
synergetics
Get Your Product
to Market
Series 1
Product Discovery Guide

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HOW DO YOU TURN A GREAT IDEA INTO A MARKET-READY PRODUCT?

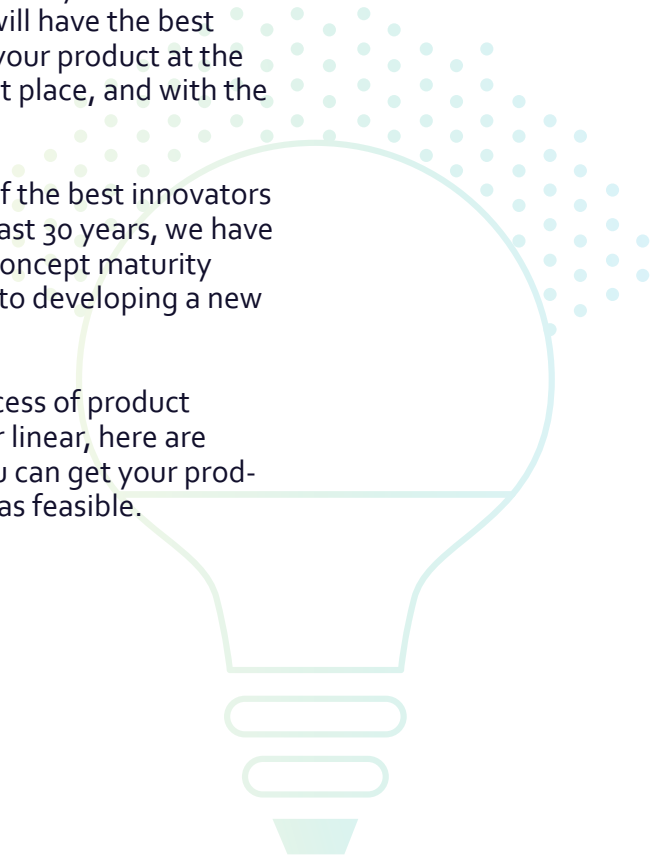
What is one thing forward-thinking innovators have in common?

They all have great ideas.
But great ideas must meet customer expectations (and be able to evolve with them) to be successful in an increasingly competitive environment.

The electronic product development process can vary from mysterious to onerous depending on where your product is in its development cycle. With the right approach, you will have the best chance of launching your product at the right time, in the right place, and with the right audience.

Working with some of the best innovators in the world for the past 30 years, we have seen a great deal of concept maturity when when it comes to developing a new or upgraded product.

Even though the process of product development is never linear, here are some tips on how you can get your product to market as fast as feasible.



WHICH ELECTRONICS INNOVATOR ARE YOU?

Entrepreneurs

If you are an entrepreneur, you are creative and ambitious.

You know what you want but you may not have a clear picture of the best path to market.

You may be participating for the first time or have participated as part of an OEM and now want to branch out on your own.

As part of your investor pitch, you will need proof of the concept to generate interest and funding.

A full-outsourced model is often used in the product design and development stage, with your key executives or founders often serving as your industry or subject matter experts.

SMEs

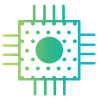
As a key stakeholder in a SME, you are typically more established than an entrepreneur.

You have funding, the proof of concept has likely been designed or developed, and you are looking to commercialize or upgrade your electronic product.

You might want to consider fully outsourcing your design and development, with executive oversight and subject matter expertise.

Alternatively, you might prefer a hybrid model to bolster your internal resource pool in a specific engineering discipline or multiple engineering disciplines, and project management.

With knowledge gaps filled or design and development support provided, you can progress your concept more efficiently.



OEMs

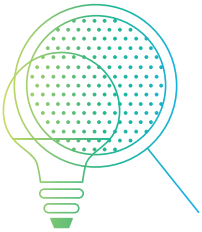
You will have funding for design and development and multiple projects underway but you are finding it difficult to resource them all.

