



## In Remembrance

by Terrance Malkinson

The Engineering Management Society honors those killed and expresses sympathy to their families, to those who carry on at Virginia Tech University, and to the greater community; worldwide.

During the early morning hours of April 16, 2007 a gunman went on a rampage on the Virginia Tech campus. By the time he was done, 32 students and faculty members were dead. <http://www.vt.edu/tragedy/> Founded in 1872, Virginia Tech is a comprehensive, innovative research university

with the largest full-time student population in Virginia, USA. The Virginia Tech tragedy has raised the complex question of security at our schools and colleges. How safe are they and what more can be done?

President George W. Bush said: “the US was shocked and saddened, schools should be places of safety and sanctuary and learning. When that sanctuary is violated, the impact is felt in every American classroom and every American community”. The impact however extends throughout the world. The educational community is a global one. Professors and students killed at Virginia Tech came from many countries. Many were within weeks of graduating and returning to their native countries. All were highly motivated, intelligent, and had impressive futures that they had worked hard for. Sons and daughters were lost to parents who loved, raised and supported them. Fathers and mothers were lost to their children.

The memory of those lost can best be preserved through understanding and compassion as we partake in our daily personal and professional activities. What can we do as engineering managers to demonstrate leadership? People respond favorably if they are treated with compassion and respect - this is the best way to motivate any member of the human family. By doing so we each will leave a legacy of a better world than that which we entered.

### ROSS ALAMEDDINE

Ross Alameddine, 20, from Saugus Massachusetts, was a sophomore English major.

### CHRISTOPHER JAMES BISHOP

Jamie Bishop, 35, was an instructor in foreign languages and literatures teaching German. He was formerly a Fulbright scholar at Christian-Albrechts University in Kiel.

### BRIAN BLUHM

Brian Bluhm, 25, formerly from Detroit, was a graduate student in civil engineering and was doing a masters in water resources.

### RYAN CLARK

Ryan Clark, 22, from Martinez, Georgia, was in his final year studying for a triple major in biology, English and Psychology.

### AUSTIN CLOYD

Austin Cloyd, from Blacksburg Virginia, was a first year student in international studies.

### JOCELYNE COUTURE-NOWAK

Canadian Jocelyne Couture-Nowak was a French instructor and the mother of two girls.

### PROFESSOR KEVIN GRANATA

Professor Kevin Granata, from the Engineering Science and Mechanics department was one of the top five biomechanics researchers in the US for his work on cerebral palsy.

### MATTHEW GWALTNEY

Matthew Gwaltney, 24, from Chester Virginia, was a graduate student in civil and environmental engineering.

### CAITLIN HAMMAREN

Caitlin Hammaren, 19, from Westtown New York, was a sophomore reading international studies and French.

### JEREMY HERBSTTRITT

Jeremy Herbsttritt, 27, from Bellefonte Pennsylvania was a graduate student in civil engineering.

### RACHAEL HILL

Rachael Hill, 18, was from Glen Allen Virginia.

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**EMILY HILSCHER**

Emily Hilscher, 19, from Woodville, Virginia, was studying animal and poultry sciences.

**JARRETT LEE LANE**

Jarrett Lane, from Narrows Virginia, was a senior in civil engineering.

**MATTHEW LA PORTE**

Matthew La Porte, 20, from Dumont New Jersey, was a freshman in university studies. He graduated from Carson Long Military Institute in New Bloomfield, Pennsylvania.

**HENRY LEE**

Henry Lee was from Roanoke Virginia. He was a freshman, studying computer engineering.

**PROFESSOR LIVIU LIBRESCU**

Professor Liviu Librescu, 76, was a Romanian-born Israeli academic in the Engineering Science and Mechanics Department. He was also a Holocaust survivor and moved to Virginia in 1985.

**PROFESSOR G.V. LOGANATHAN**

Professor G.V. Loganathan, lectured in civil and environmental engineering and had won several awards for his teaching.

**PARTAHI LUMBANTORUAN**

Partahi Lumbantoruan, 34, from Indonesia, was a civil engineering doctoral student.

**LAUREN MCCAIN**

Lauren McCain, was 20, from Hampton Virginia was doing international studies.

**DANIEL O'NEIL**

Daniel O'Neil, 22, of Rhode Island, was a graduate student in engineering.

**JUAN RAMON ORTIZ-ORTIZ**

Juan Ramon Ortiz, 26, was a graduate student in civil engineering.

**MINAL PANCHAL**

Minal Panchal, 26, from Mumbai in India, was in her first year of a masters degree in building science. She had a degree in architecture from Rizvi College in Mumbai.

**DANIEL PEREZ**

Daniel Perez Cueva, 21, was from Peru, was studying international relations.

**ERIN PETERSON**

Erin Peterson, 18, was a freshman.

**MICHAEL POHLE**

Michael Pohle, 23, from Flemington New Jersey, was to graduate with a degree in biological sciences.

**JULIA PRYDE**

Julia Pryde was a graduate student from Middletown New Jersey.

**MARY KAREN READ**

Mary Karen Read, 19, from Annandale Virginia, was born in South Korea.

**REEMA SAMAHA**

Reema Samaha, 18, from Centerville Virginia, was a freshman and a talented dancer.

**WALEED MOHAMMED SHAALAN**

Waleed Mohammed Shaalan, 32, of Zagazig Egypt, was a doctoral student in civil engineering.

**LESLIE SHERMAN**

Leslie Sherman was a sophomore at Virginia Tech, studying history and international studies.

**MAXINE TURNER**

Maxine Turner, 22, from Vienna Virginia, was a senior studying chemical engineering.

**NICOLE WHITE**

Nicole White, 20, came from Smithfield Virginia, and was doing international studies.



*Tariq Durrani,  
President IEEE EMS*

## President's Corner

*Tariq S. Durrani, President, IEEE EMS*

Dear Colleagues

I write this column as spring is approaching the far reaches of Scotland, where I live. It is a time of renewal and regeneration, a time for change and a time for preparation as the heady

days of summer approach.

All this is happening to and within the Engineering Management Society. The Society held its Board of governors meeting in early March this year, which followed from the meeting of the IEEE Technical Activities Board (TAB) where the Presidents of all the IEEE societies and councils get together, to discuss issues of common import and learn from each other.

It was good to note that our very own Irv Engelson (immediate Past President of EMS) has taken the helm of the IEEE Division VI as its Director, and is melding the societies within the Division to greater success.

The TAB meetings in the past have usually been concerned with several routine matters from various committees; on this occasion three items were discussed which would be of more general interest. These included: A strategic session on TAB's envisioned future; work of the Infrastructure Oversight Committee; no-shows at IEEE conferences.

The strategic session was seen as an innovation in the workings of TAB, moving it away from routine operational business, to spend sometime giving strategic considerations to its role. During this session, TAB's Envisioned Future, identified

by participants emerged as: TAB will be the model of operational excellence that each Society will strive to replicate in its own board processes. This Envisioned Future will be supported via the following: Society officers will view TAB meetings as must-attend events (information flow); TAB meetings will become planning events and celebrations of progress made between scheduled meetings; a staff-volunteer relationship (commitment, trust) will energize the body to achieve its mutual objectives.

Over the years the TAB societies have been subjected to a variety of financial algorithms largely concerned with apportioning the infrastructure charges across the societies and councils. These algorithms have led to fluctuations in the levy placed on societies, causing variations from year to year on the overheads charged against societies. Our own society had to endure the fluctuation of overhead charges from \$190K in 2004 to over \$320K in 2007. TAB has formed an Ad Hoc Transition Finance Committee to seek better ways to handle algorithm transitions. The Committee will work in 2007 to deliver effective results.

