

# 25 Technology Transfer and Commercialization of University Performed Research: The Arizona Experience

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Arizona's economy is organized around 11 clusters, with six of them technology-oriented (optics, biotechnology, software, environmental technology, advanced materials, and high-tech). The high-tech industry cluster in Arizona includes aerospace, electronics, semiconductors, computer hardware, telecommunications, and transportation safety. This sector alone represents almost 25 percent of Arizona's gross state product. This is a huge percentage of the State's total economic output, and it is significantly more than the percentage for any other State in the country.

Some companies in Arizona that participate in this cluster are very familiar: Boeing, Intel, and Raytheon. In addition, three State universities participate—Northern Arizona University (NAU), the University of Arizona (U of A), and Arizona State University (ASU). All three of these large academic institutions are public and funded by the taxpayers. Because of this relationship, the high-tech industry cluster began work to improve university-industry technology transfer. This effort was aimed at improving the flow of science and technology from Arizona's academic

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institutions to Arizona-based high-tech firms, thus enhancing the commercialization process of significant new university-derived technologies.

What was the impetus for the need for these changes? Arizona corporations had long-standing grievances regarding excessive costs and other impediments to accessing academic R&D resources in Arizona. There was an industry perception of onerous university policies regarding intellectual property and data rights. In my experience of 16 years in the high-tech realm in Arizona, this issue and the lack of capital were the most consistent expressions of concern and complaint among high-tech companies in Arizona.

Why would we want to change? A less encumbered flow of science and technology from public universities benefits the entire community. Universities gain access to corporate dollars, even as traditional sources of funding diminish. Students gain hands-on, cutting-edge, real-world experience. Corporations are able to commercialize products faster and make the newest technologies available to the public. A vital cycle is involved in this process. As a result of technology transfer, successful companies create new jobs to support new product lines. They attract service firms to the area, and this adds jobs. The presence of these support companies attracts other high-tech businesses to the area and adds even more jobs. This creates growth in the economy, which adds back to the tax base, grows the population, and, of course, increases the number of students for the university.

In 1995, we held the first technology summit in Arizona, principally to look at the issues surrounding technology transfer and to discuss the obstacles to technology transfer. We also discussed the Arizona Board of Regents' and the universities' policies, possible solutions to problems, and ways to enhance collaboration. This event led, for the first time in my observation, to the realization among university representatives of the depth of industry's discontent about these issues. The university officials finally accepted that the problem was real. A working group was established; it included the two vice presidents of research from ASU and the U of A. We knew we had to change more than policy; we had to also change attitudes. And, for the first time, I think, we saw attitudes begin to change.

One of the most significant issues that concerned industry was ownership of intellectual property. We have primarily aerospace and semiconductor industries in Arizona and those particular industries are even more vocal than others are. So that was the first issue we grappled with.

Ultimately the working group recommended to the Board of Regents a way to grant companies full data rights when paying what we call a “fully burdened overhead costs.” Typically, universities have a negotiated overhead rate with the National Science Foundation (at ASU it is 51 percent, at U of A it is 52 percent). But that does not account for all costs. The real costs can be estimated through basic accounting principles. This new provision, for the first time, allowed companies to own title to industry-sponsored research results, if they paid a fully burdened overhead rate. This rate turned out to be about 100 percent at one of the academic institutions, which is almost double the negotiated rate.

The Arizona Board of Regents instituted their initial policy amendment in April 1996. It states that “[at the] University’s discretion [they are not in any way compelled to relinquish data rights] full data rights can be assigned if the sponsor will pay all costs of research including salaries, materials, other direct costs, and fully burdened university overhead.”

Since these changes were instituted, both academic institutions have done a number of sponsored-research projects in which they have granted full data rights or title to the inventions. Following these changes the working group realized that more profound changes were needed because many of the provisions in the policy were outdated. The Arizona Board of Regents agreed and admonished the universities to overhaul the entire intellectual property (IP) policy.

