SCUP Chicago

Reimagining the Research Library of the 21st Century at Georgia Tech

BNIM  brightspot  Georgia Institute of Technology
Speakers

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Georgia Tech
Capital Planning & Space Management

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brightspot
Strategist

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Georgia Tech
Library Project Lead

Steve McDowell
BNIM
Architect
Objectives and Agenda

Session Agenda
The session will weave together the Georgia Tech story with the tools/process we used to write it:

1. Introduction
2. Campus Context
3. Visioning Exercise
4. Georgia Tech Library Vision
5. Vision to Space Exercise
6. Design
7. Q & A

Learning Outcomes:
In the session participants will learn:

1. How library use is changing
2. Ways to engage campus stakeholders in the process
3. Opportunities created when the primary focus of the library is no longer on housing printed materials
4. Strategies for renewing historic buildings in the center of campus
The Campus Context
Georgia Tech   circa 1920

View of Historic Campus from Across North Ave.
Georgia Tech Campus-circa 1997

9,500 Undergraduates
3,500 Graduate Students
4,000 Faculty/Staff
7,400,000 GSF

1800’s
1900’s
1910’s
1920’s
1930’s
1940’s
1950’s
1960’s
1970’s
1980’s
1990’s
Plan targets for 2014:
- 13,500 Undergraduates
- 8,700 Graduate Students
- 7,600 Faculty/Staff
- 15.6 M GSF
2014 Existing Conditions

13,948 Undergraduates
6,993 Graduate Students
7,365 Faculty/Staff
14.7 M Gross SF
Annual Growth

Gross Sq. Ft. by Year (1997-2014) Projected through 2015
IRP: Fact Book (Data Captured Each Fall) & INSITE Database (2015 Projected)

1997 - 2015
- **435,650 gsf** average growth per year
- Faculty/Staff: **161** increase per year
- UG Students: **248** increase per year
- Grad Students: **297** increase per year
- Total Population Growth: **706** per year
Annual Growth

Research & Development Expenditures FY 1997-FY2013
IRP: NSF R&D Survey

$800,000,000
$700,000,000
$600,000,000
$500,000,000
$400,000,000
$300,000,000
$200,000,000
$100,000,000
$0

$240,237,000
$259,233,000
$263,725,000
$304,511,000
$306,533,000
$340,347,000
$364,190,000
$410,799,000
$425,386,000
$444,959,000
$476,138,000
$524,888,000
$565,487,000
$615,833,000
$655,375,000
$688,905,000
$730,488,000
$725,550,000

Georgia Tech Facility Renovations
Cumulative Sq. Ft. since 1997
Innovative Piloting and Prototyping

• Pilot projects:
  – Library East Commons
  – Scale-Up
  – Library Store mock-up
  – Geofencing

• Institute initiatives:
  – Public/Private Partnership
  – Academic Space Assessment & Improvement Strategies
Presenting the New Mercedes Benz SCL600
Presenting the New Mercedes Benz SCL600
Presenting the New Mercedes Benz SCL600
Case Study - Problem Definition

…it’s all about the Student!
Zone 1 - Instant Theater
• Variety of Flexible Furniture
• Access to Power
Multi-Media Interaction
-Face-to-Face
-Written
-Webcam
-Microphone
Lessons Learned:

• Engage Students
• Access to Power
• Flexible Furnishings
• Balance between Fixed and Moveable Components
• Responsible Space Management
• Encourage Feedback
Teaching/Learning Initiatives

• SCALEUP (NC State)
  – Student-Centered Active Learning Environment for Undergraduate Programs

• TEAL (MIT)
  – Technology Enabled
  – Active Learning
Classroom Improvement Program - Case Study
Innovative Piloting and Prototyping

• Capital Planning & Space Management
• Facilities
• OIT (Office of Information Technology)
• CETL (Center for the Enhancement of Teaching & Learning)
Piloting and Prototyping

27-seat SCALEUP Classroom
Pilot 27-seat SCALEUP Classroom
G. Wayne Clough Undergraduate Learning Commons (2011) LEED Platinum
Architect: Bohlin Cywinski Jackson, CM: Turner Construction Co., TPB: $93.6M
Academic Buildings
Public/Private Partnership:
EmTech Library Service Center
Proposed Scheme E
Detail / Phasing

12 Aisle Module, +/- 3,750,000 Volumes

Phase IA
1.8775 M Vol.
Phase IB
1.8775 M Vol.

