

*The Montana Innovation Partnership (MTIP) program powered by MSU TechLink Center assists tech-based individuals and companies to fund Research and Development (R&D) efforts and commercialize their innovations. Those companies engaging under federal grants and contracts will be required to be knowledgeable about their technology commercialization plans. This Commercialization guide will initiate a fundamental understanding of key concepts.*

## WHAT IS IT

MTIP's Commercialization guide will focus on small, tech-based businesses engaging under the federal Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) programs. However, it is also applicable for any company innovating new product potential, and conveys the most basic level of commercialization planning critical to technology development efforts.

Commercialization is the process by which a technology-based company moves its intellectual property (IP) to market in order to gain business profits and to achieve growth. This can be performed under different business models that typically follow variants on manufacturing and sales, service-based practices, or the transfer of technology and know-how to another entity to commercialize. The path to market will essentially depend on the company's business objectives, the IP and development efforts undertaken, and its access to critical human and economic resources.

Commercialization Plans are frequently confused with Business Plans but the two planning mechanisms are decidedly different. The Commercialization Plan focuses on the development and advancement of a technology. This type of planning can be very early stage, and is often needed well before a business model can be fully formulated. A company will ultimately implement its Commercialization Plan within a greater Business Plan that holistically addresses all the technologies and revenue-producing efforts being pursued by the company.

## WHY IT MATTERS

The federal SBIR/STTR programs are legislatively mandated to sponsor R&D that has a strong potential for commercialization. All sponsoring agencies include a Commercialization Plan (sometimes called a Commercialization Strategy) component in their solicitation instructions. It doesn't matter how early-stage the technology might be, it has been demonstrated that making an early commitment to the means by which commercialization will occur, directly impacts the R&D planning and the potential for achieving market goals. Granting organizations (e.g. the National Institutes of Health and the U.S. Department of Agriculture) want the technology to be available to the benefit of the public at large. Whereas, contracting organizations (e.g. the Department of Defense and NASA) more typically want the end-product to directly serve their program missions, often through federal contracting and procurement channels.

Looking beyond the pressing scientific and engineering demands of R&D, a product developer must also understand the business model they will pursue in order to make best choices for the development process. Commercialization models commonly targeted include:

- Manufacturing – involves producing goods, distribution, marketing and sales, and can include software and contract manufacturing.
- Services – can be online or storefront, and may involve customization and/or product sales.
- Knowledge Transfer – includes licensing technology to another entity and franchises.
- Joint Ventures - can be developed around elements of each commercialization model, and might involve spin-off companies and many other options for bringing together differing company strengths and capabilities.

Each different commercial route will directly impact the R&D efforts to be performed, including the following variables:

- IP protection, such as whether or not patents or trademarks are critically necessary.
- Development of outside funding sources suitable to the demands of the plan.
- Capital equipment and facility investments that are requisite for manufacturing but can be of lesser value in knowledge transfer.
- Human resources such as hiring production expertise for a manufacturing model, as opposed to licensing expertise for the achievement of knowledge transfer.

Expectations for the depth of commercial planning differ considerably between the SBIR/STTR sponsoring agencies and also between Phase I and Phase II solicitations. Differing levels of details are also required in responding to other opportunities such as a presentation to attract outside investors, or in response to our state Montana Board of Research Commercialization Technology (MBRCT) program. Therefore, it is important to review specific opportunity guidelines to determine the depth of planning detail that is expected. At minimum, a technology developer should be able to knowledgeably respond to the following points:

1. What is the first product that will result from the technology researched?

*This question relates to how your technology will ultimately attract revenue for your business. The reference to 'product' is inclusive of any marketable form the technology might take including devices, components, systems, services, software releases, etc. For example, algorithms are not a saleable product. However, these may be expressed in software implemented in an integrated system, or become part of a larger process or service.*

2. How will that product move from the research bench to achieving sales (monetary returns)?

*In the example of an algorithm that will be utilized in a software application, the company then needs to determine how that software will be sold. Will the company offer it as an application download for a fee? Will they sell it as Software as a Service (SaaS)? Will they license it to another company who can then use it to enhance system performance? There is no single "right" answer and the best option might be a combination of various sales models.*

3. In the marketplace, who is the customer and who will be the end-user? Name the market and industry into which the product will be sold, and estimate the total market size.

