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# WHY HIRE A TECHNICAL CONSULTANT?

By Joe Randolph

**Introduction**

This note summarizes some of my observations from being a technical consultant for over 20 years. During this period I have completed hundreds of consulting projects for more than eighty different clients.  This has given me the opportunity to see why, when, and how various clients have decided to hire a consultant.  I have been able to see first hand what sorts of situations benefited from bringing in a consultant.  I have also seen some cases where a consultant's expertise could have been used much more efficiently if the client had acted sooner.

If you are thinking about hiring a consultant, perhaps some of my observations will help you decide how to proceed.

The decision to hire a technical consultant can be driven by a variety of specific factors, but the underlying motivation should be to *make your business more profitable*.  While there is an expense associated with hiring a consultant, you can often achieve a substantial return on investment by matching a well specified scope of work with an appropriate consultant.

**When is it Cost Effective to Hire a Consultant?**

Sometimes the economic case for hiring a consultant is fairly obvious, such as when a multi-million dollar sale is in jeopardy because your product is failing to meet a key performance requirement.  Or, in perhaps a more typical scenario, your product design requires specific expertise in a narrow area where your existing staff have little experience.

Often the economic case is not as clear but is no less real.  Some managers are content to let their in-house engineers struggle with a technical problem for weeks or months without seeking outside help. The managers justify this with the rationale that since the payroll expense of the in-house engineers is already budgeted and will be expended anyway, these engineers are "free" compared to the extra cost of hiring an outside consultant.  This rationale overlooks three very important hidden costs:

1) The company may suffer lost sales due to a delay in getting the product to market, or, if the product is already in the market, the company may experience unhappy customers and excessive field service costs.

2) The same engineers who are expending weeks or months on the technical problem are not available to pursue potentially more profitable projects such developing other new products.

3) Aside from tying up your staff, there are typically other costs associated with a protracted test-modify-retest cycle.  These costs include board layout, prototype assembly, and testing fees at

outside labs.  The process of building a prototype and having it tested at an outside lab is very time consuming and expensive.  A small investment in consulting assistance can often save you one or more iterations of this process.  Your goal should be to pass the product's performance and regulatory tests on the first attempt.  If a problem is discovered during testing, you should try to have maximum confidence in the proposed solution before you implement it and retest.

I have seen several cases where a client engaged in a seemingly endless (and very expensive) test-modify-retest cycle while trying to solve a particular problem that they did not fully understand.  When they finally decided to bring in an outside expert, the consultant was able to solve the problem very quickly.  Had the consultant been brought in earlier, a great deal of time and money could have been saved.

For situations where your in-house staff have little experience with a particular aspect of your product design, the most expensive mistakes are often made early in the design process, long before they become apparent.  Mistakes at the architectural level are sometimes not discovered until the product design is "complete" and the product is being tested by a regulatory agency or a customer.  At this late stage it can be extremely expensive to recover from poor choices that were made at the beginning of the project.  In some cases, there is no practical way to recover at all.

For all of the above reasons, it can be financially advantageous to make appropriate use of an outside consultant.  While the use of an outside expert can clearly be justified for resolving a major technical crisis, there are other, lower profile situations where an outside expert can save you even more money, by helping you avoid crisis situations in the first place.

So, when you embark on a new product design that involves technology where your staff are not already experts, or if you encounter technical problems that your staff are having difficulty resolving, you should consider bringing in an outside expert to help out.  Properly done, you will save your company money and get your product to market faster.

**Benefits of Hiring a Consultant**

*Expertise*

Certainly the most common reason that managers hire a technical consultant is because the consultant has specific technical expertise that is needed for a given project.   However, there are additional benefits, outlined below, that sometimes make the use of an outside consultant preferable to using in-house employees.

*Objectivity*

Sometimes there are conflicting technical opinions or there are political problems within a company that interfere with a manager's ability to determine where the truth lies.  An outside consultant can provide an objective perspective on the situation and provide valuable, unbiased advice.

*Focus*

Most of a company's employees have multiple projects and responsibilities at any given time.  Sometimes a nagging technical problem simply can not get the attention it needs, especially if the

employees responsible for solving the problem are trying to manage other issues at the same time. Often, an outside consultant can focus better on the problem and get it solved faster.

