

Prelude

The ATP program is designed to promote U.S. competitiveness by supporting high-risk research and development in technology areas where there is substantial potential for enhancing U.S. economic growth. The program has been highly successful in getting small, innovative firms to participate. Companies that receive ATP awards face many immediate challenges, due to the innovative nature of the technology being funded as well as the increased publicity the firms face after receiving an award. These challenges include:

- ▶ Having to deal with many suitors for "hot" technologies
- ▶ Having to develop more complex commercialization strategies
- ▶ Learning to focus in the context of a rich technology platform
- ▶ Having to develop more sophisticated planning
- ▶ Having to adapt to a more rapid learning curve

The focus of the basic concepts section was to provide information to enhance a more rapid learning curve and better decision making by small firms. Information, however, is never enough—it is only the starting point for action.

To facilitate action, the last section of this book contains a collection of activities to be addressed by the technology entrepreneur, either alone or with the assistance of an experienced, motivating mentor. As we have said earlier, such assistance could come from members of the company's board of directors, advisors, state service providers, or consultants. The role of the advisor is to help a company maintain a delicate balance between keeping these award-generated activities in the forefront while not distracting its management team from the company's core business.

Organization of Workbook

The activities included in the workbook relate to four content areas. Each has a direct bearing on the commercialization strategies you choose. These content areas include:

- ▶ strategic planning
- ▶ customers/end users
- ▶ market
- ▶ competitors

Of the 311 single applicant awards made since 1990, 212 have been made to small businesses.

Many of these issues will have been addressed by ATP awardees to some degree. One's understanding of the business environment and the best response to it, however, is dynamic and on-going.

Commercialization Toolkit™

- ▶ **Strategic plan**
- ▶ **Licensing Package™**
- ▶ **Business plan**
- ▶ **Presentation**

Do activities and then package.

Commercialization Toolkit™
is discussed in Chapter 1.

**FIGURE III-1:
ADVANCED ORGANIZER**

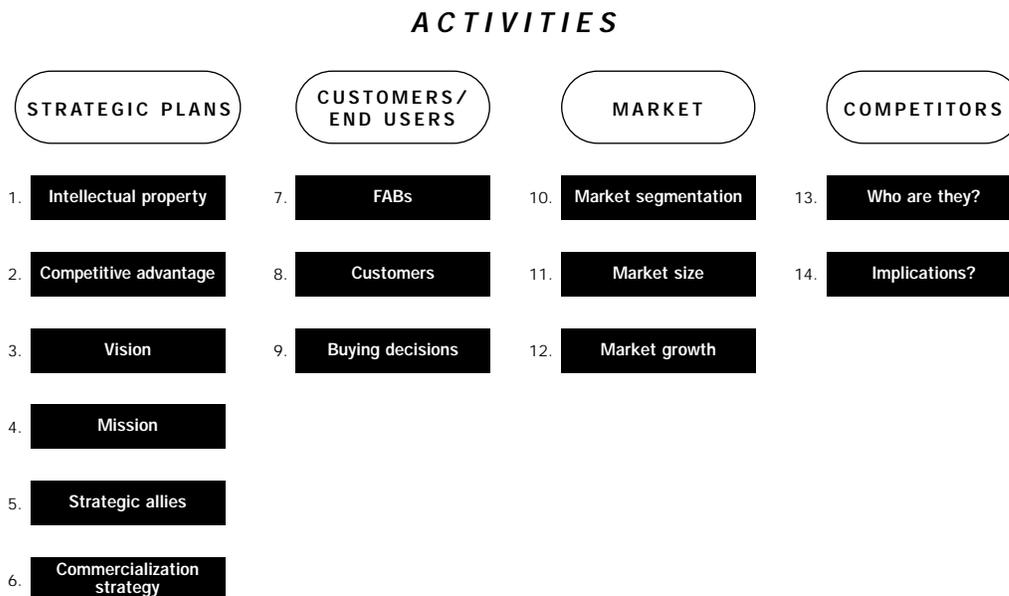
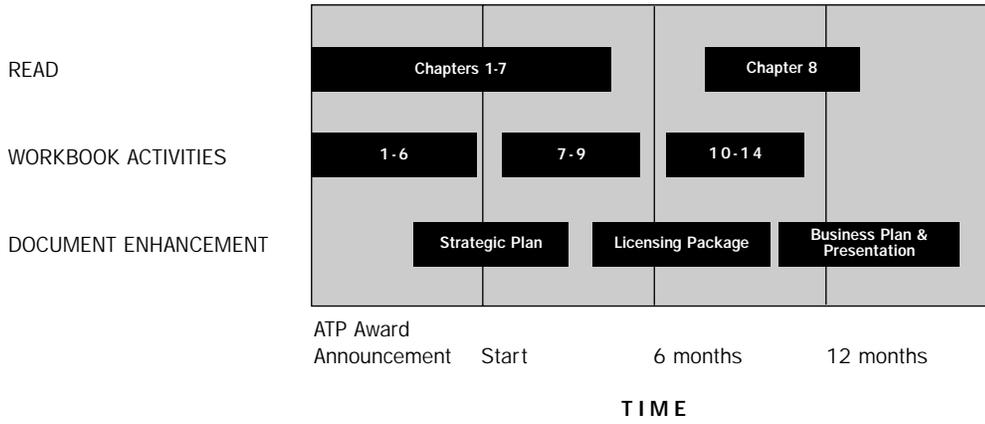


