Building a Sustainable Portfolio of Core Facilities
Part 1: A Case Study

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Northwestern University
Different Models of Administration

- Centralized (Part 2)
- Decentralized (Part 2)
- Blended – Northwestern University
  - Centralized CF administration
  - Decentralized CF management
    - Faculty Directors
    - Operations Directors (Managers)
    - Faculty Advisory Committees
Northwestern University
(A Tale of Two Campuses)
Research Occurs on Both Campuses

McCormick School of Engineering
Weinberg College of Arts & Sciences
School of Communication

- 30% of Sponsored Funding
- ~30 Core Facilities

Feinberg School of Medicine

- 66% of Sponsored Funding
- ~30 Core Facilities
Management and Funding are Decentralized

• Individual cores are managed by Evanston Departments & Centers
• Many services are tailored to Evanston investigators
• Limited operating support available

• Individual Cores are managed by Chicago Departments & Centers
• Many services are tailored to Chicago investigators
• Substantial operating funds provided by FSM Research Office

Question: So how do we create a cohesive program?

Answer: “Coordinate & Cooperate”
Programmatic activities that support all core facilities regardless of location
Annual Reports

Office for Research Annual Report / FSM Funding Application

Narrative

Budget

Activity Report
User Satisfaction Survey

Office for Research / FSM Research Office / Lurie Cancer Center

Distributed each January:
• Anyone who has used a core in the last 12 months
• All students, faculty and research staff in the medical school

In 2015 Survey:
• 1324 Respondents
• 3008 Reviews
• 61 Core/Shared Facilities
User Satisfaction Survey (cont’d)

Center for Advanced Microscopy

User Statistics

1. Which of the following best describes you?

<table>
<thead>
<tr>
<th>Response</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Investigator</td>
<td>23%</td>
</tr>
<tr>
<td>Other faculty</td>
<td>18%</td>
</tr>
<tr>
<td>Postdoc</td>
<td>26%</td>
</tr>
<tr>
<td>Student</td>
<td>21%</td>
</tr>
<tr>
<td>Research staff</td>
<td>17%</td>
</tr>
<tr>
<td>Other</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>160</td>
</tr>
</tbody>
</table>

2. Which of the following do you consider your primary location?

<table>
<thead>
<tr>
<th>Response</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwestern University - Chicago</td>
<td>90%</td>
</tr>
<tr>
<td>Northwestern University - Evanston</td>
<td>9%</td>
</tr>
<tr>
<td>Northwestern Memorial Hospital / Northwestern Medicine</td>
<td>2%</td>
</tr>
<tr>
<td>Rehabilitation Institute of Chicago</td>
<td>1%</td>
</tr>
<tr>
<td>Lurie Children’s Hospital of Chicago / Stanley Marine Research Center</td>
<td>1%</td>
</tr>
<tr>
<td>Argonne National Laboratory</td>
<td>0%</td>
</tr>
<tr>
<td>Other academic institution</td>
<td>0%</td>
</tr>
<tr>
<td>Other non-academic institution</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>160</td>
</tr>
</tbody>
</table>

3. Which of the following Centers or Institutes do you belong to?

<table>
<thead>
<tr>
<th>Response</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center for Catalysis and Surface Science (SCSS)</td>
<td>1%</td>
</tr>
<tr>
<td>Center for Developmental Therapeutics (CDT)</td>
<td>3%</td>
</tr>
<tr>
<td>Center for Genetic Medicine (CGM)</td>
<td>18%</td>
</tr>
<tr>
<td>Center for Molecular Innovation &amp; Drug Discovery (CMIDD)</td>
<td>4%</td>
</tr>
<tr>
<td>Center for Sleep and Circadian Biology (CSCB)</td>
<td>0%</td>
</tr>
<tr>
<td>Chemistry of Life Processes Institute (CLP)</td>
<td>6%</td>
</tr>
<tr>
<td>Interdepartmental Immunobiology Center (IBC)</td>
<td>10%</td>
</tr>
<tr>
<td>Materials Research Center (MRC)</td>
<td>2%</td>
</tr>
<tr>
<td>Northwestern Synchrotron Research Center</td>
<td>1%</td>
</tr>
<tr>
<td>NU Atomic and Nanoscale Characterization Experimental Center (NUANCE)</td>
<td>5%</td>
</tr>
<tr>
<td>Proteomics Center of Excellence (PCE)</td>
<td>1%</td>
</tr>
<tr>
<td>Robert H. Lurie Comprehensive Cancer Center (RHLCCC)</td>
<td>70%</td>
</tr>
<tr>
<td>Simpson Querrey Institute for Bionanotechnology in Medicine (SQIM)</td>
<td>0%</td>
</tr>
<tr>
<td>Skin Disease Research Center (SDRC)</td>
<td>14%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>160</td>
</tr>
</tbody>
</table>

Center for Advanced Microscopy

Compared to other cores

![Chart showing comparison of scores for different categories and responses](chart.png)

