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## Establishing a Spin-Off Company

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### What Is a Spin-Off Company?

For the purpose of this discussion, a “spin-off company” is a small, newly founded company formed around one or more innovations arising from the results of academic-based research, and there is involvement of the inventor and cooperation/participation of the institution, usually through the technology transfer office (TTO) and/or through an institutional organization established to facilitate technology transfer and spin-off company development. There exists considerable debate about definitions of the terms “spin-off company” and “start-up company.” In many of the referenced materials supporting this discussion, the term “start-up company” is used, thus it is important for the reader to keep the foregoing definition in mind.

### Why Engage in Spin-Off Company Development?

Academic-based research institutions encourage and participate in new venture creation encompassing technologies developed within their research facilities. They do so for many reasons, including to:

- Increase perception of and contribution to public benefit.
- Support of the academic mission.
- Enhance the reputations of the institution and its researchers.
- Increase opportunities for relevant industrial development experiences for faculty, staff, and students.

- Maximize the opportunity for success of a particular technology.
- Provide a positive impact on economic development.
- Aid in faculty recruitment and retention.
- Extend service and supply opportunities to local and regional business.
- Expand employment opportunities for graduates.
- Provide financial incentives.
- Attract investment to the community.

Most spin-off companies are located and remain within the region in which they were created. Since it first began to collect data on spin-off company creation, the Association of University Technology Manager’s (AUTM) annual licensing survey has determined that companies tend to locate and stay near the institution from which their technology was sourced or created.<sup>1</sup> This provides the local and regional businesses with new opportunities and also serves to attract new investment into the community.

Institutions in the United States, Canada, and in many other countries are increasingly challenged to contribute to public benefit, not only through the graduation of highly qualified personnel and the expansion of knowledge, but by providing public access to information on government-funded (and some industry-funded) research that is conducted at their institutions. In fact, in some countries, such as in the United Kingdom, regional economic development is a stated part of the new academic mission. In Canada and the United States, economic development is often a less obvious part of missions that

more broadly capture the concept. Nonetheless, the concept of institutions as contributors to and catalysts for economic development is cited in mission statements. For example:

- Georgia Tech is a leading center for research and technological development that continually seeks opportunities to advance society and the global economic competitiveness of Georgia and the nation. *From the "Vision and Mission" section of the Georgia Institute of Technology Strategic Plan, in which the term "economic development" is frequently cited.*
- Our mission is to educate young men and women to be industry and academic leaders, and to create new technologies that will fuel economic prosperity. Partnerships with industry are essential to both our education and research missions. *From the Mission Statement of the Jacobs School of Engineering at the University of California, San Diego.*

The publication *The New Idea Factory*<sup>2</sup> suggests that large corporate entities, multinationals, and the like have large research and development operations of their own. It is known that these companies spend billions of dollars each year inventing and nurturing hundreds of their own research and development projects, and therefore it seems obvious that they will be unlikely to consider early stage technologies from academic-based research institutions. Increasingly, it appears that large companies would rather wait until a technology is proven to be marketable before it considers whether or not the technology is of any interest. Of course by then, a new technology may have been lost due to lack of investment in the continuing research or in the development of the opportunity by way of licensing, codevelopment or otherwise.

For this reason, as well as many others similarly expressed, creating a new spin-off company around an appropriate technology opportunity may be the best commercialization strategy for that technology ensuring it a place in the market, or perhaps a place in the mergers and acquisitions market. Either way, a return on investment is realizable.

As stated by Angus Livingstone in the 1998 University of British Columbia's spin-off company report:

A growing number of large national and multinational organizations have realized they are not well suited, by internal means, to generate new products and new lines of business to respond to changing market opportunities. For them it is too difficult and time-consuming to create a new suc-

cessful division when their existing policies and organization structures are resistant. Instead, they are turning to mergers and acquisitions to meet these objectives. Many are now willing to pay a significant amount for a smaller operating company which has potential and is synergistic with their business mission. Herein lies the opportunity for investors in a successful spin-off or start-up venture to recoup their capital and earn significant returns.<sup>3</sup> Contributions to economic development take many forms. The creation of new spin-off companies established to provide a vehicle for investment in, and the commercialization of, new technologies actively promotes and contributes to the development of the local economy. Among the benefits of spin-off companies are employment opportunities, attraction of investment to the community, enhanced public visibility of the institution and its scientists, and the purchasing power of these new companies not to mention the tax base, all contributing to the local and regional economies.<sup>3</sup>