Figure III-1 is an advanced organizer representing the topics covered in this chapter. There are fourteen activities in all, relating to strategic planning, customers, markets, and competitors. It is highly recommended that the reader complete all pertinent activities prior to developing the various documents in the Commercialization Toolkit™. The activities contained in the Guide will assist in the development or revision of a strategic plan, licensing package, business plan, or presentation materials. An additional resource to consult for activities related to the development of operational plans is *Business Planning for Scientists and Engineers* (Servo, 1999).

When confronted with today's financial imperatives, planning is easily pushed aside. In order to increase the likelihood that good intentions result in successful action, start by setting up a schedule for completing the selected tasks. To obtain an objective assessment of your strengths and weaknesses, it is recommended that you start this process by consulting with a respected advisor. Then, complete only those activities that are relevant for you.

A strawman schedule for completion of various commercialization activities is listed below. This schedule will not meet all company needs.

**FIGURE III-2:
SCHEDULE FOR DEVELOPING COMMERCIALIZATION TOOLKIT™**



Related Activities:

Activity 1:

Intellectual Property

Activity 2:

Sustainable Competitive Advantage

Activity 3:

Vision

Activity 4:

Mission

Activity 5:

Strategic Allies

Activity 6:

Commercialization Strategy

The activities in this area of the Workbook (Activities 1 - 6) are intended to help management thoroughly consider fundamental issues related to strategic planning. The greatest headway with these tasks is often made in an off-site session, where interruptions can be minimized. If you intend to involve your board of directors in the planning process, an off-site meeting could be held in combination with a board of directors meeting.

To help synthesize the information resulting from these activities, we recommend that you begin work on a strategic plan for complex technology platforms (Chapter 4) following your planning sessions. Completion of this plan will require research on customers, markets, and industry trends.

A recommended low-cost resource for technology entrepreneurs is a very readable magazine entitled The Law Works:

*The Law Works
1935 S. Plum Grove Rd.,
Suite 158
Palatine, Illinois, 60067
(708) 705-7195*

The subscription cost is approximately \$45 per year. Call and ask them to send a sample so that you can assess its potential value.

A recommended book on intellectual property is Patent It Yourself, by David Pressman, Esq. This extremely readable book contrasts copyrights, trade secrets, and patents. It focuses on helping the reader understand the process of conducting a patent search, as well as filing and prosecuting patent applications.