205'-0"
138'-0"

25 November 2013
Emory University and Georgia Institute of Technology Library Service Center
Georgia Tech Library - Aerial view
Visioning Activity
Visioning Activity – 15mins

Turn to your neighbor and using the “For who we deliver with that” madlib handout, create an elevator pitch for your library of the future. We’ll ask for a few groups to share their pitch in about 10 minutes.

For______________________ who__________________________,

(audience/visitor) (motivation)

we deliver__________________with__________________________

(product/service) (unique characteristic)

that______________________________.

(benefit)
**Visioning Activity Example**

*Turn to your neighbor and using the “For who we deliver with that” madlib handout, create an elevator pitch for your library of the future. We’ll ask for a few groups to share their pitch in about 10 minutes.*

<table>
<thead>
<tr>
<th>For</th>
<th>who</th>
<th>want to plan the “library of the future”</th>
</tr>
</thead>
<tbody>
<tr>
<td>(audience/visitor)</td>
<td>(motivation)</td>
<td></td>
</tr>
</tbody>
</table>

- **we deliver** ________________ (product/service) ________________ |
- **with** ________________ (unique characteristic) ________________ |
- ________________ an interactive concurrent session ________________ |
- ________________ the story from vision to design ________________ |
- that showcases an innovative, engaging planning process ________________ |
- (benefit)
The Georgia Tech Library Vision
Reimagining the Library for the 21\textsuperscript{st} Century

The Georgia Tech Library will enable people to explore the past and design the future by bringing together \textit{inspirational spaces, curated content, expert guidance, and scholarly communities.}

Library Renewal Context

- \textbf{Data} Trends
- \textbf{Core Principles} and Values
- \textbf{Preserving and Expanding Access} to the “Universe of Scholarship.”
- \textbf{User-Driven} Spaces, Services and Collections
- \textbf{Pilot / Prototyping} Library Renewal Program
context: data

Use of physical library buildings is at a record high.
Use of print book collections is at a record low.
Use of library’s digital collections (e-books, e-journals) is very robust.

1,000,000+ “clicks” to library e-books and e-journals.
Global e-book revenue projection: 2008-2018
(Source: PWC)
Seat Count Objectives

Library Seats / Student FTE (%)

GT Peer Institutions (13/20)

Johns Hopkins – Homewood
Cornell
Univ of Michigan (Ann Arbor)
Texas A & M
Univ of Washington (Seattle)
MIT
NC State
UT Austin
Univ of California (Berkley)
Carnegie Mellon University
UCLA
Ga Tech
Penn State
Virginia Tech

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- **Ga Tech**
- Carnegie Mellon University
- UCLA
- Penn State
- Virginia Tech

**INCLUDING CLOUGH**
Seat Count Objectives

Library Seats / Student FTE (%)

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- MIT
- NC State
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- Univ of California (Berkley)
- Carnegie Mellon University
- UCLA
- Penn State
- Virginia Tech

After Proposed Renewal
context: five laws of library science

1) “Books are for use.”
2) “Every user, his / her book.”
3) “Every book, its user.”
4) “Save the Time of the User.”
5) “The Library is a Changing Organism.”

(S.R. Ranganathan, 1931)

Georgia Tech’s “Five Laws” as adapted for the 21st Century:

Scholarly Resources (e-books, datasets, gadgets, copyright help, research experts) are for use.

Every User, his / her Scholarly Resource at point of need.

Every Scholarly Resource, its User in the format they require.

“Save the Time of the User” by being proactive, creating a great UX, and anticipating user needs.

“The Library (and Librarian) is a Changing Organism.”
core values: preservation and access

Enduring core values for all research libraries include preservation of the scholarly record, and providing access to that content in a way that “saves the time of the user.”

