New Approaches to Managing, Marketing, and Money for Maintaining a Core Facility (4Ms)

MSA Facility Operation and Management Focused Interest Group Workshop (2006)

Organized and facilitated by Debby Sherman, Purdue University, dsherman@purdue.edu

Part 3: Marketing and Managing a Research Core/Facility

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D. Sherman: Pankaj Sharma is the Associate Director of Discovery Park founded in 2001. Discovery Park consists of numerous buildings housing Centers that direct Purdue's cutting-edge interdisciplinary research programs. Dr. Sharma is a nuclear physicist. With his extensive experimental background, he understands science from the ground up. After a distinguished research career, he decided to move over to scientific management in higher education, academic institutions, and the problems unique to these environments. To that end, he earned an MBA in Operations and Marketing, and then moved into the position of Assistant Director of Discovery Park. He participates in all areas necessary to bring together mainly privately funded major building structures and staff hiring along with interaction with the community and the region in order to make the vision really work. This new interactive research initiative is possible largely through effective marketing of ideas to private investors, faculty, students, staff, and community leaders. I want to welcome Dr. Sharma, who will discuss marketing strategies applicable to core facilities.

Dr. Sharma: During my 20-year research career I was involved with projects to develop a new type of dating called "accelerator mass-spectrometer." This greatly improved on the conventional carbon-14 dating in both time-scale and speed of determination. I worked with accelerators at the University of Pennsylvania and the University of Rochester before coming to Purdue.

The NSF provides only 50% of the funding needed for the Purdue accelerator while the rest has to be raised from other sources. We are required to have a 50% rate for NSF users and then we have normal rates for nonprofit organizations and commercial rates for external projects. This experience of managing the accelerator facility and developing a strong user base to cover the operating costs led me to my interest in the operation and marketing aspects of management. I would like to share with you what I have learned and the concepts that I think will be applicable to you.

First I'd like to give you a **definition** of what is meant by research facility. Then I'm going to give you some **marketing concepts** that will clarify some of the concepts that have already been presented by Don Blewett (Microscopy Today, Jan. 2007). I'll give you some **tips** about marketing and what I see as **challenges** in running a research core facility. I'd like to describe to you a couple of **industry programs** that may be associated with your facility. Finally, I am going to talk in terms of **metrics** or how to judge the **performance** of a research core facility.

Definition: A research core facility can be defined as the following:

1) supports multiple investigators
2) consists of both physical facility and infrastructure to undertake or support the research
3) is managed at the department level, college level, or upper administration level, or a combination of any of these entities.
4) The main purpose of a **Research Core Facility** is to exploit the economy of scale, which could be in terms of scheduling, maintenance, central staffing, and combined physical resources. This enables collective marketing and business planning with collective support from a business office to help manage your facility.
5) And also, as Debby pointed out, Purdue is a land grant university and we have a mission called "Discovery, Learning, and Engagement." Connecting with the community, connecting with the researchers, and connecting with industry's users are our prime goals here, and we have a mission to give back to the state. So it is very important for us to connect with industry partners.

In order to have an effective core facility:

- The scientific and technical leadership must be provided by a person who is really very technically competent.
- There must be business office support provided by the department where the facility is located or at the central level.
- The Research Core Facility should work with the "Costing Office" to determine the rates for various services.
- The Research Core Facility needs to interact with Human Resources to solve challenges related to personnel matters.

As far as Financial Planning is concerned:

- Capital equipment costs typically come from external grants or from gifts.
- Maintenance, operations, and support expenses typically come from user fees, contracts, or support from the academic unit.
- A number of recharge centers can be clustered together so as to share common facilities and support services.

We have recently come up with a new term called Strategic Research Core. This concept is currently still in the planning stage but it might be useful for you to understand the concept. What do we mean by Strategic Research Core? If we really want to take our university to the next level we need to identify certain research cores that we need to have, no matter what happens, and we need to allocate the resources in order to run them efficiently. So, at Purdue University, we define a Strategic Research Core as a facility that serves a large interdisciplinary community and is supported collectively by the higher administration, colleges/schools, and departments. A faculty member or a senior staff member will lead such a core.

