THE PROJECT MANAGEMENT STANDARD

A Quarterly Publication of the Project Management Institute® Design · Procurement · Construction SIG

Vol. XIV. Issue No. 1 · 2nd Qtr. 2007

In This Issue

MESSAGE FROM THE CHAIR

by Robb Gries, PMP, Chair

Facing the Future

The construction industry has many challenges that are unique to our industry. Owners want projects completed faster and at lower costs than in the past. The projects themselves are more complex, demanding the latest integration of technology and methods, thus increasing risk.

On a related topic, the need to address capital projects around the globe is changing as well. In the United States, the infrastructure is nearing the end of its useful life and there is little being done to address the problem. In fact, the American Society of Civil Engineers' (ASCE) 2005 Report Card for America's Infrastructure gave the U.S. infrastructure an overall grade of "D" or Poor. The ASCE study estimated the cost to correct this problem at $1.6 Trillion (USD). The recent I-35W bridge collapse in Minnesota and the failed levees in Louisiana after Hurricane Katrina are just two examples of this predicament.

In other parts of the world, particularly in China where the population is growing, there is a need to add and/or improve their infrastructures. For example, the *People's Daily Online* reports "China has invested more than $102 Billion (USD) on 60 key projects of airports, rail lines and pipelines along with power stations, environmental controls, and broadband installation." The Business Monitor International's *China Infrastructure Q2 2007 Report* forecasts that the "construction industry will grow by 7.54% during the 2007-2011 period. The construction industry was valued at $150.65 Billion (USD) in 2006."

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DPC SIG Annual Meeting – Mark Your Calendars!

When: Saturday, 6 October 2007
Time: 1 - 3 PM
Location: Hyatt Regency, Room Hanover D

SYSTEMS ENGINEERING AND THE TWO CULTURES OF ENGINEERING

Michael D. Griffin, Administrator, National Aeronautics & Space Administration

Dr. Michael Griffin, NASA Administrator, spoke at Purdue University on 28 March, 2007. He gave the Boeing lecture entitled *System Engineering and the Two Cultures of Engineering*. The DPC SIG expresses its thanks to Dr. Griffin for allowing us to reprint his speech.

Most of you will have heard of Baron Charles Percy (C. P.) Snow, and will know of his observations on the breakdown in communication between the humanities and the sciences. Trained as a scientist, Snow served as Minister for Technology under Prime Minister Harold Wilson, yet was more famous as an author, with sixteen novels and eight works of non-fiction to his credit. He would be near the top of nearly any list of scientifically literate authors, or of literarily-talented scientists. Snow developed his theme in *The Two Cultures and the Scientific Revolution*, in 1959, and explored it further in *The Two Cultures and a Second Look*, in 1963. He decried the decline in standards of higher education, and in particular what he viewed as the almost willful ignorance by the modern cultural elite of scientific fundamentals. In a summary of his theme, Snow noted,

"A good many times I have been present at gatherings of people who, by the standards of the traditional culture, are thought highly educated and who have with considerable gusto been expressing their incredulity at the illiteracy of scientists. Once or twice I have been provoked and have asked the company how many of them could describe the, Second Law of Thermodynamics, the law of entropy. The response was cold: it was also negative. Yet I was asking something which is about the scientific equivalent of: 'Have you read a work of Shakespeare's?' I now believe that if I had asked an even simpler question — such as, What do you mean by mass, or acceleration, which is the scientific equivalent of saying, 'Can you read?' — not more than one in ten of the highly educated would have felt that I was speaking the same language. So the great edifice of modern physics goes up, and the majority of the cleverest people in the western world have about as much insight into it as their Neolithic ancestors would have had."

While Snow's criticisms did not go unanswered – most famously by literary critic F.R. Leavis – the essential truth of his observations was, and is, widely acknowledged. His elucidation of the "two cultures" has become a societal paradigm, a bumper-sticker phrase to describe the basic cultural separation between the arts and the sciences that is clearly visible to most of us. Even those who know nothing else of Snow's work are probably familiar with this one phrase.

Today, I want to discuss the two cultures that, if we think about it, we find embedded in he profession we call 'engineering', and how we are linking them, and must link them, through the discipline known as 'system engineering', a product of the American aerospace sector.

Let us first explore the nature of the "two cultures" in engineering. I have always loved the view of the engineering profession captured by the great Theodore von Karman when he said, "Scientists study the world as it is; engineers create the world that has never been." Less eloquently, engineers are designers; they synthesize knowledge to produce new artifacts. Von Karman speaks to what most of us, and certainly most laymen, would consider the essence of engineering: engineers create things to solve problems.

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TWO CULTURES OF ENGINEERING *CONTINUED*

But all of us who are engineers know that the engineering profession also has a rich scientific side, the analysis of these artifacts and the prediction of their behavior under various environmental and operational conditions. Adapting von Karman's observations, it may be said that *engineering* science is the study of that part of the world which has been created by man.

Sadly, many students have been led to believe that engineering science *is* engineering! In a curriculum of 120 or more credits leading to a bachelor's degree in a branch of engineering, the typical student is required to take one, or maybe two, courses in design. Everything else, aside from general-education requirements, focuses on the analysis, rather than the creation, of engineered objects. Graduate education often has no design orientation at all. So, engineering as taught really deals with only a part of engineering as it is practiced.

This trait is so pronounced that engineers who have spent their careers – even widely-recognized careers – in design and development, focusing on the creation of objects rather than the creation of papers for publication in refereed journals, are essentially unemployable, hence unemployed, in academia. No matter how well credentialed a practicing engineer may be, when the inevitable search committee meets to rank the applicants for a department chair, or a tenured position, it is a rare designer who can offer even the minimum of "academic" qualifications expected of an applicant for the position of assistant professor.