Library Service Center of Emory University and Georgia Tech:

- Climate-controlled to preserve print book and archival collections for 200+ years.
- Technology-rich environment suitable for on demand scanning and e-delivery to campus.
- Reading room
- Modular
user experience: exploring research behavior

In partnership with brightspot, the library did a deep-dive to gain insight into the unique Georgia Tech research experience. The Library also maintains three advisory boards to provide strategic guidance.

Understanding the UX
- Advisory boards
- Observation / dScout
- Surveys

Campus Engagement
- Social Media
- e-Newsletters
- Library Renewal website

Library Faculty + Staff Insight
- “Reimagining” White Paper
- Open Forums
- Working Groups
campus engagement: advisory boards and shepherds

The Library maintains three highly engaged advisory boards who provide continual strategic input to the Library’s top leadership. Additionally, Faculty “shepherds” have been appointed to provide specific insight regarding the Library Renewal programmatic design.
library renewal: piloting and prototyping

A core principle for the Library Renewal is making the “invisible” world of e-books, e-journals, librarian expertise, and digital scholarship, highly “visible” to the user.
library renewal: piloting and prototyping

Lockers with Device Charging
Self-Service Laptop Kiosks
Retro-computing

http://renewal.library.gatech.edu
library renewal: piloting and prototyping

http://renewal.library.gatech.edu
Vision to Space Activity
Understanding Experiences – the 5Es

Understanding current user and staff experiences – as well as envisioning future ones – can be a bridge between an overall organizational vision and future needs for space, technology, services, and staffing.

Entice
What draws them in? Why are they there?

Enter
How do they enter and how are they oriented?

Engage
How do they interact with info, spaces, and people?

Exit
What happens when they leave?

Extend
What does this lead to? What’s next?

Note: 5Es framework developed by Conifer Research
Journey Map Activity – 15mins

Turn to your neighbor and using the journey map handout, create a map of a user experience in your library of the future. We’ll ask for a few groups to share a highlight in about 10 minutes.

<table>
<thead>
<tr>
<th>JOURNEY MAP</th>
<th>A tool to plot user experiences over time, identifying the “touchpoints” or moments they interact with spaces, technology, information and each other (along with the needs in each of these categories).</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTICE</td>
<td>ENTER</td>
</tr>
<tr>
<td>Users &amp; activities…</td>
<td></td>
</tr>
<tr>
<td>Space, Tech, and Furniture needs…</td>
<td></td>
</tr>
</tbody>
</table>
## Journey Map Activity Example

**JOURNEY MAP** for a hackathon in library maker spaces and event space

A tool to plot user experiences over time, identifying the “touchpoints” or moments they interact with spaces, technology, information and each other (along with the needs in each of these categories).

<table>
<thead>
<tr>
<th>ENTICE</th>
<th>ENTER</th>
<th>ENGAGE</th>
<th>EXIT</th>
<th>EXTEND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users &amp; activities...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post and tweet event; outreach to faculty and clubs</td>
<td>Check-in attendees at table and form into team</td>
<td>Initial presentation with charge Teams create prototypes Lunch break Round-robin crits with mentors Prototypes refined Final pitch presentation Awards reception</td>
<td>Sign-up for mailing list; announce next event</td>
<td>Email attendees about presentation archive and next event</td>
</tr>
<tr>
<td>Space, Tech, and Furniture needs...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>social media website</td>
<td>Table Greets tablet reg. list</td>
<td>Flat event space w/ team tables Team screens / projectors Digital fabrication shop Paper and low-fi prototyping lab Catering lunch and reception</td>
<td>tablets greeters</td>
<td>social media website</td>
</tr>
</tbody>
</table>
Architectural Design
**traditional campus**

- Internally Oriented
- “Ivory Tower” Isolated and Apart from the Community
- “Silos” of knowledge
- Single Purpose Facilities
- Traditional Inwardly-focused

- “Monastic Lifestyle”
- Consumer of Resources
- Uses Traditional Funding Sources

