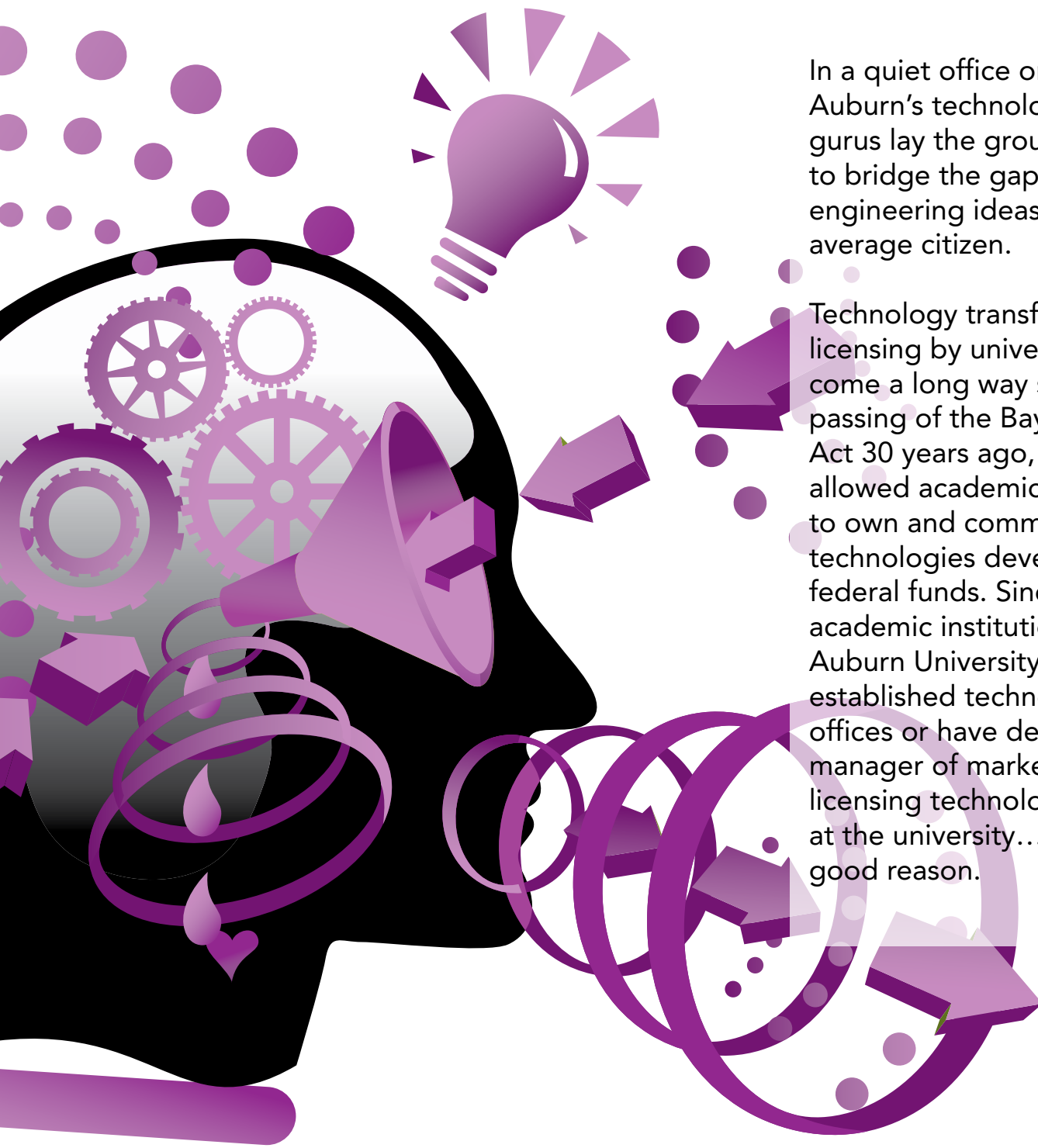


Putting Innovation to Work: The ABCs of Tech Transfer



In a quiet office on campus, Auburn's technology transfer gurus lay the groundwork to bridge the gap between engineering ideas and the average citizen.

Technology transfer and licensing by universities has come a long way since the passing of the Bayh-Dole Act 30 years ago, which allowed academic institutions to own and commercialize technologies developed with federal funds. Since then, many academic institutions, including Auburn University, have established technology transfer offices or have designated a manager of marketing and licensing technology invented at the university... and with good reason.

By Cheryl Cobb

Encouraging Technology Transfer

1940s Roosevelt administration recognizes the value of technological advances to the nation's military and begins to contract research to companies, universities and non-profits. However, lack of formal procedure for securing technologies results in few moving into the marketplace.

1963 Kennedy administration recognizes need for improved policy on intellectual property. Begins to develop inter-institutional patent agreements with some universities permitting them to own inventions made under government-funded research, opening the door for private industry to license and develop the technologies.

1980s Success of these limited agreements leads to passage of Patent and Trademark Law Amendment Act (Bayh-Dole Act) which provides an incentive for universities to protect their innovations and industry to make high-risk investments resulting in products made from those innovations.



Hartfield and Burger's propeller drive design has seen operational prototype testing by licensee Aerovate.

The protection of research-based intellectual property (IP) and its subsequent movement into the marketplace not only brings improved products to the general public but also creates jobs related to the development and sale of those products. One such product was created by Auburn aerospace engineering faculty member Roy Hartfield and graduate student Christoph Burger. They recently designed and developed a device that allows for optimized positioning of a propeller blade without the need for the heavy or complex systems that typically accompany variable pitch propellers used on unmanned aerial vehicles (UAV). This technology translates into more power and better fuel efficiency, which in turn improves performance and range.

