



## Student Step by Step Instructions for Determining the Commercial Feasibility of Their Plan Idea and Developing the Plan Itself

September 2019

The following step-by-step instructions for developing a STEM Commercialization or STEM Business Plan were compiled from BiO's *Ohio Roadmap to Future Jobs & Prosperity* and related instructions. Students should use these Instructions as a "Check List" to ensure that the plan that they develop is complete. Students are also encouraged to make use of the STEM Plan Templates in Microsoft Word & Excel for both Commercialization and Business Plans at: <http://believeinohio.org/resources/>

### **STEP 1 – Roadmap Milepost "0" - Determine if you will develop a STEM Commercialization or STEM Business Plan:**

The answer depends mainly on the subjects taught by your sponsoring teacher. Generally, students will develop a STEM Commercialization Plan if their teacher teaches a STEM subject, while students will develop a STEM Business Plan if their teacher teaches business, economics, marketing or entrepreneurship.

### **STEP 2 – Develop an idea for your Plan by applying Roadmap Mileposts 1, 2 and 3:**

Whether you will be doing a STEM Commercialization Plan or a STEM Business Plan, oftentimes, the hardest part about getting started is coming up with an idea for your Plan.

The first step is to put your imagination to work. In coming up with an idea, remember that innovation and entrepreneurship are about challenging the status quo and transforming or developing new products, services, and solutions to meet the changing needs and wants and problems of society. Start by looking around you at needs that aren't being fulfilled, problems that remain unsolved, and things that don't work. Then think about how technology developments have made possible or could make possible products and services and solutions that simply weren't possible before. Your responses to Mileposts 1, 2 and 3 must work together if there is to be a workable solution:

**Milepost 1 - Describe the Problem (aka "Pain Point") or Market Opportunity that your idea is intended to address.**

**Milepost 2 – Describe your proposed solution to the problem, pain point or market opportunity noted at Milepost 1.**

**Milepost 3 - Technological change is the catalyst behind most of the innovation that will cause virtually every product, service, and aspect of life to be continuously reinvented. Describe the key STEM concept(s) & developments that you will apply to address the problems and solutions identified at Mileposts 1 and 2. Consider the following:**

- Not every idea needs to "change the world" – smaller or simpler ideas are also important and are usually much easier to implement and prototype.
- Not every idea needs to be a "breakthrough, original idea". Ideas that improve on the existing are important too.
- Because someone somewhere else in the world is already doing something similar does not disqualify your idea. Instead, work to improve on the existing product or solution.
- This competition is about STEM advances being the basis for new or improved products and services. While the application of STEM may be large or small, it should be the catalyst for the student's idea.

### **STEP 3 – Determine if your plan idea is commercializable by applying Roadmap Mileposts 4 – 8:**

It makes no sense to invest time and energy and resources in developing an idea that a pragmatic assessment tells you is not commercializable or won't fly. By applying Roadmap Mileposts 4 – 8, one can evaluate the feasibility of an idea.

**Milepost 4 – Describe who your target customers and users are** (they may be different people). Determine if your idea would be of value to both of them.

**Milepost 5 – Discuss who your competitors are or might be** and determine what you can learn from them.

**Milepost 6 – Describe the Customer Value Proposition and Competitive Advantage your proposed solution** has over other potential solutions to the problem/pain point/market opportunity that your plan addresses. Generally, some form of cost advantage or differentiated features or benefits may give your problem solution a competitive advantage.

**Milepost 7 – Discuss what revenue streams you expect?** Having determined your customers and competitors and what customer value proposition or competitive advantages your solution offers, identify what revenue streams you expect such as: product sales through middleman wholesalers or direct to customers, fees for services performed, subscription fees, usage fees, advertising revenues, lease income, license fees, franchise fees, etc.

