**USC**Marshall
School of Business

Institute for Communication Technology Management (CTM)

## January 2019 @ CTM

### THE DIRECTOR SPEAKS - Planning for Turbulence



We live in uncertain times and makes for a volatile business climate.  Agile businesses are defined as businesses that are able to quickly adapt to changing business conditions.  While all companies are adaptable, organizations that consider themselves agile pride themselves on their ability to respond faster than the competition.  However, in extreme situations, even the most agile company runs the risk of thrashing about in the face of a rapidly changing environment. Business adaption should be a tenant of the operational credo during uncertain times but it has to be rooted in a larger, more strategic vision that serves to keep the company on course.  Such an observation makes for a sound principal but during times of uncertainty can be especially devilish.

More specifically, during times of growth, companies should be exploring new opportunities, areas that can provide disproportionate expansion of revenues.  During times of uncertainty, when future revenues are in question, most organizations will pull back on exploratory ventures and seek to reinforce their fundamental business practices.  While such steps are prudent it is the place where many organizations misstep.  There are two common mistakes that are often made.  The first mistake is that there is a fog around uncertainty and many companies will wait for the fog to clear before they begin to reposition themselves.  The net result being that the retrenchment exercise has to be more severe and the time available to strengthen the fundamentals is reduced.  The second mistake often made is that during the retrenchment effort, efforts focused on future opportunities are shelved which leave the company disconnected from the market need as the situation turns around.  It should be no surprise that great companies are not defined by how they manage themselves during times of growth, instead, great companies are forged by the decisions they make during times of uncertainty.

As we head into 2019, our crystal balls are less clear than they had been in 2018.  As organizational leaders, each of us has to decide how we wish to prepare for the coming year and those decisions will vary.  What is clear is that we cannot postpone these decision making processes and that we do not want to sacrifice our long term future because of near term FUD (Fear, Uncertainty, and Doubt).

### UPCOMING EVENTS

- **January 4. 2019.** Intelligent-Integrated IOT Conference and Workshop (I3), USC Campus, Los Angeles CA
- **Jan 8-11, 2019.** Consumer Electronic Show, Las Vegas NV
- **Jan 29-Feb 1, 2019.** IOT Evolution, Caesars Palace, Los Vegas NV
- **Feb 20-22, 2019.** NIST Smart and Secure CIties Expo, Washington DC
- **March 1, 2019.**  E2 Conference: The Future of Entertainment, USC Campus, Los Angeles CA
- **March 19, 2019.** CIO Summit, Lowes Hollywood Hotel, Los Angeles CA
- **March 21, 2019.**  Marketing Leadership Forum, downtown, Los Angeles, CA
- **April 10, 2019.** Digital Summit, Skirball Center, Los Angeles, CA
- **May 13-16, 2019.** IOT World, Santa Clara Convention Center, Santa Clara CA
- **Sept 10-13, 2019.** Global Network for SMART Organization Design, USC Campus, Los Angeles CA

*If you have an event that you would like us to include in our newsletter, please send an email to ctm@marshall.usc.edu*

### IN CONVERSATION WITH Mel Horwitch, Former Dean, Central European University, Business School

Mel Horwitch has published and taught extensively on technology strategy, global innovation, and modern entrepreneurship, most recently with regard to the analytics/data science and emerging-economy opportunities. He is former Dean of Central European University Business School [CEUBS] and former University Professor at CEU, located in Budapest, Hungary. He also directed the Innovation and Entrepreneurship Project at CEUBS.  Most recently, he was a Visiting Scholar at the Rady School of Management at the University of California at San Diego [UCSD] and at Hitotsubashi University in Tokyo and is currently International Chair of DataWest, the annual winter forum on data of the San Diego Supercomputer Center at UCSD.

 Previously, he served as Professor of Technology Management, Chair of the Department of Technology Management and Innovation, Founding Director of the Othmer Institute for Interdisciplinary Studies and Director of the Institute for Technology and Enterprise at the Polytechnic Institute of NYU (now NYU's Tandon School of Engineering).  He has served on the MIT-Sloan School and Harvard Business School faculties, and was also Visiting Professor at London Business School, and Professor and Founding Dean of Management at Theseus Institute in Sophia Antipolis, France (now part of EDHEC Business School). He was John M. Olin Distinguished Fellow at Templeton College, Oxford University, and Visiting Professor at the University of Paris-Dauphine.

