

Leveraging Late-Stage Industrial Intellectual Property for Economic Development and Entrepreneurship

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Abstract

Carthage College and the Center for Advanced Technologies and Innovation (CATI) have developed and implemented a successful model in which students use underutilized, late-stage intellectual property (IP) culled from industrial partners to develop the knowledge, attitudes, and skills of entrepreneurship, and develop products that result in regional economic development. The IP utilized is late-stage—more appropriate for commercialization than more traditional technology transfer activities based on early-stage research activities. The senior business plan projects in the Carthage ScienceWorks program are designed around leveraging CATI IP, and have resulted in several successful startups and new ventures. This paper will describe a number of the success stories and provide the background, methodologies, and databases that will allow other NCIIA members to utilize both this approach and the extensive intellectual property library of CATI in their own programs.

Introduction

Technology transfer activities are often centered on intellectual property from either government organizations (such as the National Labs) or university research. In both cases, the technologies that are developed are typically “early stage”—fundamental research relatively far removed from effective commercialization. While this intellectual property (typically patents) is clearly valuable, it is difficult to use it to develop new products and businesses that can move into the marketplace relatively quickly.

By contrast, many companies, especially relatively large organizations, generate tremendous amounts of intellectual property, much of which is shelved or used only in limited ways. This is often due to the fact that these organizations are only interested in large markets. While a particular idea or technology may result in a substantial market, perhaps in the millions of dollars, that market may not be big enough for a large company to pursue. Similarly, companies often operate in particular niches, and their products and services are limited to those markets. Technologies developed for those particular applications may, indeed, be useful in new, non-competing, ways, but will not be of interest to the patent holders.

The Center for Advanced Technology and Innovation (CATI) and Carthage College’s ScienceWorks Entrepreneurial Studies in Natural Science Program have partnered to utilize late-stage industrial intellectual property as a means to effect both undergraduate entrepreneurship education and as a resource to develop new products, services, and companies to revitalize the regional economy. The model has been successful. In only four years it has generated effective projects for over twenty senior business plan students, supported in-class exercises for our underclass students that have resulted in market analyses for new products, and provided the grist for the launch of, to this point, three new companies, with several new ventures pending. This work has been extremely important as part of attempts to revitalize the regional economy. Discussed in detail in the appendix to this paper, southeast Wisconsin and Racine County in particular have seen considerable economic declines in recent decades as manufacturing has moved to cheaper locations. While some communities have been successful in replacing much of this lost work, major efforts are needed to revitalize the region.

One of the major facets of this approach is the ability of a small college, such as Carthage, which does not have an intellectual property portfolio, substantial research programs or, indeed, any engineering at all, to provide an experience to students in product development, design, and commercialization. The approach presented here is an excellent one to be considered by liberal arts or other smaller institutions that have difficulty providing the kind of product development environment that larger institutions may be able to provide. And, indeed, it is also

possible for larger institutions to take advantage of some of the pedagogical tools that utilize existing late-state industrial intellectual property in their own entrepreneurship program.

This paper summarizes the process of obtaining, managing, and evaluating industrial intellectual property, creating and implementing the curriculum to integrate these patents into the entrepreneurship experience for the students, and some of the results of the Carthage/CATI collaboration. In addition, a number of the success stories are described.

Background: The Economic Climate

CATI's economic development approach is based on both a push and pull model for leveraging underutilized intellectual property to create, build, and reinvigorate businesses in the region. Southeast Wisconsin has traditionally been a major manufacturing center, particularly in the consumer products and automotive/large equipment areas. These businesses and industries are broadly in decline, as automation and overseas production have taken their toll. It is important to note that there are also a large number of smaller and mid-sized companies that have provided support services of various kinds to the larger manufacturers. These include machine shops, tool and die shops, and electronics and hand-assembly organizations. All of these organizations have highly skilled individuals and tremendous capability, but their markets and product lines have run dry. In parallel with these changes, the region also suffers from brain drain, as college graduates with the latest skills and abilities do not typically remain in the area. Thus, marrying the entrepreneurship program at Carthage with an economic development program through CATI has the dual role of creating regional economic value while linking students with ventures in the region, and thus retaining them. A more extensive summary of the regional economic climate, and the importance of leveraging corporate intellectual property for economic development, is included as an appendix to this paper.