Some universities have recognized this inherent bias and its consequences for the training of their students, and have sought to remedy it by creating titles such as "Professor of Practice", or similar appellations. But it is a truism that the longer the title, the less important the job. So this term serves only to emphasize the point that these particular faculty members are not "real" professors, hired and promoted on their merits in a straight-up competition among all candidates. One wonders if this is the message we really want to send to those who will design – or not – the world of the next generation.

But the present excessive focus on engineering science in the engineering curriculum is of concern, it is nonetheless true that the fundamental difference between modern engineering and that practiced prior to the Enlightenment is the development of formal analytical methods and their application to man-made objects. This has allowed the prediction of performance, and the limits of that performance, in the environment in which a given device must function. It has allowed the refinement of designs through methods more sophisticated than the trial-and-error techniques to which our ancestors were limited. It has enormously shortened the time required for a design cycle for the objects we create. A control system engineer might say that the formal methods of engineering science have produced an enormously improved feedback path for the engineering design loop. More simply, engineering science has taken engineering beyond artisanship.

But, interestingly, the development of formal methods has not altered in any way the fundamental nature of design, which still depends, as it did in antiquity, upon the generation of a concept for a process, technique, or device by which a given problem might be solved. The engineering sciences have provided better, and certainly quicker, insight for the designer into the suitability of the concept than can be provided solely by building it and examining its performance in its intended application. But a human being must still intuit the concept. We have no idea how we do that. And until we do, we have little hope of developing a formal method by which it can be accomplished.

It must be said that some progress in this area has been through research into "genetic algorithms", which use the tools of engineering science and mathematical simulation to explore the consequences of iterative random changes to a given design. The performance of the design is evaluated against objective criteria. If a change results in a net improvement it is retained; other-

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wise, it is discarded. In this manner, the design "evolves" to a higher state of suitability to its intended "environment" through the pressures of artificial, rather than natural, "selection". Modern engineering analysis tools offer the ability to conduct what is essentially a very large number of randomized design cycles in an acceptable period of time.

But this process does not seem, at least to me, to be much akin to the intuitive synthesis of a human brain when it leaps almost instantly from a perception of a problem to an idea for its solution. "Creativity", used in this sense, remains thus far the sole province of biological computers.

However, my colleague, NASA Associate Administrator Lisa Porter, has pointed out to me that, precisely because genetic algorithms work differently and produce different results than would a human designer, they can offer new, unusual, and potentially useful solutions for consideration by humans. So as the field of genetic algorithms matures, it may well be that the methods of engineering science will yield solid contributions to the synthetic aspect of engineering.

But at least for now, there remains an artistic side of engineering, and it is fully as much an art for its practitioners as any painting, sculpture, poem, song, dance, movie, play, culinary masterpiece, or literary work. The difference between the cultural and engineering arts lies not so much in the manner of creation of a given work, but in the standards by which that work is judged. In the humanistic disciplines, human aesthetics sets the standard by which merit is assigned to a finished product. In the end, aesthetic sensibilities vary with place and time, and are ultimately matters of opinion. The role of opinion in evaluating a work of engineering is, by comparison, much restricted. In engineering, more objective methods are employed to judge the degree to which the completed work meets the standards established for it, or fails to do so.

This brings us to the role of failure in engineering design. Regardless of the sophistication of the analytical methods brought to bear, they are applied to a theoretical model of a device operating in a theoretical model of the real world. The model is not reality, and the differences produce opportunities for the real device to fail to operate as intended in the real environment. An evolutionary biologist might say that the gap between model and reality is an environmental niche in which failure, like a new species, can thrive.

Civil engineer and author Henry Petroski has, in a series of essays and books, explicitly noted the crucial role of failure in producing ultimately successful designs. In *Success Through Failure: The Paradox of Design*, and other works, Petroski establishes the point that new designs, or successive iterations and refinements of a basic design, have as their essential purpose the elimination of failure modes known to be inherent in earlier designs. He further argues, by means of many examples, that designers must go beyond merely ensuring success; they must strive to anticipate the ways in which a design might fail. Great designers and successful designs incorporate, in advance, methods to mitigate such anticipated failures.

But in recent decades human artifacts have become increasingly complex, building upon and extending former art and, especially, combining disparate elements of established art in new ways. This has been accomplished at an astonishing pace, a cause and a result of Moore's Law, the approximate two-year doubling time of computational throughput, which has held sway for several decades. While a large bridge cannot properly be considered a "simple" structure, involving as it does the interaction of thousands of component parts, it clearly pales in complexity relative to, say, a space shuttle, which relies for its success upon the interaction of millions of parts derived from a dozen technical disciplines.

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Failure in complex systems can arise in so many more ways than in simpler systems that the quantitative difference ultimately produces qualitatively different behavior. It becomes unreasonable to expect, other than through the harshest of hindsight, that a particular failure mode might have been or ought to have been anticipated. Indeed, results from the modern study of complexity theory indicate that complex systems can experience highly non-linear departures from normal state-space trajectories – i.e., "failure" – without anything being "wrong".

Among the first to study complex engineering systems was Charles Perrow, in the landmark work *Normal Accidents*. Perrow argued that adding additional processes, safety measures, and alerts to complex systems – the traditional design approach to improving system safety – was inherently flawed, because for complex, tightly-coupled systems and organizations, failure is inevitable.

Perrow is a sociologist, not an engineer, but his points are well taken. Those of us who are aviators, or who are familiar with the history of aviation, can point to numerous high-profile accidents where the crew became occupied with minor anomalies and their warning systems, only to fly a perfectly good airplane into the ground. Most of us can also cite analogous incidents from other fields.

