

Product Development

Notes

Introduction To Product Development

Welcome to the inaugural edition of Product Development Notes. We are very proud to launch this article and hope it provides you with a wealth of information and enjoyment.

Product Development Notes is a newsletter explaining the Research & Development (R&D) processes and techniques used in the electronics industry, to develop new electronic products. The upcoming articles will provide a good insight and understanding into these processes. A reader who is not involved with any product development, will be able to understand the implications, and decide whether to undertake new product development through a third party contractor (such as EBD). Product development allows a company to gain considerable benefits associated with “owning” your own product. Readers who are currently developing their own products can also benefit by finding out about new ideas and techniques in electronics R&D. We will also keep you informed of other aspects of R&D including manufacturing, materials procurement and quality systems.

Product Development Notes will be released quarterly and will be emailed or faxed depending on your preference.

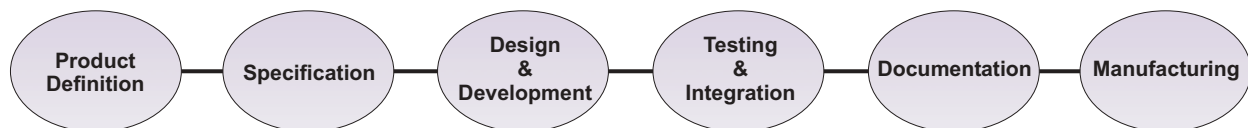
An Introduction To EBD

EBD is an electronics design company specialising in the design of electronic products and boards. Our areas of expertise include software, microprocessors, industrial control, communications products including TCP/IP, and telephony products (either voice or data). We can also undertake new product development from an idea or concept, through to a finished mass manufactured product.

What Is Product Development

Product Development is the process of taking an idea or concept, and transforming it into a tangible product. The process is diagrammatically represented in the figure below, and is briefly explained here. Subsequent articles in the coming months will expand on these steps.

The first step is to understand the product’s features and functions. The intended selling price must also be known, and as a consequence the manufactured cost of the product has to be stipulated. Step 2 enforces



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these requirements in a written specification, with milestones and deliverables at each point. Step 3 is the design and development of the product, usually undertaken by the engineering department. Step 4 involves field testing and integrating the product into a number of test sites. This is usually done in conjunction with a number of customers, with which the R&D department have a good working relationship. This usually generates constructive feedback about the product, which can be incorporated as changes before product launch. Step 5 seems simple but is often overlooked with dire consequences - documentation. The design must be well documented so new engineers can make changes in the future without incurring a steep learning curve. Finally step 6 is the manufacture of the product. This encompasses materials procurement, and manufacturing.

Why Develop Your Own Product?

The answer to this question is quite simple. If you have your own product you are in complete control of that product. It can be developed to have the features required by your customers so it is tailored to suit the target market and hence not be a compromise.

One sees many products imported from overseas and resold into our local market. Many of these products have features that are not required by the Australian marketplace, and hence they add cost to the product yet add no value. This makes the product less competitive, and not as suited to the target market as it should be. By developing your own product, you avoid this, and optimise the product's features and benefits to suit your market.

Owning your own product means you minimise problems with stock availability, especially when dealing with overseas suppliers. It avoids allocation issues which is a particular problem for Australian companies importing from overseas, due to

our small market. Unfortunately, overseas suppliers sometimes treat Australian importers as a thorn in their side, and don't give them the necessary support they require. In addition they often impose large and impractical minimum order quantities necessitating a large monetary outlay when purchasing from them, with subsequent consequences in inventory management.

If you have your own product you are also cushioned from devaluations in the Australian dollar. When the dollar drops, your product becomes more competitive as it has a large Australian content, and export sales should (theoretically) increase.

A further benefit is the ability to plan for fluctuations in sales, and respond faster to changes in the market. If forecasts indicate an increase in demand, production can be quickly ramped up to take maximum advantage of sales opportunities. If you are purchasing a product from a supplier, you don't have this benefit. If the supplier is out of stock, you will have a supply shortfall to your customers, and a consequential loss in sales.

A final benefit of developing your own product is that you have something tangible that you own and manufacture, and are in complete control of. This adds value to your business and pride for your employees and your company, which improve's everyone's effectiveness and efficiency.

When Should You Develop Your Own Product?

There are times when you should develop your own product, and there are times when it's best not to even consider the idea.

If you are in a very competitive market, with lots of suppliers, with a wide choice of products which all offer similar features and very low gross margins, developing a new product is probably not the best solution. To do so, you have to compete against established players in the market who have

“been there done that”.

If the market volume is high, it will also mean a large outlay in manufacturing tooling costs for plastic cases (injection mouldings), and component inventory. This is required to attain large economies of scale and hence reduced component costs, so the product can be manufactured at minimal cost. The initial cost of this type of outlay can range from thousands to millions of dollars. If your company fails to do this to gain the required economies of scale, the manufactured cost of the product will be too high and hence be uncompetitive.

There is one exception to this situation. If you are in a market which has been placid and stable for years with products that have not changed much, it is a good opportunity to revolutionise the market and add a lot of value and hence profit to your product. A good example of this is the humble computer mouse. For 15 years it was the same old two button rubber ball mouse. Two years ago Microsoft launched the optical mouse that did not use a rubber ball. This offered the benefit of not having to remove and clean the ball and rollers. All of a sudden, a product that sold for \$10-\$20 was now selling for \$100 and selling fast. Other suppliers also followed with other variants including a cordless mouse, and a multiple button programmable mouse. If your marketing people feel the market is ripe for a revolution, developing your own product is often the only way to do it.

So the question has to be asked. When is the best opportunity to develop your own product? The answer lies in your target market. If you have a great idea and there are no competitors, this is the ultimate opportunity. Similarly, even if there are competitors, there may be very few, and the products may be old or obsolete. This offers a great opportunity for innovation, which can be realised by developing your own product to fill a niche market such as this.

An opportunity such as this, makes product

design simpler, since there are no serious competitors and hence there isn't a strong requirement to keep product cost down. This makes development much easier. Your development contractor would thus design the product as quickly as possible to minimise R&D costs, and not be as concerned about product cost. Conversely, if the target market was competitive, the opposite strategy would apply - i.e. high development and tooling costs, but low product cost.

In a niche market, tooling and purchasing costs are also heavily reduced. Since you are not dealing with large volumes and established competitors, you don't need a large up front tooling outlay to attain good economies of scale. This also means you can manufacture the product in small volumes and test the market. In addition, since there is little or no tooling, you can change the product “on the fly”, and optimise it for your target market without scrapping expensive tooling.

An example of this is the product's plastic case. If you have a low volume product, you should tool the case using a resin mould instead of a steel mould. This has a much lower up front cost, but produces a lower quantity of plastic cases, typically 2000 versus 30,000, off the tool. This is not an issue in this situation. The benefit however is a much lower tooling cost which allows your company to launch the product without a large capital outlay and to test the market. After selling 2000 units, you may wish to change the product's appearance, and hence revise it. The updated case can then be retooled with another resin mould. Using this approach avoids the need to tool up an expensive steel tool.

This concludes our introduction to product development. Upcoming articles will discuss the R&D and product development processes in much more detail and walk the reader through the various steps, milestones and requirements.