University core facility management models: lessons learned from two institutions

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My background
Orientation into types of ‘academic’ cores
Where cores live in a University
Our research team is best known in the proteomics area. Applications to disease diagnosis and biomarkers associated with human clinical trials.

Most of my career at a well-known institution in upstate New York and had administrative responsibility for the “Biotechnology Institute” which helped centrally coordinate some life science core facilities.

**Diverse types of cores (past institution):**
- Department or College ‘run’
- Primarily supported by research centers (NSF, NIH, etc.)
- Individual faculty with advanced technology
- Centralized cores

About two years ago moved to Univ Delaware and gained responsibility for “Biotechnology Institute” which administers large network / infrastructure grants (IDeA state). There are no centrally coordinated life science cores at UD.

**Diverse types of cores (UD):**
- Department or College ‘run’
- Individual faculty
- Associated with specialized programs (e.g. IDeA, EPSCoR, etc.)
The University of Delaware  
Delaware Biotechnology Institute

Founded in 1743 by Dr. Francis Alison
Campuses Newark DE, Lewes DE
1120 Faculty
20,500 Total Students (undergraduate, graduate, medical)
$166M grants, $660M operating budget

Core Facilities:
All are distributed (we haven’t evolved to a central model yet).
Many supported by NIH IDEA state and NSF EPSCoR opportunities.
Broad faculty input nonexistent.

Represent a faculty perspective¹ and administrative viewpoint²

¹I want perfect, instantaneous service for free... if I can complain, I will.

²I have $0, but see benefit to coordination. Compliance matters a lot to me.
An Institution that I know well

**Founded** in 1865 by Ezra Cornell and Andrew Dickson White

**Campuses** Ithaca NY; Geneva NY; New York NY; Doha, Qatar

4300 Faculty
20,000 Total Students (undergraduate, graduate, medical)
$660M research expenditures, $2.7B operating budget.

**Core Facilities:**
Many are centrally administered, some are distributed.
For the eight centrally administered cores:
~500,000 analyses per year
900 PIs per
>110 institutions (30+ for profit)
~50 faculty on facility advisory boards
What do core facilities ‘look like’?

Individual PI managed
Department / College managed
Research Center managed
Specialized Grant managed
Centrally managed
Some Core Facility Models / Types – not mutually exclusive

Users

PI controls a specialized instrument – ad hoc collaborations.
Very limited access.

Department / College supported core.
Free access (built into system), but limited access.

Center grant supported (Research Center)
Free access (built into system), but limited access.

Center grant supported (IDEA / EPSCoR states)
Subsidized access or free, not enough users.

Centrally coordinated or administered.
Everyone gets access. First come, first served.
Individually Managed

Usually free to ‘clients’ via collaborations
Very high level of technical expertise
Less institutional compliance risk

Need to convince PI to collaborate
Not good for routine analyses / technologies
No metrics for success
Can be $, if institution acquires instruments
Dept / College Managed

Free to members, costs to others (if allowed access)
Cost / benefit low (divert department resources to pay)
Good technical knowledge, may not be cutting edge
Serves educational mission well
Excellent for routine analyses / technologies

Not as good for specialized techniques
High compliance risk
No obvious metrics (keep $\geq 1$ PI happy)
Research Center Managed

May be free to members, low cost to others (if access)
Good technical knowledge
Sometimes managed through research office
Metrics often developed
Excellent for routine analyses / technologies
May serve educational mission well

Not as good for specialized techniques
Limited lifetime
Compliance risk; NIH / NSF conflicting expectations
Specialized Grant Managed

May be free to relevant PIs
Metrics often developed (but usage #'s low)
Good for routine analyses / technologies
May serve educational mission well

Less technical knowledge
Not as good for specialized techniques
Limited lifetime
Compliance risk; NIH / NSF conflicting expectations
Central Management

Reduce costs through efficient use of admin staff
Minimizes politics
Minimize compliance risk
Save $ institutionally (but consume $ centrally)

Need direct faculty engagement, or else ...
Thought #1:

The best type of management model depends on the technology itself, the nature of the University (user base, organization, location).
WHO ARE THE PARTNERS / CONSTITUENTS?

1. University administrators / auditors / finance (not science)

2. University administrators (science or research)

3. PIs / faculty

4. Students

5. Core facility directors

6. Facility technical staff

7. Sponsors
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Diagram:
- President / CEO / etc
  - Research & Academic
  - Finance & Administration
- 2. admin
  - science
  - 7. Sponsors
  - 5. Core dir
  - 6. Core staff
- 3. PIs
- 4. students
- 1. admin
PARTNERS / CONSTITUENTS (WHAT THEY WANT / WHAT CORES DO)

1. University administrators / auditors / finance (not science)
   - Eliminate (or minimize institutional risk)
   - Create risk + work

2. University administrators (science or research)
   - Minimize risk + promote science & faculty
   - Create risk but support faculty recruit/retention and reputation

3. PIs / faculty
   - Get access to great staff & technology without paying directly
   - Get access to great staff & technology, how much $$$ ?

4. Students
   - Graduate and find a job
   - Access to technology helps job search

5. Core facility directors
   - Keep 1, 2, 3, 4, 6 happy + prof. development + science & technology
   - Create engagement + frustration – often inappropriate training

6. Facility technical staff
   - Professional development + customer service + science
   - Professional development

7. Sponsors
   - Do good, high impact science, support cores as needed
   - Get state of the art results
WHO UNDERSTANDS FEDERAL COMPLIANCE ISSUES?

1. admin
2. admin science
3. PIs
4. students
5. Core dir
6. Core staff
7. Sponsors

President / CEO / etc

Research & Academic
Finance & Administration
WHO KNOWS THE SCIENCE AND TECHNOLOGY?

President / CEO / etc

Research & Academic

Finance & Administration

2. admin science

1. admin

5. Core dir

3. PIs

7. Sponsors

6. Core staff

4. students
Why is OMB Circular A21 Important / Relevant?
“Principles for Determining Costs Applicable to Grants, Contracts, and Other Agreements with Educational Institutions”

A21 is not intended to prevent research. It provides guidelines and rules.

Institutions determine how they will interpret guidelines and rules and can range from conservative to … “less conservative”. It is a risk management question.

Allowable and unallowable costs
Determination of costs / fees
Calculation of F&A
Specialized service facilities
All federal contracts pay same rate for same service
Definition of general administrative costs

Thought #2:
Federal rules impact financial viability and administrative burden
Financial viability and administrative burden

Most interpretations of A21 result that every core facility (except traditional sequencing) will not cover costs and must be subsidized. Ultimately, all core facilities will “sunset”.

A) Subsidy is an investment by University into mission
B) Subsidy could be obtained through grants / contracts

One can argue that this means centralization is the best approach for many core facilities because largest pool of resources, impact greatest # people, manages risk.
Financial viability and administrative burden

Few at the institutional level understand technology and there is an administrative cost to centralization. The cost is difficult to absorb centrally (administrative burden placed at lower levels) because A21 limits the A in F&A.
Lessons Learned

Management model depends ...

Federal rules are a factor

Cores are critical to faculty recruitment and retention

Cores facilitate the educational mission

Critical to set expectations with clients appropriately

$ for equipment is easier to find than $ for people

Critical to engage PIs in core facility management

Useful to have continual improvement (~5 year commitments)

Minimize politics

Chicken & Egg: build it and they will come?

People will still complain.