SPACE CHARGING & SPACE UTILIZATION IN HIGHER EDUCATION:

COMPARATIVE CASE STUDIES FROM

University of Cape Town, South Africa
University of Michigan, Ann Arbor
Stanford University

Montréal, Canada
July 2008
Introduction

Why did we think this presentation might be interesting?

- Mix of public and private institutions
- Mix of financial models (RCM, decentralized)
- US and international settings
- Different contexts
- Different motivations
- Similar challenges
What are we hoping you might gain from this session?

- Parts of the methodology that could be applicable
- Thoughts about how to better manage space
- Lessons learned
- Case study examples
What we will cover today:

- Case Studies from:
  - University of Cape Town
  - Stanford University
  - University of Michigan

- General Observations and Thoughts

- Q&A
Space Charging

A University of Cape Town Perspective
A medium-sized, residential, contact University

Headcount 21,800 (2008)

FTE 17,600 (2008)

5,800 students in University residences

6 Faculties - Science, Humanities, Engineering, Health Sciences, Law, Commerce

Four campuses (exc. teaching hospital) – 108ha (267 acres)

Urban campus
- Governance and Financial transformation 1998 - 2002
- Decentralized model
- 23 Cost Centers
- Six Executive Deans appointed - “CEO” of Faculties
- Faculty Managers oversee the business of Faculties
- Academic and Administrative Support Departments headed by Executive Directors and Directors
Context

Governance

Space management transformation 1998 - 2002

- From - centralized, management by representation, academic standing, futures seldom realized, etc.
- To - detached and rigorous
Growth - Enrollment

FTE


18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Context
Growth - Space distortions (2003)

24% or 7,400 ASM (79,600 ASF)
Context
Growth - Options

- Constrain growth – politically unacceptable
- Build space – limited donor funding and no state funding
- Manage space – no mechanism to change behavior but ……
Options
Financial Inducements

Options:
- Space cost recovery
  - Direct to entity: No
  - Across estate: No
- Space charge (based on commercial cost of space): No
- Space charge against budget allocation based on space standards: Yes
Options
Space Charges vs Space Cost Recovery

Space Charges:
- Related to “real rental”
- Un-related to Service Level Agreements
- Consistent with charge out (research and NGO’s)

Space Cost Recovery:
- Un-related to “real rental”
- Direct link to Service Level Agreements
Physical Planning Committee Cluster

University Building & Development Committee

Purpose: To allocate space in a way that ensures that the University achieves its objectives and goals

Space Allocation Committee

Faculty Physical Planning Committees

Professional Appointments Committee

Environmental Management Working Group

Physical Planning & Landscape Working Group
In place:

- Drawings of all buildings in AutoCAD
- Database of all assignable space – type, area, allocation by org unit, sit-count, etc
- UCT space standards
- Regular internal reporting on space utilization and shortfalls and surpluses calculations
Key concepts:

- Based on student and staff numbers also concept of Merit Space

  *Space not occupied by or dependant on student or staff eg. Electron Microscope room*

- Uses the system of reporting to national Education Department which includes the concept of the Standard Cost Unit [SCU]

  *Factor applied to ASM eg. Office 1.0, Research lab 1.75*
Context
Space Charging Concept

For each cost centre -

Budget for space entitlement by space standards

vs

Charge for actual space allocated

= Inducement

Expressed as SCU’s
Value of a SCU – survey of neighboring office rentals
Implementation

- Senior committees briefed by DVC
- Academic staff and Cost Center managers briefed by DVC
- Dry run in year 1 budget cycle
- Below-the-line in years 2 and 3 budget cycle
- Full implementation in year 4 budget cycle
This room is now a research lab.
### 2006 for 2008