Yet, we have evolved complex systems for good reasons, and we will clearly continue to do so. The modern air transport aircraft is an incredibly complex device, and the system within which such aircraft operate is far more so. But in the last five decades this system has revolutionized world society, culture, and economics. It will not be shut down merely because it cannot be made perfectly reliable. Nor will we do so with any of the other complex appurtenances of modern society which did not exist a century ago, but which are now deemed essential. So, if we are not to eschew the use of complex systems, how do we make them as reliable as possible?

I believe that the answer to the above question is "system engineering". This is an entirely appropriate answer for the Boeing Lecture here at Purdue University, for system engineering has evolved as a discipline of modern engineering from its roots in the American aerospace system development culture.

System engineering and its allied discipline of systems management are treated from a historical perspective in the excellent text by Stephen Johnson, *The Secret of Apollo*. Johnson retraces Petroski's path, showing the development of system-oriented disciplines to be the natural reaction to the failure of early, complex aerospace systems, including large aircraft, ballistic missiles, and spacecraft.

From its first introduction into the engineering lexicon, "system engineering" has been a question-begging term. In earlier times, it was considered by many in the traditional engineering disciplines to be a category without a subject matter. Even today I find the term to be, in my opinion, misused and misunderstood by many who claim to be practitioners of the art. So, having spent what I believe to be the most productive part of my career as a system engineer, let me say a few words about what I believe system engineering is, and what it is not.

System engineering is the art and science of developing an operable system capable of meeting requirements within imposed constraints. The definition is somewhat independent of scale, and so these words are useful only if one understands that it is the big-picture view which is taken here. We are talking here about developing an airplane, a spacecraft, a power plant, a computer network. We are not talking about designing a beam to carry a particular load across a known span.

System engineering is a holistic, integrative discipline, wherein the contributions of structural engineers, electrical engineers, mechanism designers, power engineers, and many, many more

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disciplines are weighted and considered and balanced, one against another, to produce a coherent whole that is not dominated by the view from the perspective of a single discipline. System engineering is about tradeoffs and compromises, about generalists rather than specialists.

System engineering is not about the details of requirements and interfaces between and among subsystems. Such details are important, of course, in the same way that accurate accounting is important to the Chief Financial Officer of an organization. But accurate accounting will not distinguish between a good financial plan and a bad one, nor help to make a bad one better.

Accurate control of interfaces and requirements is necessary to good system engineering, but no amount of care in such matters can make a poor design concept better. System engineering is about getting the right design.

Complex systems usually come to grief, when they do, not because they fail to accomplish their nominal purpose. While exceptions certainly exist, it remains true that almost all systems which proceed past the preliminary design phase will, in fact, accomplish the tasks for which they were explicitly designed. Complex systems typically fail because of the *unintended* consequences of their design, the things they do that were not intended to be done. The Second Law of Thermodynamics is sufficient to guarantee that most of these things will be harmful! I like to think of system engineering as being fundamentally concerned with minimizing, in a complex artifact, unintended interactions between elements desired to be separate. Essentially, this addresses Perrow's concerns about tightly coupled systems. System engineering seeks to assure that elements of a complex artifact are coupled only as intended.

C.P. Snow believed that mutual comprehension and appreciation between the arts and the sciences, which had existed in earlier times, had been erased by his time. He did not find a means to restore it. I sometimes think that the gap between synthesis and analysis in engineering is as wide as that between the arts and the sciences of Snow's "two cultures". But the fact remains that designers simply do not think or work in the same way as analysts, and this does on occasion produce a certain cognitive dissonance. When it occurs in the context of a complex system development, catastrophe is a likely result.

System engineering is the link which has evolved between the art and science of engineering. The system engineer designs little or nothing of the finished product; rather, he seeks a balanced design in the face of opposing interests and interlocking constraints. The system engineer is not an analyst; rather, he focuses analytical resources upon those assessments deemed to be particularly important, from among the universe of possible analyses which might be performed, but whose completion would not necessarily best inform the final design. There is an art to knowing where to probe and what to pass by, and every system engineer knows it.

Like other branches of engineering, system engineering has evolved out of the need to obviate dramatic failures in complex systems. Such failures are not new. One of my favorite books is a fascinating text entitled "*Structures: or, Why Things Don't Fall Down"*, by Prof. J.E. Gordon of the University of Reading, England, written in 1978, at the end of Prof. Gordon's long career as a structural analyst. It is aimed at a level appropriate to an intelligent technical professional in any field. I recommend it highly. Regarding the matter of spectacular engineering failures, I quote Professor Gordon (pps. 352-353):

"… there are, of course, a certain number of great dramatic accidents which, for a while, monopolize the headlines. Of such a kind were …[numerous disasters follow] … These are very often intensely human and intensely political affairs, caused basically by ambition and pride. … One can at once recognize a certain inevitability about the whole procedure. Under the pressure of pride and jealousy and ambition and political rivalry, attention is concentrated on the day-to-day details.

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The broad judgments, the generalship of engineering, [my emphasis] end by being impossible. The whole thing becomes unstoppable and slides to disaster before one's eyes. …"

In thirty-six years of engineering practice, of many kinds and in many situations, I have not seen a more appropriate assessment of what is truly important in engineering. We must of course get the details right. However, to be a complete engineer, one must also master what Professor Gordon calls "the generalship of engineering".

I will be frank. Educators, and I include myself, for I have spent many years as an adjunct professor at various institutions, are far less certain how to teach "generalship" than we are of how to teach the laws of thermodynamics. And yet it is clear that an understanding of the broad issues, the big picture, is so much more influential in determining the ultimate success or failure of an enterprise than is the mastery of any given technical detail. The understanding of the organizational and technical interactions in our systems, emphatically including the human beings who are a part of them, is the present-day frontier of both engineering education and practice.