Obtaining Intellectual Property

CATI obtains intellectual property several ways. In the "push" mode, where IP is collected first and then moved to market, patents have been obtained by donation (a mode now little used due to changes in tax law), and through outlicensing. The process involves significant data mining. CATI has a staff of four associates, consultants with a wide range of technical backgrounds, who comb through patents offered for license by major corporations, identifying promising technologies. The expertise of these individuals derives from backgrounds in chemical engineering, organic chemistry, biotechnology and drug development, and instrumentation development, and all have industrial management backgrounds and can thus see the both the technical and the business/commercial aspects of each technology. One of the features of the CATI/Carthage partnership is that one of the authors (Arion) is both the key faculty member at Carthage and one of the CATI associates, thus providing an active bridge between the two components of the program. Once promising technologies are identified, CATI negotiates a license agreement, the essence of which includes the right to market the technology in exchange for a license fee if commercialization is successful. These agreements may or may not be exclusive. CATI thus develops and continues to build a portfolio of patented technologies to which it has rights or outright ownership (see <http://www.thecati.com/cati-technologytransfer.htm> for a summary of the technology transfer process and links to intellectual property). CATI has also entered into a variety of agreements with firms across the country as well as other municipalities to create parallel efforts in their locales. The largest of these efforts is with the state of Delaware, with partnerships for licensing technologies from DuPont and Hercules corporations. New efforts are currently being made in several other states, as well as several locations in Canada.

In the "pull" mode, CATI works with an existing firm or a startup organization in need of technologies for improving their product or process, or for creating new products or services. CATI associates then conduct searches for intellectual property incorporating suitable technologies for these companies. CATI negotiates a license for the use of the patent(s) and initiates a sub-license to the venture or company in need of the technology. The advantage of this process is that firms or new ventures can identify and obtain technologies without the intrinsic costs of their own research and development, and through the process are able to obtain implicit protection for their own products and services by incorporating intellectual property directly through the patent license.

The Academic Component

Carthage's ScienceWorks Entrepreneurial Studies program has been described in some detail in a number of prior NCIIA presentations and papers¹, with the primary element of interest for this discussion being the senior-level business plan projects. Students engaged in the ScienceWorks minor complete two four-credit courses, during which they develop a product or service concept, conduct the market studies and develop product designs, and develop full business plans including management and operations plans, financial projections, and risk and competitive analyses. Over the history of the program these projects have evolved from partnering students with regional startups or new ventures, or with established organizations launching new product lines or new services, to the current model in which students base their plans on CATI patents.

The process proceeds as follows: Having obtained a family of patents from a donor or licensor, CATI associates identify a collection of patents suitable for commercialization. These patents are then utilized in either the junior-level core courses or for the senior business plan projects. In the former, the patents are utilized at several points in the curriculum. In the first semester course students are introduced to the concepts of creativity and ideation, and one or more of the CATI patents are used as the basis for in-class and team-based exercises. Students are asked to ideate the patent(s) and identify potential products and services that could be created. It is particularly useful to provide the students with patents that are "platform" in nature; that is, have technologies that are broadly applicable, as opposed to a particular method of use or narrow area of applicability. In the examples given below it is easy to see how a platform technology can result in many different types of products, each of which can subsequently enter the market and be implicitly protected through the use of existing patent protection. A second student exercise is conducted when market research and marketing plans are covered in the courses. Here, students are expected to take product concepts and conduct both primary and secondary source market research on products and services they develop based on CATI patents. The junior-level courses culminate with team-based business plan projects, and student teams utilize the product ideation and market research units to create first-cut business plans. The results of the ideation sessions, market analyses, and business plan projects have been utilized in several different ways. Students have on some occasions chosen to take on these ideas as full-scale projects in the senior business plan courses. Project results are also turned over to CATI and incorporated into CATI's library of information available to the community for business development. In several cases, a few of which are described below, new ventures have been successfully launched by regional entrepreneurs or as spin-offs of existing firms based on the work done in the junior-level courses.

