

The role of the Industrial Designer in the development of new products

by Christian Theill

Designing electronic devices almost always requires a multitude of professional skills: electronics, mechanics, manufacturing techniques, aesthetics, ergonomics, finance, business, communications, marketing and others. Mindful coordination of these skills is vital to the success of the project.

Large enterprises hire specialists from all these fields, and the priority task of their managers is to produce turnover through the judicious selection of human resources, their motivation and their coordination.

In the case of small businesses, start-ups and private individuals, the situation is very different: they generally have only one or a few of these skills.

Do you recognize yourself in one of the following scenarios?

- Your company has a strong business position in a particular commodity sector but lacks the technical facility to design a new product.
- You are an electronic designer but have no technical and/or business experience to design, package, and market an entire product.
- You are a private person and have a nice product idea, intend to spend economic resources to make it but lack all the skills needed to create the product.

In all these cases you will need to supplement your resources by enlisting the services of professionals.

What is Industrial Design?

Industrial Design (also called Product Design) is one of these services and is essential to creating a product on an industrial scale.

Industrial Design is concerned with the aesthetic, ergonomic, constructive and economic definition of the product. Thus, in the case of an electronic device, it is not a matter of “covering” an already existing and functioning mechanism with a “box,” as was the case with radios in the 1950s.

Today, Industrial Design rather means the integration of all components into an object that is functional, aesthetically pleasing, constructively reasonable, cost-effective, and easy to use. A well-designed plastic shell itself can have, on its inside, important functions such as containing electronic or mechanical components. The same shell interacts, on its outside, with the user who gets tactile sensations, visual excitement, and appreciates the ease and pleasantness of using the device. This denotes that design has been seriously involved in the design of the whole device.

Some designers have completely disrupted patterns, habits and market expectations, revolutionizing the interpretation of an object. These visionary events are the pinnacles in the history of industrial design.

With good design, it is therefore reductive to talk about a enclosure for your product. And it is equally reductive to consider only the aesthetics. Instead, it is the integration of all the aspects previously mentioned.

How should I select a designer?

There is no clear definition of the term Designer and his/her professional framework. Anyone can call themselves a Designer. Therefore, it is important to be clear about the type of service you need in order to approach the professional best suited to your needs.

The aesthetic evaluation of a product is subjective. A good designer has his/her own recognizable and matured design language, a kind of aesthetic fingerprint. Examine the designer's previous works. If they seem consistent with each other, if they meet your personal taste and seem in line with the commercial target in which you have placed your project, you already have a good clue.

Stylists

Some designers are mainly concerned with “style,” that is, the aesthetic, emotional, “image”, “artistic” definition of the object, and some of them are also very good. But if they do not also take care of the technical, constructional, and production aspects, you have a problem. You will have to hire not only the designer but also a technical firm to engineer the product. Being designed without technical/production knowledge, the engineered product may deviate greatly from the original design, or it will be manufacturable only at significant additional cost.

Industrial Designers

Good industrial designers take care of both the aesthetic definition and the engineering of the product. Their great advantage is that you are assured that the aesthetic and technical aspects are bound together throughout the design

process. The initial sketch will definitely be producible, the final product will match the style initially proposed, and costs are under control.

Before choosing a designer in this category, however, investigate these points:

Does the designer's aesthetic language appeal to you, does it seem coherent, and does it also promise to match the commercial target of your product?

Can the designer point you to the most appropriate technologies for the type of your product and the expected production volume? Does he/she have the experience and can manage the costs?

Is the designer able to handle prototyping and can point you to trusted suppliers to make the molds for production?

Ask the designer for concrete costs of molds and incidental expenses in previous projects; economic management of a project is as important as aesthetic and technical management.

Young designers

Many designers are novices. Young, vulnerable, but with incredible willpower. Listen to them carefully! If you discover in them any of the skills described above consider whether you should invest in them. Sure, they cost less, but you will have to compensate financially for some of their mistakes and spend a little to supplement their lack of experience. But their vision may prove to be your best investment. Be open-minded and vigilant.

Design firms

"Design firms" typically bring together all the skills needed to develop a product under one roof: the style department, the engineering department, the marketing department, and others. Between the various departments of the design firm, there is supposed to be an ongoing dialogue and they are supposed to give you a turnkey product (or just the design). This service is generally the most expensive but in some cases they have certifications and references that the professional cannot show.

Compared to the dialogue with the professional designer here it is more difficult to establish a direct and personal relationship with the in-house designer responsible for your project who may also be replaced during the course of the project. Here you have a relationship with the company, not with individual in-house specialists.

"Star Designers"

In some market sectors, the "signature" of a well-known designer has great commercial potential. Undoubtedly this can be a great marketing aid for your new product. It is up to you to evaluate cost, quality of performance and the real benefit.