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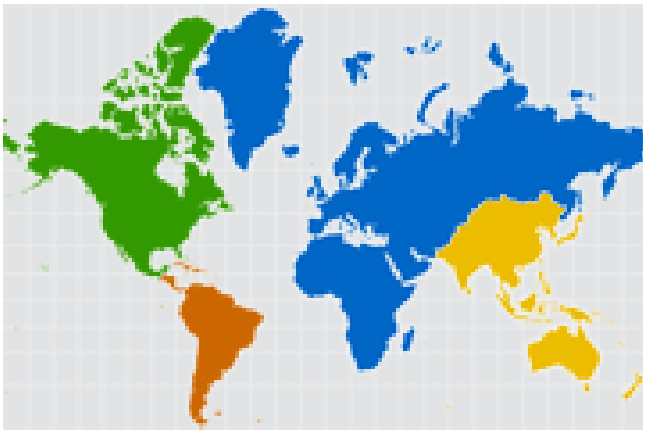

WHAT I LEARNED ON MY SUMMER VACATION

Michelle LaBrosse, PMP, Chief Cheetah, Cheetah Learning

Cheetah Learning Michelle LaBrosse, PMP, is the founder of Cheetah Learning, and author of *Cheetah Negotiation* and *Cheetah Project Management*. The Project Management Institute, www.pmi.org, selected Michelle as one of the 25 Most Influential Women in Project Management in the world, and only one of two women selected from the training and education industry. A student of life, in 2006, Michelle graduated from the Harvard Business School's Owner President Managers (OPM) program.

She created the origins of the Cheetah Project Management methodology as an Air Force Officer in the mid 80's. In 1995, she prototyped the concept of accelerating learning using "virtual classrooms," to accelerate the way people learned and applied core business skills. As a corporate research scientist in systems engineering and adult learning for a large multinational corporation, she later created and tested a one-day approach to teaching Project Management. This approach would later evolve to become Cheetah Project Management, a fast and effective way of launching projects.

It's that time of year when people pile into cars, campers or jump on airplanes to take a break and enjoy their vacation. As busy as we all are, it's easy to get caught up in work and think that we can't take the vacation. *There's too much going on at work. What will my team do while I'm gone? How will this place run without me?* The answer to that last question is especially important: If you're a good project manager, your team should be able to run well without you. If they need you there 24/7, then you're doing something wrong.

One lesson I experienced a few years ago on my summer vacation when my daughter, our two dogs and a cat, drove together from Connecticut to Florida.

I knew about the trip a few months beforehand, so I spent a month getting ready for the trip. I delegated responsibilities to key people on my team, and I set up processes so we could easily keep track of projects. I made sure that my team members created Project Agreements before I got on the road, so they had a clear road map for what they needed to accomplish and what the roles and responsibilities of each team member were. Other tools we used were the Wiki, so team members could post documents and progress reports, and my blog, as a key interactive communication tool. I posted about where I was, what I was doing and also about project management. Team members could comment and also could be part of the journey if they wanted to be – a kind of virtual post-card community.

During my sojourn, I also learned some important things about my team. I could clearly see those who could operate independently and accomplish tasks and goals with little oversight, and also those who needed more management. This gave me a lot of insight as a manager and let me know how I could manage my team even more effectively – who needed more coaching from me, and who had the capacity to take on more responsibility.

Consider the productivity aspects of vacation. According to a survey from Expedia, 33% of employed adults in the United States usually don't use all their vacation time, with the average worker surveyed giving back an average of four days to their employer. This translates to 574 million vacation days/year, worth $75.72 billion.

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What that number doesn't capture is the lost productivity from fatigue. We all know that feeling when you haven't had time off in a long time, and you are both physically and mentally tired. Your performance suffers and even worse, I think your passion dwindles.

Passion is rejuvenated from the time that we spend away from our routine. For some people, it is the sound of the ocean that relaxes and soothes. For others, it's a hike in the mountains or in the desert. Vacation is the time when you can find your own "zone" – that place where ideas, inspiration and "ah-ha's" come from.

There's a reason that Thoreau's "Walden Pond" stands the test of time. In it, he captures our relationship to nature, the importance of reflection, and poetically and philosophically explains to us the purpose of "getting away from it all."

"Sometimes, in a summer morning, having taken my accustomed bath, I sat in my sunny doorway from sunrise till noon, rapt in a revery, amidst the pines and hickories and sumachs, in undisturbed solitude and stillness, while the birds sing around or flitted noiseless through the house, until by the sun falling in at my west window, or the noise of some traveller's wagon on the distant highway, I was reminded of the lapse of time. I grew in those seasons like corn in the night, and they were far better than any work of the hands would have been." – Walden, Henry David Thoreau, 1854

If Thoreau were here today, he'd tell us that the only way to grow ideas, people, relationships or businesses is to take a vacation and find your own private reverie.

As we head into June, think about your vacation. How can you prepare for it so you can relax and come back to your office rejuvenated and ready to contribute new ideas?

Here's a vacation prep list to help you get the most out of your vacation:

Vacation Prep List

1. Review status of all projects two weeks prior to leaving and delegate responsibility while you are away.
2. Create project agreements for any new projects that will be in progress while you are away, and make sure your team is clear on what they should be accomplishing while you are gone.
3. Set up clear communication boundaries for your vacation. Can you be reached on your cell phone? If so, is it for emergencies only? Will you be checking your e-mail at all or only at a certain times? Do you only want to be contacted about certain issues? Define these boundaries before you leave so you get some downtime, and your team knows when it is appropriate to contact you.
4. Bring your favorite guilty pleasure that has nothing to do with work. Whether it's "MAD" magazine or a romance novel, indulge the part of your brain that may not get to stretch at work.
5. Laugh. No matter where your vacation takes you, laugh as much and as hard as you can. Take that laughter yoga class that you've read about or just laugh at life. It reduces stress, lowers your blood pressure, lifts depression and even boosts your immune system. Laughter is more than funny, it's healthy! Enjoy your vacation.