Usually, but not always, you will have defined requirements and can be prescriptive regarding you specifications.

Similar to a SME, you may consider an outsourced model overseen by subject matter experts or a hybrid model to bolster your internal resourcing. It maybe suitable to utilize an ODM model, with very comprehensive requirements. You may want to outsource some or all your project management.

Alternatively, you may want to mirror your organization with an electronics solution provider to partner your internal lead disciplines with external specialist lead disciplines. This is highly beneficial for large projects or where there are stakeholders in various countries playing a variety of roles.

It reduces technical complexity or internal roadblocks by relying on an external provider to provide otuputs whilst your internal leads filter them into the relevant operational teams.



PRODUCT DISCOVERY PROCESS

The initial stages of product design and development is a discovery process focused on your specific needs. Even though the product development and design process for electronics is highly specialized, you do not have to be an expert in the field to achieve success.

STEP 1: PRELIMINARY WORK

There is a certain amount of information you should have captured prior to beginning the design and development process. This information is typically captured in a "product overview" or "product development strategy" style of document.

It should include:

Product Description

This body of work should capture your MVP (Minimum Viable Product) which becomes rucial in the product design and development stage.

Market Requirements

You have an idea, but what does the market want? This body of work will capture the market needs and validate your idea. If you have a proof-of-concept product you may have tested the market or taken it to a trade show to incorporate market feedback.

User Feedback

Feedback from users on new products in not always possible due to confidentiality issues, however, excluding the end-user may lead to the inclusion of incorrect features or different technologies. In cases where a product is being upgraded to the next generation, we commonly see user feedback.

Regulatory Compliance

Making sure your product will be able to reach the market requires early identification of what regulatory requirements it must meet. If you need international distribution, it is particularly critical, as you can avoid regulatory roadblocks further along in the process. Deciding this step late in the development process usually results in delays, rework and development cost blow out.

Competitor Product

If you are developing a completely new or unique product, you may not have a direct competitor, but it's important to be aware either way. This will help to determine your differentiating features or pricing strategy. Not only is it important to be aware of your competition, but you should also strive to outperform it. Holding a competitor's product in your hand allows you to experience what the market is already using and aware of.

As you begin to engage your electronics solution provider (see Stage 2), you can take advantage of their expertise to dismantle and analyze competitors' products. This will provide you with an overall view of all the features and technology utilized within the assembly, the underlying processes used, the layout, technology, etc. During this process, you will gain a great deal of intelligence and differentiation.

Depending on your product maturity, your preliminary work will be in a detailed or light touch format, but it needs to be considered prior to beginning the design and development process because by having the above aspects of your product journey captured, you will be able to demonstrate to internal stakeholders and investors you are ready to commence product design and development.

STEP 1: PRELIMINARY WORK CONSIDERATIONS...

A. Stakeholder Alignment

Your key stakeholders (marketing, engineering, owner etc.) may have competing thoughts around what is needed. Use this stage to get everyone on the same page. By aligning stakeholders, you will avoid costly delays due to internal disagreements by the time you have your electronics partner start to develop documentation at the next stage.

Importantly, whilst aligning your stakeholders, there is a fantastic opportunity to look at the makeup of the stakeholder team. For example, you might need product expertise that is then complimented with the operational and marketing expertise to ensure the full breadth of your team is covering the required scope at this early stage.

B. Minimum Viable Product

When capturing and agreeing on your MVP, do not go for everything all at once.

Often, we see conflicting views on what the MVP should be, and innovators are constantly refining their product, adding complexity before it even gets to market. This is the biggest delay in getting your product to market (and in many cases, not getting to market at all).

Businesses with a mature NPI framework plan for product evolution over a period. Determine a realistic MVP by considering your cost of goods, timing, market demand and buyer likelihood. The key features can be defined in the product design and development stage, as can the next iteration post-market launch.