<table>
<thead>
<tr>
<th>Code</th>
<th>Space Use</th>
<th>Staff/Student No.</th>
<th>Station Area</th>
<th>Generated Area SCU/ASM</th>
<th>SCU</th>
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<td>215.33</td>
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<td>12 1 12 4.17</td>
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<td>4.00 3.33 1.00 3.33</td>
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<td>Students (All PG's)</td>
<td>20.0</td>
<td></td>
<td>7.00 140.00</td>
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<td>Academic Staff</td>
<td>5.0</td>
<td></td>
<td>7.00 35.00</td>
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<tr>
<td>300</td>
<td>OFFICE SPACE</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>265.30 1.00 265.30</td>
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<td>310</td>
<td>Office</td>
<td>183.00</td>
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<tr>
<td></td>
<td>Staff - Non office</td>
<td>2.0</td>
<td></td>
<td>-</td>
<td>-</td>
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<tr>
<td></td>
<td>Staff - Junior</td>
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<td></td>
<td>3.00  -</td>
<td>-</td>
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<td>Staff - Senior</td>
<td>9.0</td>
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<td>Staff - Emeritus Academic</td>
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<tr>
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<td>Hon Res Assoc.</td>
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<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Hon Res Assist.</td>
<td>0.0</td>
<td></td>
<td>-</td>
<td>-</td>
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<td>Ad hoc Contract staff</td>
<td>3.0</td>
<td></td>
<td>12.00 36.00</td>
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<td></td>
<td>Msc(Diss) + PhD</td>
<td>13.0</td>
<td></td>
<td>3.00 39.00</td>
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<td>Conference Space</td>
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<td></td>
<td>2.00 54.00</td>
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<td></td>
<td>MERIT SPACE</td>
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<td>Stable Light Isotope MS Facility</td>
<td>3.17</td>
<td>32.70 1.70 55.59</td>
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<td>Stable Light Isotope MS Facility</td>
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<td></td>
<td>Stable Light Isotope MS Facility</td>
<td>3.17 3</td>
<td>65.70 1.70 111.69</td>
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<td>730</td>
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<td>70.20 1.00 70.20</td>
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<td>42.40 1.00 42.40</td>
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Signed: ………………………………..

Designated Person, Faculty of Science

Date: ………………………………..

Physical Planning Unit
### Implementation Cost Center “Account”

#### $438,900 US

<table>
<thead>
<tr>
<th>Faculty of Science</th>
<th>2007 Space costs</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<tr>
<td>SCI</td>
<td>2007 Space costs</td>
<td>Allocated as 1-04-2006</td>
<td>Generated</td>
<td>Balance</td>
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<td>SCI</td>
<td>ASM</td>
<td>SCU</td>
<td>ASM</td>
<td>SCU</td>
<td>ASM</td>
<td>SCU</td>
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<td>SCI</td>
<td>36,456.80</td>
<td>49,609.60</td>
<td>31,751.36</td>
<td>43,472.53</td>
<td>14%</td>
<td>170.50</td>
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<td>SCI</td>
<td>1,403.20</td>
<td>1,896.10</td>
<td>1,232.70</td>
<td>1,725.60</td>
<td>52%</td>
<td>550.96</td>
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<tr>
<td>SCI</td>
<td>257.90</td>
<td>271.18</td>
<td>157.50</td>
<td>190.25</td>
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<tr>
<td>SCI</td>
<td>3,112.50</td>
<td>4,458.86</td>
<td>2,537.60</td>
<td>3,685.37</td>
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<td>773.49</td>
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<td>SCI</td>
<td>6,826.30</td>
<td>10,638.73</td>
<td>5,021.67</td>
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<td>2,957.06</td>
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<td>SCI</td>
<td>1,309.60</td>
<td>1,379.64</td>
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<td>1,393.63</td>
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<td>-13.99</td>
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<td>SCI</td>
<td>1,781.60</td>
<td>1,961.60</td>
<td>2,494.11</td>
<td>3,269.50</td>
<td>-29%</td>
<td>-1,307.90</td>
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<td>SCI</td>
<td>2,703.80</td>
<td>3,322.94</td>
<td>2,315.95</td>
<td>3,074.39</td>
<td>17%</td>
<td>248.55</td>
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<td>SCI</td>
<td>1,772.70</td>
<td>1,831.08</td>
<td>1,437.21</td>
<td>1,437.21</td>
<td>23%</td>
<td>393.87</td>
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<td>SCI</td>
<td>5,018.10</td>
<td>7,761.69</td>
<td>4,880.53</td>
<td>7,162.01</td>
<td>3%</td>
<td>599.68</td>
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<tr>
<td>SCI</td>
<td>3,029.60</td>
<td>4,090.44</td>
<td>3,215.02</td>
<td>4,787.75</td>
<td>-6%</td>
<td>-697.31</td>
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<tr>
<td>SCI</td>
<td>910.00</td>
<td>978.10</td>
<td>1,028.55</td>
<td>1,339.49</td>
<td>-12%</td>
<td>-361.39</td>
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<td>SCI</td>
<td>1,140.80</td>
<td>1,140.80</td>
<td>1,089.35</td>
<td>1,089.35</td>
<td>5%</td>
<td>51.45</td>
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<tr>
<td>SCI</td>
<td>4,898.00</td>
<td>6,932.30</td>
<td>3,771.46</td>
<td>4,928.69</td>
<td>30%</td>
<td>2,003.62</td>
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<tr>
<td>SCI</td>
<td>414.00</td>
<td>604.75</td>
<td>403.40</td>
<td>594.15</td>
<td>3%</td>
<td>10.60</td>
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<td>SCI</td>
<td>515.00</td>
<td>676.95</td>
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</table>

