CHAPTER 2

DEVELOPING A SUCCESSFUL CAREER PLAN

The first step to getting control of your career is developing a strategic career plan. A good strategic career plan should identify the path to your ideal job and identify the immediate and long-term actions that will lead you to your definition of career success.

A strategic career plan is a map guiding you along in your career so you know the path to your ultimate goal. It provides direction and guidance at each bend in the road so you always stay headed in the right direction.

Engineers who fail to develop a strategic career plan are like a person driving to a place they have never been before without directions or map. The analogy is this, a person who believes that as long as they drive along the freeway at 60 miles per hour, they are making progress. They may not know which exit to take, but as long as they are traveling at 60 miles per hour they are making great progress. Sometimes, going fast isn't as important as knowing where you are going to get the results you need. Spend time developing a strategic career plan and don't waste a lot of time and energy on activities that may hinder your career advancement progress.

PURPOSE OF CAREER PLANNING

There are several important reasons you need to develop a career plan. These reasons include:

- Means to reach your goals
- Sense of purpose for daily activities
- Sense of fulfillment and accomplishments
- Shock absorber during setbacks
- Develop backup or recovery plans

The Engineer's Career Guide. By John A. Hoschette

Developing a plan provides the map to guide you. Career planning also provides one with a sense of purpose for all those mundane daily activities. It is quite easy to lose focus on your short-term goals and long-range career objectives when you have long daily commutes and an endless stream of, what appear to be, meaningless tasks to accomplish.

While working in Los Angeles, Boston, and San Jose, I would sit in traffic for hours and often find myself asking, "Why am I doing this again?"

One of the most satisfying reasons for career planning is that it provides the individual with a sense of fulfillment and accomplishment as the goals and career advancement opportunities are realized. This provides a renewed sense of energy and pride in your work and keeps you working toward the next goal. "Success Breeds Success."

Finally, career planning is absolutely essential in the event of setbacks. Career setbacks include such things as being laid off, career plateaus, demotions, lower than average raises, and job obsolescence due to technological advancements. One recent career threat has been job outsourcing to foreign countries. With the rapidly changing technology environment and global economies, lifelong employment at a single company is becoming a very rare event.

The average engineer can expect to change jobs multiple times in their lifetime. Therefore, a good career plan can serve as a shock absorber and provide backup or recovery plans in the event you need it.

A graphical representation of an engineer's career is shown in Figure 2-1. The *x*-axis is time, and the *y*-axis is salary/responsibility. In an ideal situation, the engineer's career grows exponentially with few setbacks until, at the end of the career, the engineer retires. However, the reality of life is shown in the lower curve.

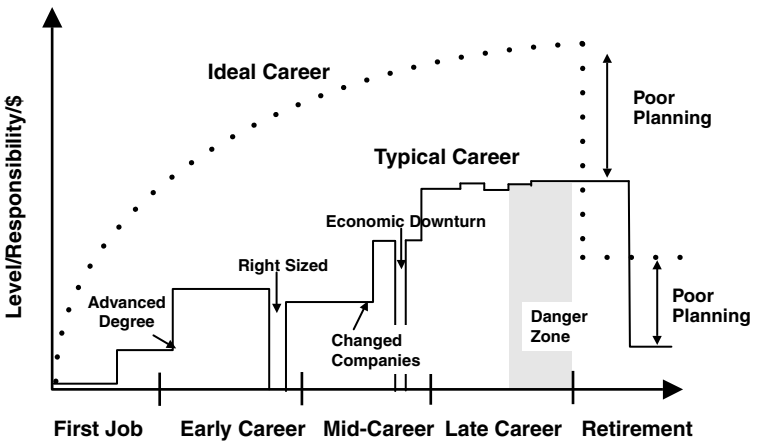

FIGURE 2-1 Ideal career versus typical career.

In the typical career, the engineer's growth is characterized by a series of ups and downs. Careers are aided by returning to school and receiving an advanced degree, job changes, excellent performance reviews, and growth through seniority. Most often it is slower than expected. There are circumstances when the engineer may be laid off due to economic downturns in the industry. A good career plan will aid the engineers through the good times as well as the bad. However, as shown in the lower curve, most often the typical engineering career is far less successful than originally hoped for, and a leading factor contributing to this is poor planning.

In recent years, a new danger zone has risen for engineers between the ages of 55 and 65; they are the leading candidates for layoff during company downturns. The reasons being they are usually the most expensive salary-wise, cost the companies the most in medical benefits, and are often technically obsolete if they have not returned for training in the latest technology.

What is constant during an engineer's entire career? Two things: first is the need for lifelong career planning to deal with all the changes. Career plans, like technology, quickly become obsolete due to all the changing circumstances. Products come and go, technology changes, supervisors change, and even companies come and go. Career plans need to be updated yearly and changes made when required.

The second constant during the career of an engineer is the need for technology updating. This is necessary now more than ever since the half-life of technical knowledge is now down to roughly five years. That is to say, half of the technology you learned only five years ago is now obsolete or overcome by new technologies. People ask, how can this be true? These questions may illustrate the point, what do you call a 5-year-old PC? Most answer, obsolete, outdated, no longer used while some even claim they qualify as antiques! With technology changing so rapidly, the only hope an engineer has to remain successful is to make lifelong learning part of their career plan. Do not become obsolete like your PC, make lifelong learning part of your career.

DANGER SIGNS INDICATING CAREER PLANNING IS NECESSARY

There are definitely danger signs where career planning is necessary. These danger signs are

- Career plateau, your career growth has stopped or you are receiving poor ratings
- Excessive hours at work, 50–60 hours per week is the norm
- Self-worth measured in terms of "Company"
- Work is no longer fun, conversely staying at work to avoid going home
- Stress—quick to anger—sarcasm—absenteeism—inflexibility
- Economic downturn in your industry, downsizing, and layoffs

▶ ***Career Tip.*** If you find yourself experiencing any of these warning signs, then it is time to do some serious career planning. Recognize the signs and take the appropriate actions now.

CAREER ASSESSMENT AND PLANNING DECISION TREE

A simplified career assessment and planning decision tree is shown in Figure 2-2. The decision tree starts with asking the basic question, "Are you happy with your present career?" Answering this question leads to three different choices. The first is, Yes I am happy with the way my career is progressing and I like my job. Then keep doing what you are doing and congratulations. Make sure you have backup plans just in case. The second choice is, I am not happy with my present job, but I do not want to leave my employer. In this case, you need to develop career plans to explore your options.

I have listed three options for this leg of the decision tree: look for new assignments within the department, leave the department, or get new training to qualify you for better assignments.

If you are unhappy with your present employer and want to leave, you need to assess what it would take to make you happy and what you want to change. From here, the next step is to generate a career plan, update your resume, and start interviewing.

As you look at the options on the decision tree and decide which actions you should take, you might want to consider actions in several of the branches at once. If you look closely, all branches involve generating or updating your career plan. Therefore, this is a good career action regardless of the decisions you make. Also, you may start down one branch of the decision tree only to discover this is not what you really want and switch to another branch. And as always, things will change, so you will need to observe circumstances over a period of time to get a true reading of where things are headed. It is most important that you spend the time thinking about and planning your career options. You can always make adjustments and change your approach. As a matter of fact, career engineers with 30 or more years of experience have found that constantly assessing the situation, defining adjustments, and changing plans are the norm.