Now we need to define the user or customer of the core facility. A customer is a person who brings us his or her wants; the customer has a need. But how do we go about satisfying those needs? There are a number of different kinds of needs such as:

1. Stated needs
2. Real needs
3. Unstated needs
4. Delight needs. An example of a delight need is when two people who have had no previous interaction are introduced through the core facility and eventually this leads to a productive interaction.
5. Secret needs—If the data is identified as coming from a facility at a very well known institution, it essentially has a "brand" name

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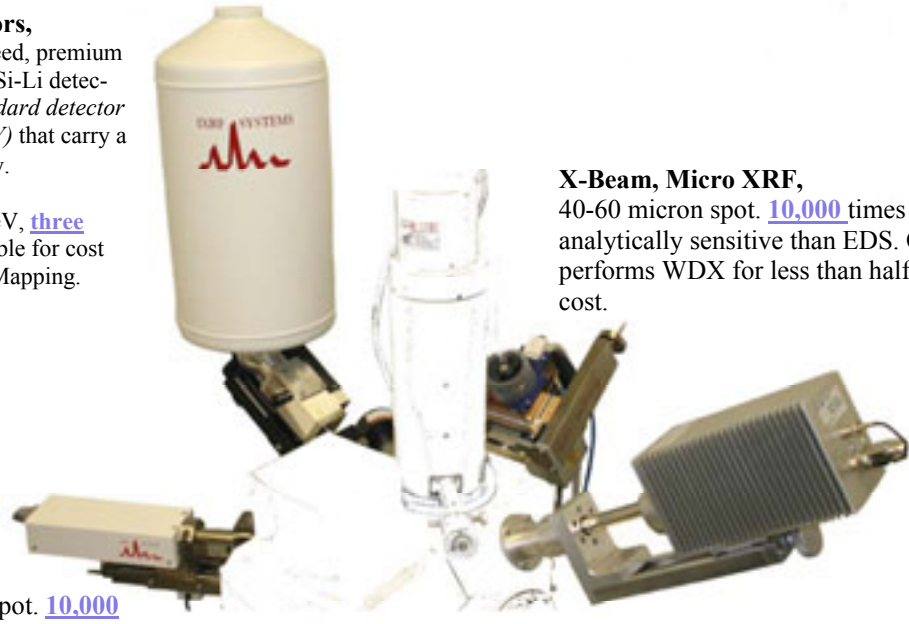

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and is considered that much more desirable. The desire for this perceived quality is called secret needs.

In order to develop marketing concepts, you have to first identify what your customers want and their needs. Then you have to ask yourself the question, "Do I have what the customer really needs?" You have to determine if you can provide the needs and then align all the functions of your business or facility to focus on fulfilling the needs of the customers to keep your customers satisfied. They will change their behavior dependent upon whether your service is good or not, whether there is another competitor that shows up, maybe on the same campus—a better instrument, better equipment, better facility, and so forth.

This is a modern customer-oriented marketing view, and we need to define our customers and stakeholders. Our customers typically are researchers, internal and external. There are students, people from industry, friends, alumni, foundations, and funding agencies—they're all our customers. At the same time, you need to be thinking about the university administration because you are going to need some support from them. So make sure that you market your facility well to the university administration.

Then what we have is the front-line employee—the people who are really sitting day and night preparing the samples and getting the data. I consider the front-line employees also our customers.

Then we have Top Management. The director/manager is responsible overall for running the facility. So he/she will sit at the bottom, but everyone else around is going to be customers.

Now, do we really have to market our facility to friends and alumni? We have seen from our experience that marketing our facility to friends, alumni, and sometimes certain foundations will allow us to get some gifts, and we'll be able to subsidize the operation and acquisition of the new equipment. This is very important for you to think about in the marketing of your facility.

Elements of a Marketing Plan: You are going to develop a marketing strategy.

