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## **AC 2011-33: BUILDING AN ACADEMIC CENTER INFRASTRUCTURE FOR PROFESSIONAL DEVELOPMENT**

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## **Building an Academic Center Infrastructure for Professional Development**

Abstract:

The Center for Professional Studies in Technology and Applied Research (ProSTAR) was approved by Purdue University under the College of Technology as an academic Center in February 2009. At that time, the underlying foundation for ProSTAR's professional education activities was a Master of Science degree with a primary focus in technology leadership and innovation skills including tools for process improvement and quality management.

This paper will address the many complex and potentially controversial aspects of designing and implementing an infrastructure for an academic Center to centralize professional studies within a major Tier 1 educational/research institution. Topics to be addressed are the creation of the underlying infrastructure, the alignment and implementation of a time-phased 18 month pro forma rolling financial budget, issues associated with course availability and ownership, trials and tribulations of Master's and PhD level program offerings, and, faculty availability.

Historical Context –

On June 11, 1998, the College of Technology requested through our internal University administration the approval of a non-traditional, fee-based weekend alternative to our traditional campus tuition-based Master of Science with a major in Technology degree. Below is an excerpt from the originally submitted internal request to administration.

“Technology is transforming all aspects of our life, both at home and at work. Therefore, it is important that we consider the future of those individuals completing undergraduate degree programs in technology and engineering technology. The number of students completing an undergraduate degree in technology-related programs continues to increase. The demand for graduate technology education opportunities is a growing population that will continue to increase. Also, as this demand continues to grow, the need for greater flexibility in delivery will also expand. Competition for this potential customer base will encourage higher education administrators and faculty to evaluate new and innovative delivery systems to serve the educational needs of these customers. A sincere commitment from all parties involved will make this initiative work. This is not a new degree program, just a different delivery approach to an existing one. Technology and engineering technology programs continue to change and evolve in striving to meet society's technological expectations and needs. It is imperative that graduate education be considered as an important element. A survey study conducted at Purdue University reported that 92% of the alumni and faculty indicated that graduate education in technology is important for the professional development of individuals working in industry and that there exist a perceived demand for graduate education in technology and engineering technology”

Subsequently, on October 13, 2000, the Indiana Commission on Higher Education (ICHE) approved the University request for delivering a full distance-based alternative to our traditional program. The entire process from conceptualization to full final approval took two years and four months.

Within the context of this newly approved Master's Program, prior to a named center for professional studies, the Graduate Studies Office took a lead role in offering our first Weekend Master's Program (WMP) in Technology on the campus of Purdue University in West Lafayette, Indiana. In early 2004, budget responsibility was assigned to the department of Industrial Technology, as they provided the majority of faculty in the program.

In the fall of 1998, on verbal approval from ICHE, the Purdue University offered non-traditional MS Technology program was made available for enrollment, some 129 years after the founding of the University and 50 years after the formation of an independent School/College of Technology within the University organizational model.

The original offering followed a weekend format; meeting from Friday through Sunday. The program met three times a semester, twice in the summer semester, for a total of five semesters (Fall, Spring, Summer, Fall and Spring). The cohort format graduated all participants in the May graduation ceremony after 22 months. The price of the program was \$325 per credit hour, \$975 for a 3 credit hour course for a total of \$10, 725 for a 33 credit hour program. Three of these credit hours were for three 1-credit hour, pass/fail directed project courses.

Since that initial program offering, there have been 17 unique offerings of this basic program, some with minor variation for company specific interests in areas of concentration. Not all cohort-based programs were open for public enrollment. Some programs were created specifically for companies who wished to fund an entire cohort themselves and subsequently make basic underlying modifications for concentrations more applicable to their company specifics.

#### Differences between Tuition-Based and Fee-Based Programs –

The predominate differences between tuition-based, residential programs and fee-based alternative format programs resides in three categories; namely, financial, geographical and ICHE approval.