The more substantial projects are conducted in the senior-level business plan courses. Here, students are expected to individually create a full-scale business plan for a new product or service, though they are assigned to groups to share the experience and support each other through the process. These business plans are expected to be (and generally are) of a quality and at a level suitable for actually obtaining financing and launching a venture. The program has been successful in doing so on several occasions. The use of CATI intellectual property has been a boon to this process. First, the patents are late stage, and therefore amenable to developing realistic products that can practically go to market in the short term. Second, the patent originators provide technical and business expertise the program can tap on a regular basis to support the students. Since the originating organization has, in general, licensed the patent(s) to CATI for commercialization, it is in their best interest to support our projects; after all, successful commercialization will result in revenue for their firm. Third, our goal in the business plan portion of the program is to motivate students to do the nitty gritty work of actually evaluating, analyzing, and presenting a business model and business plan. Students are drawn from across the campus, and have a wide range of technical abilities. By utilizing existing patented technologies we give the students a starting point where the primary-level research and development have been completed and the students can concentrate on commercialization, developing ideas that are truly marketable products and services and fully formulating the argument for the success of the venture.

ESNS Model

Case Studies

Here are some examples using this model that have been completed by CATI and Carthage.

Example 1: Yokit focus groups An example of a short-term project was a ScienceWorks focus group for Yokit. Yokit was founded to commercialize a powdered, instant yogurt derived from a patent donated to CATI by SC Johnson (US Patent No. 4,624,853). As part of the junior-level technology business course, the students engaged in a focus group to do double-blind taste testing of Yokit versus several yogurt products already on the market. The students conducted the focus group, obtained product data, and delivered a report to the Yokit principals. The project provided both a hands-on example of a market research technique in the context of the course and provided Yokit with valuable market data at no cost. Yokit launched in fall 2005. This is a good example of a win-win situation, where a new venture was able to obtain necessary data much more quickly and at minimal expense (just the cost of the product sample), while the students were able to do a real market analysis project, using real subjects and a real product. The responses of students to this experience, in contrast with earlier years when a “model” focus group was used, showed that the students were far more engaged and took the exercise far more seriously. Working directly with the principals was an excellent experience for them.

Example 2: Low-cholesterol cheese market analysis A second example is a semester-long project conducted by a team from the junior ScienceWorks class evaluating a Kraft patent (US Patent No. 5,378,487) for a process for removing cholesterol from dairy products. One of the student team leaders identified a very valuable market, namely Hispanic cheeses, taking advantage of his own particular heritage and experience. The student led his team in a full market study, leading to a business plan that included broad surveys of Hispanic cheese purchasers, producers, and vendors, as well as financial projections and a marketing and promotion plan. The documents were provided to CATI as part of the project, and were used to identify and attract a regional producer of cheeses (also Hispanic) to launch a new venture (Alliance Foods) to produce and market low-cholesterol cheese to the Hispanic market. This product is presently being brought to market.