The first step is the Situation Analysis. There are three instruments, called the "5 Ps of Marketing," "5 Cs of Marketing," and "SWOT Analysis." One other term that Don Blewett introduced (Microscopy Today, January, 2007) is that we need to arrive at some sort of a target market. Now what do we mean by "target market"? For example: Suppose that at Purdue University, we have 2,000 faculty members, but not all the faculty members would be really interested in using our facility because they are from liberal arts or management. A further understanding shows that a lot of faculty have different kinds of research interests that do not fit with the use of our facility. Therefore, the number of potential users drops to 750. Then we go back and not all of the faculty members have research grants to support or pay for the users. Now we have about 500 potential users. Therefore, our target market is about 500 faculty members out of an initial 2,000. Now each faculty member has two graduate students, so we can multiply 500 by 2 and that comes to 1,000 students. Therefore, 1,000 students + 500 faculty members—this is a target, and 1,500 researchers could be using our facility. Try to do that kind of back-of-the-envelope calculation to understand how many people might be using your facility at some point.

The next step is called the "marketing mix decisions." You need to really define some of the specifications of your services. You need to think about your pricing decisions--how you're going to come up with the rates for your services.

The last step is the "rolling out plan". You need to roll out your services. Then you need to go back and continuously monitor how your customers are feeling about your facility. What do they perceive about your facility? What do they think about the quality of your services, and so forth? You need to continuously monitor and adapt to the needs so the customers will keep using your facility. Technology will change—new areas will arise, such as nanotechnology and nanoscience—you need to increase your market and think about it—what your customers are going to be needing in the next 5-10 years, and so forth. So you need that continuous improvement.

5 Cs of Marketing. We are going to go through a kind of exercise to help you understand how to market your facility. This is called the "5 Cs of Marketing."

- The first "C" stands for Company. You need to clearly define your product line or service line. You need to come up with the culture of your organization. You need to define your mission and vision, technology, and so forth.
- The second "C" stands for Customer. Again, you need to think about the market size or target market. What are the tangible and intangible benefits that you can provide to your customers? And also, you need to understand how customers make a decision about whether they should come to you or not. How often will they want to use your facility? How long do they want to use your facility? You need to have some sort of idea by talking to your customers.
- The third "C" is for Competitors. These could be actual competitors, such as another facility at the university that provides similar services.
- The fourth "C" is called Collaborators. You can start forming alliances with existing competitors, so you do not need to compete; you can have an internal understanding.
- The fifth "C" is called Climate. There's a government policy; for example, NSF has imposed conditions saying that we can only charge 50% of the rate. The university policy will be there so you need to think about how that affects what you do. Also, you need to continuously think about the technological advancements in your field.

5 Ps of Marketing. The second instrument that will help you understand some of the marketing concepts is called the "5 Ps of Marketing."

- The first "P" stands for Product. Again, what are the characteristics of your product? What are the characteristics of your services? What is the quality associated with your facility?
- The second is called Price. You need to have a pricing strategy, and this may be different depending upon if you have competition or if you are the only one on the campus. If this is the first time you are introducing your services, it's a different kind of pricing strategy called "penetration." How do you penetrate the market when there are a number of other competitors out there?
- The third "P" stands for Place or distribution. What channel are you going to use in providing those services? Is it possible to do some remote interaction to reach customers who are at a distance from the facility, or do the customers have to physically be on the premises.
- The fourth "P" is called Promotion. How would you go about

advertising your facility?

- The fifth "P" is called Politics/Packaging/People/Process—these are some of the words people use. Again, this comes back to federal guidelines/policies, university policies, and technological advances.

SWOT analysis: The third instrument that Don introduced is called the SWOT Analysis. This lets you understand a little bit better where you stand. A good understanding of SWOT Analysis will allow you to understand your stance, correct your weaknesses, and capitalize on a golden opportunity that might come up.

The SWOT Analysis consists of two parts: 1) Internal Analysis and 2) External Analysis.