From a financial perspective, under the Purdue University umbrella practices,

- ❑ Fee-based programs do not provide assistantships or fee remittance for participants
- ❑ Fee-based programs do, however, qualify for financial aid, e.g. Stafford loans

- ❑ Organizations providing fee-based programs are self-supporting and therefore must be entrepreneurial; i.e., they receive no University-based funding
- ❑ Fee-based pricing is bounded by University guidelines; this means the fee charged must be at least that of traditional tuition-based programs, and, out-of-state rates for fee-based programs must be at least that of traditional tuition-based programs. This is actually not an issue, given the infrastructure to support an organization is entirely self-funded, meaning, the infrastructure receives no State general funds or traditional student tuition assistance
- ❑ Traditional tuition-based students provide no funding for fee-based programs should they participate in a fee-based program or course; this tends to reduce incentive on the part of fee-based program host organizations to mix student types

Geographically speaking, fee-based programs are considered non-traditional in that they are not necessarily on-campus programs; they may be on-campus utilizing an alternate format; weekend, etc., or, may be off-campus in approved locations. The Graduate School ensures fee-based programs do not compete with traditional on-campus programs. This latter point is seldom an issue as most students wishing to participate in on-campus programs are residential and anticipate a traditional experience. Alternatively, most students who participate in non-traditional weekend programs are already in the professional ranks and not able to participate in a traditional program format. In fact, the greatest single stated advantage to a weekend format program is that it is a weekend format which allows the working professional to actively participate in normal family and job related activities, and yet, takes those few weekends required to participate in class; recognizing there exists required non-class activities typically handled through other distance learning employed methodologies.

From a program approval perspective, the approval process is very similar to the traditional program approval process in that both internal university as well as ICHE approval is required. This point may be restated to say the desire to offer a non-traditional program requires yet another ICHE full committee approval comparable to that required for any other traditional new program offering. A department, school or college cannot simply repurpose an existing traditionally provided program in an alternate non-traditional format, or, alternatively, cannot holistically change an existing curriculum without full ICHE Committee approval.

#### Preparing for Future Growth –

Subsequent to February 9, 2009, on approval of the College of Technology Academic Center for Professional Studies in Technology and Applied Research (ProSTAR), an effort was afoot to create an underlying infrastructure which would promote the current and future growth of professional studies. The intent was to organize facilities, human capital, processes, practices and methodologies in support of this anticipated growth. Additionally, a new and more advanced budgeting capability was required.

The solution space involved attacking the stated objectives from two primary fronts; budget control and work load organization. We methodically followed a program and project management methodology for achieving our objectives.

#### Budget Control –

Recognizing the need for strong budget control, we immediately formed a tightly connected relationship with our College of Technology Business Office. Tight coupling with the Business Office was critical, recognizing the many changes to come and the need for their support with college Dean approvals, coupled with the ever present recognition of being self-funded. Our first effort was to create an 18 month rolling pro forma financial budget. It began simplistically identifying basic revenue, expenses and resultant residual (profit). Each month, then, as actual financial data evolved, we updated our budget in real-time, maintaining our 18 month rolling window of known revenue and expenses.

The immediate value of a credible budget, being maintained and monitored by the Budget Office is unparalleled in the eyes of senior administrative leadership. The pro forma allowed expenses to be incurred based on revenue predictions of future opportunities. This is tremendously important given the chicken and the egg scenario, where you need resources, both human and equipment, before you can bring in new business, and, can't hire new resources without already having the business. A pro forma of future residuals (profits) of expenses against revenue was critical for future growth and allowed for current incurrence of expenses against anticipated and planned revenue.

One of the most important decisions during the formation of the financial model was how residuals (revenue-expenses) would be distributed and to which departments. This is a very sensitive area to be considered. In the end, courses and curriculum are owned by the academic departments who provide faculty to teach. This directly implies there needs to exist some level of financial incentive for the home department of those faculty, as well as, direct incentive to the faculty who are involved in teaching. Additionally, there are other costs, as part of overall expenses, which must be paid to organizations such as central university administration, central administrative bodies that support fee-based programs and many more. After all expenses are accounted for, then, what model for faculty and faculty home department incentive is most applicable and will provide maximum incentive to participate in professional studies? This becomes the area of most interest to all parties and will support or alternatively potentially kill forays into centralized professional studies.