In relation to faculty recruitment and retention, new faculty being recruited to an institution will often inquire about the opportunities related to intellectual property that they may bring to or create at the institution. They are directly concerned about the opportunities for participation in spin-off company development. Experienced technology transfer professionals have expressed the view that to the extent spin-off companies remain in the local region and the faculty inventors have the opportunity to remain active consultants and/or advisors to the company, the spin-off can be a powerful force in keeping faculty inventors at the institution.

### Sourcing Technologies Suitable for Spin-Off Companies

To many, the creation of a new company is one of the more exciting options for commercialization of technologies or innovations arising from academic-based research institutions. To be a candidate for new company creation, the technology or innovation must be unique, have diverse application, and have the potential for multiple products or other commercial opportunities.

Some issues to consider in determining if spin-off company development is the most effective method of transferring or translating the technology or innovation are:

- If the invention is sufficient for creating a new venture, including a strong intellectual property position and the potential for a wide range of products in multiple markets.
- The effort required, including staff time during the preparation period for creating the new venture and the management of the conflicts of interest issues.
- The likelihood of creating a viable business opportunity through identification of a champion and knowledgeable management.
- The most effective and efficient path to market for the technology—either licensing to an existing company or creating a new business venture.
- The impact on economic development in the local economy—employment, taxes, access to and use of complementary local businesses.

Institutions are creating programs within their TTOs to identify and support technologies suitable for spin-off company creation. For example, programs such as the VentureLab at Georgia Tech,<sup>4</sup> the University of British Columbia Prototype Development Program,<sup>5</sup> and VentureBox at the University of Manitoba<sup>6</sup> (all described in more detail in the following paragraphs) serve to accelerate the commercial opportunity for suitable innovations that are identified through diligent intellectual property assessments, market assessments, and technology positioning exercises.

**VentureLab.** VentureLab is a relatively new initiative of the Georgia Institute of Technology's Office of Economic Development and Technology Ventures (EDTV). VentureLab's mission is to be a one stop shop for faculty members interested in commercializing new technologies or innovations arising from their laboratories. The program provides educational outreach workshops for faculty, staff, and students on the principles and practices involved in technology commercialization. VentureLab can also facilitate access to preseed funding for the development of prototypes, demonstration of proof-of-concept or other activities to make the spin-off more attractive to other potential investors. VentureLab conducts technology assessments, which include recommendations for commercial applications, in order to evaluate the commercial potential of technology. Unique to the program are the VentureLab Fellows, experienced technology entrepreneurs who serve as advisors to program-affiliated spin-off company creation.

**UBC Prototype Development Program.** The University of British Columbia has one of the most productive prototype development programs in

Canada.<sup>7</sup> The primary goal of the Prototype Development Program is to develop the commercial potential of a given technology by:

- Demonstrating proof-of-concept;
- Demonstrating technology scale-up;
- Conducting detailed market and technical evaluations; and,
- Broadening the coverage of the intellectual property position.

As stated in the "UBC Spin-Off Company Report":

Without spin-off companies the opportunity to maximize regional economic and social benefits would be lost, or at best, greatly diminished. Many new technologies might be abandoned, have their development delayed or be exploited outside of British Columbia. By transferring UBC technologies to custom companies with high growth potential, the university is helping to foster entrepreneurship, create jobs, and build a stronger high technology industrial base in the province.<sup>8</sup>