SERVICE-ORIENTED PROJECT MANAGEMENT - THINK BOLD, IMPLEMENT SAFELY

Jerry Manas, PMP, President, The Marengo Group

The Marengo Group specializes in principle-based project management training and consulting. Through its pioneering efforts with the *Service-Oriented Project Management (SOPM)* framework, The Marengo Group helps organizations improve their project success rates through a stronger client focus and increased awareness of organizational value.

Strive not to be a success, but rather to be of value."

- Albert Einstein

A recent *Computerworld* survey showed that thirty-three percent of respondents rated project management as their *number one challenge*, even ahead of budget constraints and regulatory requirements. The September 2006 issue of *CIO Magazine* reported that sixty percent of IT leaders stated they will need to boost their staff's project management skills, above all other skills, within two to five years.

Why the sudden rush to get better at project management? Organizations are realizing that poor project execution is impeding their ability to achieve strategic goals. Projects are failing at a rate of seventy-five percent, and have been for more than five years, despite standards, certification, and project management training. It hasn't helped that projects are growing more complex, with offshore ressources, multiple vendors, global initiatives, virtual teams, conflicting stakeholders, and the like.

But the primary reason most projects fail is because *the focus of the execution and the measurement of projects is too narrow and inwardly-directed*.

Typically, most organizations use three metrics to judge project success:

- On-time
- On-budget
- Meets requirements

There are several problems with this narrow view:

- It often has limited bearing on **real value to the client and the organization.**
- Simply meeting requirements **does not guarantee optimal performance.**
- **Doing the wrong thing on-time and on-budget serves nobody**, even if it does meet "requirements."
- It views *client satisfaction* and *total opportunity value* as lagging indicators to be measured afterwards, when **they are, in fact, leading indicators** if the project is to be *perceived* as a success and *be* a success.
- It directs the project manager's focus inward toward the project's requirements, schedule, and budget—**and away from the client**.

Another element contributing to an overly inward focus is the emphasis on tools, policies, and bureaucracy. Certifications, standards, and policies alone are not sufficient because seasoned veterans tend to ignore them and shell-shocked rookies either forget them as soon as they get caught in the thick of a political maelstrom (which most projects end up becoming), or they get so caught up in the process that they forget to focus on the client—much like someone who just learned to dance, constantly glancing at their own feet.

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In order to **redirect the focus on real client value**,we need a project management framework that:

- operationalizes a relentless focus on the client;
- redefines value and success in client terms;
- is adaptable to any size project; and
- instills a consulting mindset in project managers.

The Japanese have been practicing an outward focus for years. Honda calls this *Sangen Shugi*, the Japanese term for "three actuals"—actual place, actual parts, and actual client. Toyota has a motto, *Genchi Genbutsu*, which means "go and see for yourself to fully understand the situation." Tom Peters also encouraged this approach when discussing *MBWA* (*Management by Wandering Around*, first practiced at Hewlett-Packard in their early days and popularized in Peters' landmark book with Bob Waterman, *In Search of Excellence*).

Likewise, savvy marketers and innovative designers have realized the importance of not only conducting a "use case analysis" to understand the real need, but understanding the "whole product"—the collection of services, products, and networks that will provide the ultimate value to the client—today and beyond.

It's time organizations adopted these philosophies for their project management practices. And this is where ***Service-Oriented Project Management (SOPM)*** comes in.

SOPM: An Overview

What does it mean to be *service-oriented*? A *service-oriented* project management model adopts its philosophies from the professional services arena. For example, traditional project management begins with a set of clear requirements, at least in theory. Much like the professional services industry, SOPM begins with a set of *symptoms* or *ideas* from which the project leadership can **work with the client and other constituents to derive requirements**, which ultimately lead to design or service elements.

Suddenly, we begin to see project management more as a service to the client and their organization, much like a doctor first diagnosing and then prescribing treatment to a patient, with the assistance of specialists as needed.

This has major implications on the skills needed to manage and lead a project, just as it has implications on the selection of the project team. As a result, subjects that were previously only loosely (if at all) associated with project management, such as *business acumen*, *talent management* and *innovation*, come to the forefront. This also means that effective project management is no longer just the role of the project manager.

For instance, the formative stages can be led by a client-facing subject matter expert, who is close to the needs of the client—ideally with the early participation of the project manager (and other specialists if necessary). This client representative would ideally be skilled at diagnosis and able to identify the potential risks and opportunities. They could also serve as the project manager's right hand throughout the project. And, to further enable focus on the client, the project manager's left hand could be a project control specialist, who would handle project administration.

In general, project management must be a collaboration between a client-facing subject matter expert, the project manager, the sponsor, administrative support, and the project team.

Traditional project management begins with a set of clear requirements…SOPM begins with a set of *symptoms* or *ideas.*

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Active Client Partnerships

Another way in which SOPM adopts a professional services mindset is by using the word *client*. **By definition, a *customer* is someone who buys something, whereas a *client* receives services and advice.** In addition, a professional will often partner with a client to devise the right solution, thereby establishing **an active partnership relationship rather than a passive "request and delivery" exchange**. Accordingly, to change the project management mindset appropriately to one of consulting, advising, and partnering, SOPM suggests referring to the recipients of our services as clients.

This leads to another point of contention, and that is, "Who is the client?" Is it the person who requests the project, the person who pays for it, the end-users, the extended stakeholders impacted by the project, senior management, shareholders, or all of the above?