*Training Your Employees*

Some managers are reluctant to hire consultants because they would prefer to develop in-house expertise. However, one of the fastest ways to develop new in-house expertise is to hire an experienced consultant to train your employees in the new area. By assigning the consultant to work closely with an in-house employee on a specific task, considerable knowledge transfer can be achieved in a short time. If training your in-house engineers is one of your goals for a project, it is best to make that clear during the initial interview. Some consultants are more willing than others to share their expertise.

**Attributes of a Good Consultant**

*Relevant Technical Experience*

In most cases, an outside consultant should have previous experience that is directly relevant to the task at hand. It has been said that when selecting a consultant, "has done" is preferable to "can do." Occasionally there may be situations where the attributes you seek have more to do with the consultant's objectivity or their ability to approach a problem in an organized way. Over the years I have completed a few such projects that were outside my primary area of expertise, but this was because the client had prior knowledge about me and was seeking a particular type of individual rather than specific technical expertise. Such situations are probably the exceptions rather than the norm.

*Consulting Experience*

While technical expertise is an important factor, it is also preferable to hire a consultant who has significant experience serving clients in a consulting role. Such experience helps to hone a consultant's ability to organize his work activities, set priorities, and be responsive to the needs of the client. Occasionally people who are temporarily unemployed or between jobs will be available as "consultants," and these people can sometimes provide useful assistance. However, people whose primary job experience is working as an employee within a large company may have difficulty transitioning to the very different requirements of serving as an outside consultant.

*Objectivity*

Your consultant should be objective, with no particular axe to grind and no pre-packaged solutions that they want to force-fit onto your particular situation. Be careful relying on the technical recommendations from a vendor's sales representatives or applications engineers, since these people can not give you completely objective advice. Your consultant should be able to remain calm in the face of conflicting technical views and conflicting information, and should pursue a solution using an organized, fact-oriented approach.

*Sense of Relevance*

A good consultant has a keen sense of what information is relevant to the problem at hand. This skill is usually developed as a result of experience working on similar problems in the past.

*Thoroughness*

It is important that your consultant thoroughly review all the available information on a problem, including the underlying data on which previous conclusions may have been based. Sometimes the true cause of a technical problem is different from what it first appears to be, and the consultant should be sufficiently thorough to correctly analyze the situation.

*Sound Judgment*

The consultant should have a good understanding of how your business operates, and should recommend solutions that are appropriate and feasible.

*Strong Interpersonal Skills*

On most projects, your consultant with have to interact with several of your employees. Some of these employees may be delighted that you have brought in an outside expert, while others may feel resentful or even threatened. Your consultant should be sensitive to these issues and should be able to gain the trust and respect of the employees that he interacts with.

*Good Communication Skills*

Communication skills are key for most types of consulting projects. Your consultant should listen carefully to what you and your employees have to say, communicate well when discussing the work at hand, and present solutions clearly, both verbally and in writing.

**Summary**

The appropriate use of an outside consultant can generate a very large return on investment. If your staff lack experience in a particular technical area, or if they are struggling with a problem that is difficult to resolve, you may be able to move things forward much more quickly by bringing in an appropriate consultant.

In general, the sooner in the development process that a problem is prevented or resolved, the less it costs your company in the long run. Major design changes are time consuming and expensive if they must be implemented late in the development cycle. For this reason, it can be beneficial to include an outside review early in the development process, with periodic checks as the project progresses. Typically, this type of preventative consulting assistance is far less expensive than last minute crisis-mode intervention.

Of course, many clients only engage an outside consultant after a serious problem has developed. In these situations in particular, it is important that your consultant have not only the relevant technical expertise, but also the relevant business experience, judgment, and communication skills to help you develop a solution that is appropriate for your particular situation.

**About the Author**

Joe Randolph is an engineering consultant who specializes in the design of voice and data telecom equipment.  He has been a full time consultant since 1984.  Prior to that he was employed at AT&T Bell Laboratories, where he held positions as a Member of Technical Staff and a Technical Supervisor.  His contact information is:

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