**VentureBox Program of the University of Manitoba.**<sup>9</sup> VentureBox is a comprehensive program designed to successfully create, mentor, and grow high-tech and biotech start-up companies. It is an institution-to-business interface committed to fostering start-up business opportunities from academic based research activities of the University of Manitoba and its affiliated research partners. Once an invention disclosure is received, the disclosure is reviewed for potential intellectual property position and market potential. Each qualifying disclosure is reviewed by a committee consisting of representatives of the financial community, the business community, senior university administration, and entrepreneurs. Upon review of the technology and the recommended commercialization strategy, an invention may be identified for the VentureBox program. The researcher must be interested in proceeding under the VentureBox program and the research supporting an intellectual property position will be monitored and assessed regularly. Once research outcomes, intellectual property, and business indicators meet standards necessary for considering spin-off company creation, a company will be incorporated and investment sought. For spin-offs, VentureBox offers:

- Incorporation for an eligible technology;
- Provision of workshops and materials for VentureBox researchers on start-up operations, term sheets, and venture capital fund expectations;



- Development of business and research plans as well as identifying interim management for each VentureBox company;
- Introduction to alliance partners related to the incubator facility in the research park; and
- Access to the Springboard Fund, a small pre-seed fund dedicated to start-up business opportunities in the VentureBox program.

Described previously are only three of the numerous venture programs at research intensive institutions throughout the world. These programs have and continue to contribute significantly to the success of new venture spin-off companies.

### Mechanisms for Access to IP by a Spin-Off Company

At the outset, usually at the point of trying to determine whether or not to proceed through spin-off company creation, frequently used vehicles allowing access to the spin-off for the purpose or raising initial funding include:

- Option to obtain/license
- Memorandum of understanding
- Letter of intent

Once there is a commitment to establish the spin-off evidenced through the commitment or presence of preseed or seed funding, the legal and practical issues must be managed. These will include incorporating and structuring the company, developing shareholder and employee agreements, assembling interim management for the company, and identifying additional preseed, seed, and/or venture capital funding. Activities in these areas may also include identifying regulatory and taxation issues including recommendations on addressing these.

At this point, the institution may transfer or license the technology into the company in exchange for equity and other financial considerations. Equity is sometimes used in lieu of license fees or license initiation fees and is very often seen positively by the investment community as a vote of confidence for the technology being positioned in the spin-off company. Equity in the spin-off is only one of several financial considerations in the license or transfer agreement: others include royalty and milestone payments, share of income from sub-licensing, and sublicensing fees. These other fees come into play as the technology is further developed, regulatory requirements met, sales and mar-

keting activities well underway. This is often referred to as "back-loading" the license in order to provide for the most optimum opportunity for the spin-off company. This allows the spin-off to concentrate on the success of the innovation and is seen as sharing the risk by the financial community.

It should be noted that in most institutions, technologies are not transferred into the spin-off company but rather licensed to the company in exchange for equity, royalties, and/or other consideration with the institution retaining ownership of the technology. In some circumstances (for example, where a spin-off company would be sufficiently capitalized to move the technology to the marketplace and the continued investment in and development of the technology appears relatively certain), the institution may be in a position to transfer the entire right to the technology to the company over a period of time. This is traditionally done by using a staged approach, where ownership of the technology may be transferred based on the successful completion of certain milestones, the culmination of which is the complete ownership of the technology being transferred to the company. In the United States, this may be quite difficult given the obligations imposed on the institutions through the Bayh-Dole Act. However, where federal funds subject to the Bayh-Dole Act have not been used in the development of the technology, a scenario, such as that posed above, may be possible. This also is dependent upon the institution's policies on ownership and transfer of intellectual property.

There are many beneficial ways in which a spin-off company can access the intellectual assets including the employment of the students or graduate students who may have been involved in the development of the innovation and the continued involvement of the faculty inventor(s). The company obtains not only the intellectual property (for example, the patent through the license or transfer), but also significant intellectual assets of the hands-on, know-how resident with the students and faculty.

### Downsides to Keep in Mind and Strive to Overcome

While the promise of positive return on investment is the cornerstone of the decision to create a new spin-off company, there are several downsides that may need to be considered and carefully overcome, including:

- Very high risk in nascent technologies or innovations.
- Difficulty in finding financing for early stage ventures.
- Complexity and difficulty in negotiations.

- Difficulty in attracting an experienced management team.

