **new interdisciplinary research methods**, bringing together world leaders in information management through an annual conference, and contributing to research in areas as diverse as medicine, energy, and education.

Define our Value

Teams were subsequently invited to reflect on the overall discussions up to this point and consider what next steps in the life of the School could contribute to a re-envisioned future.

The first team (defining value) picked up on the Elliance suggestion that the name of the School be changed from the *School of Information Sciences* to the *School of Information*, as a step to signal the emergence of *information* **as a legitimate scholarly field of study**. They also suggested revising the admission requirements and expanding our outreach to attract the highest performing students and to

extend student recruitment activities to high schools and even K-8, through activities such as summer camps. A clearer delineation of a professional track and a research track was also suggested.

The second team (also defining value) focused on faculty incentives and reward structures that could channel energy in directions supporting an enhanced School **culture of entrepreneurship**. This would facilitate students from multiple disciplines working together in capstone and related experiences that would appeal to employers and other funders. They suggested that the newly identified internship coordinator (search in progress) could play a substantive role in fostering collaboration among students and with regional employers.
rlarsen@pitt.edu,
The third and fourth teams considered steps to accelerate and articulate collaboration among faculty, students, and programs. Group 3 suggested an annual themed conference that targets a topic of collaborative research and a total review of the School's curriculum with an eye towards building greater opportunities for **project-based collaborative learning**. Group 4 proposed reallocating existing resources and seeking additional external funding to support multidisciplinary research in areas such as health care, education, energy, and sustainability. This would involve identifying "**constellations of expertise**" and building the human and technical infrastructure to support large scale collaborations.

The fifth group (building a stronger faculty) thought big… suggesting ideas like creating three additional endowed chairs and hiring MacArthur Award-level faculty. They envisioned widespread collaborations that build **virtual bridges that make a difference in people's lives**.

Closing Observations

In reflecting on the day and a half of energized discussion and exploration, participants were invited to share their feelings. Contributions included "hopeful," "optimistic," "excited," "pensive," "confused," "intrigued," "motivated," and "ready."

Closed session

The Board met in closed session to consider their summary comments and report to the Provost, who joined the meeting at 3:00 pm. Discussing what they might highlight, the Board observed a palpable **enthusiasm throughout the School**, among faculty, staff, students, alumni, and employers, noting the willingness of all (including students) to share both their hopes as well as their anxieties. Several Board members observed that they sense their role changing from prior Board meetings, where they helped to clarify and resolve problems, to this meeting, focused on **identifying and exploring new directions and opportunities**. Looking toward the future, the School has significant strengths and opportunities in specialized areas such as information security (in which the School is already highly ranked) and research data management, as well as more broadly interdisciplinary work in areas such as data analytics, health care, and energy. The Board reinforced the School's ambition to move more toward the **intellectual center of the University** and of Oakland, itself, in terms of productive collaborations across disciplines and organizations, pointing out the additional necessity of reaching out to local high schools and even elementary schools through events like science fairs. They noted School's expectation of running its first summer camp for high school students during the summer of 2015.

Recognizing the amount of attention at this meeting to interdisciplinary collaboration that includes joint appointments with other units on campus (e.g., Law, Medicine, and Business), Board members also noted the potential **difficulties of pre-tenure faculty** pursuing such ventures. Universities still award

promotion with tenure to faculty largely based on their research productivity in their narrow area of expertise. This is typically measured by quantitative bibliometric indicators such as journal impact factor and citation counts. But highly creative faculty working in interdisciplinary areas often find such publication venues inappropriate or non-existent for their research. For a new and emerging field that has not established mature publication venues, such a faculty member's work may be inappropriately perceived to be of lesser quality, when it may actually be at the cutting edge of a new line of inquiry.

The Board suggested the School establish a **"stretch goal"** that builds on existing strengths and interests. The newly approved Certificates of Advanced Study (CAS) in data analytics and in information security were offered as initial steps in such a direction. The recent launch of a collaborative *science of cybersecurity* program contributes to such a goal, as do increasing faculty interests in areas such as research data management and digital curation. Such initiatives can illuminate a path that could lead to new minors, an expanded degree, or a totally reconceived degree. **Diversity** also fits into the School's ambitions for a stretch goal, and the creative work of the i3 team, including recruiting minority PhD students as summer teaching fellows for the i3 residential program is commendable.

As in prior meetings, the Board spoke of the **shortcomings of the existing facilities** available to the School, while applauding the Provost's assistance in making local improvements that have demonstrably improved the sense of community throughout the student body.

In closing, the Board concluded that the School has progressed far over the past few years and is moving in a direction that is **highly synergistic with University goals and objectives**. The work with Elliance, funded by the Provost, has already paid off with a very substantial return on investment.

This meeting of the Board of Visitors adjourned at 4:30 pm.