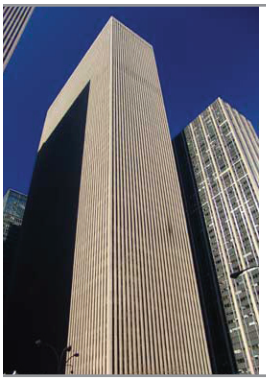

Corporate/University Collaborations in Product Development

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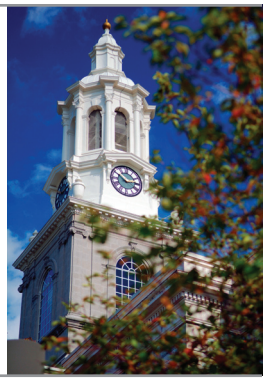

ABSTRACT

This paper will outline and discuss a process whereby corporate and university collaborations have successfully been initiated, negotiated, implemented, and have produced significant positive bottom line impacts for the corporations involved. The process has been used repeatedly resulting in the development of multiple new mainstream consumer products for corporate partners such as, Whirlpool, Black and Decker, Tupperware, Eastman Kodak, and others.

Items that must be addressed in corporate/university collaborations include: 1) confidentiality agreements (also known as non-disclosure agreements or NDA's), 2) defined scope of work for all parties involved, 3) personnel, financial, and facility resource commitments for both Corporate and University entities, 4) finite timeline for project duration, 5) intellectual property (IP) ownership agreements, and 6) defined corporate product introduction and researcher publication dates.

BACKGROUND

Over the past few years, corporations are more frequently seeking research and development partnerships with Universities. In some cases, the tough economy has forced corporations to seek other, much less expensive, avenues for research and development. In other cases, the corporation may be seeking University partners that possess unique research capabilities or facilities [1]. However, the differences between the way research is conducted at Universities and the needs of the corporation have prevented potentially successful collaborations.

At Universities, research is routinely performed, and the outcome of that research is of importance to both the researcher and their institution. Primarily, research findings and publications lead to tenure and prestige for the researcher and the university. Secondarily, research findings may lead to new technology breakthroughs, and of course, to patents and licenses which will bring further revenues (royalties) to the University.

In contrast, how the research will impact the financial bottom line is the sole concern of the corporation. The research must either lead to the development of new, profitable products in the marketplace, or it must impact production processes and provide a significant competitive advantage to the corporation.

Most University-based researchers have little knowledge and understanding of market demands in a corporation's industry, and they lack the expertise needed to create products that work in the marketplace [2, 6]. Conversely, most corporations have little insight into the existing academic bureaucracy at many universities.

Due to this slight conflict, University and Corporate collaborations on joint product development projects have always had a number of obstacles on the way to a successful joint project.

Obstacle 1: Confidentiality Agreements

For each collaborative project, a confidentiality agreement must be negotiated and signed by all parties involved (researcher, the researcher's parent institution, and the corporation). These agreements can have a negative impact on the researcher's need to publish.

Obstacle 2: Agreement on the scope of research

Allocation and availability of the academic researcher's time along with allocation and availability of the corporate entity's staff time have to be outlined and defined. In addition, this agreement must set fixed research and development timelines.

Academic researchers typically operate in terms of semesters or years, and they historically have not been held to time-sensitive research deadlines. In contrast, corporations typically have short product development cycles with specific deadlines for product introductions (for example, at trade shows like the Consumer Electronics Show [CES]). Therefore, both the University and its corporate partner have to be aware of and understand each other's scheduling constraints.

Obstacle 3: Ownership of Intellectual Property

Prior to the start of research, ownership of the Intellectual Property (IP) resulting from the collaboration must be defined to avoid wasting the time and resources of both the university and the corporation. Without an agreement in place prior to starting research, conflicts regarding ownership may arise after the completion of research. In such cases, the research may ultimately never be used to create a new product.

The inability to overcome the aforementioned obstacles combined with other issues has led many U.S. corporations to seek collaborations with foreign universities to fund research and development. These collaborations are following a path similar to the exodus of U.S. manufacturing to lower cost, less regulated overseas manufacturing sites [3].

METHODOLOGY

The model/process presented in this paper is predicated on the premise that the researcher and his or her home institution are seeking to initiate collaboration with a corporate partner.

Best practices start with finding a corporate match for a joint product development project.

Steps Prior to Completing a Formal Research Agreement

Step 1: Researcher must identify a topic area to be addressed by the collaborative effort. It could be an unmet need in the marketplace or it could be the scientific area that the researcher is currently working in (applied research versus basic research).