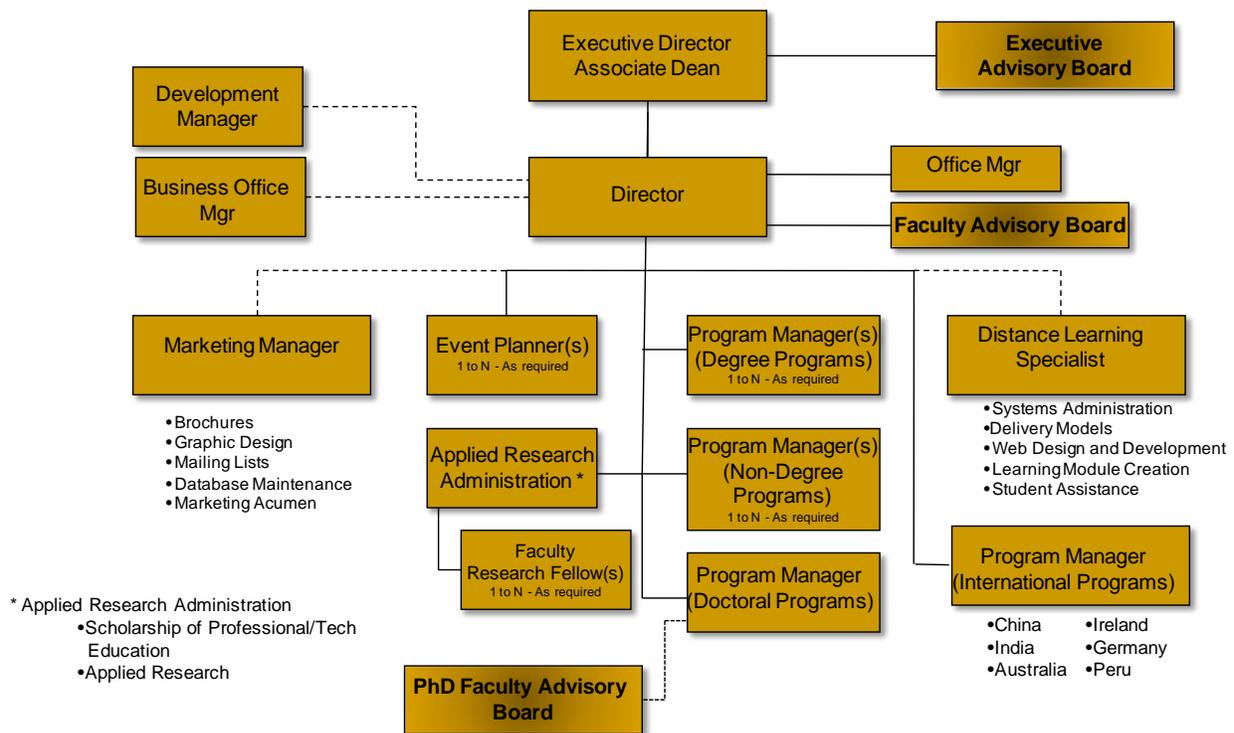
There are many models for compensating faculty and incentivizing departmental participation. In the beginning we selected a very simply model where faculty were compensated a variable amount based on an algorithmic determination of weighted criteria. This later evolved into a fixed incentive, regardless of faculty specific criteria. Department incentive, however, becomes a much bigger issue and one we learned to not take lightly. Insufficient incentive, as mentioned above, undermines the noblest attempt to build a centralized organization. The distribution must

appear fair, but, there has to be recognition from all parties that “taxes” to outside interests must be paid; in other words, a portion of all residuals must go to the governing hierarchical organization; to be read “College”. This scenario is no different than paying taxes to the U.S. Government. The “taxes” are applied to support a greater infrastructure and are the only source of funds for non-revenue generating organizations. In the end, a centralized functional model for professional studies is more efficient and effective than a more distributed model. This holds true given the required redundancy in decentralization and inherent increased costs.