Hartfield and Burger did not have a company in mind for their propeller device but wanted to make it available through licensing. Auburn's Office of Technology Transfer (OTT) worked with them to facilitate their application to patent the technology and license it to Aerovate, a Canadian company that creates aerial solutions for civilian markets, including geophysical exploration and surveillance. The company is currently testing an operational prototype.

"This device is based on a straightforward physical concept and offers the prospect for improving the performance of a class of aerospace vehicles of high current interest," says Hartfield. "The opportunity to fundamentally improve the human condition through your work, if only in a small way, is truly a gift of fulfillment."

The university also benefits through recognition for the discoveries, which in turn helps to attract and retain talented faculty, as well as entice corporate research support. Inventors receive a significant portion of the revenues from licensing activities, while some is used to support further research and education initiatives. A recent report from the National Institute of Standards and Technology estimates that new technologies account for half of our nation's gross domestic product. Many of these technologies are born in our nation's research universities.

"The Auburn University Office of Technology Transfer is implementing a new business plan that focuses on communication, marketing and commercializing IP developed by faculty and students," explains John Weete, assistant vice president for technology transfer and commercialization. "The OTT works with faculty to move research-based IP into the marketplace by creating a bridge between the university and established companies and entrepreneurs to develop early-stage technology. We do it while still maintaining the core values of publication and sharing of information, research results, materials and know-how. It is a myth that one must either publish or

patent; the fact is that a researcher or inventor can do both without jeopardizing either."

Another engineering transfer effort that is beginning to bear fruit is IntraMicron, an Auburn spin-off formed in 2001 that traces its origin to the Department of Chemical Engineering. In exchange for a license to the portfolio of microfibrinous materials patents developed by chemical engineering professor Bruce Tatarchuk and his graduate students, Auburn receives a royalty on commercial sales.

IntraMicron currently occupies 16,000 square feet of manufacturing space in the Auburn Industrial Park and employs six full-time employees, as well as a number of contract support service providers.

"It has taken a while, but IntraMicron is finally turning a profit and has enough orders to keep it busy for the next three years," says Tatarchuk. The firm's specialized microfibrinous technologies are currently being used in advanced aerospace materials, as well as in research and development programs focused on producing the next generation of filtration products. Applications include chemical filters for personal protection devices such as those worn by firemen and for air flow in large buildings, as well as for sensitive fuel cells.

"IntraMicron enjoys a close working relationship with OTT and has a number of exciting joint projects in the planning and implementation stages," continues Tatarchuk. "While required to be on different sides of the profit/non-profit fence, IntraMicron and OTT are both committed to the same end goal – economic development in the community through the harvesting and conversion of cutting edge research and development activities into value creation and high-tech jobs."

Unlike industry, where transfer often takes place with the sale of an intellectual property asset, universities most often accomplish the transfer through the option or licensing process. OTT helps faculty, such as those in the college, with the evaluation of discoveries for commercial potential; protects IP through patenting, copyrights, trademarks and trade secrets;

markets technologies; develops partners for commercialization and collaborative research; and commercializes IP through licensing and start-up companies, while protecting the university and inventors.

"Our office has done a lot of training across campus to ensure faculty members understand the disclosure and patent process," explains Weete. "In the rush to publish findings, it is easy to overlook the impact that this can have on their ability to protect related IP."

Filing a disclosure form with the OTT office is a first step. The second – filing for a provisional patent – protects the intellectual property before it is shared publicly. This filing gives faculty and OTT time to evaluate the technology and to determine if a full patent application should be filed.

"We help the faculty member ensure that the IP meets the criteria for patentability, and, if it does, begin to evaluate its marketability by identifying potential partners," says Weete. "If after a thorough check, the technology still looks promising, OTT personnel will help faculty navigate the patent process, working with the inventor to identify a potential partner to begin the development and commercialization phases of the process."

Once the IP is protected, the invention can be brought to market. This three-tier process involves the financing of the start-up process, translation of the invention into a commercial product and marketing of that product.

While some technologies that come to OTT can be turned into products relatively quickly, others are promising but need additional development. When this occurs, OTT may work with an interested party to help them secure necessary funding – possibly through a small business innovation research grant or other vehicle, such as an angel investor who provides early-stage research and development funding for small technology companies.

"Time to market typically averages seven years," explains Brian Wright, an associate

University Research: An Engine for Economic Development

\$3.4 billion in industry research performed at U.S. institutions

686 new products introduced to the market

555 new start-up companies

5,109 licenses and options signed

3,622 patents issued

* 2007 survey of nationwide universities conducted by Association of University Technology Managers

director for commercialization in OTT. "The process from this point on is as variable as the list of technologies. In some cases, a partner needs to be identified and in other cases faculty already have a relationship with an interested party that wishes to license or form a start-up company."

Whatever the steps in the transfer process, the staff in Auburn's OTT ensures that the appropriate agreements are executed in order to protect the university and the inventors through intellectual property, collaborative research, material transfer and confidentiality agreements.

Weete cites a number of engineering success stories that range from a carpet recycling technology to next generation network security integrated into high-performance protocols to address new and expanding communications platforms and related Internet security threats. With implementation of the new business plan, revenue from these and other projects is beginning to flow into the university to the tune of \$500,000 to \$750,000 annually. Weete expects to see steady growth in revenue over the next few years.

"Engineering routinely accounts for just under half of Auburn's research expenditures," says Dean Larry Benefield. "Our faculty members generate a lot of IP and work closely with the Office of Technology Transfer to begin the commercialization process that can result in job creation. University discoveries will play an increasingly important role in the growth of the knowledge-based economy and in ensuring the vitality of Alabama and the nation." 