Society Presidents at TAB expressed their concern at the increasing tendency of 'author no-shows' at IEEE conferences. The situation has become endemic, so much so that in spite of seeking prior registration at conferences, a significant proportion of papers were not being presented at the conferences, due to the absence of authors. Many do not show up because of Visa problems or travel costs. The IEEE Conferences Committee has been tasked to address this issue. Our own IEMC-2006 suffered from a lack of authors in some sessions, and it was entirely due to the hard work and rapid response of Antonio Bastos (the IEMC-2006 General Chair) and his Organising Committee that the Conference Program was restructured at the very last minute to avoid gaps in the Conference Program.

TAB also received the report that the IEEE board of Directors had passed a Motion dissolving the IEEE Engineering Management Society and establishing the IEEE Technology Management Council, effective 1 January 2008.

The March Meeting of the EMS Board of Governors was no less eventful. It was preceded by a meeting of the editors of the IEEE Transactions on Engineering Management, where critical issues of policy, quality, timeliness, and continuous improvement in the time from submission to publication, were discussed. The Society is indebted to the Editors for their hard work in ensuring that the Transactions retain their position as one of the premier publications on the subject.

It was good to see two newly elected members of the BoG attend their first meeting –Milton Chang and Sam Ghosh– and to note the positive role they played there. The BoG received a report on the various conferences being sponsored by EMS, and was pleased to learn of the plans for IEMC-2007 which will be

held at the Hyatt Regency Los Pines Resort in Austin, Texas from 29 July –2 August 2007.

The BoG received a Report on the 'Case Study Program' being initiated by the Society. This objective is to put together a set of cases where effective and innovative solutions have been found that address issues in the management of technology and engineering processes, products or programs. The Society is seeking further case studies. This is a welcome opportunity to share your experiences more widely, and I would urge you to participate, and submit cases. Further information may be obtained by visiting the EMS Web-site pages: [http://www.ewh.ieee.org/soc/ems/pdfs/Case\\_Studies.pdf](http://www.ewh.ieee.org/soc/ems/pdfs/Case_Studies.pdf), or by contacting EMS BoG member Lois Peters: (peterl@rpi.edu).

By the way, hope you have visited the new EMS Web-site. It has an attractive look and feel. We are indebted to Yaw-Shing Wang for updating the Web-site.

It was good to learn from BoG member Margaretha Eriksson at the BoG meeting, that the EMS Special Interest Groups (SIGs) are active and flourishing. They are a ready vehicle for the exchange of ideas and interests on specific subjects. I have noted the interesting exchange of ideas and experiences, and if you would like to join one of the Groups, I would suggest visiting the EMS Web-site to learn more about the SIG activities (<http://www.ewh.ieee.org/soc/ems/?menu=3&page=3>), or contacting Margaretha directly at: [margaretha.eriksson@ieee.org](mailto:margaretha.eriksson@ieee.org).

The Society has a number of distinguished Awards which it presents each year to individuals who have contributed to the growth and success of Engineering Management. Vice President Joel Snyder always welcomes nomination, and if you would like to put forward a deserving colleague, please contact Joel Snyder ([j.snyder@ieee.org](mailto:j.snyder@ieee.org)). Further information on the EMS Awards is available at: <http://www.ewh.ieee.org/soc/ems/?menu=6>.

Returning to the subject of IEMC-2007 an exciting program awaits you. The theme of the conference is particularly topical – Managing Creativity- the rise of the creative classes- and if you have not already planned so, I would urge to consider attending this important Conference. The event not only offers an opportunity to meet the experts in the field, but also to network with colleagues, learn of new developments by attending a set of challenging tutorials; and as Leslie Martinich, the Conference General Chair, tells me, the Resort is a great place to have a holiday, with its relaxing ambience, tinged with the famed Texan hospitality; to enjoy the location and the atmosphere. I, for one, am ready to pack my bags and have a good time there.

See you at the Los Pines Resort.

With all best wishes.

*Tariq S Durrani*  
President, IEEE Engineering Management Society.



**IEMC 2007** 19th International Engineering Management Conference  
Austin, Texas USA • 29 July - 1 August 2007

## MANAGING CREATIVITY

...the rise of the creative class

The 19th International Engineering Management Conference (IEMC 2007) will bring together engineering and management professionals and academics from around the world. This year we are very pleased to be hosting IEMC 2007 in Austin, Texas USA.

IEMC 2007 is a forum for the exchange of ideas, experiences, theories, and knowledge between all persons involved in engineering management and economic development of technologically-focused communities. IEMC 2007 will offer a platform for sharing experiences, presenting new results, and reviewing recent developments with keynote addresses by leading experts in the field. With the business and economic landscape undergoing rapid change, the human side of creativity, innovation, and change management is absolutely vital to corporate revitalization and growth.

### The Top 5 Reasons to Attend IEMC 2007:

- 1 **Four conference tracks:** the New Stars, the Growth of the Creative Class, Reach for the Stars, and GOLD tracks
- 2 **Networking opportunities:** network with peers involved in engineering management and the economic development of technologically-focused communities
- 3 **Austin:** the Capitol of Texas, high technology, live music, and The University of Texas
- 4 **Family fun:** allocated time for family relaxation, outdoor activities, and optional tours of Austin, San Antonio (the Alamo) and Johnson Space Center (in Houston)
- 5 **Hyatt Lost Pines Resort and Spa Venue:** provides opportunities for both indoor and outdoor activities, including an Arthur Hills Golf Course, horse back riding, water park, and a full service luxury spa

[www.iemc07.org](http://www.iemc07.org)



## IEEE Expert Now Courses Now Available to IEEE Members Through IEEE Xplore

IEEE members can now purchase individual courses from the IEEE Expert Now collection directly through the IEEE Xplore digital library. IEEE Expert Now courses feature the best of IEEE's education-

al content delivered in one-hour, online courses. The interactive, multimedia tutorials contain the latest information on emerging technologies and cutting-edge trends presented by the leading experts in IEEE

fields of interest. Continuing Education Units for maintaining professional licensure and certifications are available upon successfully passing the assessment, at no additional charge. All courses are peer-reviewed

to ensure quality. IEEE members can purchase each one-hour course for \$69.95, with unlimited online access for 30-days from date of purchase. To

review the course catalog, visit: <http://ieeexplore.ieee.org/modules/modulebrowse.jsp>. Contact Beth Babeu Kelly, [b.babeu@](mailto:b.babeu@ieee.org)

[t.gallus@ieee.org](mailto:t.gallus@ieee.org), Tara Gallus, [t.gallus@ieee.org](mailto:t.gallus@ieee.org), or Jill Bagley, [j.bagley@ieee.org](mailto:j.bagley@ieee.org) if you have any questions about IEEE Expert Now.

## IEEE Professional Communications Society Conference

Luke Maki, P.E.  
President, IEEE Professional Communication Society

Join IEEE PCS and Ray Kurzweil, famous inventor and futurist, for "Engineering the Future of Human Communication" (IPCC2007), October 1 - 3 in Seattle at the downtown Crowne

Plaza Hotel. A distinguished group of researchers and industry practitioners will engage in an energetic and friendly conference that encompasses all aspects of human communication in a world of

rapidly changing information and communication technology. Help us look back on 50 years of human communication and look ahead to the next 50! Website: <http://www.ieeeeps.org/ipcc2007/>

## New Face of Engineering

Chris McManes  
IEEE-USA Senior Public Relations Coordinator

WASHINGTON (1 March 2007) -- Dr. Carlos Cordeiro, a senior researcher and project leader with Philips Research North America in Briarcliff Manor, N.Y., is the IEEE/IEEE-USA's 2007 "New Face of Engineering". He is one of 15 young engineers recognized for this international honor.

The Engineers Week (EWeek) New Faces of Engineering program highlights the vitality, diversity and rich contributions of engineers under 30. Each engineering society's top choice must hold an engineering degree, be employed as an engineer from two to five years, and have worked with projects that significantly affect public welfare or further professional development and growth.