In their presentation at the Fall 2002 AUTM Start-up Business Development, Berneman and Denis discussed the following deal-breaking issues:<sup>10</sup>

- Open-ended patent rights (investors may seek rights to all future related inventions created by faculty founders).
- Patent costs and control of prosecution.
- Indemnification (institutions accept no liability and require insurance).
- Warranty (the lack thereof).

### Basic Elements Required for Establishing Spin-Off Companies

Besides having all the important technical, scientific, and intellectual property and market indicators suitable for spin-off company development, there are a few other elements that are critical for establishing spin-off companies, as further discussed next.

#### Funding

There are many traditional sources of funding, but for new spin-off company creation, gaining access to early stage (angel, preseed, and seed) investment funding is incredibly difficult. Absence of experienced investors is regularly cited as the barrier to spin-off company creation. Investors need to be aware that new and innovative technologies require a longer time to develop into marketable products, while also requiring a greater investment of time and money before being ready for market. Some institutions are trying to overcome this very early hurdle in the initiation of new spin-off companies through the creation of internal or at-arms-length, preseed venture funds. Some examples of these funds are:

- University of Manitoba's Springboard Fund
- Purdue University/Purdue Research Foundation's Trask Technology Innovation and Pre-Seed Awards
- Boston University, Office of Technology Development's VC Limited Partnership Funds

#### Business Partners and Mentors

Suitable business partners and mentors can often be found through the local or regional community and can be identified through the academic business

school, the board of governors or trustees of the institution, the financial and venture community, alumni of the institution, and local business entrepreneurs. The role of these partners is quite varied depending on the circumstances at hand, but it is clear that the kinds of expertise such partners would bring to a spin-off is of paramount importance to the success of the venture.

#### Facilities and Location

In order to establish a spin-off company based on the outcome of academic-based research, it is advantageous to locate as near as possible to the licensing institution. In recognition of this, many institutions and organizations are establishing research parks and other facilities to better foster and promote spin-off company development.

#### Role of the Technology Transfer Office

Depending on the depth and breadth of the institution's commitment to the development of spin-off company development, the role of the TTO can be either a passive or active one. The most passive activity occurs when a TTO facilitates spin-off company discussions and aids in the development of the business concept, technology assessment, intellectual property due diligence, or in the proposal of venture financing. Traditionally, TTOs have taken more passive roles, but recent data from the AUTM Licensing Survey indicates the level of TTOs' effort and participation is changing by becoming far more aggressive in the creation of start-up ventures. TTOs' active roles include participation in:

- Development of the business concept or preliminary business plan.
- Intellectual property due diligence (including ownership, freedom to operate).
- Intellectual property assessment.
- Market assessment and technology positioning.
- Introduction to financial community (angels, venture capital, etc.).
- Identification of the initial management team (mentors).

Creative development and use of partnerships to support and develop entrepreneurial infrastructure are some ways in which the TTO can add value to the spin-off company venture. In addition to the foregoing list of possible TTO services, other mechanisms can support and add value to new business creation and can include the identification and

access to assistance programs from various government agencies. Some examples of these include the Small Business Innovation Research (SBIR) program in the United States and the National Research Council's Industrial Research Assistance Program (NRC-IRAP) in Canada. There may also be opportunities for funding of the research supporting patent or other intellectual property activities of the scientist laboratories such as local, state, or regional assistance programs; university-industry programs of federal research sponsors; economic development agencies and so on. The institutional partner in a spin-off is often best positioned to provide advice, guidance, and access to these programs.

Some institutions prefer to use contracted or partnered services (e.g., as offered through Research Corporation Technologies, Inc.). These organizations and others like them provide many of the same services that are offered by the TTO, but are focused solely on the commercial opportunity of the technology. Under some circumstances, this type of service may be the most optimum for a technology, even where the TTO is an active partner. One of the keys for success is to maximize the opportunity for any given technology through effective use of available resources.

