

Strategic Excellence in the Architecture, Engineering, and Construction Industries

How AEC Firms Can
Develop and Execute
Strategy Using
Lean Six Sigma

Gerhard Plenert
Joshua Plenert

 Routledge
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A PRODUCTIVITY PRESS BOOK

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and Execute Strategy Using Lean
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To my beautiful wife for being my inspiration,

To my amazing kids for being my motivation,

And to my parents for their dedication.

Joshua Plenert



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Introduction

Most AEC (Architectural, Engineering, and Construction) firms seem to suffer from similar challenges. The workload seems to always be either a feast or a famine. The review process seems to be an obstacle and prevents staff members from meeting deadlines. The available resources seem to constantly be dedicated to firefighting, always overwhelmed by the most urgent tasks and never able to get to the most important tasks. Incentive programs seem to create silos throughout the organization resulting in a lack of organization-wide unity. New employees seem to quickly lose excitement for the job and end up leaving within a year. A lack of direction and passion has resulted in employees who seem to only do the bare minimum necessary to keep their jobs. Everyone is aware of the problems, everyone complains about the problems, but nothing ever changes. I'm sure you can add many more issues to the list.

The fact that these types of issues are so common among so many AEC firms should be exciting to you. Why? Because problems that are common among most AEC firms are great opportunities. The organization that can overcome common challenges will gain an uncommon competitive advantage. That is the purpose of this new book, *Strategic Excellence*. It helps you to develop a strategy for long-term sustainable excellence founded in a vibrant and productive culture of strategic thinking and continuous improvement.

When strategy and culture are efficaciously partnered, an organization can obtain a level of competitive advantage that cannot be copied by competitors. Tools, processes, even methods can be copied, but culture can never be copied. Strategic Excellence is a cultural approach that not only develops what your organization does, but what your organization is and what it is becoming. That's what makes Strategic Excellence effective. That's what makes it sustainable. That's what will render your competition irrelevant.



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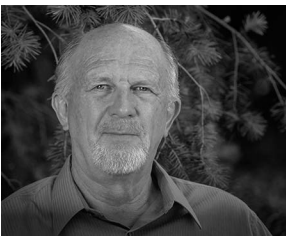
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Dr. Gerhard Plenert, former director of executive education at the Shingo Institute, has more than 25 years of professional experience in organizational transformations helping companies and government agencies strive for enterprise excellence by utilizing the Shingo Model to drive cultural transformations. Dr. Plenert is an internationally recognized expert in supply chain management; Lean/Six Sigma; IT; quality and productivity tools; and in working with leading-edge planning and scheduling methods. He has literally “written the book” on leading-edge supply chain management concepts, such as finite capacity scheduling, advanced planning and scheduling, and world-class management.

His experience includes significant initiatives with Genentech, Johnson & Johnson, Aerojet Rocketdyne, Shell, Aramco, Sony, Cisco, Microsoft, Seagate, NCR Corporation, Ritz-Carlton, the US Air Force, and

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1

Strategic Excellence

1.1 INTRODUCTION

Strategic Excellence is a goal and a process. Excellence is a moving target. Like airbags in cars, what was considered above and beyond normal and a level of excellence 10 years ago is routine today. The goal of Strategic Excellence is a moving target and needs to be reviewed at least annually.

Strategic Excellence is also a process in that it requires a focus on continuous improvement. Strategic excellence is applied strategic thinking designed to develop an empowered agile strategy that adapts to changing circumstances and drives a high performing culture of striving towards ideal behaviors. It is infused with the insight and the thought leadership of the Shingo Model and the scientific thinking of Lean Six Sigma, as derived from the Toyota Production System (TPS). Strategic Excellence goes beyond the classic approach to strategic planning by driving effective execution of the strategy by embedding collective ownership and organization-wide alignment into the entire process.

Reflecting on TPS, Toyota Engineering's approach is extremely different from the American automakers, such as Ford or General Motors. When Toyota engineers a new automobile, it generally takes less than 6 months. When the American auto manufacturer engineers a new vehicle model, it generally takes over 3 years, although they are now trying to gradually improve the process. There are numerous examples of how this process is manifested. One quick example can be found in the airbag. The airbag was an invention by American automakers, but Toyota was the first to install airbags in their automobiles.

So, what's the difference between Toyota and General Motors or Ford? Toyota manufacturers focus on quality. For example, if they design a

hinge for a car door, and they find that the hinge has high quality, high reliability, product consistency, etc., they will use that same hinge in all of their vehicles. In contrast, when American auto manufacturers design a new vehicle, they reengineer everything, right down to the door hinges. The result is twofold: (1) American engineers take a lot longer to engineer a car and (2) American cars have hundreds of times as many recalls as cars manufactured by Toyota. However, when Toyota has a recall, it's large because it affects a large number of vehicle models.