Among other achievements, Cordeiro has pioneered the design of wireless radio technologies that can quickly restore crucial communications to areas devastated by disasters, and serve areas that lack a suitable wired infrastructure. He made key contributions to the IEEE 802.22 working group on Wireless Regional Area Networks by developing new wireless radio technologies, based on Cognitive Radio that allows wireless broadband

services to be delivered over a range of up to 20 miles to remote and hard-to-reach locations. He has also designed techniques that allow wireless radio technologies to operate in TV broadcast bands without harmfully interfering with existing incumbents such as TV signals.

Cordeiro received his bachelor's (1998) and master's (2000) degrees in computer science from Federal University of Pernambuco in his native Brazil. He earned his doctorate in computer engineering and computer science from the University of Cincinnati in 2003. He is fluent in English, Portuguese and Spanish.

Cordeiro's picture and bio appeared with the other "New Faces of Engineering" in a full-page ad in USA Today on 20 February. See <http://www.eweek.org/2002/Engineers/newfaces2007/engineersweek.pdf>.

Cordeiro was selected by an ad hoc committee of IEEE members including Vern Johnson of Tucson, Ariz.; Terrance Malkinson of Calgary, Alberta, Canada; Gregg Vaughn of Birmingham, Ala.; and Abby Vogel of Kensington, Md. The committee's other top choices were Walter Guiot (Tucson, Ariz.); Dr. Dean Ho

(Evanston, Ill.); Anne Lee (El Segundo, Calif.); and Dr. Tomas Palacios (Cambridge, Mass.). Their bios are available at: <http://www.eweek.org/site/Engineers/newfaces2007/IEEE.shtml>.

For more on all the 2007 "New Faces" honorees, go to: <http://www.eweek.org/site/Engineers/newfaces2007/index.shtml>.

The New Faces of Engineering recognition program is part of EWeek, a formal coalition of more than 75 engineering, professional, and technical societies and more than 50 corporations and government agencies, including the IEEE. Founded by NSPE in 1951, EWeek is dedicated to ensuring a diverse and well-educated future engineering workforce by increasing understanding of, and interest in, engineering and technology careers among young students, and by promoting precollege literacy in math and science. EWeek also raises public understanding and appreciation of engineers' contributions to society.

The Society of Manufacturing Engineers and Tyco Electronics Corp. co-chaired EWeek 2007 (18-24 February). See [www.eweek.org](http://www.eweek.org).

# The Best Advice We Ever Took

by Sue Dorward

A friend recently told me that she is pregnant. I immediately passed on to her the best advice that I was ever given about having a baby, which was given to me years ago by a colleague and friend who said it was the best baby advice she got. "Get lots of sleep now, and once the baby comes remember to sleep when the baby sleeps. You will need the rest."

It occurred to me that this is the perfect litmus test when giving advice: what advice did I personally find the most valuable, which I want to pass on to others when they find themselves in similar situations? After giving my friend "the best baby advice," I wondered, what is the best professional advice ever given to me for being an effective manager and leader? Furthermore, what do other managers consider to be the best advice that they ever got?

Before getting into this further, I feel I should give you a few caveats about advice. Giving advice is tricky business, and doing it well requires an in-depth understanding of the other person's situation and preferences, along with good timing and tact. We often forget that what may work for ourselves may not be the best approach for others. Advising people on what to do can prevent them from learning how to figure things out for themselves. (As a coach who has pledged to follow the guidelines of the International Coaching Federation, I am required not to give advice when coaching.) Furthermore, unsolicited advice is often unwelcome, ignored, or taken as criticism, so sometimes it is best to wait until someone asks before offering advice.

That said, I am nonetheless intrigued by the idea of identifying and passing on our collective "best advice" as engineering managers. When advice is prefaced with "this is the best advice I ever got", and supported by a personal story illustrating why, the advisor's message has a much greater impact and is more likely to be appreciated, acted upon, and shared with others. The recipient

receives the advice as a gift, rather than a criticism.

## The Best Advice I Ever Took

The best advice I ever got (and acted on) was during my first year as a manager, leading and turning around a large, troubled team at a booming dot-com. My manager, a new CTO, shared with me some advice that he himself got as a young manager. (Hmm, advice with a two-generation pedigree seems to be a pattern here.) He told me, "Learn to listen to your inner voice. It may be quiet at first, but don't ignore it. Listen to it, think about what it tells you, and do not be afraid to share your thinking with others. Your inner voice will get stronger with experience and you will learn to trust it. You will learn that your greatest value as a manager is your intuition, especially when combined with judgment and analysis rather than just 'going with your gut.' If it leads you to disagree with others, so much the better. When you voice a different perspective, you add value to the organization."

## Following the Advice

I did not get much guidance or any training as a new manager, so I was especially grateful for this advice and its implied support. It helped me learn to trust myself as I made new hires, put processes in place, and interacted with my peers and senior management. I did find myself speaking up with opinions that differed from the others', and felt proud that I did so. I am proud of my accomplishments there and the organization that I helped re-create and strengthen. Though my manager may not have appreciated my opposition to him on a couple of issues that I felt strongly about (or the irony that his advice encouraged me to do this!), I never regretted standing up for what I believed in.

## Ignoring the Advice, and Regretting It

If advice is never followed and rather is only valued in retrospect, it is not effective and in my opinion should not qualify as "the best advice." However, going against good advice at times, then suffering and

recognizing the consequences, reinforces the value of that advice.

In my case, the booming dot-com grew and changed senior leadership. I found that I did not respect the new leadership and was losing my enthusiasm for working at this company, which I had once loved and believed strongly in. I consulted someone I trusted, who advised me to stay put, in part because of my high salary and the post-bubble job market. I considered a lateral move in order to have a growth opportunity, but my advisor was against this too so I did not push my management to move me.

I knew that money was not enough reason for me to stay and that I needed to grow and to work for people I respected, yet I stayed another year. I ignored and even stifled my inner voice, instead placing my trust in my advisor. (Remember those caveats earlier about giving advice?) I became increasingly unhappy, and it showed. I stopped voicing my opinions and kept quiet rather than engaging in debates, even when I knew that senior management was looking for me to do so. When I finally did leave, I had learned a valuable lesson and learned the hard way the value of my manager's advice.

## Tell Me, What's the Best Advice You Ever Took?

Now it's your turn. If you have your own "best advice" given to you that you would like to share, please email me and (with your permission) I may include it in a future publication. Please include your contact information, the advice, and your story about how you got the advice, how it helped you, and what happened when you didn't follow it (if applicable). And keep your eyes peeled for the next newsletter!

Sue Dorward is a tech management coach who coaches high-potential employees. She is based in New Jersey and can be reached at [sue@sudocoaching.com](mailto:sue@sudocoaching.com). For more information, visit [sudocoaching.com](http://sudocoaching.com).

# One SIP at a Time

by Brad Dawson

## Leveraging Unique Informational Assets to Achieve Higher Levels of Corporate Valuation

On paper, engineering firms are 6 – 12 months from financial disaster. It is the nature of a business that relies on finite project engagements and employee availability to generate sustainable revenues. Prudent firms seek to optimize traditional performance metrics including corporate chargeability, project staff composition, and billing rates to generate higher levels of revenues and associated profits. Unique corporate information, an engineering firm's most valuable asset, remains hidden in the quest to meet monthly revenue and profit targets.

Engineering firms possess the capability to enter their markets with innovative and effective products that, when implemented, result in higher levels of corporate value and formalize a more mature corporate environment that is less sensitive to the immediate actions of its customers and employees. Evolution from a services-only mentality begins with the capture, analysis and dissemination of information that is obtained through the firm's project engagements – engagements that produced information that is only known by your project team. When viewed on a project only basis, the information is of limited value. When information from multiple projects is combined, singular customer nuances meld into industry trends setting the framework for corporate evolution.

## Corporate Value – The Eventual Reward

Business owners view the world from a corporate value perspective – how much is my firm worth? Annual compensation aside, the business owner is much more concerned with the terminal value of his or her corporation at specific times during the corporate growth cycle. Unlike product-based companies that are often recipients of

outside venture funds, engineering firms are usually born from owner savings and “sweat equity” – investments that are envisioned to one day provide a substantial return to the business owner.