The university representatives began drafting a comprehensive new version of the policy. There were lots of difficult discussions among the three universities. They could not agree among themselves as to what the provisions should be. But after 18 months they released a draft that was presented to industry through the high-tech industry cluster and to faculty at the universities for comment. Industry provided written comments, which were then responded to by the universities. The universities said either that they would change the policy because of the points made, or they could not make a change because of the Bayh-Dole Act or because of tax laws.

Following that, the high-tech cluster and the Board of Regents sponsored a facilitated all-day symposium in November 1998, with the universities and industry. The symposium focused on the draft IP policy. The primary recommendation that came out of that symposium was to form an industry-university working group that would negotiate the sponsored-research elements of the policy. Over the next several months, the technology-transfer representatives and the intellectual

property attorneys from all three universities as well as their counterparts from the corporations worked to develop the wording and to discuss and negotiate every sentence in that section of the policy.

The negotiated policy draft was finalized in February 1999. In June, the Arizona Board of Regents approved this new policy. Arizona now has arguably the most progressive intellectual property policy for public universities in the United States. The hallmark of the new policy is its flexibility. It allows the university the discretion to do a deal. Of course, this requires the universities to have highly qualified experts as their technology-transfer officers because they will be up against such experts who work for the various companies. But we believe, as do the universities and industry, that a new day for industry-university collaboration has emerged in Arizona.

It is important to consider some aspects of the new policy. First, it classifies intellectual property according to the resources used to create it. Therefore, we dealt with only the sponsored-research elements of the policy. Other aspects of the policy were changed as well, but industry was not involved with those. Second, for industry-sponsored research, intellectual property ownership by the sponsor may be granted under prescribed conditions. Universities have the flexibility to make appropriate business decisions. Intellectual property disposition is negotiated on a case-by-case basis in the research contract.

The new policy addresses many issues. First is the issue of the sponsor's ownership of the invention. In the old policy a couple of provisions allowed sponsors to own title to patents, for example. One provision said they could pay a 50 percent assignment fee over and above the costs of the research. That option was not often used. That provision continues under the new policy. In addition, the sponsor will pay an assignment fee only after the intellectual property has been created. Again, the sponsor can own the technology if it pays all costs including the fully burdened overhead.

A second issue is the reassignment for non-use. In the old policy, the university can exercise a reassignment right after two years if the assignee has not and is not making a good faith attempt to commercialize the assigned technology. In the new policy, due diligence milestones are negotiated on a case-by-case basis. Every technology, every situation is very different. The new policy includes a reassignment right exercisable by the university if the sponsor has not made a good faith attempt to meet the negotiated milestones.

The third issue is that of taxpayer benefit from windfall profits. This was not dealt with in the old policy. The new policy includes a windfall provision in which an appropriate royalty rate or payment schedule is included, based on a minimum net sales value or some other agreed-upon threshold or event. The parameters of this provision, such as the windfall threshold and the compensation, will be determined on a case-by-case basis. Again, we have lots of flexibility and discretion, but the university is protected.

The final issue is due diligence requirements in licensing. The old policy did not deal with this. In the new policy, due diligence milestones are negotiated, again, on a case-by-case basis, to include marching rights if the sponsor fails in its due diligence to meet the negotiated milestones. This maintains the spirit of the Bayh-Dole Act by helping to ensure the actual commercial use of new technology developed using public resources for the ultimate benefit of the general public.

The new policy also deals with confidentiality issues and publication. Obviously academic research has to be published. In the case of sponsored research, it is reasonable to expect that the inventor (the university) warn the company what it intends to publish and that ample time is provided for the company to pursue patent protection. That is provided for in the new policy. In the case of confidentiality, the new policy protects, for example, any prior intellectual property or proprietary information that the company has brought to the table, but, again, allows the academicians to publish their work.

Intel, Allied-Signal, MicroAge, Raytheon, Lockheed Martin, Honeywell, Bull, and Simula are a few of the companies that signed a document endorsing the new policy. They committed themselves to do more sponsored research at the three universities as a result of this new policy.

The expected results from this arduous and long, but very successful, effort has improved university/industry collaboration through more sensible agreements. Both the universities' and the public's interests are preserved, and in fact the inventor's interests are also preserved.