Technicians and engineers

Many technicians or engineers specializing in plastics molding are able to design an enclosure for your product. The result will be technically flawless; however, they are unlikely to be able to give the product the personality, expression, and style that is typical of the designer's approach to design. They have a different professional background. But just as some designers are also very competent in engineering, so there are engineers who are also excellent designers. To assess their competence simply apply what has already been said for Industrial Designers.

How does the collaboration with an Industrial Designer work?

Trust

Your relationship with the designer is essentially one of trust, just like your relationship with your doctor, lawyer, accountant, or architect.

To get the best performance from a designer you must give him/her all the input you have. He/she must be aware of all the technical, functional, regulatory features your product will need to have. It is not unusual to have him/her sign an NDA (nondisclosure agreement) that the designer will always accept. It is to your disadvantage, however, if you hide parts of your project from the designer. They may not be considered in the development of an articulated design.

Personal relationship

Mutual liking is not essential but helps a lot. Mutual esteem and respect are indispensable.

You have to be sure that you frame your designer well but he/she must also know you well or at least frame your tastes and intentions. Design is only partly a technical discipline; sensitivity and, of course, trust count a lot. Tell the designer what you want to accomplish, what emotional elements you expect. If the designer is close meet for dinner, if not meet online. It is a relationship of trust, but the idea, the initiative and the money you are going to spend, is yours..

Professional relationship

Demand a detailed estimate. But also be aware that new elements that may emerge during the design may upset it. Continuous and sincere dialogue with the designer will always determine the serenity and efficiency of the consultation.

Try to create and foster dialogue and exchange among the various specialists involved in the project. Always keep in mind that none of the disciplines involved in your project has a chance to reach product status alone.

If, for example, you have developed an electronic circuit, involve your designer before a *final* burn-in of the circuit. Very often the location you have envisioned for a display or switch can be improved in an overall view of the user/device approach (“UI” User Interface Design). At this early stage the shape of the PCB itself can easily be changed or reduced if the designer points you to good functional, ergonomic, or aesthetic reasons. The same also applies to the choice of components that are in direct contact with the user of the device: there are, for example, many types of graphical displays, touchscreens, connectors or keyboards that are integrated in completely different ways into the outer shell.

Communicate continuously with your designer. Give him/her feedback. Challenge him/her. Respond truthfully to his/her objections. Nail him/her down on the agreements made and the associated performance and timelines. But also accept that agreed changes or your reconsiderations during the course of the work will result in more time and expense.

Clarify with the designer all regulatory, safety and weathering requirements before he/she makes the first sketch; the design approach may change radically.

What should I expect from a designer?

Professionalism

If you pay a designer an appropriate fee, you can expect adherence to agreed-upon time frames, availability for discussion, close cooperation with other specialists involved in the project, and a proactive attitude. You should also expect presentations that are intelligible to you and, of course, all 3D models and drawings necessary for prototyping, production, technical documentation, patents etc.

Expression and communication skills

Initially, the designer will offer you a “concept,” that is one or more solutions in the form of sketches, drawings, or 3D models. The more precise the input you have given him/her, the closer these first sketches will come to your expectations and the final product. Already from these first proposals you will be able to tell whether the designer can give your product a recognizable, pleasing and positive identity and whether that product can be a valuable vehicle for promoting your company's image.

The presentation of the first proposals is the best time to discuss formal, functional and constructive aspects. It is important to “freeze” certain dimensional and constructive aspects at this stage because they determine not only the subsequent executive work of the designer but also the layout of the PCB and any other product components. Any future rethinking will be time consuming and expensive.

Knowledge of the market and related regulations and techniques

Many designers have experience exclusively in one or a few product areas. If you find one who has already worked in your industry, you are in luck. You will easily understand how much he/she has understood and integrated into his/her designs the particular difficulties, regulations, and expectations of the market in that sector.

But if the designer comes from experience in other fields, don't discard him/her. Sure, if one is an expert in sofas and armchairs, and your project is medical equipment (or vice versa), be skeptical. But if your project is about medical equipment and the designer comes from electric home appliance design (or vice versa), consider it. He/she will be used to working with a multitude of regulations, restrictions, production and market conditions. Technically, the two fields are perfectly related. The same may be true, for example, for a toy expert you want to involve in the design of a household or kitchen product.

Technical expertise and experience

Depending on the expected production volume of the product, the technology and materials applied for production will be fundamentally different. Some designs envision production of a few dozen specimens, others of hundreds, and still others may reach thousands or even millions. Knowing this market estimate is essential for the designer because, almost equal in appearance, the construction principle of the product will be very different. If you inform the designer well about your sales expectations, he/she will be the one to advise you on the way forward for the best result and with less investment.

If your product is designed for mass production and then you sell only a few hundred pieces, you will have to spread the investment of expensive molds over those few units.

If, on the other hand, you are unsure of your market, you can start with a few hundred pieces by investing in much less expensive molds. If later market demand turns out to be much higher, you will have lost nothing, and you will be sure to amortize even the cost of a redesign and new molds.

How and how much I have to pay to my designer?

The fee the professional will charge you can be broken down in a number of ways. Whichever form you choose, it is always a good idea to set the arrangements in writing in an engagement letter.