While the *essence* of SOPM is to understand the perspectives of *all* of these stakeholders, ultimately there should be only one project manager and one client representative. However, this client representative (which may be the client-facing subject matter expert or it could be the project's sponsor) must be responsible for addressing the needs of the above-mentioned audiences—similar to a balanced scorecard approach.

Productivity and Excellence

At its core, SOPM is a productivity tool. There is a difference between efficiency and effectiveness. We can gain productivity by being *effective*, and SOPM helps us accomplish this by insuring that the *right questions* and *right priorities* are established up front, before the "execution" of the project begins.

This also leads to a better definition of value. And with a more holistic view of value, SOPM can help organizations position themselves for **long-term organizational excellence**.

Practical Simplicity

A major complaint about traditional project management processes and methods are that they make theoretical sense, but much of it is not practical in most organizations. Therefore, for SOPM to be a practical and usable enabler in everyday life, four components are required: a high level framework; a concise policy manual, a set of templates to serve as a toolbox; and a set of adaptable process flows. Most of all, it needs to be simple.

With a more holistic view of value, SOPM can help organizations position themselves for long-term organizational excellence

The SOPM Framework

The SOPM framework helps project managers gain a new perspective by which to manage projects. It uses the acronym **UP-IT** (pronounced "uppit"). Think of it as raising "up" the level of client attention, raising up the success rates of IT projects. UP-IT stands for:

- **U**nderstand
- **P**repare
- **I**terate
- **T**ransform

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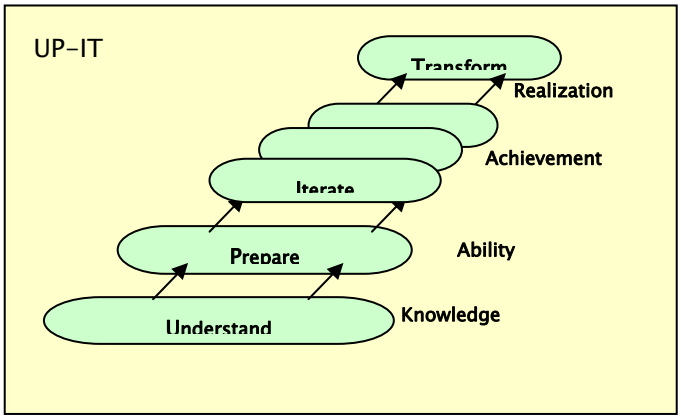

At as high level, the *Understand* phase generates the baseline knowledge needed to be successful; the *Prepare* phase insures that the project team has the ability to execute effectively; the *Iterate* phase offers incremental benefits and safer delivery; and the *Transform* phase positions the client and the project team for long-term success.

The phases are outlined below. They contain some familiar activities and some new ideas. The key is that the activities are placed in a simple context that helps facilitate the project lifecycle. It is also important to note that it's possible that a project might require looping back through all four phases multiple times throughout the project. SOPM is not hierarchical.

Phase 1: Understand

The *Understand* phase includes partnering with the client to develop deep comprehension of the project and the definitions of success and failure.

This deep understanding requires going beyond the superficial level (e.g. *transmitting* a set of requirements) to developing shared knowledge (e.g. the underlying basis for the requirements and what information was left out). Ultimately, it requires spending a certain amount of time in the real environment to observe and analyze all of the variables. Over time, as a project manager, with the assistance of the client-facing subject matter expert, gains experience on a variety of projects, some observations become second nature.

In traditional project management, much of this is assumed to have happened prior to the project manager being assigned. Often, it is done poorly if at all. Worse, some organizations assume the project manager should be doing this alone, and many project managers are ill-equipped. This includes understanding information about:

- The client (*i.e. who the client is, their role, their likes and dislikes, their communication preferences, etc.)*
- The organization (*the political situation, its hierarchy, culture, and goals*).
- The situation/problem/opportunity being addressed (*including what the client or end-users are currently experiencing—go and see for yourself*)
- Prioritized goals (*including stakeholder priorities and influence*)
- External factors (*the competitive market, economic considerations, etc.*)
- Strengths, Weaknesses, Opportunities, and Threats—SWOT (*yours, your potential team's, the client's, and the product's)*
- The players involved (*language, culture, who stands to lose or gain*)
- Available resources (*human and otherwise*)
- The subject matter (*business and technical*)
- Assumptions, Constraints, and Risks (*including competing priorities*)
- Past successes and failures (*internal, similar external projects*)
- The Total Cost of Ownership – TCO (q*ualitative and quantitiative*)
- The Total Value of Ownership – TVO (*qualitative and quantitative*)

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Phase 2: Prepare

Preparations should begin in parallel with the *Understand* phase, for several reasons. First, preparation is "learning by doing," which, in turn, aids the *Understand* phase. We can rarely wait until we have a 100% understanding to begin developing preparations.

Second, in a competitive market where the fastest innovator wins, we must be acutely aware of time. Colonel John Boyd, a fighter pilot frequently referred to as the greatest military strategist of all time, coined the term OODA loops (OODA stands for Observe, Orient, Decide, Act). The premise is that the faster a person or team can complete the OODA cycle on an incremental and continuous basis, the better chance they have of confusing the opponent and coming out ahead. Organizations such as Toyota have taken this to heart and have made it an underlying principle of their company.

The same principle holds true with SOPM. The faster a project team can *effectively* make it through the four phases and avoid analysis-paralysis, the more benefit they can provide to the organization. Determining the right balance is more of an art than a science, and depends on the industry and the nature of the project.