1. **Broadly speaking, your scholarly field concerns the management and role of technological innovation in a diverse range of organizations. Obviously, such a wide-ranging subject involves business, government, academia and inter-relationships between them. Are these inter-relationships shifting today, and if so, what are the forces behind and impact of such changes?**

Yes, modern innovation possesses highly diverse elements. These factors and their inter-play affect the nurturing and management of innovation, and they have fascinated me almost from the get-go of my academic career. I was fortunate that my doctoral work at HBS required a rather eclectic approach in studying innovation. I grew to understand the richly varied innovation-related behavior and great significance of innovation for firms of all kinds, not just high-tech startups, and for the public sector as well.

In 1974, while I was an HBS doctoral student, HBS Professor Dick Rosenbloom, who was going on sabbatical, asked me to teach his MBA course on managing technological innovation (all while trying to complete my thesis!). I kept one class ahead of my M BA students but discovered from this early teaching experience that studying and teaching how to create new things under the sun was a lot more fun and uplifting than, say, teaching how to cut costs or market existing products. I admired those who, as entrepreneurs or executives, committed themselves to innovation. I was hooked.

In addition, also while a doctoral student I was fortunate in that I gained a deep understanding of technology and innovation's place at the governmental and even societal levels. This is because my thesis focused on the American efforts in the 1960s and early 1970s to develop an SST. In researching the US SST Program for my thesis (which later resulted in a book), I learned that government was important in setting an overall tone and in providing early-stage funds for innovation in a society. Just as important, I discovered that often large, long-running, and decade-long government endeavors, like the US SST Program, can come to mirror and even accelerate underlying shifts in society's values and priorities. This was especially true for the SST, which started out in the early 1960s as a more or less conventional aerospace effort. Interest and involvement in the early years were largely limited to experts, specialists, and fellow compatriots in industry and on the Hill. However, by the end of the 1960s, the SST issue had morphed and expanded to reflect rising, broad-ranging environmental concerns. (For example, the SST issue figured prominently in the first Earth Day in 1970).

These twin dimensions of innovation—as an engine of progress and growth and as a possible force for societal harm—remain with us to this day, as we see in such fields as life sciences, AI/data science, and energy.

2. **Turning to data science, business practices and even culture are inter-twining with this new field today to make the world a different place. For most, that is both exciting and at the same time scary. From your vantage point how can firms and other parts of society be sure that they are moving forward in a positive and competitive direction?**

From a management and strategic perspective, incorporating and leveraging major new technology regimes represent a great challenge for most existing firms. I am currently examining this matter with regard to large incumbent enterprises, particularly in relation to the arena defined by data science, software, computational power, and mobile communications. As we all know, this powerful combination of new and improving technological prowess is transforming practically all industries and sectors.

Surprisingly it is especially non-technological factors that figure in importance in successfully making this change. Recently a CEU PhD student, Milos Milicsevics, and I conducted some research on how incumbents can effectively exploit analytics. Specifically, we looked at two firms in life sciences (Pfizer and Merck) and two industrial firms (Honeywell and Emerson). We found that effective application of strategy, organization structure, and innovation management was critical for success in analytics. In essence, for analytics broadly defined management matters.

Moreover, analytics, et al. represents a unique opportunity for emerging and still-striving regions (like the CEE) to catch up. Analytics represents an *au courant* pathway for leapfrog and competitiveness. Why is that? I think, first, younger generations everywhere possess innate tacit familiarity with using technology, e.g. mobile telephony, social media, and apps. It is second nature. In addition, such applications and development essentially require non-capital-intensive resources, like computers, networks, and talented people, in comparison with older industrial-style investments like steel mills, shipyards, or billion-dollar cleanrooms. Finally, many products and services are regional or local in scope, often requiring local familiarity.

