Professional Development Activities to Enhance Your Career

By Gary Breed
Editorial Director

> This month's tutorial is about engineering as a professional career, explaining the main avenues for self-improvement that lie beyond work assignments

It is often said that there is a big difference between a "job" and a "career." A job is simply a collection of tasks, while a career is deep personal involvement in the business or technology that requires the completion of those tasks. In short, a job is what you do, a career is who you are.

Although some engineers go to work each day with the attitude that it's a job, most engineers see their work as a career—they have invested a lot of hard work in school, they have ambitions for achievement in a professional environment, and they love to figure out how to make things work!

There are two main avenues for professional development as an engineer: technical and managerial. There is a third path—personal development—that may be pursued within, or in addition to, employment. Every engineer seems to find that one, two or even all three are challenging and satisfying paths for professional achievement and recognition.

Graduate Studies

The most obvious way for an engineer to enhance his or her technical capabilities is to obtain an advanced degree. Whether pursued immediately after receiving an undergraduate degree or earned later, a Masters or PhD degree is a proven way to advance an engineering career. Many universities have programs that emphasize an area of high frequency technology—microwave engineering, communication systems (wired and wireless), RFID, sensors, mm-wave technology, RFIC and MMIC development, computer simulation and analysis, and many other study areas specific to the industry.

The advanced study and research that is integral to postgraduate study is valued by employers, who understand that the ability to sustain in-depth, focused study will translate to similar tasks in product development. Many companies have formal programs to assist their employees with part-time graduate studies. Even if they don't provide financial support, almost all will make an accommodation for class work and allow the use of company resources for research projects.

Large corporations, government and military laboratories may fully fund graduate study. Some of these programs have requirements such as minimum employment tenure, and/or a commitment to stay for a time after completion of an advanced degree. A number of these programs are merit-based, limited to the most-valued employees.

Continuing Education

The most flexible means of maintaining and improving technical competence is through selected learning opportunities. Short courses of one day to two weeks are a good way to "jump start" your understanding of a new subject. Using the references and other resources provided in course materials, you can proceed with self-study as necessary. Some courses offer advanced courses that may be helpful, as well. Short courses may be the best way to learn about application-specific matters, such as standards and regulatory matters. While they may not include all details, they will provide an organized outline of the pertinent issues.

Company-specific training has become increasingly important for such things as EDA tools, test instruments, integrated circuit foundry services, and even components. Powerful tools and capable devices need to be used to full advantage. A great deal of design expertise is contained in these products, and key elements of that knowledge must be communicated to the designers using them. User meetings, design seminars and the recently growing webinar format are all methods for improving productivity.

Industry-Wide Involvement

Another means of career advancement is involvement in activities outside the company. Although the support of such activities varies widely across the high frequency industry, the vast majority of employers will appreciate the value of wider recognition through their engineers' reputations. Delivering papers or working on the steering committee of your favorite conference is a common way to get involved.

Of course, outside involvement may be of direct interest to your company. For example, you may be encouraged to join standards committees. When your company has a strong interest in a particular standard, involvement and influence is essential to be competitive. Both technical input and "diplomatic" participation are needed in standards work. Committee work will help you hone your special talents in either of these areas.

You might be called on to represent the company in collaborative groups like the WiMAX Forum or a military contractors group. Company-sponsored involvement may also include collaboration with universities for recruiting, internships or research projects.

Management and Business

The workplace is a complex environment, especially if your chosen path of career advancement is in management. Understanding business, personnel, and project management principles takes the same kind of effort as getting though an engineering curriculum. If your ambitions are focused on a larger role than just engineering, consider obtaining an MBA or other business management degree.

If you are already in a supervisory role, short courses or individual business school courses may be sufficient to fill weaknesses in your knowledge of business operations and personnel matters. Self-study is possible, but is highly dependent on each individual's background and learning style. Some universities offer "Management of Technology" or similarly titled MS degrees that may be appropriate programs for you.

If your role will remain technical, it is still important to learn more about the things that happen around you. As a "Senior Member of the Technical Staff" or even "Senior Scientist," you will have many dealings with corporate management. Even if those interactions are completely technical, the personal dynamics of communicating with management executives are not. Meetings with management will benefit from any effort you make to understand business principles and the operation of the company outside the engineering department.

Sharing Your Knowledge

Experienced engineers, or talented engineers at any level, can have a special understanding and unique insight concerning their areas of specialization. Saving this knowledge and passing it along to other engineers is an important part of the profession. This is how we get reference books, technical papers, application notes and all the other written records of technical material.

Writing is an important part of engineering, yet many engineers approach a project like an in-depth technical paper with fear! They don't realize that they are already prolific writers through their lab notebooks, e-mail communications, memos and reports. A paper might be more organized and complete, but it should be viewed as a logical step upward, not something completely new.

A written record (including electronic means) is essential for any profession. Making a significant contribution, however small, will be appreciated by future generations.