

HUCK-RI-P001: Shared Technology Facilities (STFs)



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1.0 Overview

Shared technology facilities (STFs) play a critical strategic role by providing foci for investment in instrumentation and expertise that enable research initiatives and allow groups of scientists to accomplish cutting-edge science. In this role, they help us define, recruit, and retain faculty and students. As strategic imperatives change over time, STFs need also to be dynamic, with flexibility in how we support, equip, staff, and operate STFs.

1a. Strategy

We seek to manage the overall set of Huck Shared Technology Facilities as a strategic resource, where scientists not only come with their samples but also to obtain expert consultation about project conception, methods, and costs. Strategic considerations, combined with service, must always be foremost in our planning and management of STFs. Our fundamental strategic aim is to develop and deliver technology that is required to support, attract, and retain the very best scientists, while also serving clients that occupy the remainder of a long-tailed distribution of technology needs. Our strategic planning will be facility-specific, involving input from many sources, including most notably our STF directors, faculty steering committees, Huck equipment committee, Huck Director of Research Instrumentation, and individual STF users. While the Huck administers STFs, they ultimately belong to large communities of users and will function best when all key participants have a sense of ownership and responsibility, with accountability, for their design and management. Realizing the strategic vision for STFs requires a culture of service and science excellence, with respectful and effective interactions between clients and staff, and open lines of communication about scheduling and fees. Records of consultation and instrument use must be maintained and followed with timely billing and payment. Problems and issues arising anywhere in the process should be communicated with the Huck Director of Research Instrumentation and Financial Officer. An organizational chart showing lines of responsibility and reporting is shown in Appendix 1.

1b. Technology

Instrumentation and staff expertise in STFs provide technological capabilities that have broad importance across the life sciences. Hence, in addition to strategic rationale, we must consider also how our STF investments and portfolio enable institutional capabilities across the life sciences. Technological considerations are important when we consider choices about upkeep and retention of older instruments that no longer have a strong strategic role or return on investment. Considerations regarding technology involve: how instrumentation enhances research capability and student training; how the facility staff's expertise and consultation affects research conceptualization, proposal writing, troubleshooting, turnaround time, data analysis, and author's understanding and ownership of the methods in their research; how the presence of demonstrated institutional capability affects grant review and funding decisions; cross fertilization of ideas/expertise or intellectual coalescence among otherwise disparate users; how ownership and local access provides custom configuration (technical creativity); avoidance of logistic challenges and costs of material handling, transport, and potential loss. Technical investments that pay off scientifically and are financially sustainable provide leverage for additional investments to expand and support research in particular strategic areas. Ultimately, that is the only way we can maintain and grow technological capabilities.

1c. Business

Planning and managing investments in STFs must also involve business planning and financial sustainability to ensure cost-effective and responsible management of institutional resources while serving the needs of our stakeholders. Having capacity that keeps ahead of demand requires some subsidy, i.e. we don't expect to see full cost-recovery for all the services provided; however, a sustainable financial model with documented commitment of financial support and benchmarks must be developed and regularly updated. University policies must be followed.

1d. An integrated STB approach

These three considerations – Science Strategy, Technology, Business (or STB); in that order - will drive our decision-making process regarding the management of Huck STFs. Is there an institutional strategic imperative that requires the support or development of a STF? If the answer is no, there must be a very strong technological reason to have and to keep it. Finally, there must be a sustainable business model and resource plan.

2.0 Equipment purchase & retention

2a. New instrument decision tree: is it appropriate for a Huck STF?

Consideration of all instrument purchases will be guided initially by a decision tree (Appendix 2) aimed at determining if it is appropriate for placement in a Huck STF.

2b. An STB plan for instrument purchase and retention

Proposals for purchase of instrumentation that passes the decision tree will include the following:

- Instrument name, model number, vendor, price
- Strategic value: Including a demonstration and test of faculty samples
- Technological advantages • Business plan for achieving sustainability
- Rationale to retain or sunset (a field to be left blank initially and revisited quarterly)

Recommendations for new instrument purchases can come from any source, including our Huck Instrumentation Committee, but the development of the STB description should involve the director and Faculty Steering Committee of the facility in which the instrument will reside. Engagement of Faculty Steering Committees in this capacity will provide diverse perspectives and distribute the ownership of decisions. The Faculty Steering Committee should work closely with the Huck Director of Research Instrumentation and Financial Officer to develop the business plan for each new instrument.