Intellectual Property

One of the most significant changes during the past four years is the **provisional patent application process**. According to "Important Notice for Inventors," issued by the Patent and Trademark Office:

“As of June 8, 1995, inventors will be able to file a provisional application that will allow them to obtain an early filing date with few formalities and at a lower cost than filing a non-provisional application. This new application differs from a non-provisional application because the patent term does not start from this filing date, the application is not examined, and it cannot issue as a patent. The provisional patent application is retained in confidence and is automatically abandoned 12 months after filing. Before the provisional patent application expires, the applicant must file a non-provisional application to obtain a patent.

To file for a provisional patent application inventors should include:

- ▶ a clearly written description of the invention
- ▶ any drawings needed to understand the invention
- ▶ the filing fee of \$150 (\$75 for small entities), and
- ▶ a cover sheet identifying the inventor(s) name(s), residence(s), invention title, name and registration of correspondence address, and any U.S. Government agency that has a property interest in the application.

The inventors now have up to 12 months to file a non-provisional patent application under 35 US Section 111 (a) and claim the benefit of the provisional application filing date.”

For specific details about changes in U.S. patent law, please call the **Patent and Trademark Office (PTO) at (703) 305-9300**. For questions concerning any changes in the rules of practice before the Patent and Trademark Office, call (703) 305-9282.

At first blush, the provisional patent application may seem to bear similarities to the disclosure document program. However, the two are significantly different. The disclosure is used as evidence, whereas a provisional patent application is indeed an application. The 20-year clock does not start ticking until the formal application is filed. The major benefit to an inventor is that he can file a provisional patent application with a \$75 fee and receive a patent pending status. This enhances the inventor’s ability to interact with potential allies. One must then file the formal patent application within 12 months; otherwise the patent application will be abandoned. Consult the PTO with any questions.

Activities

Make a list of the intellectual property your firm has protected, noting the dates when patents, copyrights and trademarks have been filed or issued. If you find yourself indicating that your technology is “patentable” but have done nothing toward that end, start giving serious consideration to how you will protect your intellectual property.

WORKSHEET: ACTIVITY 1: INTELLECTUAL PROPERTY

DATE _____/_____/_____

INSTRUCTIONS: Use this area to generate a list of your current and pending intellectual property. With pending intellectual property, be sure to take action. You don’t want to revisit this page in six months and find that nothing has changed.

	Title	Date	Responsible party
Issued Patent			
Pending Patent			
Unfiled Patent Application			
Copyright			
Trademark			

Sustainable Competitive Advantage

Sustainable competitive advantage is the collection of characteristics which provide your firm and your technology/product with clear advantages in terms of cost, speed, exclusivity, and effectiveness in meeting genuine customer needs.

Competitive advantage is required for the long-term health of any company.

The types of things that provide a company with a sustainable competitive advantage include:

- ▶ intellectual property, e.g., patents, trade secrets, copyrights, trademarks
- ▶ the uniqueness of the technology and the limited number of people who have expertise in this area (hopefully many of them are employed by your company)
- ▶ cost of entry
- ▶ other advantages that enable you to be quicker and less expensive
- ▶ your record with respect to selecting successful new products or technologies, as well as your ability to keep to development timelines
- ▶ other organizational strengths such as your marketing and sales capabilities, access to distribution networks, and the quality of your work
- ▶ your strategic alliances and champions

Have I answered this question adequately?

Result: Your goal is to develop a list of those characteristics that comprise your “sustainable competitive advantage” and then to condense this list into a succinct statement of fewer than 50 words.

WORKSHEET: ACTIVITY 2: SUSTAINABLE COMPETITIVE ADVANTAGE

DATE _____/_____/_____

INSTRUCTIONS: Use this area to generate a list of those items that contribute to your sustainable competitive advantage. Then, generate a succinct statement that clearly expresses the competitive advantages of your company.