Flat fee

Normally the designer will ask you for a flat fee by estimating the time commitment for his/her services and also partially considering the commercial prestige of the future product and the prestige of your brand. His/her hourly fee at

the basis of this calculation will probably be proportional to his/her experience. But if you have a start-up or a small company, the estimate will certainly be different from that reserved for a multinational company.

At the engagement you will have to pay a down payment of at least 20% - 30% of the total fee, subsequent payments are to be determined as the project progresses, and the balance is due upon completion and approval of the project. To avoid disputes, it is good practice to agree on exact deadlines and divide the project into various stages (draft, prototyping, executives for production, etc.) and corresponding payment tranches. Keep in mind, however, that changes and reconsiderations during the course of the work may result in changes in the agreed-upon fee.

This is the most common mode and particularly suitable when you do not intend to share the product revenue with the designer. The disadvantage is that you expose yourself with the full cost of the design before you have revenue from the sale of the product. The disadvantage for the designer is that he/she does not share in any potential commercial success of the design.

Royalties

Another form of compensation is royalties. If the designer is convinced of your ability to bring your product to market, he/she may offer you this formula. You pay him/her a down payment (expense reimbursement) to be determined, and he/she will have a percentage calculated on the net sales turnover of the product. This percentage generally varies between 3 percent and 10 percent depending on Industrial Design's contribution to the overall design and is subject to negotiation with the designer. The designer may ask for a guaranteed annual minimum for the first few years of production to ensure that he/she is within his/her costs.

This formula has the great advantage that you have to invest a very modest amount before you actually sell your product. If the product sells well, partly because of its good design, the benefit will be both yours and the designer's. He/she will then be committed to providing you with the best service thinkable. But what if other aspects of your product that are not within the designer's expertise are not up to snuff (e.g., electronics, marketing etc.) and you don't reach your sales forecast? Then the designer loses out. He/she must then have valid reasons to trust your company.

Flat fee + Royalties

It is a combined form of the previous two and is particularly suitable for cash-strapped start-ups. Only one-third of the budgeted fee is paid to the designer during design (to be divided into stages and corresponding payment schedules). The remaining two-thirds are paid, from the start of production onward, in the form of royalties and in any case within two to three years of the project's completion (to be agreed upon). If at the end of this deadline the royalties have not reached the agreed fee you will have to pay off the rest. If the product sells well you are both happy. Royalties are clearly due even after the agreed-upon fee is reached.

Compared to flat fee your advantage of this formula is that you don't have to settle much of the fee before you have profits but you do have to pay royalties as long as the product remains in business.

Compared to pure royalty payments with this form it will be easier for a designer to accept the risky commitment to a startup: he/she will receive his/her fee, albeit very diluted over time, but in return he/she will share in any success of the product.

Designer - Partner

Another option is to involve the designer as a partner in your business and to value his/her services as a share in the company. This means that an agreed-upon share of your business is formally assigned to the designer, and thus also a share of the revenues. This can be mutually convenient but the designer anticipates his/her entire work without revenue until the product generates profits.

Fixed and continuous consulting

If your company needs continuous and recurring Industrial Design work a very practical and streamlined formula is a continuous consulting contract: the designer is available to you for a set number of hours and is paid a fixed monthly fee. In this case you must have full confidence in your designer's abilities. The advantage is that you avoid the need and waste of time for recurring quotes and that you will have priority of your designer in case of emergencies.

What can go wrong?

It may happen that the design seems perfect to you but the finished product disappoints you. Causes of this can be actual mistakes by the designer, his/her inexperience, or poor execution of the molds.

Planning errors

Even the best designers can make mistakes that result in unanticipated costs (e.g., interference between two components, inaccessibility of fastening components, insufficient drafts, etc.). Normally the person who technically designed the product is liable for damages and additional costs. A design review by another professional can help to reduce the risks.

Bad execution

Poor quality of molded parts is often due to a superficial choice of suppliers or excessive thriftiness. The cheapest molds often do not achieve an acceptable level of quality. Evaluate with the designer the price/quality ratio of each supplier

Unsuitable designer

If at an early stage of the project you feel that the designer's proposals do not match your expectations you are still in time to avoid further damage and look for another designer. At a later stage of the project this will become more expensive.

Conclusion

The Industrial Designer is an indispensable consultant in the design process of your new product. In the ideal case he/she not only has artistic skills but is capable of combining all the aesthetic, functional, ergonomic, constructive, industrial and economic aspects of your project.

Involving a good Industrial Designer in your team benefits enormously the quality, recognizability and cost-effectiveness of your product and the image of your company. Don't forget to reserve an "Industrial Design" item in your project budget. It will still be less onerous than the economic damage you will find yourself if you try to do without it.

And remember that it is essential to involve him/her from the very beginning of the design process. Design is not an ancillary discipline to beautify your product but integrative of all functional, constructive and aesthetic aspects of it to make it better.