Example 3: Air conditioner applications The third example demonstrates a senior-level business plan, with a student paired with a startup firm trying to commercialize a spin-off technology. In this case, a new firm, Genisys, was formed to develop new products and market opportunities derived from a proprietary technology originally developed for fuel injection. In this project, CATI staff had identified through an ideation session a number of alternative market opportunities, with one being application of the technology as an advanced air conditioning compressor. The student began his study with the output of the ideation session and, as a student, was able to contact and engage in extended discussions with senior design engineers at eight different automobile and truck manufacturers, as well as the primary manufacturers of automobile air conditioning compressors, obtaining information that might have been difficult or impossible to obtain by a commercial enterprise. The student identified a rich target market, namely hybrid vehicles, and developed a full business plan for this market, including engineering specifications, market research and a promotion plan, management plan and full financial projections including sales projections, cash flow, and balance sheet. These documents were provided to the Genisys principals and were instrumental in the founding of the firm. Genisys is currently in advanced research and development on the product. This is an example where the student was able to start with a technology that had been identified, and used it as a springboard to engage a very detailed and rewarding business case project. Starting with an established technology allowed the student to spend the time and effort needed to develop working relationships with the automobile manufacturers. He gained an excellent understanding of many business processes in addition to business plan development, such as relationship building with large companies, understanding how big manufacturers work with technologies developed by outside firms, and how deals can be negotiated between startups and existing, large organizations.

Example 4: UV-sensitive wrist bracelets Finally, the most recent ScienceWorks students researched a patent donated by International Specialty Products, Inc., for a UV-sensitive polymer (US Patent No. 5,314,929). They developed a concept for a UV-sensitive wrist bracelet, similar to the “affinity” bracelets begun with the Lance Armstrong cancer drive that could be used to monitor sun dosage to prevent sunburn. They have begun the process to launch their own venture based on this IP, and have applied for funds to complete research and development and begin their marketing campaign at a consumer goods show in Las Vegas in March. Once again, this project shows the advantage of students starting projects with platform intellectual property. They were able to develop a new product idea, have the benefit of intellectual property protection, have access to chemistry experts at ISP, and develop a business model that was sufficiently advanced for a new venture to be launched directly out of the class.

These examples show how students, working individually or in teams, can gain valuable experience in many aspects of technology business development while simultaneously creating valuable products that can significantly impact regional economic development.

Summary

The Carthage/CATI partnership has resulted in a revision to the senior business plan project courses and to elements of the junior-level core courses that have significantly improved the student experience while contributing to regional economic development and in reducing brain drain. The approaches presented here are equally applicable in a wide range of entrepreneurship education environments, and the CATI portfolio is an excellent place to begin a search for intellectual property that can be incorporated in coursework and student projects.

Appendix: Southeastern Wisconsin: In Search of Innovation

Due to the national transformation from a manufacturing-based economy to a service economy, a burgeoning global labor marketplace, and an aggressive move to automated systems of manufacturing, Southeastern Wisconsin has seen its fair share of job losses and plant closures. Racine County is centered in the heart of the Milwaukee-Chicago region and serves as a microcosm for the impacts of the region's deindustrialization. It is estimated that Racine County has lost 3,000 manufacturing jobs since 1999. During the 2001 through 2003 time period, a total of fifteen companies announced significant layoffs or closings, affecting 2,000 jobs.

Labor force data compiled by the Wisconsin Department of Workforce Development from data provided by the US Bureau of Labor Statistics shows that the average unemployment rate in Racine County for the most recent twenty-four-month period ending on May 30, 2003, was 7.5%. The County unemployment rate is 134% higher than the 5.6% US average unemployment rate for the same time period.

Table 1. Racine County 2005 Average Labor Force

| | Racine County | City of Racine | Balance of County |
|-------------------|---------------|----------------|-------------------|
| Total Labor Force | 99,668 | 38,268 | 60,400 |
| Employed | 93,826 | 35,622 | 58,204 |
| Unemployed | 5,841 | 3,645 | 2,196 |
| Unemployment Rate | 5.9% | 9.3% | 3.6% |

Other facts (Source: Wisconsin Department of Workforce)

January 2006 Employment in Manufacturing sector = 19,000 or 23.7%

Number of manufacturing companies = 430 (approximate)

Total Payroll = \$653,486,186

Manufacturing Payroll = \$253,205,634 (or 39% of total payroll)

In order to address the challenges faced by local entrepreneurs and existing companies, the Center for Advanced Technology and Innovation (CATI), Inc. was launched in 2001 as a non-profit technology-led economic development organization by a partnership of academic, workforce development, and economic development agencies. Located in the heart of the Midwest manufacturing belt, strategically between Chicago and Milwaukee, CATI's challenge is to be a source of innovation for entrepreneurs, companies, and students seeking new product development and/or market opportunities designed to be more value-added.