INTELLECTUAL PROPERTY: (This is the activity you just completed ((Activity 1)). Be sure to reference the information in your succinct statement.)

PERSONNEL:**COST OF ENTRY:****TRACK RECORD:****STRATEGIC ALLIES:****OTHER:****50-word statement of sustainable competitive advantage**

What is Your Vision?

Management can't begin to map out financial, marketing, research and development, and manufacturing strategies until it decides upon a direction for the company's future. Many companies approach their growth strictly in an opportunistic fashion. Although a company should always remain open to opportunities, without a vision for the future, a company will not be able to propel itself forward in a purposeful way.

Activities and background:

The management team should spend time sharing visions for the future around each of the items listed below. This requires at least four hours of uninterrupted time. An off-site meeting may be the best way to make sufficient headway with this activity.

(1) PRODUCTS AND SERVICES

- ▶ What products and services will your company be providing?
- ▶ What type of work will you be doing: research, development, marketing, manufacturing, distribution?

(2) FINANCIAL GOALS

- ▶ What are your financial goals for five years from now?
- ▶ What will your company's (SBUs) revenue stream look like?
- ▶ What will your profit margin be?

(3) MARKET GOALS

- ▶ Who will your customers be?
- ▶ What geographic location will you serve?
- ▶ What percentage of market share will you possess?
- ▶ How big a player will your firm be in its defined market niche?

(4) IMAGE

- ▶ How will your organization be viewed by others?
- ▶ What will differentiate your firm from other companies?

(5) WHAT WILL YOU LOOK LIKE IN THE FUTURE?

- ▶ How large do you want to become?
- ▶ Where will your business be located?

Have I answered this question adequately?

Result: Your goal is to produce a thoughtful, two-to-three-page document. It doesn't need to be eloquent, but it does need to capture your vision for the future. Put the materials in a three-ring notebook and/or in a computer file. When you develop a commercialization strategy or sales and marketing objectives, check to see whether or

not it coincides with your vision. Let your vision propel you forward, rather than tie you to the present situation.

The most important elements of the vision are items 1-3. Items 4 and 5 are secondary items to consider when mapping a path for the future.

WORKSHEET: ACTIVITY 3: VISION

DATE _____/_____/_____

INSTRUCTIONS: Your vision for the future is a key element of what propels a company forward. Use the list of prompts on the previous page as discussion points for an off-site or after hours planning session. Your vision for the future must be one you have the energy and drive to pursue. For planning purposes, select a five-year horizon and summarize your conclusions below. Add additional pages as needed.

(1) PRODUCTS AND SERVICES:

(2) FINANCIAL GOALS:

(3) MARKET GOALS:

(4) IMAGE:

Mission Statement

Being able to describe your business in a very succinct fashion is a selling tool. Any manager should be able to clearly and simply express the essence of the business in one sentence. In addition to serving as a selling tool, a clear recognition of your company's mission helps define the commercialization strategies best suited for your firm.

Activities and background:

A good mission statement should answer the following questions:

- ▶ What business are you in? This question is answered by indicating the types of business functions your company performs, i.e., research and development, engineering, manufacturing, marketing, custom design, distribution.
- ▶ What products and technologies are involved?
- ▶ What markets do you serve?
- ▶ What is unique about your company? What differentiates it from others?

Have I answered this question adequately?

Process: Start by addressing the preceding questions. Be thorough and don't be concerned about length or style. Once you have addressed all of these issues, try expressing your mission in a 50-word statement. It will probably sound extremely dense. However, adding the word "limit" afterwards forces you to single out the critical elements. The resulting mission statement must pass "The Elevator Test;" i.e., you should be able to tell someone what your company does as the elevator moves between floors.

Results: Your goal is a pithy statement describing your company's mission. The following is a good example:

"Voltec Inc. designs, manufactures, and markets the only U/L-approved, high efficiency, computer-controlled power combustion gas fired boilers and heaters to the Real Estate, Education, Health Care and Service sections of the HVAC market in the commercial and industrial segments."

