

# Industry-University Consortia and Conflicts of Interest

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**Abstract** - The author has experience with several forms of partnerships, both current and past. This paper describes characteristics of each, with guidance, based upon experience, for managing each. Lessons from different types of partnerships will be contrasted. The author has led formation of one industrial consortium that continues successfully over ten years later. He is currently working to establish another at another university. The US NSF model for establishment of the consortium, recruitment of members, and management provide effective tools. These will be reviewed and examples of activities presented. Outlines for an effective recruitment meeting will be presented. The central role of establishing a strategic plan, including a short-, medium-, and long-term research plan will be described. In addition, development of value for both the university and industry will be reviewed. Finally, examples will be given of difficulties arising when communications are inadequate. A particular form of partnership is represented by the activities involved in commercialization of intellectual property created by one or more investigators at the university. In addition to the usual activities of licensing, non-disclosure agreements and other processes, there are other considerations. The author will give examples and provide guidelines for management of conflicts of interest that can arise. The particular example arises from securing funding from the Governor's Emerging Technology Fund, which expects commercialization to proceed from research.

**Index Terms** – Commercialization, conflict of interest, industrial consortia

## INTRODUCTION

The author has experience with several forms of partnerships, both current and past. This paper describes characteristics of two specific cases, with guidance, based upon experience, for managing each. Lessons from the two different types of partnerships will be contrasted.

## GENERAL CONSIDERATIONS

There are several elements that are common to most, if not all, of the examples cited in this paper. It seems reasonable to describe them here to avoid unneeded replication. Brief descriptions will be provided, with specific examples presented within the discussions of individual partnerships.

*Different cultures* – One obvious difficulty in university engagement with external groups is the different culture of a university from that of the partner. In the case of multiple partners, this may be even more complicated. Efforts must specifically be made to break down the barriers that may exist due to those differences. Even the jargon may differ. It is especially important to clarify every element of any contracts or agreements. Be specific about expectations and deliverables.

*Need to listen* – University faculty members are often justifiably proud of their accomplishments, and they often have experience in selling those ideas to funding agencies. However, it is extremely evident that faculty members need to listen intently to both ideas and problems presented by the external partners in order to craft a meaningful joint plan.

*Organizational learning* – Peter Senge [1] proposed the concept of a “learning organization,” i.e., one in which the participants are continually learning more about the organization. This can lead to not only better understanding but also to continuous improvement. As facts and ideas are shared, trust can be developed. This aspect of management science is important to understanding partnerships that have not only been effective but also which have been long-lasting. This transcends mere differences in jargon and objectives and leads ultimately to understanding each other.

Meetings of the various partners must be conducted carefully, especially when the partnership is being initiated. Meetings should use any of the various techniques available to be sure the dialogue moves in a useful direction and is not dominated by any one person or group. Coming to consensus is the goal. In addition, the team will grow more effective if trust is created as a part of organizational learning. In the early stages of partnerships, it is very useful to employ an experienced external facilitator to create meaningful and engaged dialogue. The facilitator should be someone who has no vested interest, although some knowledge of the areas being discussed is desirable.

*Strategic planning* – A fundamental way of beginning to break down cultural and communications barriers is to develop a strategic plan for the coalition. (Of course, if the grouping is part of a specific, funded proposal, the directions may be sufficiently direct to avoid the need for this step.) Planning is essential, because to paraphrase Lewis Carroll in **Alice in Wonderland**, [2] "If you don't know where you're going, any road will get you there."

Having disparate groups, especially when located in different locations, can be challenging, although tools available today facilitate such dialogue. It is often easier if all participants are in the same organization (company or university). However, the benefit to these activities lies in the focus on establishing common directions and objectives. It may be helpful to have an external facilitator for such discussions, as well as for other initial communications and team meetings.