Internal Analysis consists of strengths and weaknesses; you need to also think about your culture. You need to think about your resources and your infrastructure. This means financial infrastructure, physical infrastructure, and people infrastructure. You need to think in terms of your operational efficiencies, capacity, brand awareness, and market share.

External Analysis consists of opportunities and threats, and then you think about your competitors. Think in terms of technological trends during the next 5-10 years—what's happening? What are the political and regulatory environments around your facility?

Now Elaine (Humphrey, Microscopy Today, Jan. 2007) has shared a document that's called a Strategic Planning document. It's a very simple concept. Systematic planning will help you to identify and adapt to expected changes. So essentially, to start, where are you right now? That's called Point A. Where do you want to go? That's called Point B. And then you need to have some sort of goals associated with what you want to accomplish—short-term goals, medium-term goals, and long-term goals. For example, short-term goals may be 0-1 year, medium-term goals may be 1-3 years, and long-term goals, 3-5 years. So, how do you want to go from Point A to Point B? Then how are you going to know that you have arrived at Point B? This means you have to think in terms of metrics, and if you want to go from Point A to Point B what resources are needed?

There are a number of communication platforms you can use, and this is a big laundry list. You need to think in terms of advertising your facilities; public relations (which consists of news releases, seminars, annual reports, and so forth); sales promotion (going to all the conferences, participating in the trade shows, and so forth); and direct marketing (You can have user lists. Once in a while or routinely, you can send important information about your facility by email, and you can have a newsletter associated with your facility.).

One thing that has become very important right now for any enterprise to survive is a website. Here are some of the benefits of a website:

- It really promotes the strategic vision of your facility.
- People that are working in your facility receive some sort of recognition for their services. They will see their names and pictures show up, and they will feel good about it.
- It provides a better understanding of the current and potential customers.
- It fosters competition, which is sometimes very healthy. People can say they saw your rates advertised on your website. They can adjust their rates or be more competitive.
- It provides a place for feedback. Many people would like to give feedback about your core facility.
- It is a "one-stop shop" for all the resources related to your facility.
- It is available 24 hours a day, 7 days a week, and 365 days a year.
- It can catalyze remote collaboration. Suppose someone from Australia sees your website and he/she sees the interesting capabilities of your facility, then this person will be able to think about using your facility.

You need to think about what contents you should post on the website. You can collect statistics about the website—how many users are coming to your website, how often they are coming, and so forth. A lot of this information would be very useful for you to have in better marketing your facility.

The other thing that comes up is building community. You need to build community because you want to build that user base. If you do not have a strong user base, then your facility probably is not going to survive. You need to constantly build community around your research core. Some tips to do this are

- Have a regular seminar series associated with your research core facility.
- Sponsor annual symposiums. Bring together all the people who are using your facility and have a symposium or conference.
- Have a student council. Sometimes the students are the ones that really work hard trying to finish their thesis, and so forth. They can provide you with very good suggestions about the improvement of your facility, and they are very important customers. So, you want to have some sort of student council and get good advice from them—engage them in a discussion.
- You need to continuously give a large number of tours of your facility. Customers are really very happy when they see a student giving a tour.
- Have an industry affiliate program.
- Have an open house.
- Have a faculty affiliate program.
- Have a training/educational program around your facility.
- Have an advisory council. When you have set up an advisory council, you'll want to make sure you have experimentalists and theoreticians because they bring different viewpoints about science.
- Have a regular newsletter.
- Have carry-in lunches. Just bring your lunch every Friday. People will sit down, start mingling with each other, and start sharing ideas.
- Design a T-shirt with a logo.
- Have faculty policy and procedure committees. You may want to include faculty (who are the main users), staff members, and students. You may want to define how often you will meet.
- You may want to have town hall meetings where everybody comes together and you tell them what's going on—what's the latest in your facility--so everybody is being updated.
- You do want to reach out to alumni.