Unfortunately, due to the nature of engineering firms, corporate value usually becomes a secondary consideration for any business seeking an acquisition candidate. Instead, factors such as customer rosters and personnel skill sets are paramount when an acquisition is being considered. As a result, pricing multiples on gross revenues for engineering firms are very often anemic when compared with a product-oriented business of comparable financial size.

The reason for the differentiated payout amounts is easy to explain – it relates to the expected value of the corporate assets. In product businesses, the product, of course, becomes the primary basis for establishing a selling price. Models can be developed to show future values that build on the expected lifecycle of the current and planned product portfolio. In contrast, engineering firms are scrutinized based on customer contract language (can the largest customer exercise an out clause upon an acquisition event?) and the overall confidence that key employees will stay after the acquisition event. This disparity of corporate asset values between services and product based companies results in the wide swing in buyout pricing.

Is there a way for engineering firms to increase their corporate value and acquisition pricing without completely resorting to a product-based business model?

## The SIP Approach Defined

The SIP Approach leverages the diverse and complex nature of an engineering firm's delivery experiences and “packages” that knowledge for use in both strategic thought-leadership and product development avenues. The acronym SIP stands for Services, Infor-

mation, and Product – the three components necessary for achieving revenue diversity and higher levels of corporate value.

## The Services Component

The Services component is self-explanatory – it is the primary base of revenue for an engineering firm. Typically project-based with an established duration and contract value, the services offerings focus on employee chargeability and labor rates as the primary internal business drivers.

Although engineering firms will often argue as to the “best practices” regarding overall corporate levels of chargeability, our experience has found that the optimal chargeable level is 80%. When the rate is lower than 80%, the cost of administration, overhead and/or selling expenses are too large when aligned with the actual delivery levels of the business. Conversely, when the rate is higher than 80% indicates that individuals are working beyond normally expected hourly workloads – not a work environment that is sustainable for any significant period.

Labor rates are another area of frequent discussion among engineering firms. As a starting point for discussions, the “Rule of Threes” is often used as point of reference. Under the “Rule of Threes” an individual's billing rate is 3x their salary cost. One third of the rate goes to salary, one-third to overhead, and one-third to profit. Of course, in highly competitive environments, these rates are subsequently discounted to achieve higher levels of chargeability.

Although different variations exist, service offerings for engineering firms are often classified into three categories:

## Assessments

Most engineering firms have conducted “special studies” for their customers. Projects associated with power system availability or fault current analysis are

often resident in service portfolios. Information regarding industry and manufacturer trends, competitive positioning and logical market shifts are also resident in the firm's knowledge banks. The objective is to offer this specialized knowledge to the end-customer, thereby, establishing a paying, low-risk relationship. In a very short time, this customer develops a trust relationship with you and, more importantly, sets the stage for you to participate in the more traditional design and construction efforts.

### Implementation

For most engineering firms the Implementation component represents approximately 70% to 80% of the total revenue of the firm. This is the primary offering of the firm – usually associated with traditional design and construction administration services. By already providing chargeable customer work under the auspices of the Assessment offerings, the engineer is perfectly positioned to influence the timing, character and pricing of the larger implementation prize and do so in a way that excludes other services providers from eclipsing the already-established customer relationship.

### Maintenance

Once construction is complete, the goal of the engineering firm is to justify its existence for the lifecycle of the building. For many firms the development of outsourcing offerings provides the best means to ensure a continuous, unbroken customer relationship, thereby, allowing the firm to remain a visible and positive contributor to the customer for extended periods of time.

The intent and purpose of building systems change throughout the life of the building. Where tenant occupancy cycles may be 7 to 10 years, organization full-term business lifecycles are usually of a shorter duration – 18 months to 5 years depending on the industry and organization type. Regardless, where a building system has a useful life of greater than 15 years, the engineer is of paramount importance to the building owner as a reviewing

authority for any contemplated changes in the building systems – these changes occurring as a reflection of the business character from the various tenant and business cycles.

For most engineering firms, the process of corporate evolution stops here. Each customer project signifies a start and stop mentality where little is learned or leveraged into the knowledge banks of the organization. The focus is oriented towards achieving volume and, as a result, service offerings become mechanized processes devoid of any real level of thought innovation.

### The Information Component

The Information Component represents the specific and unique information that has been gained from all corporate project experiences. Many engineering firms already capture information regarding improved production and internal operational practices but are less likely to capture specific performance, industry or relational variable characteristics that can be used to predict market direction and performance. It is this information gained from the analytical stages of every engagement that can be leveraged for the benefit of the engineering firm. What's more, this information is unique to the organization and, as such, now represents a new asset for the business – an asset that can be valued.

But, what is the value of this unique information? It doesn't appear on a balance sheet nor can it be used to collateralize a loan, yet, by its very existence, provides market differentiation and, as a result, can be used to decrease customer acquisition costs, increase customer retention levels and provide an avenue to develop tangible products.

Understanding what comprises an informational asset is at first glance a daunting task. There are literally reams of data that are collected as part of each project engagement. For many, the process of culling through the information is akin to finding a needle in a haystack. But the process can be sub-

stantially simplified by asking several questions regarding the impact of the information. Specifically, what similarities or trends in data across multiple projects are beginning to emerge? Does this information support a shift in the industry or is it merely an anomaly that can be explained away by a series of one-time events? Finally, does the information "point" to a logical market position – one that will significantly reward those players that reach this destination first?

Through this internal examination, certain "realisms" begin to emerge. As we already know that markets are never stagnant, the role of the engineer is to predict where the next market evolution is heading and seek to be the industry's most knowledgeable player. The value of being in the right future place while the rest of the market struggles to find their niche allows these firms to reap significant market and customer rewards.

The Information Component represents the next rung on the corporate maturity ladder. Specific project experiences are yielding unique information that can both guide the firm and serve as a strong differentiator in the marketplace. Recognition of this information as a newly created organizational asset paves the way for the engineering firm to embrace larger, more diverse revenue options. In addition, the Information Component begins to recognize the value of the organization over the value of its individuals – a strong move towards creating higher levels of overall corporate value.

### The Product Component

The Product component is the natural extension from the Information component – it is a means to "productize" the unique information for the benefit of the customers and serve as a differentiator during customer acquisition events. Usually having a shelf life of 3-5 years, these "products" serve to increase corporate wealth and provide a new tangible revenue source.

For most business purists, the advent of the product is usually seen as the pre-

able to any viable business. For traditional product start-up companies the problem, of course, is obtaining the funds necessary to develop, produce and support a product lifecycle – an event that often fails. Alternatively, engineering firms have the ability to self-fund, through free cash flow generated from services revenues, the necessary capital to develop and produce new products.

Does this position advocate that engineering firms should always seek to develop tangible products in their marketplace? The answer, of course, is based on the desires of the business owners. However, if higher corporate value and an acquisition event are desired, the overall price of purchase will be exponentially higher (in most cases) when the firm also maintains a viable product portfolio.

The Product Component represents the top rung of the corporate maturity ladder. However, as any product company will attest, the value of a product in any market is short-lived. There is a need to constantly develop new offerings to remain competitive and viable. Again, using the SIP Approach, new ideas identified through on-site customer experiences provides the best avenue to creating new solutions for the marketplace.

### Impact on Corporate Revenue and Delivery Costs

Under a traditional engineering services business model, customer relationships follow a relatively predictable 5-year cycle. Customer revenue can be depicted using a bell curve graphic where nearly 70% – 80% of these revenues occur at the mid-point of the customer relationship – peaking in Year 3. As a result, savvy engineering firms craft concurrent customer relationships to minimize the occurrence of operational (and cash flow) peaks and valleys. The SIP Approach, because it relies on a shorter 3-year product lifecycle curve, provides another means to maximize individual customer revenues and further flatten the impact on operational and financial resources.