This was one of the reasons we launched our Business Analytics Master's at CEU. To take another example, at the moment I am organizing an advanced executive program between West Africa and South Florida, much of which is anchored on introducing data science for the West African marketplace. A final example that comes to mind is the notion of a Peace Corps-like, VISTA-like "Data Science Corps," which was very recently presented at the DataWest Conference in La Jolla, California.

3. **From what I read in the press, Central European University [CEU] in Budapest, Hungary is directly buffeted by tides of change. Based on your experiences as Dean of CEU Business School and University Professor at CEU do these developments reflect a particular situation or are they part of a larger trend? And are there any relevant lessons you have learned?**

While every situation is somewhat unique, I do think what is happening in Hungary can happen elsewhere. And there are lessons to be learned. For example, events can move very quickly, and surprises can happen. So one has to keep in mind regarding the possibility of unanticipated consequences. If I were told, say, two to three years ago that a large part of CEU might have to decamp Budapest for Vienna, I would have found that notion outlandish and would have rejected it even as a novel. While maybe not quite a total "black swan" event, this development is close.

On the other hand, at my own more micro-personal level, I found being involved in a dynamic business school in Budapest and teaching MBA students in that city to be an uplifting experience while not being a particularly strange or unfamiliar one. And from that experience I grew to realize that an exciting business school functioning in a place like Budapest can represent a powerful force for good and for progress.

Please allow me to elaborate on this point.

Three of the main curricula pillars at the school included broad-ranging innovation, integrity management, and sophisticated and rigorous general management. Almost without exception our MBA students were very good, extremely enthusiastic, and ambitious. In other words, they behaved like high-quality MBAs around the world. Our weekend EMBAs represented working executives and entrepreneurs of all stripes, and they were highly professional and actively engaged. In fact, our EMBA program grew significantly and became largely regional in character. The EMBAs were not all that different from, say, the Sloan Fellows I taught while at MIT. Our faculty, many of whom had PhDs from highly regarded universities in the US and Europe, won international awards for original case studies and teaching innovations. The faculty was totally committed to our students and conducted most of its teaching in the evenings or on weekends. So the environment was switched-on.

This kind of learning experience, I postulate, would resonate anywhere. Indeed, I encountered this same kind of attitude elsewhere in the CEE. For example, CEUBS formed an EMBA partnership with the Warsaw University of Technology Business School, and a major feature of that relationship centered on emphasizing innovation in the joint EMBA curriculum. In the CEE anyway, one can discover and nurture a forward-thinking b-school academic community that is recognizable and not all that different from what one would find in, say, London, Boston, Hong Kong, or NYC.

I also learned that one has to treat one's environment and the people one encounters with respect and not to short change them with what I call "derivative" hand-me-down curricula. One has to leverage best-in-class ideas and material and simultaneously develop relevant superior ideas and material of one's own. In short, I found Hungary to be a great place for an engaged business school to operate.

4. **When you think back over your experiences involving managing innovation management and your various academic postings in the US and abroad, what quote comes to mind and why do you recall it?**

That's an intriguing question. Especially after having lived in Central-Eastern Europe for over seven years, I often recall William Faulkner's quote from *Requiem for a Nun,* "The past is never dead. It's not even past." I mention this quote because I learned that one cannot easily escape history and its hold on a region. This is particularly stark in the CEE. The twentieth century was not kind and has taken its toll, with the aftermath of World War I, the debilitating decade of the 1930s with the Great Depression and rise of fascism, the massive destruction of World War II, including Nazi domination and the Holocaust, and postwar Soviet rule that lasted almost forty years. One of the great tragedies of the last century was that the CEE was left behind, and still has not yet caught up with the West. This is especially true for managing innovation.

On the other hand, I found management education to be a powerful force in counteracting this particular instance of a pathological weight of history (the "past" that Faulkner refers to). Practiced with care and sensitivity modern management education offers a pathway toward a more open world, greater competitiveness, and cultivation of the impressive talent and creativity residing in the region. And, by the way, this is not simply true for the CEE.

That is why throughout the world we need first-rate and forward-looking management education of sufficient relevance and scale. This kind of education should be largely devoted to creating high value in a manner that reflects integrity, professionalism, and creativity. Modern management and the promise of innovation can thus be a liberating force offering many a better life and hope for the future.