2c. Formulation of the business plan

Detailed consideration of the business plan for new services or instrumentation must be developed by the Facility Director in consultation with the Faculty Steering Committee and approved by the Huck Executive and Director. In addition to considerations of instrument purchase and acquisition costs, the following must also be considered as part of the business planning process:

- Operational costs: Include salary support of any additional personnel required to operate the instrument and provide its routine care and standardization.
- Maintenance: May include service contract and software, or funds for local technical personnel (and parts) who will maintain the instrument if such personnel are qualified to do so.
- Supplies: Necessary supplies for operating the instrument such as chemicals, cryogens, and other expendable items.
- Anticipated Income and funding consideration: Enumerate the sources of income such as charge back fee structure, grants, or institutional support such as at the college or departmental level as appropriate. Other options are commitment to submit Center /Program Project grants, endowment funds, Huck bucks, individual faculty contributions and TSF CURE funds. Whenever relevant, all of these stakeholders should also be considered when evaluating decisions for purchase of an extended warranty at time of instrument acquisition
- User rates setting and review: User rates are estimated and subsequently reviewed within a defined timeframe by Financial Officer and Research Instrumentation Director following analysis of operational costs maintenance and other committed funds

3.0 Membership and functions of Faculty Steering Committees (Advisory Boards)

All members of the University faculty are eligible to serve on a Faculty Steering Committee. Individuals whose specialist knowledge of the relevant science and/or technology or whose research is significantly impacted by the capability of the Facility are suitable members of the Committee. We strive to achieve a membership that is diverse in experience and expertise, with membership across multiple departments and colleges wherever possible. Individuals with potential conflict (ownership or significant interest in an external competitor or customer) will not be eligible to serve. All appointments to the Faculty Steering Committee are at the request of the Institute Director or their designate.

Faculty Steering Committees will meet twice annually (end of 1st and 3rd quarters; see Appendix 3) to review facility performance and look ahead to see what actions need to be made in the future. They will help develop the STB plan for new instrument purchases and will review annual reports compiled by the facility director (section 4b) before it goes to the Huck Director of Research Instrumentation and Executive Committee. Faculty Steering Committees will also be kept apprised by the Financial Officer of any substantial deviations from the business plan. In such cases, Faculty Steering Committees will examine the situation and advise on possible solutions. In addition, they will generally advise on strategic and technological opportunities for their facility. They will help maintain a service-oriented environment in their facility and discourage patronage (uneven access or billing across individuals, including their own work).

4.0 Periodic reporting & review

Monthly financial reports will be prepared by the Financial Officer and sent to all facility directors. Meetings can be called by either side when needed, for example when there is a 10% discrepancy between actual and budget or when there are discrepancies between recorded and actual income. Meetings will be held at least every quarter during which the facility director will provide metrics/data regarding strategic and operational performance (Table 1). These metrics will be recorded in a standard format, using a spreadsheet or online tool provided by the Financial Officer for this purpose. Facility directors should make recording these data a part of their daily or weekly routine.

Table 1. Metrics/Data

Metrics/Data points	Monthly	Quarterly	Annual
# of users for the month, # of Pls	X	X	X
# of new users for the month	X	X	X
Financial performance to budget	X	X	X
Equipment Downtime	X	X	X
# of consultations with faculty and total hours		X	X
# of support letters and hours of consultation for grant submissions		X	X
Names, labs and project titles of student users		X	X
# hours training students (by undergrad and grad)		X	X
# of repeat users - Established facilities		X	X
# of total users/departments for the month		X	X
Titles and authors of grants, publications, and theses enabled		X	X
Customer Service Satisfaction Survey			X

4a. Monthly review of STF instrumentation and financials

The Huck Director of Research Instrumentation and Facilities Financial Officer will meet monthly to review information that is itemized by each major instrument and review relevant facility-wide data. The strategy for this will need to be flexible and will need to develop and eventually become automated once software is installed. The key metrics/data points for the monthly review will be focused on the user-base and capacity utilization of the equipment. The expectation is that use of STF equipment and staff expertise is not limited to a small set of labs but rather a diverse group of researchers that benefit from sharing technology. Evaluating user trends will allow the Huck Director of Research Instrumentation to identify research trends and opportunities for other users that may benefit from the technology.

