



Engineer to Entrepreneur

SUCCESS STRATEGIES TO MANAGE YOUR CAREER
AND START YOUR OWN FIRM

Rick De La Guardia

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Engineer to Entrepreneur

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Career and Start Your Own Firm*

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Foreword

Although you may be fortunate to have mentors as an engineer, your career success is ultimately up to you—nobody else. Unfortunately, too many engineers don't understand this. They go through their day-to-day routines, waiting for the next high-profile project, waiting for the next client to call them, and waiting for their next pay raise, which may or may not come. *Engineer to Entrepreneur* will not only inspire you to take control of your engineering career, but the book also gives you a blueprint for doing so, regardless of where you are in your career when you read it.

I can't think of a better person to write a book on engineering entrepreneurship than Rick De La Guardia. Rick epitomizes an entrepreneurial engineer, which you'll see when you read the vivid examples of his career and business throughout the book.

I had the good fortune of meeting Rick when he offered to come on my radio show (now a podcast) and offer career advice to young engineers. He enjoyed the idea of helping engineers so much that soon after, he invited me to come to speak to the students at his alma mater. During the trip, I visited Rick's office and got to see first-hand how passionate and energetic Rick is, both as an engineer and as a person. To this day, watching him grow a successful engineering business in a well-defined niche, while still serving the profession in so many ways, is motivating.

An entrepreneur is defined as a person who organizes and manages any enterprise, especially a business, usually with considerable initiative and risk. The word *enterprise* is important here. It doesn't have to mean a business; it can also mean your career. This book gives you the tools to be a highly successful engineer, with an entrepreneurial attitude and spirit, whether you start a company or not. Believe me, I provide career coaching to hundreds of engineers, and if they only knew half of the information Rick provides in this book, they would be 10 times as successful as they are now.

This book is overflowing with value. From the inspirational story of Rick's father, to his own story of how he learned so much more than engineering working for a small firm, to practical guidelines for networking and building your leadership skills, it was difficult to put the book down. Rick even dives into details like how to improve your credit to help you take out a business start-up loan. You'd be surprised how far in advance you may have to plan to start your own business. Rick De La Guardia covers it all.

As an engineering career coach, I tell engineers over and over, "It's up to you to engineer your own success." You must become a great communicator, you must learn to network, you must develop your leadership abilities, and you must ensure that you are getting rewarded for the value you are providing. Use this book to learn how to develop these skills, and start doing so today. The impact it will have on your career and those around you will be monumental.

Anthony Fasano, P.E.
Author of *Engineer Your Own Success*
Founder of www.EngineeringCareerCoach.com

ANTHONY FASANO, P.E., is the cofounder of The Engineering Career Coach website and podcast, through which he provides free and affordable career development resources for engineers. After becoming successful as an engineer at a young age, Fasano realized that his success was related largely to the development of his nontechnical skills. Since that time, he has decided to transition his career from designing to inspiring engineers in their soft skill development through coaching, speaking, and training.

In the past few years, Fasano has written a best-selling book entitled *Engineer Your Own Success: 7 Key Elements to Creating an Extraordinary Engineering Career*, which was recently updated with IEEE-Wiley Press. He has also created a top-rated engineering iTunes podcast entitled The Engineering Career Coach. These resources can be found at www.EngineeringCareerCoach.com.

Fasano has also coauthored a series of children's books with his eight-year-old daughter, Brianna, titled *Purpee the Purple Dragon*. They have delivered hundreds of the books to pediatric cancer centers around the United States.

Preface

The sharing of my experiences as an engineering entrepreneur started off as a PowerPoint presentation titled “From Engineering to Entrepreneurship,” where I outlined the qualities, knowledge, and steps necessary to prepare for, start, and manage an engineering firm. It was a way to not only share my experiences with others but also to encourage and provide an avenue for them to reach that goal. Before opening my own engineering firm, I had worked at two other engineering firms for a total of 16 years and had been tasked primarily, at my first job that lasted 13 years, with many managerial, administrative, accounting, and human resources duties, which is where I developed most of the skills necessary for entrepreneurship.

I was asked to present to the Society of Hispanic Professional Engineers, South Florida Professional Chapter, in May 2010 in conjunction with their local student chapter at the college of engineering on the campus of the University of Miami. The feedback on the initial presentation was so positive that the organization asked that I present to their members two additional times. Word about the presentation started to spread, and shortly after the third presentation, I was asked to present to the Southeast Florida Professional Section of the Society of Women Engineers. This was done in conjunction with their local student section at the college of engineering on the campus of Florida Atlantic University in February 2013. Then I was asked to present at the regional student conference of the Institute of Industrial Engineers at the University of Miami in March 2013. After that presentation, I received several other presentation requests and presented a webinar on the topic to the members of the Institute for Engineering Career Development in May 2013. Before that, I had uploaded a revised version of my presentation on the professional networking site LinkedIn via the SlideShare application, and it quickly became popular, so much so that SlideShare placed it on its “Hot on LinkedIn” features on its main page, where it continued to

get regular views. Needless to say, I had discovered a need and decided to try and fulfill that need as best as possible. The writing of this book is my attempt to fulfill that need to the best of my ability and make it available to all who may be interested in owning their own engineering firms one day.

Acknowledgments

FRANCES G. DE LA GUARDIA: My wife Frances was instrumental in not only nudging me to follow my dream of opening my own firm, but she also was an avid supporter of and investor in the company. She has made countless sacrifices along the way, without which I would not have been able to realize my dream. She is an accomplished professional and a loving mother with a kind heart. She has remained steadfast by my side through the good times and bad. Having her by my side through the ups and downs of entrepreneurship has made the experience worthwhile. I am forever grateful for her love and support. I have asked my wife to write a brief piece on the pros and cons of supporting an entrepreneur, as it is important that a significant other be part of and supportive in such a journey. Below is her piece:

To pursue a dream, you need more than the dream. You need the motivation and hard work to make that dream into a reality. Those who dream big and are successful are persons who see a challenge and persevere despite the obstacles. The person who is the partner of the dreamer and hard worker has an even more challenging job. Besides the financial sacrifices that must be made, there are far bigger investments you must make. You must be a cheerleader, a consultant, a psychologist, and a spiritual advisor. Even dreamers need someone to keep pushing them and helping them to forge ahead when they reach stumbling blocks. My part was easy in that regard, because Rick is not a person who sees an obstacle as an issue. He merely finds a way around it and continues to move forward.

My role as the wife of an entrepreneur was to believe in him, even when the numbers and the financials told me not to, and not to give up or ask him to quit. Behind every successful person is a support team of family and friends who believe in that person, even if he or she cannot see the reality of the dream. Without that backing, it is virtually impossible to make a dream into a reality.

No one person does it alone. The best advice I can give to an entrepreneur is to surround yourself with a partner and family who believe in the dream and are ready to stick it out when it gets tough, because it will get tough. If you do this, you will reap the reward of hard work, not only in the financial sense but also in the emotional reward of seeing your partner's dream come to fruition. It really becomes your dream, your mission when you are invested. That is the best pro of all: the investment and the reward belong to you too.

The cons are the typical cons of investing time or money in any project. You must be prepared to weather the storm, financial and emotional, and ride it out. You must give up hours and days of time with your partner. You must dig into your nest egg or investment to realize the end goal. However, if done with an open mind, the payoff is worth it. The payoff is not just the money or success; it is that you are part of the puzzle piece that made the dream into the reality, because no one makes it on his or her own, and no one should try.

VANESSA J. GARCIA: The idea for writing this book came about after the success of several presentations made to the Society of Hispanic Professional Engineers (SHPE), South Florida Professional Chapter, with a similar title. Instrumental in conceiving the initial presentation (“From Engineering to Entrepreneurship”) was Vanessa Garcia, a fellow member of the University of Miami College of Engineering Alumni Association (UM CoEAA), and a budding entrepreneur herself. I am grateful to Vanessa and SHPE for placing the idea in motion and for the first opportunity to share my experiences of entrepreneurship with others. I have asked Vanessa to write a brief piece about how entrepreneurship has touched her life and what led her to approach me to make that first presentation. Below is her piece:

Back in 2009, it was not an ideal year to be graduating, even if it was with an engineering degree. Now, history books call the time that I graduated the “Great Recession,” and hiring was pretty much at a halt. Therefore, it was a pivotal moment in my life because I needed to decide which direction to take, whether to apply for biomedical engineering jobs or seek an opportunity in the family business and learn more about growing the business with the engineering training I had just acquired. At the time when most businesses were collapsing, I actually saw my parents’ business still doing well and made the choice to work in our export company for the next year to learn more about how international trade and exports can be an attractive business, even through difficult times in our country.

Now as I was understanding fundamental concepts in the export industry and how to run a business, I still wanted to stay active within SHPE, the Society of Hispanic Professional Engineers, as a young professional. Fortunately for me, it was perfect timing as well to join the SHPE South Florida Professional Chapter, because the chapter was being reactivated and new leadership was on the horizon. I became the Vice President of Student Affairs, and this step really provided me the ability to seek opportunities that could tie in my current experiences. I could share my experiences with students, perhaps some students who had some of the same thoughts I had just experienced jumping from engineering to the world of entrepreneurship.

That is when I met Rick De La Guardia, and his passion and enthusiasm really spoke volumes about his experience as an entrepreneur. It captivated me to ask him to become a speaker. At the time, I knew that I didn't have the experience or wisdom to put into words this change I was experiencing, but I believed that he could, and he did.

When the manuscript was first taking shape, three individuals were instrumental in helping me determine if I was on the right track. These individuals provided helpful feedback, which allowed me to refine and even alter the manuscript to more accurately and concisely get the correct message across. I am grateful to Francisco Urrea, Jonathan Torrens, and Itve Guerrera for their advice and suggestions early on.

Before deciding to write this book, I consulted with Anthony Fasano, the accomplished author of the work *Engineer Your Own Success: 7 Key Elements to Creating an Extraordinary Engineering Career*. In addition to agreeing to write the foreword for this book, Anthony provided valuable insight and advice for which I am very grateful.

I would also like to thank, posthumously, my first mentor, Humayoun Farooq, Ph.D., P.E., who entrusted me with many of the operational duties of his company. That opportunity provided me with many of the necessary skills needed to be an entrepreneur. May he rest in peace.

And for advice from the members of the University of Miami College of Engineering Alumni Association (UM CoEAA) who are highly successful and accomplished engineers, I am extremely grateful for their contributions, with special thanks to Ileana Barbara and Alfonso Dager.

Finally, I am who I am today because of my mother and father, Carmen Laysis De La Guardia and Rodolfo Humberto De La Guardia. My mother provided most of the love and nurturing for our family and still does to this day. She is the perfect example of sacrifice in the name of

and for the benefit of her children. My father instilled most of the discipline and taught us the necessary life skills. I am the second child of four. I have an older brother, Rodolfo Humberto De La Guardia, Jr., and two younger siblings, Gustavo Adolfo De La Guardia and Ana Matilde De La Guardia-Paiz. My mother has made and continues to make untold sacrifices to make sure her children are well taken care of. I am eternally grateful to her for that.

When it comes to my professional career, I owe all to my father. I did not understand his strict form of discipline, which was extreme at times, but there is no denying his love for all of us. I honestly feel, despite all the hard times we went through growing up, that I would not be successful today if it were not for the lessons he taught me. You see, my father was a strict man, but he was also a smart, hardworking man. He was shot and paralyzed in the 1980s while working a typical late night at a gas station he owned, next to a business he had set up, after a full day of work at his day job. He did all of this to put his four children through private school and college.

There are people in this world who say they love you, and then there are people in this world who show you they love you. My father was the latter. I did not understand that at the time. I even struggled with that notion late into adulthood. I struggle with it even as I write this book. My father died in 2009 from complications after his assault, and I never got to say goodbye or thank him for all his sacrifices. I grew up with an internal resentment because of his strict form of discipline, and I never learned to cope with it. I never truly understood him. Even as he was dying, he maintained his stubborn beliefs and did not reach out, or let others reach out, and let me know of his condition. He felt that if I was told of his situation, I would feel pity and reach out solely for that reason. He was wrong in thinking that, and I was wrong in not reaching out more. But he died thinking that I did not care about him.

Dad, I do love you, very much, and I miss you. Thank you for all your sacrifices, for all your hard work, and for the examples you taught us. I dedicate this book to you. Te quiero mucho!

Introduction

Starting, owning, and managing a company are daunting parts of a daunting process. Starting an engineering company is even more daunting because of additional professional regulations, requirements, and ever-changing technical aspects of the profession. To be successful in the highly competitive field of engineering, it is important to have a specialty or niche, something that sets you apart from the competition. Having a specialty helps reduce competition and helps insulate the company from a tough economy. My experience in starting an engineering company is in a highly specialized field of architectural engineering; therefore, some of the examples provided may not at first seem applicable to your intended engineering field or discipline.

When reading this book, pay particular attention to the ideas and concepts offered that transcend any particular engineering discipline. The advice and recommendations in this book are provided with the goal of guiding and preparing the reader for the challenges of starting an engineering firm, regardless of the field or discipline. In addition, this book provides the reader with advice on finding and exploiting a specialty or niche, an important facet of owning a successful and competitive engineering firm.

It does not matter what stage of learning or school you are in; starting to prepare as early as high school or college can help ensure the best possible level of readiness for entrepreneurship. It is never too early to prepare for owning your own firm. As a matter of fact, the earlier you prepare, the less work is required once you decide to take the plunge from engineering to entrepreneurship. Some of the more common obstacles to entrepreneurship, such as having a lack of experience, obtaining start-up funding, and developing valuable contacts, can be overcome by starting to plan and prepare for entrepreneurship as far in advance as possible.

This book provides guidance and suggests helpful activities at the end of each chapter to inspire the reader to take positive steps toward entrepreneurship. Personal examples have been used wherever possible to demonstrate the real-life issues and decisions facing entrepreneurs and to demonstrate that anyone can be an entrepreneur. The book was designed to be read by and to be helpful to three distinct groups at three different phases in life. Feel free to skip ahead to the relevant chapters, if you wish, based on your applicable group. However, do not ignore all of the information in previous chapters, because it could prove helpful:

- Group 1: High school and college students: (Part 1: Chapters 1 and 2);
- Group 2: Young engineers (Part 2: Chapters 3, 4, and 5); and
- Group 3: Experienced engineers (Part 3: Chapters 5 and 6 through 11).

The focus of the book is on three critical stages:

- Part 1: How to Prepare For Entrepreneurship,
- Part 2: How to Manage Your Career, and
- Part 3: How to Start Your Own Firm.

Regardless of the stages in which you find yourself, try not to ignore the advice in each section or the helpful activities at the end of each chapter, because you may find these activities to be useful. The book has been organized with a progressive level of information, focusing on and starting from the student level, progressing to the young engineer level, and ending with information suitable for individuals in the experienced engineer level ready to start your own firms. Be patient when reading the book, especially the younger you are, and try not to skip ahead, as all the information builds on the previous sections and chapters.

Being an entrepreneur is not easy, and it can, and will, be difficult at times, but it can also be extremely rewarding and liberating. The adage “If I can do it . . . anyone can” holds true. Not only does this book provide advice on how you can do it too, but I also provide firsthand accounts and personal experiences and details of how I did it, including the hurdles I encountered and how I overcame them. The personal information and experiences provided in this book are not intended to be a success story, and the book contains examples of failures along the way. It is instead a story of personal perseverance, determination, and overcoming obstacles; it is very much still a work in progress. It is

written with the intent of providing the reader a road map of how I did it and how you can do it better. Remember that regardless of what you get out of this book, it is ultimately up to you to put what you learn into practice and begin to realize your dream of entrepreneurship.

Engineering is a natural and advantageous choice as a career if entrepreneurship is your goal. During your studies, you will be exposed to and learn a way of thinking that is unique to the engineering curriculum. It includes understanding science and technology, experimentation and report writing, establishing conclusions, solving problems, working in a team environment, learning computer software and programming, and many more concepts necessary to be a successful entrepreneur. More so than any other career choice, engineering provides you with the necessary skills and places you at a greater advantage of being a successful entrepreneur, compared to graduates with other degrees.

Before we get started, I believe that it is important, when getting advice from someone, to know and understand where that person is coming from and how they arrived at their perspective.

My father and my upbringing were the main reasons I decided to become an engineer. My father was a combination mechanic, electrician, handyman, engineer, entrepreneur, and overall problem solver. He owned a gas station and a mechanic and parts shop, where my older brother and I spent most of our free time, working, during our youth. Working at the gas station and mechanic shop exposed us to all of these kinds of work at a young age. Since before and throughout high school, I was learning and doing many tasks that people would normally pay a professional to do. That work included working with cars, masonry, carpentry, electricity, and plumbing. I also worked building and installing custom security bars, building reinforced masonry walls, laying and installing chain link fences, and dismantling cars, bought at auction, for usable parts. In addition to this work, we also worked at the gas station pumping gas, fixing flats, changing oil, installing tires, and repairing cars. My brother and I were also responsible for doing all the house chores, including yard work, repairs, and cleaning. In the process of completing all of these responsibilities and chores, I learned how to use almost every type of mechanical and power tool and how to solve problems.

It was not an easy or typical childhood by any means, but it certainly taught me how to be resourceful, independent, and versatile. Not only was I able to take care of my own problems as a child; I was also able to

resolve other people's problems. My childhood upbringing and experiences helped hone my analytical skills. I spent a great deal of my childhood taking things apart and putting them back together, creating, and building. To this day, I rarely have to hire a professional to fix a problem around the office or house, still preferring to do it myself. I like a challenge, and I love solving problems.

Engineering as a career was a natural choice. I do not recall ever considering anything else. However, I struggled to decide which discipline to pursue. I was drawn to the emerging and alluring field of computer and electrical engineering, and ultimately that was the major I chose. Ironically, I did not pick the most natural choice for me, based on my upbringing and experience, which would have been civil engineering. At the time, I did not know that much about the structural and construction aspects of civil engineering, nor what civil engineers did for a living. I had reviewed the curriculum, and many of the required courses did not appeal to me, courses involving transportation and environmental design. I also was not interested in designing roads or bridges, which was my impression of what civil engineers did. My ultimate career choice did not come into focus until several years later, when a new major, architectural engineering, was offered at the college. By that time, I had a much better understanding of the different engineering disciplines available, and I eventually decided to make the switch. Electrical engineering did not prove to be the area for me. I was always more of a hands-on person and preferred the tangible nature of the construction field. I guess I just could not get away from my roots.

Considering the time I spent "trapped" in the wrong discipline, I wish I had had someone available to explain the civil engineering discipline to me, especially the structural and construction portions, someone to explain that being a civil engineer did not just entail designing roads and bridges. It would have made the transition to architectural engineering much easier. Architectural engineering offered all the structural and construction aspects of civil engineering that I craved, including courses on building materials, architectural design, and building illumination, without the transportation and environmental courses in civil engineering that did not appeal to me. In addition to the advice and guidance that I could have benefited from before choosing an engineering discipline, it would have been beneficial to have someone, a mentor, a career counselor, or professional, to explain what life as an engineer after graduation would entail. At that time, I did not realize how ill-prepared I would feel, and be, for the real world of

engineering once I graduated from college. Even after earning a bachelor of science in engineering, the uncertainty and lack of confidence were often overwhelming. Do I belong here? Can I do this? I really had no clue what was expected of me in the real world as an engineer. There is so much more to learn than just the theoretical portion you are taught in school. I certainly could have benefited from some guidance early in my career to help prepare me for life as an engineer after graduation, someone who could have advised me on what a day in the life of an architectural engineer would be like. This is the type of advice and guidance that I am hoping this book can serve to provide to young aspiring engineers.

I got my first part-time job at an engineering firm by pulling a piece of paper off the bulletin board of the halls of the engineering building. I was a junior in college credit-wise, but I had lost several years because of switching majors, so I was older than most juniors. The job posting that I responded to was not even for an engineering position, but rather an ad for clerical help at a local engineering firm. I also did not realize it at the time, but the engineering firm that posted the ad was a specialty engineering firm that did not focus on typical civil, structural, or architectural engineering work. However, it turned out to be one of the best decisions I ever made with respect to my professional career. If I had not responded to the posted clerical position, but instead waited for an actual engineering internship, I am not sure I would be where I am today, which is president and founder of my own engineering firm.

Even though the position entailed only clerical work initially, it did expose me to the engineering field. Not only did it expose me to the engineering field, but it also exposed me to the new, unique field of specialty engineering. In my case, that specialty field was designing the exterior building envelope, a field that I had no idea existed and is not taught in any college or university. I started working as a file clerk, typing, running plans, and making blueprints. Soon after, I was assigned bookkeeping and office management responsibilities. I handled the setup of the office medical and retirement plans. Thereafter, my responsibilities increased to encompass office accounting (quarterly reports and profit and loss statements), including learning the software. I would go on to upgrade the office accounting and general office software and prepare more efficient calculation templates using computer software and eventually learned and implemented computer accounting software and processed payroll. I was also writing all of the project job proposals, testing proposals, and inspection reports.

Then, my first chance at engineering presented itself when I suggested transitioning the drawings produced at the office from hand drafting to computer drafting. I had taken and excelled in my CADD class (computer-aided design and drafting) in school and was given the opportunity. I took advantage of the challenge, and it paid off. Quickly thereafter, I helped complete the transition by installing and configuring the software and new plotter, including creating the new drawing templates. I was so successful in convincing the firm of the benefits of computer drafting that the company decided to hire a full-time AutoCAD operator, since I was part time and the workload had grown too much for me to handle alone.

Once I was no longer solely responsible for the drafting, I began learning to review plans and perform inspections under the supervision of another staff member. I was quickly given more and more inspection responsibilities, and I excelled at those as well. Then after graduation, I was offered a full-time position as an engineer with the firm. The pay was not optimal, and I kept getting nontechnical projects to work on; however, I was told that one day those nontechnical skills would be valuable.

I eventually held every possible position that could be offered at an engineering firm (clerk, bookkeeper, drafter, office manager, accountant, inspector, engineer, human resources employee, and project manager). That job lasted thirteen years and is the main reason that today I own my own engineering firm. I consider my time there as valuable learning experience that taught me how to run and manage an engineering company. I have only had three engineering jobs in my professional career: the part-time job that turned into a thirteen-year apprenticeship; a three-year stint at a general structural engineering firm, in which I established and implemented my field of specialty and oversaw its development; and my current venture going on six years of owning my own engineering firm. Working at those three jobs, based on the tasks I was asked to perform, I accumulated the equivalent of approximately twenty years of experience in overseeing engineering office operations.

The first big project that I ever worked on, to this day, is my favorite to have worked on. It entailed overseeing the design and installation of the building envelope for a local open air mall with more than sixty-five retail clients, each with its own team of design professionals (architects, engineers, general contractors, glazing contractors, owners' reps, project managers, and superintendents). The project developer was one of the

largest mall developers in the country at the time and brought in retail clients from all over the world. This was the project that put me on the fast track of learning.

As is typical in our field, little thought was put into the design of the building envelope. The grand opening was looming, and not a single storefront was approved by the city. In fact, almost all of the design submittals had been reviewed and rejected by the city at least three times. The city had grown frustrated and insisted that the developer hire a glazing consultant. The firm I was working for at the time got the job, and I was put in charge. The city refused to review any more plans until they were reviewed and approved by us first. I had recently graduated and became responsible for reviewing, guiding, and approving the work of much more experienced engineers, who were just not familiar with the local codes. There were so many backed-up rejected submittals that the architect provided a space for me at their offices to use for reviewing. They stacked more than thirty rejected shop drawings and calculation packages for me to review on my first day.

Eventually, I reviewed all the drawings by working many long hours, guided the engineers in revising their submittals, and obtained approval and permits for every one of the projects. I was not only responsible for the review of each storefront design but was also responsible to inspect and approve the installation of every storefront on the project. The mall went ahead with a partial grand opening, but all of the stores that I reviewed and approved were able to participate.

As a result of our work and completing the project, the next time a big developer planned to build another large exterior retail mall in the area, they made sure to hire a building envelope consultant from the start. Moreover, to avoid the setbacks and delays caused by engineers inexperienced with the local codes, which had plagued the previous project, the developer required the retail clients to hire a specialty building envelope consultant from a list of only two consulting firms. The firm I worked for at the time served as the lead consultant, and as you may have guessed, I was put in charge of that project as well. To this day, that mall has a small list of approved specialty engineers from which their retail tenants can choose. My own firm has since been added to that list.

I did not consider becoming an entrepreneur until late in my career. This was partly because of a set of fears and partly because I was comfortable and content with where I was. I was not being paid well, but I was given lots of responsibility and I was constantly learning. I guess

entrepreneurship just never occurred to me. I was afraid of the unknown. I was not sure if I could run a company and take on the responsibility of being an employer. It was not until I hit a rough patch in my life, coupled with hitting a ceiling at work, after many years, that I actually started to seriously consider it.

I had just been divorced, and my job was no longer fulfilling to me. I was stuck doing tedious work that I did not find challenging. I was not learning anymore. I had become stagnant. I found myself looking at my watch every day, hoping that it was time to go home. Finally, I got the courage to make a dramatic change in my life. I decided, after thirteen years, to leave the only place I had ever known as a professional. It almost felt like I was leaving home again. It was a terrifying decision. I could no longer hide from my fears, so I decided to confront them head on.

Instead of taking comfort by going to work for another company that did something similar, a job that would allow for a smooth transition, I decided to take a totally different path. I decided to do something that I was ill-prepared to do. I decided to work for a firm that did only general structural engineering. I left my comfort zone. I decided to leave the field of engineering in which I had practiced for many years, a specialty that was the only thing I knew how to do. I was embarking on something totally foreign to me. I thought to myself, how will I ever get hired to do general structural engineering when I have never practiced it, and I am in my forties? I figured that I would learn something new, but how would I sell myself? So I decided to make a bold decision. I asked to be paid entry-level pay. It would mean a drastic pay cut. However, there would be a catch. The agreement was that I was to be paid at the entry level for the first year, with the understanding that my compensation would be adjusted at the end of the year if I was able to originate sufficient work in my field. The deal was that if I did bring in the work, my salary would be brought up to what I had made the year before at my previous company. We had a deal.

I was the first one to work the next day. I had a renewed sense of excitement, mixed with some trepidation. Could I learn to do the general structural work? Would I be able to bring in work in my field? I had asked for a little time to get the staff trained and ready in case I could bring in the work. In the meantime, I would do whatever they asked me to do until I was ready. As it turns out, I did not get a chance to do too much general structural work since I had severely underestimated myself. I got to work on some foundations and some structural repair

inspections for a few months until word got out that I had left my job and had gone to work for another firm.

Some of the people I had done work for found out where I had gone and tracked me down. They asked if I was willing to do some work for them. I was not ready, but I could not say no. After all, this was my field of specialty, and I knew the work backward and forward. I would do all the work myself and train the staff on the fly. Soon, more and more work in my specialty started pouring in, without a single phone call or any marketing on my part. It appears that I did pretty good work, and the clients took notice, and some followed. I worked at the new firm for three years. Most of the time was spent overloaded with work and asking for more help so that I could go out and bring in more.

The economy was in the midst of a bad downturn, and my requests for assistance went unheeded. Nonetheless, after my first year, I had generated considerable work for the firm and was compensated as agreed. My next review did not go well, despite the fact that I continued to generate a lot of work for the company. But I decided to stick it out a little longer. I had managed to take a new discipline into a company that had no experience in that field, train the staff to work in that field, and bring in work, but the economy was in a tailspin. It became apparent that I had quickly hit another ceiling at my new job. I became disillusioned. It was time to make another move. I kept expressing my disappointment with my current situation to my new wife (I had since remarried), who by now had grown tired of hearing me complain. One night, I must have been complaining a little too much, and she finally said, "Just shut up and do it." I do not recall if she said it quite that way, but it sure felt like it because it certainly made an impression on me. So, I decided to quit my job and go into business for myself. I was told by my current employer that it was a bad time to quit because of the economic downturn. I was advised to take some time to think about my decision, but my mind was made up. I gave immediate notice of my intent to resign.

I was going to enter the entrepreneurial field in engineering during a time when existing firms were laying people off and downsizing because of the poor economy. But I had a plan. I would offer equal or better quality of service at a reduced rate. It made sense, since at my current job I had built up a following of old contacts and generated new business based on my knowledge and experience. The people I had worked with in the past followed me to my new place of employment—why wouldn't they follow me yet again? I would assure them that

on my own I would be in a position to offer them better rates, more flexibility in terms, and better service, since I would be the one making all the decisions, not having to rely on someone else to set the terms and fees.

I had quit my job, and used my life's savings, along with financial support from my wife, to set up my company out of my own home. DLG Engineering was born.

My advice to Group 1 readers (high school and college students) is to get practical hands-on experience while you are in school. This experience does not need to be actual engineering work, so long as it is work of any kind at an engineering firm. Seek out someone, anyone, in the engineering discipline and ask them to explain to you what they do. Be mindful of courses in high school or college that can be beneficial to your future career. Any course that focuses on computer software, public speaking, and technical writing, as well as management skills, will almost always serve you well.

My advice to Group 2 readers (young engineers) is to reach out to your alumni groups and professional organizations. Actively and passionately network with peers. Keep an open mind about discipline. Seek an appropriate specialty. Consider entrepreneurship, and lead your career with that path in mind. Even if you never open up your own firm, the skills you will learn from following the path of an entrepreneur will be valuable assets in any path you ultimately take.

My advice to Group 3 readers (experienced engineers) is to make sure that you understand what it takes to be on your own, both financially and mentally. Be prepared to work hard and make sacrifices. Make sure your significant other is aware of the path to come and is supportive. Develop a good support group. Most importantly of all, do your research and make sure you love what you do.

Now, let's get started.



PART 1

HOW TO PREPARE FOR
ENTREPRENEURSHIP

STUDENT ENGINEERS

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Chapter 1

Helpful Courses and Skills

Established curriculum courses will be more useful to you in the future if you know what to focus on in the present.

You may not realize it now, but certain courses can make your life as a future entrepreneur much easier. Specific courses and skills can be learned that are part of the established curriculum. You should focus and pay close attention to these courses. There have been times when I would say to myself, "I wish I had paid more attention in 'fill in the blank' class." Well, this chapter points out what some of these classes are, so that you never have to utter those words in the future.

There are three types of courses offered in school that are beneficial to an entrepreneur later in life:

Courses that focus on or use computer software and programming,
Courses that develop management and/or leadership skills, and
Courses that teach you the core principles of your chosen engineering discipline.

Computer Software and Programming Courses

It is important not only to learn how to use, but also to master the use of the available software that you will be exposed to while in school. Demonstrating an advanced level of understanding of the available software of the day, especially the often obscure benefits of that software, can separate you from other applicants vying for the same position. It could also help you better understand the full capacity and/or limitations of that software when it comes time to choose the software best suited for your particular needs when starting your own firm. Purchasing software, especially for a start-up firm, can be an expensive proposition. In the early years of owning your own firm, you may

have to rely on less expensive and potentially less specialized or sophisticated software, such as that which you used in school, just to get by until you can afford to purchase the proper software for your needs.

However, if you learn to master and unlock the full capacity of the software you learn in college, you might be able to adequately meet your needs by programming and using that existing software and tailoring it to suit your needs. As a young professional, and as a budding entrepreneur, I wasted countless hours trying to figure out how to use specific features of most of the software that I used in school, hours that could have been spent in a more productive manner. I also had to learn new software that I had never been exposed to before, which was time-consuming and frustrating at times. Features such as mail merge to create and send form letters to clients (in any word-processing software), spreadsheet programming to facilitate office management, and accounting software to maintain proper and efficient bookkeeping, just to cite a few examples, would have been helpful to know. When I was a young engineering student, these were the relevant software packages that were available. Today's software, or updated versions of the ones I cite, is far more advanced, beneficial, user-friendly, and efficient than when I was starting out. Nonetheless, learning the intricacies of the software while you are in school saves you time later in your career. Also, as your company grows, firsthand advanced knowledge of the software that your company uses gives you a better understanding of the ability and competence of the individuals you will hire to perform the tasks that you had previously been performing for yourself. It can also serve to diminish the expense of information technology (IT) support that may be required, by understanding and doing some of the computer and software troubleshooting on your own until you can afford to hire a qualified IT person or firm.

Specific courses to focus on where computer software is required are those that expose you to, or teach you, necessary entrepreneurial skills, such as the following: word processing and document creation, presentations, programming, accounting, web design, and marketing. Below are examples of some useful software in each of these areas that could be helpful to you in landing your first job. More importantly, learning to master the software you need will help make your path to entrepreneurship much easier. I have also added examples, at the end of each description, of the software's particular usefulness to me as a student or young engineer. I also describe when and how I grew to

learn of that particular software's benefits, either before or after I became an entrepreneur and founder of a small start-up engineering firm.

SOFTWARE EVERY ENGINEERING ENTREPRENEUR SHOULD OWN

MICROSOFT WORD
ADOBE ACROBAT PRO
MICROSOFT POWERPOINT
MICROSOFT EXCEL
QUICKBOOKS
ADOBE DREAMWEAVER
ADOBE PHOTOSHOP
AUTOCAD
SKETCHUP

Word Processing and Document Creation

Microsoft Word

Microsoft Word, or its equivalent, is a valuable piece of software throughout your educational and professional career. It can be used not only to prepare your course work while in school, but also to prepare your resume and write technical papers, magazine articles, project proposals, and inspection reports, as well as numerous other uses. Learn to unlock all the features within your word-processing software that make these tasks easy to perform. Master the built-in features, such as tracking changes, creating and inserting tables and pictures, mail merge, address labels, and spell check. If you do not learn to unlock the full potential of your word-processing software, you may spend hours trying to figure out how to accomplish certain tasks, tasks that can be made simpler by understanding the often obscure features contained within the software. Often, users only learn that these features exist from someone else who has taken the time to become familiar with the software.

This is by far the most important managerial software you will use as a business owner. It is easy to overlook the importance of this software

because it is so readily available and it is relatively easy to use. It is not until you think about the many uses for your word-processing software in school and in the business arena that you realize its true importance. While in school, I learned the bare minimum required to function. I basically learned how to type and did not think or bother to take a course in Word. (In today's advanced technological era, online tutorials and courses are much more readily available and are highly recommended.) Subsequently, I did not know how to use most of the special features, and I struggled when asked to perform relatively minor tasks during my first job, tasks such as preparing address labels for client mailings; creating or inserting tables, graphs, and picture into reports; and properly formatting a letter or proposal with indentations, bullets, and headers. My lack of knowledge about how to work with these built-in features cost me many precious hours, until eventually I learned most of the features on my own or from a friend or colleague. To this day, I find what I learned to be useful. I even teach my office staff some of the more helpful features I learned along the way, including ways to get the most out of the software in order to be more productive. I have written resumes, technical and inspection reports, job proposals, magazine articles, and of course, this book with this software. The only thing more important than learning how to properly use this software is learning how to properly write. Writing is a skill that is an invaluable asset and essential for an entrepreneur to learn and to master. I discuss this skill in detail in chapter 11, which is about intangibles of entrepreneurship.

