Which Comes First:
The Story of Information Technology Planning for new Campuses

Geneva Henry, Executive Director, Digital Library Initiative, Rice University
Joanne Kossuth, Director of Information Technology Franklin W. Olin College of Engineering

Contact Information: Joanne Kossuth
Franklin W. Olin College of Engineering
1735 Great Plain Ave
Needham, MA 02356
781-292-2431 (v)
781-292-2440 (fax)
joanne.kossuth@olin.edu

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Abstract

Which Comes First:
The Story of Information Technology Planning for new Campuses

Geneva Henry
Executive Director, Digital Library Initiative
Rice University
Houston, Texas
Joanne Kossuth
Director of Information Technology
Franklin W. Olin College of Engineering
Needham, Massachusetts

Rice University is collaborating in the development of the International University of Bremen (IUB), the first private research university in Europe. Olin College is opening a brand new engineering college with a grant from the FW Olin Foundation. This "work-in-progress" presentation will focus on the challenges inherent in meeting the goals and deadlines of the multitude of tasks necessary to start up institution while incorporating collaborative relationships and responsibilities into the fabric of the institutions.
In this day and age of virtual universities/institutions, the general question asked of both Olin and IUB community members is: *Why build a bricks and mortar university/college?* The major factors are listed below.

**With regard to the Franklin W. Olin College of Engineering:**

- The founding principle of Olin College of Engineering is to prepare leaders able to predict, create and manage the technologies of the future.
- The Olin education will be provided at little or no cost to bright, talented, creative, and ambitious students, regardless of their financial circumstances.
- The faculty, curriculum, and facilities will be unsurpassed and deliberately designed for fast and continuous change to adapt to technology and meet the business needs of the 21st century.
- To change the way students learn about engineering. And by creating a college from scratch, to approach education in a whole new way—a way that will best server the engineers of the new millennium.
- Olin will be bold, innovative, flexible, and creative. The curriculum will emphasize an interdisciplinary approach, teamwork, Hands-on design, and communication.
- Faculty members from all over the world who’s past accomplishments will help them teach in effective ways are waiting. The emphasis will be rigorous preparation in Engineering and Science, team based design, communication, independent projects and research, and principles of business and entrepreneurship.

A version of the reasoning released for publication purposes is as follows:

Two independent colleges – Franklin W. Olin College of Engineering and Babson College – are collaborating to create significant academic, co-curricular and administrative opportunities for the benefit of both institutions. Although the two schools are completely separate institutions, they share a common educational philosophy based on continuous innovation and a holistic, integrated view of student development. The colleges’ core campuses are located on adjacent land, enabling the sharing of several academic and administrative resources and services. *(Excerpt)*

**With regard to IUB (International University of Bremen):**

- Issues with overcrowding in German universities and insufficient funding base created
- German university system is public and funded by the government, not by tuition City State of Bremen wanted a collaborative venture with a US University to establish a “US” modeled university that would address these issues
- IUB to be private/independent, tuition based, residential campus, modeling itself on Rice
- Rice encourages students to spend part of their undergraduate years studying abroad
- Credit for engineering courses outside of the US does not usually transfer to Rice
• Philosophical differences between Rice and non-US universities
• Research along with teaching
• Residential campus
• Low student-to-faculty ratio
• Rice imported the Humboldtian vision from Germany at the start of the 20th century; it can now return that vision to its roots at the start of the 21st century

Which Comes First:  
Technology vs. Curriculum

For Olin College, the Technology design.

• Why?
  – Design of buildings and contract documents required it in order for scheduling
  – IT staff toured various institutions and queried others re their infrastructure and processes
  – Faculty were not hired until later in the process
  – Invention 2000 plan calls for the Olin partners to assist the faculty in developing and testing the curriculum
  – A major tenant of Olin College is constant change and evolution
  – Does this mean our best guess?

• Start Date?
  – October 1999
• End Date?
  – ASAP
• Task
  – Design a network infrastructure for Phase I buildings and outside plant, anticipating future phases
  – Rationale: “It will be Different”

Goals of the Design

• An infrastructure with a minimum expected lifespan of 25 years
• A technology experience consistent with the expectations for the “Engineering College of the 21st Century”
• An infrastructure capable of:
  – supporting faculty research requirements such as the Sloan Center for Online Education (www.scole.org)
  – supporting collaborative endeavors that cut across educational, corporate, and international boundaries
  – supporting student expectations and requirements for academic, community, and social activities
• Fiber connectivity to the world
• Fiber connectivity between buildings
• Fiber connectivity between floors
• Category 6 copper cable for up to 1GB throughput to the desktop
• Fiber to the desktop for advanced multi media applications such as CAD
• Wireless services
• Satellite Dishes
• Partnerships with 8-10 technology companies
  • An ongoing commitment to upgrading and replacing technology on an annual basis
For IUB, the Technology (sort of);
• A direct trans-Atlantic link between IUB and Rice was required
• Relationship between Rice and Enron led to an Enron proposal for 2 DS3 lines connecting the two institutions
• Connection envisioned as needed to support exchange of digital, English information resources to support the IUB Information Resource Center (the IRC)
• How much bandwidth?
• Rice: “What’s the curriculum & the research?”
• IUB: “Who’s paying for this?”
• Support 20 staff initially, scale to 300 faculty, students & staff by end of December 2001
• Goals were simple: minimize cost, maximize bandwidth
• Minimizing cost to IUB resulted in the DS3 lines being cancelled, at considerable cost to Rice
• IUB will take advantage of wireless networking, but current wired infrastructure is minimal, taking the term “Ethernet” to a whole new level