While revenue gains are most visible as corporate products achieve higher levels of market acceptance, the real impact is felt in the cost of delivery. For traditional engineering service offerings there is a direct relationship between revenue earned and labor hour charged – a person is necessary to achieve any form of revenue. Conversely, in the product space, the cost of delivery is minimal as corporations seek to offset development and distribution investments as opposed to assigning direct costs for every product sold. The net affect is that in periods where product sales are peaking, there is generally a much higher level of free cash flow than could ever be achieved in a pure services environment – regardless of the number of people working.

The overlay of the traditional 5-year customer relationship cycle and the 3-year product lifecycle creates a unique opportunity for engineering firms to both maximize customer revenues and minimize the potential impact of any single cycle.

### Organization Performance Metric Considerations

The SIP Approach moves a traditional engineering firm from an entity with a short predictable timeframe to an organization that is able to realistically count on a period consistent with the expected life of its product portfolio. For many organizations, this timeframe moves a firm from a 6-month horizon to a 3-year perspective – all the time increasing the acquisition value of the organization.

Services and product-based businesses operate under a very different set of performance metrics. Selling, delivery and corporate reinvestment philosophies are comprised of nearly diametrically opposed viewpoints – where a mix of philosophies can detract more than support the diverse business mission. The answer is to never bring the two cultures under a single operating structure but instead embrace the differences under the auspices of separate organizational and operational entities.

### Sales Metrics

Engineering firms rely on consultative (or relationship) selling as the basis to acquire and retain customers. They have found a high degree of success when the same person that sells a project is responsible for delivering the results. In this way, the customer relationship remains intact throughout the entire customer cycle and allows the firm to shepherd the client proactively through the customer lifecycle.

Conversely, product sales are all about volume – the number of calls, orders, and customer touches. Sales and delivery are separate functions and a continuing customer relationship becomes less important as product revenues become the basis for maintaining any customer allegiance.

It should be no surprise that these two business models require two very different selling skill sets and cannot be accomplished by any single individual. Too often businesses that look to encompass both services and product sales are dissatisfied with customer acquisition results blaming the outcomes on the sales professional when in fact, the combined environment negates any real ability to achieve measurable success under either business model.

### Delivery Metrics

Expectations associated with delivery metrics are also vastly different between a services and product-based culture. In a services environment, delivery re-use (i.e., the ability to reuse processes or tools from one engagement to the next) is often compromised as new or unique project requirements necessitate a flexibility of approach versus a standardized method of delivery. Conversely, product based companies bask in their ability to mechanize their delivery processes for both quality and cost-effective reasons. Grading either business model on their delivery reuse metric without understanding the underlying culture sets unrealistic (and perhaps fatal) expectations for any delivery team.

## Corporate Reinvestment Considerations

Research and development is a relatively unused term in the services environment. While “special projects” may arise during lulls in project commitments, research and development is focused on the products environment. Realizing that products typically have a limited useful life (anywhere from 3-5 years depending on the industry), organizations need to establish funding cycles to replenish new product development investments.

Given the disparities between the performance metrics for services and product-based companies, maintaining separate and distinct organizational and operational structures is highly recommended. By creating these stand-alone, yet, symbiotic structures, each entity is

allowed to grow and succeed based on their respective performance metrics. Engineering firms possess a capability to enter their markets with innovative and effective products that, when implemented, create higher levels of corporate value and formalize a more mature corporate environment that is less sensitive to the immediate actions of its customers and employees. The SIP Approach provides corporations with a model to immediately leverage unique corporate knowledge gained from services engagements and evolve this information into viable market products.

### About the Author

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## Triathlon for Personal and Professional Development

*Terrance Malkinson*

“Pain is Temporary  
Pride is Forever”

This article is in response to requests from many EMS members who learned of my involvement in triathlons and have asked me to share with you what I have learned. For me, participation has brought a holistic approach to my life and has contributed to my personal and professional development. It's not just about the event itself; rather it is about the journey to get to the start line. It's about reflecting upon your life and realizing your dreams. It's about realizing what is really important in life. It's about friendships with energetic and motivated people who relish life. It's about making sense of the world that we live in. It's about learning from failures, overcoming challenges, and then success \_ crossing the finishing line and achieving a sense of pride of a moment that will remain in my memory for the rest of my life.

### Introduction

Triathlon; involving consecutive swimming, cycling, and running has become one of the most popular endurance sporting events for people of all ages and abilities. This relatively new multi-sport event builds physical and mental strength contributing to overall personal health and wellness, which improves performance in all aspects of your life. This presentation will provide an overview of the triathlon, a discussion of the physical and physiological per-

formance challenges facing participants, training strategies, and the lifelong health and wellness benefits. Triathlons up to and including the Ultraman level will be discussed in general and the Ironman level will be discussed in detail. Sources of further information are provided to the reader at the end of the article.

Triathlon is a fast growing individual sport which is done in a group setting. Triathlon exists at various levels of participation and is suitable for all ages and for both genders. The word “Triathlon” is derived from: TRI (three) and ATHLON (combat). The Ironman triathlon level began on February 18, 1978 in Hawaii in response to a debate among a group of athletes as to who is the most fit — swimmers, cyclists or runners. To settle the argument it was proposed to combine the three sports together into one event and whoever won would be the fittest athlete and called “the Ironman”.

Triathlon engages every cell, structure, and system of the body to perform efficiently using economy of motion, and economy of body resources in a manner that will avoid serious injury. Advances in sports medicine, training techniques, and equipment design provide the participant with the resources for an enjoyable and safe triathlon training and event experience.

*It's not about crossing the finish line first —  
Rather, it's about the journey and finishing with style*

### Levels of Triathlon

There is a participation level of triathlon for everyone - young to old; novice to experienced.

	SWIM	BIKE	RUN
Kids of Steel			
7 and under	50 m	1.5 km	500 m
08-09	100 m	5.0 km	1,500 m
10-11	150 m	10.0 km	2,000 m
12-13	300 m	15.0 km	3,000 m
14-15	500 m	15.0 km	4,000 m
16-19	750 m	20.0 km	5,000 m
Sprint	750 m	20.0 km	5.0 km
Olympic	1.5 km	40.0 km	10.0 km
Ironman 70.3	1.9 km	90.0 km	21.1 km
Ironman	3.86 km	180.2 km	42.2 km
Ultraman	10.0 km	418.3 km	84.0 km

### Benefits

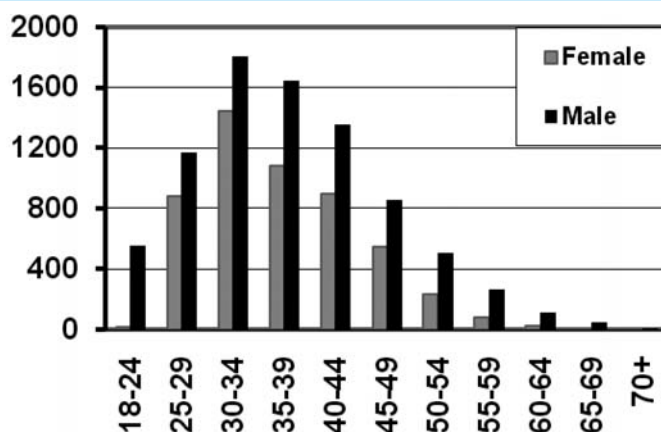
- Develops synergistic endurance, strength, and flexibility
- Develops strength-of-character and perseverance
- Personal challenge and significant accomplishment
- Sense of an elite community and camaraderie
- Ageless participation - youth to elderly
- International events and global participation
- Peer respect and support
- Relatively inexpensive
- Year-round fitness
- Keeps you youthful
- Participation is better than just watching others
- It's fun!!!!

### Distribution of Ironman Participants by Age and Gender

Participation in the sport of triathlon is within the reach of anyone. There are many examples of handicapped participants who overcame their disabilities and successfully realized their dream. Beginners often start with the shorter distances and as they realize the benefits, quickly migrate to more challenging triathlon levels. Participation in Triathlon's worldwide is growing rapidly as are the spin-off businesses which are meeting new needs in this market place. The accompanying graph illustrates the combined distribution by gender and age of participants in two Ironman's; Ironman Canada and Ironman New Zealand for the years 1997-2005.