Adobe Acrobat Pro

Adobe Acrobat, or its equivalent, can be used to convert and share most of the documents created with the software mentioned in this section to a format (PDF format) that is easy to transmit and secure. It can facilitate comments or corrections by other individuals, while preserving the integrity and proprietary nature of the original document. For security and proprietary reasons, proposals, final drawings, or technical reports, as well as other important documents, should not be sent in their original format. You want to protect your document from being easily manipulated or copied by the recipients or clients unless the intent is to allow them to make changes to the original. Acrobat is useful for sharing certain documents with individuals who may not possess the programs necessary to view the documents. You may have certain highly specialized programs that your clients do not have access to, or that are not readily

available, which could pose a problem if you expect them to view and/or comment on your work. You also may not want your client to be able to change your document without your knowledge, which could pose potential problems down the road. I used to send out letters and proposals to clients in the original word-processing document format, until I started noticing that some of them did not appear the same when they were signed and returned. Most of the time, this was an innocent occurrence, and the discrepancies were caused by having different settings on the software used by the individual when opening and viewing the document on his or her own computer than the settings that I had used when I created the document. Some of the discrepancies I observed included different margins, indentations, fonts, and general formatting. Those discrepancies got me to thinking, what if someone, intentionally or by mistake, changed a critical portion of the document and I did not notice it? A situation such as this could cause a big problem or misunderstanding in the future. Ensuring that your documents are transmitted in a safe and reliable format while still allowing feedback and comments is critical.

Presentations

Microsoft PowerPoint

Microsoft PowerPoint, or its equivalent, is essential to preparing technical and marketing presentations and literature for yourself and your company. Learning to master the software that allows you to get the word out about your company's products or services cannot be overstated. Learn to unlock the features that will help make your presentations stand out and easy to follow. Learn to use and incorporate features, such as animations, videos, graphics, and tables. Learn to design attractive, clear, and concise backgrounds and templates. PowerPoint is extremely helpful in presenting technical papers and webinars to professional organizations. I did not use this software while I was in school or even early in my career. Granted, today this software is much more sophisticated, readily available, and beneficial to students and young professionals than in the era when I was a student and young professional. It was not until I started my own firm and needed to find ways to promote myself and my company that I decided to explore its many advantages. One of the first uses I found for it was when I volunteered at my University's College of Engineering Alumni Association and I needed to create a presentation to recruit and inspire new members.

Once I learned to use it and I became more comfortable with the software, I then used it to create a presentation to a local professional engineering association promoting and raising awareness of my engineering discipline. One of the most productive uses was developing a 90-minute live webinar that I have now presented three times. This software is an important tool in promoting yourself and your company.

Programming

Microsoft Excel

Excel, or its equivalent, can be used for engineering calculations, creating project and office management spreadsheets, and organizing and manipulating data into useful information, information that can be helpful in your company's decision-making process. It is a useful tool to fill in the gaps that may exist in other software that you use. It is adaptable to many applications and even for creating your own custom-programmed software.

Excel's integration and programming capabilities make it a useful office tool when well understood and used properly. This is perhaps the most flexible and versatile software for an entrepreneur. I have used this software to manipulate and analyze data for all sorts of applications. The first application that I can remember using this software for, as a recent graduate and young professional, was to develop a spreadsheet to keep track of the complicated limitations of the company's retirement contributions to the employees at my first job. Subsequently, I have created programs using this software for developing budgets, preparing engineering calculations, determining project fees, and understanding investment potential, among endless other uses.

Accounting

QuickBooks

QuickBooks, or its equivalent, can be used to help track and manage your office accounting, taxes, projects, employees, and finances. It is important to note, however, that the information or output you get from your accounting software, as with any other computational software or program, is only as good as the input you provide. You must first, or concurrently, learn basic accounting principles in order to properly track the financial health of your company and avoid headaches come tax time.

Important issues to consider include setting up income and expense accounts and distinguishing between the different classes of income and expenses; setting up accounts payable and receivable; categorizing asset and liability accounts; using the correct tax tables for both state and federal taxes; understanding the tax payment and reporting requirements; tracking project information and collections; setting up employee, payroll, and benefits information; and properly categorizing contractors.

Once your accounting software is properly set up, the most important feedback comes in the following easy-to-generate reports: profit and loss, balance sheets, aging, and payroll. As a young professional, I had never been exposed to basic accounting principles. It was not until I was asked to learn this software at my first job, in order to better track company expenses and handle accounts receivable and payroll, that I started understanding the principles of accounting. I found that this software was easy to use and that the built-in tutorials provided sufficient guidance to begin to understand the basics of accounting. I credit this software for opening my eyes to the information and tools necessary for an entrepreneur to keep proper track of the financial health of his or her company. It did not teach me everything, but it did serve to expose areas where I needed to seek additional guidance. Understanding the limitations of the software itself, knowing that the output is only as good as the input one provides, and being forced to seek additional information ultimately made me a better business manager.

Web Design

Adobe Dreamweaver

Dreamweaver can be used to design and maintain your website. Learn to upload graphics, videos, pictures, company bios, and brochures. Add links to useful and pertinent information; provide a vehicle for client contact. In today's era of technology, it is easy and relatively inexpensive to create and maintain your own website. I have not personally used this software, but my staff has used it to update the information, graphics, and images on our website in real time without having to wait for an outside web manager or service. This is a case where I would recommend that, unlike me, you learn the basics in order to better position yourself to save your company time and money. I had to pay to develop a website and initially maintain it until I hired someone who could do it in house.

Marketing

Adobe Photoshop

Adobe Photoshop can be used to design much of the marketing literature that would be helpful in promoting your start-up firm and the services it intends to provide. This literature includes company flyers, brochures, pamphlets, and e-mail and online marketing literature. You might want to invest in a good camera and learn to crop, touch up, and edit pictures of your projects or select images from stock photography sites representative of your services for use in your marketing campaigns. As with other software I mention, I have not personally used this software for business purposes, but the benefits and capabilities of the software, and of learning it yourself, can help save your company time and money. Most of the helpful use of this software, for company purposes, I have entrusted to my talented staff. We have used it in creating enhanced images of past projects completed for use on the company website, enhanced images of headshots of staff for the company website, marketing brochures that include company history and our scope of services, flyers promoting networking events, company logos, and enhanced images for company T-shirts, among numerous other uses. Most of these uses involved using Adobe Photoshop, along with some of the other software mentioned.

Computer Drafting

AutoCAD

If your engineering firm requires production of drawings, you need to become familiar with AutoCAD. Learning to read plans helps in learning to produce plans. Learn to draw perspectives, floor plans, elevations, sections, and details. Learn to add dimensions to the drawing details. Learn to interact with other available software, such as SketchUp, to help make your drawings easier to read. Learn not only how to effectively produce drawings in AutoCAD, but just as important is learning to print or plot, design your drawing templates, and convert your drawings to PDF. This software is one with which I not only have personal experience, but also it was instrumental in securing my first job. When I got my first job, the engineering company I worked for was still preparing all their drawings by hand. Because of my proficiency in this software, I was able to demonstrate that I could

perform the same task more quickly and more consistently and could increase office productivity. I learned other critical tasks associated with and critical to computer drafting, other than just drawings, which were not taught in school, that made me even more useful and productive to the company. These tasks included installing and maintaining the software, setting up and configuring the plotter and pen styles, designing the drawing templates, learning to use blocks and developing a library of details to increase productivity, and learning AutoLISP programming to increase efficiency of preparing repetitive details. To this day, I put a lot of emphasis on computer-aided design and drafting (CADD) knowledge by interns and entry-level engineers I hire, and I have found that other colleagues do the same. Versatility is important for a small firm, and most demand a proficient knowledge of CADD.

Management and/or Leadership Courses and Skills

More important for entrepreneurs than learning computer software, programming, and the technical aspects of engineering is learning how to be a good manager and leader. All the technical aspects of being a good engineer are properly addressed in the school curriculum or during your first job after graduation. What is not taught in school or after graduation are the soft skills necessary to be a successful entrepreneur. However, some courses in school can provide a good foundation and assist in developing these necessary skills. Do not limit yourself to just your schools' curriculum for access to these courses or means to learn these skills. If they are not offered in school, look online. Courses that can teach you lessons beyond technical and software skills and can help you develop the necessary entrepreneurship skills are listed here:

THE FOUR MOST IMPORTANT SKILLS ENTREPRENEURS SHOULD MASTER

1. MANAGEMENT
2. TECHNICAL WRITING
3. PUBLIC SPEAKING
4. BASIC ACCOUNTING

Management

Learn how to expertly handle human interactions in the most effective manner to accomplish a goal. Learning to work well with and lead others is the essence of success. Any type of management course helps build necessary skills needed in entrepreneurship. Focus should, however, be on money management, project management, and office management courses. Learning to work in a team environment and developing the skills necessary to lead are crucial to entrepreneurship.

These courses do not necessarily need to be specifically management courses, as long as they involve or teach you management skills. Working on a team, needing to meet deadlines, learning to supervise and delegate, and preparing a budget are some examples of beneficial tasks that you should look for when deciding on what existing or supplementary courses to take. Examples of courses within the engineering curriculum that teach these skills are surveying, project management, senior design, and materials and structures lab, to name a few.

I received my first lessons in working as a team during my freshman surveying class. Surveying teaches you that if you cannot communicate well with another individual, the results negatively reflect that problem. You need to be able to trust your partner, relay good information, and agree on the next steps to be able to get good results. The same holds true in the materials and structures lab when performing experiments with a partner. Sometimes you need to delegate tasks and assume a leadership role to get the job done right. Sometimes you have disagreements, and you need to get past them and compromise without negatively affecting the outcome of the experiment. Take advantage of all the opportunities that present themselves in these types of courses and assume a leadership role. Valuable lessons are learned along the way if you do not shy away from responsibility. Don't be afraid to make mistakes along the way; sometimes we learn more from how we handle and overcome mistakes than from our successes.

Technical Writing

Learn how to convey and communicate a clear and concise written message. Communication is critical to a successful company, and being able to convey your message clearly and concisely in writing is extremely important. Writing proposals and reports is a large part of the business. Putting this information comprehensively and concisely in writing can

help you avoid misunderstandings. Writing a comprehensive proposal entails stating a specific scope of services about what is covered and what is not covered in the proposal. The ability to write easy-to-follow reports is also extremely important and cannot be overstated. Critical conversations or verbal agreements should always be followed up by a well-written letter or e-mail confirming the agreement or understanding.

Aside from your English writing courses, scientific and technical writing experience can be gained and honed in your science lab courses, such as physics and chemistry, as well as in material and structures labs. Focus and emphasis should be on the report writing of the experiments you perform. Convey your message and results in an easy-to-follow manner. Avoid being repetitive and only include what you are sure you can substantiate. Be clear, concise, and to the point.

Physics, chemistry, and materials and structures lab are the perfect ways to practice your writing skills. Entrepreneurs, and especially engineering entrepreneurs, need to rely on the facts and should omit emotional content from their communications, especially for technical reports. There is no better way to learn this truth than by following the structural writing guidelines of preparing a good laboratory report. Practicing and mastering this skill pays off when it comes time to write your own reports for future projects and clients.

Public Speaking

Learn how to sell yourself and your company or services in a confident and appealing manner. Using effective verbal communication and disseminating information about your products or services are the primary selling points for your company. Demonstrating confidence and properly conveying your sales pitch can mean the difference in landing that coveted project or convincing a client to send you work. When preparing technical presentations or marketing yourself or your company, you should always have a few key points ready and anticipate any questions that might be asked of you about your products or services. Public speaking is one of the most underrated nontechnical skills not taught in college.

Historically, this is one of the hardest skills to master for the engineering profession in general. Do not shy away from speaking up in class or giving verbal presentations. You may not sound eloquent at first, but this skill cannot be mastered by simply studying and reading about it. It must be practiced and honed constantly. Preparation is the

key to controlling the inevitable nerves associated with public speaking. However, even if you prepare amply and know the material backward and forward, the manner in which you speak is extremely important. I have sat through many presentations about intriguing and informative topics and still found myself struggling to keep focus because of the delivery of the information being presented by the speaker.

I found myself nervous to the point of having sweaty palms every time I was asked to get up in front of the class, but it was only through preparation, practice, and persistence that I overcame the nerves.

EIGHT TIPS TO BECOMING AN EFFECTIVE SPEAKER

1. PRACTICE YOUR SPEAKING OUT LOUD.
2. BREAK UP YOUR SPEECH PATTERNS.
3. SPEAK LOUDLY AND SLOWLY.
4. MAKE EYE CONTACT.
5. USE VISUAL AIDS.
6. STUDY THE PATTERNS OF GOOD SPEAKERS.
7. HAVE NOTES HANDY.
8. PERFORM MENTAL ROLE PLAY.

Practice your speaking out loud, and do so numerous times

This is the best way to refine your speech. By hearing your own voice, you can determine if you need to make any adjustments in the way the speech flows and is received. You can change the inflections or emphasize certain parts differently. You may even be able to tell if you need to revise the content.

Break up your speech patterns and emphasize and inflect on key points

Make the speech sound like a controlled conversation with a good friend as much as possible. Do not present in a monotone, rehearsed voice. Let your voice dictate the important parts of your speech by emphasizing with a louder tone, a stronger inflection, or a slower or repetitive pattern.

Speak loudly and slowly

Present the speech as if you are talking to the people in the back of the room or at the far end of the table. Speaking slowly allows your mind to keep up with your words and ensures that a clear message comes through.

Make eye contact

Look the audience in the eyes; it makes them feel invested and part of the conversation. You can keep their attention and focus if they feel that you are talking directly to them. Pick a few people in the audience or at the table and focus the speech directly to them for a few seconds at a time.

Use visual aids

For long speeches or for those that include technical information, prepare a slide presentation and practice out loud going through the slides.

Study the patterns of good speakers you know and emulate them

If you have ever heard a speech that captured your attention, study and dissect the delivery.

Have notes handy to keep you on track

Keep notes only as a guide to keep you on track; do not read the notes. The notes should include certain trigger words that will guide you to your next topic should you lose your way.

Perform mental role play

Present the entire speech, or the important parts, in your head and visualize distractions, questions, losing your place, or technical difficulties. Role play how you would react to these issues.

Basic Accounting

Learn how to effectively and efficiently handle the money you make and the money you owe. Being aware of basic accounting principles is essential in the financial management of a company. A good accounting system can expose the difference between a truly successful company

and one that portrays the illusion of success. Understanding profit and loss, balance sheets, aging reports, assets, and liabilities is crucial. Learn to properly prepare and manage a budget. Money, to put it bluntly, is what drives the world's businesses and the decisions of all entrepreneurs. To be a successful businessperson, you must first know how to manage money. You more than likely need to look outside of your standard engineering curriculum to supplement this important skill. There are many available books on the topic, and this skill can also be honed by becoming familiar with and proficient with some available software, which provide built-in tutorials and examples. Some of the qualities necessary to develop the skills needed to effectively and efficiently manage money are fiscal restraint, meticulous attention to detail, foresight, and a continual collection and interpretation of data. Money management is in essence the art of making decisions based on a thorough analysis of your data through a series of interconnected reports that detail your company's finances. This analysis eventually leads to a nonsubjective answer to all your financial questions. There is an art to identifying the proper data that need to be evaluated and disseminated into clear and concise reports that provide you with the necessary information for you to make an informed decision. You must properly address all of your financial questions regarding your company through this method. Questions such as, Can I afford to hire a new employee? Should I open a new office? and Should I raise my rates? should not be answered solely by gut feelings, but you must first seek the answers that the numbers suggest and then use your intuition and educated opinion.

I was always meticulous when handling my finances in college and thereafter. I balanced my checkbook every month, used my credit cards wisely, never made a late payment, paid off my first car loan faster than loan terms required, and started saving and contributing to my 401(k) at my first job. I had the advantage of learning to use QuickBooks, which exposed me to the financial data and tracking that are important for making good financial decisions.

Core Principles Courses

To be a successful engineering entrepreneur, it is important to have a solid technical educational foundation, especially in your specific

engineering discipline. This goal can be achieved simply by focusing on your core and technical foundation courses, also known as your STEM courses (science, technology, engineering, and math). These courses provide the theoretical and technical foundation, as well as the required tools necessary to have a successful base in engineering. Do not underestimate the importance of having a solid technical foundation in your specific engineering discipline because without it, all the soft nontechnical skills you learn while reading this book cannot help you become successful. It is important, while in school, to focus on the technical skills taught in your school's curriculum courses, especially the core courses in your chosen discipline. Just as a smart engineer will struggle in entrepreneurship if he or she does not have the necessary soft skills, a business-savvy engineer will struggle in engineering without the necessary technical knowledge and skills. It takes a balance of both types of skills to make a successful engineering entrepreneur. We do not focus, in detail, on these technical courses and skills in this book because we presume that the standard engineering curriculum suffices to provide a solid technical engineering foundation. After all, it is not until after graduation, in the transformation from student to engineer, that you will begin to learn the real technical skills required to be an engineer. Most of what is taught in school is simply a primer and base for the real world of engineering, and most often the tedious theoretical analysis learned in school makes way for more practical and efficient methods required to stay competitive in the real world. In the real world, you are not graded by methodology and process, as you are in school, but rather by the outcome and efficiency of the work you perform.

Science

Science courses provide the theoretical foundation for all engineers. Your first exposure to laboratory work, reports, and experiments is in these courses. They are instrumental in teaching you discipline and analytical thinking. They lead you to your eventual choice of engineering discipline. If you find yourself drawn to any one of these courses, take a closer look at its associated engineering discipline. Each of the following courses has an associated engineering discipline or specialized field directly related to it: physics, biology, anatomy, chemistry, and geology.

My favorite was physics. It taught me to question how things work and why, and how to use math to solve real-world problems. It was one

of the first courses I took that really made me think. If you want to be a civil, architectural, or structural engineer, pay close attention in physics class. Biology and anatomy would typically be a great foundation for biomedical engineering, a relatively new field that focuses on developing medical devices to be used within or on the human body. Chemistry is useful in the field of chemical engineering, in which you may design products such as plastics, resins, or additives, or the means to make these products. Geology is perfectly suited for the geotechnical and environmental disciplines that focus on the Earth, working on securing the building and bridge foundations and overseeing ecological effects on the Earth.

Technology

Technology courses provide the practical foundation and make your path to entrepreneurship easier. Learning to use all of today's vastly and rapidly growing technological advances to your advantage can save time and set you apart. These courses include word processing, computer hardware, computer programming, web design, electronics, and Internet courses. It also entails knowing how to use the latest communication technology and computer and smart phone applications. These types of courses can be taken outside of the school curriculum, and most can be learned or expanded upon online.

I had to learn to type on a typewriter before I moved on to an actual word processor or computer. Do not underestimate the power of learning to type and learning to do so quickly and accurately. Learning to not only use, but also repair, debug, build, and adapt computers to suit your needs is extremely valuable for an entrepreneur. It could mean the difference between shutting down for the day, or days, until a technician can get you back up and running or simply fixing the problem yourself and getting right back to work. In business, time is money. Programming in BASIC was fun because you could actually tell the computer what to do. Today's programming is much more sophisticated and complex, which makes it more enjoyable. It is amazing what you can do with some knowledge of programming to make your work easier these days.

Web design is another skill that can be handy for an entrepreneur. Finding a way to get your information out there and get your site back up and running without much delay can be beneficial. Learning about

the latest electronics and being proficient with them put you ahead of the game.

Engineering

Engineering courses provide the technical foundation for your eventual career. Careers in engineering include mechanical, aerospace, civil/structural, architectural, environmental, industrial, biomedical, electrical, and computer. Each of the core curriculum courses for these disciplines is expanded on in school and is a prerequisite for the more advanced courses in that particular discipline.

I actually started off as an electrical engineer before I discovered that it was too slow-paced and not hands-on enough for me. Keep an open mind about the field in which you want to practice; it may turn out not to be the one you originally thought. In chapter 3, we describe what an engineer in each of these engineering disciplines does for a living, so if you do not know what suits you, perhaps you might have a better idea after reading that chapter.

Math

Math courses provide the necessary tools for any engineering discipline. These courses include algebra, geometry, calculus, differential equations, and statistics.

Math and I had a love-hate relationship when I was in school. I was at times fascinated, infuriated, dumbfounded, and mesmerized by it. But it was a necessary evil for me. If you are good in or love math, you will feel at home with an engineering degree. If you are struggling in math but really want to be an engineer, do not be discouraged. To this day, I still have to pull out a calculator for relatively simple calculations. Just as important as being good in math, for an engineer, is having good old-fashioned common sense with a strong dose of logical reasoning. Computers do all the math for us these days, but you must be smart enough to question and analyze the results, since computers obey the premise of garbage in, garbage out. However, it is important to pay attention and pick up the skills early since math courses build upon themselves in a natural progression. Once you get to more advanced mathematics, you will struggle if you do not retain the lessons learned from the previous courses.

Recommended Activities

1. Make a list of all the courses that use the software and fit the mold of those mentioned in the computer software and programming courses section of this chapter that are available to you in your current curriculum, whether you are in high school or college. Constantly remind yourself that these courses are important and pay close attention in class.
2. Make a list of all the courses that use the software and fit the mold of those mentioned in the computer software and programming courses section of this chapter that are *not* available to you in your current curriculum. Find out where they are available or if they will be offered later in your curriculum. Make yourself a note to seek these types of courses.
3. Make a list of all the software that you currently own or have access to that was mentioned in this chapter. Start to learn the intricacies of that software, on your own time, and master them. The built-in tutorials can be helpful. If they are not, find an online course and learn that software backward and forward.
4. Make a list of all the software that you do *not* currently own or have access to that was mentioned in this chapter. Find a way to acquire or borrow a copy now. If it is not useful to you at the moment, it will be in the future. Get a head start.
5. Do the same for the courses that are and are not available to you in your current curriculum, whether you are in high school or college, that were mentioned in the management and leadership skills section of this chapter. Place special emphasis on money management, project management, and office management courses. Constantly remind yourself that these courses are important and pay close attention in class or find a way to get access to that information online. For the courses that are not available in your curriculum, look online for articles, presentations, or seminars and consider participating. The Internet is a great resource for learning about all these topics, and a lot of information is available for free.
6. Find a shoe box sized box and decorate it colorfully so that it attracts attention. Label it "Entrepreneurship." Place a copy of all of the lists of recommended activities at the end of each chapter inside that box or any item that can serve as inspiration in your

entrepreneurial pursuit. As you take and master each of the courses or software, and you perform all of the recommended activities of the chapters to follow, check them off your list and place the list back in the box. Keep going back to that box periodically to help keep you motivated. Add some inspirational notes to yourself. This process can help remind you and refocus you on your goal and dream of owning your own engineering company one day.

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Chapter 2

Helpful Activities

Being actively involved in student organizations and participating in internships while in school provides a crucial advantage to aspiring entrepreneurs.

Certain activities outside of the high school or college curriculum courses are ideal for learning the management and nontechnical soft skills needed for becoming a good manager and leader. Internships especially provide that first glimpse into the real world of engineering and are especially beneficial to the aspiring entrepreneur. Participating in both of these types of activities while in school is not only highly recommended, but also it could be crucial in landing you that first job.

Join Student Groups and Associations

Most of the basic management and leadership skills can be learned and honed by actively participating in student organizations at your school. Whether in a student chapter of your intended professional society, a social fraternity or group, or student government, these organizations offer you the best opportunity to learn how to relate to, manage, and inspire people. After you join these organizations, make a plan of action to seek a leadership role within the organization. Any leadership position is acceptable, such as secretary, treasurer, committee chair, event chair, or captain, but you should always strive to grow within the organization and move up the ranks. Remember that you can learn from both positive and negative experiences, and often the negative experiences and how you react to them create the best learning experiences for leaders.

I was not involved in any engineering student group while in college, which in hindsight was not a good idea, but I did join numerous other social and university groups that helped enhance my social and

leadership development. I joined the Reserve Officers' Training Corps (ROTC) for one semester, without the intention of continuing, just to experience the discipline and training. In that semester, I learned survival skills, map reading, discipline, and physical training. I also volunteered to participate in new student orientation programs, which placed me in a group leadership role. However, the most important group that I joined was my social fraternity, Alpha Sigma Phi. Within the fraternity, I advanced to leadership positions throughout the years (pledge educator, little sister chairman, and Greek Week chairman). The fraternity experience had a huge positive effect on my social and leadership development. Not all fraternities are the same; nor do they always offer positive experiences, so it is important to seek one that meets your goals to improve social and leadership skills if you strive for entrepreneurship in your future. Select the serious fraternity that has university student leaders as members and that is academically conscious and active in university and community affairs.

Establish Contacts and/or Become an Intern at a Local Engineering Firm

There is no substitute for practical experience and working on real-life projects. Even if your first internship or part-time job is not directly related to engineering but at an engineering firm in a supplementary role, it is still much better than not having any experience at an engineering firm at all. If you are in high school or college and are not ready for an internship, frame the experience as an interview for a school project. Research the local engineering firms in your area, regardless of discipline. Ask your parents, teachers, and counselors if they know anybody who works in these companies. Research the company and schedule an appointment to meet with the president or vice president. Tell him or her that you are a student interested in learning more about this profession and how he or she became successful; ask if he or she could spare a few minutes of time to talk to you. An in-person interview is preferable, but offer to perform the interview over the phone if the president or vice president seems hesitant to meet. Have a list of questions prepared and take notes. Feel free to improvise questions, but return to your list of questions to make sure that you do not get off track with the purpose of the meeting, which is to establish a contact

and learn more about the profession. Ask for an e-mail address or business card at the end of the meeting and send a thank you e-mail the very next day.

If you feel that you are ready for an internship and that particular company interests you, ask about potential internship opportunities. If they seem hesitant, offer to work for experience only, with the trade-off that they offer you some practical experience. Finding a paid internship is always preferable, but getting an internship by any means necessary is critical for a budding entrepreneur. Ask your school counselors or advisors for any leads on companies that hire interns.

I never had the opportunity to participate in an internship per se; however, I did take a position as a file clerk at an engineering firm while in school that ended up making all the difference in my professional career. I will not recount that experience again, but it can be found at the beginning of the book in the Introduction. It is an important lesson: you never know where an opportunity is going to lead you, and you should always have an open mind. Strive while in school to get that practical experience, whether through an internship or a part-time job.

Find Work That Emphasizes Accounting, Management, and Clerical Duties

If you want to hone the skills that will one day help you manage your own firm, there is no better way than practical experience. Not only will you practice these skills, but odds are that you will learn something along the way that might be useful to you down the road. Focus on getting summer or part-time jobs that involve clerical, management, or accounting duties. Remember that the goal is to get practical experience and that it does not necessarily have to be well-paying, so long as the experience gained is productive. Unless the position is at an engineering firm, you do not necessarily have to stay with that company for too long. Move on to a new challenge next summer or as soon as you have mastered the skills necessary to perform the tasks asked of you. On the contrary, if the position is at an engineering firm or if your responsibilities are constantly growing, consider remaining there for a longer stretch.

Compile Available Resources

Resist the temptation, especially in college, to throw away or sell your college core course (STEM) textbooks. Certainly, do not sell or throw away any codebooks that you may need in your practice. Some construction projects or retrofit projects may be grandfathered to the code that was used during original construction, and those codebooks you used in school could come in handy, especially in the construction, civil, architectural, structural, environmental, electrical, and mechanical fields. As an entrepreneur in a technical field, you will find these resources handy one day, and the cost to replace them as a professional is much greater than having them purchased by your parents or at a student rate. Keep any special projects or notes from the relevant courses in your anticipated field that can serve as a quick refresher as well.

To this day, I reference some of my old textbooks and notes for a solution to an especially unique problem. Every time I have encountered a new design method or unique solution to a problem in my career, I have made it a point to summarize and provide details of how to resolve the issue for potential future reference. I have used those notes countless times in my career. I kept all my old codebooks as far as I can remember and have on occasion referred to them for forensic or retrofit projects.

Networking as a Student

You do not have to be a professional to network with professionals. In fact, students have more to gain from networking than the average graduate or professional engineer. When the average graduate or professional engineer networks, he or she is looking for contacts who may lead to potential business or collaboration. He or she can afford to network not effectively or to use the event simply as a social opportunity. He or she can leave all the heavy networking or rain-making to their bosses or colleagues with higher aspirations. After all, so what if they do not make that great contact? They still have a job to go to the next day. Students, on the other hand, should be looking for help, guidance, and a head start to their careers to land their first jobs.

Getting in with and getting to know the right people while networking with professionals, as a student, might make all the difference between embarking on a mediocre career or one with tremendous potential.

Contrary to what one might think, it is easier for a student to network and strike up a conversation with a professional of interest since there is no expectation and usually professionals are open to providing advice to students, especially to students who show interest and initiative. When networking with professionals, always lead by asking them questions about themselves, their companies, or projects they have worked on. Successful professionals love talking about themselves. Use this part of the conversation to identify common points of interest that may lead to establishing a bond that may open the door to a future meeting or encounter. Never lead directly by asking about potential job or internship opportunities. Doing so only puts the professional on the defensive and may cause him or her to lose interest. As a matter of fact, you should not even ask about a potential job or internship at the first meeting. You should only ask after you have developed a good rapport. The next step after you build up a rapport is to ask if you could visit the office to see what an engineering office looks like and get a feel for the environment. Odds are that if there is a job or internship opportunity and you develop a bond or good rapport, you may not even have to ask.

Keep an active and complete profile on LinkedIn, the premiere online professional networking site, in my opinion. It is easy to set up a profile, and it can be extremely useful in getting your name, experience, and professional aspirations out there for professionals to see. Do not shy away from networking online and reaching out to engineers in your specific field or those you may wish to emulate. Update your resume frequently, join established groups in your field, and follow the discussions of interest on this site. Attend your regional or national conferences and alumni events.

I did not network as much as I should have, or as much as I would recommend the reader do, partly because I did not join an engineering student group and partly because I found a part-time job at an engineering firm while still in school. I also did not network via LinkedIn, simply because it was not available at the time. However, I cannot stress enough the importance of both networking as part of an engineering student group and being actively engaged in networking via LinkedIn.

Recommended Activities

1. Make a list of the organizations that interest you, both technical and social, that are available at your school. Approach current members, discuss requirements for joining, and ask about the activities they participate in.
2. Make a list of all the local engineering firms, regardless of discipline, that are in your area and schedule a meeting. Just tell them that you are a student seeking advice on what it is like to be an engineer in their specific discipline. Be prepared with questions for them.
3. Seek a summer or part-time job that involves clerical, management, or accounting skills.
4. Make a list of all your core class (STEM) textbooks and store them together.
5. Establish and maintain an active profile on LinkedIn website.



PART 2

HOW TO MANAGE YOUR CAREER

YOUNG ENGINEERS

While you are in college is the ideal time to learn the basic skills needed to be an entrepreneur. Once you graduate from college, you should begin to focus on a specialty or niche and begin “paying your dues.” This time is when you develop your connections with potential future clients, put into practice the skills learned in college, and start the process of making a name for yourself. If you do not yet possess or have not put into practice the skills in computer software, programming, management, writing, and public speaking mentioned in the previous chapters, this would be the time to learn and perfect them.

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Chapter 3

Finding Your Niche

What would you rather be . . . a small fish in a big pond or a big fish in a small pond?

To start your career off right with entrepreneurship in mind, you need to begin to identify potential specialty or niche practice areas in your specific field of practice. A niche can be established in any of the known disciplines, but it should be in an industry in which you have experience and/or connections from which you can attain specialized knowledge and learn to provide a useful and needed service. The areas that you identify in this chapter will be the foundation for your future engineering business venture.

Having served as president of the University of Miami's College of Engineering Alumni Association allowed me to mingle with many alumni and practicing engineers in many disciplines in the engineering field. This position afforded me a unique perspective on what each engineering discipline entails. I also consulted with colleagues in most of the main engineering disciplines before writing this chapter. All of the individuals I approached for advice are members of the University of Miami College of Engineering Alumni Association (UM CoEAA) and are highly successful and accomplished engineers.

I have found through my years of working with young engineering students, mentoring, interviewing, and advising, that most do not fully grasp what each field of engineering actually encompasses. They feel drawn to engineering because they are good at math and science; therefore, engineering becomes a natural choice. Some may not even know what their chosen field actually involves until after graduation when they start working. I was one of those students without a clue about what each engineering discipline, including mine, actually entailed. This chapter exposes and raises the reader's awareness about

some of the engineering disciplines available, including some of the responsibilities and useful services of each in today's society. This chapter is not intended to show you exactly in what specialty or niche area you should practice, but rather it is meant to stimulate and inspire you to come up with your own unique idea through research and application, using this chapter as a guide. To quote a phrase from the book written by Napoleon Hill titled *Think and Grow Rich* (Chapter 7 on organized planning), "Capitalist society guarantees every person the opportunity to provide useful service and to collect riches in proportion to the value of the service."

What potential useful service can you come up with? What niche can you discover or exploit from within the realm of engineering? Who are the potential consumers of your great idea? These are the questions this chapter hopes to inspire the reader to answer for yourself. Once you have decided on a specific field or discipline of engineering, use this chapter to help determine what specialty or niche of engineering best suits you.

Mechanical

The field of mechanical engineering deals with the design of machinery to aid and increase human productivity by means of mechanical systems, land transportation, and human comfort while in habitat or transit. It typically focuses on the design and integration of mechanical parts and their interaction with each other in order to achieve a well-balanced and efficient piece of machinery.

Mechanical engineers specialize in analysis and design to support mechanical forces (static and dynamic) associated with the design of all forms of machine systems, including vehicles, engines, mechanical products, and building systems relating to climate control, such as heating, ventilation, and air conditioning (HVAC).

Areas of potential specialty include manufacturing, product development, automobile and automobile parts design, miscellaneous vehicular design, and the building construction industries as they relate to climate control and human comfort. The most typical areas of specialty are found within the big automobile and HVAC firms, as well as the private-sector mechanical engineering firms.

Aerospace

The field of aerospace engineering deals with the design of aircraft and aircraft systems to aid in air transportation and space exploration. It typically focuses on the design of airplanes; rockets; propulsion systems; and space exploration vehicles, parts, and systems integration.

Aerospace engineers specialize in analysis and design to support mechanical (static and dynamic), aerodynamic, and propulsion forces associated with the design of all forms of airplanes and space exploration vehicles.

Areas of potential specialty include the airlines and space industries, including but not limited to mechanical systems and parts design. The most typical areas of specialty are found within the airlines, the military, NASA, the Jet Propulsion Laboratory (JPL), and private space exploration firms.

Civil

The field of civil engineering deals with the design of transportation and site infrastructure to aid in land transportation and travel. It typically focuses on the design of transportation infrastructure, including roadway, site planning, and bridges from a structural and planning perspective.

Civil engineers specialize in analysis and design to support structural forces (e.g., dead loads, live loads, wind loads, snow loads, seismic loads, hydrostatic loads, and hydrodynamic loads) associated with such things as the design of roadways and roadway systems, bridges, culverts, foundations, and retaining structures.