There are certain people who have some kind of a title associated with running the facility, such as Director, Manager, Technologist or Business Staff, Outreach and Industrial Liaison Staff, etc. It's not necessary that you have all of these titles. It depends upon your mission and vision, and what resources are available to you.

There are a number of challenges based on my experience. These challenges are related to operations of the facility, the administrative challenges, and the customer challenges. I have tried to put them into three separate categories here, with some overlap.

1. Do you have a well-designed process flow when a sample enters your facility? After the sample enters your facility, what happens next? Do you have a login procedure? Where is the sample going to end up? Who is going to prepare the sample? When is it going to be put into the machine?
2. Do you have a sample tracking mechanism? So if I send the samples today, and I call you up in two days, will you be able to tell me what is happening with the sample?
3. Do you have an operational plan to manage breakdown? Suppose there is an equipment failure, and the customer jumps on you and says, "I need the results by tomorrow. There is a conference coming up". You need to come up with some sort of procedure to define how you are going to handle that equipment failure.
4. How do you manage rush orders? Customers may say, "I need this analysis in five days. Can you provide it to me?" How do you handle those rush orders if you already have a backlog? A person may say, "I'm ready to pay rush charges. You need to have some sort of policy.
5. How do you forecast the demand? If you really understand the demand, it will certainly help you to better manage your facility. I'll give you a simple example: When the months of August, September, and October come up, you will see a lot of students arriving on campus; they start using the facility. When it gets close to the end of November and December, the students and faculty are busy preparing for exams and the usage goes down. So you may want to schedule some big maintenance during the slow months.
6. How do you manage the variable capacity? You will have spikes in the number of users.
7. Do you have any standardized invoicing system?
8. Do you follow any Current Good Laboratory Practices (cGLP)? This brings up quality.

Here are some Management Challenges:

1. Do you have a well defined administrative infrastructure and area of responsibility for each person who is working?
2. Do you have policies on rates?
3. Do you have any incentives for employees?
4. How do you retain competent people? You really need a well-trained technical staff because the equipment is so highly technical.
5. What's your policy on co-authorship of publications? Staff members often spend a lot of time helping in the interpretation of data. What's the reward for that person? Can he or she get a co-authorship of the publication?
6. Co-authorship in inventions—the same thing comes up. When something new comes up, how are you going to manage inventions?
7. Do you have support from central administration for running your facility?
8. Do you have business office support?
9. Do you have an idea of a breakeven point? How many samples do you need to analyze to help you to get through the year to break even so that you will not run into any deficit at the end of the year?
10. You need to have some sort of idea about the latest technology. What's coming in the pipeline? You'd better prepare yourself.
11. Do you ask your users if they can be included in your grants? It also helps to be acknowledged in grants and publications as a measure of your productivity.

Now, from the customer's point of view, there are a number of challenges.

1. Do you have training programs? When I want to come and use your facility, how can I train myself? How can I have my students train in using your facility? Do you have any classroom training sessions—hands-on or online training programs?
2. What is your service level? Suppose you have been sent a sample today and your turn-around time is five days. What's the probability that I'll be able to get the data at the end of five days? Is it 98%, 68%, or 50%?
3. Do you provide remote access to some of the equipment? That would be very wonderful for those customers who are remotely located.
4. Do you have well defined "contact us" information? I have a technical question. Whom should I ask? I have a business related question. Whom should I ask? I have a scientific question. Do you have a faculty member who can help me in answering scientific questions?
5. Do you have some sort of web-scheduling system where a person can log into the site and check availability? People have access to websites, so try to think along those lines.
6. Customers should be thinking all the time about when they will use your facility; they should be thinking of including your facility as part of their grant.

Industry Program: There are a number of benefits to having an industry program. First, federal and state agencies would like to see an engaged commercial sector, and there are some programs for this. NSF has a program called GOALI program, which facilitates university/industry interaction. There are some grants—SBIR grants and STTR grants. Funding agencies typically like to support discovery & education, and they like to see economic growth.