Although this statement is very dense, it contains all the required elements. One instantly knows what business functions the company performs—it designs, manufactures, and markets. One knows what products the company produces—gas fired-boilers and heaters. The listener knows what gives the company a sustainable competitive advantage—it has the only U/L-approved, high efficiency computer controlled device—and what markets it serves—the heating, ventilation and air conditioning market as it pertains to real estate, education, and health care. It would pass the elevator test.

WORKSHEET: ACTIVITY 4: MISSION

DATE _____/_____/_____

INSTRUCTIONS: Listed below are the four key elements of a good mission statement. Carefully consider each of these and then create a succinct statement. Begin by writing a sentence for each of the following prompts, and then combine them.

Business Functions:

Products/Technologies:

Markets:

Differentiators:

Succinct Mission Statement

In all cases, to sell these potential benefits, you need to know the large company's business and look at yours in a different way.

Activities

In order to find a good ally:

- (1) define the appropriate domain of potential allies and/or licensees based on the following:
 - ▶ needs addressed
 - ▶ technology synergy
 - ▶ market synergy
- (2) request copies of annual reports and SEC documents if publicly traded
- (3) obtain lists of patents and see if they are working in this area
- (4) find articles which show what they are doing relative to divestiture, acquisition, new product introductions, change in management, downsizing, and bankruptcy
- (5) obtain product catalogues and pricing information.

Have I answered this question adequately?

Process: Start by developing good intelligence files on potential strategic allies, reviewing the materials, and completing a partnerability analysis.

Result: The purpose of this exercise is to help clarify to whom your product/service can be of greatest advantage. Your goal is to prepare a partnerability analysis using the materials gathered. Develop a matrix—with potential allies listed down the ordinate and with three columns using the following headings: (1) contribution to cost reduction/ revenue enhancement, (2) time frame, and (3) partnering strategy. Complete this matrix to summarize the relative contribution that you could make to the strategic allies you are considering.

WORKSHEET: ACTIVITY 5: STRATEGIC ALLIES

DATE _____/_____/_____

INSTRUCTIONS: Begin this activity once you have developed good intelligence files on potential strategic allies. Then use the space below to clarify the nature of the synergy between your technology and their needs, technology, and/or marketing and sales capabilities. Add additional pages for each potential ally.

POTENTIAL ALLY NAME

Evidence of strategic fit:

Evidence of technology synergy:

Evidence of synergy with marketing/sales capability:

Evidence of corporate stability:

- | | |
|--|---|
| (3) Preliminary technical assessment | (3) Phase I Small Business Innovation Research grant (SBIR) |
| (4) Detailed market assessment | (4) Retained earnings |
| (5) Predevelopment business/financial analysis | (5) Retained earnings |
| (6) Technology/product development | (6) ATP funding |
| (7) In-house product tests | (7) Corporate partner |
| (8) Customer product tests | (8) Beta test at prime partner site |
| (9) Trial sell | (9) License to distribution partner |
| (10) Trial production | (10) Equity financing from angels |
| (11) Pre-commercialization business analysis | (11) Corporate partner |
| (12) Production start-up | (12) Obtain equity capital |
| (13) Market launch | (13) Equity financing |

Please note that the milestones listed in the left-hand column come from Robert Cooper's work. This list is illustrative. Different steps will be appropriate for you depending upon the nature of your opportunity. For example, opportunities related to the pharmaceutical industry are likely to include such milestones as human trials and FDA approval.

WORKSHEET: ACTIVITY 6: COMMERCIALIZATION STRATEGY

DATE _____/_____/_____

INSTRUCTIONS: This is a summary sheet on which to map out factors that affect your strategy, as well as the preferred financing steps to utilize to fund each of the activities associated with bringing your product to market.

MISSION STATEMENT:

Business functions:

Target market(s):

Sustainable competitive advantage:

VISION: Select the descriptor that best fits your vision.