In essence, the *Prepare* phase uses shared knowledge to create an environment that leaves the project team in a better position to jump out of the starting gate with minimal confusion and distraction. This includes:

- Setting client expectations
- Setting stakeholder expectations and gaining buy-in and active support
- Selecting the right team (*based on complimentary strengths, knowledge, and skills*)
- Providing appropriately-scaled project management methods and tools
- Planning adequate training (*situational, subject matter, tools, protocols – as needed*)
- Defining the solution and strategy for solving the problem or need
- Preparing the project implementation approach and plan
- Documenting the business case and gaining approval to proceed
- Documenting and communicating the strategic alignment (*vision, mission, goals, strategy, objectives, accountability*)

Phase 3: Iterate

Using the axiom, "*Think **BOLD**, implement safely*," SOPM encourages focusing on bold differentiating benefits that can "wow" customers and boost a company's top line growth. Peter Drucker once said, "Only marketing and innovation produce revenue. All other business functions produce costs." David Newman echoed this in his landmark book, *Unconsulting*, when he pointed out that "the bottom line is meaningless if the top line is weak." But while a focus on bold moves is encouraged, it's equally important to implement safely. This is where the *Iterate* phase comes in.

The *Iterate* phase involves delivering results in phases, using pilots and prototypes where possible. This incremental approach results in:

- Earlier benefits
- Quick wins (*which conveniently translates to less resistance*)
- Maintaining client attention and participation
- Discovery-driven learning (*which may lead to new or changed requirements*)
- Fact-driven course corrections
- Less risk in case of early termination
- Maintaining momentum
- Better focus and scope control
- Paced spending (*especially if negotiated accordingly with vendors as needed*)

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The frequency of iterations is vital. The more frequent the iterations, the greater the benefit of using such an approach. Again, this is an art more than a science. And once again, Colonel Boyd's OODA loop (Observe, Orient, Decide, Act) concept comes into play, as does W. Edwards Deming's quality cycle of PDCA (Plan-Do-Check-Act).

Phase 4: Transform

The final phase of SOPM is *Transform*. Instead of the traditional approach of ending the project when the product has been delivered, SOPM requires transforming the client, the organization, and the project team before declaring an end to the project. Think of the saying, "*Give someone a fish and they can eat today; teach them to fish and they can eat for a lifetime*." To apply this, first we must transform the client, the stakeholders, and ultimately the organization in three ways:

- Capabilities *(by insuring they have the tools, training, and knowledge to gain full benefit from the product or service*)
- Growth and learning *(by insuring they have a multiple paths to grow on their own, beyond the initial delivery*)
- An adequate support system (*by insuring they know where to go for support if needed so that they're not left on their own completely; perhaps, leveraging a buddy system or superuser network*)

In addition to transforming the client, stakeholders, and the organization, it's important not to forget the project team. We can transform the project team (which ultimately helps transform the organization) through the following devices:

- Lessons-learned *(by insuring the team helps identify and fully understands the lessons-learned from the project, so as to enable them to spread the lessons to future projects and project teams*).
- Recognition (*by insuring that team members are recognized for their efforts, which not only serves to make them stronger, but encourages ambition in others as well*)
- Development plan (*by contributing to the team members' development plan, so as to insure that they build on their existing talents, making them even more valuable in the future*)

Redefining Success in Project Management

At its core, project management is simply *the art of leading others to achieve objectives succesfully*. While this is a simple definition, defining *successfully* is often elusive. With SOPM, we can define "successfully" as achieving the following results:

- the client is satisfied;
- the project delivered value; and
- nobody got hurt—physically or mentally

We can define *value* in terms of the *Total Value of Ownership* (TVO), which includes *direct value* (i.e., directly reducing operating costs for the client) and *indirect value* generated by the client having a superior product or service (such as the opportunity for the client to increase prices, retain customers, or gain new ones).

This is not a new concept. Organizations such as Frito-Lay, CR England, and others have been using TVO to select their supply chain projects for quite some time. In 2002, Gartner created a "Total Value of *Opportunity*" methodology for IT investment planning, although they fell sadly short of a Total Value of *Ownership* model, despite numerous requests. Their response in a May 2006 article? The problem is too hard, too controversial, and too difficult to quantify.

"Only marketing and innovation produce revenue. All other business functions produce costs."

- Peter Drucker

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One solution is to take a more holistic view of value as opposed to just measurable benefits and profit. First, this broader view of value includes more than just direct and indirect benefits to the client. It also includes value to the employees, which in turn leads to customer retention, which ultimately leads to profit.

This relationship, also known as the *virtuous circle*, is a proven model for long-term organizational excellence. In other words, aiming for holistic value is the means, while profit is an end. To illustrate this concept, consider the following definition of profit by Ken Blanchard in his recent book, *Leading at a Higher Level*:

"Profit is the applause you get for taking care of your customers and creating a motivating environment for your people."

With this view in mind, we can see how qualitative information can be just as important as quantitative, and in fact quite adequate for some organizations and projects. Even Albert Einstein, the supreme authority in mathematics, once said, "Not everything that can be counted counts, and not everything that counts can be counted." When it comes to the Total Value of Ownership to an organization, this is certainly true.

Supporting this view is an article in the September 2006 issue of *PM Network*, the monthly magazine of the Project Management Institute, titled "Beyond Budget." The article headline states, "For a true read on project success, organizations must track both qualitative and quantitiative benefits." In the article, Carlyle Maranhao, a client principal with Hewlett-Packard, uses a bridge example. He states, "… if it was built on time, on budget, and met specs but wasn't beautiful to look at, it may not have enhanced the city it was in." Of course, the bridge must meet specs, but to ignore the potential *intangible benefits* can shortchange the project and the organization.