In evaluating the region's strengths, a key recognition by CATI was the fact that traditional forms of technology transfer, as defined by basic research from a university being spun-out via licensing to produce a product, was not prevalent in the region. Wisconsin's flagship academic institution, the University of Wisconsin-Madison, represented a major powerhouse in federal research and development expenditures, but unfortunately there is

very little evidence to suggest this has translated into a resource for Racine County industries or as a stimulus for new company formation.

Table 2 represents the total R&D expenditures at universities in close proximity to the Racine County area. The funding levels would produce a national ranking of 97th for Southeastern Wisconsin, suggesting a significant asset for future technology-based or knowledge-based industries.

Table 2. Level of Federal Research and Development Dollars for Wisconsin Academic Institutions (1996-2003)
Federal R & D Funds (\$ '000)

| Ranking and Institution | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| 4 U. WI Madison | 412,570 | 419,810 | 443,695 | 499,688 | 554,361 | 604,143 | 662,101 | 721,248 |
| 112 Medical College of WI | 47,365 | 51,629 | 56,021 | 61,446 | 70,581 | 83,857 | 96,700 | 108,608 |
| 195 U. WI Milwaukee | 19,679 | 19,995 | 20,807 | 21,325 | 20,010 | 23,492 | 24,933 | 27,259 |
| 262 Marquette U. | 5,946 | 5,855 | 6,763 | 6,469 | 7,653 | 7,236 | 9,807 | 11,385 |
| 372 Milwaukee School of Eng. | 1,335 | 1,518 | 1,704 | 1,776 | 2,020 | 2,117 | 2,499 | 2,448 |
| 396 U. WI Stevens Point | 1,649 | 1,324 | 1,112 | 1,302 | 1,227 | 1,827 | 1,849 | 1,980 |
| 422 U. WI La Crosse | 1,310 | 1,045 | 1,185 | 1,113 | 1,404 | 1,563 | 1,939 | 1,483 |
| 427 U. WI Stout | 1,523 | 1,306 | 1,386 | 976 | 1,236 | 1,070 | 1,358 | 1,437 |
| 452 U. WI Eau Claire | 386 | 479 | 613 | 604 | 684 | 514 | 839 | 1,131 |
| 454 U. WI Green Bay | 590 | 533 | 491 | 478 | 543 | 602 | 900 | 1,122 |
| 459 U. WI Superior | 951 | 494 | 383 | 505 | 380 | 404 | 889 | 1,057 |
| 474 U. WI Oshkosh | 396 | 574 | 636 | 603 | 585 | 670 | 662 | 942 |
| 518 U. WI Parkside | 338 | 339 | 187 | 158 | 362 | 575 | 769 | 559 |
| 554 U. WI River Falls | 146 | 262 | 242 | 231 | 152 | 288 | 332 | 331 |
| 578 U. WI Whitewater | 356 | 395 | 282 | 148 | 272 | 260 | 236 | 224 |

Source: National Science Foundation

There are several potential reasons for the shortcomings of university technology transfer efforts in an area such as Racine County. A key to this may be the infrastructure of the local economy, based more in areas of manufacturing, resulting in a “technology mismatch” with university-based research strengths in Wisconsin. For example, according to a Wisconsin report, UW-Madison’s research concentrations by subfields include strengths in life, physical, and environmental sciences, but weaknesses in engineering, math, and computer sciences, areas that would better match the Racine County industry clusters.