**Category** | **Question** | **Your Core** | **All Cores**
---|---|---|---
1 | Instrumentation | It is easy to schedule instruments in this core | 4.34 | 4.33
2 | Instrumentation | Instruments that I need are generally available | 4.08 | 4.27
3 | Instrumentation | Instruments are in good operating condition | 4.45 | 4.31
4 | Instrumentation | Instrument training is available | 4.60 | 4.21
5 | Services | The core has an easy / efficient process to request services | 4.23 | 4.32
6 | Services | Services are provided in a timely fashion | 4.18 | 4.50
7 | Services | Provided services are of high quality | 4.54 | 4.42
8 | Staff | The staff are accessible / responsive | 4.56 | 4.45
9 | Staff | The staff are knowledgeable in experimental design | 4.54 | 4.44
10 | Staff | The staff are capable of resolving technical issues | 4.55 | 4.44
Software For Ordering & Billing

Built & Deployed “NUcore”
NUcore (cont’d)

- Launched in 2011
- Currently serves 52 Facilities
- Over 3100 active users (in the last 12 months)

- Items, Services & Reservations
- Integrated with NU authentication, financial & reporting systems
- User accounts and payment sources span cores
- Tools for users, core directors, administration
- Centrally supported (no cost to cores)
- Full-time support
- Continuous code development
- Open source
Core Facility Search Function

Information about cores services is scattered

- NU OR Portal
- FSM Cores Site
- Lurie Cancer Center Cores Site
- At least 65 individual core home pages

Users and potential users are confused. Core directors are tired of updating multiple sites. Attempts to centralize this information largely failed.

Solution is to index all of this information and make it widely available

- Global Cores search powered by a Google Search Appliance
- Specifically indexes all core-related web sites continuously
- Search box can be deployed on any web page
- Changes anywhere are reflected everywhere
- Search is agnostic to source or location
Cooperative Program

Funding

Reporting

User Surveys

Software

Search
Financial Oversight

- Compliance with Federal Regulations
- Business Consulting
- Support Services
Compliance

• Ensure uniform charging scheme for users per the NIH FAQ
  • No discounts; better option: usage vouchers
  • No “membership fees” (unitized based on allocable costs)

• Assist with the proper application of subsidies
  • Distinguish salary, per unit, and operating subsidies
  • Ensure group subsidies are applied properly (e.g. CCSG)

• A uniform and flexible Cost Study is essential to both of these ends
  • New model for NU Cost Study; almost universal adoption
  • Better utilization tracking, staff time allocation, and subsidies
Compliance (cont’d)

• Provide guidance to cores on External Users
  • Unrelated Business Income (UBI) Tax:
    • Mere equipment rental and commercial testing may be taxable
    • The “net profit” (per unit charge less the cost basis) on eligible transactions may be taxed at a 30% rate
  • Ensure that both a “Lab Waiver” and a “Certificate of Insurance” are on file for in-person visits to NU Cores
  • Administer a General Counsel-approved “Lab Services Agreement” spelling out contractual terms if requested by an end user
Business Consulting

• Vital to track the financial performance of cores across all departments and schools at NU

• Tracking core facility financial performance and understanding equipment and service utilization trends informs how central resources can be directed to their highest purpose

• It is important to consult one-on-one with cores to ensure rates are commensurate with expenses and that services are well-defined and properly unitized
Core Expenditures Vary Widely....

Individual Cores by Recharge Expense (Endpoint Data Removed)
As Do Their Recovery Rates

Histogram of Cores by Recharge Cost Recovery
FY2014 Financial Summary

• Total recharge expenditure: $21.5 million
• Total internal revenue: $13.7 million
• Total external revenue: $1.6 million
• FY2014 Recovery Percentage: 71%
• Operating Subsidies/Transfers: $5.4 million
• Subsidies and transfers come from multiple sources: grant support, FSM Support, OR Operating Support, Department/Center Support (derived from gifts, endowment income, allocated budget)
Support Services

• Vital to unify core facility support and transaction software across both campuses and all disciplines

• Our unified solution—NUcore—helps ensure that central administration goals can be met
  • Ensures compliant application of subsidies and rates for all groups
  • Tracks core usage by PI’s, departments, and external users
  • Easy access to usage/revenue data for comparison and consulting

• A unified solution provides additional benefits
  • Community accesses information and services on a single platform
  • System support is centralized
  • Integration with enterprise systems (Oracle for journals and valid accounts, User ID authentication for access, COGNOS for reporting)
COGNOS-based Reporting Tool
“Analysis Studio” pulls from NUcore
Institutional Governance

Northwestern University
Office for Research

- Core Facilities Advisory Board

  - Institutional Policy
  - Program Review
  - Inter-Institutional Initiatives
    - University of Chicago
    - University of Illinois, Chicago
  - Compliance
    - Compliant Rate Setting
    - UBI (taxable income)
CF Advisory Board

- Meets quarterly
- Fosters communication between campuses
- Discusses challenges and opportunities
- Addresses federal regulations & compliance issues
- Recommends policies and best practices
- Coordinates financial support ($3.5M/yr)
- Monitors program reviews
- Assesses metrics of evaluation
- Facilitates regional partnerships
Metrics of Evaluation