THE PROCESS OF GENERATING A CAREER PLAN

Stephen Covey, in his book *The 7 Habits of Highly Effective People*, defines a simple process for an individual to follow to generate a career plan [1]. This process is shown in Figure 2-3 and contains three simple steps. These steps are self-evaluation, generating a career plan, and taking action.

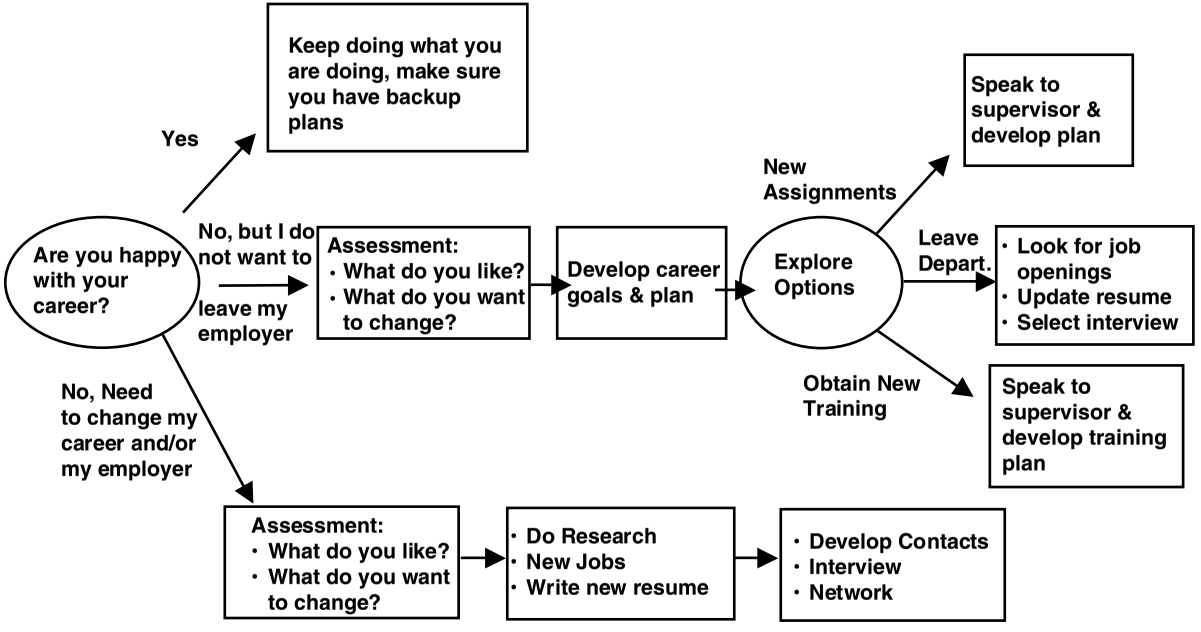

FIGURE 2-2 Career assessment and planning decision tree.

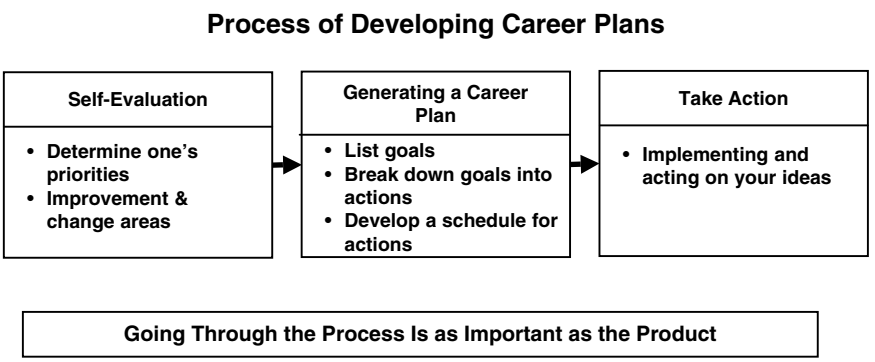

FIGURE 2-3 Process of developing career plans.

The first step in the process is to determine one's priorities in life. Simply put, we do not have time to do it all, so we must choose the most important things and prioritize the list. In addition, one must identify improvement areas. Another way to look at this is to determine our weaknesses and come up with an improvement plan. It is not usually our strong areas that hold our career back but our weak areas, so the best return on effort is to improve areas where we are weak and turn them into strengths.

Once we have performed a self-evaluation, the next step is to generate our goals list. Clearly identify your career goals and then break down those goals into actions. As we identify career actions, we need to determine a schedule for the actions. Set a deadline for each action and make it happen. Think of it as an assignment from your supervisor, one that is important and needs to be accomplished on time.

For the final step in the process, we need to take actions, great plans are useless without action. It is action that translates plans into accomplishments. In this step of the process, we realize the benefit of our planning.

Some people I have coached feel that generating a perfect plan is the key. And they get all hung up in the way the plan looks and how it is formatted. A neatly formatted plan is not a guarantee to successful career planning. The most significant benefit behind planning is simply going through the process and forcing yourself to think about your career. Don't worry if your career plan is not perfect and there are holes or undecided items. Just trying to generate a plan and recording your thoughts puts you ahead of the majority of engineers.

CAREER WORKBOOK—HELPING YOU PLAN YOUR CAREER

To help you organize your thoughts and guide you in the assembly of your career plan, the next sections of this chapter will identify typical engineering career goals and the corresponding actions to accomplish these goals. As you read through the remaining sections in this chapter and start to identify your goals and actions, you can record them in the career workbook provided at the end of this book, in Appendix A.

It is very important you take the time to write out your goals and actions in order to accomplish them. Experts all agree, writing them down, discussing, and formulating action plans will lead to success.

The workbook in Appendix A, will help you formulate your own personalized career plan. Please take a moment and review the workbook before starting the next sections of this chapter. Briefly study the workbook and identify the questions and data it will be asking of you. Then return here and we will start the career planning process.

Quickly review the career notebook in Appendix A and then return here!

Career planning involves each individual doing assessments of what is important to them and where they ultimately want to go with their career. To help you identify and select your personal career goals, I have identified some typical career choices you need to make. These career choices can be categorized into the following:

- Technical versus management career plan
- Typical goals during an engineering career
- Skills assessments (strengths and weaknesses)
- Examples of great career goals
- Balance in your career and great personal goals

To develop a strategic career plan, you need to look down the road of a typical engineer's career. Where do assignments lead? What do you need to be doing to accomplish your present short-term career goals and subsequent long-term goals. Let's look at the typical career of an engineer as they progress from leaving school to senior levels.

TECHNICAL VERSUS MANAGEMENT CAREER PLAN

A fairly typical career path for most engineers is shown in Figure 2-4. Engineers leave school and join a company in an entry level position. These positions are identified in Figure 2-4 as levels E1, E2, and E3. Generally, a Bachelor's degree with no experience will join the company as a level E1. If the engineer has some experience or a Master' degree, they enter at level E2. If the engineer has a PhD, they may enter at the E2 or even E3 level.

