

Product Development

Notes

Commercial Aspects Of Developing A New Product

In the previous issue of Product Development Notes we introduced the product development cycle, and each of the steps undertaken to develop an electronic product from concept to production.

In this issue we introduce some of the commercial aspects of developing a product through a 3rd party R&D House, including contractual obligations, timescales, funding and some typical development paths and models.

Product Specification

When a 3rd party R&D House is contracted to develop a new product, a contract will be required between the client (the company instigating the development) and the R&D House. The contract must encompass all relevant standards and specifications, of which the Product Specification is the focal point.

A Product Specification outlines the functions of the product, features, characteristics and behavior the product must exhibit. For instance, let's assume the client is developing a Television set for the

Australian market. The Product Specification may stipulate the TV must operate from 240V mains, have a 68cm viewable area, come in a silver plastic case, and have a 20 button remote control. The specification may also stipulate the TV must operate in ambient temperatures of 10 degrees Celsius to 50 degrees Celsius and a relative humidity of 10% to 95%. As the reader can see, specifications can be simplistic or very technical. The information contained in a Product Specification has no bounds. Any requirement that needs to be satisfied, must be in the Product Specification.

Role Of The R&D House

Most companies who wish to develop a new product, will use a 3rd party R&D House such as Electronics By Design, to undertake the development.

An R&D House will design the product, thoroughly test it in the lab, undertake field trials, and release samples to the client's preferred customers for field-testing and feedback. The design will be thoroughly documented and professionally presented.

In essence, it is responsible for every technical aspect of the product. The R&D House's task is to take responsibility for all the technical facets of product development, leaving the client free to

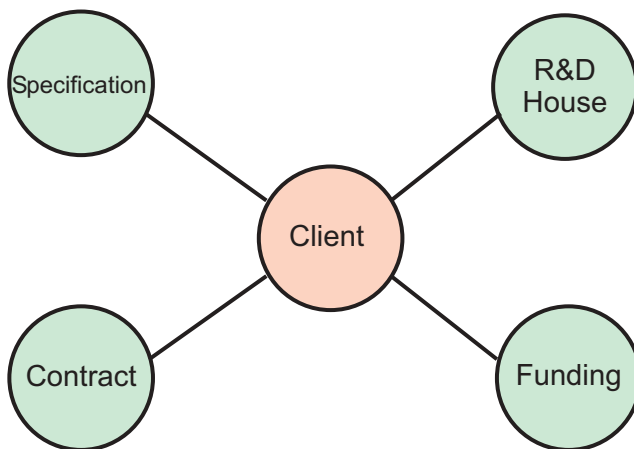


Figure 1: Components Of Product Development



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concentrate on their core business.

Contract

A contract between the client and R&D House is inevitably required when developing a new product. It must outline milestones, deliverables and timescales at various stages of the design. It must also stipulate a firm completion date for the product. Penalty clauses may also be specified for late delivery.

A contract will encompass the Product Specification, and all other applicable standards and specifications. It should cite all documents that are relevant to the product's development, including their issue numbers and dates.

Product Development Models

The contract will stipulate how the product's development will be funded. Typically there are two possible methods of funding new product development.

Client Funded Development

Client funded development offers the benefit of Intellectual Property (IP) ownership to the client. Each stage of development is funded by the client, and specifies milestones and progress payments. Each milestone specifies the deliverable and tangible items, and the associated progress payments.

Deliverable items can include technical drawings, software, hardware or working prototypes. The client owns the IP at each stage after payment is made for that stage. This offers the benefit of total control. The milestones, deliverables, and payments, are stipulated in the contract.

R&D House Funded Development

If the R&D House funds the development of the product, it will usually recoup the cost of development by amortizing it in the sell price of the product, when supplying it back to the client.

Under this arrangement, the contract will stipulate a minimum order quantity of the product, and the time period over which the goods will be shipped to the client. The development cost will be amortized into the final product cost, along with an additional profit margin.