Potential areas of specialty include the transportation and roadway/highway/bridge industry, with an emphasis on structural design of infrastructure. The most typical areas of specialty are found within the federal and state departments of transportation and private-sector civil engineering firms.

Structural

The field of structural engineering deals with the design of buildings, structures, and structural systems to aid with safe storage, shelter, and

habitat of people and property. It typically focuses on the design of all forms of structural systems. It is often combined with civil engineering, but there is a concerted effort to distinguish the field of structural engineering from civil engineering.

Structural engineers specialize in analysis and design to support structural forces (e.g., dead loads, live loads, wind loads, snow loads, seismic loads, hydrostatic loads, and hydrodynamic loads) associated with the design of all forms of structural systems and components.

Potential areas of specialty include the building construction industry, with an emphasis on structural design in residential, commercial, industrial, and retail structures, among others. The most typical areas of specialty are found within the building construction industry and private-sector civil and structural engineering firms.

Architectural

The field of architectural engineering deals with the design of building services and systems, including structural, electrical, mechanical, plumbing, and construction management to aid in safe storage, shelter, and habitat of people and property, waste management and disposal, human comfort, life safety, and safe and efficient construction as it relates to building structures. It typically focuses on the design of buildings and building systems. It is a combination of structural, electrical, and mechanical engineering specific to buildings.

Architectural engineers specialize in analysis and design to support structural forces (e.g., dead loads, live loads, wind loads, snow loads, seismic loads, hydrostatic loads, and hydrodynamic loads, among others), electrical loads, and mechanical loads associated with the design of buildings and building services. Architectural engineers are also trained in construction management and architectural design.

Potential areas of specialty include the building construction industry, with an emphasis on building services and systems design, including structural. The most typical areas of specialty are found within the building construction industry, electrical and mechanical engineering firms, general contracting firms, specialty engineering firms, and architectural firms.

Environmental

The field of environmental engineering deals with the design of water, sewer, garbage, and waste management infrastructure, including delivery and treatment facilities to aid in the safe management, delivery, and disposal of water, sewer, garbage, and waste in an environmentally conscious manner.

It typically focuses on the design of water, sewer, and waste management, treatment facilities and processing plants. This list includes recycling of garbage as well, addressing concerns regarding the effects of contaminants affecting the environment.

Environmental engineers specialize in research and the design of facilities to adequately treat and safely dispose of water, sewer, garbage, and waste contaminants. Potential areas of specialty include the city water and sewer industry, construction site management, and the environmental industry. The most typical areas of specialty are found within the Environmental Protection Agency, local municipalities, and private-sector environmental engineering firms.

Industrial

The field of industrial engineering deals with the optimization of complex systems or processes to aid in human and resource efficiency and productivity. It typically focuses on the development, improvement, implementation, and evaluation of integrated systems of such things as people, financial resources, information, equipment, energy, and materials.

Industrial engineers specialize in the coordination, planning, and control of such systems and processes, relying on, for example, the analysis and synthesis of mathematical, physical, and social sciences, and the principles and methods of engineering designed to specify, predict, and evaluate results from such systems or processes.

Potential areas of specialty include consulting in industries, such as banking and finance, health care, and supply chain management, to name a few. Industrial growth has created unusual opportunities for the industrial and systems engineer. Because of increased emphasis on automation and productivity, coupled with higher levels of systems

sophistication, there is great demand for industrial engineers with broad interdisciplinary backgrounds. Industrial engineering is often called the “people-oriented” engineering discipline, and its applications are widely expected in industrial, manufacturing, services (e.g., banking and health care), commercial, and governmental activities. The most typical areas of specialty can be found within the food services and the fast food industry (Ileana Barbara, personal communication, 2016).

Biomedical

The field of biomedical engineering deals with the design of medical devices to aid in medical procedures and to enhance or repair the human body.

It typically focuses on the design of medical devices to improve the quality and longevity of human life and includes design of such things as pacemakers, hearing aids, prosthetics, and artificial hearts.

Biomedical engineers specialize in research and the design of biologically compatible devices for the human body. Potential areas of specialty include the medical and medical device industry, physical rehabilitation centers, research and development firms, and medical technology start-up firms. The most typical areas of specialty can be found within the large biomedical companies and the military’s wounded warrior programs.

Electrical

The field of electrical engineering deals with the design of devices to aid in human comfort, communication, and entertainment; to enhance human productivity by means of electrical systems; and to provide power and light to electrical devices and infrastructure.

Electrical engineering typically focuses on the design of electrical and power systems and devices and design of electrical and power distribution infrastructure to safely and efficiently deliver power to homes and businesses.

Electrical engineers specialize in research and development of new products, the design of electrical components, and utility systems, as well as power distribution and storage.

Potential areas of specialty include the utilities industry, the communications industry, and the entertainment industry. The most typical areas of specialty are found within the large power companies.

Computer

The field of computer engineering deals with the design and creation of hardware, software, and algorithms for controlling almost every technology that touches our lives to aid in communication, entertainment, productivity, research and development, and education.

It typically focuses on the design of computer hardware, including everything from microprocessors to circuit boards, robotics, and networks.

Computer and software engineers specialize in the design and creation of code to build an application as well as the firmware that is used for detailing how hardware and software interact. More specifically, software engineering entails writing code for websites, desktop applications, smart phone application, and automated testing. More specific fields of software engineering include information security, wireless networks, communications, cryptography, compilers, embedded microcontrollers, and algorithm design.

Potential areas of specialty are vast. Starting a business in computer engineering requires little overhead. Two of the largest entrepreneurial opportunities are the creation of websites or smart phone applications. Recent history has seen simple mobile device games such as Angry Birds or Candy Crush Saga quickly gain a pop culture following, leading to numerous downloads through already available means (i.e., iTunes and Google Play) and thus showing large profit margins. Along those same lines, large technological companies have displayed a great willingness to spend large amounts of capital on innovative technology, such as the WhatsApp SMS tool that was created by a team of 50 developers and purchased by Facebook for \$19 billion. The key to becoming an entrepreneur in the field of computer engineering is finding new ways to take advantage of the technology that continues to grow as it applies to old problems. The most obvious areas of specialty can be found within the tech start-up and computer and smart phone application development industry (Alfonso Dager, personal communication, 2016).

Now it is time to get to business.

Recommended Activities

1. Identify your areas of interest based on information provided in this chapter.
2. Research your chosen niche or specialty to gauge demand.
3. Talk to alumni or practicing engineers in your fields of interest.
4. Seek employment from a leader in that particular field and learn as much as you can.

Chapter 4

Your First or Next Job

Your first real engineering job sets the pace for the rest of your professional career. Make it a wise choice.

Your first job is very important in setting the pace for and guiding your career. Be careful to analyze your situation, and do not become lulled in or lose focus on the bigger picture. Specific learning opportunities may not be present or available to you in all companies, and you need to be aware of this. There is also a specific state of mind that you need to have to place yourself in a position to make the most of your situation. This is the time to start thinking about, researching, and identifying what specialty or niche on which you want to focus for your eventual jump into entrepreneurship.

Interview Your Interviewer

When interviewing for your first job, make sure you understand that a career is a two-way street. Undertake extensive research on the company where you will be interviewing. Visit its website; learn about the management team, scope of services, and what significant projects have been worked on. Learn as much as you can about the company's activities and personnel culture. A good interview should not only be about what you can offer the company you are interviewing with, but also what the company you are interviewing with can offer you. Do not inquire too deeply into salary, benefits, or bonuses, but rather ask questions during your interview that help you understand what growth potential the company offers, what your daily responsibilities may be, and any continuing education programs or professional organizations with which the company is active. It is important to determine if the particular company you are interviewing with will provide you with good experience and plenty of room to

grow. Ask who your immediate supervisor would be and what kind of experience he or she has. It is important that the person you will be working with on a daily basis has a lot of experience to impart and is willing to teach you. Be humble and let your potential boss know that you want to learn.

I do not have much experience in interviewing for a job, as I was lucky enough to be hired straight out of college by the firm for which I worked part time as a file clerk. I do not count that as a professional interview, because the requirements for the job were not tough, and I ended up working for that firm for 13 years. However, I do have plenty of experience on the other side of the table as an engineering employer performing job interviews, and I base my suggestions on that experience. When I perform an interview, I select résumés that impress me with their organization and writing skills; correct, proper grammar is a must. I look for somebody who is confident but not overly so, someone who engages and is not afraid to ask questions. Good communication skills are critical. I look for the person I am interviewing to have an idea of what my company does and what he or she wants to do in the short term as well as the long term. I especially like candidates with entrepreneurial skills or experience, no matter the endeavor.

Be Open Minded with Employment Type

When deciding on which job to accept, if you find yourself with the luxury of choosing from several different jobs, choose the job that provides you with more responsibility and experience, even if another job offers more money. If you want to be an entrepreneur, experience and knowledge should be more valuable to you than salary. Generally speaking, small companies typically offer you more experience and responsibility than large companies. You may find yourself wearing many hats and getting great exposure working for a small niche firm.

When I first applied for a clerical position with the company that would eventually end up being my first engineering job, I did not know what to expect from a career in engineering. My chosen discipline and the degree that I earned were in architectural engineering and were more structural in nature as it pertains to buildings,

more so than the typical civil engineering field. To confuse matters more, the firm where I went to work was a specialty engineering firm. It provided delegated engineering services and not general structural engineering work or design. The company was specialists in what is called the glazing industry. Glazing is anything related to the glass industry with respect to the building envelope and primarily consists of curtain walls, storefronts, windows, and doors. South Florida, where the firm is located, is subject to strict hurricane design requirements for the building exterior components, which are mostly made of glass. I did not know what glazing was or even that engineers needed a permit to install windows and doors. Needless to say, taking this job turned out to be a wise choice. Working for such a small, specialized engineering firm provided me with the necessary tools, responsibility, and experience that allowed me to grow to become one of the foremost experts in the field.

Consider Working for a Niche Firm

Working for a small niche firm serves two important purposes: it is likely to provide ample experience, and you also are likely to be working under a very experienced individual. Small niche firms tend to seek individuals who are versatile and can handle numerous responsibilities. You are more likely to become involved in all aspects of the company, such as client relations, project management, field work, and even marketing. A successful small company typically has experienced staff or principals from whom to learn. Niche firms are also more apt to survive during down turns in the economy because of limited competition, and they should have well-developed clientele bases. Whereas large firms have a larger and more crowded hierarchy, at large firms you are more likely to be given minor tasks to complete and to work under numerous supervisors.

While working at my first job, a small niche firm, I was exposed to all facets of the engineering profession, and that experience was not limited to engineering. It encompassed report and proposal writing, office management, client relations, office bookkeeping and accounting, account setup, and employee training, among many other responsibilities that would not have been available to me working at a large, established firm at such a young age.

Seek a Mentor

It is essential if you want to start your own engineering firm one day to find a mentor from whom you can learn, someone who will guide you in the right direction. There is no need to reinvent the wheel and make many mistakes along the way. Find someone who has been there and done that, and pick his or her brain. A good mentor helps you avoid major pitfalls and is a great resource. Ideally, that mentor works in the same company and is readily available to answer your questions. However, there are ways to learn from a company even if you do not have access to a mentor. One way is to ask a lot of questions of your supervisors and show interest in why tasks are being done the way they are. Do not blindly do what is asked of you, but make sure you understand why you are doing it. What is the importance of this task to the overall project? What is the basis for such a task? Reach out to your coworkers and ask their advice as well. If you do not have a mentor at work, look to your alumni association. Most engineering schools have programs available for their alumni, or if not, you can simply reach out to an alumnus for guidance on your own.

I was so nervous when I was first asked to do real engineering work that I did not even consider *not* asking questions. One of my first mentors was a coworker at my first job who did not mind that I came into his office on an almost daily basis asking questions. He helped me understand the tasks I was given to do. He had a rough exterior persona, and he put up an imposing front, but he was a good teacher and he loved to talk. He was always helpful to me in my early years as a recent graduate.

As I matured at work and was given more responsibility, the next person I would consider a mentor was the structural plans reviewer at a tough local building department. He too liked to talk, was a good teacher, and had a rough exterior persona. Whenever he would comment or reject one of my submittals, he would always take the time to explain why. He would not do this for just anyone. In fact, most times he would not be detailed in his rejection comments, because he felt that it was not his job to teach the engineers who submitted work for his review how to do their jobs. He had a reputation as a tough reviewer, and if you could get something approved by him, you could get it approved by anyone. For some reason, he took me under his wing at times and explained in detail why he had rejected my plans and even suggested references and resources for me to correct the problems.

Offer to Assist with or Learn Management or Accounting Tasks

If you work for a small company, the odds are that it could use a little extra help in the management, bookkeeping, and accounting areas of the office. Various employees may actually ask you to do some of those tasks as an intern or entry-level engineer. Don't be afraid or discouraged if they do ask you to do clerical, management, or bookkeeping work initially. Embrace the work and use it as a valuable learning tool for later in your career and in life, for that matter. As a matter of fact, if you possess the skills, and you should if you did as the earlier chapters in this book suggested, you might even want to offer on your own to do those services should the need arise. This step not only increases your value to the company, but it also provides you much-needed real-life experience in management, bookkeeping, and accounting.

I was lucky enough to have a boss who, for whatever reason (to save money most likely, but that's okay), gave me the opportunity to work in all areas of the business. He would often tell me that management was more important than engineering. That would frustrate me, because I wanted to do more engineering. I always thought to myself, if management is more important than engineering as he says it is, then why am I not paid more than the engineers? The majority of my early years with that company was spent doing managerial and administrative work, and even though I did not see any benefits to being a manager while I worked there, I now look back and see exactly what he meant.

Understand the Right Time to Make a Career Move

Regardless of the salary, you should always make your career moves based on asking yourself this question: Is there more that I can learn at this firm? If the answer is no, it is probably time to make a move. If the answer is yes, ask yourself another question: Is there somewhere else I can go that will allow me to learn more? The decision to make a career move should not necessarily be based on salary. Salary should only be the deciding factor, barring any extenuating circumstance, when two potential "learning situations" are equal. It is entirely possible for one job to provide all the necessary tools for entrepreneurship. Learn to interpret

and understand the financial state and direction of a company. Pay attention to future projects and potential opportunities into which you can grow.

In my case, even though I was not getting the engineering experience at the beginning that I had hoped, I was constantly learning new things. I was continuously being given more responsibility. I never intended to open up my own firm, so I wasn't looking at all that managerial experience as much of a plus at the time, but I was always being challenged, and it was exciting to me. The money was not good, but the experience was, and in fact turned out to be invaluable. The ultimate reason for me deciding to leave came down to the fact that I had eventually stopped learning, and the job had stopped being challenging. The money was still low, even though it became better the longer I was there, but it was not competitive compared to other firms. I had thought that eventually, because I had been there helping run the office for so long that I would be the one to lead that company into the future, but that was not to be, so it became time to make a move, which I did.

Always Learn, Never Stagnate

An entrepreneur should never stop learning. The best and most natural time to learn, aside from the theoretical learning done in school, is as a young engineer fresh out of college at your first job. It is extremely important if you want to be an entrepreneur that you take full advantage of all the learning potential at your disposal. If learning opportunities are slow in coming, you should not wait to be given an opportunity to learn; you should in fact seek it out. Being proactive in your quest for learning and growing as a young engineer not only makes you a better engineer, but it also makes you more valuable to your company. Never get caught in a situation or job that does not teach you something. The day that the learning opportunities end or become few and far between, it is time to make a move. I'm not talking about learning what the company is willing to teach you or any other engineer out of college; I am talking about above and beyond that. Sure, you can and probably will be a successful engineer by keeping your nose to the grindstone and doing everything asked of you to do, but it is the few who thirst and hunger for more who stand out and have what it takes to be an entrepreneur. If you are given a task to do, do not blindly follow how the last person did it.

You should thoroughly research, on your own time if you have to, and get to know that task backward and forward, and then learn to do it better or more efficiently. Keep your eyes open for new and exciting projects your coworkers are working on, and pick their brains about what they are doing. Seek to learn from the more senior individuals. Offer to work on tasks that no one else wants to do if it will teach you something new. Learn how the company structures and runs itself, for example, how it handles marketing and job proposals. You must constantly be learning something new.

When I graduated from college, I had already been with the company for a few years as an office clerk and manager. I had learned a lot about the inner workings of an engineering office. I had performed, and at times, improved on company managerial tasks that included job proposals, report writing, payroll administration, tax reporting, accounting, and managing the office accounts. But now, I thought, I would get right to work on engineering. After all, I had my new shiny degree, and I figured it was time to put it to good use. Well, my boss had other plans for me. Initially, he kept me doing the exact same thing that I was doing as a clerk and manager. His initial reward to me was to put me on the company's medical plan—not even a raise initially. I was disappointed, of course, but that didn't stop me from learning. Spurred on by my newly acquired confidence, I began learning more about the engineering projects on which the company was working, while at the same time handling the office affairs. I constantly asked questions about the ongoing projects. I would take home some of the calculations and would thoroughly dissect them. I would not only follow the examples, but I wanted to know why it was done the way it was. I tried to decipher it all on my own, and if I could not, I brought up the question the next day to a coworker until I got a satisfactory answer. I created a binder with all the new information I was learning on my own for reference. If a section of the work referenced or was based on a particular code or standard, I would make copies of those sections of the code and standard and take them home to study and dissect. If the work involved the use of software, typically basic programming where the answer was hidden inside the program, I made a printout of the code, took it home with me, and dissected it until I understood how it worked. Every time I was given an opportunity at even the slightest taste of real engineering work, I did the same until I mastered the task or found a way to do it better.

Be Patient with the Right Firm

Just as with deciding to make a career move based on not being provided sufficient learning opportunities, it is important to be patient with the right firm. The right firm is one that not only provides good and continual learning opportunities but can also offer the opportunity to work with a mentor, provide interaction with clients, give increasing responsibilities, provide management training, and expose you to a specialty or niche market. To be the best, it is important to learn from the best. Some of the greatest entrepreneurs started their careers working under other great entrepreneurs, and then they were able to branch out on their own after gaining the necessary contacts, experience, knowledge, and skills.

When I first started working as an engineer at my first job, I did not see the rapid transition from my regular office responsibilities to those associated with an entry-level engineer, as I would have hoped, nor the increase in pay, for that matter. However, my patience in my first job is what provided me the necessary tools for entrepreneurship. Had I left early and chased the money, I may not have had the knowledge necessary to succeed as a business owner. I constantly learned new skills and was given more responsibility, which is part of the reason why I stayed as long as I did.

Be Honest and Dependable

Two of the most important and vital qualities of an individual or company are honesty and dependability. It is tempting when things are not going right on a project to make excuses or simply avoid a client's calls or attempts to communicate. It is better to face the issue head on and take all necessary steps to correct the problem, even if you are a young engineer and these are not your clients. An individual cannot fundamentally change who he or she is overnight; therefore, it is important that you develop these traits fresh out of college and stick to them. An honest and dependable individual is likely to run an honest and dependable company. Slow responses to clients' concerns, hiding the truth, or constantly offering excuses can lead to doubt and uncertainty about your character and dependability. The easiest way to lose a client

is to promise something and then not deliver. The moment you make a promise that you may not be able to keep, you are committed to deliver or be forced to either look incompetent or make excuses. Always try to give a client an honest answer. Avoid putting yourself and the company for which you work in compromising positions. Resist the urge to tell a client what he or she wants to hear, unless you are absolutely sure you can deliver.

It would have been easier on me during my first job if I did only what was expected of me, especially on the big projects I worked on and managed. I simply could have shut down my computer and left at quitting time when everyone else did. No one would have faulted me. It takes passion and pride to go the extra mile to satisfy a client who is depending on you during a big deadline. I spent countless late nights, took work home over the weekend, and even performed some late-night inspections, all to exceed expectations. That level of dependability stuck in the minds of the people for whom I worked and was a big reason they followed me when I switched jobs. Because of how I handled myself with the clients of my previous job, with honesty and dependability, I had established lifelong professional relationships with those individuals, enough for them to trust me with their work. I did not always tell them what they wanted to hear, but I made sure that if I did, I would make every effort to deliver what I had promised.

Make Personal Contacts

Establishing a good rapport with clients, especially at your first job, is about planting seeds, seeds that can one day grow into clients of your own. You need to create and nurture good relationships with everyone you work with along the way. The personal contacts that you make while you are growing as a young engineer may be useful to you when you decide to open your own firm. Don't just focus on your immediate contacts or the supervisors and project managers or lead architect and lead engineer or contractor. Pay close attention to and offer the same level of respect to their subordinates and the assistants, because these are the individuals who will be in charge when it comes time for you to start your own firm. Answer your clients' calls or return them on the same day, if possible. Follow up and show concern over their predicaments. Be flexible and understanding when they find themselves in a tough

situation. It could be tempting to neglect the clients or not to go the extra mile when you are working at someone else's company, but this attitude is dangerous for the successes of a future entrepreneur, and it could come back to haunt you in the future. Never hide behind the fact that you are not the boss and say that if a client is unhappy, then it is not your business. It is, especially if you plan on being a business owner yourself one day. Learn to go the extra mile, and be considerate to the client when you can't.

One of the reasons that clients followed me, from my first job to my second and then when I opened my own firm, was that no matter for whom I was working, I always treated them like they were important and as if they were *my* clients. I stayed late to finish time-sensitive projects and worked weekends and nights when there was a big deadline looming. I worked well with and respected all of the people I dealt with, regardless of their positions and roles on a project. I did not have to make all those concessions. In fact, even my boss, whose true clients these people were, at times would tell me not to worry and to go home before completing a project, but I wanted to make an impression and do the best I could for the client. Don't get me wrong; there is nothing wrong with or bad about leaving work at quitting time, *but* if you want to be an entrepreneur and have your own business and clients one day, you have to find a way to make an impression with clients and stand out from the crowd. This is a good way of doing so and establishing good rapport for the future.

Networking as a Professional

In Chapter 2, we discussed how to network as a student and we briefly detailed the differences between networking as a student and networking as a graduate or professional. Now, we must learn how to network as a graduate or professional and how to network effectively, with entrepreneurship in mind. When you become an entrepreneur, networking remains important, but most of the focus of networking shifts to marketing and originating work for your company. As we mentioned in Chapter 2, some graduates or professionals network halfheartedly or use networking as a social exercise. However, if entrepreneurship is your goal, you must learn to network with a purpose. That purpose should be to secure work or to establish a personal beneficial contact with a

potential client. This networking not only helps and impresses your current employer, which may lead to bonuses and promotions if you originate work for them, but it is also great training for when you have to network for your own firm in the future. As was expressed in Chapter 2, successful people love talking about themselves and their companies or projects. Make that your point of emphasis, and start them talking about themselves; then see if that leads to a mutual connection, contact, hobby, or interest that can lead to further contact in the future. Unlike with student networking, you can certainly make your intentions known immediately, which is to collaborate on future work. You can present it as helping one another out and sell it as a mutually beneficial working relationship.

I did not participate in much networking at my first job at all, because my boss at the time was not open to involvement in professional organizations, and I did not know any better. In addition, I was not a member of any engineering student group that would lead to involvement in their professional chapter after graduation. Therefore, I found myself at a disadvantage as it relates to networking. It was not until after thirteen years when I first changed jobs that I became exposed to networking in a professional environment and then, again, once I started my own firm.

Save Business Cards

Business cards are an essential marketing strategy, even in this era of technology. You should never be shy about handing out your business cards; in fact, you should always hand out your business cards to all of your clients when you first meet in person. This act serves as an opportunity for them to reciprocate and hand you their own business cards. You should never throw away old business cards when a project is over, even if you have not done business or heard from that individual in a long time. Do not only focus on collecting business cards from people you work with directly, but also focus on the supporting and subordinate cast around a particular client or project. You never know when these individuals will move up in rank in their current company, at a rival company, or in their own firm one day, and they could end up being valuable to you. When you receive a business card, if your memory is not so good, make sure to write a hint about what the individual does.

Place the business cards in relevant categories; for example, if your company deals with construction, you may have categories for engineers, architects, general contractors, subcontractors, and owners. Do not just focus the collection of business cards on potential future clients. There are many individuals who may be helpful to you, other than potential clients, the day you decide to open your own firm, such as insurance brokers, office machine vendors, materials representatives, and manufacturers' representatives, to name some examples.

Collecting business cards for the sake of collecting is not what I am recommending. For the collection of the business cards to be fruitful to you in the future, you must, of course, collect the cards from individuals with whom you have developed a rapport, hopefully with good outcomes in the projects with which you were involved. Times are changing, and opportunities for networking via the Internet and social media abound. However, do not underestimate the power of a well-designed, printed, old-fashioned business card.

I used to ask everybody with whom I had worked for a business card. I would sort the cards by categories, such as developers, architects, engineers, general contractors, glazing contractors, tenant representatives, and miscellaneous. I would group them in those categories and secure each category with a rubber band. The day I decided to open up my own firm, I took out all those business cards and started to reach out to everyone with whom I had worked to let them know I had branched out on my own. It worked. I received excellent feedback and some immediate work out of my initial marketing campaign, all because I had collected and saved those cards. I have even seen my business card, and those of my competitors, on the desks of my clients when I visited for project meetings. Make sure always to give your card to every new person around the table or office at such project meetings.

Incorporate, Open Business Accounts, and Establish Credit at Least Three Years in Advance

Do not wait to the last minute to begin the tedious process of establishing a record for yourself and your future company. You do not have to be operating as a business to incorporate and begin the record process. Some of the things you can be doing, up to several years before you

actually plan on opening your own firm, are coming up with a good name, incorporating, getting an employer identification number (you do not need to report income taxes until you actually hire employees), applying for company credit and charge cards (you will have to personally cosign for the accounts at the beginning), and opening a bank account. By doing these things before you actually start operating your own business, you place yourself ahead of the curve when the time actually comes. Doing so helps to reduce the number of things you need to do when start-up time comes. It also helps to develop credit history, which is important going forward. You do not want to underestimate the value of establishing and maintaining excellent credit. Some companies require that you be in business a number of years before you can even apply for an account. By opening some accounts years in advance, you might be able to open those accounts sooner rather than later. You may actually be able to develop good credit for your company before it is even in operation. Once you open up these accounts under your company name, after more than likely having to cosign for them, you can begin using the cards to purchase personal items and pay them off on time. This process can help to develop good credit far in advance of the time you actually need it. More information on incorporating is provided in Chapter 7.

I incorporated my company more than six years before actually launching it. I opened a bank account, applied for and received a gas card, office supply card, home improvement card, and a credit card. I had developed excellent credit and was able to take advantage of many promotions and perks that came along with it. I was constantly being offered low promotional or zero percent interest rates. I was able to secure a home loan and save a lot of money by avoiding high interest rates. The tricks to creating excellent credit, aside from the obvious step of never being late on a payment, are to have a long credit history, not to use too much of your available credit at any one time, and to have a lot of open accounts spread out over time without too many credit inquiries on your record. After a number of years with excellent credit, I made the mistake of falling behind on some payments and closing out a lot of my open accounts. That was the worst mistake I have ever made regarding my credit. Do not close any accounts, even if you do not use the cards; if you do, it lowers your available credit, making your utilization rate (the amount you owe compared to your available credit) higher and lowering your credit score. Having excellent credit can make your life as an entrepreneur much easier.

Invest in a 401(k) Plan and Max Out Your Contributions If Possible

The best form of savings, regardless of outside methods or investments, is contributing as much as you can possibly afford into your company 401(k) plan. You should first consult with your investment advisor or accountant on this philosophy. Investing for your retirement is beneficial not only for your eventual retirement, but it can also be useful when the time comes to open your own firm. Many people do not understand the advantages of investing in a well-managed retirement plan. Any money set aside and contributed into your qualified retirement plan is tax deferred. In other words, no income tax is withheld from the money contributed directly into the retirement account. In addition, all of the interest earned while the money is in the retirement account is also tax deferred. For example, if you make \$1,000 in a particular pay period and you choose not to contribute into your retirement account, you are taxed based on the entire amount of \$1,000. However, if you decide to contribute \$200 of that \$1,000 into your retirement account, you are now taxed based on only \$800 of income; the entire \$200 goes into your retirement account. This may not seem like a big saving, but believe me, it adds up and can snowball. Eventually, you may not even feel the effects of contributing to the retirement account. In addition, most companies with a 401(k) plan match either all or part of your contribution or contribute a discretionary amount on your behalf. The matching company contribution or discretionary contribution is placed in your account based on a vesting schedule. A vesting schedule is a set period of time in which those funds are fully released for your benefit. The typical vesting schedule is 20% per year. This vesting is done as an incentive for employees to remain with the company for a long time. Every year that an employee remains with the company, the vested percentage increases, and more of the employer matching or discretionary contribution is released or vested into the employee account. For example, if the company matches or contributes \$1,000 into your account, after the first year (assuming a 20% yearly vesting schedule), \$200 is yours to keep. The other \$800 remains in your account until the next vesting cycle, or it would be forfeited back to the company should you leave after only one year. Every additional year you remain with the company would mean that an additional 20% of the money the company contributes on

your behalf is yours to keep or take with you when you leave. After five years with the company, any funds it contributes on your behalf are automatically yours. The money that you contribute toward your retirement as an employee's deferred salary contribution is 100% yours at the time of contribution. It is also possible to accumulate enough tax-deferred funds in your employer's 401(k) account from which to borrow if you need a loan, depending on how the company structured the loan requirements.

I understood the importance of contributing to a retirement account more than most employees. I was given the responsibility of establishing and administering our company's new 401(k) plan. I had to become intimately familiar with how a retirement plan works and how to implement it, manage it, and educate the staff. This situation, coupled with my responsibilities and duties handling the office accounting, provided me with unique insight into how beneficial investing in a 401(k) plan can be. You will understand why this is so important as an entrepreneur when you read Chapter 6.

Buy Your First House Wisely

You may think this an odd section to be included in a chapter about your first job. However, I submit to you that buying your first home is one of the most important financial decisions you make after graduation, along with investing heavily in your 401(k). This is the time that most graduates permanently leave the comfort and security of their parents' homes. If you purchase your first house wisely, you could be setting yourself up with a critical source of start-up funding for the future, but you need to know what to look for. Refer to Chapter 6 (Funding Your Start-Up Company) in Part 3 in the section on fixed-asset equity for important information on how you can plan ahead to have start-up funding available by using equity in real estate investment.

I did not realize the benefits of real estate investment, nor did I develop the knowledge of how to invest until much later in life, and I actually lucked into real estate as an investment tool out of chance. However, this is one of those instances of "if I knew then what I know now" that I wish to impart to the reader. You can certainly benefit from advanced planning, as I mentioned in the Introduction, and it is *now*,

when you graduate and have increased income from your first job, that you can best afford and prepare to buy a home wisely to use the equity buildup for start-up funding, as described in Chapter 6. At this stage in your career, you will need to make some crucial decisions, such as renting versus buying, how to buy, and where to buy.

Recommended Activities

1. Research your desired niche.
2. Find a mentor.
3. Join a professional organization.
4. Contact your alumni organization.
5. Save business cards.
6. Enroll in the 401(k) program at your work if available.
7. Buy your first house wisely.

Chapter 5

Establishing Your Niche

Having a passion in life and making it your career is an ideal situation, but identifying a need and making it your passion is just as rewarding.

Once you have decided on your niche or specialty, then it is time to establish yourself as an expert in that field on the basis of your years of experience. Having a well-defined specialty, one in which you can set yourself apart from your competition, is extremely important. It does not have to be a unique or original idea; it can be an improvement or twist to an existing idea, product, or service. Find a way to do it differently, uniquely, and passionately. Make it yours! But that alone is not sufficient to take the plunge. Once you feel you have identified your niche and you believe that you are well established, ask yourself the following five questions.

The Five Questions Aspiring Entrepreneurs Should Ask Themselves Before Starting a Firm

1. Do I have a specialty or niche that involves a specific idea, product, or service?
2. Is there a need and demand for the specialty I have chosen?
3. Do I have the necessary knowledge to become an expert and entrepreneur in my chosen field?
4. Can I create an efficiently trained team and staff to follow and adhere to the quality and standards that I have learned?
5. Have I established good relationships with the people I have worked with, and will they trust me with their business?

If you have yet to identify your specialty and if the answer to any of the above questions is no, you may not yet be ready to take the plunge. Focus all your efforts to change the answer to the these questions, and

never lose sight of your goal. This chapter may be useful in moving you to that next critical phase. Let's explore each of the questions in more detail and see if we can turn those questions for which the answers are no into a clear path to change the answers to yes.

Do I Have a Specialty or Niche That Involves a Specific Idea, Product, or Service?

Be mindful that if you are doing something exactly the same way someone else is doing it, the odds are that you will not be doing it successfully for long. You will be sharing the market equally with your competitor. Eventually, various people will set themselves apart by making those subtle adjustments that will tilt the market in their favor and increase demand: subtle changes such as better quality, faster service, a unique marketing strategy, cheaper fees or rates, increased efficiency, and/or reduced overhead. These subtle changes, by the way, should be part of a continual growth process. Study and learn from those who have been successful in your industry. Come up with a unique twist of your own. Associate with people who are innovative and can add to your knowledge base.

I fell into my specialty and niche without even knowing it when I accepted my first engineering job out of college. Soon, however, I discovered the benefits of being a specialist. The engineering company for which I first worked specialized in glazing and building envelope components in the state of Florida, one of the states most affected by hurricanes. Glazing and building envelope components are the first line of defense during a storm and are quite important, yet this field is much misunderstood and neglected. *Therein lie the specialty and the niche.* We were working on large and important projects with a team of, at the beginning, only five employees. This specialty allowed our firm to develop valuable contacts with large architectural, engineering, and general contracting firms throughout the country that came to work in south Florida.

Is There a Need and Demand for the Specialty I Have Chosen?

Just because you are good at doing something or you can do something better, faster, or cheaper than someone else does not mean that your firm will be successful. Do your homework and keep your eyes and ears open

for market changes. You can do this by keeping up to date with the latest trends and new technology in your particular industry through professional associations, publications, social media, industry conferences, white papers, and listening to the low chatter. If the low chatter becomes too loud, odds are that you missed the trend and then, beware. Like the stock market, the old adage of buy low, sell high applies. When everyone is doing “something,” that is not the right time to get in. In fact, that might just be the right time to get out, if you are in, or do it better, faster, and cheaper; if not, then you must adapt. Use social media to try to gauge the demand or need for your product or service. Tailor your research to the people in your chosen profession, and do not just listen to the untrained opinion. Do not focus only on the top-tier decision makers, but include their subordinates, who may one day become the decision makers, and get their opinions as well. Listen to the quiet dissension but with a trained ear. Do a trial run in a controlled environment and have a good exit strategy.

Florida is the only state in the country that has been hit with every numbered category of hurricane (categories 1 through 5) in the Saffir-Simpson wind scale, which measures the strength of hurricanes. There have only been two category 5 hurricanes to make landfall in the continental United States, and one of those (Hurricane Andrew) devastated portions of south Florida in 1992. I experienced Hurricane Andrew and began working as an engineer in 1993 shortly after the hurricane exposed many defects in construction, design, and installation of building envelope components. *Therein lie the need and the demand.*

Do I Have the Necessary Knowledge to Become an Expert and Entrepreneur in My Chosen Field?