At the lower levels (E1–E2), the engineer is expected to be a good team player and take directions from lead engineers and follow orders. In addition, the engineer should be further developing their technical skills and knowledge base. They should be learning to work on teams, interface with other engineers of different disciplines, and learning the company structures and processes. The quickest way to advance is by getting their assignment correct and done ahead of schedule. This clearly shows they are ready for more challenging assignments and ready to move up.

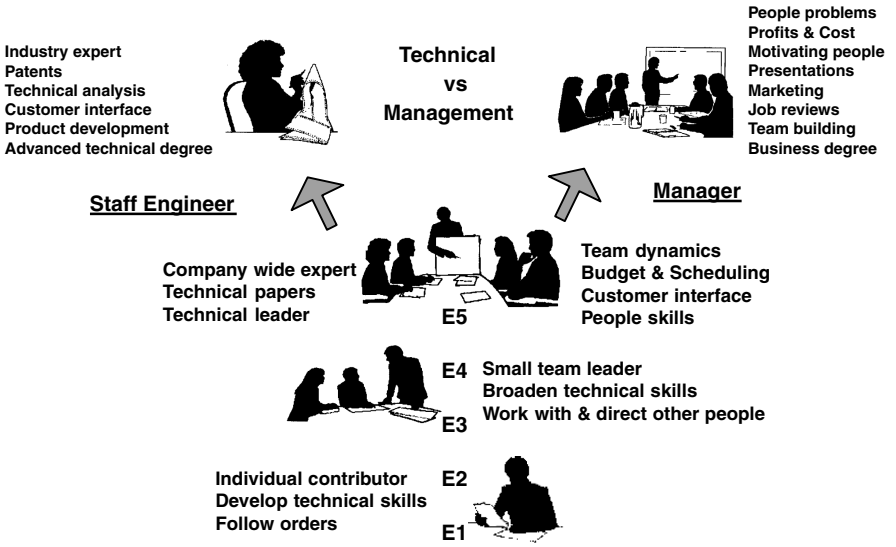

FIGURE 2-4 Career planning.

As the engineer moves into the middle ranges (E3–E4), they become a small team leader. They must continue to broaden and expand their technical knowledge base and also lead the efforts of a small team of engineers. Their assignments continue to include doing technical work in their area and expand to learning how to get other people to support team efforts accomplishing the goals. They work with other people and get assignments done by others.

In the top levels (E4–E5), the engineer usually becomes the leader of large teams and often is responsible for the team's technical success as well as the financial success. As a project lead engineer, they may be directing the activities of several large teams at once. On the technical side, the lead engineer is responsible for the team meeting the technical objectives of the projects. They are often considered industry experts, may hold several patents, and may be the technical director for the project. They lead and are often responsible for the team's engineering design, build, test, and product production. They direct the technical activities of the team, including making technical decisions and approaches.

On the management side, these lead engineers (E4–E5) are responsible for the financial success of the project. They work to ensure the project is completed on time and within budget. They are required to have a variety of management and people skills. They must be able to organize teams, plan projects and resources, set objectives, interface with customers, and resolve conflicts in the best interests of the team and company. They often become involved in personnel issues such as hiring, layoffs, raises, and promotions. The lead E5 engineers need to develop great business skills in addition to keeping their technical skills updated. Generally, it takes about 10–15 years for an engineer to progress from an E1 to the E5 level.

At the E5 level, the engineer has to make a major career choice. The engineer has reached a fork in the career roadmap. This career choice is shown in Figure 2-4 as becoming a "Technical Staff Engineer" or "Manager." If the engineer decides to focus on becoming a Technical Staff Engineer, their assignments usually become strictly technical in nature. They focus on the technical aspects of the project and leave all the business decisions to the managers.

The technical staff engineers are responsible for the technical success of the products, projects, and company. They usually hold several patents, publish technical papers, and often return for advanced technical training and degrees. They interact with the customer and the customer's technical experts and are considered industry experts in technological development.

If the engineer decides to become a manager, then they need to develop an entirely new skill set. The engineer takes a major turn in their career to focus their energy on the business success of the company. They handle company finances, banking, people problems, profit and loss, marketing, and customers. They are responsible for the financial success of the company. The shift to a management career requires the engineer to return for business schooling and develop an entirely new skill set.

Deciding on whether to remain technical or change and become a manager is entirely dependent on your preferences. If you find yourself having no interest in dealing with people, organizing teams, and dealing with the business side, your career choice best lies along the path of becoming a technical staff person. If, on the other hand, you like to lead people or wish to develop good people skills and enjoy organizing teams, then the management path is your best choice.

If you are unsure, the best thing to do is talk over your choices with your mentors, supervisors, and others in the company who are presently in those positions you hope to reach some day. Ask them what they like and dislike about their jobs, what they find challenging, and how to best prepare for a position similar to theirs.

As you move up the engineering levels, there is a constant trade-off between acquiring more technical skills or management skills and you will need both to advance. However, the timing of acquiring these skills is key to successful and rapid growth. The recommended guidelines for allotment of time and effort you spend on technical versus managerial planning and training for the various engineering levels are shown in Figure 2-5.

I have witnessed junior engineers (E1–E2) announce they are returning for an MBA because they want to become a manager. They falsely expect by the time they receive a degree in three years the company will simply make them a manager. This is good planning but unrealistic goals. They must also prove they have the technical skills and demonstrate a good technical base.

It is not likely that junior engineers will ever move up two to three levels in a single promotion. Therefore, when others around the engineer hear their expectations, it may cause negative reactions. You must develop a sound technical base as well as developing your leadership skills.

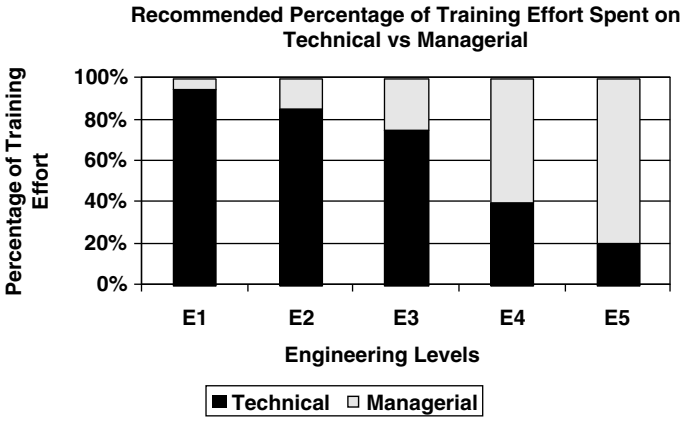

FIGURE 2-5 Time and effort spent on technical versus managerial training and planning.

On the opposite side of the issue, I have observed junior engineers return as advanced technical masters and expect to skip levels up the corporate ladder simply because they know more than anyone else. They develop their technical skills and knowledge base but neglect their leadership and people skills. After they graduate with a advanced degree and are put in charge of a team, the team quickly disintegrates because they lack the skills to resolve problems and manage teams.

Over the years, I believe, or have been convinced, the best approach for rapid career growth is to concentrate more time and effort on the technical skills in the lower levels (E1–E3) and more time and effort on the leadership skills in the upper levels (E4–E5).

Now that you have looked at the typical paths available to engineers, what are your career plans? If you're in the lower levels of engineering, your major career planning should include broadening your technical skills and developing your team leadership skills. If you're in the more senior levels, you have a major decision ahead to either remain technical or go into the management side.