STEP 2: CHOOSING AN ELECTRONICS SOLUTION PROVIDER

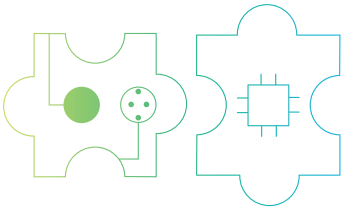
Depending upon the above electronic innovator category you may now have a good idea of your market, product requirements, resource gaps and regulatory requirements.

It's time to search for a partner.

You may attend a trade show synonymous with your market segment, search online or be referred to from within your network, however picking the right size partner able to demonstrate an understanding of your market or similar technologies would be a good start.

For example, choosing a partner for medical device development or other regulated markets such as defense who has no prior experience in the sector may be on a steep learning curve and usually end up with cost and time blowouts.

Narrow your selection down to 3 candidates and then meet in person and get some reference checks done just like selecting a new employee for your own company.



STEP 3: REQUIREMENTS SPECIFICATION

In electronics product design and development, a requirements specification details how your product is going to work.

It is the critical driver that is needed to get your product market ready.

By properly categorizing and defining the functions, properties, attributes, and constraints of your electronic product, you can get a clearer overview of what you need to design. Also, it allows you to separate the product functionalities so they can be researched and achieved on their own.

Having a comprehensive requirements document is also very useful in a project where there are multiple stakeholders as it allows everyone to be on the same page and have a clear definition of what they are developing.

A requirements specification requires technical and specialist input. A discovery process is a typical activity completed with your key stakeholders and your solution provider to capture your preliminary work and develop the requirements specification.

Upon completion of developing your requirements specification with your solution provider*, you will have captured:

Functional Requirements

The functional requirements define exactly what it is you intend for your device to do. It includes a formal description of the product and importantly, the expected functionality of the product including operational conditions and environmental considerations. As you collaborate with your electronics solution provider you will describe in detail what the product does and therefore capture and define all the products features and options.

Non-Functional Requirements

Non-functional requirements refer to properties, qualities, or attributes that the product must possess. The look and feel should never be overlooked, and the Industrial and mechanical design form a major part of the development. There is no single formula of the non-functional requirements for an electronic product as each device has its own particularities. By establishing the non-functional requirements, you capture the usability and effectiveness of your product.

Despite the unique nature of an electronic product, non-functional requirements categories often include:

Design Requirements

What your product needs to have or be relating to components and high-level design

System Requirements

Maps your product functionality by order and interface into available technologies

Hardware Requirements

This is typically related to the enclosure aspect of your product and includes the top-level architecture

Power Requirements

Identifies your product operating capacity, consumption, time/s and, often, temperature

Testing Requirements

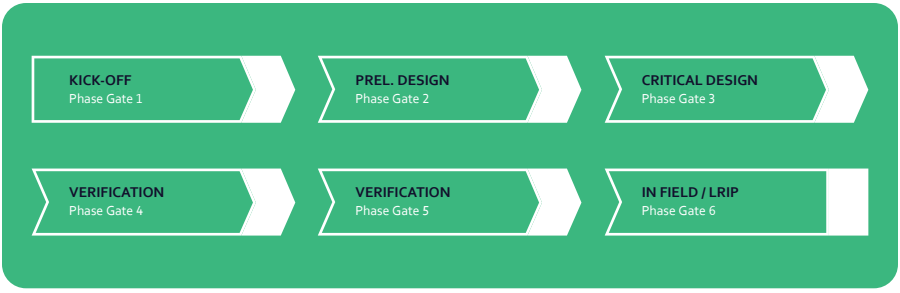
Associated testing that your product must pass, this could include temperature, pressure, environmental conditions and/or movement

Product Roadmap

Your product roadmap should include 2 key components, the milestone deliverables and the task deliverables. These are often delivered in the below formats:

Product Phases

Your design and development journey will be planned around a phase gate process that is divided into major milestones. It also includes high-level activities within each milestone. The phases are separated by decision points. Although your product phases will be unique, the framework remains the same. Below is an example of a relatable Phase Gate Process for electronic engineering:



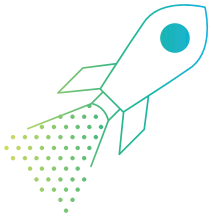
Integrated Master Schedule

Whilst an Integrated Master Schedule is developed in full at the next stage of your product journey, the development stage, a high-level schedule should be identified within your requirements specification as it includes all task deliverables, as identified by your solution provider throughout the requirements specification journey.