### Senior Iron-People

Data compiled from Ironman World Championships held in Kona, Hawaii in 2005 revealed the ageless nature of the event.



### Female

Madonna Buder  
75 years age from Spokane WA.  
Swim 1:45:05  
Bike 7:25:17  
Run 6:19:43  
Total=15:54:16

### Male

Robert McKeogue  
80 years of age from Villa Park IL.  
Swim 1:54:50  
Bike 8:15:12  
Run 5:55:42  
Total=16:21:55

### Characteristics of a Typical Triathlete

A survey of the sports medicine research literature revealed the following characteristics of triathletes in the 18-35 cohort group.

	Male	Female
Sample size:	1,429 (47 publications)	115 (8 publications)
Age:	27 (4.1) yr.	32 (3.2) yr.
Weight:	71 (3.1) kg.	58 (1.6) kg.
Height:	179 (2.7) cm.	166 (3.1) cm.
Body Fat:	10.6 (1.8) %	17.6 (2.2) %
VO2 max:	65.1 (5.5) ml/kg/min	56.9 (6.0) ml/kg/min
Heart Rate max:	180 (8.8) bpm	188 (0.7) bpm

### Training

Daily (365 x 7) using a Periodized annual training plan. Periodization is a cyclical approach to training where periodic changes in training parameters (volume, intensity, loading, activity) are planned in order to achieve optimal performance (peak) on the day of the sporting event. Before starting a training program it is always advisable to get a medical check-up with a physician experienced in the issues involved in participation in athletics. Although triathlon is an individual sport it is always advisable to obtain professional training advice so that you achieve the maximum benefits from each session.

### Warm-up (Base) Training

A group of exercises performed immediately before an activity which prepares the body and provides it with a period of adjustment for the transition from rest to training. Activities include the following components:

- Pre-exercise nutrition
- Stretching and flexing through full range-of-motion
- Stabilization of core muscles for lumbopelvic strength
- Yoga / Pilates poses
- Continuous self-assessment

### Technique Training

Research, analysis, and coaching to improve the athletes' efficiency of motion. Technique training includes the following components:

- Improving swim, cycling, and running technique
- Drills, drills, and more drills
- Improving balance and flexibility
- Equipment adjustments
- Nutrition adjustments
- Knowledge acquisition
- Consultation with a personal trainer

### Strength/Power Training

Overload resistance training to improve strength and power simulating the movement pattern involved in Triathlon sports. Strength/Power training is characterized by:

- Total body conditioning with an activity (swim, bike, run) focus
- Light-to-heavy resistance progression
- 6-8 repetitions
- 3-4 sets
- Slow, controlled — concentric and eccentric motions
- 3 day split-routine cycle
- Full range-of-motion
- Unilateral legs/arms engagement for bilateral symmetry
- One legged cycling
- Plyometric (explosive power) training

### Aerobic (endurance) Training

Groups of exercises using large muscle groups and of intensity and frequency to improve maximum oxygen uptake (VO2max). Aerobic (endurance) training is accomplished through:

- Distance swimming, cycling and running
- Running and cycling hills
- Intervals
- Lake swimming
- Heat acclimation

A typical weekly Ironman training includes: 10 km swimming; 200 km cycling; and 45 km of running

### Taper

A period of time immediately before the sports event which prepares your body through rest, and the storing of energy.

- Rest
- Plan your strategy for the event
- Appropriate nutrition (do not experiment)
- Bike maintenance - tires, tubes, chain, cogs, cables, lubrication, repair kit
- Monitor weather forecasts
- Prepare transition bags
- Lubricate clothing
- Avoid people with "colds"
- Avoid senseless injury

### Day before the Triathlon

- Registration package pick-up
- Athlete briefing
- Carbo-load party
- Bike check-in
- Reset bike computer
- Transition bag check-in
- Relax and enjoy the athlete camaraderie

### Day of the Triathlon

- 05:00 Athlete check-in
- 07:00 Swim starts
- 09:20 Swim course closes
- 17:30 Bike course closes
- 24:00 Run course closes / Fireworks

### Day after the Triathlon

- Reflect on the experience
- Record lessons learned
- Register for next year
- Athletes' awards banquet
- Volunteers' banquet

### Restoration

Celebratory, post-triathlon rest period

- Awareness of Immunosuppression
- Review lessons learned
- Planning for next year

### Equipment

SWIM	T1	BIKE	T2	RUN
sunscreen		→		→
body glide®		→		→
timing chip		→		→
watch		→		→
swimsuit/wetsuit		sunglasses		→
swim cap		tri-shorts		→
goggles		shirt		→
towel		race number		→
		heart rate monitor		→
		favorite foods		→
		helmet		white hat
		bicycle shoes		run shoes
		bell		reflective tape
		Tri-bicycle		
		emergency repair kit		
		bike computer		
		padded bicycle gloves		

### What about the Swim?



### Rules

- Mass Start @ 07:00
- Any swim stroke allowed
- Drafting allowed
- Wetsuit allowed if water temperature is less than 250 C
- Swim cap compulsory
- No propulsion devices allowed
- Cutoff @ 09:20

### Challenges

- Mass swim start
- Collisions
- Open water (lake or ocean)
- Swimming straight
- Hypothermia
- Hyperventilation
- Water aspiration
- Deep water
- Waves
- Shoulder overuse injury

- Swimmers ear
- Dermatological issues
- No fluid or nutrition available while swimming

### Safety Precautions:

- Telescopes view swimmers
- Lifeguards in kayaks
- Houseboats at swim course milestones
- Divers sweep course
- Timing Chip for electronic monitoring

### What about the Bicycling?



### Rules

- Helmet compulsory
- Conforming bike
- Mount/dismount lines
- No drafting
- Pass on left
- No side-by-side riding
- Obey traffic laws and officials
- Penalized by added time
- May be disqualified if infraction serious
- Nutrition and medical aid stations on the course
- Cutoff @ 17:30

### Challenges

- Crashes
- Pressure neuropathies
- Patello-femoral pain
- Iliotibial band syndrome
- Metatarsalgia
- Heatstroke
- Sunburn
- Bike breakdown and repair
- Correct bike fit
- Cadence and gearing
- Knee / leg / neck strain
- Weather
- Tire Pressure
- Road Surface
- Grumpy residents!!!

Always obtain advice from a professional bicycle fitter. It's essential to have the correct sizing for comfort, maximizing muscle recruitment and movement kinematics, maximizing power output, as well as avoiding of injury.

### What about the Run?



### Rules

- Run on right side of road
- Clothing reflectivity at night
- Run / walk / crawl to finish line allowed
- No outside assistance
- Official finish by midnight
- Nutrition and medical aid stations on the course
- Ensure that you get a good finishing photograph!!

### Challenges

- Blisters
- Toe-nail trauma
- Heatstroke
- Sunburn
- Gastro-Intestinal distress
- Bone micro-fractures
- Cambered road surface
- Patello-femoral pain
- Iliotibial band syndrome
- Achilles tendinitis
- Plantar fasciitis

"I'll keep running because it educates me. Before my first 5K, I did not know what a K was. I was very glad to hear that it's shorter than a mile."