▶ ***Career Tip.*** Regardless of your level, you should be looking ahead to levels you one day aspire to reach and develop career actions to ensure you will reach these levels.

Go to the career workbook and fill in the data requested for developing your long-range career plans. You should identify where your ultimate career path will lead, technical or management. Once you have made this choice, it is time to identify the actions needed to accomplish these long-range career objectives.

An example of a multiyear career plan is shown in Figure 2-6. The goals are identified for the present year, three years, five years, and 10 years.

This Year	3 Years	5 Years	10 Years
Goal: Outstanding rating E3, Senior Engineer	Goal: E4 level, Lead Engineer	Goal: E5 level, Project Leader	Goal: Manager
Actions required to meet goal: 1. Discuss performance and future plans with supervisor 2. Identify weak areas 3. Training in technical area 4. Team training 5. Excellent performance	Actions required to meet goal: 1. Secure training in making presentations 2. Further technical training 3. Get leadership assignment 4. Talk to leaders about career paths	Actions required to meet goal: 1. Return for MBA 2. Lead major project 3. Publish papers 4. Complete leadership assignments successfully 5. Solve major technical issues	Actions required to meet goal: 1. Complete Master's in Business Admistration 2. Return for technical updating
	Actions for 3-year goal: 1. Training in meetings 2. Training in budgeting	Actions for 5-year goal: 1. Identify project lead opportunities 2. Get assignments in leading small efforts	Actions for 10-year goal: 1. Gather data for MBA program 2. Enroll in MBA program

FIGURE 2-6 Example of a multiyear plan.

FIGURE 2-7 Discussion with supervisor to identify criteria for "Excellent Rating".

For each goal, career actions have been identified. For this example, the engineer has identified the career path to becoming a manager within the next 10 years.

The engineer's goal for the present year is to obtain an "Outstanding" or "Excellent" rating. To accomplish this goal, the engineer identified the actions of career advancement in a discussion with the supervisor to determine the criteria for an "Excellent" rating (Figure 2-7). Other actions include identifying weak areas and developing plans to strengthen these areas. In addition, the engineer has identified both technical and team training to be completed.

Also identified are the career actions to be accomplished within three years. The engineer has identified the 3-year goal of becoming a lead engineer. The engineer must work on the actions for this year as well as actions for development for the following years. The engineer has identified the career actions of learning how to run meetings and how to do department budgeting as needed for the 3-year goal.

For each of the engineer's major career objectives for the next 10 years, actions have been identified to accomplish these goals. The engineer has set up a career plan to make sure their performance at the present level is "Excellent" while at the same time learning new job skills that allow them to be ready to handle job assignments at the next level. The simple rule for my engineers is: "Top Performance Today is Training for Tomorrow."

▶ ***Career Tip.*** Top performance today is training for tomorrow.

If you have selected your long-term career path, you must start now to break your goals into a series of actions you need to accomplish this year, 3 years, 5 years, and even 10 years from now. Turn to the workbook in

Appendix A and fill in, as best you can, the multiyear career goals and actions you will need to take.

If you do not have enough data or a clear understanding of the steps leading to your goal, it is time to talk with your supervisor and mentors about what you need to do. When you have completed this worksheet, return here and we will continue the career planning process.

TYPICAL GOALS DURING AN ENGINEERING CAREER

A matrix of typical career goals as a function of the engineer's age is shown in Figure 2-8. The goals have been separated into various age groups as well as personal and company goals.

This example matrix was developed from materials received from the IEEE, AIAA, and SME engineering societies. These societies have published various lists of career goals for their memberships based on age.

The matrix identifies typical career goals throughout an engineer's life. As the engineer matures and advances, the goals change. Therefore, career planning is a lifetime activity. In the first five years after leaving the university, the immediate goals are for the engineer to learn the company engineering/business methods. In parallel, the engineer should be developing a long-range 5–10-year career plan and expanding their technical skill base.

Years from Graduation	0–5 Years First Job	5–10 Years Early Career	10–20 Years Mid Career	20–30 Years Late Career	30–40 Years Retirement
Age	22–30	30–35	35–45	45–55	55+
Company/ Technical Career Goals	Adjust to work environment Learn company ropes Enhance technical training Career planning	Focus on technical specialty Develop team skills Higher levels of responsibility Publish papers Lead product development	Tech vs Business Develop leadership skills Update training Supervisor Return for MBA Publish papers Patents	Continue leadership development Technical update Upper management Mentoring junior people Senior role in company/staff	Leveling of career and responsibility Consulting role Teach classes
Personal and Family Goals	Payoff college debt Have fun Financial plan for retirement Elder caregiving New car	Marriage Purchase home Start family Elder caregiving Plan for retirement	Family vacations Child development Child school activities Elder caregiving Plan for retirement	Family vacations Children college Elder caregiving Plan for retirement	Very late for planning of retirement Wedding of children Grandkids Less pressure

FIGURE 2-8 Typical lifelong career goals.

In the next stage of early career, 5–10 years after graduation, the engineer should focus on a technical specialty and start to develop team skills. The engineer will be accepting assignments with more responsibility and could even lead development teams. In this stage, the successful engineer is enhancing their technical area of expertise, broadening their technical background into new areas, and working on team skills. At this point, engineers return for some type of advanced training, either technical or business in nature.

At the mid-career stage, 10–20 years after graduation, the engineer is usually in a leadership position directing either the technical or business aspects of a product or team. The engineer has risen to the point where they need to decide if they are going to remain technical or become more of a business leader. Once again the engineer needs to acquire new skills and talents.

Engineering careers generally peak in the next stage from 20 to 30 years after graduation. If the engineer has been successful and accomplished their career goals, they are usually in a senior level technical or business leadership position, making significant contributions to the company's success. They are the upper level leaders determining the technical approaches and directing the engineering workforce. They are doing many career actions simultaneously, running departments, returning for training, mentoring junior people, and continuing their leadership development.

In the last stage, the engineer has generally reached a plateau and can start to give back by teaching classes and mentoring their juniors. Oftentimes, senior engineers start a consulting career based on their acquired knowledge. And finally, if the engineer has done the proper planning, they may retire in comfort to enjoy life.

There is an equally important set of goals to your professional goals and these are your personal goals. Do you know what your personal goals are? For you? For your spouse? Children? Personal goals in the first years after college deal with establishing a solid career plan, paying off college debt, doing some financial planning, and possibly giving elder care to parents. As the engineer ages, these goals may change to marriage, starting a family, and buying a home. Then as the children grow, the goals might include becoming involved in the children's school activities and planning family vacation. Finally, in the later years, a typical engineer may be supporting children in college or planning weddings. A constant planning activity throughout an engineer's lifetime should be financial and retirement planning.

After you have reviewed Figure 2-8, turn to the career workbook and fill in the section on career goals based on your age. Remember to identify your personal as well as work goals.

Engineers have asked, "What are some great career goals and actions?" Brainstorming with other engineers, we have tentatively identified the following list of great career enhancing actions you can take.