The schedule often works backwards from your planned market deadline and is a critical piece of information to determine what needs to be done in order to meet your deadline and by when. Your market deadlines also need to include the individual component lead times and manufacturing.

STEP 3: REQUIREMENT SPECIFICATIONS CONSIDERATIONS...

Be agile – but not to the detriment of your market launch



We often see changes being made along the requirements specification journey. Validating your product through the development stage is understandable, you do not want to limit yourself as you learn about product possibilities, but never lose sight of your committed launch schedule.

Continual or major changes are possible; however, they also impact all the moving parts that go into the specification requirements such as hardware, housing and importantly, the schedule. Remember your MVP. At some point, you need to get underway with your MVP so make sure you take the learnings of your product possibilities and plan them into your product version upgrade strategy for post-launch.

Similar to the product overview document you developed in Stage 1: Preliminary Work, you may already have some aspects of the requirements specification captured.

Where a requirements specification exists, your electronics solutions provider will review the information and work with you to tease out additional details needed in order to identify buildability and timeline aspects of your product.

If you are an OEM, it is likely you have a very detailed requirements specification already. After a review with your electronics solution provider, you will likely move to stage 3 more rapidly than an entrepreneur or SME.

Your role in D&D

"Are we building the right product?"

Our role in D&D

"Are we building the product right?"

STEP 4: PROJECT PLAN – HIGH LEVEL

Now you have established all the required elements to make your product work, and have evidence that it will work, your electronics solution provider will develop a development project plan ('project plan') that will capture what is required to prepare your product for production.

The project plan works backwards from your market launch date and determines the realistic activities required to meet that date. This is then utilized to track progress during weekly status updates and technical meetings. Your project plan should include:

Engineering Tasks

Major tasks for all the various engineering disciplines. This would usually include the number of resources required to meet the various deadlines.

Timeline and Dependencies

Your controlled timeline and the associated milestones and activities will be shaped around the phase gate process that is divided into key milestones and separated by decision points (refer Product Roadmap in Step 2). This will also include dependencies to control the timeline.

Realistic end date

Given the time, effort and passion you have already extended to get to this stage of your product development, it is likely that you are more than ready to get your product to market. Your electronics solution provider will share this goal; however, you should also allow for true considerations of the technical effort required. For example, we occasionally see the need for a toolmaker or other 3rd party specialist to be involved. Given the external nature of this process, their needs and lead times need to be factored in. Our advice at this stage would be not to see this as a delay but as a critical dependence.

STEP 5: SIGN-OFF

At the end of this stage, you will have the details required to identify an order of magnitude for your engineering and manufacturing requirements.

Once reviewed and approved by your key stakeholders, you will then be in a position to transfer to the design and development stage.

AT THE END OF YOUR PRODUCT DISCOVERY JOURNEY YOU WILL HAVE

A signed off requirements specification.

A defined Program of Work to reach "DFx".

Approximate order of magnitude required to fund your product development and manufacture.

YOU CAN NOW

Determine the feasibility of product development, this includes approximate cost, time and resourcing.