The benefit for the client is a greatly reduced level of financial exposure, and less involvement with the

management of the product's development, since all responsibility rests with the R&D House. The R&D House is responsible for delivering the required product, and taking care of warranty issues and all other aspects of the product's performance and quality.

The downside for the client is not having ownership of the IP, and ultimately, the overall product cost will be much higher, as all the risk is borne by the R&D House.

At Electronics By Design, we can undertake development for a client, utilizing either of the above models.

Product Development Time Scales and Costs

It can't be denied product development places a significant drain on company resources. A new product may take 6 months to 2 years to develop from concept to production. During this period, engineering costs have to be funded with no return on investment until the product reaches the market and sales are generated.

Development budgets can start from \$20k and extend over \$1 million. This is largely dependant on the complexity of the project. Most projects however, are achievable within a \$100k budget.

The development cost can be ammortised into the product cost. If the R&D expense is \$100k, and 1000 units of the product will be manufactured (say), the R&D cost is \$100 per unit. If the R&D House is funding the development, the client is not exposed to this expense.

In summary, the company instigating new product development, i.e. the client, has a number of vital components to manage, for the development of a successful product. Figure 1 diagrammatically shows these components.

Typical Arguments Against Using A 3rd Party R&D House

There are always for and against arguments about using an R&D House for developing a new product. Here we air some of these arguments, and address them.

Development Control

Companies sometimes feel using an external R&D House, compromises the ability to control the development of a product. This concern can be

alleviated by the generation of a good Product Specification and contract, which ties the design down, and greatly reduces the chances of misunderstandings.

The best strategy for developing a Product Specification is to identify the R&D House that will be used to undertake the product's development, and work with them to develop the specification.

It's very important the client maintains control of the preparation of the Product Specification. The R&D House must not be allowed to influence it excessively, otherwise it will favour them instead of the company who is instigating the development.

Continuity Of Supply

If the R&D House owns the IP, they have total control of the product. As a result, the R&D House will also be responsible for manufacturing and supplying the product, usually through a subcontract manufacturer.

The client may become concerned about continuity of supply, should something untoward happen to the R&D House (such as going out of business)

The manufacture of the product, (and hence supply), is dependant on a comprehensive manufacturing package being compiled and made available to the subcontract manufacturer, who will build the product. The package must describe how the product is built, tested, configured and packaged. It will also include a Bill Of Materials so materials requisition planning (i.e. purchasing of components) can be undertaken.

The package will have all the information and tools required to manufacture the product, with no prior knowledge. This ensures that if the R&D House fails in it's responsibility to manufacture the product, the client can seize control of manufacturing and maintain continuity of supply. Typically this will be as simple as contacting the subcontract manufacturer, and placing an order with them to build X number of units of the product. The client does not need to understand how the product is manufactured, as all this information is contained in the manufacturing

package.

In addition, the manufacturing package can also be placed in the hands of a 3rd party solicitor, who will be authorized to allow access and use to it, as an additional safety precaution.

By having these mechanisms in place, a client is protected and the supply of their product is guaranteed, although there may be a slight hiccup if they take control of the product's manufacturing.

At Electronics By Design, we recommend this approach to our customers, so they have the utmost security in the supply of their product.

By The Time We Document Our Requirements, It's Easier To Design It Ourselves

Some clients will argue that by the time they draw up specifications and contracts for a 3rd party R&D House to develop the product, it would be quicker to develop it themselves (assuming they have in-house R&D capabilities).

The author firmly believes this is one of the greatest fallacies ever encountered. If a project is trivial, this type of thinking can be argued successfully, however 99% of products that are developed, are not trivial. The amount of time it takes to document the requirements of a new product development in the form of a specification and contracts, is minuscule compared to the total development time. In addition, documenting the design requirements before R&D commences, ensures a better product will be developed, and will get to market faster, thus saving time and money.

Drafting a Product Specification to allow a design to be locked down and does not take very long. Typically, two weeks is all that's required, once the client knows what is required in the product, in terms of features and specifications. After the document is prepared, the R&D House develops the product, with minimal resource loading from the client. This allows the client to get on with other business.