### Organizational Design Model –

Parallel to our efforts to create an 18 month rolling window pro forma financial budget was the creation of how our work was to be organized; an organizational design model (Org Chart). Very early on we decided to not “etch out of rock” a new model when within the University umbrella were professional development organizations who had demonstrated great success. We evaluated a number of theoretical organizational models <sup>1,2</sup>. With a foundation of theoretical understanding, we performed a compare and contrast with other College models. We looked at the College of Engineering Professional Education (ProEd) organization, the Krannert School of Management model and the Agriculture Business model. Looking at these models allowed ProSTAR leadership to identify not only the required functions to successfully implement professional programs, but, equally important, the level and type of personnel; i.e., student support, faculty or administrative support, either full or part time.

The, then utilized model is depicted below.



The above model reflects the primary functions of applied research (a foundational element of our charter and name), graduate programs (including a PhD program), international programs and programs implemented through 100% distance learning.

Applied research is focused on the scholarship of professional technical education and actual application of technology to proposed industrial problems or perceptual areas for improvement. Graduate programs are those Master of Science programs offered in a non-traditional fee-based environment either on-campus in a weekend format or at the specific location of a given industry partner. The proposed PhD program is currently under study. An ad-hoc faculty advisory committee has been formed to collectively reflect on the realities of offering such a program; this recognizing the absolute requirement for preservation of quality and integrity as currently provided through other Purdue University comparable Doctoral programs. International programs provide for a multitude of alternative arrangements. Although this concept has not yet fully materialized or been implemented, it is our current intent to begin with an introduction to various cultures through semester periods of study abroad; most likely in the summer semesters.

Our distance learning approach was, and continues to be, a significant undertaking. Again, as in our efforts to create an organizational design model, we first reflected cumulatively on the theoretical foundations of distance learning; namely, same-time, same-place; different-time, same-place; same-time, different-place; and, different-time, different-place<sup>3</sup>. We also looked at various models of distance learning versus distributed learning; face-to-face with some form of technology employed, hybrid and blended courses<sup>3</sup>. We examined with equal interest the integration of adult learning principles with adult development principles<sup>4,5,6</sup>; this given our target audience was primarily working professional adults.

In looking at currently available campus models, we decided the initial start-up costs associated with building a distance learning facility was prohibitive in the near-term. We therefore focused on two currently existing organizations already involved to one extent or another with distance learning.

The first distance learning model was an established model in the College of Engineering. The College of Engineering has been involved in distance learning dating back since the 1950's, nearly 60 years ago. They deliver distance learning through hundreds of courses taken each semester. The College of Engineering model supported the real-time recording and distribution of distance learning course modules; these while faculty teach a live class in a state-of-the-art multi-million dollar telecommunications facility. This model would have essentially been equivalent to an outsourcing of distance learning capability from ProSTAR (College of Technology) to ProEd (College of Engineering). All aspects of distance learning from student admissions, through course recording and server hosting would have been part of this approach. ProSTAR would have simply had to market the applicable programs and "guide" interested potential students to the appropriate admissions website. This model, however, came with an overhead cost comparable to that of ProSTAR, which means, essentially two self-funded

organizations would have to cover significant expenses en route to greater student enrollment; the road of which may have been long and fraught with serious financial risk.

Recognizing the need to mitigate potential risk associated with overhead costs and yet provide a quality distance learning service, we turned to another prominent university organization; Continuing Education and Conferences and our own internal information technology centralized function. Working collaboratively, we were able to create a faculty and student seamlessly integrated process from inception to end. The process consisted of all aspects of student admission, registration, technical problem resolution and program conclusion. It represented a total solution with minimal costs implications. Most services were negotiated, as they are provided at a subsidized rate, covered partly by university overhead funds. This approach also provided distance learning instructional facilitation and webpage creation and subsequent support.

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