A strategic planning activity causes the partners to think hard about such issues as clientele; comparative advantages; strengths, weaknesses, opportunities, and threats (traditional SWOT analysis); mission, vision, and key strategic directions and steps to reach the vision. Each of these steps requires commitment to fully exploring issues and bridging cultural differences. Further, the author has led several strategic planning exercises, and he has found that a significant benefit is the involvement of people working together on a common problem, even though in some cases they had never previously collaborated, or, in some cases, had never even met.

As the strategic plan is developed, there needs to be agreement on the underlying financial aspects, including allocation of other resources, such as people's time and space. This is especially important when money is made available by one or more partners. It helps to clarify expectations from both sides up front.

## **INDUSTRIAL CONSORTIA**

The author has led formation of one industrial consortium that continues successfully over fifteen years later. He is currently working to establish another at another university. The US NSF model for establishment of the consortium, recruitment of members, and management provide effective tools. These will be reviewed and examples of activities presented. Outlines for an effective recruitment meeting will be presented. The central role of establishing a strategic plan, including a short-, medium-, and long-term research plan will be described. In addition, development of value for both the university and industry will be reviewed. Finally, examples will be given of difficulties arising when communications are inadequate.

While serving as Dean at Louisiana Tech University, the author was instrumental in formation of the Trenchless Technology Center (TTC). The TTC was focused on the following two areas: (1) refurbishing old pipelines in place and (2) placing new pipelines without digging trenches. It was created by a bright, beginning faculty member who had considerable industry experience before returning to school for a Ph.D.

The Center would later adopt experience developed through the highly successful National Science Foundation Industry-University Cooperative Research Centers (I/UCRC) [3]. However, initially, the Center was formed without defining the objective of moving in that direction. The founding Director was short on experience in such enterprises. In the interest of full disclosure, the author was also without such experience. As a result, a few mistakes were made, and resulting lessons will be noted.

When the Director began dialogue with the first organization to join the consortium, he was asked what the annual membership fee would be. Off the top of his head, he suggested \$10,000. This was actually a number that should have followed more comprehensive study and review of likely candidates for membership. Later advice from I/UCRC leadership at NSF indicated this placed the center at a disadvantage in reaching the level of committed funding required for I/UCRC success. Of course, each industry is different, and the level of support will vary. Some consortia have been formed with only three to four members at \$75,000 - \$100,000 each per year.

In the TTC, there were disparate categories of members, including owners (usually municipalities), manufacturers, and designers. Municipalities usually do not have sufficient funding to join such a consortium, even though they may control operations, maintenance, and construction budgets that are quite large. As consortium formation continued, it was apparent that this important group be represented. At the time, the solution was to select an active and well-recognized city engineer and pay his expenses to be a part of the committee. Many such consortia now allow municipality membership at no cost or a substantially reduced fee.

In one of the early meetings with early members, the author asked about the existence of a strategic plan, beginning with a mission. The response was that they had crafted a mission statement and could probably find it in one of the files. In short, they did not have a mission statement, or any strategic plan. That led to beginning a strategic planning process.

One early step was an off-site meeting with Industrial Advisory Board (IAB) members and prospective members. This was facilitated by an independent third party, and it helped define industry issues more clearly. A strategic plan followed.

If the consortium had followed the guidelines for development and implementation of National Science Foundation Industry-University Cooperative Research Centers, some of this early learning could have been expedited. This well-established and successful model includes a number of steps, of which a few key elements are as follows:

- Convene a meeting of possible members (probably 20-25)
- Develop preliminary agenda at that meeting
- Solicit interest and commitment with annual fee paid by members
- Create Steering Committee from members
- Develop short-, mid-, and long-range research agendas
- Develop methods for funding both core and specific research agendas