Another indication of the disconnect is highlighted when evaluating the level of Small Business Innovation Research (SBIR) funding, which is typically used as an early-stage research funding tool for technology-driven businesses. Table 3 shows that from 2000-2004, only two Racine County companies received SBIR funding.

Table 3. SBIR and STTR Grants in Select Wisconsin Communities (2000-2004)

SBIR/STTR Grants and Loans

| | 2000 | 2001 | 2002 | 2003 | 2004 |
|-------------------|------|------|------|------|------|
| Madison | 30 | 32 | 43 | 42 | 38 |
| Milwaukee | 6 | 5 | 4 | 8 | 8 |
| Racine/Kenosha | 0 | 2 | 0 | 0 | 0 |
| Rest of the state | 7 | 4 | 5 | 2 | 3 |

Source: TIP Development Strategies report for the Racine County EDC

Additionally, the reason may be a simple test of spatial considerations. A number of researchers suggest firms are much more likely to interact with sources of public research and development that are relatively close by. Racine County is approximately 100 miles from UW-Madison.

The key is that university research is tacit, including its ability to be applied and how to manage a relationship with the university, so proximity is important to this sort of transaction. This is an important issue relative to regions of the country where small companies without comprehensive R&D activities are prevalent and the distance to a leading research firm is quite far.

However, we should not conclude that the area does not have a concentration in R&D. From 1990 to 1999, according to the US Patent and Trademark Office, 599 patents were issued to Racine County companies, suggesting a strength more in line with applied research. In fact, Table 4 highlights that of the seven counties making up the Milwaukee metropolitan region, Racine County has the highest rate of patents issued per 10,000 capita. Dane County was added for comparison as the political jurisdiction location for the University of Wisconsin-Madison campus. Table 5 outlines patents issued to Racine County industries from 2001 to 2006.

Table 4. Patents Issued in Milwaukee Metropolitan Counties (2001-2006)