A recent article in the *Philadelphia Inquirer* on October 9th 2006 shows that even business schools are taking notice of these new trends. According to an MBA forum made up of 70 business school leaders from around the nation, the number of required quantitative courses has fallen, while the demand for courses in general business acumen and communication is going up. Forum attendees also suggested different admission selection for students, focusing on creativity and risk-taking as opposed to pure knowledge. It is apparent that we are entering the age of *creativity*, *differentiation*, *risk-taking*, and *humanity* in business. Indeed, the time has come to staff and manage projects accordingly.

Measuring Success

To support these new trends in business, SOPM measures success in a broader sense than traditional project management. Rather than simply looking at on-time, on-budget, and within-scope metrics (i.e., the *inward* view), SOPM adds qualitative measures regarding client satisfaction and value—throughout the project, not just at the end. Client feedback is monitored regularly and tracked on a progress chart. This offers a more holistic view of project success and adds a vital source of information for making course-corrections.

It is the same with business value. As a project generates value-producing deliverables, value (tangible and intangible) can be tracked accordingly. If an early deliverable produces more or less value than expected, course-corrections can be made. Currently, many organizations, if they track anything at all, merely track work completed against the project's budget—the false assumption being that the work completed represents value to the client.

It is apparent that we are entering the age of creativity, differentiation, risk-taking, and humanity in business…the time has come to staff and manage products accordingly.

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SOPM Templates and Process Flows

In addition to the SOPM framework, a working SOPM model includes the requisite templates, process flows, and a concise policy manual that highlights the principles of the model and offers general guidlines. Together, these serve to enable operational execution of the framework. The templates are forms that may be used as needed, as appropriate to the nature of the project. The primary difference between these and most traditional project management methodologies is that these templates are more geared towards the needs of the framework. For instance, a client "use case" template facilitates conducting a situational walk-through with the client. Status Reports capture interim client feedback information and value achievements.

Likewise, process flows, which can be scaled up or down as appropriate, include those processes necessary to navigate the framework. Overall, the SOPM toolset, including the templates and process flows, addresses a project from three perspectives: *project management*, *implementation*, and *quality management* (which serves as the voice of the client).

In addition, many of the tools borrow heavily from the marketing and design disciplines to enable greater client focus.

SOPM Themes

With an understanding of the concept of SOPM and the framework or superstructure that supports it, some key themes become evident. At its core, SOPM:

- Facilitates an emphasis on pre and post project activities (as compared with traditional models)
- Adopts a *Professional Services* approach
- Encourages a more holistic view of value (TVO)
- Operationalizes an intense client focus
- Offers a framework (UP-IT) that is meant to work in the real world, adaptable to any project
- Redefines project success in client and organizational value terms

The Future of SOPM

As organizations awaken to the knowledge that a different approach is needed for project success, SOPM is well positioned to fill that gap.

Imagine industry-vertical versions of SOPM, with templates and process flows specific to industries such as healthcare, pharmaceuticals, or aerospace. Imagine a client's delight when a project manager shows a genuine interest in their situation and well-being. Imagine project manager and team member confidence rising as they begin to adopt a consulting mindset and increase their self-worth.

As organizations awaken to the knowledge that a different approach is needed for project success, SOPM is well positioned to fill that gap.

The SOPM model will evolve over time with use, and as software vendors and service providers build out supporting sytems. In the meantime, organizations would be savvy to adopt these philosophies and begin to usher in a new era in project management

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CALENDAR OF EVENTS

August 2007

25 August 2007
PMI Atlanta Chapter Annual Profession Development Day

28-31 August 2007
4th annual PMOz project management Australia Conference

29-31 August 2007
2nd Brazilian project management congress—Innovation by Projects

September 2007

10 September 2007
PMI Puget Sound Chapter One-Day Seminar/Workshop

10-11 September 2007
PMI Kansas City Mid-America Chapter Professional Development Days

12 September 2007
PMI Washington DC Chapter First Annual Career Day

17 September 2007
PMI 2007 Northern California Fall Symposium

18 September 2007
PMI Kentuckiana Chapter presents Achieving Project Management Excellence with Dr. Harold Kerzner

18-19 September 2007
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MESSAGE FROM THE CHAIR
CONTINUED

Now add to the problem that the resources to address the world's construction needs are either more in demand or becoming scarce. Key construction materials such as steel, concrete, wood, gypsum, asphalt, and plastic are in high demand; thus, raising their respective costs. Projects will also need skilled laborers, but probably the most critical component will be qualified, senior project managers. Where will the PMs come? The DPC SIG Leadership Team believe that the senior PMs will come from the ranks of the junior PMs within the construction industry as well as seasoned PMs from outside industries such as manufacturing, information systems, and information technology. The big question is how can we prepare them?

The DPC SIG is exploring opportunities to collaborate with other organizations outside of PMI. Earlier this summer, PMI's Cooperative Relations Manager, Maria Eli, inquired about possible collaborative projects with the Construction Management Association of America (CMAA) and the Asociación Española de Dirección Integrada de Proyecto (AEDIP). Our response was to address the need to develop qualified senior PMs to address the increasing demands for managing capital projects.

The DPC SIG is also evaluating the development of an Advanced PM Training Program to meet this emerging need. Although it is still a work in progress, the general concept is to have a two-phase training program for junior level PMs as well as senior PMs from outside the construction industry (a.k.a. "Crossovers"). The first phase will most likely include Webinars on general PM knowledge areas but with a construction-related focus. The objective is to ensure that everyone, particularly the Crossovers, has the same level of understanding of the core construction competencies. The second phase will be a "resident" course that will require three or four, two-day, face-to-face workshops over the course of the year with assignments in between each workshop. This phase will challenge the participants to apply their knowledge to realistic project scenarios to better prepare them for challenging capital projects.

The DPC SIG Leadership Team believes it is time that we face our future challenges with conviction and steadfast determination. It is our responsibility to address them so that the next generation does not have to fix the "problems" we have left behind.