EXAMPLES OF GREAT CAREER ACTIONS

- Join an engineering society
- Host a society meeting at your company
- Visit the university bookstore
- Have a feedback session with your supervisor
- Write a technical paper
- Attend a conference
- Attend a seminar
- Apply for a patent
- Write "lessons learned" memo
- Do a hardware demo
- Write an article for company paper
- Do a new product demo
- Submit a team or coworker for an award
- Volunteer to improve something in your company
- Return for more schooling and/or advanced degree
- Learn a software program
- Write a report
- Read new technical journals
- Learn about the job level above yours
- Help organize engineers week
- Update your resume
- Take a time management course
- Get your work done early and ahead of schedule
- Develop a new simulation/model

Are these the only great ones? Absolutely not, they are provided to stimulate your thinking and get you thinking outside of the box. Go to the career workbook and select some career goals for your plan.

EXAMPLES OF GREAT PERSONAL/SOCIAL ACTIONS

Similarly, we generated a list of great family/social actions you can take.

- Plan family vacations
- Sunday night family meetings
- Date night with spouse
- Plan birthdays
- Plan anniversaries

- Plan volunteer work
- Attend your kids' school functions
- Coach a sports team
- Exercise (stress relief)
- Make it home for dinner more often
- Spend "special time" with your kids
- Financial planning

Have you ever considered these types of goals in your career planning before? Why not? I am sure your family members will have their own ideas about great activities. Have you ever stopped to ask them? Maybe you could run a brainstorming session at home just like you do at work and generate new family activities that everyone enjoys. The important considerations are getting their involvement and making good plans even better. People tend to support and help implement actions they helped develop and enjoy.

Go to the career workbook and select some personal/social goals for your plan.

KEEPING BALANCE BETWEEN WORK AND PERSONAL LIFE

One of the most important things I have found in my 30 years as an engineer is to have a balance between work life and your home life. Every time I let things get out of balance, it has resulted in trouble for me either at work or at home.

An oversimplified example of what I am discussing is shown in Figure 2-9. The teeter-totter is like your life. On one side are personal goals and demands and on the other side are work demands. It requires a constant effort to balance both and there will be times when you get out of balance and restoring balance is no easy task.

Try to monitor your daily activities at work and at home. How many days do you make it home on time? How many days do you work overtime? If you are out of balance, how do you plan on getting back in balance? Restoring balance will not occur naturally, you must work hard at it.

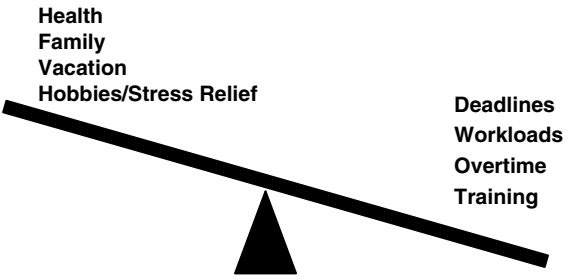

FIGURE 2-9 Balance in your life.

I have known many engineering managers who traded their family for a promotion, only to regret it. To have balance in your life, you must have a family/social plan as well as a career plan and work constantly at both.

How do you get things back in balance once they are out of balance? The best answer I can give is, time management. You simply need to take control and limit your time at work. One recommendation I can make here is to take time management classes to help you organize your time and be more productive in a shorter time frame. Another recommendation is to schedule going home just like you do regular work meetings. Block out your calendar and schedule a meeting called "Time To Go Home" at the end of each day, the meeting notice will pop up and remind you. No excuses for showing up late for dinner again!

I have completed research and attended many seminars on getting and keeping balance in your life. The experts in this area all indicate you need to set priorities in your life and constantly keep these priorities in mind as you grind through the daily hassles of life. These experts recommend you set your priorities in the following order:

1. Religion (moral beliefs)
2. Family
3. Self
4. Work

From my 34 years of experience, I found I felt the best and was the happiest when I kept my priorities in this order. When I felt the worst, I had set priorities based on the reverse order with work holding the number one position. I have also observed many other engineers and managers who told me they felt the worst about their lives when they set their priorities in the reverse order. How do you have your priorities set?

CAPITALIZE ON YOUR STRENGTHS AND MINIMIZE WEAKNESSES

Each of us has a set of strengths and weaknesses. The key for a successful career is to capitalize on your strengths and eliminate your weaknesses by turning them into strengths. A partial list of skills that engineers will use during their careers is given in Table 2-1. Please read through this list and do a self-assessment on whether these skills are a strength or weakness. By definition, if it is not one of your strong points, then it is a weakness.

As you go through the list, think of some type of accomplishment or action that indicates this is a strength or weakness for you. If this list does not meet your needs, then I suggest you design your own list.

After you have reviewed the list, go to the career workbook and fill in your personal career assessment. I have given more blank lines in the workbook for you to fill in skills you know of and are not on the list.

At this point, I am asked, "What are the most important skills and what are other skills needed to advance?" To this I reply, see your supervisor and company job descriptions. These are an excellent place to start. Another excellent person to check with is your mentor. A good mentor will provide you with an objective opinion on the importance of these skills and help you rank them. Mentors can also identify skills missing from the list. Then prioritize your list in the workbook. Make sure you focus your energies on the highest priority skills (Table 2-1).

Go to the career workbook and select some career goals for your plan. Return here after you are finished selecting goals.

TABLE 2-1 List of Engineering Career Skills

Type of Skill	Strength or Weakness	Accomplishment Demonstrating Strength or Weakness
Technical		
Product design		
Technical knowledge in your field		
Technical knowledge in other fields		
Product building		
Product integration		
Laboratory test		
Laboratory research		
Technical publications		
Computer modelling		
CAD design and modeling		
Analysis and modelling		
Experimental research		
Patents		
Technical awards		
Programming		
Manufacturing		
Project Management		
Planning		
Budgeting		
Organizing		
Developing policies		
Developing procedures		
Cost tracking		
Schedule planning		
Customer interface		
Team formation		
Salary administration		
Department budgeting		
Presentation skills		

TABLE 2-1 ***(Continued)***

Type of Skill	Strength or Weakness	Accomplishment Demonstrating Strength or Weakness
Interpersonal Skills		
Motivating		
Team leadership		
Conflict resolution		
Work relationships		
Meeting skills		
Versatility		
Team dynamics		
Communication style		
Customer relationships		
Social abilities		
Mentoring		

TRANSLATING GOALS INTO ACTIONS

Translating goals into action is the heart of career planning. For each goal you establish in the workbook, you should identify the actions and dates you need to accomplish them. An example of the career goal "Getting a Master's Degree" and the corresponding actions to accomplish this goal are shown in Table 2-2.

The first example is for returning to pursue an advanced degree. Here, the goal is broken down into simple tasks that are easily accomplished with deadlines set for each task. The first step to realizing your career goal of obtaining an advanced degree is doing some research on the types of degrees and the programs offered at various universities. The next step is talking with your supervisor and Human Resources department about your plans and getting their support and approval. Next, you should generate a degree plan and complete the admission forms and finally start. Please note the example time line shown. From start to actually taking your first class could be six months. So if this is your career goal, get going now.

I have dedicated an entire chapter of this book to going back for your advanced degree. I identify the options available, what they mean to your career, and advise on how to overcome roadblocks during this process. This material is provided in Chapter 45, "Getting the Most From Your Company's Education System." The steps shown in Table 2-2 are presented for guidance in formulating an action plan to achieve this goal. When you actually start down the road to this degree, you will quickly realize that there are a significant number of other tasks and subtasks not listed. In fact, if you come up with a detailed plan of all the actions, you will quickly realize you will be busy doing something every week to accomplish this goal.