One very interesting lesson was learned at a meeting held at a hotel near the Dallas-Fort Worth airport. The meeting was held there to enable industry members to easily attend, and several faculty members flew in from the university for the day. The meeting was held in part because IAB members desired to become more familiar with faculty capabilities and to refine their thoughts on research prioritization. The format was established to have several faculty presentations on their ongoing and/or proposed research. This had gone through several presentations with very little interaction. Observing the audience, it seemed that there was some reluctance of the industry members to consider themselves free to question Ph.D. faculty members. Finally, one faculty member was describing the use of ground-penetrating radar to locate potential obstructions. He discussed the process at several depth ranges, and then said he knew they were interested in a particular depth range that he specified. Suddenly, one of the industry members blurted out a strongly worded statement asking what made the faculty member believe that was their range of interest, because indeed it was not. The faculty member was stunned, and a lot of participants looked around. A break was taken from the presentations to discuss our communications and community building. In review, this event helped solidify growth of the group. It broke down some of the barriers between industry and faculty (broke the ice), and it led to a revised approach in subsequent presentations and meetings. While faculty members discussed their work, they began to solicit industry input, and they began to listen.

## COMMERCIALIZATION PARTNERSHIP

A particular form of partnership is represented by the activities involved in commercialization of intellectual property created by one or more investigators at the university. In addition to the usual activities of licensing, non-disclosure agreements and other processes, there are other considerations. The author will give examples and provide guidelines for management of conflicts of interest that can arise. The particular example arises from securing funding from the Texas Governor's Emerging Technology Fund, which expects commercialization to proceed from research. The author acquired \$2 million from this fund, matched by another \$2 million from the University of Texas at El Paso (UTEP) and the University of Texas System (UTS). An additional \$2 million must be acquired from industry sources.

A search was conducted to hire a premier researcher in the area of inland desalination who also had commercialization experience. Such a person was identified, hired, and is now active in development of a research and commercialization program.

Any time university researchers are charged with developing new businesses and business relationships, the potential exists for both actual and perceived conflicts of interest to develop. When people of integrity are involved, which is almost always the case, the perception of conflict when proper management is not in place can provide significant embarrassment and difficulty. The University of Texas System has a comprehensive policy for dealing with such situations, including development and approval of a Plan to Manage Conflict of Interest. Such a document may prove to be a significant piece of work, and managing day-to-day operations to avoid any apparent conflict can be very complicated and time consuming. To illustrate this, first, a few key elements of UTS policy will be noted. Then, examples will be cited illustrating elements that were certainly not apparent to the author as he embarked on this program.

The UTS policies [4] include references to equity positions held by faculty or staff as well as other forms of participation with companies, following appropriate Texas legal codes, such as *Texas Education Code*, Section 51.912(b) and specifically *Series 90103: Equity Interests* and *Series 90104: Business Participation and Reporting*. The policy further emphasizes that the Plan "... describes how to keep a **potential** conflict of interest from developing into an **actual** conflict of interest." Key elements of the Plan are as follows:

- Disclose all potential conflicts pursuant to the legal codes cited above
- Identify factors that may mitigate the likelihood of actual conflicts of interest. (An example would be a wide disparity between the research interest of the sponsor and the employee.)
- Implement effective management practices to minimize development of conflicts of interest. (Examples include use of independent personnel to help manage project activities, or, in some cases, to completely take over.)
- Carefully review sponsorship and license agreements to assure that they are arm's length transactions.

All submitted plans must be approved through the level of UTS leadership. UTEP has a separate conflict of interest oversight committee to review issues that may arise and to advise on proposals. Included locally are often requirements of

regular accounting for time spent on various activities, separating university activities from commercialization partnerships. In addition, monitoring of fund allocations and approval of such transactions is subject to scrutiny.

A few conditions help to define the environment.