## STEVE SHEPARD: Life Long Learning

Happy holidays to all—I hope the end of the year brings time to relax, contemplate, enjoy the closeness of family, and step away from work, however briefly.

I thought that I might depart from the norm a bit with this month's post and offer something different: a list of what my granddaughter calls "readings and listenings"—in other words, a combination of written resources and Podcasts that I find particularly useful to keep me current on things and to drive the kind of thinking I need to be able to do. No matter how old or young we are, no matter whether we have recently graduated or whether it has been many years ago, it is important to keep in mind in our fast paced world we have to stay current. We have to always be pushing to lean new things and to take the effort required to think about things from new and different perspectives. It does matter how we learn or how we expand our horizons, but it is critical that this happens, For me, talking to professionals both in my comfort zone and especially those who are outside that zone, reading, and podcasts have proven the best way for me to accomplish this feat. As a new year's goal, I hope that if I share my reading list and my podcast list, I am able to help you on your journey. So here goes - let's start with readings.

I just calculated that by the time New Years Eve rolls around in a little over a week, I will have read 129 books this year—not all technology-centric, of course—I do read my fair share of fiction, poetry, natural history, and other topics that I like. But from a business and tech perspective, here are my recommendations:

- Janine Benyus: Biomimicry
- Richard D-Aveni: The Pan-Industrial Evolution

- Judea Pearl: The New Science of Cause and Effect
- Brené Brown: Dare to Lead
- Steve Case: The Third Wave—An Entrepreneur's Vision of the Future

As for Podcasts, here are my favorites:

- 99% Invisible
- Crazy/Genius
- Damn Interesting
- Levar Burton Reads
- Retropod
- The Future According to Now
- The Natural Curiosity Project (a little bit of self-promotion here!)

I hope this list gives you a little extra to fill the time over the holiday and beyond. From all of us at CTM, Happy Holidays!

### THE I³ CORNER (I3.usc.edu)

The I3 Consortium is hosting an Intelligent-Integrated I3 Conference/Workshop on Jan 4, 2019. The event will include some super keynote events and includes three distinct tracks. There is a general conference track that will focus on how IOT systems are working to redefine smart communities and improve our quality of life. There is a complimentary technical track that is much more focused on issues that impact the realization of these smart communities. And, as though that was not enough, there is also an interactive workshop track where participants with a common interest can meet to discuss community needs, objectives, and obstacles to be overcome as progress is made.

Participants include representatives from The City of Los Angeles, The County of Los Angeles, The City of West Hollywood, Los Angeles Department of Transportation, USC Marshall, Noodle, Oracle, Verizon, Urban Strategies, USC Viterbi, Wizr, Los Angeles METRO, Korea Univeristy, Async, ISC, Binghamton University, Mobi, Etc, UC Irvine, Cradlepoint, Savant, UC Santa Barbara, USC Rossier, and more.

The event will be held on the USC Campus in Fertitta Hall (the lower level). Registration begins at 8am and the opening keynote kicks off the day at 9am. The event is scheduled to run until 4pm and will be followed by an post-event reception/networking session. You can register at https://www.eventbrite.com/e/intelligent-integrated-iot-conference-and-workshop-registration-52800122588

**I3**

**Intelligent-Integrated IOT Conference and Workshop**
Hosted by the I³ Consortium
(i3.usc.edu)

**Fri, January 4, 2019. Los Angeles California**
**University of Southern California (USC)**

USC Fertitta Hall, Lower Level
Los Angeles California
9:00 AM – 4:00 PM PST
Registration opens at 8:00