Do not let impatience ruin a great idea. To set yourself apart, you must be fully prepared and versed in your chosen specialty or niche. Keep up with the latest technology, attend conferences, get involved in committees, and engage yourself with your peers. Rushing into entrepreneurship when you are not yet ready can be a costly mistake.

I was always curious about what I was working on, and I never accepted “because that is the way it is” as an answer to any of my questions. If I was given a task to do and I was not sure how to accomplish it, I was never afraid to ask for help. I visited one staff member’s office on an almost daily basis seeking to understand

why I was doing what I was doing. I could have simply followed the example I was given or taken the direction I was given and completed the job without question. Undoubtedly, the job would have been completed and I would have been free to move on to the next task, but that was not the way I was built. I needed to understand why. Without this stubborn need to know why, I never would have found a better way of doing the task I was asked to do. I never would have been able to deal with deviations from the earlier task that I had just completed.

This was true for whatever task I undertook, whether it was setting up the company 401(k) plan, performing field inspections, or writing a project proposal. I always wanted to know why, and then I found a way to do it better. I believe I implemented changes that improved all facets of the job at my first place of employment, all the way from the company letterhead, to the way inspection reports were written, to how to better keep track of employee contributions to their 401(k) plans. I took this same philosophy and applied it to the field of building envelope engineering. I have more than 20 years of experience; my articles have been published in industry magazines; I have conducted numerous live webinars related to my field of practice; I have presented technical papers at national conferences, I have served as lead consultant on numerous large scale projects. I am considered by many in this specialized business as an expert in my field. *Therein lies the knowledge.*

Can I Create an Efficiently Trained Team and Staff to Follow and Adhere to the Quality and Standards That I Have Learned?

Your team must reflect the same quality and standard of service as you yourself. You are tasked with creating a team that must be an extension of you with respect to the quality of the end product and the service needed to complete your work. Your team does not have to share all of your ideas, but they should share the same goals and trust and follow your directions. At the beginning, you must constantly supervise until the standard and quality are to your satisfaction, and then you must step back and delegate with trust. A successful team works well together, and it is up to you to notice any issues and resolve them or make adjustments before those issues become problems. You cannot be lenient or soft with mistakes, especially if they become repetitive.

One of the biggest mistakes you can make as an entrepreneur is to work too hard. You need to learn to delegate and trust that your staff will adhere to the same quality and standards as if you were doing the work yourself. This method may require much turnover until you find the right mix, but that right mix is critical. And then you must do whatever you can to keep the core group happy. You must remain flexible enough to maintain the same quality even after key staff members leave to pursue other opportunities.

This was one of my biggest fears when I decided to leave the only engineering job I had ever known. I knew that I could do the work, I could handle my part, but could I train all the supplementary staff to maintain the end product of the same high quality and standard that I was used to? Instead of going out on my own, I had decided to join a regular nonspecialty engineering firm with the promise that I could bring in work in my specialty. Therefore, I did not have to be responsible for any of the office operations, except for training the staff. Also, I was well versed in all the supplementary tasks that came along with the work that I did.

At my previous job, I learned many of the skills needed and also trained many of the incoming staff. These experiences helped me train the staff at my new job. I had started off as a clerk and drafter at my first job, so I could train the drafter at my new job on how to prepare and detail the drawings properly. I had prepared all the proposals at my first job, so I would continue to do those tasks until the new staff at my new job learned how. I had done many inspections and prepared the inspection reports at my first job, so it would not be an issue training the staff at my new job. In short, I had a trial run without the risk that faces most entrepreneurs. Perhaps that is what gave me the courage to take the eventual leap and open my own firm.

When I did make that leap several years later, I no longer had a safety net, and it was sink or swim. Luckily, I had set up all the office accounts and handled the accounting and bookkeeping while at my first job, so I had that experience. For my own business, I reviewed every single job proposal, inspection report, quarterly report, and shop drawing and mark them up numerous times without pity until they came back as products that I recognized as high quality. Eventually, the oversight became less and the delegation kicked in. I hired versatile employees and simply plugged in new ones with an already established protocol whenever someone left. Today, I do most of my supervision off-site via computer and smart phone. I have managed to put together a

staff that is regularly complimented for high-quality service and a great end product with little direct involvement from my end. You do not become an entrepreneur to work 60-hour weeks—at the beginning, perhaps, yes; in fact, that is probably a reasonable expectation. However, your end goal should be to work less time for more profit and benefits, freeing you up to enjoy some of the finer things in life. *Therein lies the efficiently trained team.*

I sometimes quote or paraphrase a saying that I have become fond of: “An entrepreneur has to do things for a while that most people won’t do, so that one day he can do things for the rest of his life that most people can’t do.”

Have I Established Good Relationships with the People I Have Worked with, and Will They Trust Me with Their Business?

The business of entrepreneurship, in most cases, involves having a good relationship with your clients. They need to feel comfortable with you and trust that you will take care of them. This is true for every profession, even for apparent monopolies where there is little to no competition. Eventually someone will sense dissatisfaction and find a way to break into that market and provide a better alternative. When that happens, if you do not have a strong enough bond with your clients, you can expect them to leave you.

Even as an employee at my first job, I started to notice client dissatisfaction while working at a specialty engineering firm focused on hurricane mitigation design in an area that had recently been struck by one of the most devastating hurricanes to make landfall, in a field that was neglected, looked down upon by other engineers, and misunderstood. You may be getting the picture; not many people could do what we did at the time or at least do it well. Municipalities and codes were changing all the time and becoming stricter. The company for which I was working had a near monopoly on the business, and the prices kept going up; the small project was getting the short end of the stick. I made it a point to offset the higher fees we were charging with excellent service. Hardly any of our designs and plans were being rejected by the municipalities for noncompliance with the new codes, whereas other firms were struggling to keep up with the code changes.

It got to a point where clients called me directly when they had issues or wanted to discuss new projects. I listened, followed up, answered all their questions, and treated them all as if they were the most important client of the company. That included thinking outside the box, whereas sometimes my boss would reject anything that did not fall within a certain norm. In essence, I did all I could to gain the trust of the people with whom I worked. When I decided to switch firms and work for the nonspecialty engineering firm, my plan was to ease into training a staff and then eventually start to approach some contacts in the hope that I could convince them to bring some of their work, on a trial basis, to my new employer. I gave myself about a six-month time frame to start marketing our new discipline to my contacts. In the meantime, I was excited to engage with the current projects in which the company was contracted and finally work on regular engineering work, or so I thought. I was part of a few projects, working on one retaining wall, a few footings, a lot of concrete restoration work, and some inspections over a few months' time, until the people with whom I had worked previously and with whom I had developed a good relationship finally tracked me down. The word got out that I was at a new firm, and slowly more work in my specialty started coming my way without one phone call made on my part to try to convince them to send work. *Therein lies the trust.*

Once you can answer the five questions with a yes, you are ready to take the next steps, which are acquiring and creating credentials and recognition. There is nothing like having credentials associated with your name to legitimize yourself in the eyes of your peers and the public. Being published, obtaining certification, having a license, being a member of an organization, being a presenter or leader of an organization set you apart from your competition and opens doors.

Being recognized for your achievements is also important. Credentials and recognition are not given to you; they are earned. But you must have a hand in creating them for yourself. No one is going to force you or stay on top of you to write a book or magazine article, to obtain your P.E. license, to join a professional organization, or to present at your professional association's conference. These are things you have to seek to do for yourself. These are the things that set you apart from your competition. These are not easy accomplishments; if they were, everyone would be doing them. Recognition also does not come knocking at your door; you have to seek that as well. This is done by keeping your eyes and ears open to opportunities. Look to your professional associations,

your local chamber of commerce, or your alma mater. You must participate and apply for recognition from these organizations.

Before opening my firm, I had not obtained any of the credentials I just mentioned. I started off by first contributing to an article. That progressed to writing an article for an industry publication. From there, I decided to write a technical paper and present it at a conference. I then volunteered at my university college of engineering alumni association where I eventually became president. Once you partake in a few of these ventures, chances are you will be sought out for more involvement. If I had not attended a happy hour promoting top minority-owned businesses by the local chamber of commerce and if I had not filled out the application for consideration, my firm would never have been selected as one of the top minority-owned businesses in south Florida. The bottom line is that you have to be proactive and find ways to stand out from your competition and even stand out from fellow entrepreneurs.

Recommended Activities

1. Identify your specialty or niche.
2. Research your chosen niche or specialty to gauge demand.
3. Study the five questions posed, and take steps to change the answers from “no” or “I’m not sure” to “yes” by following the suggested steps.
4. Begin acquiring credentials.
5. Start compiling available resources and identifying potential team members.
6. Gauge your potential client base through networking.
7. Identify potential clients.
8. Prepare a marketing campaign highlighting your specialty.
9. Practice your sales pitch.
10. Provide incentives for clients to work with you.



PART 3

HOW TO START YOUR OWN FIRM

EXPERIENCED ENGINEERS

Now that you have learned the necessary skills for entrepreneurship (Chapters 1 and 2), identified a specialty or niche (Chapter 3), honed your skills, established yourself in your industry, created your credentials (Chapter 4), and most importantly, answered the five entrepreneurship questions with a yes (Chapter 5), you have all the necessary tools needed for entrepreneurship. It is time to make the leap.

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Chapter 6

Funding Your Start-Up Company

Creative planning and investing can ease the stress of where and how to find start up funding

Finding the necessary funds to start your own company is the hardest part of starting your own firm. You need to start thinking of funding your start-up expenses years before you actually plan to take the plunge. However, it's not as simple as finding the money. You also need to understand your future business expenses and potential revenue or income stream. Following are the necessary steps needed to determine your ability and the feasibility of funding your start-up, as well as some sources of funding. *Please make sure that you have read Chapter 5 and have answered yes to all the questions posed therein.*

Step 1: Find out how much money you have.

Step 2: Find out how much money you need.

Step 3: Find out where to obtain the money that you need.

Step 4: Find out how to obtain the money that you need.

Step 1: Find Out How Much Money You Have

Determine your net worth and establish a personal budget surplus. Your net worth is established by identifying all your assets and all your liabilities. You have to assume that you will cash out everything of value that you own (assets) and pay off all your debts (liabilities). What is left over is your net worth. Be conservative when listing your assets, and do not get carried away listing too many personal items unless they are of real value and can be used as collateral or you would consider selling them. Focus on your big assets.

Assets: Cash, or items that you own that can be readily converted into cash. Examples include houses, cars, stocks, certificates of deposit (CDs), 401(k) accounts, cash on hand, cash in bank accounts, jewelry, antiques, and collectibles.

Liabilities: That which you owe in debt. Examples include house mortgages, car loans, 401(k) loans, credit card balances, and miscellaneous loans (e.g., student loans).

Establish a personal budget. Unlike with your future company start-up budget, where you are estimating potential expenses and income, with a personal budget you know exactly, or you can determine exactly, what your yearly and monthly expenses are. You also know exactly, or you can determine exactly, what your current income is. Use these two figures, personal expenses and personal income, to establish a budget that will allow you to set aside the budget surplus. You can then use this budget surplus along with your current liquid assets to invest and help secure your future company start-up funding.

Personal Expenses: Similar to how you establish your company expenses, as will be shown in Step 2, you need to identify and list all of your personal expenses. Unlike Step 2, I will not provide estimated costs per expense items, as you should know exactly what your current expenses are. However, I provide the typical expense categories here to help you determine your total personal expenses. Personal expense categories can include but are not limited to home expenses (e.g., mortgage or rent, alarm services, fumigation, housekeeping, landscaping, maintenance, telephone, cable, Internet, electricity, and water and sewer); car expenses (e.g., loan payment, insurance, gas and maintenance, tolls, and parking); entertainment; wardrobe; grooming; cell phone service; dining; charity; groceries; fitness memberships; gifts (e.g., birthdays and Christmas); insurance (e.g., health, life, dental, and vision); and credit card payments.

Personal Income: When listing your personal income, it is necessary to list your net monthly income and not your gross monthly income. The net income is the actual amount of your salary, as shown on your paycheck after all taxes have been withheld. This is the money you will have available to you to pay your expenses and to invest.

There are other forms of income that you can create for yourself if you have any special skills. Examples include entrepreneurial ventures (e.g., tutoring, babysitting, or lawn care), income from a rental property, and income from stock investments. These types of income should all be taken into consideration when preparing your budget and determining your net worth.

You should develop a computer spreadsheet listing totaling all your monthly income and listing, itemizing, and totaling all your monthly expenses. Subtract the total of your monthly income from your monthly expenses and you get your monthly budget surplus or deficit. If you have a deficit, you have some serious decisions to make about how to cut down on your expenses. If you have a surplus, this is the monthly amount available for you to invest. You should track and constantly update all of your assets, liabilities, expenses, and income to have a constant idea of your changing expenses and net worth.

Step 2: Find Out How Much Money You Need

Determine your start-up expenses. Start-up expenses vary from business to business, city to city, and state to state. Therefore, it is difficult to associate an exact cost with each expense. You need to conduct your own research and use your own judgment as to the actual costs for each category in your own business, city, and state. However, to provide the reader and prospective business owner with a general idea of what kind of costs can be expected, I have provided the actual cost range that I incurred for each expense category during the setup of my own firm. This service is done, to the best of my recollection, so that you can have an idea of real-life costs associated with an engineering start-up. The actual cost figures or cost ranges provided herein are based on my unique situation and experience and may have changed periodically throughout the years. They are to be used solely as a guide and are not to be taken as actual costs that the reader may incur. This section focuses on estimated cost or cost ranges and not logistics. Logistics for many of these categories is provided in subsequent chapters.

Start-up expenses can include office equipment and furniture, rent, marketing, payroll, 1099 contractors, insurance, office supplies, codes and standards, utilities, professional associations and licenses, printing and delivery services, and computer software.

Office Equipment and Furniture

Purchasing or leasing your office equipment is one of the biggest start-up expenses your company may have. The big-ticket items can include

office furniture, office computers, copiers, a phone system, and a pen plotter.

The following are the approximate costs that I incurred for each of these items when I started my own firm, to the best of my recollection:

Office Furniture: I purchased simple desks (tabletop and legs) with an independent drawer set that fit underneath one side of the desk. I arranged each desk set in an “L” shape configuration; the other side of the “L” consisted of a simple tabletop with screw-on legs, all from IKEA. The approximate cost for a tabletop desk set (desk with drawer set and tabletop with legs) was approximately \$300 each set. The chairs I bought from Office Depot for approximately \$100 each. The estimated yearly total for four employees (four desk sets and four chairs) is \$1,600.

Office Computers: I purchased identical computers with keyboard, mouse, monitor, and CPU tower from Best Buy for approximately \$1,200 each, at the time, not including software. The estimated yearly total for four employees is \$4,800.

Copier: I found it more cost effective to lease a copier than purchase one. This method allowed me to have a much better quality copier and save cost on maintenance. My company is basically in the business of selling paper, because my firm specializes in engineering consulting and providing our clients, as an end product, with numerous sets of lengthy calculation packages and specifications. Therefore, for my company, because we print many more copies than the average small company, it was important to have the best, most reliable machine that can copy fast, scan, and collate. Similar to leasing a car, leasing also alleviated the hassles of having to deal directly with maintenance issues, and we receive a brand new copier every three years or so. In addition, if you purchase a copier, you incur a down payment and depreciation, as well as the added maintenance and toner expenses. The cost to lease such a copier is \$325 per month on a three-year lease, including a maintenance plan and toner. The estimated yearly total is \$3,900.

Phone System: Since I started my company as a home office, and currently my office layout is such that all the staff sits relatively close to each other, I decided to purchase a relatively inexpensive phone system. I chose a basic wireless expandable office handheld phone system from Best Buy with multiple stations for approximately \$250 total. My office manager controls the main wired station, and each employee gets a portable handheld wireless station with charging station at his or her desk. The estimated yearly total is \$250.

Pen Plotter: I found it more cost-effective to send my plotting and printing of drawings to an outside vendor. The cost of purchasing a good pen plotter (approximately \$3,000 to \$5,000) was cost prohibitive for me at the time. Additionally, if you purchase a pen plotter, you incur a down payment and depreciation as well as the added maintenance, paper, and ink expenses. It is assumed, for estimating purposes, that you will send the plotting and printing of drawings to an outside vendor.

Rent

You can save on rent by working from a home office. If a home office is not an option, you will need to look for office space suitable to your particular needs. Do not be tempted into renting a fancy office where the rent alone can eat up most of your profit. Stay modest at start-up, and look into sharing space and/or resources with another start-up if possible.

I initially started my company from a home office; therefore, I saved on rent. Currently, I am paying approximately \$2,500 per month for a 1,000 square foot office unit in the city of South Miami, Florida. The rent includes estimated yearly common area maintenance (CAM) fees that cover electricity, garbage disposal, water and sewer, and building maintenance upkeep fees. The CAM fees are adjusted, via additional invoice or credit from the landlord at the end of each year, depending on if the actual yearly common area expenses are greater than or less than the landlord estimated. The estimated yearly total is \$30,000.

Marketing

Before your business can actually start operating, you need to set up your marketing strategy. Expenses can include advertising through avenues such as a company website, business cards, and brochures at a minimum. You can find many avenues of free advertising using social media sites, such as Facebook, LinkedIn, Twitter, Instagram, and online business listings. Some social media sites include a paid option for expanded advertising purposes and may be significantly more affordable than using a conventional marketing company. If you are unsure of how to reach your target audience, there are lead-generating vendors that can provide you with industry-related contact information at a cost. In this era of social media and the Internet, a comprehensive and effective marketing plan can be implemented internally and accomplished relatively inexpensively.

The following are the approximate costs that I incurred for each of these items when I started my own firm, to the best of my recollection:

Company Website: Because of budget constraints, I asked around. A talented individual was recommended, who happened to still be in high school, to design my company website. As it turned out, this individual did an excellent job of setting up our initial company website for approximately \$300, plus a hosting fee of approximately \$250 per year. He has since graduated from college and owns his own media company. Subsequently, we have internally updated our website using some of the software mentioned in Chapter 2. In this age of online vendors, you can find numerous vendors that offer website templates or website creation applications to create your own website relatively inexpensively. Our estimated yearly total is \$550.

Business Cards: When I opened my company, I used a conventional printing company and paid approximately \$50 per employee for 500 cards each. However, I designed, with help from my talented staff, my own logo and card. In this age of online vendors, you can get business cards printed relatively inexpensively. The estimated yearly total for four employees is \$200.

Brochures: When I opened my company, I used a conventional printing company, the same as for the business cards, and paid approximately \$100 total for 250 copies of a three-panel folding brochure that included brief company history and staff bios, scope of services offered, and contact information. However, I designed our brochure, with the help of our talented staff. The estimated yearly total is \$100.

Social Media: Social media was not considered an adequate avenue for marketing of businesses when I started my firm. That has since changed, with an explosion of corporate ads and marketing on almost all of the social media sites. I have since set up a Facebook page, a LinkedIn Group, and a Twitter account to help promote my company, all at no financial cost. I have never paid for social media marketing, but paying for online marketing and ads is an avenue worth exploring if your business tailors to the general public or if target marketing is available by any of these sites, or others.

Online Business Listings: I have exhaustively used this form of advertising, not necessarily to drive in business but to help create my company's online presence. I would look for all of the free online business listing and networking sites and either claim, create, or update my business listing. I would constantly search for my company name online and gauge how many times it would come up and under which

listings. Some examples of online business listings and business networking sites that I used include Google, Yahoo, Manta, Citysearch, Naymz, and Merchant Circle. I have never paid for claiming, creating, or updating an online business listing, but in this age of global marketing, it might be worth some expense.

Lead-Generating Vendors: I have never paid for or used a lead-generating vendor, and you must be careful of scams. However, in this age of global networking and opportunities, should you find a reputable vendor who comes recommended by a friend or colleague, it might be worth a try.

Payroll

Before you actually get “paying clients,” you need to make sure you can cover your payroll expenses and fund a reserve to handle any lag between receivables and payroll liabilities. A revolving line of credit can be useful for this purpose.

My firm has employed, from the beginning of its founding and anywhere in between, up to ten employees at one time, including me. Currently, my payroll sits at about \$5,000 net employee salary per pay period (two weeks) and approximately \$2,500 in withheld taxes per month. Unemployment state tax rate (0.0293) and federal tax rate (0.06) are, respectively, approximately \$1,000 and \$2,000 per year, based on the respective rates on a capped income of \$8,000 per employee for four employees. This total accounts for four employees and two office interns. Part of payroll expenses means having reserves and revenue sufficient to pay the IRS for the income, Social Security, and Medicare taxes withheld from your employees’ paychecks, unemployment taxes, and tax-deferred employee salary contributions into the company retirement plan, as well as medical insurance, if done through payroll deductions. The estimated yearly total for 26 pay periods of net salary, 12 months of withheld taxes, and 1 year each of state and federal unemployment taxes is \$163,000.

1099 Contractors

1099 contractors are those individuals or companies who perform work for you but are not considered employees or do not have their own company or company Employer Identification Number (EIN). The term 1099 comes from the IRS form 1099 that must be used to report payments

in excess of \$600 paid to these types of individuals or companies. Hiring 1099 contractors is a great way to save on payroll, tax, and employee benefits expenses and could be quite valuable to start-up firms until the revenue stream stabilizes to a consistent and adequate level. Potential 1099 contractors include interns, drafters, field inspectors, office help, and engineering consultants.

To this day, I pay my engineering consultants, as well as some drafting, inspections, and office help services individuals, as 1099 contractors. This is an area that is difficult to put a total yearly number on. But the expenses associated with it should be less than that of a comparable employee's yearly wages, because you are saving on payroll, taxes, and company benefit expenses. On average for the years of 2013 and 2014, my firm paid out approximately \$50,000 per year in 1099 contractor expenses. So, the estimated yearly total is \$50,000.

Insurance

The typical insurance requirements for an engineering company may include general liability, professional liability, and workers' compensation. If your business does not entail working with life and safety issues or if you work with small companies or individuals, you may not be required to obtain professional liability insurance, which can be quite costly. Even if you do work with life and safety issues, you may not be legally required to obtain professional liability insurance (please check with your local state insurance officials on this). However, some larger firms do require that you obtain professional liability insurance in order to work with them. If your firm sponsors a qualified retirement plan or health plan, you need to account for and secure a fidelity bond (to secure your retirement assets) for your retirement plan and account for health insurance costs.

Professional Liability: Professional liability insurance protects your firm from errors and omissions on your designs and services. The premium depends on the number of employees, revenue, and type of engineering services offered. My firm currently pays approximately \$8,000 per year based on four employees plus one qualifying engineer, \$400,000 in revenue and structural engineering services. The estimated yearly total is \$8,000.

General Liability: General liability insurance protects your employees and your clients should they be injured in your place of business. The premium depends on business personal property and number of

engineering professionals employed at the firm. My firm currently pays approximately \$1,500 per year based on three engineering professionals. The estimated yearly total is \$1,500.

Workers' Compensation: Workers' compensation insurance protects your employees should they be injured at the job site. The premium depends on number of employees, not counting exempt officers. My firm currently pays approximately \$2,000 per year, based on three covered employees and two exempt officers. The estimated yearly total is \$2,000.

Fidelity Bond: A fidelity bond is required by law and protects and secures your company-sponsored retirement account. The premium is based on your total retirement account balance and is capped. My firm currently pays the maximum premium of approximately \$100 per year. The estimated yearly total is \$100.

Health: This expense depends on the number of employees, their ages, and the plan you choose, including choice of deductibles. My employer-sponsored health coverage is based on four employees with a high deductible and mid-level coverage plan option. The company pays for one hundred percent of the insurance premiums and reimburses each employee up to \$1,000 for medical emergency expenses per year to help cover the cost of a high deductible. The approximate cost to the company for all four employees, not considering any deductible costs, is \$1,500 per month. The estimated yearly total is \$18,000.

Office Supplies

Office supplies, especially paper, can be expensive to stock initially, depending on the number of employees you have at start-up. Having an office account with your local office supply store can help defer expenses.

This is an area difficult to estimate, as it depends on the number of employees and the type of business. My company spent on average of approximately \$7,000 per year on office supplies in 2013 and 2014. The estimated yearly total is \$7,000.

Codes and Standards

An engineering firm needs to be stocked with the latest codes and standards to be able to use as reference when needed. As it relates to the structural and civil engineering field, this cost can become quite

expensive, especially when the code changes. A structural firm may need to be equipped with the latest or applicable codes in the following disciplines at minimum: state codes (e.g., building, electrical, mechanical, and accessibility) and standards (e.g., concrete, steel, masonry, wood, aluminum, and wind).

When the code changes, typically every three to four years in Florida, it can be quite expensive to keep up with and update to the latest code-referenced standards. However, you have no choice but to do so and to do so with enough time to become familiar with the changes from the last editions. On any given code change cycle, my firm, based on my field of practice (civil and structural engineering), if all the referenced standards were to be changed at once, would pay approximately \$500 for the Florida Building Code (FBC), \$175 for the concrete standard (ACI 318), \$250 for the steel manual (AISC), \$125 for the masonry standard (ACI 530.1), \$150 for the wood standard (NDS), \$400 for the aluminum manual (ADM), and \$100 for the wind standard (ASCE-7). That estimated yearly total is \$1,500.

Utilities

Basic office utility expenses may include electricity, phone service, Internet, cable, water and sewer, garbage disposal, maintenance, and cleaning expenses. These may or not be paid as part of a commercial lease if you rent office space. Should you decide to start your firm from a home office, you can save considerably on utilities and even declare a portion of your home utility expenses as company expenses.

My company currently pays for most of the aforementioned (electricity, water and sewer, garbage disposal, maintenance, and cleaning expenses) through the common area maintenance charge portion of the rent paid to our office unit landlord. However, at one point, our company paid approximately, on average, the following monthly payments for utilities: \$250 for electricity; \$50 for water, sewer, and garbage disposal; \$100 for maintenance; and \$400 for cleaning expenses. My company currently pays, outside of the CAM fees payable to the landlord, approximately, on average, the following monthly payments on the remaining utilities mentioned here: \$250 for phone service, \$30 for Internet service, and \$200 for cable. It is assumed, for estimating purposes, that you rent office space and pay the landlord, as part of the rent, the CAM fees. The estimated yearly total of utilities not covered by the CAM is \$5,760.

Professional Associations and Licenses

Professional association fees are typically annual lump-sum fees that need to be accounted for during start-up. When your company's specific discipline requires a professional license, this too must be considered. Examples include yearly membership fees to professional associations, such as the American Society of Civil Engineers (ASCE) and the Florida Structural Engineers Association (FSEA), for each professional employee. Your firm must keep track of state corporate filings, professional engineer (P.E.) and company state licenses, and P.E. and company local tax receipts. This category depends on the type of business and field of practice, as well as the city, county, and state in which you decide to start your business.

Examples of the yearly and lump-sum fees paid for these mentioned, other than the professional associations, are approximately \$150 per year for state corporate filing; \$100 each for a two-year P.E. and company state license renewal; \$160 and \$250 per year, respectively, for P.E. and company city local business tax receipt renewals; and \$60 and \$45 per year, respectively, for P.E. and company county local business tax receipt renewals. The estimated yearly total is \$765.

Printing and Delivery Services

If you provide drawings or a final product that requires printing services that cannot be performed in house, you need to establish an account with a fast and reliable printing company. If you decide to print or plot in-house, you must consider plotter equipment and maintenance, plotter paper, and ink expenses as well. Once you get the drawings or specifications, or whatever your end product may be, you need to send them to your client in a timely fashion by means of local couriers or national delivery vendors, such as FedEx, DHL, UPS, or USPS.

I found it cost effective to send my drawings out to a vendor for printing and plotting. The cost of printing varies and depends on the number of projects on which you work and the number of sets of drawings and calculations your clients require. In 2013 and 2014, my company paid approximately, on average, \$1,000 per year for printing and \$500 per year for delivery services. The estimated yearly total for printing and delivery services is \$1,500.

Computer Software

Purchasing computer software is a critical and expensive part of operating an engineering business. The minimum recommended software includes Microsoft Office (Word, Excel, PowerPoint, and Outlook); Adobe Acrobat Pro; AutoCAD; a basic engineering analysis software (Mathcad); and QuickBooks. In this age of cybersecurity, it is important, and expensive, to have a licensed copy of the software mentioned here. It is tempting to find bootlegged copies of this software, but it is not worth the legal risk.

The approximate cost that my company incurred for each type of software mentioned at the time of purchase was \$300 for Microsoft Office Professional (Word, Excel, PowerPoint, and Outlook); \$500 for Adobe Acrobat Pro; \$1,500 per seat for AutoCAD; \$1,600 per seat for Mathcad; \$200 for QuickBooks, plus \$500 per year for their payroll subscription. The estimated yearly total is \$4,600.

These expense categories and approximate amounts are provided solely as a guide for the reader to have an idea of what typical company expenses are like. Times change and cost varies from location to location. You are advised to do your own research as to what the actual costs you can expect to incur may be when deciding to start your own firm. More information on office expenses can be found in Chapter 8 in the section on establishing a budget.

To determine the approximate amount of start-up funds you will need, take the yearly total of all of the expenses discussed that are applicable to your business and divide it by 12 to get the estimated monthly expenses for your start-up. You should have a reserve of about three to four months at start-up to cover all expenses until you establish a steady revenue stream and to account for unforeseen expenses or lower than expected revenue.

On the basis of these estimated costs, the total yearly company expense is \$305,125. Dividing that number by 12 gives you the total monthly company expense of \$25,500, if you round up. Allowing yourself a three-month reserve will require \$76,500 of start-up funding. Allowing yourself a four-month reserve will require \$102,000 of start-up funding.

To determine exactly how much money you will need for your specific start-up, you should follow my example using your own cost estimates based on your own anticipated expenses. Take that number and subtract the funds that you currently have from Step 1, and you will have an idea how much money you will need to start your own firm.

Step 3: Find Out Where to Get the Money You Need

Determine your available sources of funding. Not all of the following sources are available to you, but you can certainly position yourself, given enough time, to potentially benefit from one or all of these resources in the future if you know where to look and how to prepare and if you plan ahead.

Available sources of funding can include liquid assets, fixed-asset equity, banks and credit unions, borrowing from your 401(k), Small Business Administration grants, investors or partners, and credit cards.

Liquid Assets

Liquid assets are the easiest form of financing a start-up company. It involves cash or any possessions that can easily be converted to cash. Start accumulating assets (items you can acquire that appreciate in value with time or with a bit of sweat equity), create a side business to generate cash (e.g., tutoring service, lawn care, or a side job), or invest cash earned and saved (business or property) as early as possible to use for your eventual start-up capital. Remember, your goal is to be an entrepreneur, and that is much harder to accomplish if you spend all the cash you have or earn and if you buy into liabilities instead of assets.

I had managed to save up enough cash through the other investing options listed, mostly by buying and selling real estate, usually my principal residences. I would buy fixer-uppers in nice neighborhoods for significantly below market value, fix them up gradually while I lived there for a few years, and then sell them at a profit. The rest of the cash was what I could accumulate from saving throughout the years. This method afforded me enough cash to launch my company.

Fixed-Asset Equity

The biggest fixed asset one could use to help with the company start-up expenses is one's home or condo. You can do this either by continually (every few years) buying low and selling high or by taking out an equity line of credit. I am not a fan of renting, because I feel that you are providing the financial benefit of increased home equity to someone else instead of yourself. I would much rather live with my parents and wait until I could afford to buy a modest place of my own than rent. I was

never a fan of paying someone else's mortgage, taxes, and insurance so that they could gain equity in their property, at my expense, while the hard money I earned was put to no investment use. If you could plan far enough ahead and purchase your first home with the intention to use its future equity, it would be a good source of start-up financing. Of course, it is very important that you have and maintain great credit.

There is an art to buying a house with the intent to use potential equity in the future. Whereas in the typical purchase of a house you would look for a very nice house, buying a house for investment purposes has totally different research parameters. You want to buy the ugliest house *in the nicest neighborhood* with potential for appreciation. As long as the required repairs are cosmetic in nature and not structural, buying an ugly house allows you to buy at below-market value; by doing so, you lower the monthly mortgage payments. You can then defer the required costs to upgrade the house and perform the repairs at your own pace. By doing this, you increase the value of the house and the equity.

Every property that I have ever bought has been a property that most people would have walked away from because of its current condition. But I learned to look at the potential of a property and focused on the neighborhood instead of the shape and condition of the house. I made sure that the neighborhood was nice and that the houses around the property were well kept and in much better condition than the house I was considering buying. You have the power to change the appearance and condition of your house, thereby increasing its value, but as to the neighborhood, not so much. What you have to do is scout potential fixer-upper homes or condos in nice neighborhoods. Look up the property appraiser's website in that area and see the home's sales history. Also, take a look for what the other homes in the area have sold, both in the past (five-plus years) and currently (less than five years). Visit the property, and take a camera with you. Take a picture of every little defect you can find, and make notes about that defect. Estimate what the repairs to all those defects would cost. If the number is not high, then you are not looking at a fixer-upper. My definition of a fixer-upper is a property that by inspection you can document enough needed repairs to justify a below market offer. When you find the right house, deduct the cost of the repairs from the lowest comparable sales or the asking price, whichever is less, and make an offer. Include the detailed breakdown of all the repairs needed. By choosing a fixer-upper, you are choosing a house that most people would not consider buying and most would walk away from without making an offer, which means that you do not

have much competition and the owner is most likely to entertain your offer. If you end up buying the house, you have automatically increased your net worth. You will have bought a house far below market value and taken the time to slowly but consistently upgrade it while keeping your mortgage payments much lower than those of your neighbors. Once you are done with all the repairs, you should have equity in the house, at least equal to the amount of repairs you used to bring it to good condition, and then some.

Banks and Credit Unions

Since the crash of the housing market caused by questionable lending practices, it has become difficult to secure a loan from a bank, regardless of the reason. As with buying a home, you must have very good or excellent credit and show consistent income plus a positive net worth. Banks look at your balance sheets, profit and loss statements, and at least two years of corporate tax returns. They typically lend up to 20% of your gross yearly revenues and look to see that your monthly profits will cover the minimum monthly payments along with having a positive net worth. Refer to Chapter 10 in the section on office management for more information on these reports. If you do happen to be in a position to qualify for a small business loan, you should research before choosing your bank to make sure that it has terms best suited for your financial needs. Sometimes credit unions offer better rates or terms to members than banks. Don't be afraid to ask friends in the banking industry for advice on how to best secure a loan.

I tried numerous times to obtain a small business loan to no avail. The housing crash was fresh in everyone's mind, and the banks just were not lending. It was not until I decided to call a good friend from college that I got that opportunity. Even then, the rate was a bit higher than average, and I had to put up a second mortgage on my house. I have also used an equity line of credit on one of my residences after I bought at below-market value and did some repairs and upgrades. This method is by far one of the most difficult forms of start-up funding, unless you have some help from family or friends.