TABLE 2-2 Career Goal and Actions for Getting A Master's Degree

Career Goal	Actions	Date to Complete Action
Get Master's degree (MBA)	• Contact university on programs available and get information	• January
	• Talk with supervisor	• January
	• Talk to HR about tuition refund	• February
	• Generate plan for degree	• March
	• Fill out application form	• April deadline for starting in fall semester
	• Apply	• April 25th
	• Start	• September 15th, first class

Another example of a career goal might be getting your next promotion. This is no simple task, and there are no guaranteed ways to accomplish this career goal. However, there are steps you can take to significantly reduce the time to your next promotion. The career goal to obtain a promotion and a simplified example list of the corresponding recommended actions for accomplishing this goal are shown in Table 2-3.

The remainder of the book is dedicated to the actions you can take and career tools that are available for your use. The first steps are to determine how you are perceived by your supervisor and how far away you actually are from getting promoted. Therefore, the first step recommends reviewing your last

TABLE 2-3 Career Goals and Actions for Getting a Promotion

Career Goal	Actions	Date to Complete Action
Promotion	• Review your last job appraisal and performance rating	Start
	• Determine your weaknesses and strengths, action plans	1 month
	• Research the criteria for your present position	2 months
	• Research the criteria for the next level up	3 months
	• Talk with supervisor about your desires and potential for promotion	1 month
	• Develop an action plan leading to promotion	2 months
	• Demonstrate you are ready!	6 months to 3 years
	• Make sure there is an opening	Constantly
	• More career discussions and feedback with supervisor	Every 3 months
	• More demonstration of performing at the next level up	Constantly
	• Doing a performance review	Yearly

performance appraisal and determining your improvement areas. Next, you must come up with a plan that demonstrates, when executed, you have mastered the requirements/criteria for your present level.

The following action is to determine the criteria for the level of promotion you wish to receive. This will require doing a significant amount of research. This research will include finding out the formal and informal criteria for promotion and determining your supervisor's criteria, what Human Resources has set as standards for the next level, and work performance you must demonstrate. This is followed by doing months and even possibly years of consistently outstanding performance at your present job. Along the way, you must be in sync with your supervisor and obtain feedback on your performance improvement.

The most significant point here is that your promotion is a minimum of a year away from the time you decide to accomplish this goal. So if you do nothing other than your normal job, where can you expect you will be a year from now? Doing the same job you are doing now.

▶ ***Career Tip.*** Your promotion is a minimum of a year away from the time you decide to accomplish your goal.

The typical time to move from each level of engineering in most larger companies is 3 years if you are a star performer and 4–6 years if you are an average performer. If you count the number of levels in your company, and multiply by the years per level for average performers, you will quickly realize that, unless you become a star performer, it is difficult to reach the upper levels of most major corporations. To be a star performer, you must have a clearly defined career plan and consistently execute critical career actions. The career plan must be a well-formulated plan, capable of handling roadblocks and setbacks. Therefore, having a career plan is absolutely necessary if you wish to move up in the company.

Please turn to the career workbook again and look at the career goals you wish to select for you. Then start to fill in the actions you feel are necessary to accomplish these goals. Make sure you identify a date for the action and the priority level.

If you feel you do not know enough to generate actions for each of the goals, don't panic. You can leave them blank for now. As you read through the remainder of the book, I will be providing you with career tips and actions for these various goals. So for now, fill out what you can, and as you read through the remainder of the book and find something you would consider as a great career action, quickly turn to the back and record it.

The next step to formulating a career plan is to fill in the career goal worksheets provided in the career workbook. The worksheets are formatted like Tables 2-2 and 2-3. Identify your goal, then determine and record the actions necessary to complete this career goal. This is a very iterative process and will require an extended period of time to complete

these worksheets. You will identify goals and actions and as you think through the process, you will more than likely change or modify your approach. Take your time and complete the worksheets over several weeks.

The next step is to get feedback on your plan. Go over the plan with your mentor, your spouse, or anyone else with whom you feel comfortable. Get feedback on your thoughts and ask for ideas on how to improve it. Your mentors should have some great ideas and experience they can share with you that should help your planning. Your mentors may also have good feedback on the timetable you have estimated. You may be overly optimistic or too pessimistic for your estimates of the time it will take to accomplish these career actions and goals. One good person to get feedback on your plan from is your mentor; please refer to Chapter 7 on this.

Make sure you prioritize your career goals and personal goals from highest to the lowest. You are not going to have time to do everything, so making sure you have a prioritized list is essential. When you have prioritized career goals and action lists, you are ready to move on.

Before we continue, do you have balance? Have you considered your personal/family social goals? Make sure you identify these goals as well.

You are now close to completing a career plan but there is one final, very important step, that is critical to getting started. Your task is to generate a timetable or calendar for career actions.

ORGANIZING CAREER ACTIONS INTO A CALENDAR OF EVENTS

The last page of the workbook is a simple chronological listing of your career and personal goals/actions by month for the year. This should be very easy to fill out from your completed workbook sheets. Make sure your highest priority actions are listed. When the calendar is completed, you will have a prioritized list of career actions you need to take each month. The company has goals for the year and now you have your own goals. You may even consider combining both. A sample calendar is shown in Figure 2–10.

Once you have completed your personalized career calendar, the next step is to post it where you can see it daily. I have seen a format in Power Point and Excel spreadsheet and both work nicely. Posting your completed calendars behind one's computer is another excellent career management technique. This way, when you are working at your computer, you are reminded of the actions you planned to take. You might even add notices to your electronic calendars that pop up and remind you. Another good technique is to use it as a screen saver. I add check marks as each task gets accomplished.

January
- Update plan
- Plan year
- Wife's birthday

February
- Kick-off new project
- Take time management class
- Kid's birthday

March
- Plan family vacation
- Attend financial planning workshop
- Spring break holiday

April
- Career discussions with supervisor
- Major program review
- Taxes

May
- Launch new product

June
- Anniversary
- End of second quarter financial report

July
- Family vacation
- Complete major test
- Parent's birthday

August
- Update plan to year-end
- Major design review with customer
- Kid's soccer

September
- Kids start school
- Run special testing
- Job review

October
- Third quarter technology planning
- Customer meetings in New York
- Raises and promotions

November
- Trip to parent's home (out of state)

December
- New Year department budget and planning
- Celebrate holidays

FIGURE 2-10 Sample personal and career goals calendar.

HOW TECHNOLOGIES, PRODUCTS, AND INDUSTRIES IMPACT LONG-RANGE CAREER PLANNING

Excellent career plans are not a guarantee for advancement and may even fail miserably. The reasons the career plans can fail are generally due to engineers neglecting to monitor and adjust their career plans for changes in the job market, industry ups and downs, and rapidly changing technology. Sometimes engineers end up leaving their engineering field or worse yet, leaving engineering completely at a significant cut to their salary and not to mention a large time investment.