| General Track | Technical Track | Use Case Workshops |
|---|---|---|
| Keynote 1: Data Driven Communities | | |
| Keynote 2: Smart Cities and Smart Government (Panel Session) | | |
| A1: I3 Consortium Overview | B1:Trusted Devices | C1: IoT in the Public Realm: Shopping, Dining & Entertainment |
| A2: IOT and Quality of Life | B2: 5G Wireless | C2: Smart Buildings/Districts |
| A3: IOT and Smart Agriculture | B3: Resilient and Interoperable IoT | C3: Smart Wellness/Healthcare |
| A4: Networking, Platforms, and Infrastructure | B4: Cloud, and Edge Technology for IOT | C4: Smart Transportation |
| Keynote: Smart Mobility | | |
| Keynote: Real Time Company Transformations | | |
| A5: Dynamic Project Management in Complex Systems | B5: : I3 Software Development | C5: Smart Airports/Ports/Depots |
| A6: Impact of Mobile Networks (5G, wifi, …) | B6: LoRaWAN and I3 | C6: Smart Citizen Involvement () |
| A7: Big Data, AI, & Data Driven Business | B7: IoT and Opensource Security | C7: Smart Hospitality |
| A8: IOT Impact on Education | B8: Silicon Engineering for IOT | C9: IOT Entertainment |
| A10: Data-Driven Public Policy | B10: Smart Mobility and IoT | C10: IOT Public Safety |
| Networking and Closing Reception | | |

Selected Speakers:
Joyce Edson, Deputy CIO, City of Los Angeles
Jagjit Dhaliwal, Deputy CIO, County of Los Angeles
Francisco Contreras, Innovation Manager, City of West Hollywood
Lea Eriksen, CIO, City of Long Beach
Seleta Reynolds, General Manager, LA Department of Transportation
Arif Ansari, USC Marshall Department of Data Sciences
Micha Benoliel, Co-Founder Noodle
Chuck Gilbert, Principal Product Manager, Oracle
John Walker – Walker Real Estate Advisors
Bhaskar Krishnamachari, USC Viterbi CCI and I3
David Carter, CEO Wizr
Zaki Manian, Executive Director, Trusted IoT Alliance
Jerry Power, USC Marshall CTM and I3
Ken Hayashida, Board Certified Pediatrician
Ken Coleman, Deputy Executive Officer, Los Angeles Metropolitan Transportation Authority
David Galassi, USC Assistant CIO
Heejo Lee, Korea University
Christopher Dro, Founder, Async
John Wroclawski, USC Information Sciences Institute
Yu Chen, Electrical and Computer Engineering, Binghamton University
Jack Illes – Urban Strategies
Dirk DeJong, Execuritve Director USC Hospitality
Chris, Ballinger, CEO and Founder Mobi
George Gerba, USC Etc
Cason Lee, Technology & Innovation, City of Long Beach
Nalini Venkatasubramanian, Information and Computer Science, University of California Irvine
Ken Williams, USC Cinema School and Executive Director Etc
HP Le, Business Development, Verizon
Gowri Ramachandran, USC Viterbi
David Parker, System Strategist, Mayor's Office, City of Los Angeles
Andy Molisch, USC Viterbi
Edwin Mendoza, Cradlepoint
Farhad Mafie, CEO, Savant Company Inc
Chandra Krintz, UC Santa Barbara
Ken Yates, USC Rossier

**READINGS FROM THE EDITOR'S DESK**

- **Marketers - next year, don't over target your audience**  Advisers suggest advertisers move to marketing channels that are not overly saturated and do so in a way that is not intrusive to the customer. Over targeting creates a blindness at best and at worst offends customers. The end of digital spray and pray?
- **How 5G and IoT are revolutionising logistics**.  When IOT and 5G technologies are combined together it serves to change supply-chain/logistics systems from a series of independently linked partners to a cohesive end-to-end system that improves services to customers.
- **Your Apps Know Where You Were Last Night, and They're Not Keeping It Secret** Privacy is a complicated issue. Because statistics can infer individual information without PII, it may be less an issue about the data than an intention/use. The question has to be whether one can "trust" the holder of the data to behave as expected.
- **Digital Transformation at Midsized Businesses: Exciting Advances and Potential** Roadblocks  Companies know innovators outperform laggards by reducing cost and increasing opportunities and are drive by transformation programs. These programs are often hindered by lack of time/budget that these efforts seek to solve. A chicken-egg issue.
- **Video: Here's How BMW Uses Industry 4.0 Tech in Logistics**  Industry 4.0 includes robotics, automated quality checks, supply chain, warehouse/inventory management, task/project management, remote product maintenance, and data analytics. Much more than factory automation; includes customer support and more.
- **Last-Minute Shoppers Increasingly Trust Only Amazon to Deliver.** Amazon's success is linked to their ability to manage their supply chain process, however, what makes this stand out is that Amazon has been able to develop a trusted relationship with their customers that can be monetized.
- **35 years ago, Isaac Asimov was asked by the Star to predict the world of 2019. Here is what he wrote.** In 1983 Isaac Asimov predicted the world in 2019. He talked about robotics/automation, commercial enterprises in space, and increased international cooperation. Good calls but he forget to factor in the human stumbles on the road to progress.