Borrowing from Your 401(k)

If you did as suggested in the previous section and invested as much as you could afford into your 401(k) account, that account might be a great

source of start-up funds for you. You do not want to withdraw the funds directly, as this step would cause accelerated taxation and early distribution penalties up to 20% or more of the amount withdrawn. What you want to do is establish your own company retirement plan with the ability to take out loans for whatever reason (subject to laws and local requirements). Then, once you have created your own 401(k) account, you want to roll over the entire vested portion of your account into your newly created qualifying account. Once you do that, you can request a loan from your 401(k) account up to 50% of your vested balance or \$50,000, whichever is less. Because you would be the plan administrator, you could then set your own terms of repayment and interest. The repayment amount and interest would be deposited back to your own account. As the laws dealing with retirement accounts vary and change frequently, you should consult an accountant before starting this process.

If you have a working spouse, I hope that you would have advised him or her to do the same, investing heavily in his or her company 401(k), and his or her account may also be a great source for start-up funds.

This was one of the primary forms of start-up funding that I used to start my company. I had contributed as much as I could into my 401(k) plan in my years with my prior two employers. I used money that I had saved up to get the company off the ground, and then I quickly set up and implemented a 401(k) plan of my own for the company. As soon as the plan was up and running, I requested a rollover of 100% of my balance into my own plan. When I structured the plan, I did it so as to allow loans to all participants for whatever reason without restriction, except those governed by law and plan limitations. Not only did I use a portion of my 401(k) savings, which I took out as a loan to start my own business, but I also advised my wife to invest heavily in hers as well. Therefore, we were able to use some of her funds by way of a loan against her account to supplement and ensure our success during tough economic times. The beauty of funding a company in this manner is that the loan application, terms, interest rate, and repayment method are all controlled by you as the plan administrator. In addition, and even better, all the payments, including interest, are deposited back into your own account.

Small Business Administration Grants

The federal Small Business Administration offers support, including loans, to qualifying companies. You should look into its website, along

with other sites that offer assistance to technical start-ups. For more information on the U.S. Small Business Administration, you can visit the website at www.sba.gov.

Investors and/or Partners

Seeking investors and/or partners in your company is an option, but these two options, in my opinion, should be explored only after careful consideration and absence of other funding methods. A relationship with an investor or a partner is similar to a relationship with a spouse. There is a good chance that it could end in a messy “divorce” if not handled properly. Make sure that you put all agreements and understandings in writing, regardless of your friendship or trust level with your potential investor or partner. Discuss and document your work philosophy, and provide clear expectations and scope of responsibilities before committing to work together. Remember that having an investor or partner limits your control of the company. I highly suggest, if a partner is the direction you wish to take, that you make sure to maintain controlling stock interest in the company to safeguard yourself from a potential deadlock. Having a partner or investor also limits the tax strategies available to you to position your company in the best manner possible come tax time. You can read more about the tax strategies in the section on profit management in Chapter 10.

When I launched my firm, I had no intention of seeking partners or investors. It would be my company, and I would run it as I saw fit. However, I needed to find a qualifier for the company, and during my search an interesting opportunity presented itself. A colleague and former coworker, who happened to have a P.E. and a tremendous amount of experience in my field, reached out to me. I was hesitant, but we decided to give it a try and team up. Because I had already completely set up the company and had done most of the setup work and had an initial client base, I insisted on keeping 51% of the company and offering my partner 49% of the company but an equal share of the profits. After a few months, it became apparent that we had different philosophies. We started to disagree on the use of the office space, company purchases, workload, and tax benefits. Needless to say, it ended up not working out, and it took me a while to recover and get the company back on its feet. It would have been much worse if I had agreed to a fifty-fifty partnership.

Credit Cards

This should not be your primary source of funding. However, it can provide you with much-needed funds to get you through tough times. It is critical that you actively maintain excellent credit. Without excellent credit, you can forget about this as an option. If you do have it and can maintain, excellent credit, some cards can offer you as much as a \$30,000 line of credit, many with introductory low or zero-percent interest rates for a period of time.

I have certainly used credit cards to my advantage when I had excellent credit. I routinely transferred balances from cards with higher interest rates to those that offered low introductory or promotional rates. That all ended, however, when I made the mistake of letting my credit slip. The importance of establishing and maintaining excellent credit cannot be overestimated.

Step 4: Find Out How to Get the Money You Need

Create and stick to a personal budget and establish a goal-oriented financial plan. Being a successful entrepreneur requires a special tenacity, state of mind, and philosophy. It is not easy. If it were, everyone would own their own businesses. In order to understand the entrepreneurial philosophy, I would recommend reading the book by Robert Kiyosaki, with Sharon L. Lechter, CPA, *Rich Dad, Poor Dad*. It was instrumental in helping me understand the financial entrepreneurship philosophy. You will never achieve your financial goals by saving money away, incurring liabilities, or working for someone else. You must learn to invest and/or convert the money you have and the future money you will earn into assets that will create more money for you in the future, whether it is in the stock market, real estate, or in an entrepreneurial venture. You must take educated risks. Learn to use other people's money through loans to make more money for yourself or purchase appreciable assets that can be used for funding your start-up company in the future. You must constantly be thinking of ways to improve your net worth.

The first thing you need to do, once you have established how much money you have, how much money you need, and where to get the money you need, is to determine how much money you *actually* need (Step 2 minus Step 1). The actual money you need are determined by

subtracting your estimated start-up funding total from Step 2 (using the three- or four-month reserve amount) from how much money you currently have from Step 1.

The second thing you need to do, once you have determined how much money you actually need, is to write that figure down and set a plan, using the section on where to get the money you need (Step 3) to secure that funding. This step is done by setting goals and creating and sticking to a personal budget for yourself. You can then use the budget surplus to reduce the amount of start-up funding you actually need. With respect to creating a budget, you will not yet have a company; therefore, you will need to create a personal budget using the same principle as that shown in Step 2, but instead using your personal expenses and current income as per Step 1. You must stick to your budget and spend as little as possible on unnecessary expenses, so that you can take the budget surplus and use it to invest in appreciable assets or an entrepreneurial venture instead of letting it sit in a savings account.

Aside from the sources of start-up funding mentioned in Step 2, there are other forms of investment to help you achieve your financial goals: the stock market, real estate, collectibles, antiques, jewelry, loans, and entrepreneurial ventures.

The Stock Market

You should not invest in stocks directly if you do not know what you are doing. However, with proper research or professional advice, investing in the stock market (stocks, bonds, and mutual funds) can be quite lucrative, provided that you follow the old adage of buy low and sell high. Unlike with investing in stocks within a qualified retirement plan, you will be using after-tax money (money you receive from your salary once all applicable taxes have been withheld) to invest, and you will be taxed on your gains. The younger you are, the more you should focus on high-yield, high-risk funds, depending on the market conditions. If the stocks rise greatly, sell off some and place the proceeds in a safer, low-risk, low-yield stock until the stocks begin to drop. Once stocks drop below the point at which you bought them, you can reinvest in those same stocks and ride the eventual wave back up. You will need to do your research or seek advice from a qualified professional, and you have to be patient and understand that investing in stocks is a long-term strategy.

You would be surprised how most people ignore such an easy stock investment strategy as buy low, sell high. Contrary to that rule of thumb,

most people tend to get into the market when they see that it is going well and everybody is investing in the market, and they get out when they see that it is going badly and everybody is jumping ship. Because the stock market's historical performance is composed of high cycles and low cycles, if you get into the market when it is high, there is nowhere to go but down, and vice versa, if you get out when it is low, there is no way to recover your losses. Buy low, sell high!

Real Estate

It is important when purchasing real estate as an investment to know what it takes to find a good value. A good value is buying a property at below-market value that with cosmetic changes can appreciate in value in a relatively short period of time. These types of properties include fixer-uppers, distressed properties, and foreclosures. For more information on investing in real estate as your own home, refer back to Step 2 in the section on fixed-asset equity, and Chapter 4 in the section on looking to buy your first house wisely.

Collectibles, Antiques, and Jewelry

If you purchase appreciable items, such as precious stones, gold, silver, collectibles, and antiques, given enough time those investments will increase in value and may serve as a source of funding or reserve for your future company.

Loans

Using loans, not for pleasure or material liabilities (bad loans), but for the purpose of reinvesting or purchasing assets (good loans) is a good way to use other peoples' money to make money for yourself. Make sure that the return that you will get on the investment you choose to use the loan proceeds on is higher than the interest rate you will be charged, including closing costs on the loan.

Entrepreneurial Ventures

Investing in supplementary business ventures for the sole purpose of creating start-up funding or using it to achieve your financial goals is relatively easy to do if you have a specific skill. These goals can be

achieved on a part-time basis or as a full-fledged venture. Examples include tutoring, babysitting, and lawn care. Use whatever special skill you may have, or learn one, to help gain capital to put toward your company start-up funds.

Recommended Activities

1. Determine your net worth and available assets.
2. Research your start-up expenses.
3. List your available sources of funding.
4. Set financial goals.
5. Prepare a budget.
6. Invest your money wisely.
7. Inquire into the rollover procedures of your previous employers' retirement accounts.
8. Review the available equity in your current home.
9. Research available federal or state grants or small business loan opportunities.

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Chapter 7

Company Start-Up Logistics

Building a company from the ground up is a lot like having a child. There will be moments of extreme joy and long sleepless nights.

Setting up the company and setting up the office are two totally different things. The former entails the formation of a virtual entity; the latter entails the structuring of a physical space in which that virtual entity will operate. This chapter focuses on setting up the company. Company start-up logistics can be tedious, time-consuming, and confusing. I break it up for you into seven simple steps. Be aware, however, that the specific examples provided in this chapter are applicable to the state of Florida. Nonetheless, the reader may find the information provided useful, and regardless if your company will operate out of Florida, or another state, it is highly advisable that you investigate the applicability, for yourself, before starting a company in Florida or any other state.

THE SEVEN STEPS TO OPENING YOUR OWN ENGINEERING FIRM:

1. COME UP WITH A GOOD NAME
2. DECIDE ON A LEGAL BUSINESS STRUCTURE
3. INCORPORATE YOUR BUSINESS
4. SET UP COMPANY POLICIES
5. APPLY FOR BOARD OR STATE CERTIFICATION AND LICENSES
6. APPLY FOR BUSINESS TAX RECEIPT
7. IMPLEMENT LEGAL, TAXATION, AND INSURANCE REQUIREMENTS

Come up with a Good and Unique Name

Your company name will become your brand, so it is important that it be recognizable and easy to remember. You should create your brand in a systematic way so that it can be incorporated into all aspects of

your marketing. You should create a logo that represents both your brand and the services your company offers. Before you decide on your company name, you need to make sure that no other company is currently operating with the same name or a similar name. If you select a name that is the same or similar to that of another existing company, you could be infringing on their brand, thereby exposing yourself to legal action. This is usually easy to determine. You simply need to visit the state's department of state website and perform a name search. In the state of Florida, this can be done by visiting the Florida Department of State, Division of Corporations at <http://www.sunbiz.org>. Just type in the name while in the "search by entity name" section exactly as you would like it to appear, and run the search. If you find another company with the same name or a similar name, the best thing to do is to choose another name and run the search again until you find no other company with the same or a similar name.

I incorporated my company years before I was ready to start my engineering practice. At the time, I chose a name without regard to logo or marketing purposes. When I was ready to start my engineering practice, I completed and submitted a change of name amendment to the original articles of incorporation and chose my company name (DLG Engineering) to be the initials of my last name (De La Guardia) followed by the word "Engineering" to clearly identify that it was my company and what my profession was. I did consider other catchy names and performed a name search on the Florida Department of State's website to make sure that I did not infringe on anyone else's brand. Some of those names were taken and some were not, but I ultimately decided on DLG Engineering. There was nothing complex about it.

I created my new company logo to reflect my new company name, DLG Engineering, Inc. (DLGE), as well as my field of specialty (building envelope consulting). I expressed this by using a representation of a city skyline incorporating some of Miami's signature high-rise buildings being viewed from the perspective of one of those high rises through the very building envelope product (glass curtain wall with aluminum mullions) that I design. I created the logo myself with the help of my talented staff and used social media and the Internet (e-mail campaign) to allow the public (friends and colleagues) an opportunity to help select my logo from several proposed options. I ended up using the logo, shown in Fig. 7-1 that received the most votes from the public.



Fig. 7-1. DLG Engineering, Inc., logo.

Decide on a Legal Business Structure

Once you have decided on a company name that does not infringe on another company's brand, it is time to decide what business structure best suits your needs. There are several different types of business structures from which to choose, each with its own advantages and disadvantages. You have to decide which structure is best for you. The following is a brief summary of some of the business structures and their pros and cons.

I chose the second of the listed options, a small business corporation (S Corporation), which offers the same protections as a regular or large corporation (C Corporation) but allows for pass-through taxation at the shareholder level and tax rate. I decided to represent the selection of establishing my company as a corporation by choosing and including the incorporation abbreviation, "Inc." behind my company name, whose

official legal name would be DLG Engineering, Inc. This abbreviation is required to identify and distinguish between legal business structures.

C Corporation

A C corporation is typically the business structure chosen by big businesses. It consists of an incorporator, shareholders, a board of directors, officers, and a registered agent. It is governed by bylaws, and ownership is determined by stocks. Corporations, in the eyes of the law, are totally separate entities and can conduct business like any individual. It can have a bank account, own properties, enter into contracts, purchase goods, donate money, and so forth. Corporations offer their shareholders, directors, and officers protection from personal liability, with the exception of willful misconduct or willful negligence. C corporations typically conduct their business through employees and must obtain an Employer Identification number (EIN), which is the equivalent of an individual's Social Security number. It must withhold income, Social Security, Medicare, and unemployment taxes from its employees and report and deposit it to the Internal Revenue Service. C corporations are subject to corporate taxation.

S Corporation

An S corporation is typically the business structure chosen by small businesses. It is commonly called a small business corporation and is similar to the C corporation in all respects, except that it is taxed at the individual shareholder level by a method known as pass-through taxation. All the shareholders receive a K-1 form from the corporation for the purposes of reporting their share of company gains or losses on their individual tax forms. Any gains or profits are taxed at the individual tax rate. The designation of small business corporation is solely for tax purposes, and application must be made to the Internal Revenue Service.

Partnership

A partnership is an association of two or more individuals or entities that agree to equally own and operate a for-profit business. It is governed by a written or oral partnership agreement. The gains or losses of the partnership are shared equally by the partners. Partnerships, even though they have to file tax forms, are not taxed. Instead, the taxation of the partnership is based on the individual partners' share of the

partnerships gains or losses, similar to an S corporation. Partners are personally and jointly liable for the obligations of the partnership. This business structure does not require the recordkeeping nor formality of a corporation. A partnership may or may not have to apply for an Employer Identification number (EIN). More information on who needs to apply for an EIN is provided in the section titled Apply for Employer Identification number (EIN).

Limited Liability Company (LLC)

A limited liability company is a hybrid between a corporation and a partnership. It can be formed by one or more individuals or entities. An LLC does not have to be a for-profit company. It is governed by an operating agreement and consists of members and member managers. It offers its members limited liability, similar to a corporation, and pass-through taxation, similar to a partnership. It can choose to hire employees, and if it does, or if it meets the other requirements listed in the section titled Apply for Employer Identification number (EIN), it would have to apply for an EIN.

Sole Proprietorship

A sole proprietorship is an individual who has decided to go into business by himself or herself. It is an unincorporated business owned and operated by one person without the personal liability protection or the structure of any of the other business entities. The individual is solely and completely liable for business debts and obligations. No formal organization or state registration is required. The individual must declare all of his or her business gains or losses on the individual tax form. Depending on the business chosen, there is no need to apply for an EIN. All income earned must be reported under the individual's personal tax return using his or her Social Security number.

Incorporate your Business

Once you decide on your legal business structure, you should proceed to implement all the necessary logistical procedures necessary to form your company. In this section, I provide the terminology, process, and filing

requirements for a corporation, one of the most typical of the legal company structures for engineering firms. When forming a corporation, you must file an application form for articles of incorporation. In the state of Florida, that form can be obtained by visiting the Florida Department of State, Division of Corporations at <http://www.sunbiz.org>. Following are some basic incorporation terminology that you need to understand to be able to properly fill out the form.

Incorporator

The incorporator is the individual who files the corporation papers with the state, the creator of the corporation. You will be required to disclose this information when you file the articles of incorporation.

Shareholders

The shareholders are the owners of the corporation, the individuals to whom the company stocks are assigned. Ownership percentage is determined by the number of shares of stocks an individual is assigned compared to the overall total number of stock that the company has issued. You are required to disclose the initial total number of shares of stocks issued by the corporation when you file the articles of incorporation. You also need to list all the individual shareholders, along with the numbers of shares that are assigned to each.

Board of Directors

The board of directors is the body entrusted by the shareholders with providing guidance and advice to the corporation's officers. It is in charge of setting company policy and approving changes. The board of directors is responsible for appointing or hiring a chair or chief executive officer who serves as a liaison between the board of directors and the officers. Members of the board of directors are allowed to be officers.

Officers

The officers are the individuals selected by the board of directors to run the corporation. You must select and disclose the initial officers of the corporation when you file the articles of incorporation. You need three officers to form a corporation, typically a president, treasurer, and

secretary. One individual can serve as more than one officer. Officers are allowed to be members of the board of directors.

Registered Agent

The registered agent is the individual or entity selected to be responsible for receiving all the legal notices of the corporation. Any individual or entity can serve as a registered agent, including an officer. You are required to disclose the name of the registered agent when you file the articles of incorporation.

Bylaws

Bylaws are the rules by which the corporation is governed. The bylaws is a very important document to have. The bylaws dictate how the company operates and identifies responsibilities of the officers. There are standard corporation bylaws that can be purchased online; you can modify them to suit your needs. Do not overlook or underestimate the importance of having clear bylaws. The legal system will look to this document to settle any legal dispute among shareholders, board members, or officers.

Stocks

Stocks are the method by which the ownership of a corporation is determined. The company must disclose the total number of shares of stock it has issued. Shares of stock can be issued in any quantity deemed appropriate by the incorporator. Shares of stock are assigned to individual shareholders by the incorporator. Ownership is determined by the percentage of shares that a particular shareholder controls in relation to the total number of shares issued by the company. It is possible for an individual to be sole shareholder or own 100% of the company stock.

When I incorporated my company, I completed and filed all the necessary initial paperwork myself. As I was the one who submitted and filed the paperwork, I was considered the incorporator.

From the time when I first incorporated my company to the time when I was ready to start my engineering practice, and even after that, there have been several other shareholders of the 100 initial shares of company stock (my ex-wife and an ex-business associate). I have since negotiated with and bought out all other shares of the company stock. I decided to change the company name from its original name

before setting up my engineering firm. I accomplished this by submitting an amendment to the articles of incorporation, which included a company name change and reassignment of all 100 shares of stock to myself, identifying me as the sole shareholder and owner of the company. To this day, I am sole owner and shareholder of the company.

I appointed myself as a member and chair of the board of directors under the authority vested in me as sole shareholder of the corporation. I also appointed my current wife, as well as my chief engineer, as additional members of the board of directors. The current board of directors includes my wife, my chief engineer and me.

I appointed myself as president and treasurer of the corporation, and I appointed my wife as secretary of the corporation to fill the three necessary positions of officers of the corporation. I also appointed my chief engineer as vice president. All appointments of the officers of the corporation are done under the authority vested in me as sole shareholder of the corporation.

I designated myself as the registered agent of the corporation, which identifies me as the individual responsible to receive all legal notices on behalf of the corporation.

I purchased a set of standard bylaws online, which I tailored to fit my company's needs. I have since added to or changed portions of the bylaws as needed.

As part of the purchase of the bylaws, included were copies of stock certificates. I chose the easy-to-distribute 100 initial shares of stock, of which, with the exception of my ex-wife, no one has ever owned more than 50%, or fifty shares of stock. I did this to protect my company from potential ownership disagreements and deadlock. By assigning no more than 49% of stocks to another individual, I retained the majority of stock and therefore the majority vote on all company affairs. This is something that cannot be easily accomplished under a partnership structure, which assumes that all partners are equally liable and equal owners of the company. This is another one of the benefits of selecting a corporation when choosing the legal business structure.

Set up Clear Company Policies

Company policies are the rules by which the office is run, and a copy should be provided to every employee in writing. Even a start-up company needs clear company policies in place. Clear company policies

dictate the acceptable comportment of the employees, detail acceptable company practices, specify the holiday and vacation pay structure, provide details regarding the retirement and health plans, and determine methods of dispute resolution. Having clear company policies in place is a way to avoid misunderstandings and protect the corporation and its employees from potential legal action. As with corporate bylaws, standard company policies can be found online and modified to suit your needs. More information on communicating company policies to your employees can be found in Chapter 9.

I tailored my original company policies from a sample copy of old company policies from my wife's firm and adjusted, added, and deleted information as necessary to suit my needs. Sample company policies can be found online.

Apply for Board or State Certification and Licenses

If you and your company require board certification, you and your company must meet the requirements for qualifications for board certification and then complete the application and registration process. Board certification for engineers is done by taking and passing the principles and practice exam and obtaining licensure and registration as a professional engineer. Board certification for companies offering engineering services is done by meeting the guidelines set by the state and completing the application process by applying for a certificate of authorization number. Both certifications require filing and paying yearly license fees. In the state of Florida, that is done through the Florida Department of Professional Engineers at <http://www.fbpe.org>.

I have yet to obtain my professional engineer certification and license (P.E.) in the state of Florida. I have instead relied on the license and certification of a Florida Registered P.E., who must be an officer of the company under Florida rules. That individual would be in responsible charge, according to the Florida Board of Professional Engineers, for all of the engineering of the company and serve as the company's qualifier under his or her individual P.E. license and certification. This step is done by completing and applying for a Certificate of Authorization number (CAN) from the board of engineers. Both state certifications (P.E. and CAN) account for the necessary professional engineer and engineering company certifications, respectively, and require individual periodic renewals.

Apply for Business Tax Receipt (Occupational License)

You, as a professional engineer, and your company are required to register in the city and county where the business is located. You must be granted a license to operate as a professional and as a company in both jurisdictions. Originally called an occupation license, it is now referred to as the local city or county business tax receipt. Information on starting and registering a company in the city of Miami can be found at the city of Miami website at <http://www.miamigov.com/home/startingabusiness.htm>. Information on registering your company in Miami-Dade County can be found on the Miami-Dade County website at <http://www.miamidade.gov/businessexpress/start-license.asp>.

My company was formed and registered in the city of South Miami under the jurisdiction of the County of Miami-Dade in the state of Florida. Therefore, my company qualifier/professional engineer (P.E.) as well as my engineering company, are required to apply for and receive a local business tax receipt for the city and the county in which it is based. That constitutes four separate and distinct local certifications (P.E. City, P.E. County, Engineering Company City, and Engineering Company County). These four certifications each require individual periodic renewals.

Implement Legal, Taxation, and Insurance Requirements

There are some aspects of starting and operating your own company that require professional advice. This section helps to expose some of those aspects, mostly from a company start-up perspective, and help raise your awareness of the many legal, taxation, and insurance requirements of owning and operating a business. There are some parts of this section that are relatively straightforward and can be adequately accomplished simply by reading the instructions on the appropriate forms. There are some parts, however, that you should not go about alone. If you are unsure about any one of the particular areas, it is advisable that you seek advice from a professional in your specific state regarding your particular circumstance. After reading this section, you should be better prepared and more knowledgeable in the areas of the legal, taxation, and insurance requirements of opening and operating your own company.

The key is to ask the right questions of the right professionals. I hope that this section can help expose some of those right questions.

With respect to legal issues, I have been lucky not to need any formal legal advice in the incorporation and company start-up process and beyond. My wife happens to be a partner at a large multinational law firm, and I can rely on her council from time to time. However, even having her and her associates as useful resources, I have managed, though diligent research and by asking a lot of questions, to handle all legal matters mostly on my own. These tasks include incorporating my business, setting up the business structure and bylaws, understanding state and federal company requirements, establishing company policies, preparing non-compete agreements, and settling disputes with former shareholders. Do not, however, underestimate the need for legal advice should you find yourself in need.

With respect to taxation issues, one of the biggest mistakes I have made as a business owner had nothing to do with not knowing the tax requirements but rather in underestimating the IRS response to not paying taxes when due. In my situation, I felt that I had no choice but to defer payment of IRS federal tax payments if I wanted to keep my company in operation. This occurred during the tail end of what is now considered the Great Recession (2011 through 2012), and banks simply were not lending money. I detail my experience in this area in Chapter 10 on the section on payroll management in the hope of passing on some lessons learned from my mistakes to the readers. Other than that issue, and it was a big issue, I have managed to not have any taxation or reporting issues before or since. I find that using the QuickBooks software, along with its payroll subscription, provides all the necessary tax reporting and filing resources you need if you know what you are doing. However, do not hesitate to consult with an accountant or a qualified tax consultant if you find yourself in need of advice.

With respect to insurance issues, my former boss at my first company managed never to purchase professional liability insurance while I was there. He simply did not want to pay the premium, and because it was not a legal requirement to purchase professional liability insurance, he did not. His reputation was such that companies would overlook the fact that he did not carry professional liability insurance, as they desperately needed his services and, at the time, his firm was pretty much the only game in town, with very little reliable competition. He even found ways around paying for workers compensation insurance by using an officer's exemption for regular employees. Today, there is much more competition and much stricter oversight requirements on workers

compensation insurance requirements, and this practice would be severely frowned upon. When I opened up my firm, because of cost considerations, I too opted not to secure professional liability insurance. However, as my company grew, I felt that professional liability insurance was necessary to attract and work with larger clients. It also made it easier for me to secure a company qualifier. Therefore, I believe that I had little choice in the matter. I have general liability and full workers compensation insurance as well. I have also been lucky not to have to file any insurance claims in the years since the company's founding, with the exception of a minor unemployment claim against the company, which increased our unemployment tax rate for a period of time.

New Hire Reporting

Some states require that you report the hiring of new employees in a timely manner. Florida is one of those states. The main reason for new hire reporting is to facilitate and expedite payments of child support to the children who need it when parents relocate and find new jobs. More information can be found at the Florida New Hire Reporting Center at <https://newhire.state.fl.us/fl-newhire/>.

Form I-9 Employment Eligibility Verification

All companies must verify the identity and the employment eligibility of all their employees, both citizens and noncitizens. This form is not required to be filed, but rather the information in it must be verified by the employer and kept on file and made available for inspection by authorized government officers for three years after hire date or one year after termination, whichever is later. The form can be obtained by visiting the Department of Homeland Security website, U.S. Citizenship and Immigration Services, at <http://www.uscis.gov/i-9>.

Proper Interview Questions

When conducting interviews for new employees, it is important to know that some questions are considered illegal to ask, which could lead to discrimination complaints. You need to stay away from questions pertaining to race, color, sex, religion, national origin, birthplace, age, disability, or marital status. More information can be found at <http://www.cbsnews.com/news/illegal-job-interview-questions>.

Noncompete, Confidentiality, and Nondisclosure Agreements

Once you have established your niche and specialty, it is important to protect it. **Noncompete agreements** help protect you or deter employees from taking the knowledge they have gained while working with you and starting a business of their own, or going to work for someone else in direct competition. It helps prevent them from soliciting your clients and from working in your specific field for a certain distance and period of time. When writing a non-compete agreement, you must be careful not to make it too restrictive, since the law will side with an employee's right to earn a living. **Confidentiality and nondisclosure agreements** are similar to one another and help protect you or deter employees from unauthorized sharing of proprietary information with the competition.

Patents, Trademarks, and Copyrights

If your trade is such that you are developing proprietary designs and or products, you should consult with an attorney who specializes in patent and trademark law. You want to make sure that you protect your designs from those who might want to steal or use your ideas for their own benefit.

Apply for Employer Identification Number (EIN)

As mentioned previously, an Employer Identification number is an entity's equivalent to an individual's Social Security number. It serves to identify the entity. Application for an Employer Identification number is done through IRS Form SS-4 (Application for Employer Identification Number) and can be found by visiting the Internal Revenue Service at <http://www.irs.gov> and searching under Forms and Pubs. More information on who needs to apply for an EIN can be found by visiting the Internal Revenue website at <http://www.irs.gov/Businesses/Small-Businesses-&Self-Employed/Do-You-Need-an-EIN>.

Apply for Small Business Status

Seeking status as a small business affords you pass-through taxation if you meet the requirements. In other words, any gains or losses of the business will be reported on your personal tax return, and any taxes

incurred on gains will be at your personal and not the corporate rate. To see if you meet the requirement for an S corporation, you can visit <http://www.irs.gov/Businesses/Small-Businesses-%26-Self-Employed/S-Corporations>. Application for small business corporation status is done through IRS Form 2553 (Election by a Small Business Corporation) and can be found by visiting the Internal Revenue Service at <http://www.irs.gov> and searching under Forms and Pubs.

Federal Taxes

Federal taxes include income, Social Security, Medicare, and unemployment tax and are to be withheld by the employer from employee's paychecks at the time payroll is issued. Additional information on federal taxes is provided in Chapter 10 in the section on payroll management.

State Taxes

Check with your particular state to identify tax liabilities. The state of Florida does not impose employee income taxes on its residents. If you plan on opening your business in a state that does impose employee income tax on its residents, you are advised to consult a professional in your area. The state of Florida does impose corporate income and unemployment taxes. S corporations are exempt from filing corporate income tax unless federal income tax is owed. More information on state taxes is provided in Chapter 10 in the section on payroll management.

County Taxes

Check with your particular county to identify tax liabilities. Miami-Dade County, through its Office of the Property Appraiser, imposes a tangible personal property tax as per the requirements of the state of Florida. A tangible personal property tax is a tax imposed on businesses for property used for commercial purposes that is not included in the assessed value of your business's real property and whose combined value exceeds \$25,000. More information on tangible personal property tax can be found at the Florida Department of Revenue website, <http://dor.myflorida.com/dor/property/tpp/FAQtpp.html>.

The county also requires filing and paying a professional and company business tax receipt, as mentioned and described in Step 6.

City Taxes

Check with your particular city to identify tax liabilities. The city of Miami requires filing and paying a professional and company business tax receipt, as mentioned and described in Step 6.

State Corporation Fees

Check with your particular state to identify applicable corporate fees and filing requirements. The state of Florida requires filing and paying corporate renewal fees via an annual report. More information can be found at the Florida Department of State website at https://efile.sunbiz.org/sbs_ar_instr.html.

Workers Compensation Insurance

Check with your particular state to identify workers compensation insurance requirements. The state of Florida requires its employers in the construction industry and those in the nonconstruction industries with four or more employees to offer workers compensation insurance. Officers of corporations in nonconstruction industries can exempt themselves from workers compensation coverage. Workers compensation law requires proper notice and display of coverage and signage in a prominent location in the office. More information can be found at the Florida Department of Financial Services, Division of Workers Compensation website at <http://www.myfloridacfo.com/wc/index.htm>.

General and Professional Liability Insurance

As an engineer, you are not obliged or required to obtain general or professional liability insurance, but it may be required by certain clients or when doing work for the government. Liability insurance may be one of the biggest expenses of owning an engineering firm, but it could prove worth the cost in the event that something goes wrong. General liability (commercial general business liability) insurance protects the company assets and pays the medical obligations if someone should get hurt on your property or if there are damages or injuries caused by you or your employees. Professional liability (errors and omissions) insurance protects an individual or company that offers professional advice or service from negligence claims by a client.

Recommended Activities

1. Decide on your company name and make sure you do not infringe on someone else's name rights.
2. Decide on your preferred legal business structure.
3. Incorporate in the particular state where you will be doing business.
4. Set up clear office policies.
5. Get certified by your state's professional certification agency, if required.
6. Obtain your local business tax license in the city and county where your business will be located.
7. Obtain the required insurance coverage.
8. Register with the Internal Revenue Service to obtain an Employer Identification number.
9. Register and set yourself up to withhold and deposit employee state and federal taxes.
10. Protect your company by providing noncompete and nondisclosure agreements and patents or copyrights if applicable.

Chapter 8

Office Start-Up Logistics

You may spend up to one third of all your weekday hours at the office. Make it a dynamic and exciting experience.

Once your company has been properly set up, the next step is to set up the office. I'm not referring to the physical office space (equipment, furniture, and layout) but how the office functions. Learning to setup and run a good and efficient office is essential to run a good business. There are many critical steps involved in this process; most involve establishing procedures for the proper functioning of an engineering office based on the services it offers. This chapter focuses mainly on the logistical aspects of setting up an office to function efficiently.

Choosing a Physical Office Space

If the type of engineering company you plan on starting is conducive to working from home or if you will be the only employee of your company at the start, you should explore the cost savings and many tax benefits of having a home office. Not only can you save money by not having to pay rent for an office space, but also some of the expenses incurred while operating your business from home, such as utilities and home repairs, can be tax deductible to the extent they are used for the business. More information on declaring home office expenses can be found on the Internal Revenue Service's website at <http://www.irs.gov/Businesses/Small-Businesses-%26-Self-Employed/Home-Office-Deduction>. You can even have your company pay yourself rent as owner of the house, under a lease agreement, and consider the rent payments as a company expense, which could help at tax time. Before choosing to start a home office, you should make sure to inquire with your local municipality or city with respect to the zoning requirements

and possible restrictions regarding having a home office in your neighborhood.

If you do plan on renting office space, you have to consider size, location, and cost. Regardless of which option you choose, you have to consider most, if not all, of the office start-up expenses listed in Chapter 6, step 2, especially office equipment and furniture.

I first started working from home when it was only me and my first business associate. The company saved on rent and utilities and avoided any hassles of dealing with a landlord. I purchased and built most of my office furniture from IKEA, which proved to be a huge cost savings, and it wasn't difficult to build. I purchased several computers from Best Buy, and with that, I had the makings of my first office.

I had all intentions of setting up a lease agreement between myself and my company so that I could receive rent from my company for the use of my home as an office. Unfortunately, I did not declare the rent in the years they were due, since I figured that the company really did not make enough money to pay me for rent. A few years later, in discussions with my accountant, I learned that what I should have done was write the lease agreement and write myself the rent checks from the company account, but just not cash the checks until the company could afford to pay. This is another mistake I made that I can pass along to you, the reader, should you find yourself in a similar situation. By paying yourself rent, you create additional company expenses that can be used to offset any profits made at the end of the year and reduce your corporate tax liability. Conversely, if the company made no profit but instead had losses, the rent can increase the company losses, thereby potentially increasing your personal tax refund if your firm is set up as an S corporation with pass-through taxation. Discuss your options with your accountant about the proper way to go about declaring a home office and charging your company rent for the use of your home.

Eventually, my company grew too large for a home office, and after some heavy prodding from my wife, who had seen almost 50% of our living space converted to work space, I decided to rent office space. Renting office space can include paying advanced rent, which include the first and last month of the year, and a security deposit, as well as annual common area maintenance (CAM) payments.