### Working with Faculty Interested in Spin-Off Companies

#### Role of Researcher

To form a successful spin-off company, a solid invention or technology is needed, preferably already issued patent or other intellectual property protection. Desire, commitment, and cooperation of the inventor/creator is also critical to the success of a spin-off. Working with faculty who are interested in seeing the commercial fruits of their research is one of the more unique and rewarding aspects of working in an institutional technology transfer capacity. Researchers often have difficulty understanding that to develop the commercial strategy, focus shifts to market-related issues, business financing, scale-up of technology, regulatory issues and barriers, and ultimately on return on investment—none of these activities that appear to the scientist as having much to do with the science behind the innovation or even the innovation itself. To address this paradox, the TTO must work closely with faculty researchers to facilitate their understanding of the commercialization process as it relates to their science. This includes increasing faculty understanding of time scale development and of the legal and

financial aspects of the business to be addressed early on in the venture.

The ultimate role of the faculty researcher or inventor can depend upon the acuity of the individual related to the business opportunity or can be related to the desire of the inventor to be intimately involved or to take a more passive role. These are all possible roles, but ones often dictated, at least in part, by the financing partner(s). A most appropriate role for academic inventors might be that of chief scientific officer. Rarely should an academic inventor take on the role of president and chief executive officer. The TTO should provide guidance on these various roles accordingly.

#### Conflict of Interest, Conflict of Commitment

There has been significant discussion in a variety of sources of the inherent conflicts of interest in research conducted for or with private sector/industry partners. Even more so, the perception and reality of conflict is paramount in spin-off company creation from academic-based research. Recalling that the definition at the beginning of this discussion included the element of active participation of the inventor in the company, it is easily seen where conflict can and does occur.

Conflict of commitment can occur where a faculty member who is actively involved in a spin-off company experiences or demonstrates difficulty in prioritizing their obligations to their students, employer, and to the spin-off.

Although there is more discussion of these concepts elsewhere in this publication, a few comments are worthy of consideration here.

*The University of Wisconsin, Madison.* There is a very positive and effective approach to identifying and managing conflicts of interest at the University of Wisconsin, Madison. For example, it is permissible for faculty-owned companies to support research on campus in the faculty member's own laboratory. These arrangements are complex and therefore involve considerable oversight and review, but are nonetheless allowed within existing policy.<sup>11</sup>

*The University of Utah.* Faculty at the University of Utah can simultaneously hold equity in a company and be full-fledged members of their academic units, although conflict of interest disclosures and management are expected/required. Companies owned by faculty can contract with the university for research projects, including the participation of a faculty member and his/her laboratory. Oversight and management of these relationships is required.<sup>12</sup>

*Purdue University.* Purdue has a well-written document, "Policy, Guidelines and Procedures Document on Faculty-Owned and Operated Businesses," which offers clear, concise guidance on issues involving conflict of interest and conflict of commitment.<sup>13</sup>

### Statistical Evidence of Spin-Off Company Development

The Association of University Technology Managers, through its annual licensing surveys, has been collecting information and statistics on spin-off company development since 1994 when the survey requested respondents to include the number of spin-off companies formed since 1980 through FY 1993. Starting in 1995, the survey asked how many start-ups had been formed in the year of reporting. The AUTM definition of start-ups (called spin-offs for the purpose of this discussion) is deliberately narrow in that it is restricted to companies that were dependent on the license of the reporting institution's technology for initiation. The question of equity as consideration or partial consideration for the license to the spin-off was not asked until 2000 when respondents reported holding equity in 252 or the 454 start-ups reported for FY 2000 or 55%. Based on the data for years subsequent, this number appears fairly consistent. Based on data for the previous years reporting, this number has remained consistent.<sup>14</sup>

The AUTM Licensing Survey: FY 2002 survey reported a decline in the number of spin-off companies from 2001,<sup>15</sup> and a further decline was reported in the FY 2003 survey<sup>16</sup> noting the difficult conditions for raising early stage funding for such ventures in both 2002 and 2003. Given the activities of the investment community in 2004, it is possible that this downward trend will continue. The number of companies in which the licensing institutions took equity however appears to be at a significantly increased level since 2000. The proportion of licenses with equity executed with existing small companies almost tripled from FY 2001 to FY 2002, although it declined in FY 2003. One interpretation of this dataset may be that given the difficult financial climate for new spin-off company formation, an increased number of licenses were executed with equity as part of the consideration for the license rather than cash payments of upfront license fees. This is possibly also due to the more sophisticated licensing activities at institutions, the increased willingness to be creative in

order to support early stage technologies, and establishing the mechanisms through which institutions can actually hold equity in a spin-off.