BUSINESS PHILOSOPHY:**PRODUCT OR TECHNOLOGY DESCRIPTION:****STAGE OF DEVELOPMENT:**

The activities in this area of the Workbook (Activities 13 - 14) are to help you compile information about your competitors and consider the implications of this information for your commercialization strategy and business plan.

WORKSHEET: ACTIVITY 13A: COMPETITORS

DATE _____/_____/_____

INSTRUCTIONS: Use the summary sheet below to compile information on competitors. Add additional pages as needed.

SIC	Competitor's Name	Address	Phone Number

What are the current characteristics of these competitors?

This activity relates to expanding your customer files. In Activity 13a, you were asked to pinpoint who your competitors are. This activity helps you determine what types of information you should collect about your competitors. Analyzing your competitors' strengths and weaknesses helps you to take a more realistic look at your own organization and develop sound strategies for success.

Activities and background

The information you can obtain on competitors depends to a large extent on whether they are privately owned or publicly traded. Considerably more information is available on publicly traded companies. Leonard Fuld's book *Monitoring the Competition* (1988) provides many helpful hints on how to build up good data files on your competitors.

If the company is publicly owned, you can request an annual report, 10-K, 8-K, and 10-Q, from the Securities Exchange Commission. If the company is privately owned, the task is more difficult. However, you can develop good data from news articles, product literature and catalogs, price lists, and market studies, all of which may be available on the Web.

All of this information should be compiled in competitor files.

Have I answered this question adequately?

Process: Obtain more complete data on your competitors, in accordance with the suggestions listed above. In subsequent chapters you will be instructed to analyze the data you are now beginning to collect.

Results: The goal is a list of the competitor files that you have and what data your files contain: 10-K, 8-K, 10-Q, prospectus, annual reports, news articles, product literature, catalogs, price lists, and market studies.

WORKSHEET: ACTIVITY 13B: COMPETITORS

DATE _____/_____/_____

INSTRUCTIONS: : Use the summary sheet below to act as both a prompt and a place to compile information regarding competitors. Much more information is available for publicly traded companies. Add additional pages as needed.

Competitor Name _____ **Public?** _____ **Private?** _____

- | | | |
|-------------------------------------|--|--|
| <input type="checkbox"/> Prospectus | <input type="checkbox"/> Annual Report | <input type="checkbox"/> Articles |
| <input type="checkbox"/> 10K | <input type="checkbox"/> Price Lists | <input type="checkbox"/> Catalog |
| <input type="checkbox"/> 10Q | <input type="checkbox"/> Market studies | <input type="checkbox"/> Internet info |
| <input type="checkbox"/> 8K | <input type="checkbox"/> Newspaper clippings | <input type="checkbox"/> Patents |

Competitor Name _____ **Public?** _____ **Private?** _____

- | | | |
|-------------------------------------|--|--|
| <input type="checkbox"/> Prospectus | <input type="checkbox"/> Annual Report | <input type="checkbox"/> Articles |
| <input type="checkbox"/> 10K | <input type="checkbox"/> Price Lists | <input type="checkbox"/> Catalog |
| <input type="checkbox"/> 10Q | <input type="checkbox"/> Market studies | <input type="checkbox"/> Internet info |
| <input type="checkbox"/> 8K | <input type="checkbox"/> Newspaper clippings | <input type="checkbox"/> Patents |

Competitor Name _____ **Public?** _____ **Private?** _____

- | | | |
|-------------------------------------|--|--|
| <input type="checkbox"/> Prospectus | <input type="checkbox"/> Annual Report | <input type="checkbox"/> Articles |
| <input type="checkbox"/> 10K | <input type="checkbox"/> Price Lists | <input type="checkbox"/> Catalog |
| <input type="checkbox"/> 10Q | <input type="checkbox"/> Market studies | <input type="checkbox"/> Internet info |
| <input type="checkbox"/> 8K | <input type="checkbox"/> Newspaper clippings | <input type="checkbox"/> Patents |