Step 2: Identify companies working in that industry or technology area. Investigate whether or not the corporation has previously entered into external partnerships or funded R&D work by an outside entity to develop a new product. Ascertain if they are open to receiving and evaluating technology or inventions from outside of the corporation. If the company is open to outside submissions, identify the appropriate point for contacting the corporation (i.e. the Vice President of Research and Development or the person responsible for new product development).

Step 3: Prior to contacting any potential corporate collaborator, the researcher and university must have a template in place for all legal agreements needed. Corporations are on tight product development schedules and do not have the flexibility to spend months negotiating agreements. If the university does not have a corporate collaboration model in place with the appropriate agreements, the company will go elsewhere or decline to participate.

Template agreements that the university should have in place:

1) Confidentiality Agreement (also known as a Non-Disclosure Agreement or NDA)

   Not only do you need to have your University's NDA available, you also need to have someone from the University's Technology Transfer Office (TTO) assigned to your project as well. In many cases, the corporation may not be able to sign the university's NDA template since the needs of corporate partners are all different. Therefore, in the event that the NDA needs to be modified, or the corporation sends

their own NDA to be signed instead, the TTO assignee has the authority to quickly negotiate an NDA that is acceptable to all parties.

2) Scope of Research Agreement

   A tentative framework for the scope of research and development efforts should be drafted that includes the personnel resources to be used from both the university and the corporation, what university lab or research facilities will be used and during what time frame, timelines for completion of research, deliverables from both the university and the corporation, and how ownership of Intellectual property (IP) will be defined. If the corporation owns all outcomes from the research, the university must negotiate how it will be compensated for its time and resources. If the university and/or the researcher have needs for publication, these must be negotiated and defined. This template agreement will need to be the most flexible since it will need to be negotiated with the corporate partner [5].

3) License or Purchase Agreement (provided the research is successfully completed)

   If the IP is jointly owned or ownership remains with the university, terms for the eventual license or sale of the protectable research or invention must be established. This would likely include terms such as:

   - Exclusivity – does the corporation have the exclusive right to license or purchase the IP from the University?
   - Term – how long will the corporation have the rights to use the IP?
   - Fees or royalties – how will the university be compensated for use of its share of the IP?

Although the mission of the university is to benefit society, the mission of corporation is to provide a financial benefit to owners or shareholders. To comply with disclosure rules to guarantee IP protection and to help the corporation obtain a market advantage by being first to the marketplace with a product, researchers may have to refrain from publishing their research for a longer period of time than usual in order to make the collaboration work.

Having discussions with your University's Technology Transfer Office (TTO) in advance of any collaboration is *extremely important.* Not only will the TTO produce the needed template agreements, but the TTO will help guide you through the collaboration process to ensure you are legally protecting the IP generated by your research. Engaging the TTO early will streamline the negotiations with a potential corporate research and development partner.

Steps After Completing a Formal Collaboration Agreement

Step 1: Work in Progress

Negotiating the agreements is important and once they are completed and in place the focus shifts to how these collaborations can be carried out. The assumption is made here that both parties are working towards meeting the scope of work and the timelines outlined in the formal collaboration agreement.

At this point communication between the University and the corporate partners is of the utmost importance. Weekly, or at best daily, emails and teleconferences between the parties are needed to make sure both parties are proceeding in a mutually agreed upon manner towards the completion of the project. This standardized communication protocol will avoid misinterpretation of information and delays either in the research or development end of the project.

Good communication is the key to combining and utilizing the expertise of both the University researcher and the corporate product developers [1].

Step 2: Knowledge Translation

Knowledge Translation is converting academic research findings into the language or terminology of key stakeholders, in this case, corporations, to further the uptake and use of the research findings [4, 5]. It is critical that the corporate product designers can understand and use the information provided both quickly and easily so they can adapt the research to the design and production confines of their company.

University researchers must remember that no one knows a specific market's demands better than a company who has been operating in that market for years. It is important to develop strong communication channels between the University and the corporation to allow the free flow of information between the technological experts on both sides. Then the creative people in both organizations realize their expertise is valued and being used.

DISCUSSION

Recently other domestic Universities have begun addressing these issues and developing flexible Intellectual property policies.

For example, Penn State has a new research model dealing with Intellectual Property (IP) and research. If the research is corporate sponsored, the ownership of the resultant IP is given to the industry sponsor. In cases where the research involves federal funding, Penn State offers its "Two Step" licensing option in which the industry sponsor may take a licensing option on the IP at a fixed price.

Hopefully, other universities will soon come to the realization that changes need to be made in order to stem the tide of corporations seeking research collaborations overseas.

FUTURE WORK

We are extending our use of the Corporate / University collaborations model into areas composed of small start-up companies and niche markets where product development resources are scarce. By having successful collaborations with small corporations in niche markets, we hope to classify the above process as a product development 'Best practice' and publish the template collaboration agreements we have developed.

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