Which Comes First:
Infrastructure vs. Architecture

For Olin College, the architecture
• Why?
  – The Foundation selected the architect and started the design process
  – The Foundation and architects were focused on “signature” buildings
  – Appropriate staff were not in the mix until approximately 2 years into the process
  – Lack of telecommunications rooms in buildings, squeezing them in means some “V” shaped rooms
  – Preponderance of glass restricted placement of receptacles (data and power)

Examples:
Inadequate planning for access e.g. each classroom was initially planned to have 1 voice and 1 data jack. The current plan is power and data to every seat as well as power, data, and fiber along all the walls.
Value engineering of some buildings included lowering of ceilings without appropriate coordination drawings so the $64,000 question was “where does the cable tray go” and the initial answer was “we recommend removal of the cable tray ” versus the final answer of “we can change the light fixtures”

For IUB;
• Architecture
• Inherited a very nice campus – a former Army logistics base
• Concerns focused on renovations to make it more like a college campus
• Vacate remaining military personnel and operations
• Remove barbed wire from around the campus
• Remove the guard barricade at the entry to the campus
• Make rooms more conducive to classes, labs, residential colleges
• No one full-time responsible for I/T
• Hired a librarian to head IRC, which is library & I/T; started in summer 2001
• We heard he recently quit (last week)

Infrastructure Design Considerations

• The design is based on the following factors:
  – The impact of the technology currently in place, and the impact of the technology planned in the following environments:
    • High Schools
    • Comparable Colleges
    • Corporations
  – The level of students being recruited by Olin College
  – The increasing expectations of the student community, in general
  Students are already used to:
  • 24x7 access to course materials on the web
  • ATM machines
  • Home banking
  • E-commerce (groceries to cool techie toys)
  • Using the Internet voice over ip to make “free” telephone calls
  • Using cell phones to download material from the web to stay constantly in-touch
  • Napster and MP3s (“making their own music in their own portable format”)
  • Sending postcards via e-mail
  • Receiving photos from a CD, not negatives
  • Using a digital camera and skipping the photo development process entirely
  • Watching TV or videos over the Internet
  • Playing “group” games such as SimCity and Doom
  – The role of emerging network technologies
  – The rapid rate of technological innovation and change
  – Focus on customer relationships over a lifetime

From the IUB perspective:
• Who’s paying?
• How much does it cost?
• Rice has a videoconference every-other week with IUB to address technology issues
• Infrastructure design is “just-in-time”

Which Comes First:
Administration vs. Faculty

For Olin College, the Administration (at first)
• Why?
  Construction project required expertise in areas such as Administration and Finance, Project Management, and Information Technology
  – Hiring faculty required a Provost and administrative assistance
  – Recruitment required Admissions and External Relations specialists
  – “Getting the Word out” increased the number of applications for the positions and adding to the team required the participation of all of the community members

For Olin College, the Faculty (second)
• Institutional reputation dependent, in part, on the national visibility of faculty
• Faculty research opportunities are critical in recruiting students
• Expectations about the amount and quality of time spent with faculty are important in student recruitment and student experience on campus
• Under Invention 2000 students are partnered with the faculty in developing and testing curriculum
• The resulting curriculum will need to meet the student requirements and expectations re innovation

For IUB,
• Administration
• Why? Reasons the same as Olin
• Faculty, International recruitment effort
• Quality of faculty to be attracted would set standard for quality of IUB à research & teaching. This will be important for attracting donors as well as students
• Faculty will not be rewarded based on years of service, but on quality of contributions

Which Comes First:
Faculty Facilities vs. Residences

For Olin College, it’s a tie!
• Why?
  – Need facilities to teach students but also need a place for them to live
  – Changed the order of permanent building multiple times
  – Due to permitting issues, bad weather, etc constructions delays of up to 8 months existed
  – Buildings would not be ready for the partner in Fall 2001
  – Contingency planning evolved into leasing modular units for residence hall and academic center space

Again, due to permitting issues these were delayed so contingency plan II had to be put into place
–Initially, students lived in the CEE (Center for Executive Education) at Babson College; with a few field trips interspersed
–Initially, classes were held in various living rooms and conference rooms of the 5 temporary houses that had previously been converted to office space
–2 weeks late, students moved into the residence hall on a Thursday night and the Academic Center was occupied on Friday