**Signed:** ………………………………..
**Designated Person, Faculty of Science**

**Date:** ………………………………..

**Physical Planning Unit**
Outcomes 2007

15% or 4,600 ASM (48,900 ASF)

Actual  Generated

Commerce  Engineering  Humanities  Law  Science
Stanford University Case Study
- 6,700 undergraduates, 8,200 graduate students
- 1,800 faculty members
- 10,500 staff employees
- 7 schools including a school of medicine
- $3.8 billion operating budget
- 8,180 acre campus
Context

- Lots of land, but limited ability to expand
- General Use Permit (GUP)
- Debt Capacity Constraints
- Pressure to expand physical plant
- Moving administrative functions off-campus
- How well are we currently using our space?
Implementation
Project Goals

- Change mindset about cost and use of space
- Encourage more efficient use of space
- Empower the schools to manage space
- Provide tools for space management
- Keep it simple, fair and transparent
- Limit the cost of implementation and ongoing maintenance
Implementation
Project Scope

- Limit to office space only
- Limit to 7 budget units
- Charge for space at the budget unit level
- Project timeline 18 months from approval of concept
- Perform detailed space utilization studies for each unit
  - Walk every building
  - Classify and document use of every room
Implementation

Allocation and Charge Mechanism

First: School receives an incremental base general funds allocation to cover its space “entitlement”

Then: Annually, school is assessed a charge based on actual space usage
Baseline Allocation Calculation

<table>
<thead>
<tr>
<th>People Count</th>
<th>Guideline s.f.</th>
<th>Buffer</th>
<th>Allocation Per s.f.</th>
<th>Unit Allocation</th>
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</thead>
<tbody>
<tr>
<td>60 faculty</td>
<td>160 s.f.</td>
<td>1.15</td>
<td>$33/s.f.</td>
<td>$364,320</td>
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</table>
Faculty 2\textsuperscript{nd} offices were not as big of a problem as thought

Student space was a big problem

Many areas were inefficiently used

Six of seven units owe money – causes vary (space abhors a vacancy)

One highly inefficient old building

Excess student space (more spaces than students)

Staff in faculty-sized offices
How Can a School Reduce its Net Charge?

- Repurpose office space for other pressing needs
- Grow within existing footprint
- Present a plan to reconfigure problem space and request temporary mitigation funds
- Sublet space to Provost or other unit
- Relinquish space to Provost
Outcomes
Achievements Thus Far

- New focus on cost of space
- Changes in space configurations
- More efficient office space planned for new construction
- School master plans underway, focused on space utilization
- Provost is now armed with key information about space usage by individual schools
University of Michigan – Ann Arbor

Space Study
Context

- Public academic and research institution and hospital
- Ann Arbor campus
- 19 schools and colleges
- 41,042 students
- 23,013 faculty & staff (excluding hospital)
- 3,070 acres in the City of Ann Arbor
- 538 buildings
- 29.4 million sq. ft. overall
- 14.4 million sq. ft. General Fund space

