

Industry Academic Partnerships with Technology Companies in Western North Carolina: A Case Study

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Abstract:

The vast majority of fundamental research is conducted at academic institutions. Unfortunately, academic faculty often lack the resources or experience needed to bring these ideas to fruition so that they can have an impact on society. In contrast, companies have the resources and experience required to bring new products to market, but they are often hesitant to invest in new technology where the return on investment has high risk or the payback period is too long. The limited way in which these discrete worlds are interconnected has always served to restrict the impact that discoveries in fundamental research have had on the development of new commercial products.

This research aims to uncover the key elements necessary to establish, nurture, and maintain mutually beneficial collaborations between commercial and academic partners. Specifically, we strive to discover 1) how an effective collaboration is established, 2) why the collaboration exists, 3) the nature of communication channels within the collaboration 4) what each party gains from the collaboration, 5) events that can put the collaboration at risk, and 6) activities that can be performed to strengthen the collaboration.

A case study was conducted in 2021 to evaluate one such partnership. To gain a broad range of perspectives, individuals with different roles within the company and the university were identified. The list included the C.E.O. of the company, the engineer working directly with the university team, a faculty member working directly with the company and overseeing the effort of the team, and the university director responsible for negotiating and signing contracts pertaining to the collaboration. IRB approval was obtained, and interviews were conducted after obtaining written consent. Data were captured through semi-structured interviews with guided questions, but the interviews also had enough flexibility to allow the conversation to flow. Questions were open-ended providing an opportunity for the interviewee to contribute original ideas and details. Interviews were recorded and transcribed using an industry leading transcription provider which uses the latest voice recognition technology to

provide transcription and subtitling services in over 119 languages and accents. Prior to transcription, all personal identifiers were removed to ensure anonymity of the interviewee. Transcribed data were coded, memoed and categories were identified. Interview data were also analyzed for sentiment by question, overall, individually and by organization. Data were run through a sentiment analysis system which computes a sentiment score reflective of the overall sentiment, tone, or emotional feeling of the input text. Sentiment scores range from -100 to +100, where -100 indicates a very negative or serious tone and +100 indicates a very positive or enthusiastic tone. The themes were then compared to the sentiment analysis where themes emerged from these data.

In several response areas all individuals interviewed responded similarly. All felt that the collaboration was highly positive. All also responded that the development of the partnership was not actively pursued by either party. This may indicate that the partnership emerged from a chance occurrence based on general outreach activities. Regarding benefits for the company, the results were split based on level. Executives felt that the collaboration was beneficial to the company while the engineers were less enthusiastic. Differences were also observed in the channels of communication. Executives rated it as very high, but engineers rated it much lower. Upon review of the transcriptions, this may have been due to the reduced level of interpersonal interactions associated with the COVID-19 pandemic. Another interesting finding was that companies assessed the level of communication higher than the academics. This may mean that corporate personnel were satisfied with the level of communication while the academics felt that it could be improved.

Although this study showed interesting results, it was a case study of a single industry academic partnership, so it may not be representative of these types of partnerships in general. More data will need to be collected before general conclusions can be made.

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