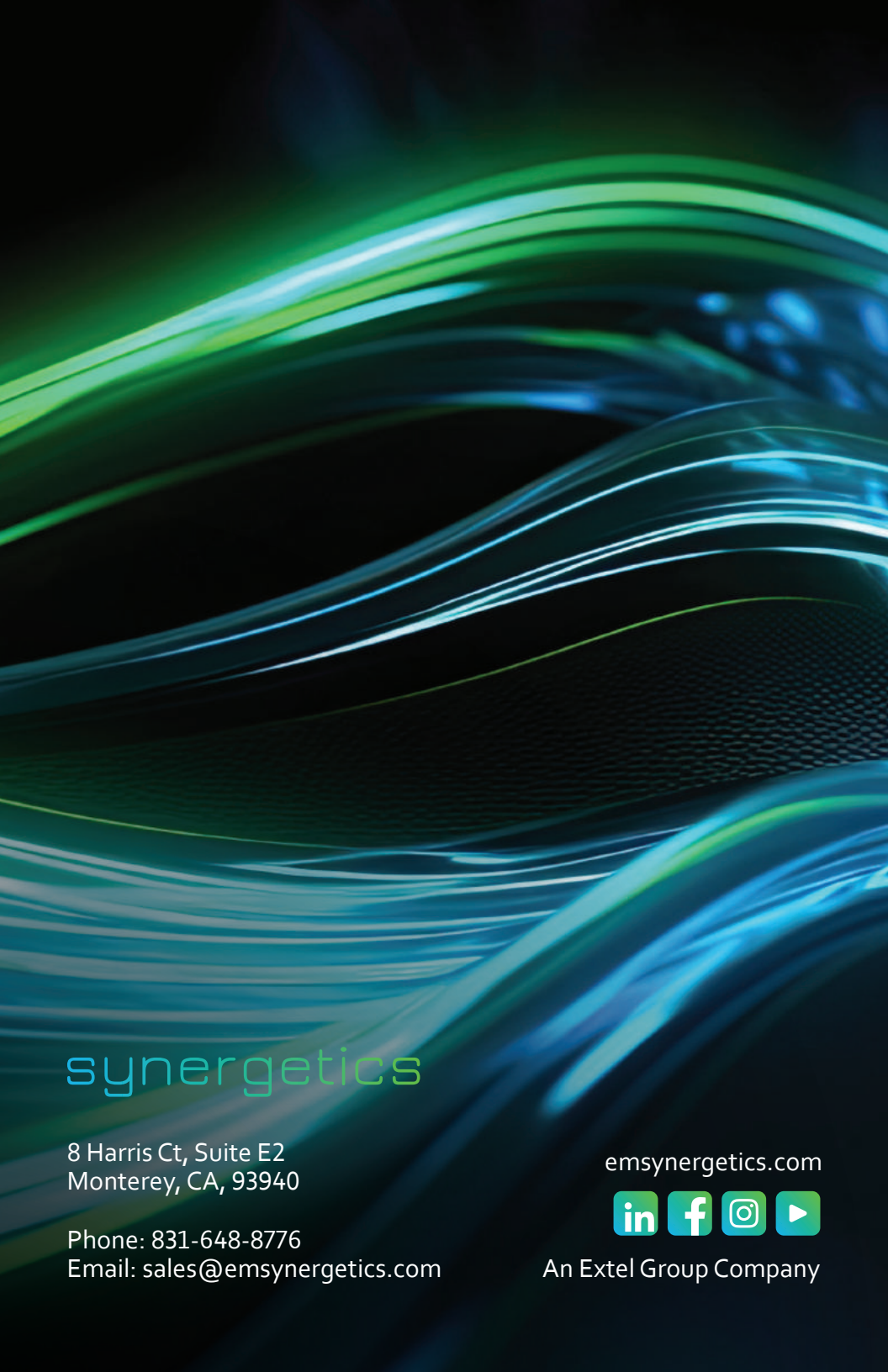
Move to the Design and Development stage of the product life cycle.

CONTACT US TODAY

While product development in the electronics sector is a complex process, it does not have to be difficult or more time consuming on your resources than necessary if you know how to approach it right from the start.

Leverage our vast experience in getting products to market and begin exploring your product development journey with us.

We hope this guide has been helpful in understanding the key stages and considerations involved in getting your product to market.



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