Context
Context

Financial Challenges

- Unpredictable State of Michigan funding
- Volatile increases in energy costs
- Average 2% growth in General Fund space per year
- Interest in reducing growth to an average of 1% in coming years
Context
Cultural Challenges

- Decentralized environment
- Campus perception that space is a “Free good”
- “Owned” by individual schools and departments vs. an institutional resource
- Few pressing space constraints
- Reluctance by units to share space
Implementation
Space Charging Model

- Schools and colleges
  - Pay for utilities
  - Assessed a maintenance fee per sq.ft.
  - Do not pay for building depreciation

- Administrative units
  - Do not pay for utilities or maintenance
Space Charging Model
Pros/Cons

- **Pros**
  - Schools/colleges generate revenue to pay for space
  - Financial incentives encourage schools/colleges to conserve energy and use space more efficiently
Cons

- Administrative units have no financial incentives to conserve energy or use space efficiently
- Current financial incentives for schools/colleges not powerful enough
  - Several schools are revenue-constrained, limiting our ability to strengthen financial incentives
- No automatic savings program exists for building depreciation
- Maintenance fees for new space are assessed to recover costs, but do not increase at a rate commensurate with inflation
Implementation
Space Utilization Initiative

- Established July 2006

- Purpose
  - Explore how space and utilities are used on the Ann Arbor campus
  - Plan and manage these resources more effectively to contain operating costs and to better meet the University’s mission and needs

- Compliments financial incentives already existing within the University budget model
Implementation
Areas Being Addressed

- Information and systems
- Capital projects process
- Budgetary incentives
- Facilities maintenance and upkeep
- Shared space
- Shared technology
- Energy conservation
Outcomes
Projects Delivered

- Office space guidelines
- Capital projects process and guidelines
- Classroom scheduling and utilization
  - Data warehouse
  - Utilization reports
Sample Classroom Utilization Scorecard

<table>
<thead>
<tr>
<th></th>
<th>Classroom</th>
<th></th>
<th>Lab</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Dept.</td>
<td>Variance from Goal</td>
<td>Variance from Unit</td>
<td>Dept.</td>
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<tr>
<td>Total Utilization (time x seat) (45.5%)</td>
<td>20.0%</td>
<td>-25.5%</td>
<td>0.0%</td>
<td>27.5%</td>
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<tr>
<td>Time Utilization (70%)</td>
<td>37.1%</td>
<td>-32.9%</td>
<td>0.0%</td>
<td>26.7%</td>
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<tr>
<td>Seat Utilization (65%)</td>
<td>54.0%</td>
<td>-11.0%</td>
<td>0.0%</td>
<td>103.1%</td>
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</table>

Classroom time utilization

Class lab time utilization

Classroom seat utilization

Class lab seat utilization
Outcomes
Projects Underway

- Classroom scheduling and utilization
- System for class and event scheduling
- Business practices
- Campus guidelines
- Food service planning
- Facilities maintenance and upkeep
- Building-by-building energy conservation ("Wolverine Teams")
Overall Conclusions

Key Success Factors

- Support from senior leadership
- Gradual introduction of design/concepts
- Transparency and communication
- Cross-functional collaboration

Continued monitoring, promotion, and awareness of effective space management and utilization, in relation to:

- Cost of space
- Benefits to campus
Overall Conclusions
Remaining Challenges

- Implementing and refining:
  - Space standards
  - Space reporting through systems
  - Space entitlement calculations
- Creating systems for reporting and verifying “real time”
- Developing “change management” opportunities

Surprise: (“It’s not really all about space!”)
Overall Conclusions
Shortcomings / Limitations

- Challenge of recognizing building condition
- What about inducements to reduce energy or water consumption?
- No funding mechanism in place (yet) to fund the inevitable reconfiguration costs associated with space contraction
Overall Conclusions
Was This All Worth It?

We think so…

- It’s important to manage our space
- Data is critical
- Robust space standards help
- It is possible to devise fair methods to translate space into cost
- We need to lead by example and by practice
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