Competitor Name _____ **Public?** _____ **Private?** _____

- | | | |
|-------------------------------------|--|--|
| <input type="checkbox"/> Prospectus | <input type="checkbox"/> Annual Report | <input type="checkbox"/> Articles |
| <input type="checkbox"/> 10K | <input type="checkbox"/> Price Lists | <input type="checkbox"/> Catalog |
| <input type="checkbox"/> 10Q | <input type="checkbox"/> Market studies | <input type="checkbox"/> Internet info |
| <input type="checkbox"/> 8K | <input type="checkbox"/> Newspaper clippings | <input type="checkbox"/> Patents |

Competitor Name _____ **Public?** _____ **Private?** _____

- | | | |
|-------------------------------------|--|--|
| <input type="checkbox"/> Prospectus | <input type="checkbox"/> Annual Report | <input type="checkbox"/> Articles |
| <input type="checkbox"/> 10K | <input type="checkbox"/> Price Lists | <input type="checkbox"/> Catalog |
| <input type="checkbox"/> 10Q | <input type="checkbox"/> Market studies | <input type="checkbox"/> Internet info |
| <input type="checkbox"/> 8K | <input type="checkbox"/> Newspaper clippings | <input type="checkbox"/> Patents |

Implications of Competitor Files

The purpose of developing good competitor files is to anticipate what your competitors are likely to do when you enter the marketplace with a new product that eats away at their market share. At the point of market entry, chess or war analogies are often used. It is important to keep in mind that the purpose of making a product entry is to gain market share and create value. This is always done at another company's expense. Some company will lose market share as you gain. Even in those instances where you come to market first and are developing a market, your presence in the marketplace first often makes it more difficult for other companies to replace you.

Once you have gathered competitor files, review the information looking specifically at issues such as the following:

- ▶ how financially stable your competitors are
- ▶ what their pricing policies have historically been
- ▶ their research and development plan
- ▶ strategic alliances formed
- ▶ distributors used

Then ask yourself what your competitors are likely to do when you enter the marketplace—drop their price, increase advertising, enhance customer service, buy a competitor to gain greater access to the marketplace, etc. Use this information when developing your marketing and sales plans, and your contingencies—all of which are part of your business plan.

WORKSHEET: ACTIVITY 14: IMPLICATIONS OF COMPETITOR FILES

DATE _____/_____/_____

INSTRUCTIONS: This worksheet contains a list of prompts for you to use when reviewing competitor files. We have seen so many companies just collect information and never do anything with it. Set aside time for your management team to review competitor files and discuss the implications for your evolving strategies and business plan. Add additional pages as needed.

Competitor _____

Financial stability of competitor:

Pricing policy:

Research and development plan:

Strategic alliances formed:

Distributors used:

Other:

Conclusion

The purpose of the *Advanced Technology Program's Commercialization and Business Planning Guide for the Post-Award Period* is to provide assistance to new ATP awardees and their advisors. The book is divided into three sections. Section 1 presents basic concepts concerning financing options, with detailed information on licensing, corporate partnering, and equity investment. Section 2 is an annotated sample presentation to investors. Section 3 is a workbook to be used by the technology entrepreneur on his own or with the guidance of an experienced advisor. For maximum benefit, it is recommended that you seek the involvement of an experienced and motivating mentor. The results of the various activities completed should be synthesized and incorporated into a variety of documents that become part of your Commercialization Toolkit™. Suggested outlines for the various documents that you are likely to need in the commercialization of your technology are included at the end of various chapters in Section 1 and throughout Section 2. These include:

- ▶ Strategic plan
- ▶ Licensing package
- ▶ Business plan
- ▶ Presentation

Scientists and engineers who are founders of their own companies can develop the necessary skills to successfully guide the growth of their firms. This requires dedication, however, since time for planning must be added to an already busy schedule. The information and the activities included in this workbook will assist in this endeavor.