As shown in Figure 2-11, the optimum career success occurs when you are at the intersection point of all three factors (technologies, products, and industries), and all are thriving. If you find yourself in thriving industries,

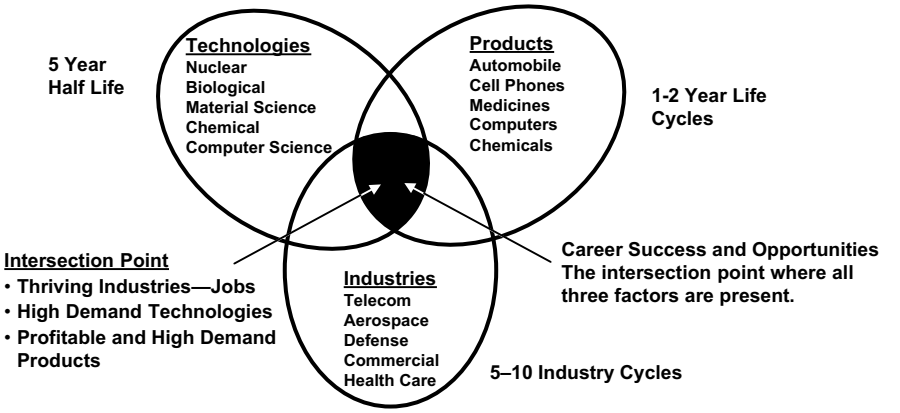

FIGURE 2-11 Career intersection point of technologies, products, and industries.

and your technical background is in demand and you are working on profitable high-demand products you are in a very good career situation.

▶ ***Career Tip.*** The purpose of long-range strategic career planning is to keep you at the intersection point of technologies, products, and industries.

As you do your career planning, have you considered the effects that technology obsolescence, product life cycles, and industry ups and downs will have on your career and ability to stay employed?

Plots showing the relative number of jobs in various industries and technology fields over the past 40 years are shown in Figure 2-12. These graphs show the cyclic nature. In the upper graph of Figure 2-12 is the number of jobs that cycle up and down for various industries.

In the early 1960s, NASA and space were the hot industries that all the engineers wanted to get into. The space industry was where the new engineering jobs were in the 1960s. However, with the Vietnam War reaching its peak in the late 1960s and with the successful landing on the moon, jobs turned from space to the defense industry. Then, with the end of the war in Vietnam, defense spending fell and jobs moved into the private sector. In the 1980s and Reagan years, the Cold War was at its peak and defense was once again a hot industry. Defense has a characteristic 10–15-year cycle of ups and downs. In the early 1990s, the Berlin Wall fell and with the end of the Cold War, the defense industry did another downturn and lost a significant amount of jobs.

In the late 1980s, the telecom industry was one of the hottest industries but this quickly died out by the mid-1990s. A very quick burn industry in the 1990s was the DOT.COMs. Companies and millionaires were literally made overnight, and just as quickly as they came, they disappeared.

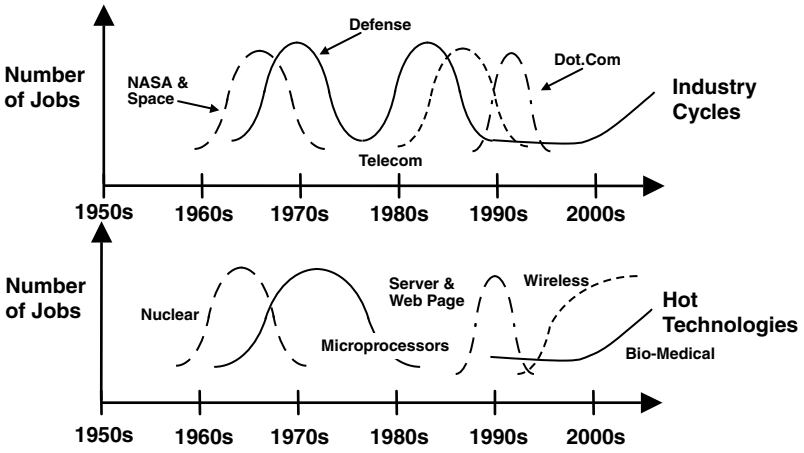

FIGURE 2-12 Industry and technology effects on number of jobs.

The important point to consider in your career planning is what stage your industry is in today. Is it growing, peaking, or decaying? Your career plans should include provisions and adjustments for these swings in industry. Your objective is to make your career resilient to downturns.

Another factor to consider is the technology with which you are working. Technologies and your technical training go through periods of high demand and then obsolescence. As shown in Figure 2-12, in the 1960s the hot technology was nuclear. The nuclear engineers were in high demand and this demand quickly died off when elimination of nuclear power plants and atomic weapons became the concern of many nations and political groups.

Then with the push to get to the moon, the semiconductor industry and microprocessor technology became the high demand. Employment forecasts indicated that there would not be enough engineers to ever supply this demand. However, as the technology matured and the number of transistors per chip quickly increased, the demand for these digital designers fell off. Then in the 1980s, and 1990s, the server technology and web page technology became hot. This quickly fell off leaving many web page designers looking for new employment. Another hot technology, and still growing, is the wireless technology. Cell phones, remote controls, and computers are all going wireless. This has recently created a high demand for wireless engineers. A new and emerging technology has been the biomedical field of the healthcare industry.

One unforeseen event has been the 2009 economic downturn and its impact on engineers' careers.

Does your technical training support the development of a growing technology field or are you working in a decaying technology field with obsolete technical skills? You need to assess your conditions. If your technical training and skills are becoming obsolete and the technology field you are

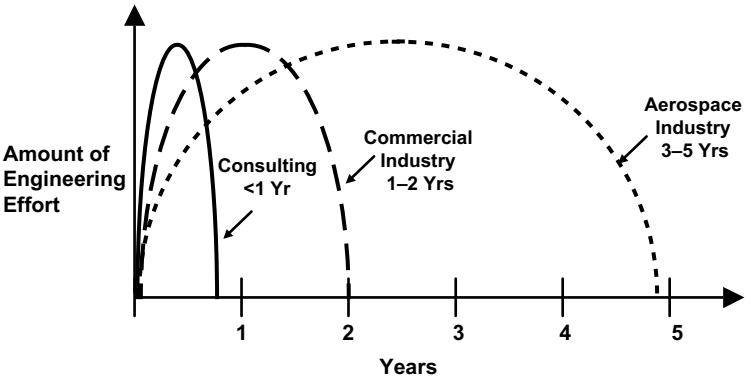

FIGURE 2-13 Typical product life cycles.

working in is getting replaced by new and better technology, it is time to do some serious career replanning and retooling.

Another equally important factor to consider in you career planning is the product life cycle. Many engineers plan their career solely around a single product and act surprised when the product is phased out after a year or two and so are their jobs. A typical product life cycle for various industries is shown in Figure 2-13.

The shortest is the consulting product life cycle; many engineers try to become a consultant hoping to provide their services to many companies. However, the typical consulting contract (in my experience) is usually less than 1 year. This means the engineer must be looking for a new job on a yearly basis. In the commercial industry like automobiles, TVs, computer, and personal electronics, the typical product life cycle is 1–2 years. This means the engineer must be willing to change products and incorporate new improvements and technology every 1–2 years. The aerospace and defense industry typically have a longer product life cycle ranging from 3 to 5 years. However, the products in this industry are tied to government spending and funding changes yearly. So, the engineer must be attuned to government budgeting and spending on a yearly basis.