For IUB, Classrooms
• Residence issue not as problematic for IUB since buildings already existed
• Ordered furniture for residences just-in-time
• Food for students a last-minute consideration
• Food contract signed 2 days before students were planned to arrive

Which Comes First:
Students vs. Buildings

For Olin College, the students
• Why?
  – Recruited students for Fall 2001 (see poster on next slide)
  – Building permitting and weather delays led to months long slippage in scheduling
  – Established Partners program to involve students in the design and testing of curriculum creating a five year experience for the first class
  – Limited to 30 partners for 2001
  – 664 applications for 30 positions

For IUB,
• Buildings, but it’s not a fair question
• Buildings were already there; easy to focus on renovations
• European students do not generally apply for admission until late spring or summer before the fall semester starts
• Student focus was to alert them to take SATs, since European schools do not generally use this test
• IUB enrollment: 118 students; SAT average comparable to Cornell

Which Comes First:
Research Labs vs. Classrooms

• For Olin College another tie!
• Why?
  – Founding faculty members had research to bring with them
  – A decision was made to include undergraduate research experience in the mission of the institution
  – The involvement of outside entities such as companies and research centers is critical in that these provide funding as well as the knowledge to keep the College relevant in terms of the training provided to students
  – The modular Academic Center and the Classroom Building were designed to house both

For IUB, a tie, for the same reasons as Olin
• IUB focus on faculty and students didn’t consider the research needs of faculty
• Faculty will be bringing in 65 research assistants/associates by the end of December, all supported by existing grants – SURPRISE!!
• Faculty demanding direct connection to I2

Which Comes First:
Definitions vs. Collaboration

For Olin College, Collaboration
• Why?
  – Initial agreement between Babson and Olin was an overview
  – Joint Collaboration Committee was too large to be effective
  – Smaller working groups much more effective e.g. the front lines
  – Collaboration in working groups led to decisions in the various areas which were presented to a strategy committee
  – Decisions in effect detailed the definitions and further defined the collaborative relationship
    • Involvement of other institutions e.g. Wellesley College for languages, Brandeis for biomedical, Babson for entrepreneurship, etc.
    • Olin’s mission is to focus on engineering and to utilize resources of other institutions who have expertise in various areas as opposed to reinventing the wheel
    • An evolving work in progress.

For IUB, definitions
• Collaboration expectations not viewed the same way by Rice and IUB
• Resource sharing not easily accomplished due to legal/contract issues
• Decisions involving $$ not always conducive to collaborative approach
• IUB is not a branch of Rice; they are establishing themselves independently

Which Comes First:
First Day vs. Policies/Procedures

• For the most part, the first day 😊
• Why?
  – At Olin, the nature of involving students dictated that outlines might be in place but these were subject to review and testing by the students under the Invention 2000 plan
  – In terms of technology, until the curriculum was in a more mature state it is impossible to predict the creative uses of technology that may or may not be required
  – In terms of student life, the community will be developing co-curricula and extra curricula activities that students are interested in

  – Questions remain
    – How does the honor code impact student behavior?
• So far, so good
  – How do we balance opportunities for innovation with securing mission critical systems?
• Segmenting additional T1s to secure critical resources
• Juxtaposing flexibility, experimentation, security and mission critical services is an expensive and intense balancing act
For IUB, the first day, no doubt!!
• IUB is a just-in-time university
• Must-meet deadlines drove action
  o E.g.:
  o Decision on buying an LDAP server driven by students arriving in a couple of days
  o Library furniture ordered for delivery day of orientation
  o Library software scheduled to arrive 1 week before classes starting
  o Dorm furniture scheduled to arrive the day before students scheduled to arrive
  o Sidewalks laid 2 days before students scheduled to arrive

Final Thoughts
• It is not just about technology planning
• Technology is only one part of the business
• If the business plan doesn’t work, the technology won’t work
• Think CHALLENGES not PROBLEMS

What Would We Do Differently
From the Olin perspective:
• Realistic Opening Day deadlines
• Managing expectations
• Improved intra and inter-institutional communication
• Better intra and inter-departmental communication
From the IUB perspective:
• Don’t assume you have the answers
• Be cautious in acting aggressively
• Improve communications
• Checkpoint progress and flag issues early
• Agree on areas of collaboration before boldly aligning verbally ahead of time

Quote from a Rice official:
“We’ve looked on this as a distant adventure.”

Quote from an Olin official:
“It’s like flying a plane while building it.”
Olin College Main Entry Way off of Great Plain Avenue. Buildings shown are part of the “temporary” campus.
Top of picture: Building C Classroom Building
Left of picture: Building A Administrative Building, Building B (Phase II)
Right of picture: Building D Campus center (top), Residence Halls (3 are Phase II)
“FULL-TUITION SCHOLARSHIPS!”

“ALL-NEW CAMPUS!”

“ENGINEERING LIKE YOU’VE NEVER SEEN IT BEFORE!”

“TWO THUMBS UP!”