To compare Toyota and the American manufacturers, let's consider the effect of the different methodologies. Which is more customer responsive by having a higher level of product flexibility? Which methodology tends to have higher quality and reliability? What characteristics do you, the reader, prefer in the products that you purchase? Which of these two engineering strategies would you classify as having strategic excellence?

Strategic excellence is not an accident. It doesn't happen by chance. It requires intelligent planning and deliberate action. Strategic excellence is the prerequisite for achieving a corporate vision. It is the only path to victory.

On June 6, 1944, the Allied forces crashed onto the beaches of Normandy. The D-Day campaign involved more than 13,000 aircraft, 5,000 ships, and 150,000 troops from eight different Allied countries. The Allied forces had been working together for many months in preparation for that day by spreading out Nazi forces using a variety of tactics. Despite the unprecedented amount of coordination required to execute an operation of this size, when the smoke cleared, the Allied forces had established a solid foothold in Europe. This extraordinary victory was referred to by Winston Churchill as "the beginning of the end."

Dwight D. Eisenhower stated that "in preparing for battle I have always found that plans are useless, but planning is indispensable". When the Allied forces landed on the beaches, chaos ensued. Surely, many aspects of the invasion didn't go exactly as planned. However, the many months of planning had prepared the Allied forces to succeed, no matter what scenario they were challenged with when they hit the beach.

The message of this story is that it's the process of strategic planning, the analysis of the options, and the consideration of alternative scenarios which is invaluable. The resulting plan will invariably change because the environment and the assumptions change. For example, the weather changes, the people change, the financial structure changes, the legal structure and the code structure change, and so on. The better you have

thought through the various potential scenarios, the better prepared you are for the unexpected.

This book takes the “planning is indispensable” approach to strategic excellence. The planning process presented here will unite an organization behind a shared mission that will guide and direct decision making and problem solving at all levels. It will develop a culture that will prepare your organization to succeed, despite the scenario encountered.

1.2 PHASES

This book explores the Strategic Planning and Strategic Management processes by categorizing them into four functional phases. Strategic Planning is divided into two phases, which are thoroughly *analyze* the current and future conditions and then *define* a competitive strategic plan based on the analysis. These first two phases that we are grouping together as Strategic Planning are also often referred to as SA&D (Strategic Analysis and Design).

The second two phases are lumped together under the heading of Strategic Management. These phases are to *execute* the plan in an effective manner that will align the entire organization focused on the plan and then *refine* the plan over time, learning from our experiences to maintain a focus on continuous improvement (Chart 1.1).

1.2.1 Analyze

A successful planning process is built on a foundation involving a thorough understanding of current conditions. Far too often, engineering

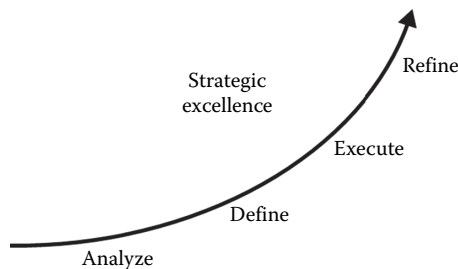


CHART 1.1

Strategic Excellence Model.

becomes an exercise in what is referred to as Catalog Engineering. For example, Catalog Engineering frequently occurs when companies lay out their assembly lines. They search the catalogs put out by industrial machinery makers and they create some combination of different machines using machines that already exist, trying their best to make them work together successfully. Often, the job of making the pieces work together becomes someone else's problem, like production.

At Toyota, the engineer's job is not completed until he or she incorporates creativity into the newly created line. His or her job is to make the line better than the sum of its parts. The Analyze Phase defines the end product to be high quality and error-free. The engineer's job isn't finished until after the trial runs are completed and the assembly line is in full production, running with high quality and error-free. An example of how this works is that the production line must be sensitive enough to failures so that it stops itself automatically. No bad product should ever be produced. The Analyze Phase includes the requirement that the engineer must stay with the assembly line and continue refining the line until he/she achieves the goal of being error- and defect-free.

The Analyze Phase of this book explains the elements of both an internal analysis and an external analysis. Useful tools for ensuring a thorough analysis are presented and their usage is explained. The analysis process works to break through the cultural façade and identify the underlying issues that are typically overlooked. It forces the organization to ask the hard questions that many organizations subconsciously avoid asking themselves. Starting with a detailed analysis of the current state of the organization and the environment in which it operates and recognizing the gaps between the current state and the desired state will lead the organization towards developing a highly competitive strategy.

1.2.2 Define

Defining a strategic plan is often simplified by downloading a free template or slightly altering a previously used plan. This approach not only results in an uncustomized strategic plan but also completely misses out on the true power of strategic planning, which is the planning process itself. The methodology presented in this book will result in a highly competitive plan, customized for the specific strengths and needs of the