### Strategies for a Successful Day

- Absorb the energy of spectators
- Focus on a healthy finish enjoying the experience

- Train effectively
- Know your body
- Know your pace
- Know your food
- Know your hydration
- Appropriate clothing
- Be aware of environment
- Know the route
- Know where the aid stations are
- Use lots of sunscreen
- Use lots of body glide®
- Don't over-inflate tires
- Plan transitions
- Don't experiment
- Stretch before starting
- Change body position often
- Well-prepared equipment
- Carry a bike repair kit

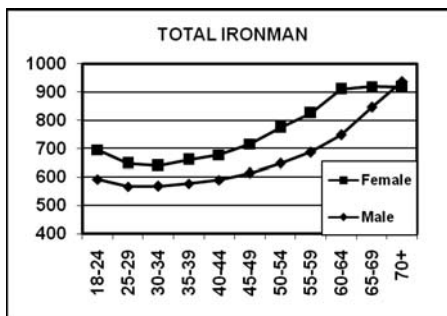
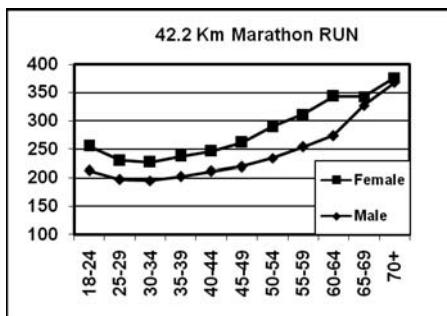
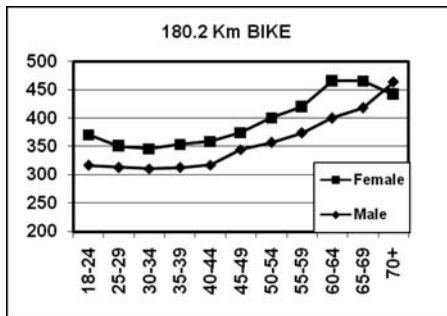
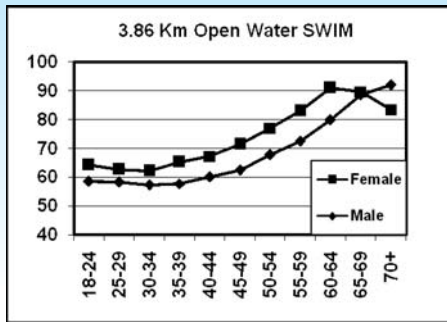
Recognize that things can go wrong due to circumstances beyond your control. Create a personal mission statement that helps you focus your goal — a personal philosophy on why you are doing a triathlon.

### Achieving an Edge in Performance

- Use a wetsuit to increase buoyancy
- Draft on the swimmer ahead of you
- Shave down
- Train at altitude to increase VO2max
- Use appropriate best equipment
- Get a medical and biomechanical exam
- Get a resting energy expenditure test
- Get a VO2 max test
- Avoid tendency to overtrain
- Do not experiment near or on race day
- Taper prior to the event
- Read, analyze and apply the research literature
- Learn from other triathletes
- Obtain professional training advice

### The Numbers

The following graphs represent data compiled from participants in Ironman Canada and Ironman New Zealand for the years 1997–2005. Data represent the average of the first three age division finishers for each gender. Time in minutes is represented on the "y" axis and the age grouping on the "x" axis.



**Age and Gender and Ironman Performance?**

Fastest times are in the 30-34 age division

	Male	Female
3.86 km swim	57 min	63 min
180.2 km bike	311 min	346 min
42.2 km run	195 min	227 min
TOTAL =	568 min	640 min

**What is the Fastest Completion Time and who has done the Most Ironman's?**

Male: 8:14 Ironman World Championships Kona, Hawaii in 2005.

Female: 9:07 Ironman world Championships Kona, Hawaii in 2002.

Manabu Ueda of Japan has completed 53 Ironman's

**So, what does this all mean to me as an Engineering Manager?**

We are all mortal and have only one life to live. In a past career I was involved in health care which taught me an important lesson - life is fragile and anyone's life can end or change unexpectedly. I witnessed many instances of individuals who suddenly became chronically or terminally ill and who were filled with regrets that they were now unable to realize their dreams.

Some of you may be familiar with other articles that I have written that reflect on the philosophy of "carpe diem" - Seize the day! This is the result of the influence that many of my most significant mentors have had on my life as well as other life experiences such as participation in many Outward Bound programs. The 1989 Academy Award film "Dead Poets Society" tells the story of an English teacher at a conservative and autocratic boys' school who inspires his students to make changes to their lives of conformity through his teaching. The movie "Field of Dreams" has inspired millions and is a tribute to all who dare to dream. Individuals such as Lance Armstrong; seven time winner of the Tour de France and who as a cancer survivor has been a symbol of hope and a source of inspiration to millions around the world.

We all must learn from history and from the experiences of others. You must decide for yourself what is personally important as you journey through life and what will be your legacy to society? How will you be remembered by your family? How

will you be remembered by those you supervise? How will you be remembered by what you have "engineered?" Will you be remembered as someone of high integrity and ethics and as someone who made a difference? As an engineering manager do you serve as a good role model to those that you manage? Do you have worksite wellness and fitness programs?

To me and I hope to others, participation in a sporting activity of your choice, at the level for which you are comfortable and perhaps even your extending outside your comfort zone is an important component of a well balanced life. Your participation will be of benefit to you as an engineering manager through improved health, wellness, and personal confidence. This activity may not necessarily be a Triathlon; there are many other opportunities open to you. As stated earlier in the article before engaging in a new activity always get a medical check-up and seek out sources of professional advice to assist you with your training. Start conservatively, advance by small steps and make engagement in health and wellness a non-negotiable part of your daily activities.

The experience and research is clear and unequivocal. Those who take the time on a regular basis are more effective in all aspects of their life. You only have to look at the skyrocketing cost of health care to realize the importance of maintaining a healthy lifestyle.

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### DVD's and Websites

What it Takes: A documentary about the quest for greatness of four world-class triathletes. [www.WITmovie.com](http://www.WITmovie.com)  
ESPN 25th Anniversary of Ironman. A documentary describing the Ironman over the years 1977-2002. Ironman Productions.

Yoga for Endurance Athletes. [www.TTUniversity.com](http://www.TTUniversity.com)

An excellent catalogue of training and motivational DVD's are available at the Swimming World Magazine website: [www.swimmingworldmagazine.com](http://www.swimmingworldmagazine.com)

Another excellent catalogue of training and motivational DVD's is available at the Triathlete Magazine website: [www.trimagstore.com](http://www.trimagstore.com)

The Ironman Canada Website: [www.ironman.ca](http://www.ironman.ca)

The Ultraman Canada Website: [www.ultramanCanada.com](http://www.ultramanCanada.com)

### About the Author

Terrance Malkinson, B.Sc., B.Tech., A.Sc.T., SMIEEE is a proud Canadian, an elected member of the University of Calgary Senate, a Governor of the IEEE Engineering Management Society, Vice-Chair of Communications for IEEE-USA and Editor-in-Chief of a number of leading journals. He is a graduate of the University of Calgary and was a founding member and a senior research technologist of the Faculty of Medicine for over 25 years. He then completed his Bachelor of Technology degree and worked for General Electric; providing professional support to their sales and technical operation throughout North America. He is the author of over 300 publications, has presented the results of research at numerous international scientific conferences, and is the recipient of many peer-reviewed awards for his work. He is an alumni of Outward Bound Canada and Outward Bound Singapore.

# Making the Transition from Engineer to Manager

by Leslie Martinich, VP Publications, IEEE EMS,  
Chapter Chair, Central Texas EMS

Engineers are well-trained as engineers, but making the transition to management is often a perilous, arduous task.

Technical professionals should learn and develop leadership skills early in their careers. Attending conferences, networking with professionals, receiving adequate mentoring, and getting good training are all ways in which professionals can help build their leadership skills.

I'll discuss three of those approaches in this article: getting good training specific to engineering managers, networking with professionals, and finding a conference track within which to gain skills.

## Training

After meeting with executives in technology and engineering organizations in the Spring of 2006, we piloted our first Engineering Leadership Institute. The executives' objectives for their engineering managers were to

- quickly get managers up to speed to manage technical projects;
- improve cost efficiency; and
- participate in results-based learning that provided applicable tools.

The specific services that the executives asked for and that the Engineering Leadership Institute offers are:

**Jump-start training:** in the first one week session, managers gain basic communication, strategic planning, negotiation, team-building, and project management skills. The three follow-up sessions build on those skills and address new issues they are facing.