*The customer and end-user are not necessarily the same person or entity. Applying the example of an algorithm being used in a web-based service for researchers, your company might sell directly to its customer who is also the end-user. However, the company could alternatively sell or license its software to a manufacturer to be loaded into high-cost instrument systems that are then sold to research organizations. In that more complex example, your company's customer is the systems manufacturer, the manufacturer's customer is the research organization, and the end-users are the researchers. This represents a significantly different sales model and those differences need to be understood in order for a company to properly orient its commercial planning. Examination of the sales channel options is also critical to an ability to characterize the industry and market segment(s) being targeted, and to justify the commercial potential through market numbers and analysis.*

4. Who are the competitors and what competitive advantage is offered by your product?

*Inventors often proclaim, "There's no competition because nothing like this has ever been done before!" Every new product or technology has competition of some kind, even if the competing solution is vastly inferior. Manual television controller knobs were the competitor of the never-before-seen remote control unit. Despite being completely novel, the remote control had a strong competitor in the market which adequately addressed the function of changing the television channel. "Never-before-seen" is not synonymous with "no competition." You must be able to demonstrate your awareness of the state of the art, which is the most recent stage of development achieved as a solution to the problem your innovation will address. Failure to recognize the competition and exactly how your technology creates advantages, can cast doubt on whether or not your technology is an innovative solution able to attract revenue and market share.*

5. How much money will be needed following the funded R&D project stage to bring the product to market? How will your company fund that cost until sales can be achieved?

*A financial projection in the early development stages requires creativity combined with practicality and a dose of basic business logic. You must be prepared to make a realistic estimation of the market readiness your technology will attain when the SBIR/STTR or other project funding runs out. Of course, this presumes that the R&D has proceeded as planned and has been successful. That's a huge leap of expectation in the world of innovation, but that's the only position from which you can estimate the costs of launching commercial sales using the model you have selected. Be honest with yourself as to the operations and development costs to fully attain market readiness as that will help you to understand funding resource steps that must be taken, whether seeking outside investors or loans, continuing to apply for R&D grants, and/or digging deeply into personal finances.*

## COMMON DEFICIENCIES

Commercial planning is often multi-faceted, as opposed to being a linear process. For example, a company might want to manufacture and sell hundreds of products to a specific market segment in which they are well known, but have no interest in scaling up to achieve further sales for other application demands. In this example, an initial role as manufacturer can be sustained even while engaging a licensing relationship with another company capable of further growing the production and sales capabilities. This can be a very effective way to build market share from a small beginning. However, even in licensing, in which production will be relinquished to another entity, there needs to be a detailed understanding of the alternative applications and market segments, as well as the mechanisms for achieving knowledge transfer.

The bottom line is that companies and developers must invest time into researching the industry, markets and supply chains for their technology. Company founders are often scientists and engineers who are uncomfortable with the task of deciding a commercial future that can be distant, uncertain and changeable. However that reluctance can backfire. If a researcher is unable to commit to a future commercial model for their technology, prospective investors are likely to be similarly reluctant to commit funding to R&D endeavors. MTIP counselors can help with resources and insights into commercial models. Though it is nearly certain the Commercialization Plan will change over the time required for product R&D, an evolving plan is still more effective than having no plan at all.

## READY FOR THE NEXT STEP?

This guide has been prepared by the Montana Innovation Partnership (MTIP) powered by MSU TechLink Center in partnership with the Montana Department of Commerce. MTIP provides free coaching to Montana technology-based companies seeking help in applying to federal and state R&D and commercialization funding programs. For more information, contact the MTIP Program Manager at [techlinksbir@montana.edu](mailto:techlinksbir@montana.edu) or visit MTIP's website at [montanainnovationpartnership.org](http://montanainnovationpartnership.org).