In all cases, the product life cycle should be considered in your career planning. What part of the product life cycle is your present job supporting? What are the future products of your company? Does your product have funding and plans for updating? Is your product just one in a family of products and can you work on others if the product goes away? These are all questions you should be exploring during your career planning.

STRESS RELIEF PLANNING

One of the major factors in successful careers is being able to handle all the stress that comes along with the job and home life. Do you have a stress relief

plan? To be successful and handle all the stress that is going to be thrown at you, a stress relief plan is essential. A graphic depicting the combinations of stress you are going to face during your career and family life is shown in Figure 2-13.

Along the bottom are shown your age and various stressful conditions that normally occur. Along the left-hand side are shown the job levels and on the right-hand side the age of your children.

The key in studying this chart is to determine when you may be a great candidate for overstressing and making sure you have a plan in place to deal with this stress in a positive manner.

In studying the diagram, you can see that at various times in your life you are going to be subjected to an unusually large amount of high stress. The high stress job levels are related to first and second line supervisors. During your lifetime (age axis), stress is high when you first leave school, start a new job, and possibly get married. Later on in life, another high stress condition is in your 30s and 40s when you may return to school. The final stress generator is your family or children. A high stress time is when your children are first born and when they reach the teenage years. You can see from the graph that at certain times you will have three to four high stress conditions all occurring at once.

The most stressful conditions seem to occur all simultaneously. The worst case is when you have recently been promoted to supervisor, starting a new

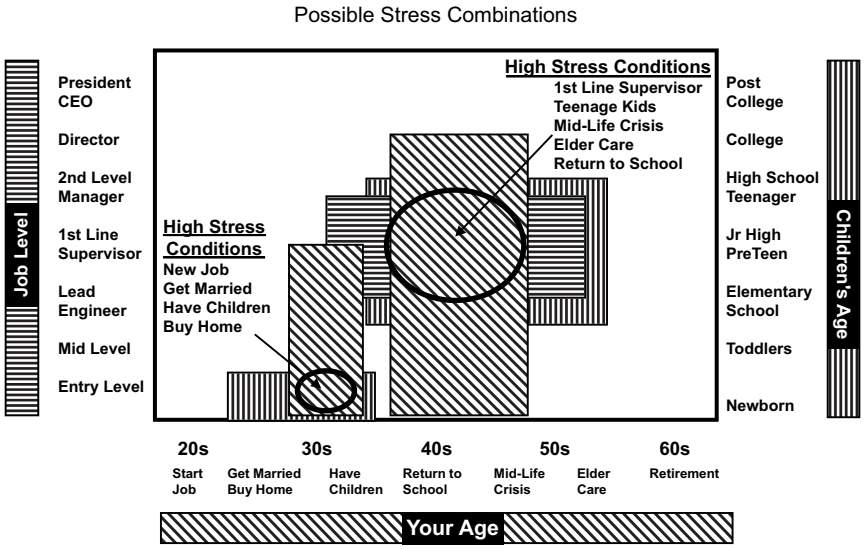

FIGURE 2-14 Possible stress combinations.

project, returning to school for an advanced degree, and your children have reached their teenage years and are still living at home.

Are you prepared for these conditions? Are you presently in a high stress situation and don't realize it. Do you have a stress release plan? Check in your local bookstore and purchase a book on how to relieve and handle stress. Do you exercise regularly? Do you take time out for yourself? Do you reward yourself after each significant milestone? Having a great stress relief plan will allow you to perform better, not take problems out on people, and keep you calm and in control when all others are not.

▶ ***Career Tip.*** Having a great stress relief plan will help you perform better and accomplish more under high-pressure situations.

Leave your personal problems at the door when you go to work in the morning and when you leave at the end of the day try your best to leave work problems at the office. If you do not have a stress relief plan, start working on one. How about taking your significant other out for dinner and putting a stress relief plan together.

DEALING WITH CHANGING SUPERVISORS—REBOOT TIME

One final aspect (I recommend) you should take into consideration while you are executing your career plans is to make sure your career plans are not solely dependent upon your supervisor. Many engineers will develop career plans entirely dependent on their supervisor promoting them into the next level. Then halfway through plan and with the promotion nearly in sight, the supervisor leaves and a new one is assigned to lead the department. When this happens, the engineer must start all over again from the beginning to prove to the new supervisor they are ready for the promotion. It is like entering all the data into your PC and before you complete the analysis the system crashes and you lose all the data. You must reboot and start over. This is exactly what happens when your supervisor changes. You start all over trying to prove you are ready for the next promotion.

In my 34 years in industry, I have had over 65 different supervisors. Typically, over a 30-year period it is not unusual to have 50 or more different supervisors. You must be prepared for this when you develop career plans. Sometimes supervisors can change as often as every 3 months.

Your supervisor will play a significant role in your development and promotion, but you must be prepared in case your supervisor suddenly leaves. It is called contingency career planning and is absolutely necessary if you are going to survive. Your career plans should include your supervisor, but not solely dependent upon him or her.

If your supervisor does have to leave due to an assignment change, make sure they acknowledge that you are on track for a promotion before leaving. Ask if he or she will discuss with the new supervisor your expectations on promotion. The supervisor who is leaving can brief the new supervisor on your progress and promotion plans. This will bridge the transition from the old supervisor to the new supervisor and hopefully minimize the impact on your promotion plans.

Another career move is to discuss the changing of your supervisor with the manager who is the next level up from your supervisor. If the manager agrees you are on track for a promotion, then you have protected yourself against the supervisor leaving and having to start all over with the new supervisor.

▶ ***Career Tip.*** Your promotion is a year away—get started now!

Get started on your career plans now; most significant career accomplishments or promotions take years to accomplish. You can significantly reduce the time to your next promotion with a great career plan.

Experience has shown that when engineers finally start to work for a promotion in earnest, it is usually a year or more away before it actually occurs. So if you want to be promoted a year from now, get started today.

Who is going to do your career planning? Only you can. Career planning is not hard and the more you do it, the easier it becomes.

SUMMARY

Career planning is a never-ending task. It is personal to everyone and only you can do it for yourself. Not having a career plan is like driving to a place you have never been without directions or a map. A good career plan guides you along, provides you with a sense of purpose, and even acts as a shock absorber during bad times. Career planning takes time and it is an iterative process. Your plans will need to be updated yearly and even sooner if you are in a highly dynamic environment.

You should have short and long-term career goals. Your career plan should include work as well as personal goals. The best plans have balance in them. When you are out of balance it will take effort to get things back in balance, they will not go back naturally.

Get started on your career plans now; most significant career accomplishments or promotions take years to accomplish. You can significantly reduce the time to your next promotion with a great career plan.

Have you identified any career actions you want to take as a result of reading this chapter? If so, please make sure to capture these ideas before you forget by recording them in the notes section at the back of the book.

ASSIGNMENTS AND DISCUSSION TOPICS

1. How long should it take to develop a career plan and how often should you update it?
2. What are the benefits of generating a career plan?
3. Name some danger signs that indicate you should be doing some career planning.
4. How do technologies, product life cycles, and industries affect your career planning?
5. Is stress relief important?

REFERENCE

1. Covey, Stephen, *The 7 Habits of Highly Effective People*, First Fireside, 1990.