Source: US Patent and Trademark Office

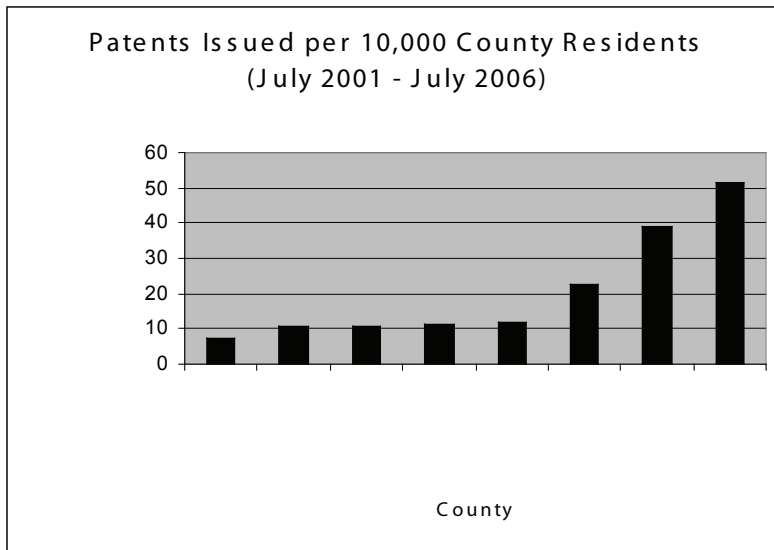
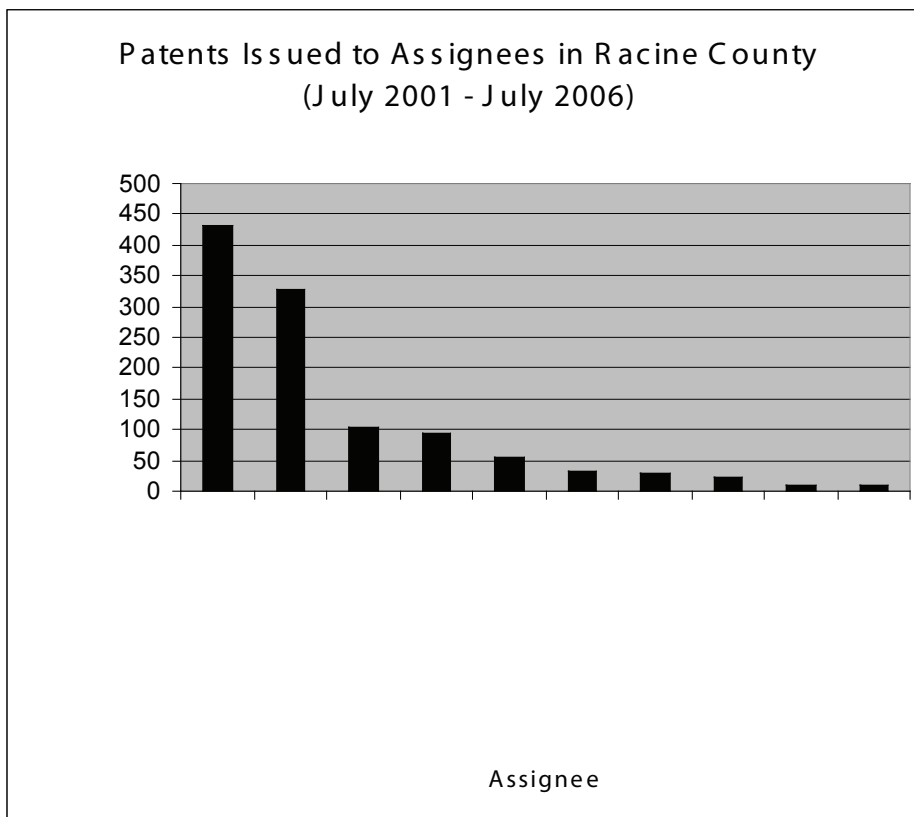


Table 5. Patents Issued to Racine County Industries (2001-2006)

Source: US Patent and Trademark Office



Recognizing this key statistic and a fundamental knowledge of the Racine County economic infrastructure, CATI embarked on the creation of a holistic approach to technology transfer, teaming with local academic and economic development organizations to design a methodology for transferring underutilized or off-strategy technologies from private industry to existing firms in Racine County or as a mechanism for spawning new ventures within the region.

The US is a global leader in innovation and patenting activity through its locally based corporations. However, anecdotally, most of those companies only utilize or maintain for defensive purposes approximately 60% of their in-house intellectual property. Of the underutilized or “orphan” patents remaining, there are typically 10% that have some economic merit either within that particular industry, or as a platform technology to be applied to multiple industry targets.

“Dormant” technologies, particularly from large companies, are a major source of licensed or purchased technology. Many companies develop technologies they never use or commercialize. Some firms recognize the inherent value of these innovative technologies and choose to license or sell them to benefit financially without having to commercialize them in-house. For example, IBM licensed its unused patents in 1990, and saw its royalty revenue jump from \$30 million a year to more than \$1 billion in 1999.

In 1999, corporations received one patent for every \$2.7 million in industrial R&D (total expenditures \$180 billion), universities received one patent for every \$8.5-\$9.5 million in industrial R&D (\$28-32 billion), and the federal government had one patent for expenditures in the range of \$22-24 million in federally-performed R&D (\$22-\$24 billion).

In terms of pure scale, consider that in a typical year the number of patents granted to IBM will almost equal the number granted to all US universities combined.

The key is understanding some of the fundamental differences between academic research and private industry R&D as it relates to regional economic development. Of the three phases of R&D activity (basic research, applied research, and development), industry dominates the latter two, the ones that most directly lead to patents. Industry provides over two-thirds of this country’s applied R&D expenditures and 89% of development expenditures, and spends 92% of its R&D funds on applied research and development. Unlike universities, private firms are intimately involved in the market for their products and can make good commercial judgments in areas of product or process development.