**Successful projects:** with the skills they acquire in conflict resolution, project management, and strategic planning, managers learn to successfully bring in projects on time and within budget.

**Increased efficiency:** within the negotiation, communication, and team-building classes, managers learn proven strategies to improve their team's effectiveness.

This institute is taught by award-winning faculty and industry leaders. By the end of the first week, managers have added important tools to their skill set, and organizations see an immediate ROI with the added bonus of a follow-up each 6 months to strengthen and add to their managers' tool kits. Learning over a two-year period, with a set of 15 to 20 cohorts, new engineering managers acquire the tools they need and find a supportive group within which to develop their skills.

## Networking with Professionals

Attending your local EMS Chapter meetings provides a good way to network with other professionals and learn different ways of dealing with management challenges.

At our April Central Texas EMS Chapter meeting, we discussed "Leading an Effective Engineering Team." The participants generated over 100 good practices for leaders. Those are online at [http://www.ewh.ieee.org/r5/central\\_texas/ems/meetings/meeting-centex-ems-070403.htm](http://www.ewh.ieee.org/r5/central_texas/ems/meetings/meeting-centex-ems-070403.htm)

At our February Central Texas EMS Chapter meeting, we discussed "Building Morale in Your Organization." At that meeting, participants considered what worked and what did not work to improve morale, and constructed a list of practices that do work. That list is available online at [http://www.ewh.ieee.org/r5/central\\_texas/ems/meetings/meeting-centex-ems-070213.htm](http://www.ewh.ieee.org/r5/central_texas/ems/meetings/meeting-centex-ems-070213.htm)

## Conferences

Many conferences offer good opportunities for engineering managers to

learn new skills. The IEEE GOLD (Graduates Of the Last Decade) group is planning a track for the International Engineering Management Conference <http://www.iemc07.org> that is designed to be a place where young professionals can meet, network, learn from each other and from experts, focus on making the transition to management, and have a lot of fun!

GOLD members will also have the opportunity to present their work through peer-reviewed articles and poster session presentations. Their track is specifically focused on young engineers making the transition to management, with a panel discussion led by Gus Gaynor and an invited talk from Celia Desmond on "Leadership and the Young Manager." Their work will be podcast and vodcast, allowing GOLD members to interact world-wide through the conference repository of video clips.

Kayaking and river rafting at IEMC 2007 present some opportunities to test their team-building, collaborative and competitive skills as well. Who knows, perhaps their river rafting expeditions will be vodcast as well!

If you or your employees are about to make the transition to management, you can make that transition more likely to be successful by getting training and mentoring. Take advantage of these opportunities to build your skills and see your professional life flourish.

## Resources:

### Training Sources:

Engineering Leadership Institute:  
[http://lifelong.engr.utexas.edu/short-course.cfm?course\\_num=1068](http://lifelong.engr.utexas.edu/short-course.cfm?course_num=1068)

### Books:

Gerard H. Gaynor, *What Every New Manager Needs to Know: Making a Successful Transition to Management*, New York: AMACOM Books, 2004.

**Articles:**

Linda A. Hill, "Becoming the Boss," Harvard Business Review, January 2007.

**Conferences:**

International Engineering Management Conference 2007 29 July - 1 August 2007, Austin, Texas USA, held

at the Hyatt Lost Pines Resort, <http://www.iemc07.org>

## CHAPTER REPORTS

### Dallas Chapter

*Bob Bishop*

Dallas chapter meeting March 9, 2007, discussed the Transformation of the Engineering Management Society into the Technology Management Council, and what it means to each individual member.

## Southeastern Michigan Chapter

*Mark Ciechanowski, P.E., Chapter Chair*

Our last meeting was at the Section-hosted Spring Section Conference on Thursday, March 29, 2007. We had one of the largest best-attended meetings ever with twenty-two people present. Our speaker was IEEE distinguished lecturer Robert R. Bishop, Jr. who presented "You're Dilbert's New Boss - Overview of Engineering Management Issues". Bob reminded us of many Dilbert truisms while taking us through a list of management issues. Bob says that everyone is perceived as dumb once

in a while, so to your employees you may appear more like Dilbert's manager than you think. Bob lead us in an exercise in a "Freewrite Process" writing exercise by author Peter Elbow. The next day a few of us had a very enjoyable informal lunch discussing further management topics with Bob before he left to return to Texas.

The keynote speaker for the evening was Ms. Teri Takai, Chief Information Officer of the State of Michigan. Teri presented "Technology and Michigan:

Re-Engineering Government". Teri showed us how she consolidated IT in Michigan, saving millions of dollars for the state and giving Michigan one of the top state government IT organizations in the country. The next section conference will be the Fall Section Conference on Thursday, November 8, 2007 5pm-9pm.

Let us know how we may serve your needs in engineering and technology management. Email us at [semichigan-ems@ieee.org](mailto:semichigan-ems@ieee.org) and visit [http://ewh.ieee.org/r4/se\\_michigan/ems](http://ewh.ieee.org/r4/se_michigan/ems).

# CALL FOR PAPERS

## IEEE Transactions on Engineering Management Special Issue on "Managing Innovation in Emerging Economies"

### Guest editors:

Clayton Christensen (Harvard University),  
Chang-Chieh Hang (National University of Singapore),  
Kah-Hin Chai (National University of Singapore)  
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This special issue will focus on the management of innovation in emerging economies with widespread impact such as Brazil, China, India, and Russia. This is a timely effort, since emerging economies are increasingly an important driving force in the world economy. In line with a recent report by the Economist (Sep 16, 2006), we define emerging economies as countries that were not OECD members prior to 1994, regardless of their current status. Because of the vast differences in education, political, economic, and geographical factors, the challenges faced by technology managers and entrepreneurs in these markets are numerous and multi-faceted. The emphasis of this special issue is on the management of innovation, engineering, and technology at the firm level rather than macro-economic national policy-level.

Given the differences and uneven levels of development among emerging economies, what and how should different types of innovations be

introduced and managed in these countries? In what ways should local companies manage their 'indigenous' innovations? How relevant or useful are existing innovation theories and practices that have primarily been developed in western countries when they are applied to China, for example? What are the 'new' theories? Surrounding these and related questions are a broad range of topics in innovation and technology management. We particularly welcome papers on managing innovation in emerging economies in the following areas:

- Innovation strategies
- Intellectual property management and strategy
- Disruptive innovation
- Managing indigenous technologies
- Technological entrepreneurship
- R&D management
- University-industry technology transfer
- Human resource issues
- Strategic alliances
- Organization structures and cultures

We seek both research and practice articles which will enhance our understanding of the topic. Research articles are empirical or conceptual papers that present the results of research, new theories which integrate existing literature, or state-of-the-art models in the relevant areas. Practice papers describe significant application issues, innovative case studies or actual implementations of existing concepts or methodology. These papers describe complex real-life situations requiring innovative solutions. They use rigor in their arguments, build upon appropriate literature, and reach conclusions that will have an impact on research and practice.

Submission Deadline: March 31, 2008. Papers should be submitted electronically to <http://mc.manuscriptcentral.com/tem-ieee>. The cover letter should indicate that the paper is being submitted to the special issue on innovation in emerging economies. Initial editorial decisions will be reached in June, and publication should occur in 2009.

## Board of Governors

Your Board serves the interests of the Society and promotes Excellence in Engineering Management. The EMS Board needs your input to help determine if the Society meets your needs. Please contact any Board member for additional information, for expressing opinions, or raising issues that need to be addressed by the Society.

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## Newsletter Deadlines

Issue	Deadlines
First Quarter	15 January
Second Quarter	1 April
Third Quarter	1 July
Fourth Quarter	1 October
Terrance J. Malkinson, Editor <malkinst@telus.net>	
Paul Doto, IEEE Newsletter Coordinator <p.doto@ieee.org>	

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