• Annual Reports (standardized, required for support)
• Annual University-wide User Survey
• Program Reviews (ad hoc)
• Usage and Financial Data
  ✓ NU core (enterprise system software)
  ✓ COGNOS datacube (Analysis Studio)
• CF Grants Database
  ✓ Equipment grants (NIH, NSF, DOD)
  ✓ Summary statements (Adobe Portfolio)
  ✓ P30 grants database (NIH)
Metrics of Evaluation

“Balanced Scorecard”
Metrics of Evaluation

FY14 Comparison across core facilities

Score (5 is best) vs. Question #
Metrics of Evaluation

Annual Outstanding Core Facility Awards

- Top 3 facilities
- Plaque
- Luncheon for staff
- $2000 support for professional development
- Photo and article in OR Newsletter
Metrics of Success

Leadership Skills

- Technical Expertise
- Admin & Communication Skills
- Business Acumen

Professional Development

- Conferences (MWACD, ABRF)
- ABRF Research Groups
- Advanced Training Courses
- Business Courses
<table>
<thead>
<tr>
<th>Time</th>
<th>Monday December 8</th>
<th>Tuesday December 9</th>
<th>Wednesday December 10</th>
<th>Thursday December 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30-8:30am</td>
<td>Breakfast</td>
<td>Breakfast</td>
<td>Breakfast</td>
<td>Breakfast</td>
</tr>
<tr>
<td>8:30-9:00am</td>
<td>Program Introduction&lt;br&gt;&lt;br&gt;Liz Howard &amp; Phil Hockberger</td>
<td>Managerial Accounting&lt;br&gt;&lt;br&gt;Mark Fan</td>
<td>Segmentation, Targeting and Positioning&lt;br&gt;&lt;br&gt;Julie Honnessy</td>
<td>Creating a Culture of Innovation&lt;br&gt;&lt;br&gt;James Conley</td>
</tr>
<tr>
<td>9:00-10:30</td>
<td>Team Building&lt;br&gt;&lt;br&gt;Keith Murnaghan</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
</tr>
<tr>
<td>10:30-10:45am</td>
<td>Break</td>
<td>Managerial Accounting&lt;br&gt;&lt;br&gt;Mark Fan</td>
<td>Segmentation, Targeting and Positioning&lt;br&gt;&lt;br&gt;Julie Honnessy</td>
<td>Creating a Culture of Innovation&lt;br&gt;&lt;br&gt;James Conley</td>
</tr>
<tr>
<td>10:45am-12:15pm</td>
<td>Team Building&lt;br&gt;&lt;br&gt;Keith Murnaghan</td>
<td>Lunch</td>
<td>Working Lunch/Applied Learning</td>
<td>Program Summary&lt;br&gt;&lt;br&gt;Liz Howard</td>
</tr>
<tr>
<td>12:15-1:30pm</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch &amp; Guest Speaker&lt;br&gt;&lt;br&gt;Michael Stanley</td>
</tr>
<tr>
<td>1:30-3:00pm</td>
<td>Building Strong Social Networks&lt;br&gt;&lt;br&gt;Noseau Contractor</td>
<td>Building Strong Social Networks&lt;br&gt;&lt;br&gt;Noseau Contractor</td>
<td>Building Strong Social Networks&lt;br&gt;&lt;br&gt;Noseau Contractor</td>
<td>Final Conversations &amp; Project Planning&lt;br&gt;&lt;br&gt;Phil Hockberger</td>
</tr>
<tr>
<td>3:00-3:15pm</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
</tr>
<tr>
<td>3:15-4:15pm</td>
<td>Building Strong Social Networks&lt;br&gt;&lt;br&gt;Noseau Contractor</td>
<td>Value Pricing Strategies&lt;br&gt;&lt;br&gt;Lakshman Krishnamurthi</td>
<td>Value Pricing Strategies&lt;br&gt;&lt;br&gt;Lakshman Krishnamurthi</td>
<td>2:30-3:30pm</td>
</tr>
<tr>
<td>4:15-4:30pm</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
</tr>
<tr>
<td>4:45-6pm</td>
<td>Applied Learning/Project Discussion</td>
<td>Understanding Customers&lt;br&gt;&lt;br&gt;Liz Howard</td>
<td>Guest Speaker&lt;br&gt;&lt;br&gt;Michael Stanley</td>
<td>2:30-3:30pm</td>
</tr>
<tr>
<td>7:30-8:30am</td>
<td>Breakfast</td>
<td>Breakfast</td>
<td>Breakfast</td>
<td>Breakfast</td>
</tr>
</tbody>
</table>

Will be offered again on November 16-19, 2015
Building a Sustainable Portfolio of Core Facilities
Part 2: Challenges & Opportunities

Diane Tabarini ¹
Annabelle Stein ²
Jeff Weiss ³

¹ Memorial Sloan Kettering Cancer Center, NYC
² University of North Carolina, Chapel Hill, NC
³ Northwestern University, Chicago, IL