According to the National Science Foundation, basic research is directed toward increases in knowledge or understanding of the fundamental aspects of phenomena and of observable facts without a specific processes or products in mind; applied research is directed toward gaining knowledge or understanding deemed useful in meeting a recognized and specific need; and development is the systematic use of the knowledge or understanding gained from research directed toward the production of useful materials, devices, systems, or methods, including design and development of prototypes and processes. More detailed definitions are available at <http://www.nsf.gov/sbe/srs/nsf99335/appa.htm#define>.

The other critical difference is in time to market as defined through commercialization. Typically, commercialization is a costly, lengthy process with a highly uncertain outcome. The costs of commercialization can run from between 10 and 100 times the costs of development and demonstration of a new technology. Moreover, success is rare—less than 5% of new technologies are successfully commercialized. Even when successful, technology commercialization does not happen quickly. On average, the commercialization of university research takes more than six years. Commercialization of radically new technologies can take well over a decade. Most small companies in mature markets can ill-afford to make take that much time to launch a product.

While much attention is paid to successful innovation in high-technology industries, such as biotechnology and software, market opportunities for innovative technology-based products exist throughout all goods-producing industries, such as carpets and automotive parts. In fact in 2001, less than 50% of the patents granted are for technologies in high-technology industries.

Concluding Remarks

Technology transfer and commercialization programs have sprung up all across the country. For the most part they are disconnected from local economic development organizations, as technology transfer tends to operate on a scale more consistent with regions and states. In addition economic development agencies tend to be staffed by more generalists, marketers, and facilitators focused on developing and implementing broad strategies and helping businesses find the resources needed to be successful. Few have staff with the technical training needed to manage technology transfer and commercialization.

While CATI does not attempt to replicate a local or regional economic development agency, we have positioned the organization as another tool for economic development groups. In other words, CATI can be utilized as a resource when faced with businesses or entrepreneurs seeking innovation or struggling to develop more value-added products and services. As such, in the last two years, CATI has developed relationships with nearly a half-dozen city and county economic development organizations across the country.

However, we recognize that the scale of a technology transfer model must go beyond the local and often regional level. In that regard, in early 2006 CATI made the decision to launch its CM² program as a national model in order to link late-stage, private sector technologies as a national exchange network. The thought is that at some point in the future, technologies in one region of the country that might be applied in Southeastern Wisconsin and vice-versa can be linked by local and regional economic development groups.

CATI's first national engagement began in April 2006 when the State of Delaware's Economic Development Office awarded the organization a contract to manage its Patent Donation Initiative and establish a program to commercialize more than 250 patented technologies from DuPont and Hercules corporations. A new CATI-like organization will be replicated in Delaware with the vision of spurring technology transfer opportunities for Delaware-based businesses and entrepreneurs. In addition, SE Wisconsin will have the advantage of awareness of those technologies and vice-versa.

Finally, while still in its relative infancy as a model, early successes have resulted in CATI being honored by the International Economic Development Council (IEDC) as a 2007 and 2006 award winner for Technology-Based Economic Development.

[1] See, for example, the following references:

Arion, D. 1995. The Carthage College Entrepreneurial Studies in Science program. *American Association for the Advancement of Science Annual Meeting*.

Arion, D. 2000. Integrating New and Existing Businesses with E-Teams. *National Collegiate Inventors and Innovators Alliance Annual Meeting* [Invited].

Arion, D. and M. Secor. 2005. Entrepreneurship Across the Curriculum. *National Collegiate Inventors and Innovators Alliance Annual Meeting*.

Secor, M. and D.N. Arion. 2006. Creating A Powerful Educational Experience For Entrepreneurship Students: A Model For Program And Curriculum Development. *American Society for Engineering Education (ASEE)*. Chicago, IL.