**Milepost 8 – What startup and operating cost do you expect to incur?** Consider what startup and operating costs you would expect to incur. To what extent will you incur costs for research and development or for the development of prototypes and testing? Will you manufacture a product yourself, or outsource production? What staff will be needed to bring your plan idea(s) to fruition?

**STEP 4: At the Roadmap Stoplight, consider what you learned in Steps 2 & 3, reassess your plan idea:**

Based on your assessment, make needed changes and “Pivot”. Repeat the process as many times as needed until you are satisfied that you plan makes commercial sense.

**STEP 5 – Working through Mileposts 9 – 12, write your plan:**

Work through Mileposts 9, 10, 11 and 12 and follow Believe in Ohio’s plan preparation instructions that tell you how to assemble the different parts of your plan into a single cohesive and understandable plan document.

**First**, provide a short summary (couple of sentences) that describes your Problem Statement/Pain Point/Market Opportunity (Milepost 1) and your proposed solution (Milepost 2). *(This will be Part 3 of your written plan also to be discussed on pages 13 & 14.)*

**Milepost 9 – Summarize the STEM concepts & principles underlying your solution** *(This will be Part 4 of your Plan.)*

In this Part 4, summarize and explain the application of each of the key STEM concepts included in and underlying your solution to your plan problem and demonstrate to the reader that you have a reasonable working knowledge of the key STEM concepts. Also, discuss why you believe this science provides a feasible basis on which to base your plan.

Part 4, is titled “Summary of the STEM Concepts & Principles Underlying Your Plan Solution”. It can be no longer than 500 words (which is about one page in length). (Part 4 of your Plan should be based on your discussions at Mileposts 3 & 9.)

**Milepost 10 – Summarize in writing your commercialization assessment of your plan** *(This will be Part 5 of your Plan.)*

In this section, summarize your conclusions as to the commercial feasibility of your plan. In doing so, discuss each of the individual topics addressed in Mileposts 1-2 and 4-8,, then report on your overall assessment of commercial feasibility.

**Milepost 11 A –If yours is a STEM Commercialization Plan, develop a science and technology proof of concept**

This section, which will be Part 6 of your Plan Document, is similar to a research paper. It should provide an in-depth assessment of the STEM concepts underlying your plan and provide a proof of concept for the feasibility of your proposal. It should include five elements:

1. A review and assessment of the scientific literature.
2. A discussion of your findings with relevant cited references provided.
3. A statement of a single, clear and compelling (1) testable hypothesis, or (2) engineering design.
4. An inquiry or design-based discussion of the STEM concepts relative to your idea, rather than simply summarizing current knowledge.
5. Data tables, graphs, charts, cited references, etc.to properly support your science & technology proof of concept.

**Milepost 11 B –If yours is a STEM Business Plan, develop a business and financial proof of concept:**

This section, which will be Part 6 of your Plan Document provides an assessment of the business and financial feasibility of your planned business venture which equates to a proof of concept for your idea. It should include five elements:

1. A discussion about your marketing, sales and pricing strategies to bring your product or service to market.
2. A discussion about your operational plan to bring your product or service to market.
3. A discussion about the significant risks and uncertainties you expect to face.
4. A discussion about the amount and type of investment you will need to get your venture started.
5. A summary three-year financial projection that confirms the financial feasibility of bringing your venture to market.

**Milepost 12 – Prepare an Executive Summary and Elevator Pitch of your entire plan:** *(This will be Part 2 of your Plan.)* An Executive Summary of 250 words or fewer provides a concise summary of your plan and its most important points. It must be written in a manner that a person who is not be familiar with your topic can understand what your plan is about.

An Elevator Pitch is a three or fewer sentence summary of your entire plan. You Elevator Pitch & Executive Summary should be written last, after you have completed all the other parts of your plan.

**STEP 6: Review your plan carefully before turning it into your teacher:**

You may have the best idea in the world, however if it is not professionally presented it may go unnoticed. Carefully review your plan for good grammar, correct spellings, proper punctuation and its overall professional appearance.