There are some benefits to industry. When industry people come and use your facility, they gain access to the faculty and students. They also have access to some of the federal grants that require a university partnership, resulting in access to extra funding.

Similarly, if you think from a university point of view, you can provide more visibility for the university users. You can provide a platform where your faculty and students can engage in real life problems, can work with industry partners, and can solve problems to benefit society. An industry user base can help in covering the operational costs. Finally, there are some grants that require industry partners, especially the SBIR and STTR—these grants have to be submitted by companies.

As I mentioned, you may want to think about whether you are following any Good Laboratory Practices (GLPs). This builds quality in your research and there are a number of advantages to this.

- It really provides consistency and control.
- It minimizes some of the errors that may happen while running your facility.
- It adds confidence to interpretations and conclusions.
- It provides for quality and reliability of the data.
- It enhances overall value.

- If facilitates industry-university interaction.

Some key components of Good Laboratory Practices are listed here:

1. Integrity of Personnel
2. Laboratory Safety
3. Training and Job Competence
4. Procedures
5. Documentation
6. Validation/Verification of Your Equipment
7. Process Equipment
8. Facilities
9. Audits

As I said, you need to sell this facility to a number of different audiences, and talk in terms of metrics. How would you assure your success? So here is a very simple concept. I would like to think a facility is like a black box. It has input and it has output. What you can think is that a black box has processes and operations going on. Samples are coming in. You're doing all the processing, putting the samples in the machine, and finally, output is coming. So I'd like to divide some of the metrics, just for clarification, into Input Metrics/Operational Metrics and Output Metrics.

The Input Metrics consist of:

- The number of employees you have, and the total budget of your facility
- The break-even point
- The amount of F & A Return you are getting from all the grants that are being funded or supported by your facility
- The percentage of time the facility is running
- The percentage of time the facility is being used—it could be running all the time, 100% of the time, 365 days, but you may have only 50% of the usage. So you want to really see how much of the capacity of your facility is being used.
- Corrective action procedures—that's part of the continuous improvement. Suppose some mistake happens. You want to go back, analyze it—what made this thing happen? You come up with a plan so that this mistake does not happen a second time when you process a sample or put the sample into a machine.

Then I define Output Metrics:

- How many users are there—you can break them down (faculty, students, industry)?
- How many publications have come out—you also want to find out how many theses have come out. How many inventions have come out?
- How many conferences, workshops, and tradeshows are associated with your facility?
- How many departments, colleges, and universities are using your facility?
- What is the amount of funding (accepted, pending, rejected, proposals)?
- How many samples have gone through your facility?
- How many seminars have you conducted?
- How many people have been trained to use your facility?
- How many news releases have come out about your facility?
- How many web hits have you received?

You can add some of your own metrics into this because you are more experienced in using your facility, but this does provide some sort of a guideline.

What I have done here is to give you some general concepts about marketing and managing a research core facility without any reference to your facility. In addition, I have provided a number of challenges and metrics that you can use. Certainly, there is not one size that fits all. You need to determine what information will be most beneficial to you and then start using it to market and manage your research facility.

So I'd like to conclude here. Have a happy time marketing and managing your facility. Thank you very much. ■

Question: This is sort of a comment on your web marketing. About a year ago, we took our pricing system off the Internet pages and just kept it on our intranet within the college. There were a few reasons for doing this that we do not need to go into now. One of the knock-on effects of that has been that if people want access to the facility and they are coming from outside the college, they have to phone me or one of the staff. They need to talk to us on the phone or even come in face to face and talk to us about their projects. The result has been that we have actually increased our volume of work from outside the college by not having that pricing system because people are being contacted—more contacts, more face to face. We've actually almost doubled the number of people in the last year coming from outside. I do not think it's entirely to do with this, but it seems to be coincidental with taking the prices off the web page.

Dr. Sharma: That's a good point. You may want to have the extra flexibility. Once you put the rates on the website, then you are locked up. Again, as I said, there is not going to be a one size that fits all. You need to think about where are you right now in terms of managing your facility and so forth.

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