

So you want to be an entrepreneur. Or, perhaps you want to work with entrepreneurs, in an organization that is entrepreneurial in the entrepreneurship ecosystem. This is fabulous. And the great news is that there a lot of opportunities for entrepreneurship- minded materials scientists and engineers.

Before you start playing in the start-up sandbox, there are a few questions you should ask, of yourself and about the ecosystem you want to access.

1 What is the problem?

Every successful company has to start by solving a problem. The problem could be wide spread or it could be distinct for a certain group of consumers; it could be global or local; it could be simple (such as a one-off) or complicated (requiring a number of microsolutions). In all cases, there is a specific problem that is identified by the entrepreneur. The problem could be linked to a gap in a system, a pain point in an organization or field, or a wall that is impeding innovation and advancement. You must be able to clearly define the problem, show that it exists today, and clarify whose problem it is.

2 Can this problem be solved with a product or service?

The problems that exist in scientific research are fascinating and important. When solved, they have the potential to reveal exciting mysteries related to the universe and contribute to humanity's advancement. But before we go changing the world, as entrepreneurs, we have to check- can this problem actually be solved with a product or service? Some aspiring entrepreneurs have ideas based on scientific discoveries. But the way to convert the new knowledge into something that someone would actually purchase has not been elucidated or determined. It might be that the research problem is still in its infancy or the discipline is a frontier field, lacking certain technological achievements to advance beyond concept. To make the leap to entrepreneurship, the solution must be able to be converted into a product or service.

3 Can this product or service be produced? How?

These questions relate to the others above. If the technology is not advanced enough for us to harness a particular innovation into a product or service yet, it cannot be an entrepreneurial venture. For example, a time machine would solve a lot of problems (and create a lot too!), but the technology and scientific and engineering understanding of how to bend, alter, and move through time is, well, just not there yet. Make sure your product or service is based in real-time and real-world physics.

4 What is the market for this product?

This query helps you to identify the market for this product, where it is located, and how customers will purchase it. For example, is your product one that is to be bought by individual consumers or businesses? A very common tool that is utilized to scrutinize a market is a SWOT Analysis. SWOT stands for Strengths, Weaknesses, Opportunities, and Threats. Strengths and weaknesses tend to be intrinsic to the product and/or company, while opportunities and threats are extrinsic. And keep in mind that a threat could be varied – it could be based on the current state of economics or politics, or it could be threatened by time, that is, that the product has to be released by a certain date or it won't sell at all. When thinking about the market, also consider your competition, and what they are already doing in the arena you wish to occupy. Are there any special challenges that must be addressed to beat the competition or improve upon what they are already offering?

5 What are the business needs to bring the product to market?

There are many business tasks that have to be completed to get to the point where you can sell a product. For example, from where do you anticipate obtaining funding as you move past various stages toward the market? How and where will you manufacture the product? How will you distribute it? What are the legal (intellectual property or otherwise) issues that need to be addressed, and how will they be? What will be your management structure? Who are the experts you will need to hire? Who or what type of people will be your board consist of?

6 Where do you want to be one year from now?

As with any goal, you have to have a plan. Even if you are still too early in your work as an entrepreneur that you don't feel ready to write a complete business plan, you can start to formulate it. Write out what you plan to do each month for the next 12 months. Keep track of these objectives and adjust as needed. Certainly, your first few months will include data gathering, via reading and informational interviews, to be able to answer the questions above. If your mission is to launch an entrepreneurial venture, what are the next steps you need to complete in order to get there and how will you make it happen?