**knowledge based community**

- Internally and Externally Oriented
- Engaged with the Community at many Different Levels
- Interdisciplinary Teaching and Learning Community
- Multi-Functional / Interdisciplinary Facilities
- Distributed Facilities involving Campus and Facilities Movement of People and Electronic Communications

- Study / Play – Live / Work Community
- Steward of Resources
- Leverages Partnerships and Funding Project Delivery Methods
Buildings For:
People       Books
INWARD

OUTWARD
Layers of Design
people centered scholarly community
The Library of the 21st Century

- Scholarly Community
- Long Life Loose Fit
- Inspirational Space

Renewal
Long Life, Loose Fit

Making the Buildings Useful Long-Term
Scholarly Community
Making the Buildings Effective for Research and Learning
Inspirational Spaces

Making the Buildings Inspire Student and Faculty Success
transforming space for people

EXISTING

FUTURE

DIFERRENCE

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiential Learning</td>
<td>32%</td>
</tr>
<tr>
<td>Stacks</td>
<td>-38%</td>
</tr>
<tr>
<td>Staff</td>
<td>Faculty</td>
</tr>
<tr>
<td>Food Service</td>
<td>1%</td>
</tr>
</tbody>
</table>
Our design intervention aims to connect visitors with the library's resources through technology in a secure environment.

**Technological Transparency: A View into the Library of the Future**

The current connection between plaza and grove level spaces utilized the resources of the library's technology.

Our design intervention aims to connect visitors with the library's resources through technology in a secure environment.
BRIDGE AND PRICE-GILBERT ENTRY FROM GROVE
PRICE GILBERT OPENING AND STAIR TO GROVE LEVEL
Organizing Concepts

Focus

Active

Clough
Price Gilbert
Crosland

St. Seuman Looking North
BUILDING SERVICES, ARCHIVES COLLECTION & PRESERVATION, KAISER ROOM, LOGISTICS
SCHOLARS’ EVENT NETWORK, GROUP STUDY, INNOVATION & IDEATION, HOMER RICE ROOM
READING ROOM, VIS LAB, GENERAL COMPUTING, MULTIMEDIA ZONE, OFFICES
TEACHING STUDIO, OFFICES, GENERAL COMPUTING, FACULTY RESEARCH ZONE
5 DEAN’S SUITE, FACULTY AND STAFF OFFICES
GRADUATE STUDENT COMMUNITY, INDIVIDUAL STUDY SPACE
SEVENTH LEVEL
MULTIPURPOSE EVENT SPACE & READING ROOM, MEETING ROOM, ROOF TERRACES
The greatest discrepancy in energy use occurs in the measured electricity vs modeled electricity use.

The modeled profile shows a large reduction in summer which is not reflected in the current usage.

The modeled electric demand is also about 50% of the measured electricity. This may be partially due to the reduction in lighting and provision of daylighting.
Energy Model Evolution

Annual Energy Use Intensity [kBtu/sf]

[*EXISTING BUILDING] 121
[ASHRAE 90.1] 75
[12/23/14 REPORT] 48
[02/02/15 UPDATE] 46
[CURRENT DESIGN] 42

Plug Loads  Lighting  Heating  Hot Water  Cooling  Pumps  Fans

*Existing Building data is measured, not modeled
ENERGY USE PER PERSON (Btu/sf/person)

96.8
BEFORE RENEWAL

17.8
AFTER RENEWAL
Program and design aligned with GT Strategic Plan, Landscape Plan and Sustainability Plan
Design led by innovative process of piloting new services and spaces to predict the future
Create new services for students and faculty
Doubled seat count
Create porosity of library buildings and connect interior spaces to campus
Replaced books with people
Integrated learning technology infrastructure for evolving future needs
Increase population by 100%
Removed brick walls and replaced with windows for daylight and views
Reduced energy use by 60%
Thank you!

Howard Wertheimer  
Georgia Tech

Elliot Felix  
brightspot

Ameet Doshi  
Georgia Tech

Steve McDowell  
BNIM