Establishing Business Accounts

When opening your own firm, there are numerous business accounts that you must open. These accounts include bank accounts, credit and charge cards (e.g., for gas and office supplies), utility accounts (e.g., for phone, Internet, electricity, and water), and vendor accounts.

The first step is to open a **corporate bank account**. Requirements for opening a corporate bank account include a company resolution, embossed or stamped, with the corporation seal (which can be obtained when purchasing the company bylaws and stock certificates online) and signed by a corporate officer indicating that the individual opening the account is authorized to open and manage the bank account on behalf of the company. You can find copies or samples of corporate resolutions within the bylaws that you purchase online.

The next step is to open basic **credit and charge card accounts** to begin establishing a credit history for your company. You will more than likely have to cosign for your company, because the credit card companies typically require three years of proof of revenue and good credit standing before issuing cards to businesses.

The next step is to establish your **office utility accounts**. Again, you may have to cosign for your company to establish an account. Accounts include electricity, water and sewer, garbage disposal, Internet, cable, and telephone. Most office landlords include electricity, water and sewer, and garbage disposal in their CAM fees, leaving you with only Internet, cable, and telephone accounts as the basic company accounts needed.

The last of the basic office accounts to set up for a start-up company are **vendor accounts**. These can include needed services, such as potable water, delivery, and printing.

After I incorporated my company and after I opened a corporate bank account, I applied and cosigned for three company charge cards (Home Depot, Office Depot, and a gas card). This arrangement allowed my company to start developing a credit history. I would make small personal purchases and paid all my accounts in a timely manner. As far as utilities, I started off in a home office; therefore, I saved on utilities the first few years. Currently, I pay most of my utilities as part of the CAM fees charged by my landlord. The first vendor accounts I set up were with a printing company to plot all of our drawings and with local and national delivery services.

Establishing a Budget

A well-conceived and detailed budget is one of the most important items you will need to prepare before starting your own company. It is important to have a good guesstimate of what your projected income will be, but it is more important and critical to know what your projected and anticipated expenses will be. To properly understand this concept, you must break down and detail all facets of your business operation into manageable categories. There are always items overlooked when creating budgets; therefore, it is important to make adjustments or generously account for miscellaneous expenses along the way. Expenses listed in Chapter 6, Step 2 can be beneficial in determining your likely expenses for use in establishing your initial budget. Because it is difficult to establish a projected income as a start-up company, you should first focus on determining your anticipated absolute minimum monthly company expenses. Yearly or quarterly fees should not be overlooked but should be broken down into monthly increments.

You can determine your basic expense categories by using templates within the QuickBooks accounting software. You will inevitably need to add company-specific expenses. Again, you can refer to Chapter 6, Step 2 for a list of potential expenses that you can then categorize and incorporate into with the use of the QuickBooks templates. Examples of expense categories useful in determining an initial budget for a start-up company include the following: advertising; automobile expenses (e.g., gas, tolls, and parking), codes and standards, computers (hardware and software), 1099 contractors, copies and printer, equipment rental, insurance (professional liability, general liability, and workers compensation), meals and entertainment, miscellaneous items, office supplies, payroll, postage and delivery, rent, telephone, Internet, travel expenses, and utilities (electricity, water and sewer, cable, and garbage disposal).

I was always meticulous in setting up budgets, both personal and business. The above categories come directly from my company profit and loss statement. I have left some out that may not be applicable to a start-up company, but in my opinion, all of these categories will need to be accounted for in your budget. Some categories have subcategories that may or may not apply to all circumstances. Use this list as a guide, and use your own judgment, as some businesses have different expenses and expense categories.

Setting Up an Employee Benefits Package

In this section, we focus on those employee benefits that are not required by law, for small companies, but that go a long way in attracting and retaining good employees for your company and office. We do not discuss the normal benefits that come with payroll, such as paid time off, overtime, and holiday and sick pay, which are outlined in Chapter 10 on the section of payroll management. The benefit packages that we discuss, which I feel are important, are company-sponsored retirement plans and health plans.

Creating a company-sponsored retirement plan is optional and not required by law. However, it is not only a great benefit to offer your employees as an incentive for them to stay with your firm longer, but it is also a great way to save money on taxes and expedite the growth of your and your employees' retirement accounts. The money contributed by you or by your employees into your company retirement plan in the form of employee tax-deferred salary contribution is taken directly from the paychecks before income tax withholding. The portion not contributed to your retirement account is subject to full income taxes and payable after each pay period. The savings on taxes, from the portion of deferred income instead of being withheld and submitted to the government each pay period, along with the interest earned on that portion throughout the years, are not taxed until you retire and are taxable only when you request distribution, which will greatly increase your accounts' growth potential.

Another form of contribution, the company discretionary contribution, or profit sharing, is also a great benefit. Profit sharing involves company contributions made, at the company's discretion, into the employee retirement plan for the benefit of the employees. The discretionary amount is distributed among all eligible employees in proportion to their yearly salary and subject to IRS limits and regulations. This form of contribution does not automatically belong to your employee, but instead, employees become vested based on years of service to the company, thereby encouraging your employees to remain with your firm longer. The employee is vested the money contributed by the company for their benefit at yearly increments, depending on the amount of time your employee stays with your company. Typically, employees are vested such contributions 20% per year and become fully vested after five years. You can also structure the plan to allow loans of the employees vested portion to yourself and your employees as an

added benefit. For more information about the benefits of a 401(k) plan, refer back to Chapter 4, the section on investing in your 401(k), and Chapter 6, the section on borrowing from your 401(k).

Creating a company-sponsored health plan is optional and not required by law, for small businesses, subject to the federal Affordable Care Act. However, this benefit is extremely helpful in attracting and retaining employees, more so than retirement plans. Typically, a small start-up is not able to offer employee health coverage, and you are likely to have to wait until the revenue can justify the expense. But once the revenue can justify the expense, it is a great benefit to have and will make your firm more attractive and competitive when recruiting good employees. The health care laws are changing radically at the time of writing this book, so it is almost impossible to provide clear guidance as to what the law may or may not require when everything shakes out. There are currently ongoing discussions about offering federal incentives for small companies that provide health coverage to their employees, including potential tax credits. You need to research and explore the new health care laws in effect when you decide to open your own firm for help in deciding whether to offer your employees health coverage.

When I first opened my firm, I immediately set up a qualified company-sponsored retirement plan. My reasoning and initial intent were based more on creating a vehicle to accept a qualified rollover of my vested balance from my two previous employer-sponsored retirement accounts than on providing employee benefits. When I created my company retirement account, I included a provision, as the plan's administrator, to allow loans in any amount and for any reason, subject to the vested amount available and IRS laws and regulations. This method allowed me, once the funds had been rolled over into my company plan, to take out a loan to help fund my start-up expenses and meet my company payroll and expense liabilities. This strategy is mentioned in Chapter 6 in the section on borrowing from your 401(k) for company start-up funding. The ultimate result, however, was to provide the employees with all the benefits of salary-deferred and employer profit sharing contributions to plan for retirement.

I decided to establish a company-sponsored health plan after being turned down by several key individuals I was recruiting and losing several key employees throughout the years because of lack of health care coverage. I felt that in the long run it is not feasible to grow and attract the best possible team without offering it. When the economy was tough, it was easier to attract good employees, because other firms were laying people off, and it was basically an employer's market. The better

the economy became, the more the bigger firms started hiring again, and their offers included health coverage. I lost several good employees, young as well as seasoned employees, whom I had spent years training, to offers from bigger firms that I could not match. Without at the very least offering health coverage, there was no way for me to compete to keep my employees from leaving to bigger, better paying firms. That is why, to stay competitive, I have established creative benefit packages, including flexible and employee-friendly office policies.

Generating Proposals for Services

A good project proposal for services should spell out a specific scope of services and the project terms and conditions. It should also spell out services that are excluded and services not included but offered as additional services. You should write the specific scope of services out in itemized, action-specific tasks that will allow you to easily estimate the amount of time required to complete. Offer lump-sum fees based on internal estimated times for projects that can be performed easily and quickly. Because of your expertise and efforts to streamline, this is where you can increase profit margin. Offer an hourly rate for projects not easily estimated, but provide estimated times next to each line item with the disclaimer that the fee is an estimate but will be billed on actual time spent and could be higher or lower. In these cases, you can add a not-to-exceed amount to a level 20% above what you estimate the project to take. For competitive projects or projects that will raise your company's exposure, you can estimate fees based on your overhead using a multiplier based on your internal cost. Try to avoid placing a completion date on your proposals unless asked, and when asked, never write down a date if you think it cannot be achieved. A good proposal should include the following separate sections:

1. A brief description of the project.
2. Brief general comments about the project pertaining to potential areas of concern in a numbered list format.
3. A detailed description of the basic services offered in a numbered list format, including time estimate and applicable fee rate, followed by a brief paragraph providing the total estimated fee based on each line item, time estimate, and rate.

4. Identification of items not part of the fee proposal that would be considered additional services in a numbered list format, followed by an itemized hourly rate structure that would be applicable for the additional service fees and basic service fees that were used to provide the total estimated fee discussed in item 3 of this section.
5. Proposal terms and conditions. Included in the terms and conditions should be the following, at minimum:
 - a. The number of sets of drawings or specifications, or the end product, which are included in your fee.
 - b. Payment terms, including when the fee is due and if payment is required before release of drawings and specifications, or the end product.
 - c. A statement indicating when the project is considered complete, which would trigger additional service fees for any work requested after that point.
 - d. A statement that work will be assigned upon receipt of retainer, if applicable.
 - e. Any other specific term agreed to by you and the client.
6. A closing paragraph outlining action items, retainer requests, and payment terms.

More information related to proposals for services can be found in Chapter 10 in the sections on project management. Additional information that could be useful in preparing proposals for services can be found in Chapter 10 in the section on profit management.

In my opinion, proposal writing is an art form, and you must learn to master it to avoid potential project and client issues. A well-written proposal should also provide a detailed outline to help in project estimation. I learned to write proposals early on and found that the most effective ones were easy on the eyes and succinct. I tend to use different sections and bulleted or numbered points rather than lengthy paragraphs. This outline comes directly from proposal formats that I use to this day.

Handling Collections

Collections issues can turn into cash flow issues when clients do not pay on time, and project flow slows down. This can be the most challenging

and difficult aspect of owning your own firm. There are techniques to make collections easier for you and your clients that should be made clear from the beginning and included in the proposal for services. Ask for a retainer before work commences, specify the date to commence work to start from the date of receipt of retainer, and require that the balance due be submitted before release of completed work. Some clients, however, may not agree to your policies, and your ability to be flexible and tactful may be the only way to secure the job and client. You must learn to categorize your clients and justify placing them in a specific category. Learn which of your clients pay on time, which of your clients are consistently late, which are repeat clients, and which are “one and done.” Learn which of your clients haggle on fees, which of your clients try to add extra services, and which are struggling financially. For those clients struggling financially and not just paying late to take advantage of their cash flow, you should set up agreeable payment terms. For those clients who always pay on time, you can waive or modify your policies as a reward and offer more flexible terms. For those clients that are repeat clients and for high-profile clients, you may have to be even more flexible. Here’s a note of caution, however; you should always be aware of the cash flow situation and make adjustments accordingly before clients sign the project proposal for services. Do not get caught in a situation where you need cash flow but your outstanding proposals do not contain clauses that call for retainers, progress payments, or balance payable before release.

On the basis of my discussions with other entrepreneurs, this is an area of constant and ongoing struggle for most firms, big or small. I strive to do a good job of tailoring proposals and payment terms, as well as invoicing, to always keep the cash flow sufficient to cover expenses. The issues with collections arise when clients do not pay on time or per the agreed-upon terms or when projects are put on hold or timeframes run long. On occasion, I have had to be stern with clients and risk alienating them because of the fact that they were not paying as agreed. I always keep the discussion and communications regarding collections issues professional and remind them about the agreed-upon payment terms. I appeal to their sense of compassion by explaining that we are a small firm and their delay in payment is causing hardship and preventing us from meeting our company liabilities, including payroll. This appeal typically persuades the client to respond with payment. I suppose I would have fewer collection issues if I followed the strict letter of the proposals with all of my clients and withheld delivery of

plans or put their work on hold when payment terms were not met. The unfortunate fact is, and I learned this from experience working at my first job, that if you do that, and there are other available options for your clients, you will risk losing your clients altogether. I have struggled with finding the right tack to take with each individual client whenever faced with cash flow issues based on a slow collection process, and I suspect that this will be an ongoing struggle until the economy fully, or truly, recovers.

Hiring Employees

The employees you hire for a start-up company should be able to be productive in more than one area and should be knowledgeable about the work performed by their immediate supervisors. No one individual should be critical to the operation of the company. Creating and maintaining a clear succession plan is imperative for the situation when a key employee leaves your company. You must have a clear training plan in place for those employees subordinate to the key employees to prepare for the eventuality of losing a key employee, because it is not a matter of if, but when, it will happen. When hiring employees, look for those who are self-reliant and self-motivated. Train them to work without needing your constant supervision. This training will not only allow them to grow faster into your area of specialty, this will also free you up as the owner to perform the most important task of all: finding work and promoting the company. The project managers should be able to do the basic engineering; engineers should be able to draft; drafters should be able to gather the required project information from the client; and office clerks should be hired and groomed to move up the ranks if and when needed. More information regarding handling office employees can be found in Chapter 10 in the section on employee management.

I have been lucky to find very good employees throughout the years. I have also had to deal with losing those employees after years of training to bigger companies. In addition to the good employees, I have had to deal with bad employees, those who take advantage of the relaxed office policies, are not self-motivating, or who do not get along with their coworkers. I have no qualms about firing an employee who is not motivated, but I never make moves based on them making mistakes alone. We all make mistakes, and mistakes can make us stronger if we

learn from them and do not repeat them. That is the key. I always tell new hires not to be afraid of making mistakes and not to be afraid of asking questions or not initially knowing what they are doing. I tell them that if they make mistakes, I will look for growth and development. I have found that the key is to find young, ambitious, self-motivating employees who are willing to sacrifice on salary and benefits for the opportunity to learn a unique specialty. I propose to each new employee whom I hire a unique learning experience and potential for constant growth not available in the mainstream or large engineering firms based on the advantages of working for a small niche firm, as detailed in Chapter 4. I offer them the opportunity to learn all aspects of a unique specialty of engineering to which few people or engineers are ever exposed. This opportunity includes but is not limited to enhanced experience in drafting, engineering, project management, client relations, field inspections, entrepreneurship, and career mentoring. But most importantly, I offer them a relaxed and flexible, family-oriented working environment.

Pay Yourself Last

It is important for the morale and office environment that your employees know how valuable they are to the success of the company. It is also important if you are asking your employees to make sacrifices that you demonstrate leadership by being the one who sacrifices the most, or at the very least, sacrifices with them.

When my company first started experiencing financial difficulty, during the Great Recession, I had to streamline the staff, cut down on raises, reduce bonuses, and withhold employee paychecks for a time. This set of solutions became necessary to keep the company going during the construction and real estate collapse. During this time, I made it a point to show my staff that I was willing to sacrifice with them. I reduced my personal expenses so that I could reduce my pay to the bare minimum needed to cover those expenses. I covered payroll, many times, out of my own pocket as a shareholder loan to the company to avoid having to let go of more staff. In the long run, these adjustments not only allowed us to survive the Great Recession but also to come out of it stronger. To this day, I withhold my personal check and make sure all of my employees are paid first before I cash my paycheck.

Recommended Activities

1. Open the basic office business accounts (e.g., banking, credit, utilities, and vendors).
2. Consider the tax advantages of working from a home office.
3. Set up a working office budget.
4. Set up an affordable company retirement account and roll over your retirement savings from your previous workplace.
5. Create standardized company project proposal templates.
6. Begin the interview and hiring process.

Chapter 9

Marketing and Communications

You can be the smartest engineer in the room, but if you don't know how to market yourself or communicate effectively, no one will ever know it.

It is important to understand that marketing and communications may mean the difference between a successful firm and one that struggles. Learning how to promote yourself and your company effectively and eloquently should be your number one priority. These are the skills that separate mediocre firms from good firms and good firms from great firms. The ability to convince and persuade a potential client or investor could make all the difference. These skills are even more important during tough economic times or in areas of high competition. Engineers are typically so focused on the highly technical aspects of their careers that they neglect the soft social skills needed to be successful.

Developing these skills takes time and practice. It also takes a lot of work. You can learn, practice, and hone these skills by being active in and networking at your professional organizations and alumni association events. There is no such thing as an unfruitful marketing endeavor, provided you do it right. Consider every networking event or organization that you attend as an orchard. You start out with nothing (you don't know anybody); you then cultivate the soil (you meet people), plant the seeds (explain to them what you do), and water them (set up a future meeting) until they grow (discuss how you can help) and bear fruit (secure that first project). Of course, it is not as easy as that, and there are no guarantees that you will secure work at those networking events, but one thing is guaranteed: if you don't try it, you *will not* procure work at those networking events. For a refresher on networking, refer to sections in Chapter 2 (Networking as a Student) and Chapter 4 (Networking as a Professional).

Marketing

Creating Credentials and Self Promotion

Being a good engineer is not enough to be successful; you also have to prove your worth and value. This is done by creating credentials outside of the normal expected credentials for your field of practice. There are two types of credentials for engineers, those that we are expected to obtain or earn (degrees and licenses) and those that we can choose to create for ourselves and earn (e.g., certifications, graduate degrees, and those for presenters, authors, lecturers, expert witnesses, and consultants). A good engineer can stop at what he or she is expected to earn, degrees and licenses, but a good entrepreneur chooses to go beyond that and create and earn his or her own credentials. Creating your credentials can be accomplished in many ways, such as researching and writing articles in your specific discipline; writing and submitting a technical paper for presentation at your engineering association or society's yearly conference; or writing or coauthoring a book about your specific field. There is no better way of positive self-promotion than actively seeking to improve or raise awareness of your profession by sharing your knowledge, by becoming published, by having speaking engagements, or by testifying about your field or discipline. You can separate yourself from your competition and be instantly accepted as trustworthy and an expert by most because of the credential you create and earn for yourself, above and beyond that which is expected of you.

This idea of creating credentials was foreign to me as a young engineer, and far outside my means, I thought. Who would have thought that I would have written numerous articles for magazines, lectured to university students, presented technical papers at several professional conferences, presented live webinars to my peers, and written a book? Not me, not in a million years! But here I am, and those are the credentials that I created and earned for myself. There is no magic to it; anyone can do it with the right preparation and determination.

If you are good at what you do, you have plenty of information to share with society by means of industry publications. I was approached to contribute to my first magazine article by posting information about my work and company on LinkedIn and by creating and managing a professional networking group on the site (Hazard Mitigation of the Building Envelope). One of the editors of *US Glass Magazine* connected

with me and became interested in the work that I was doing. She first asked me to contribute to a story the magazine was working on. That later grew into writing an article of my own, and that has since turned into an ongoing relationship of contributing and writing articles for that and other magazines. For me, it was that simple.

If you are good at what you do, you have an obligation to share that knowledge with your peers by means of professional organizations. My first professional-level presentation was as a direct result of being a member of a professional organization (Florida Structural Engineers Association) and my peers wanting to understand better my specific field of engineering. The success of that presentation gave me the confidence to submit an abstract to a regional conference (ATC-SEI Advances in Hurricane Engineering Conference). In the process of joining another professional organization (Architectural Engineering Institute: Curtain Wall Committee), I was asked to prepare a paper for their regional conference, and then, on behalf of the curtain wall committee, I was asked to prepare and present a live webinar for the members of the American Society of Civil Engineers. For me, it was that simple.

If you are good at what you do, you should give back to those who are seeking knowledge and growth, especially our youth. My first instance of lecturing to university students, as I recounted in the preface of this book, was about engineering entrepreneurship. It was simply a presentation to university students about my experiences being an engineer and setting up my own firm. That presentation, along with the success of numerous others and some prodding from colleagues, led me to becoming an author. For me, it was that simple. It can be that simple for you as well, achieving these as well as other credentials, if you become good at what you do and you surround and associate yourself with the right people and organizations that can help you achieve the credentials you desire. My point is if you really want to accomplish the goal of obtaining a certain type of credential you need to seek out people and organizations that can help you achieve that goal.

Recognition

It is a rare case when someone or some organization seeks you out for recognition, especially as a start-up firm. Be careful of those that do, because there are many scams that play on your ego and claim to want to recognize you or your firm for your achievements, only to request a

donation or some form of payment after a lengthy sales pitch. You must instead actively seek out the established and reputable organizations and apply for recognition. You need to research and identify the organizations or individuals in your respective field or community that are responsible for offering beneficial recognition to local businesses, organizations such as your local city chamber of commerce, local and national professional organizations, industry publications, and local trade organizations. Those organizations typically recognize companies that are excelling in their respective fields and bestow awards. In most cases, you will need to be actively involved or have a presence within those organizations. Find out when they typically hold their call for nominations for awards and recognition, inquire as to their requirements for awards or nominations, network with their membership and leadership, and apply to be considered for recognition. Some of these organizations may require that you be a member, which could mean a yearly membership fee; some organizations may ask for an application fee; some may require that you be present at their awards banquet or dinner, all of which cost money, so you have to weigh the cost of joining and applying versus the potential publicity and recognition garnered. If you deem it worth your while and are truly interested in being active in that particular organization, you may consider your investment as a marketing expense. However, if you do not get involved and do not actively seek and apply to be recognized, the acclaim may never come.

I always look at engineering companies, as well as nonengineering companies, that are recognized by established organizations as leaders in their industries with huge admiration. I never dreamed that my small start-up firm would be among those recognized until I learned about the process. I had no idea how easy it was to gain that recognition, as well as how easy it was to wallow in obscurity, even while having the same accomplishments as or *better* accomplishments than those companies being recognized. Perhaps all of the accolades were well deserved, but I now realize that there is a method and process you must learn to be recognized.

My company was first recognized by the Greater Miami Chamber of Commerce in 2012 as one of the top 100 minority-owned businesses in South Florida. This feat was accomplished only because I went to hear about a happy hour sponsored by an organization (the Cuban American Bar Association) that my wife's firm (Holland & Knight) was a part of, in conjunction with the greater Miami Chamber of Commerce, which she was attending and to which she asked that I accompany her. I had no

idea that the event was geared as a networking event for those firms considering applying for recognition from the Greater Miami Chamber of Commerce until I started asking questions. To make a long story short, after the happy hour, I went online, downloaded an application, and applied, thinking that there was no way my firm would be selected. As it turned out, my firm was selected and recognized. It was our third year of existence. We had steadily increased revenue each of our three years in business (2009 through 2011) during tough economic times, had hired employees while other firms were laying employees off, and had worked on several large and recognizable projects, among numerous other accomplishments. The following year (2013), our revenue increased substantially from the year before, so we applied again and were once again selected and recognized as one of the top minority-owned businesses in South Florida.

Establishing a Marketing Strategy

In engineering, marketing is not only about getting the word out or sending out flyers and brochures. It is a unique field that does not lend itself to a typical form of mass marketing. It is more of a process of personal interactions and building relationships. It is about understanding your client base and their circle of consultants and advisors. You must target the right people with the right message, typically in person. Because engineers are not hired by the general public as a norm, you must understand your potential client hierarchy in your specific field of practice. Conversely, you should not ignore the general public as a whole, as it is quite often not what you know but who you know when it comes to opening doors to potential new clients.

Bankers, lawyers, and insurance company executives, as some examples, may be intimately involved in the very engineering projects you might be targeting, from their career perspective. If you develop a rapport with these individuals, it could open doors or lead to contacts for you to meet the right people. However, they should not be your primary focus or target, nor should the general public. The typical engineering hierarchy in my discipline of architectural engineering—you have to identify the hierarchy in your own field—from lowest to highest potential is subcontractor, general contractor, project engineer, project architect, developer, and owner. Engineers can be hired directly by any of these individuals, and your message needs to be specific to each group, because they all may have different perspectives on what a successful

project entails. Do not just target the people from that group who can hire you directly, but also target the people who are in a position to recommend your services to those who can ultimately hire you. As an example, on any particular project, the owner may be the one paying your bill, but it could be the architect, another engineer, the contractor, or the subcontractor who recommends you and your services to the owner. All of these people, as well as their assistants and subordinates, are instrumental and should be part of your target group when attempting to secure new projects. You should take all those individuals into account, and they should be treated as important on current and ongoing projects. One of the most successful forms of marketing is past performance, reliability, and dependability, which are relayed among the industry by word of mouth referrals from past clients. The best way to market yourself is to do good work and be honest, dependable, and reasonable. You should take into account all of the players involved in your particular field of discipline through personal interaction. You never know when you might run into them again in the future.

I have been blessed to secure most of my work, even before opening my own firm, through word of mouth referrals from past clients who were satisfied with my level of service and work. I always treat everyone involved in a project I work on as a valuable member of the team, and they usually remember that. No matter if the person is a field welder or project superintendent, I always take the time to address his or her questions and concerns or even curiosity regarding our designs. I never dismiss alternate forms of construction that may have been recommended by subcontractors, and if those methods are rejected, I make it a point to explain why. As an owner, I always personally mediate disagreements between my staff and the contractors, even if the end result is the same. Taking this approach often makes the contractors feel that their concerns are being addressed and taken into consideration. This method may not always lead to a happy outcome, from the contractors' perspective, but it certainly leads to respect and appreciation in the long run.

When it comes to marketing and promoting my company, my preferred method is face to face. There is no substitute for the experience, confidence, and knowledge that can be demonstrated by speaking to a potential client directly about his or her specific project and how you can help to achieve his or her goals. Working in my particular industry for so long has enabled me to identify potential project problems within minutes of reviewing the plans and specifications. I often relay this information, at no cost, to the clients at our initial meetings and offer a

potential solution before even preparing a formal proposal for services. This step gives the client a sense of security and confidence that you know what you are doing and are the best person for the job. On occasion, I have gone too far in pointing out problems and identifying potential solutions before being retained for the project, but I consider that a lesson learned and have always felt a sense of satisfaction in those cases, knowing that I made an impression and was able to help. My feeling is that if those same individuals run into problems on future projects, they will remember my expertise and willingness to help. The key is to offer sufficient information to make them comfortable with you and your company but not provide them with too much information so that they feel they can do it themselves. I have since learned to find a happy medium between not providing information and providing too much information when trying to secure a job. Face-to-face consultation is my number one method of marketing my firm.

Professional Engineering Association Networking

A great way to make your colleagues aware of who you are and what your company can offer is to get involved and actively participate in professional associations related to your field. Do not simply sign up and pay the required dues, but get involved. Being on the executive committee or board of directors, or chairing an event or committee is a great way to really get your colleagues to recognize you, and it will make networking within the organization much easier. As with any organization, once you take on a leadership role, people look at you and your level of success with more admiration, and they listen to what you have to say with a keener sense of respect. Being actively involved in professional associations has three important benefits. First, you are giving back to your profession and community through the organizational activities. Second, you are developing a tight-knit networking and support group by teaching and/or learning from the organization's members. And third, you are promoting yourself and your company to potential collaborators and clients. Being actively involved in professional organizations should not be underestimated when your goal is to be an entrepreneur and own your own firm.

As I mentioned in Chapter 4 in the section on networking as a professional, for the first thirteen years of my professional career, I did not network nearly as much as I should have, and I did not join any professional engineering associations or groups. That, however, changed

while I was at my second job. As part of my employment benefits, I became a member of the Florida Structural Engineers Association. The group got together on a monthly basis and sponsored continuing education seminars over dinner. It was a great way to meet other engineers and discuss their projects and fields of practice.

When I opened my own firm in 2009, I provided all my employees with the same benefit of membership in this group. My association with this group led to one of my first professional presentations in April 2010 when I was asked to prepare a presentation for continuing education credits regarding my field of practice. I gave a presentation on hazard mitigation of the building envelope. The attendance for my presentation ended up being one of the largest of the year for the group and was very well received. The success of this presentation provided me with the confidence to prepare and share many more presentations and technical papers. Involvement with this group also led directly to working with other members on future projects.

Subsequently, another instrumental membership in a professional organization would develop. I was asked by a colleague to consider applying for membership in the Architectural Engineering Institutes' (AEI) Curtain Wall Committee. I was already a member of the American Society of Civil Engineers (ASCE), the parent organization of the AEI, but it was only after I was accepted into the Curtain Wall Systems Committee that I became actively involved with ASCE. As part of and on behalf of the AEI Curtain Wall Systems Committee, we were encouraged to submit ideas to develop live webinars for the memberships' continuing education programs. As an example of how being actively involved in a professional organization can be, currently, I am serving as vice-chair of the AEI Curtain Wall Systems Committee and have developed three ninety-minute live webinars for ASCE. ASCE pays their instructors well for presenting webinars, and the good webinars are presented numerous times with little to no work for subsequent presentations after the initial webinar is created. In addition to preparing and benefiting financially from live webinar presentations for ASCE, my association with AEI and ASCE led to the publishing of this book.

Professional Nonengineering Association Networking

Professional nonengineering associations can be valuable parts of your networking strategy. You need to mingle with and associate with those who do business with your potential clients. Every project needs funding

and legal advice and has insurance needs, for example. Many of these organizations sponsor events with professional engineering groups that could be a great source of face-to-face networking and can help get the word out about what you do. You may not acquire work directly from a banker, lawyer, or insurance executive, but you certainly may need their help along the way for your company. They certainly provide work to potential clients of yours in the same industry or in an associated industry. You should not hesitate to tap into this resource.

When I first opened my company, I joined the Latin Builders Association (LBA). To be honest, I was a little taken aback at first by how few engineers and architects actively attended their networking events. These were the individuals I could target to try to get work. Instead, I noticed a large proportion of bankers and insurance executives, as well as building subcontractors unrelated to my specific field. Although I did not directly get any work from being a member of the LBA at first, I met people who would be instrumental in my career as an entrepreneur. In fact, I first met the dean of my university's college of engineering program at my very first networking event. It had been years since I graduated, and the college of engineering had gone through several deans. I was considering joining the LBA and was invited to attend a networking event between the LBA and another group to be held on the grounds of the school of architecture at the University of Miami campus. I was introduced to him by a board member of the organization. That introduction led to a significant part of my professional career. I then realized how valuable networking outside of your specific discipline could be, and, eventually, I did secure work from networking with unrelated disciplines. This connection occurred by being introduced to those who needed my services by those I had met who did not need my services. Coincidentally, it was as a new member of the LBA at another networking event at the University of Miami campus; this time, it was on the grounds of the school of business. The point that I am trying to make is that no good opportunity to meet professionals in a networking environment is a waste of time, and you never know what beneficial result can come from a chance meeting at one of those events.

College Alumni Association Networking

There is no better place to market and promote yourself than the place where it all started. College alumni associations typically have established networks and resources that you can use not only to promote

yourself but also to give back to the college and its students. When approaching your alma mater, it is important that you do it in such a manner that the relationship is beneficial to both parties.

One of the most rewarding experiences of my professional career was becoming involved in and serving as president of the University of Miami's College of Engineering Alumni Association (UM CoEAA). At first, the intent was to network with engineering alumni of my alma mater to try to secure and collaborate on work for my company. That led to much more, which I detail in Chapter 11 (Intangibles of Entrepreneurship) in the section on philanthropy. I let that section speak for itself.

I did, however, manage as a bonus to make valuable connections during my time there that led to collaboration and work for my company. There is nothing like the feeling of family when networking and getting to know fellow alumni. In most cases, that fact alone will open the door to opportunities that you should definitely take advantage of.

Online Networking

The professional networking site LinkedIn is a useful resource that all entrepreneurs should take full advantage of. However, as in whatever endeavor you choose, the amount of dedication and quality of time you put into your activity is proportional to the benefits derived. Make sure to use LinkedIn strictly for professional means, inviting to connect only people who may be beneficial to you and your company, directly or indirectly. Resist inviting friends or individuals who may serve as a distraction or prove unprofessional. LinkedIn allows you to easily access potential clients, collaborators, and consultants. Particular attention should be focused on marketing yourself and your company. This promotion can be done by inviting members to a specific group that you create and maintain, tailored to the discipline you practice in; creating polls to better understand your industry or gauge your potential clients' needs; uploading your biography and company brochures; commenting on discussions on other related groups; attaching links to your company website; and creating links to your published articles and publications.

My experience with LinkedIn has been invaluable to me and my company. I started by creating as complete a profile as possible. I then joined and participated in LinkedIn groups related to my industry. Eventually, I decided to create a private group of my own and invite only those individuals and professionals who sought to actively engage

in and network with other like-minded professionals. That group has led to interesting industry-related discussions, and even collaboration among the members.

The biggest benefit of LinkedIn has been the beneficial connections developed throughout the years. It allowed me to connect with others or have others connect with me, which has resulted in several beneficial relationships that otherwise would not have happened. My first published magazine article was a result of a LinkedIn connection. I got to know online and then met in person, and have since developed a great rapport with the author of the foreword for this book, a published book author himself. I have consulted on several projects as a result of information listed on my public profile. In short, I believe that LinkedIn is a great resource for aspiring entrepreneurs and should be used to its fullest potential.

Websites

Today it is easy to set up a functional and attractive website relatively quickly and inexpensively. An effective website should have information on your location, scope of services, projects, staff, contact information, and helpful resources. Engineering websites do not necessarily draw in the same kind of traffic of potential clients as other professions. However, they are important and useful tools in showing potential clients with whom you have had discussions more about your company, your expertise, past projects, and staff that may otherwise not be mentioned at an initial meeting.

I have rarely received calls directly as a result of my company's website. Part of the reason, as mentioned on establishing a marketing strategy is that the clientele base is not the general public and most of the marketing is performed and comes from face-to-face communication and word of mouth referrals. I have, however, successfully used my website to close a deal or reinforce my credibility and experience to potential clients.

Business Cards

Business cards are extremely important, even in this age of online access. Many clients place the business cards of their favorite vendors somewhere on their desks, readily available. Always introduce yourself to a new client with a firm handshake followed by a copy of your business

card. Do not only focus on the main contact person but rather have a business card for every member of his or her team. Many times, the recommendation to hire a vendor comes from the subordinates. Do not throw away business cards from clients you have worked with in the past; they may well come in handy in the future and can serve as a great resource for a future marketing effort.

Times change, and in this age of Internet and e-mail, your contact information is never far away from your clients. However, there is no substitute for face-to-face meetings and handing out a hard copy of your business card. If the card is lost, misplaced, or thrown away, there is always e-mail contact information to fall back on. However, by handing out a business card, it forces your potential client to physically have to carry it and place it in a location in his or her home or office. If you have made a good impression, he or she will not throw it away. The same goes for past and potential vendors. I have often found myself cleaning out my desk and finding business cards from individuals with whom I had done business in the past, whether a client or vendor. Sometimes I look at that card and realize that I could use that client's or vendor's services. Sometimes it reminds me of a potential contact, which causes me to reach out to them. Business cards are not obsolete and should still be a primary source of getting your name and contact information out to potential clients.