## CTM RESOURCES

CTM has a history of making topical and thoughtful information available to the CTM community.  In support of our community, the following may be of interest to our readers.   See marshall.usc.edu/ctm for a complete list of resources.

- **The Need for a Fourth Industrial Revolution Operating System (free .** The adoption of Fourth Industrial Revolution thinking to our data-centric world may require that we rethink the macro systems that govern the way that humans relate to the data that surrounds them.   In the 4th Industrial Age it is interesting to think of the technology around us as resources which could be managed by a societal operating system.
- **How AI Could Tackle City Problems Like Graffiti, Trash, and Fires (free).** Cities operate fleets of diverse vehicles to serve their citizens. If these vehicles were equipped with video cameras, the captured images could be used by video analytic programs to self-detect many city operational issues in need of attention so appropriate crews could be dispatched without waiting for citizen complaints to be registered.
- **I3: An IoT Marketplace for Smart Communities (free).** I3 (The Intelligent IOT Integrator) is a data governance vehicle that manages IOT data flows for many independent device owners. It supports the user's need to self-manage their own data streams, manages participation incentives, privacy, and monitors device security. This curated environment creates the free and open IOT data marketplace needed to accelerate IOT adoption.
- **The Evolving Internet of Healthcare Things (free).** Healthcare IOT applications can be divided into hospital, doctor, and consumer applications. Over time these isolated worlds will blur and there will no longer be a single administrator that oversees the network infrastructure; healthcare data networks will be an open and fluid environment. New systems will be needed to manage vendor neutral data repositories and to govern data flows.
- **The Fan Multiplier Effect (free).** Marketing Programs should be driven by behavioral objectives and measured by metrics. Instead, many marketing campaigns focus revenue driven objectives even though campaigns designed to increase fan engagement can often drive greater strategic value. This paper focuses on efforts to drive fans to advocate for a product or service so that they become your revenue drivers.
- **Internet of Things (IOT) Model.** CTM has developed an Internet of Things (IOT) model that allows users to identify profit pools within the larger IOT market, test how changes in pricing will affect demand, and see how different functional characterizations impact the model. The modeling tool is sufficiently flexible that the users can adjust the parameters in order to develop a personal view of market evolution.

## SUPPORT CTM

Please feel free to forward this email to your friends and colleagues who you believe would benefit from participation in the CTM community. For those of you who wish to be included in the CTM family of people who believe that technology is a tool and that business success is achieved by skilled wielding of the tools available to us, you can join the CTM family by registering on our home page. A voluntary subscription would be appreciated for those that want to give back and help grow the CTM community (click here to contribute). If you have suggestions, topics you want to see included in future newsletter updates, or other general inquiries, feel free to email us at ctm@marshall.usc.edu.  For physical mail correspondence: USC-Marshall-CTM, 1149 S Hill Street, 9th floor, Los Angeles CA 90015.

The idea expressed in this newsletter are intended to stimulate conversation and dialog that will lead to a better understanding of our collective future.  The opinions may not necessarily reflect the opinions of USC, Marshall, CTM or the wider CTM community.

## GOT A BUSINESS, TECHNOLOGY, STRATEGY ISSUE?

The CTM team is dedicated to working with its member companies to better understand the increasingly dynamic business world in which we live. We believe that companies must lead in order to prosper in a world where the threats and opportunities facing us are constantly evolving. Feel free to reach out to the CTM team via email at ctm@marshall.usc.edu if you would like to start a conversation.

## ABOUT CTM

*Founded in 1985, the Institute for Communication Technology Management (CTM) is the world's foremost institute at the intersection of technology and content and represents a powerful network of industry leaders involved in every facet of the digital media value chain. For more about CTM go to marshall.usc.edu/ctm.*