#### Spin-Off Company Activity

In the AUTM Licensing Survey: FY 2003, 432 new spin-off companies based on academic discovery were reported, down almost 10% from the previous year. Of the new companies created, 84.3% were located in the state or province of the academic institution where the technology was created. Since 1980, 4,748 new companies have been formed based on a license or transfer of technology from an academic-based research institution. Of those start-ups, 2,769 or 58.3% were still operational as of the end of FY 2003.<sup>17</sup>

This start-up survival rate is quite high, approaching the rate experienced by the venture capital industry overall. This observation isn't necessarily unexpected, considering the large proportion of university start up companies that received funds from venture capitalists.<sup>18</sup>

The AUTM Licensing Survey and resources available through the AUTM Web site ([www.autm.org](http://www.autm.org)) include many references to the activities of companies created around technologies licensed from institutions and the new products these companies are marketing. These vignettes are a very worthwhile read and are evidence of the enhanced contribution to public benefit that can be made by considering spin-off company formation as an important tool in the technology transfer tool box and an important contribution to economic and social benefit.

#### Licenses and Options

For the 4,964 licenses and options executed in FY 2003 for which data on both exclusivity type and the size and nature of the licensee was reported (98.3% of the total reported licenses and options):

- 63.1% of new licenses and options executed were with newly formed or existing small companies (fewer than 500 employees), while 36.8% were with large companies;
- 95.5% of licenses and options to start-ups were exclusive;
- 44.2% of licenses to existing small companies were exclusive.

#### Keeping Perspective

Of the measured technology transfer activities including licensing options and spin-off company



development, spin-off company development represents only about 10% of activities directed to commercialization. While it is thought that the measurable returns on investment may be increased through spin-off company development, the statistics have yet to certify this as fact. It is also imperative to consider the mission of the institution, the investment in the technology transfer activities of that institution, and the expertise available to support a spin-off company development program.

Dr. Howard Bremer, in his keynote address to the International Patent Licensing Seminar 2002, in Tokyo, Japan, stated: "In today's globally competitive economy we must remember and understand that no matter how much money is spent on research and development, the results of those efforts are not going to benefit society unless there is suitable incentives to invest in commercialization."<sup>19</sup>

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## The Role of Universities and Research Institutions in Economic Development

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### Introduction

A comprehensive definition of economic development is

a community's collective efforts to:

- Create expanded employment and business opportunities for local residents
- Provide support for existing employees and businesses
- Improve local productivity
- Promote the development of quality jobs and qualified workers
- Increase wages and local business profitability
- Help diversify employment sources and the local economy
- Stimulate growth and private investment in the community
- Maintain and enhance local property tax values and the property tax base
- Retain and attract young people for the community
- Enhance the community's quality of life.<sup>1</sup>

The community can exist at the local or state levels, and, in terms of the world economies, at the federal level. Federal, state, and local governments, therefore, are all concerned about economic development efforts within their spheres of influence, and undertake efforts in a number of ways to stimulate and support such development. As new technologies are great factors in driving modern economic development, governments increasingly recognize the

importance of and provide support to research institutions as engines for economic development.

Research institutions (academic institutions, research hospitals, and nonprofit research organizations) are becoming hubs around which major economic development takes place. Universities educate the workforces that add value to communities and their research programs engage in basic, applied, and developmental research that yields new products and processes that can generate new businesses. As research institutions increase their activities, they also contribute to the local economy by expanding their facilities and by hiring additional researchers, technical staff, and other workers. Overall, the success of research universities benefits local, state, regional, and national economies.

### Support for Economic Development to Research Institutions

#### Federal Government

The federal government has undertaken several major programs to stimulate economic development within the last twenty-five years. Four of the programs are summarized in this chapter.

**Bayh-Dole Act** In 1980, during a time of slow economic growth and high unemployment, the federal government looked at many opportunities to stimulate economic growth. This included recognition that federal financial support served to nurture the growth of research at research institutions that led