Press Releases

Press releases are not relegated only to large, well-known companies. They are a good way to keep your company's activity in the minds of your clients and potential clients. Find local media outlets or online publications that relate to or provide information to people in your specific field. Get acquainted with a handful of editors or media personnel and use them to help get the word out on the happenings of your company. Social media is also a great way to accomplish this.

I had no idea about how to issue a press release when I first opened my firm. But I researched it online and followed the examples I found. I had also researched numerous industry magazines related to my specific discipline and reviewed their policies on press releases. Almost every magazine has a section reserved for such announcements. Some publish press releases for free. For example, I managed to develop a rapport with an editor whom I had researched, so I connected with her on the professional networking site LinkedIn and sent her a request to

publish my press release. I did this via e-mail. She did so. The release was also picked up by that magazines' affiliates and other associated online publications. With the advent of Facebook, this is now done much easier by developing a Facebook page for your company and publishing information on your company affairs in real time.

Flyers and Brochures

An effective and relatively inexpensive way to get your company's scope of services to potential clients is through flyers and brochures. This method should not be your primary form of marketing, but it is useful and should not be discounted. Developing flyers and brochures has become easy. It can be done on your own, without professional help. Mailings are still useful if you target the right people. Once you develop the flyer or brochure, there are many new avenues to get the word out than in the past when traditional mailings were the preferred method of marketing. Social media sites are a great resource for this exposure.

I developed several flyers and brochures targeting architects and contractors when I first opened my own firm. I had my staff develop the literature using software. I do not find myself sending out much of these via mail anymore, because the avenues for getting the word out have become so easy and inexpensive when done via social media sites. You will need to determine for yourself if your specific field of discipline most effectively uses mailings or if it is suitable to release your flyers and brochures via social media. They are certainly handy to have in the office waiting area, or you can make them available for download on your website.

Client Relations

The best form of marketing for an engineering firm is word of mouth referrals. That can only be obtained by doing good work and taking care of your clients' project needs. Whether they are your own clients or those of your current employer, you must treat them with the same attention and respect. Sometimes you may have to go above and beyond the stated scope of work or terms, but if you do, you will have a loyal client as a result.

Obtaining recommendations from clients with whom you have done business is critical to your company's success. To obtain favorable

recommendations from clients, it is imperative that you be honest, responsive, and flexible in your dealings with them. You must respond quickly to requests for information or proposals. You must actively stay on top of agreed-upon timeframes and provide timely project updates. It is important to be flexible with design consideration and listen to clients' ideas and thoughts, even if you end up not using the methods they suggest. It will make them realize that you have taken their ideas into consideration. Ultimately, to acquire new and repeat clients, you need to establish a history of satisfied customers. More information can be found in Chapter 10 on the section on client management.

When I made the move from my first engineering job of thirteen years, working for a specialty engineering firm, to go to work for a regular structural engineering firm, I had no idea how clients of my previous company would react to my departure. Would it be business as usual at my previous job, or would they miss the level of work and service I provided them? I think the answer was evident within my first few months on my new job, as detailed in the Introduction. To briefly recap that, I had done such a good job in satisfying the needs of the clients at my two previous places of employment that it was only natural that those same clients would follow me when I decided to open my own firm. After all, I no longer had any constraints as to project terms and conditions or fee structure. Therefore, I could offer them the same level or a better level of service for less cost. How could they go wrong with that?

Shortly after I started my own firm, I managed to secure a lot of work from my alma mater, consulting on their new campus building construction and retrofit projects. I managed to do this, not because I was an alumni and president of their college of engineering alumni association, but because I had done good work for one of their contractors. I had no luck using the alumni angle, and it was not for lack of trying. I had previously met with the person in charge of facilities and construction, at the request of the director of alumni relations, to see if there was any way they could use my specialties. Nothing directly resulted from that meeting. It was only some time later because I had done good work for one of their contractors in the recent past and only after they were having a lot of trouble with a tough structural plans reviewer that they decided to give me a chance. Since then, I have consulted with them on almost every new construction project on campus and numerous retrofit projects as well, a fact that I am very proud of. The point I am trying to make is that sometimes it does not

matter who you know, but what matters is the quality of your work and how you treat your past clients.

Communications

Internal Communications

Staff Meetings

Open and effective communication with the office staff is critical to ensure smooth company operations. You must be assertive, consistent, and clear about your expectations regarding your employees and their responsibilities. Keeping your staff informed about their individual progress and the progress of the company and involving them in certain company decisions promotes a sense of accountability, pride, and personal investment in the company. You should always make yourself easily available to all of your staff in case people have questions or concerns. You should make that point explicitly clear to them. Have periodic staff meetings to go over all the current and pending projects and set priorities. Follow up on past directives and discuss or adjust expectations accordingly. You should clearly address negative behavior or bad results and offer clear ways to correct the issues, but do not linger on them. Do not chastise staff members for making mistakes but instead emphasize and reassure them that it is okay to make mistakes as long as they learn from them and the mistakes are not repeated.

Making mistakes is a natural way of growing and learning; making employees nervous or belittling them when mistakes are made is not the act of a leader. If the negative behavior continues, or if the same mistakes are repeated, do not hesitate to speak individually with the staff member in question to clearly state your concerns and make sure the situation is corrected. Do not be afraid to fire someone if it will benefit the company, should the situation prove disruptive to the operations and morale of the staff. If you do have to fire someone, explain to the staff why it was done. Having open lines of communication with your staff to keep them well informed improves morale and keeps office gossip to a minimum.

My method of leadership and communications with my staff is quite different from most and a bit unorthodox. I prefer to inform my staff about almost all the affairs of the company. If the company is going through a rough patch, I advise them and explain why. I constantly try to

praise and thank them for their work. I am not physically present at the office every day or much of the time, preferring to delegate and lead mostly remotely. However, I am in constant communication via Skype (group and individual chats), e-mail, and phone. This type of leadership requires unique and self-motivating employees. But if you find the right employees, as I have done, it can free you to promote yourself and your company in creative ways. I make it a point to tell new employees of this style of leadership at the beginning and impress upon them that just because I am not physically present, it does not mean that I am an absentee owner. Far from it. I judge all the employees and the staff based on progress, and I accept the idea that the office may be “looser” without me constantly there looking over their shoulders. I entrust the responsibility for the productivity of the office to my office manager and project manager. I gauge the results by the quality of work and satisfaction of the clients. I insist on being copied on all client e-mails, and I provide feedback and direction to the office and project managers on a continual basis so that I can review and gauge project progress.

Staff Evaluations

Performing periodic evaluations of your employees is necessary to maintain the quality of service provided to your clients. You should be honest and fair in your evaluations but firm and clear. Review the good as well as the areas of needed improvement. Allow the employee to self-evaluate and provide areas of strength and improvement, from their perspectives, to gauge self-awareness and compare with your own assessment. You should proactively reward and/or positively reinforce and commend good performance.

I try to perform ongoing staff evaluations and make it a point to discuss individual employee progress at the end of each year. One of the most important evaluation parameters is growth and the employee's chemistry with other staff members. I pride myself on treating the staff as a professional family, and it is important to me to keep that chemistry intact.

Staff Motivation

Never forget that your employees are a huge part of your company's image. You want to make sure that they are constantly aware that you value the work they do so that they can promote you and your company

in the most positive light possible. Recognition and minor perks can go a long way in staff morale, especially if financial sacrifices are expected of them.

My philosophy on motivation has always been to praise the staff members when praise is due and never to take their effort for granted. I try to offer as many miscellaneous perks as possible, and I am typically more flexible regarding taking time off to handle personal affairs than most employers. I am lenient regarding office attire and provide my employees a sense of freedom from micromanaging office time. My only condition with respect to this form of freedom is that I tend to look the other way on certain office behaviors, which are quite often micromanaged and frowned upon by most employers (such as extended lunch breaks, personal computer time, and time arriving at and leaving work) as long as the job gets done right and done on time and the clients are happy. I have found that given this level of freedom, when left to their own devices, good employees know when they can slack off a bit and when they need to put in extra hours to get the job done without you having to ask them. This, of course, occurs provided that you make it clear to them that you are aware of what they are doing and expect their performance to be on par with the high standards you have imparted to them. It is important when hiring employees suitable for this sort of freedom to look for ambitious and self-motivated employees.

Office Policies

In addition to the information provided in Chapter 7, it is important not only to establish clear office policies but also to communicate them clearly and in writing to all your employees. You should have them study the office policies and return a signed copy to you to make sure that they have read and understood them. Whenever there is a change in any office policy, you should put it in writing and have a meeting with the staff to advise them of the policy changes and address any questions or concerns. Office policies are necessary to avoid misunderstanding between you and your staff members and between your staff members and their workmates. To reiterate and expand, some of the more important pieces of information that should be communicated to your employees within the office policies are proper employee compartment, a list of official paid holidays, vacation and sick pay policy, overtime policy, available benefits packages, and methods of dispute resolution.

Office policies are not difficult to prepare. I borrowed a copy from my wife's firm to use as an example and edited and tailored it to my specific company needs. I started with the basics and added to it as my company grew.

External Communications

Online Media

In today's era of the Internet and social media, there are endless avenues available to creatively, both directly and indirectly, keep your company in the minds of your clients and potential clients. These avenues can also serve as a great vehicle for your clients and potential clients to learn more about you and your firm to help develop or strengthen their confidence in your services. These avenues should be focused on and tailored from a public relations perspective and should not be seen as direct marketing ploys. Information shared in these types of postings should provide your clients and potential clients with updates on your staff, progress of major projects, company milestones, and information on beneficial resources. Forms of postings include maintaining a blog, creating a company page on Facebook, maintaining your company information up to date on LinkedIn, opening a company Twitter and Instagram account, and claiming and filling out free online company listings. You should periodically perform an Internet search of your company and be aware of all the available information that is out there and tailor it to suit your public relations needs. You should embrace the explosion of social media outlets and not be resistant to using it, because if you resist, you could ultimately face being left behind.

My introduction to this avenue of communication began with writing a blog to raise the public's awareness of my specific engineering field of specialty. I would tailor the information and advice in layperson's terms so that the general public and readers of the blog would understand what it is that my company does. I have effectively used postings on LinkedIn by providing updated profile information regarding projects I worked on and my latest publications or webinars. With respect to my company Facebook page, I never expected to derive business from it, but that actually happened once. An old friend's wife would periodically see all my company updates, and when her husband, who happened to be a general contractor, was approached to bid on a project that involved my specific field of specialty, she recommended

that he contact me. He did, and we got the job. The philosophy behind this type of public relations approach should be to avoid falling into the “out of sight, out of mind” dilemma. If business is generated as a result, it should be considered a bonus.

Newsletters

One effective way of communicating your company’s latest achievements is by way of a monthly or quarterly newsletter, either in print or submitted via e-mail to those clients interested and who sign up for such updates. This way, you can summarize all of the progress and deliver it directly to those who are interested. The information provided should be similar to that of the online media information as stated previously but should be tailored specifically to those interested.

This is an avenue that I have yet to effectively implement for my company, but I have seen a couple of effective impressive examples that I plan on emulating.

Sales Pitch

As principal of your firm, you are the face of the company. It is your primary responsibility to communicate what your company can offer and why the client should choose you above all other competitors. Be prepared to answer questions relating to past projects, staff experience, and capabilities. A good sales pitch must be honest and frank about your capabilities and limitations. You should hone your sales pitch using the techniques and steps stated in Chapter 1 on becoming an effective speaker.

This is one of my strengths. I have been referred to, affectionately, as a car salesman by the tough plan reviewer and mentor whom I mentioned in Chapter 4. I often get smiles from plan reviewers who are impressed by my level of preparedness and the way I communicate complex issues. Clients tend to trust me and my company a lot more after speaking with me. This skill is not gained easily and it cannot be faked, but is instead born and honed from years of experience and dedicated practice in your profession. Do not try to sell something if you cannot deliver, for it may stick with you throughout your career and make it difficult the next time you attempt your sales pitch. Speak from personal experience and with confidence, and let the controlled passion and love of what you do and for your work take over.

Presentations

A productive way to indirectly but effectively communicate information about you and your company's area of expertise is to participate in calls for technical papers and professional presentations, as well as preparing webinars for the organizations related to your specific field. You should look to your industry publications and communications and keep an eye out on the call for papers. You should also approach related industries and offer to make a technical presentation on your field of practice, possibly for continuing education credits. Not only are you networking with peers, you are also raising awareness of your field of practice and giving back and helping to improve your industry.

My involvement in writing technical papers and making presentations, as detailed in the section on creating credentials and self-promotion, not only served a useful purpose for the industry, but it also allowed me to hone my social and presentation skills. More people became aware of what my specific field of practice entails and became interested in learning more. Whenever you can accomplish two goals as part of one single task, giving and receiving, and are helping improve the industry and improve yourself at the same time, you have nothing to lose and should consider it a gift to your profession.

E-mails

All important verbal communications should be followed up by confirming them with a well-written and concise e-mail. E-mails should be kept short and concise and always remain professional in nature. Emotional responses should not be part of a professional e-mail. Examples of what to put in writing include the following: all changes to scope of work, all changes to project time lines, requests for information and responses to such, changes in design, approval to proceed from preliminary to final stages of design, and agreements about additional services. A properly written e-mail may mean the difference between a satisfied client and a disgruntled client. The client still may not be totally satisfied, but he or she will respect the facts that you state, will have no choice but to accept the change or discrepancy and will be more apt to quickly move to find a solution, as opposed to assigning blame and responsibility.

This is one of my pet peeves. I am always on top of my staff to put everything in writing to avoid misunderstandings with clients. I believe

that there is no substitute for a clearly written statement when dealing with clients. It can and has saved the company time and money from potentially embarrassing and costly misunderstandings. I have had clients insist that they are right on a certain topic, only to show them clear written evidence to the contrary. I have also had to expend extra time and effort on items I knew not to be true, only because a staff member failed to provide the information or a summary of what was agreed with the client in writing after a verbal agreement. The bottom line is that verbal communications are great and serve to expedite progress on projects, but always, always, summarize what was verbally agreed to in a concise and well written e-mail to the client.

Recommended Activities

1. Write a press release to announce the formation of your company.
2. Plan a launch party to promote your new business and invite potential clients.
3. Create a company profile on LinkedIn.
4. Prepare a company and personal biographies.
5. Gather and tailor all staff résumés to fit the needs of the company.
6. Establish a website.
7. Sign up for as many free online business listings as possible.
8. Write a blog.
9. Write articles for industry publications.
10. Write technical papers for your company's professional associations.
11. Seek out organizations that offer recognition for business accomplishments.
12. Establish clear and comprehensive office policies.
13. Set up business e-mail addresses.

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Chapter 10

Management

Being a good engineer is only half of what is needed to be a successful entrepreneur. The soft skills are the other half and may actually be more important to the success of your company.

Understanding the technical aspects of engineering is not, in and of itself, sufficient to make it as a successful business owner in the field of engineering. Mastering the soft, nontechnical skills can be more important. You can be the best and brightest engineer, but if you do not know how to communicate and manage effectively, then you may never be a successful entrepreneur. Success can be measured in different ways. You can make a lot of money as an engineering entrepreneur while working endless hours and enduring constant stress, or you can make a lot of money while working fewer hours and delegating the stress. Your management skills will help determine which path you will take.

Management skills are needed in a variety of situations, and they are all critical to success, but proper and detailed tracking is what allows for effective management. Without the right information, you cannot know if you are making the right decisions. It takes meticulous organizational skills to keep track of all the management requirements of a successful company. You should learn to create spreadsheets or use existing software to track progress and generate reports that can constantly be reviewed and analyzed to gauge the state of your company. The data provided in these reports, spreadsheet, or even handwritten notes on folders can let you know if you are headed in the wrong direction so that you can make a course correction before it is too late. Some of the suggestions provided in this chapter may seem overly simple; however, you may be surprised how important they can turn out to be. In the interest of thoroughness, I have listed even the most mundane.

THE EIGHT AREAS OF MANAGEMENT IN WHICH YOU MUST EXCEL:

1. OFFICE
2. CASH FLOW
3. CLIENTS
4. PROJECTS
5. EMPLOYEES
6. PAYROLL
7. CONTRACT WORKERS
8. PROFIT

Office Management

The office environment, typically, is an extension of your management style and skills. It is the first impression your clients receive of your company. An office must be well organized and efficient for a company to be truly successful. Your employees are a reflection of your company. Your staff members must convey the same message by how they comport themselves, and the message must be that of efficiency, professionalism, and confidence.

How the staff organizes itself is critical to efficiency, professionalism, and confidence. Encourage your staff to use weekly “to-do” lists. You would be surprised how much time is wasted on simple tasks in a disorganized office. Place tasks that need attention on bulletin boards. Teach your staff to communicate in a professional, courteous, and timely manner. Keeping good track of your office expenses or overhead is also a key component of business management and is necessary to make proper and informed decisions.

Office management is such a vital part of the success of a business that it amazes me how its importance is quite often overlooked by many first-time business owners. More value is placed on engineering skills than management skills. As an example, I recount an experience with a business associate of mine when I first started my company.

We made a deal that I would bring the associate on as vice president in charge of all the engineering and that that I would be in charge of all the management and we would equally share in the business profits even though it was my company and I was 51% shareholder while my associate would be made 49% shareholder. This split and delineation of responsibilities was done at the insistence of my business associate. That is how confident the associate was of her engineering skills. Soon thereafter, we discovered that we had a fundamental disagreement on the importance of management versus engineering. In time, due in no small part to my management skills, we found ourselves inundated with work, and my business associate was falling behind on the engineering work. My business associate saw her role as engineer as much more important than my role as manager. Soon, the associate began questioning if we were putting forth equal effort into the company. After all, the engineer was slaving away preparing the calculations for all of our projects while all I was doing was sitting in front of my computer "doing nothing." Putting aside that the agreement was based on my associate's insistence that she would handle all the engineering for the company, we agreed to seek additional help for the engineering, which was understandable and merited. Nonetheless, it became apparent that my part, the management responsibility, was continued to be viewed as not important enough to justify an equal stake in the business profits.

Ultimately, because of that fundamental disagreement, we made the decision to part ways, and my associate decided that it was best to pursue a company of her own. It was not too long after the split that I started receiving calls from my former business associate for assistance: how to write proposals, how to set up office accounts, how to deal with difficult clients, how to manage the accounting, and what software to use or buy, among many other management-related questions. I could have simply refused to answer my former business associate's questions, but nonetheless I decided to answer them as best as I could. Not too long after that, I got a call expressing how difficult management was compared to doing the engineering and how my business associate wished things could go back to the way they were. My former business associate no longer had time to do the engineering because the management part was so difficult and took most of her time.

The moral of this story is that you should not underestimate the importance of management to any successful business. In fact, engineers make very successful managers and should not be turned off by being

asked to take on that role as their careers progress but rather should embrace it and consider themselves lucky to be asked.

Examples of some of the organizational and tracking tools that can be helpful in an engineering office are listed here.

Recommended spreadsheets to create, and items to track, for effective office management include the following:

1. **Office business accounts:** It is important to track all of your office business accounts, including account numbers, credit limits, current balances, and payment due dates. These accounts can include credit cards (for gas or fuel and office supplies), utilities (e.g., electricity, phone, Internet, and water) and loans.
2. **Vendor accounts and contracts or agreements:** Information to track includes monthly fees, contract expirations, and copies of signed contracts. These accounts can include office service (e.g., printing, delivery, landscaping, and cleaning) and equipment (e.g., copier, phones, computers, plotters, and printers).
3. **Professional association memberships:** It is important to track all membership information, including membership numbers, dues, and expiration dates. These memberships can include all technical and community organizations that you or your company belong to that require an application for membership and for which you must pay monthly, quarterly, or annual dues.
4. **Professional and occupational licenses:** Information to track includes renewal fees and expiration dates. Licenses include city and county business permits and professional certification for individuals and the company.
5. **Online account log-ins and passwords:** In this age, the number of user IDs and account passwords needed to keep up with modern technology is too much to keep in your head. Write them down and store them in a secure place.
6. **Inventory of office equipment, warranties, and receipts:** Keep a running inventory, including pictures and serial numbers along with receipts or warranties for all your office equipment. This could be useful for insurance purposes in case any of them is damaged or simply to keep track of the company assets.
7. **Copies of current insurance policies:** The obvious reason to keep all of your insurance policies organized is in case you ever need to file a claim. Another reason to keep track is that some of the policies are expensive to maintain, and renewal means that

- another payment is due. By keeping good track, you can anticipate when the policy is due to expire and prepare for the next payment. Policies can include general liability, professional liability, workers compensation, automobile, health, and life insurance.
8. **Employee files:** Keep a separate private folder for each of your employees, including records of evaluations, pay rates, raises, copies of signed office policies, and employee agreements, such as noncompete or confidentiality agreements.
 9. **Company records:** Company records to keep track of and place in a secure location are the articles of incorporation, stock certificates, corporation bylaws, minutes of meetings, company resolutions, and the corporate seal.
 10. **Accounting reports:** These reports are important not only for IRS quarterly reporting, year-end reports, and tax time, but also for obtaining loans, seeking investors, or general evaluation of the company's financial health. These reports, all of which can be easily generated by using accounting software, include IRS quarterly reports, profit and loss reports, balance sheet reports, payroll reports, and aging reports.
 - a. **IRS quarterly report:** These reports are for the benefit of and are required by the IRS and may be required by the state in which you reside. They are to be filed quarterly (in April, July, October, and January). Florida does not have state income tax; therefore, no state employee income tax filing is required. The reports include employee federal and state income tax liability reporting (IRS Form 941), employer and employee federal and state unemployment tax liability reporting (IRS Form 940 and Florida RT-6). See the section on payroll management, item 1 on taxes for more information.
 - b. **Profit and loss report:** This report, along with the balance sheet report, is used to determine your company's financial health and stability by lenders and potential investors. It is also critical for you to review this report on a constant basis to gauge your company's financial progress. It basically generates data on the basis of what you input and how you categorize your company's income and expenses. It can compare with previous years to show company financial progress or regression by income and expense category. At the end of the report, for the particular time period chosen, the company is shown to be on an either positive financial footing (where income exceeds

expenses) or negative financial footing (where expenses exceed income). This report, however, can be misleading regarding the profitability of your company because it depends on how you categorize your expenses. See the section on profit management in this chapter, the item on profit for more information.

- c. **Balance sheet report:** This report, along with the profit and loss report, provides you with a complete picture of your company's financial health. As opposed to categorizing income and expense as the profit and loss reports do, showing your company's ongoing profitability, the balance sheet categorizes assets and liabilities, thus establishing your company's current net worth. It shows any fixed (e.g., real estate or vehicles) or liquid (e.g., bank account balances or cash) assets owned by the company, along with all the liabilities (e.g., loans or credit card balances) of the company, as well as any shareholder loan contributions you may have made to start and to fund your company. The profit and loss and balance sheet reports are what lenders and investors will ask to see to determine if your company is loan worthy or a good investment.
- d. **Payroll report:** This report shows all employee salary (e.g., regular time, overtime, holiday pay, and bonuses), benefits (e.g., 401(k) contributions and health care contributions), hours worked, pay rates, and paid time off balance, as well as all the employer and employee tax liabilities.
- e. **Aging report:** This report shows a summary of all outstanding receivables (invoices) by client and project. See item 2 under Cash Flow Management for more information.

Cash Flow Management

Keeping the cash flowing is not an easy task. You must constantly analyze the bottom line by means of standard accounting principles. Review your accounting reports on a constant basis and focus on the invoicing and aging reports. Use techniques to generate faster cash flow, such as asking for retainers, balance due at completion, base payments upon completion of phases, or offer incentives with slight discounts for early payment. There is a fine line between holding firm to these policies

and alienating your clients. You must strike a delicate balance between keeping cash flowing and preserving client relationships.

Cash flow management is one of the hardest of the management areas to control and predict. I constantly have to weigh the benefits or potential drawbacks to enforcing established office policies on collections so as not to alienate or offend a client by holding on to completed work for payment. I review the aging report on a weekly basis to see how the clients are paying and which clients pay in a timely manner and which clients pay late. Most of the time, I relax our policies for repeat or good clients and enforce our policies for one-time clients or clients with a history of paying late, unless there is a special circumstance.

Cash flow items to track include the following:

1. **Invoicing:** Make sure that invoicing is done in a consistent and timely manner. Establish clear invoicing and payment policies (e.g., payable upon receipt or 30 days net) in the project proposals. Send invoicing via e-mail to speed up the delivery process. For invoices payable upon receipt or upon project completion, send out invoices in advance with a note “in anticipation of completion” to give your client sufficient time to process and not cause a project delay. State the terms on the invoice and provide clear scope of services rendered and project information.
2. **Aging report:** This report shows all of the outstanding invoiced amounts due, itemized, and categorized by either client or by project, as well as their status, and can be tailored to show amount due in incremental time periods (e.g., 30, 60, or 90 days). This report is generated using data from your current invoices to clients. It is important to keep track of which of your clients are paying as agreed and which are not. The aging report is useful in this task so that you can best understand your clients’ payment history and you can make informed decisions regarding future payment terms. It is also a good indicator of how much cash flow you can expect to arrive in the near future for planning purposes.
3. **Payment incentives:** If cash flow becomes an issue that starts to affect the ability of the company to meet its financial obligations, one option to try to remedy the situation is to provide incentives for clients to pay in a timely manner by offering small discounts if the invoice is paid before agreed-upon terms.

Client Management

Although the adage of “the client is always right” does not always work in the practice of engineering, ultimately, we are in the service industry, and the client is the one who pays the bills. A business owner must walk a tricky tightrope when dealing with clients, especially the more demanding and eccentric ones. You must never compromise integrity to please a client, no matter how vital he or she may be to the firm. Finding the right balance is the key, and being consistent and honest are ways to handle such clients. Find ways to reward your more consistent clients while not alienating the others. Keep tight reins on those who consistently deviate from agreements, but always stay professional and try to keep negative emotions in check.

Knowing how to manage different types of clients (good ones and bad ones) can be an art form. I have needed to have frank conversations with several of my clients, such as clients who insisted on getting the job done at any cost (insisting that we overlook the code requirements) and clients who decidedly took advantage of our relaxed policies (by not adhering to the scope of work agreements). To those clients who insisted on us overlooking code requirements, I simply stood firm and advised that we could not accommodate them. Some of them learned, and we continued with our working relationship, but some we had to mutually part ways, and some I had to refuse to work with. I would never compromise integrity to get work from anybody. I will always work outside the box with clients, but never if it contradicts or violates the code. To those who consistently did not adhere to our scope of work agreements, I would increase the lump-sum fee proposal on subsequent projects or switch to an hourly fee system to account for the added aggravation and changes requested outside of agreed-upon scope. On the flip side, I have also rewarded good clients with such things as special rate reductions, relaxed payment terms, or no charge for certain additional services.

The following is an important list of questions to ask yourself when dealing with clients:

1. **Is the client a repeat or loyal client?** This item is easy to track and important to understand. As a business owner, you need to know who are your loyal and repeat clients and go out of your way to let them know you appreciate them. You can do this by giving them a

- special rate or treating them to an occasional thank you lunch, where you can find out if they are satisfied with your service.
2. **Does the client pay in a timely manner?** Clients who pay in a timely manner are just as valuable to your company, because you can count on the influx of cash flow. Conversely, clients who do not pay on time can throw your entire cash flow strategy out the window and leave you having to make collection calls. You must keep track of this and take action accordingly so that it does not become a problem.
 3. **Is the client demanding and constantly pushing deadlines?** Clients who are overly demanding typically create more work for your staff and reduce your profit margin. To compensate, you may need to make an adjustment or turn to an hourly fee basis to discourage excessive demands or changes to agreed-upon terms.
 4. **Does the client try to add services not specified in the original scope of services?** A good way to counter clients who try to take advantage and include services is to be clear with your scope of work and add a statement that anything outside the agreed-upon scope is considered additional services to be billed separately. This step may eliminate clients trying to squeeze you for additional work that was not agreed on, and if you make it clear in writing, it may also eliminate hard feelings and misunderstandings.
 5. **Does the client recommend you to others?** Clients who recommend you to others should be rewarded similarly as repeat or loyal clients.
 6. **Is the client a high-profile client or is the project a high-profile project that could lead to good marketing opportunities?** For these types of clients, you may want to offer reduced rates and flexible terms just to land the job. Make sure to clearly state that you are reducing your rates with the hopes that you can establish a future working relationship. You may not make as much money from the initial project, but this gesture could land you a job where you can get valuable exposure and even repeat work.

Project Management

Projects are the lifeblood of the company and what generates revenue. You can be great at marketing and securing new projects, but if those

projects are not managed and completed in a manner satisfactory to the client, or if they are not efficient enough to generate profit for your company, then you either may not get more projects from that particular client or you may not be able to afford working for that client, unless changes and adjustments are made. Being able to handle workflow during both high-volume and low-volume periods ensures continuity and profitability. All projects should be logged with a sequential job number based on the year the proposal was issued. All project submittals to the governmental review agency should be clear and concise and should provide the reviewer with all the necessary information to make an informed decision, including citation of references used. Any comments by building code officials or consultants should be accompanied by a formal response letter, including the original comments and the response identifying any changes as a result.

Before you get the projects, it is extremely important to prepare a detailed and clear project proposal for services as detailed in Chapter 8 in the section on generating proposals for services. Never make a potential client wait more than a couple of days for a proposal for services. That first impression of responsiveness can be important in your future relationship and trustworthiness in the eyes of the potential client.

After you get the projects, learning to manage them so that all your clients are satisfied with your work and feel that you have paid complete attention to their projects is key to client retention. You need to coordinate with the office manager and constantly refer to the proposal for services to identify the following:

1. Potential issues identified in the general comments,
2. Exact scope of services,
3. Identification of what is considered additional services and subject to additional fees,
4. Exclusions from the scope of work,
5. Proposal terms and conditions,
6. Fee and payment terms, and
7. Project time frame to completion.

Good project management requires coordination with office management to ensure that the project is carried out per the agreed-upon terms and conditions based on the proposal for services, as stated and in Chapter 8 in the section on generating proposals for services.

I always try to keep an open line of communication with my clients and respond to e-mails and phone calls in as timely a manner as possible. Of course, most clients feel that their project is the most important and that you should drop all of your other work to get their project out first. I have learned that the key is to make every client feel that we think so too, while balancing all my other projects and learning how to establish a priority list. Some clients have used the “squeaky wheel gets the grease” philosophy and barraged me with phone calls and e-mails to keep me on track. I never ignore those e-mails and phone calls, but rather I stay firm and state that I am working diligently to get the project completed. I have learned to request pieces of needed information regarding the project of the client or to seek clarifications that show the client that I am working on his or her project. They have to research and respond to these requests, thereby allowing me some time. I always put requests in writing and offer progress as to the status of the project. I have learned, if at all possible, not to promise to have a project done by a certain time, but instead I state on e-mails and proposals that we estimate that we can deliver preliminary drawings by a certain time, “provided information needed is provided in a timely manner,” which must be reviewed and approved, or comments provided by the client, before completion. By sending out preliminary drawings, I can gain some time and progress toward completion on work on another project with less pressure. Once I send out the preliminary drawings, in most instances, the pressure is relaxed, and I can focus work on other projects until they review and provide comments or changes, at which time the pressure commences anew.

Project management items to consider and track include the following:

1. **Date of initial project contact:** Recording this date and comparing it to the date in item 2 can establish how long it takes your client, from the initial date of project inquiry, to provide you the needed information to generate a job proposal. This information provides valuable data needed for project scheduling.
2. **Date when required project information was provided:** Recording this date and comparing it to the date in item 3 can establish how long it takes you, from receipt of all needed information, to review and provide a job proposal. This time should be as short as possible, and it could become beneficial if the delays in generating a proposal occur because of lack of information or delay in information provided by the client.

3. **Date that project proposal was issued:** Recording this date, and comparing it to the date in item 4, can establish how long it takes a client to review, discuss, and accept your proposal.
4. **Date when project proposal was accepted:** Recording this date and comparing it to the date in item 5 can establish the actual time it takes you to complete a project of that type from acceptance date to completion.
5. **Completion date of project:** Recording this date and comparing it to the date in item 6 can establish how long it takes you to generate and submit an invoice. Needless to say, this should be done with the least amount of time possible. The data obtained from recording and analyzing this information can surprise you, especially if the workload is high.
6. **Invoice date of project:** Recording this date and comparing it to the date in item 7 can establish how long it takes your client to pay the invoice.
7. **Payment date of project:** This date is the most important one of all; it dictates the available amount of cash flow to apply toward meeting your company's financial obligations.

Employee Management

Assembling a team that works well together is critical. The chemistry and compatibility of the office environment are important. As principal of the firm, it is your responsibility to assemble a cohesive and complementary team. It is also important that you treat your employees with respect and appreciation. Always offer your most valuable employees room to grow within the company or the opportunity to continue learning; otherwise, they will seek that opportunity elsewhere. This is a lesson that my two previous employers did not understand, and even though the result ended up well for me, a future entrepreneur and competitor, it did not end up so well for my previous employers. Do not make that same mistake as an owner yourself.

Versatility is also important. You must assemble a team that can complement and assist each other and even take over each other's responsibilities if need be. Learn your employees' strengths and weaknesses. If an employee has an exceptional skill, find a way to incorporate it in your company's growth strategy and reward the employee by

providing incentives and additional compensation commensurate with the additional work it may generate.

Good employee management also means learning to delegate. You must train your staff members to run the office and business effectively, even when you are not there. Use the technology of the day to supervise from afar and to remain in control even when you are not physically present at the office. Delegation, coupled with sufficient oversight, can free you to seek other ways to promote and help your company, or you as an entrepreneur, to grow. These other things include attending conferences, writing technical papers or presentations, and taking a leadership position at a community organization. Delegating, however, should not mean losing control or touch with all aspects of the company. That would be a grave business mistake.

This employee management process begins with the job interview and continues on via employee evaluations and the setting of office policies.

I have always treated employees as members of an extended family. I seek employees who can develop good chemistry with the other members of the staff. I test their skills with a “throw them to the wolves” mentality, with proper oversight and guidance. I insist that I be copied on every e-mail to clients so that I can gauge my employees’ progress and communication and client relation skills, as well as their grasp of the projects. I have an unorthodox method of leading and teaching. I provide my employees with the resources and means to learn and excel and provide as much responsibility as they can handle with as little oversight as needed to get the job done. Those employees who can handle the loose reins and still produce good results I consider part of the core team. I accept the leeway that may come with the “when the cat’s away, the mice will play” attitude, as long as the job gets done. I measure the progress by the end result and not necessarily the means, as long as the means used uphold the strict professional guidelines I have set up throughout the years.

Employee management items to consider and track include the following:

1. **Initial interview:** During the initial interview, you will want to make notes on the employee’s résumé of your first impressions and anything that stands out. Note any special skills, any issues of concern, or any special agreements or conditions for employment.

Record the date of the interview and file it in your private folder for the employee.