4b. Making adjustments

In cases when a STF is falling short of projections, alternative solutions may include the following to increase usage, reduce deficits, or balance operational costs:

Internal approaches

- User groups, workshops and seminars, Facilities Day
- Huck media profiles to highlight technology, uses and outcomes
- Targeted seed grants • Review supply inventories to prevent overstock
- Review support contracts versus repair expenditures
- Review and rebalance staffing
- Review professional travel and expenses
- Increase user rates

External approaches

- Develop leads and new business from industry and academic institutions
- Create promotions to attract other research universities or nearby colleges
- Obtain center grants

In the event, the STF is outperforming expectations, adjustments to the plan may include:

- Reducing user rates to reflect higher volume
- Add additional staff to support additional demand

4c. Quarterly review of STF

On a quarterly basis, following the 3rd monthly STF review, The Huck Director of Research Instrumentation and Facilities Financial Officer will meet with the Huck executive team to review the quarterly performance metrics.

Following the 2nd quarterly review, the Facility Director, Director of Research Instrumentation and Financial Officer will assess staffing requirements. When a business plan is failing to meet projections because of consistent shortfalls in usage, the review of staffing will consider opportunities for retraining personnel to work across multiple facilities. Such cross-training will allow, for example, fractional allocation of personnel effort within an STF rather than being bound to integer units. This will especially help avoid overstaffing in small facilities where we need more than the director but less than one full time technician. Such opportunities should be considered by STF directors and discussed with Faculty Steering Committees and presented to the Huck director as a revised business plan. Each STF's director will have primary responsibility for matching STF staff to demand and how workloads and cost recovery attributable to individual staff affects execution of the business plan.

If an STF is understaffed, this should be considered by STF directors and discussed with Faculty Steering Committees and presented to the Huck director with a revised business plan.

4d. Annual STB review by facility directors

Facility directors will be tasked with performing an annual reassessment of STB features for each major instrument in their facility, to be reviewed by the FSC. This will include brief summaries of strategic value (tell us what types of research it is enabling, how it is affecting recruitment and training), technological advantage (why the functionality and training value cannot be cost-effectively obtained elsewhere), and performance regarding the business plan. The latter should include consideration of maintenance plan costs, need to keep or terminate the maintenance plan, and alternative maintenance options to the extent they exist. Finally, they will write the "summary of reasons to retain or sunset".

These assessments will inform the annual review and decision-making process of the Huck Director of Research Instrumentation, Executive Committee, and Director.

5.0 Executive level oversight

5a. Annual Staffing Review

This annual review will occur in January, following the 2nd quarter so that management can give approximately 5–6-month advance notice to any staff that will not be reappointed.

5b. Annual Huck STF report

The Huck Director of Research Instrumentation will work with the Financial Officer, and executive board to annually produce a report on the "State of the STFs" that summarizes the STB performance of each facility, highlighting successes, noting problems and proposed solutions, and major goals for the coming year and beyond.

In the case of facilities that are not meeting STB goals, opportunities for transferring ownership of instrumentation and technological capabilities outside of the Huck (in the case of exclusive or near exclusive use) or individual user laboratories or in combination with other Universities should be explored. This may include individual instruments or entire STFs.

As an outcome of this review and report, incentives for superior performance will be provided as feasible. Incentives may take the form of adjustments in the annual salary increments of facility directors and high-performing staff, as well as support for professional development opportunities and special recognition. The Huck financial and managerial staff will be available for consultation with STF directors to assist with these decision-making and management.

6.0 User Rates for STFs

It is the responsibility of the Huck Research Instrumentation Director and the Financial Officer to review facility rates semi-annually. In some instances, adjustments to user rates may be necessary to adjust for strong or poor financial performance, for changes to university fringe or F&A rates. All rates are calculated in accordance to Penn State Policy AD15 <https://guru.psu.edu/policies/AD15.html>. In general, rates will be determined based on:

- Volume of Usage (historical and expected)
- Cost of Labor (salary and fringe)
- Cost of Supplies
- Cost of Maintenance
- Cost of relevant training
- Cost of administrative overhead

In addition, an institutional comparison should be provided that justifies the competitive market. In some instances, government rates are pre-negotiated in advance by the Office of Sponsored programs. Otherwise, external industry rates and government rates should not be lower than the actual cost for the service. Industry rates should be comparable to other institutions both commercial and research institution.

Prior to any rate submission to the Financial Officer for approval, or if necessary, the Cost Analysis group Department, the user rates are discussed with the faculty advisory committee who will make their recommendation. It is ultimately the Director of the Huck Institutes that will decide upon the proposed user rates.

Visit the Huck Institutes of the Life Sciences on the web at <http://www.huck.psu.edu>.

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