- The faculty member holds about fifteen patents
- He developed and patented a new technology while at another university, which owns rights to the patent
- He is due royalties on any proceeds from the patent
- A separate company was formed (Company A), and the university licensed the technology to that company
- That Company A is then free to negotiate with other companies to develop and commercialize the technology
- An agreement was signed with a large company (Company B) prior to arrival at UTEP, and pilot plant work had been ongoing for several months on that technology, with both the faculty member and personnel from the Company B participating in the tests and data collection and analysis.
- After arrival, the faculty member and his partners in Company A formed a separate Texas company (Company C) to allow licensing of new technology
- Company B is pushing on an aggressive schedule to do larger scale pilot plant work and to begin commercialization
- Because of his reputation and technical expertise, the faculty member is asked to consult on numerous other projects
- The faculty member has donated a patent to the University

A few examples will illustrate the complexity of development of the Conflict of Interest Management Plan for this activity.

*Pilot plant development* – As part of its efforts to be able to perform first-class research and serve the desalination industry, it has embarked on a plan to develop a suite of pilot plants of various sizes and capacities. One is being built from scratch (and will be operable and leased at time of presentation of this paper), while four others were purchased or acquired through donation and refurbished. These will be used for various funded research projects, but they will also be available for lease to companies wishing to do their own research, whether in concert with university personnel or not. A few steps have been taken concerning these pilot plants to avoid any apparent conflict.

- The university has developed and implemented a standard contract for such leases that will be used for leases to any company. The specific fee is based on a monthly rate that would pay back the entire cost of the specific pilot plant in four years.
- Guidelines are being developed to advertise availability of these pilot plants, with steps to assure that all companies with interest have equal access.
- All plants being built are “black box designs.” That is, they are not specific to any particular technology. For example, Company B, when leasing the pilot plant, can insert their specific technology into the plant for testing and then remove upon completion. Other companies can do the same.
- In the future, any pilot plant leases will be handled by someone other than the faculty member if he has any involvement (business, consulting, research) with the leasing company.

*Engineering Analysis Service* – As part of the center formed for the desalination effort, an Engineering Analysis Service (EAS) is being developed. This will provide analyses of proposed new products and processes for inventors, companies, or venture capital firms. If the faculty member is directly involved in the analysis by himself, especially if the proposed product or process could be viewed as competition for his own, a conflict could be perceived. Therefore, other experts on the university faculty or elsewhere will be retained as consultants for the analyses. With proper controls, it may be possible to seek advice from the faculty member due to his expertise, but final recommendations and reports must be prepared by others independently. In some instances, it will likely be determined that the faculty member must maintain an arms-length relationship and not participate in the evaluation, even informally.

*Potential conflict in development of new technologies* – The University and the State of Texas are committed to development of new technologies that will be owned by the university and commercialized in Texas. This is part of the necessary role of a state university to enhance economic development. Given pre-existing relationships, there is naturally a concern that no one would think that the faculty member would focus on the pre-existing technologies if they appeared lucrative as opposed to developing new technologies. While there is no indication this would happen, the university is establishing procedures for accounting for the faculty member’s allocation of time to assure that this does not pose a conflict.

Fundamentally, the issues involved in potential conflicts of interest fall into the following categories [5]:

- Time
- Compensation
- Intellectual property

There must be careful accounting of all of these elements in any conflict of interest management plan. Faculty members in academic institutions are accustomed to having considerable flexibility in how they spend their time. There are, however, restrictions on that freedom for those in such commercialization and potential conflict of interest environments. Most

universities do have regulations and required approvals for faculty members who engage in consulting, but there may be more limitations in the cases being described here. In some cases, an individual may serve on less than a full-time appointment, for example, to assure that there is no conflict.

## CONCLUSIONS

While it is clear that not all partnerships are the same, the underlying principles have more commonality than might at first be expected. It is clear that partnerships between universities and other entities require faculty members to make a commitment to true engagement, and there are several steps that can be taken to help increase organizational learning within the partnership while at the same time enhancing the likelihood of success.

It is interesting that many of the same elements exist in other partnerships. For example in community-based participatory research, as noted in [6]-[10], elements of development of trust and requirements for faculty to earnestly listen are featured prominently in successful academic-community partnerships.

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