2. **Date of hire:** Recording the date is not only necessary for obvious reasons, but you should be aware of all of your employees' hire dates and be sure to reward them, even if it is a simple congratulations and small token on their hire date anniversary. This can be recorded on the inside cover of the employee folder.
3. **Initial pay rate:** This date should also be recorded on the inside cover of the employee folder to remind you if any adjustments need to be made in salary during yearly reviews.
4. **Yearly evaluations:** Yearly evaluations of each employee should be conducted to determine and establish growth, areas of excellence, or areas of deficiencies.
5. **Office policies:** Office policies should be issued as close to the hire date as possible, giving the employee sufficient time to read, understand, and acknowledge receipt of such policies. The employee and employer should keep a signed copy of the office policies.
6. **Benefits package:** These benefits could include health insurance (e.g., medical, vision, dental, or prescription drugs), life and disability insurance, and a retirement plan. You should have a standard benefits package given to the employee at or as close to the date of hire as possible.
7. **Date of promotion or increase:** This information should be written and dated directly under the initial pay rate to give you a quick understanding of the employee's progression and compensation history.
8. **Date of termination:** This information needs to be shared with many of your vendors, including health insurance, retirement plan, Internal Revenue Service, and clients.

Payroll Management

Setting initial pay rates, raises, and bonuses is important to keep up office morale, employee satisfaction, and retention. Properly collecting, reporting, and paying payroll taxes make up a big part of payroll. Making sure that you collect payroll data and meet your payroll responsibilities is one of the more challenging aspects of start-up

companies. Most of these items can be properly taken care of or tracked by using a payroll services company or by purchasing and using good accounting software. Do not overestimate your company's ability to meet payroll and tax liability requirements based on your projected income. You should have a backup plan to cover these expenses should the need arise.

Managing payroll and handling the company's tax liability is perhaps the toughest learning process and challenge that I have had to face and struggle with as a small business owner. A start-up company, and especially a small company, inevitably runs across cash flow issues that affect your ability to meet payroll and tax liability requirements in a timely manner. In the course of owning my company, I have had to withhold employees' paychecks, sometimes for weeks, or I have had to choose which liabilities to pay and which liabilities to defer payment on, and it is not a fun task. Having to make these decisions takes a psychological toll on you, and you have to be of strong character to be able to withstand the pressure. As a small business owner, you have to be aware that you may face the same issues as I did, and you will have to have the fortitude to stick to your principles and overcome them, as I did, and trust in the future of your company, as I did.

My mistake was that I treated the company as if it were an established company instead of a start-up. I paid employees a good salary, hired too many employees, provided large year-end bonuses, and gave yearly raises. I tried to get involved in too many professional organizations and paid for all employee memberships. None of these are bad things, of course, but my young company was ill-prepared to absorb such expenses while trying to build up a larger clientele. For much of the time, I sustained the losses by making numerous shareholder loan contributions to the company to cover payroll and company expenses when things were tough. Year by year, I learned to streamline payroll and better manage these issues to alleviate most of the causes that led to withholding of paychecks and deferring of tax liabilities. I found young, entry-level employees willing to work for less with the promise of increased experience and learning opportunities, as well as flexibility. I used more engineering interns, learned which liabilities to pay on time (always pay the IRS on time!) and which can be deferred (those that do not adversely affect your credit worthiness). They say that sometimes you learn more from your mistakes than you learn from your successes. This certainly holds true for me. I learned my lessons.

THE SEVEN CRITICAL PAYROLL ITEMS TO TRACK:

1. TAXES
2. BONUSES
3. HOLIDAY PAY
4. VACATION AND SICK PAY
5. OVERTIME
6. RETIREMENT BENEFITS
7. INSURANCE BENEFITS

1. **Taxes:** The state information on taxation mentioned here is based on the requirements of the state of Florida. Both the information on federal and state taxation requirements mentioned here is to be used as a reference only. Seek professional advice on all tax and payroll matters. You must withhold, report, and pay corporate and employee, federal and state, payroll taxes. These taxes include federal and state employer corporate income tax, federal and state employee income tax, employer and employee Social Security tax, employer and employee Medicare tax, and employer federal and state unemployment tax. Some states, such as Florida, do not impose employee income taxes. Make sure you subscribe to a payroll service or use accounting software that comes with a payroll subscription. It is important to keep up with the latest tax rates for both corporate and employee, federal and state income, if applicable, as well Social Security, Medicare, and federal and state unemployment.
 - a. **Federal and state employer corporate income tax:** Corporate income tax must be reported and paid at the end of the year at the federal and state level. At the federal level, this is done by filing IRS form 1120 for a C corporation (1120S for an S corporation). Any tax owed on gains is taxed at the corporate rate for C corporations and at the pass-through individual shareholder tax rate for an S corporation. At the state level, this is done in Florida by filing state form F-1120 for a C corporation. S corporations are exempt from filing

the state corporate income tax form unless federal income tax is owed.

- b. **Federal and state employee income tax:** The state of Florida does not impose income tax on employees; therefore, this section focuses solely on federal employee income tax. Federal employee income tax must be withheld by the employer at the time payroll is issued. It must be reported quarterly via IRS form 941 and paid electronically on either a semiweekly or monthly basis to the Internal Revenue Service via the Electronic Federal Tax Payment System (EFTPS). More information on EFTPS can be found at <https://www.eftps.gov/eftps>.
- c. **Federal employer and employee Social Security and Medicare tax:** Social Security and Medicare taxes are a federally imposed tax on employers and employees as a result of the Social Security Act of 1935. It was established to provide for the general welfare by establishing federal old-age benefits. It is now more commonly known as the Federal Insurance Contributions Act (FICA) tax. Withholding of this tax is done by the employer when payroll is issued, and reporting for Social Security and Medicare is done quarterly via IRS form 941. Both the employer and employee are subject to these taxes. For example, in 2014 the Social Security tax was 6.2% of the gross employee income for both the employer and the employee and was capped at \$117,000 of gross income. The Medicare tax rate was 1.45% of gross income for both the employer and the employee and was not capped. Social Security and Medicare taxes are also taken out of any retirement contributions, but not out of income tax.
- d. **Employer federal and state unemployment tax:** The Federal Unemployment Tax Act (FUTA) tax is imposed on employers to provide unemployment compensation to workers who have lost their jobs. It is withheld at the time payroll is issued and is typically paid quarterly, electronically via EFTPS, and reported annually via IRS form 940. The federal unemployment tax rate is set at 0.006 times the first \$7,000 of gross eligible income for each employee. The Florida state unemployment tax is filed and paid quarterly at the state level via form RT-6; the rate is set and announced to each company annually. The tax rate is applied to the first \$8,000 of gross income for each employee. In 2012, Florida renamed its state unemployment tax to its reemployment tax. More information on the state of Florida unemployment tax can be found at the Florida Department of

Revenue website at <http://dor.myflorida.com/dor/taxes/reemployment.html>.

For more information on federal employer tax requirements, you can visit the Internal Revenue Service website and download IRS Publication 15 (Circular E, Employer's Tax Guide) at <http://www.irs.gov>. For more information about Florida's employer tax requirements, you can visit the Florida Department of Revenue at <http://dor.myflorida.com/dor>.

2. **Bonuses:** Bonuses are treated the same as payroll and are subject to the same taxes as regular income. They should, however, be independently tracked in the payroll software.
3. **Holiday pay:** Paid days off on holidays is optional for the company and typically includes all of the commonly observed holidays. These should be tracked in the payroll software and detailed in the office policies.
4. **Vacation and sick pay:** Paid vacation and/or sick days are also optional and vary from company to company. My firm offers two weeks paid time off per year for both. It should be tracked in the payroll software and detailed in the office policies.
5. **Overtime:** Overtime pay is typically 1.5 times regular pay and must be incorporated into the payroll software and detailed in the office policies.
6. **Retirement benefits:** Retirement benefits are optional and are run through the payroll software. They are to be collected, reported, and deposited to the retirement plan provider immediately after every payroll. Retirement benefits are subject to Social Security and Medicare taxes but not state or local income tax.
7. **Insurance benefits:** Insurance benefits are optional, subject to the new Federal Affordable Care Act, depending on the size of your company. They can include medical, vision, dental, prescription drugs, and disability insurance. There are numerous options available, and you should consult with a qualified insurance professional for further information if you are considering offering insurance benefits to your employees.

Contract Worker Management

Using contract workers (1099 contractors) instead of employees is one way of reducing payroll expenses and saving on benefits.

However, strict rules govern if workers can be classified as contract workers. The rules are issued by the Internal Revenue Service, and they involve the level of autonomy and the control you as an employer have over the contract worker. Guidelines include answers to these questions:

Can they set their own hours?

Can they hire people to assist them in their tasks?

Can they work from home?

Do they issue invoices for their services and set their own fee structures?

For information on contract worker rules, visit the IRS website at <http://www.irs.gov/Businesses/Small-Businesses-&Self-Employed/Independent-Contractor-Defined>. Good candidates for contract work include office assistants, drafters, and inspectors. Contract workers are responsible for reporting and paying their own taxes, and you are not required to offer them company benefits.

I have always found good use for contract workers, because it saves the company money, is a flexible form of employment, and you can hire better quality help immediately when needed, as opposed to having to train a new employee. You must be careful that the contract worker meets all the IRS requirements. I typically make sure if I hire a contract worker that we discuss the parameters up front and that I explain the conditions to make sure we comply with the IRS requirements. Sometimes I have hired a contract worker for a period of up to 90 days, under contract worker rules, until I determine if the person is suitable to be hired as an employee. I also always make sure that contract workers are properly categorized in the accounting software to be able to identify them at the end of the year for reporting purposes.

Contract worker items to consider and track include the following:

1. **Social Security number:** You are required to collect the contract worker's Social Security number and issue the worker an IRS form 1099 miscellaneous income form at the end of each year showing what their compensation was for that particular year.
2. **Invoices:** Contract workers should issue you invoices detailing the work they performed for you, including compensation and the rates they charge.

Profit Management

Profit management involves understanding the business and ownership structure of your company and learning to manage company investments and expenses to get the most out of the income generated by the company. It also involves establishing and setting a fee structure for the services the company provides. Before a fee structure can be established, a thorough analysis of the expected company overhead and expenses, including payroll, needs to be performed. Most companies typically use a multiplier based on payroll expense to establish their fee structure.

I have a different idea of profit than most people. I believe that you should keep your “book profits” low or even show a loss at the end of the year by reinvesting your “actual profits” back into your company. You can read more about this philosophy in the last section of this chapter on profit. I typically do an analysis of the overhead (including salary, insurance, and rent) to determine what type of profits the company makes per project. I then make adjustments to the multiplier and adjust my fee structure accordingly, based on the results.

Overhead

Overhead is the cost to operate your business and includes most expenses incurred by the business, including payroll, insurance, utilities, and rent. You can establish the overhead by preparing an expense report for the company. When preparing such a report, it is important to properly categorize all the expenses.

Multiplier

A multiplier is a number used to multiply the company payroll expenses for a particular project in order to determine the fee to charge. The number usually involves the number to multiply the company payroll expense that covers payroll, plus the overhead necessary to complete the project, plus a specific percentage of profit. Some companies typically use a multiplier in the neighborhood of 2 to 3. As an example, if it will cost you \$1,000 in payroll expenses to complete a specific project, the fee you would charge is \$2,000 to \$3,000. Theoretically, this covers the payroll, plus the overhead for the project, plus a percentage profit.

Fee Structure

The fee structure can be based on either an hourly basis or a lump-sum basis. You can also establish an estimate with a not-to-exceed amount. Hourly rates should be established based on staff experience, position, and service to be provided. An example of a fee structure is principal, engineering, drafting, and inspection. You should keep the rates and fee structure consistent and offer special rates for good clients. If you plan on offering lump-sum or not-to-exceed fees, make sure to perform a thorough estimate for the work that will be involved in the project and add a percentage increase to account for underestimating the work. An aid to estimating the amount of work is to write the proposal in a line item format and design the line items to specific action items required to be performed on the project, being as specific as possible. Include time for reports, principal review, travel, shipping reproductions, copying, and miscellaneous work.

Additional Services

To keep fees competitive, outline a clear, specific scope of services that you are offering for each specific project. Add a statement that says that any service not covered under the outlined scope of services will be considered additional services. State an hourly rate for whatever is to be considered additional services. In addition to outlining the specific scope of services to be covered, you should also outline some specific services that are not covered or are not your responsibility under the proposal. One easy way to accomplish this is by adding a statement in your proposal for services that states that anything not specifically outlined in the basic services agreement is considered additional services to be billed separately at the hourly rate specified.

Profit

There is a misconception, especially for small businesses and start-ups, about what makes a business successful. Unless you have additional shareholders, other than you as the owner, where you have a fiduciary responsibility to seek to make profit for your investors, you do not need to be a profitable business to be a successful business. As a good business owner, you should take advantage of the corporate income tax structure and reinvest all profit, to the extent permitted by law, back into your

company before the end of your tax year. You must understand the difference between how a business is taxed and how an individual is taxed. Individuals are taxed on their gross income, before they spend their earnings on living expenses, whereas businesses are taxed on their net income, after they spend their earnings on operational expenses. As an example, if your company, after all income, expenses, and liabilities are tallied, ends up with a positive net of \$50,000 in any particular year, you are subject to the corporate or “pass-through” tax rate for that profit for that particular year, depending on your tax rate. However, if your company, after all income, expenses, and liabilities are tallied, ends up with a positive net of \$50,000 in any particular year *and* you decide to reinvest all of that net before the end of your tax year back into your company, then you lessen your income tax burden. In the first scenario, you would show \$50,000 profit per the books and be taxed accordingly. In the second scenario, you would show no profit and would be taxed accordingly, but you would have strengthened your company and reduced your tax burden.

There are many acceptable ways to reinvest potential profit back into your company, such as a company retirement plan, office improvements, or employee year-end bonuses. There are also acceptable ways to show less profit at the end of the year, especially if your accounting is set up on a cash basis, such as not processing receivables for the last few weeks of the year and waiting to deposit them until the new tax year. When doing so, however, be careful to manage your bank statement so as not to bounce any accounts payable.

Profit items to analyze and track include the following:

1. **Income and Expense Reports:** Keeping constant track of income and expense reports is crucial to the well-being of your company. A good entrepreneur learns to properly understand and categorize the company expenses so that the reports give the best and most accurate information possible.
2. **Salary and Contract Worker Expense:** Knowing and keeping track of what is most likely to be your company’s biggest expense item is important in setting your rates and employee salaries.
3. **Overhead:** You must track all expenses to get a good grasp of you company overhead. This step is crucial to setting your multiplier and determining the fees to charge your clients. You must learn to differentiate between real expenses and expenses used to invest back into your company for tax purposes.

4. **Multiplier:** Your company multiplier should be used hand in hand with your income and overhead projections to set the right fees or make salary adjustments.
5. **Hourly Rates versus Lump-Sum Fees:** Once you understand your overhead, you can increase profit by using lump-sum fees coupled with efficient production. You must be careful when estimating lump sums not to underestimate. You also do not want to charge exorbitant fees using the hourly rate method and scare away your clients. A good compromise is the estimated fee based on hourly rate with a not-to-exceed amount, which would include a built-in cushion should you underestimate.

Recommended Activities

1. Implement personal and employee to-do lists and have your employees keep the lists at a readily visible location where you can review and add or adjust tasks.
2. Prepare and display a large job board to assist in discussing projects.
3. Establish spreadsheets or tracking methods as recommended for each of the management items covered in this chapter.
4. Review company aging reports on a weekly basis to control cash flow.
5. Create office accounts and vendor, employee, and contractor files.
6. Perform an expense analysis and determine the company overhead.
7. Establish the company fee multiplier.
8. Set a fee structure.
9. Create standard proposal templates for specific project types, with detailed scope of services outlined, that can be used as a basis for future proposals.
10. Establish consistent terms and conditions.
11. Provide staff incentive policy.
12. Encourage employee versatility and redundancy.
13. Implement a client loyalty policy and be consistent with it.
14. Use and reward interns with practical hands-on experience.
15. Reinvest profit back into the company.

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Chapter 11

Intangibles of Entrepreneurship

Beyond the technical and soft skills of entrepreneurship, there are intangibles that can set you apart from other entrepreneurs.

Being a good engineer or even a good businessperson is not enough to make you a good leader. Understanding the intangible characteristics of a good leader is critical to real and continued success in entrepreneurship, as well as in life in general. Among the traits of a good leader that are critical to entrepreneurship are great communication skills, honesty, empathy, humility, philanthropy, philosophy, and self-awareness. In this chapter, I attempt to explain how these qualities can manifest themselves in business by providing my unique definitions of each, which may differ from the standard, along with real-life examples. I try to show you how you can cultivate them and incorporate them into how you run your business.

THE SEVEN INTANGIBLES OF ENTREPRENEURSHIP:

1. GREAT COMMUNICATION SKILLS
2. HONESTY
3. EMPATHY
4. HUMILITY
5. PHILANTHROPY
6. PHILOSOPHY
7. SELF-AWARENESS

Great Communication Skills

The art of getting your point across confidently and concisely. Everyone has communication skills and tools at their disposal, much more so in this age of advancing technology. Those who have or can develop great communication skills using all of the available tools will be the most successful. What constitutes being a great communicator? A great communicator can change or drive minds by being prepared with the facts and eloquently and concisely conveying a message with empathy, tact, and confidence. You can be the smartest engineer of the group, but if you cannot convey your idea or message in a way that touches your audience or clients, you will lose a great opportunity to connect with someone and develop a fruitful relationship. You will be the smartest engineer of whom nobody has heard or for (or with) whom nobody wants to work. I have seen numerous colleagues with enormous intelligence miss or squander business and relationship opportunities because of poor or ineffective communication or perceived attitude problems. A well-written letter, e-mail, or properly phrased conversation can make all the difference in how a client or colleague interprets what you are trying to say.

Body language and tone are also important, so as not to give off the wrong impression or let slip your true feelings in awkward situations that can cost you a project or client. There are many forms of effective communications these days: e-mail, letters, reports, presentations, and social media. A successful entrepreneur learns to master each of these. Proofread your letters and e-mails and check for grammatical errors. Read them to yourself out loud and pretend that the letter is addressed to you; see how you would react after reading them. Do not write an e-mail or letter under emotional stress, or if you do, take time to calm down and reread the letter before sending it. Odds are that when you are calm, you may want to soften or edit the original version. Be precise and concise when you write and stick to the facts. Do not clutter your letters or e-mails with emotional or unsubstantiated information. Do not ever put anything in writing that you cannot prove or commit to. When speaking, speak loud and with confidence and do not mutter. Always try to stay calm in the face of adversity and be professional.

I have been able to hone and practice my communication skills through the years, and I have found that the best way to be an effective

and great communicator is to practice and be confident. Practice, confidence, and knowing your material inside and out are the essence of a great communicator. I always proofread my reports, e-mails, and letters multiple times, until they convey exactly what I intended. I break down my writing in small parts that get to the point, and I always read it back to myself. When I have a presentation or speech to present or when I am going to meet with a client for a potential job, I always practice the speech or conversation in my head in a sort of self-role play exercise. I make the imaginary clients or audience give me a tough time and question everything I say in a devil's advocate scenario. I am able to sell myself and my company because I believe that I can do a better job than any other person. If you exude confidence backed up by experience and practice, there is no job you cannot land.

Honesty

Remaining true even under enormous pressure. Being a successful entrepreneur is all about building successful and fruitful relationships. Sometimes you may be tempted to promise something you know you probably cannot deliver just so that you can secure the job or because you are afraid to say no. Try not to get caught in small white lies. Do not be afraid to say no but do so in an empathetic and honest manner. Never sign off on a project or report or put anything in writing simply because it is what your client needs or because it will make a problem go away. Do not compromise your integrity, no matter the reason. Honesty is just as important when dealing with your staff as it is when dealing with your clients. Being open with your staff during troubled times can lead to empathy as opposed to resentment and suspicion.

As I have mentioned, I have at times had to withhold paychecks from my employees for several days because of a lack of cash flow. I always try and make it a point to apologize and explain the situation. Keeping quiet and not addressing it can lead to rumors and discontent. I have had to make tough decisions and turn good work away because I did not feel that we had the expertise to handle the job correctly or I felt that we could not deliver in the time they were requesting. Accepting the jobs and not being able to deliver or delivering an inferior product would be a tough blow to the company's reputation, and word gets around.

Empathy

The ability to see issues from another person's perspective. To be a good leader, you have to understand how your clients and staff are feeling. Look at the issue from their perspective by putting yourself in their shoes. Never be dismissive of their concerns or criticisms. Always take the time to hear them out and have an open dialogue, even if the outcome will not be any different afterward. A genuine display of consideration and concern goes a long way. Just as you may be undergoing rough times, times can be just as rough, or worse, for some of your clients and staff, who may also be quietly struggling employees or small business owners trying to make it in a tough field. You must be aware of their circumstances and be flexible and understanding of their needs and limitations without sacrificing your own company's well-being.

I have at times made exceptions to established office policies, and yes, sometimes the good will does not pay off. But sometimes it does. By doing so, you develop a reputation as a businessperson who demonstrates understanding and flexibility, instead of someone who is rigid and inflexible. You have to learn as you go along which clients and employees reward your flexibility and which just take advantage of it, and you can make necessary adjustments in the future. Instead of losing all those clients and alienating employees by being inflexible, you can solidify and strengthen relationships with those who are truly appreciative. Some may even reward your assistance along the way with their loyalty by means of hard work and repeat business.

Humility

The ability to stay grounded in the face of success. Even if you feel you have made it, never think that you no longer need your clients and staff or that you no longer need to be concerned with their issues. Treat your small clients through successful times, the same as you treated them during the lean start-up years as it relates to service, attention, and understanding. Even if the job gets done in large part because of your direction, pass the credit around to your staff and praise them for their efforts. Do not lose sight of your humble beginnings or the passion that got you where you are.

I always try to thank my staff after the completion of a big project and let them know how instrumental they were in getting it accomplished. Even though in the eyes of some, it may appear that I have made it and am a successful businessman, I never let myself believe it; in fact, I still do not consider myself a successful businessman. There are many degrees and levels of success, and I am always striving to reach that next level by being as hungry as I was for the levels that came before.

Philanthropy

Assisting and guiding those in need. Entrepreneurial philanthropy should not only involve assisting and guiding those who are materialistically poor; it should also include assisting and guiding those who are materialistically well off but inspirationally poor or in need of guidance. Most of the significant charitable contributions come from people who have made it and accumulated vast wealth and are therefore in a better position to give back in more traditional philanthropic ways. I'm talking about advising and inspiring the youth, assisting community development in your specific field, and giving back to those who helped you along the way so that they can better help our future generations. Entrepreneurial philanthropy is not only good business practice; it is also internally and spiritually rewarding and should be the duty of all successful entrepreneurs.

I did not get involved in philanthropy until I founded my engineering company. I kind of fell into it and was quickly mesmerized by the satisfaction it brought me. It all started, as I have described, when I attended an event sponsored by my university's college of engineering alumni association. I figured that I needed to start to network and promote my new engineering company, and what better place was there to start than at my university alma mater? I began to inquire about what type of networking events or opportunities were available and how I could get involved. To be honest, I was a little disappointed by how little opportunity there was. I would come to learn later that the organization was just barely getting back on its feet after a prolonged absence. Apparently, because I had asked all those questions and made several suggestions and I introduced myself as a business owner, I got the attention of the current president of the association, alumni, and advancement directors of the college; when elections came around,

I found myself nominated for president. I accepted the volunteer position, and we quickly got to work. We implemented an incoming freshman welcome reception, a student mentoring and career guidance program, networking events for the alumni, student organization support programs, and community awareness events, among other things. I found the experience of giving back so rewarding that I expanded my personal role and began giving back to organizations outside of the alumni association. I did this by holding talks and presentations on entrepreneurship to student groups at other organizations and universities and even at my high school alma mater to promote the profession of engineering. I also began offering entrepreneurship advice on social and professional networking media sites. I began offering internships to local engineering students and recent graduates. This part has been one of the most satisfying perks of being a business owner and entrepreneur.

Philosophy

A way of thinking and living your life. Many people in this day live beyond their means and squander opportunities to become truly wealthy and successful. They live by no particular philosophy, but instead they default into accumulating material property as a sign of success. This lack of philosophy and this way of thinking do not discriminate based on your financial position in life. It does not matter if you make \$1 million a year, or \$50,000 a year, or even \$15,000 a year. Most people have adopted the philosophy of “keeping up with the Joneses,” and they spend more than they make on a yearly basis without consideration of the consequences.

The very fact that you have chosen to be or are considering being an entrepreneur, however, means that you are willing to think differently than most people. You want to take the road less traveled, or even bolder, you want to choose your own path. You will encounter many naysayers along the way, and you may be tempted at times to change your way of thinking to a safer alternative, but if you do, you may never realize your dreams. You must remain true to your entrepreneurial philosophy and live your life with it in mind. The entrepreneurial philosophy entails learning constantly and keeping an open mind, not being afraid of taking educated and informed risks, and being an investor and not a mindless consumer.

Early in my career, I read the book by Robert Kiyosaki, with Sharon L. Lechter, CPA, that made an impression on me, *Rich Dad, Poor Dad*. That book opened my eyes to a new way of thinking, which is that you will get nowhere in life by playing it safe and saving your money, that you should strive to accumulate assets and not liabilities. It showed me how to use other people's money to make money for myself. Really and truly follow the "buy low, sell high" philosophy in life. Do not be tempted into buying the latest gadgets, fancy cars, and expensive clothes, no matter how much money you are currently making. Instead, invest that money in a business, property, or idea that can bear fruit for you later in life. Then, you will see how those wise choices can pay off and serve to multiply your investment and money several times over.

Let's consider this example: Person A makes \$1 million a year and uses that money to accumulate liabilities (items that cost you money to own with no real increase in value over time), such as fancy cars, expensive clothes, elaborate dinners, and the latest gadgets. Person A lives in a big fancy house, travels to exotic places, and maxes out his or her credit cards. At the end of the year, Person A may have nothing to show for that \$1 million he or she earned. Alternately, Person B makes \$50,000 a year and uses that money to accumulate assets (items that can be readily converted to cash or that will increase in value over time), such as collectibles, antiques, and artwork. Person B limits the liabilities by buying a decent car and keeping it for as long as it suits his or her needs, buys nice clothes but not to excess, eats dinner at home with only the occasional night out, and limits the gadgets to only the essentials. Person B buys a fixer-upper home in a nice neighborhood, travels locally, and fully explores his or her own region. Person B uses available credit wisely, uses it to invest, and maxes out his or her 401(k) at work. At the end of the year, Person B will have fewer liabilities, assets increasing in value, increasing equity in his or her home, a growing 401(k) account, and more money available to invest. At the end of the year, a person making less money but with a sound philosophy can be in a better financial position, have more money to invest, and have more earning potential than a person making significantly more money but lacking a sound philosophy.

It is also entirely possible that a person making \$50,000 a year can be wealthier than a person making \$1 million a year based solely on his or her respective philosophies. The true measure of a person's wealth is net worth. If a person making \$1 million a year who has adopted a philosophy similar to Person A (living beyond his or her means,

accumulating liabilities, consuming excessively with no consideration for investments, and living paycheck to paycheck) loses his or her job and adds up all the assets and subtracts all the liabilities, he or she may well learn that he or she has a negative net worth. On the contrary, if a person making \$50,000 dollars a year who has adopted a philosophy similar to Person B (living within his or her means, accumulating assets, minimizing consumption, investing the money he or she earns, and setting money aside each paycheck) loses his or her job, he or she could well have a positive net worth and be “richer” than Person A.

I have learned to live most of my life modestly with the occasional splurge. It is not easy to do, it can be a struggle to stay grounded, and there are times when I have strayed from my philosophy. But as I have discussed previously, every home that I have purchased has been a fixer-upper in a neighborhood with much nicer homes around it. I used sweat equity and good but inexpensive contractors to gradually upgrade the homes to the standards of our neighbors. By buying a fixer-upper, I was able to have much lower mortgage payments and therefore been able to accumulate faster and more equity. I have resisted leasing a new car every three years and instead have purchased all my cars and paid off the loan quickly, leaving me with no car payments for many years. I have maxed out my 401(k) and taken several loans against it, some to buy my homes and some to start my business. I do not buy fancy clothes, I do not accumulate all the latest gadgets, and I try to eat at home as much as possible. I am in the middle to later stages of my career, so those looking from the outside might notice all the properties my wife and I have, the vacations we take, and the places where we dine now. However, those perks come after a life spent sacrificing and planning. My hopes are to eventually use all the investments and transition them into being able to enjoy the finer things in life.

I am by no means in the twilight of my career, but you cannot take your assets and investments with you when you pass; rather, you need to learn to have a balance in life and accordingly stop to smell the roses and splurge and pamper yourself once in a while. One of my favorite sayings about the entrepreneurial philosophy, which I believe in wholeheartedly, is, “Entrepreneurship is living a few years of your life like most people won’t so you can spend the rest of your life living like most people can’t.” Unfortunately, everybody wants the same outcome (living like most people can’t), but few of us are willing to pay the price (living like most people won’t). I chose the price of “working hard and having no life so that I can be hardly working and living the life.”

Self-Awareness

The ability to know your limitations. As an entrepreneur, you may no longer be responsible solely for your own professional welfare; you might also be responsible for quite a few others as well. You must protect those who have put their trust in you and your company by learning the difference between risk and recklessness. Taking risks is an inevitable by-product of entrepreneurship and goes hand in hand with choosing your own path. Many lessons can be learned by failures experienced when taking risks. However, taking risks without being informed or compromising integrity is not a risk worth taking. A good leader does not bite off more than he or she can chew and is never afraid to ask for help.

There have been times when I have been tempted to bid on or work on a project that is beyond our scope or comfort level. I always try to keep an open mind and allow my company to grow and expand in growth. I even started to accept smaller general engineering work, outside the scope of my specialty that had never been within my comfort level but that members of my staff were qualified to do. I am also aware that my strengths lie more in management than in the actual engineering these days. So I have learned to delegate and trust those I have hired to do the job. A good leader or a good entrepreneur never puts himself or herself or the company at risk for the promise of wealth, if that promise means compromising integrity.

Recommended Activities

1. Practice your speech, sales pitch, or conversation out loud *and* in your head. Imagine yourself at the event and pretend you are being asked questions by your listeners or clients. Make the questions as difficult as you can, as if you intend to stump yourself, and imagine how you would respond. Imagine how you would handle interruptions, technical difficulties, and setbacks. The mind is a powerful tool, and putting it through this exercise better prepares you for real-life situations.

2. Practice and perfect an empathetic way of saying no to your clients when you cannot meet a deadline they require, but always offer your best effort in accomplishing what they seek.
3. Put yourself in your client's shoes during difficult situations and pretend that you are trying to deal with the situation with yourself. This might put things in a different perspective and assists you when making difficult decisions.
4. Make it a point to praise your staff when they do good work. Show them that you recognize the work they do for you and reward them on occasion for absolutely no reason, other than to show them that you appreciate them.
5. Find a cause that you are passionate about and actively give of your time and money. Student organizations, alumni associations, and charities are a good start.
6. Live your life with purpose and goals. Do not give up on your dreams, no matter how big or small. Read the book *Rich Dad, Poor Dad* by Robert Kiyosaki, with Sharon L. Lechter, CPA. It made an impression on me, and it just might do the same for you.

Closing Statement

Entrepreneurship is not an easy path to take. In fact, it can be a difficult and trying experience at times. It takes a person with fortitude, patience, and resilience. However, if you have those qualities or if you manage to get past the hurdles that come with owning your own business in spite of not having those qualities, it can be an extremely rewarding and liberating path and experience. I paraphrase a saying here when I say that “entrepreneurship is about doing things for several years that most people *would* not so that you can spend the rest of your life doing things that most people *cannot*.”

Whereas following the advice presented in this book does not guarantee success, this book provides information to ensure the high level of preparedness that is required to manage a successful business. Entrepreneurship is not for everyone, so if you feel inspired to take that leap, it is my sincere desire that after reading this book, you feel that you can take that leap with many more tools and more knowledge and awareness at your disposal than before.

Starting a business is a complicated and confusing process. All that you have read in this book is my opinion based on my experience. Please consult with an attorney, accountant, and any other qualified professional before starting your own firm.

Finally, in my humble opinion, the true measure of people is how they touch and affect those around them in their time here on Earth. Do they walk through life without leaving footprints and impressions, or do they touch lives in a positive manner and inspire, teach, and assist others? The knowledge I have shared in this book is my attempt to give back, teach, and guide those who seek and thirst for the knowledge that I have gained. Whether I did it effectively is not my goal; that I did it with good intentions is the most important thing to me. And I can only hope that the lessons learned from reading this book can inspire and be of benefit to our future entrepreneurs.

Rick De La Guardia, President and Founder of DLG Engineering, Inc.

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About the Author

Rick De La Guardia is president and founder of DLG Engineering, Inc. (DLGE), an engineering consulting firm specializing in hurricane mitigation design of glazing and building envelope systems. Mr. De La Guardia founded DLGE in South Florida in February 2009 during the height of an economic downturn, when many engineering firms were struggling and opening an engineering firm was considered ill advised. Mr. De La Guardia earned his bachelor's of science degree in architectural engineering from the University of Miami in 1996. He has more than 19 years of experience designing and consulting in all aspects of the glazing field, including inspection, peer review, forensic investigation, and product testing and certification.

In addition to promoting entrepreneurship, Mr. De La Guardia has presented and written on other topics, such as "Hazard Mitigation Design of the Building Envelope" (to the Florida Structural Engineers Association, April 2010), "Hazard Mitigation of the Building Envelope: Are Our Building Envelopes Ready for a Powerful Storm?" (at the ATC-SEI Advances in Hurricane Engineering Conference, October 2012), "Hurricane Design of Glazing Systems: Understanding the Intricacies" (a 90-minute live webinar for the American Society of Civil Engineers, January, July, and November 2013), and "Hurricane Mitigation Design of Glazing Systems: Requirements for Wind and Windborne Debris Protection" (at the Architectural Engineering Institute Conference, April 2013).

Mr. De La Guardia has authored numerous magazine articles, including "Allowable Strength of Glass: How to Design Safely for Today's Threats" (*US Glass Magazine*, July 2010) and "Growing Awareness: Changes in ASCE 7-10 to Affect Hurricane-Prone Regions" (*Architects' Guide to Glass & Metal*, December 2011). Mr. De La Guardia served as president of the University of Miami's College of Engineering Alumni Association from June 2010 to May 2012. Mr. De La Guardia is or has

been a member of numerous professional organizations and technical committees, including American Society for Testing and Materials (ASTM), Glass Association of North America (GANA), Florida Structural Engineers Association (FSEA), Latin Builders Association (LBA), and the American Society of Civil Engineers (ASCE), serving on the Architectural Engineering Institute (AEI) curtain wall committee as Vice Chair in 2013. His company, DLG Engineering, Inc., has been recognized by the Greater Miami Chamber of Commerce as one of the top minority-owned businesses in south Florida in 2012 and 2013. He has a passion for entrepreneurship and helping others achieve the goal of owning a business.

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