USC Marshall School of Business — Institute for Communication Technology Management (CTM)

Sept 2018 @ CTM

THE DIRECTOR SPEAKS - The cities as a platform for Growth AND Efficiency

Earlier this week I had the opportunity to talk about CTM and I3 at The Digital Government Summit. For me, it was a great place to talk about what we are doing at USC and how our efforts to encourage out-of-the box disruptive thinking a critical component for business/organizational survival. The idea that incremental change is good but embracing paradigm shifts will become the norm as we struggle to keep with a world where change is only accelerating resonate with the audience. I think the City of Los Angeles stole the stage with a very interesting presentation about how the cities are working to change their culture from a series of traditional waterfall development programs to a more holistic and metric driven project driven process that is measured by metrics. More specifically, cities are shifting away from deploying technology projects where technology is the center point of each project to one where projects are designed, developed, and measured by their ability to drive economic value to the city or citizen focused improvements in their quality of life. This means that before any new technology is adopted, cities begin the process by clearly defining the business objects that they want to drive – a measurable user-centric objective that is not based in technology. Potential methods that might involve process changes, augmentation of existing systems, or new technologies are then compared to determine the best path forward. Technology is then treated as tool by which the objective might be met. By looking at projects this way allows a city to include consideration for the city's organizational culture and the citizen perspective as potential hurdles that might add complexity and need to be overcome in the city's drive to achieve the targeted objectives. This objectives driven perspective, once fully embraced should serve to increase the city's return on their technology investment encourage platform based solutions where the costs can be amortized over a range of projects. Effectively, this mindset treats the city's infrastructure as a platform for efficiency and enrichment, a platform for future growth.

Special Note: CTM has created an individual membership level so that you can personally step forward support the work of CTM. This option a great way to say thanks and to encourage more out-of-box as seek to disrupt the status quo in a way that economically sustainable while strengthening the customer/citizen linkage to our organizations. You can join by clicking here, selecting register, and then picking the individual member option.

UPCOMING EVENTS

- **Sept 12-14, 2018.** Mobile World Congress Americas, Los Angeles, CA
- **Sept 24-26, 2018.** The MedTech Conference, Philadelphia PA
- **Oct 20, 2018.** IDEAS: SoCal AI & Data Science Conference, Los Angeles CA
- **Oct 22-25, 2018.** Oracle OpenWorld Conference, San Francisco CA
- **Nov 2-18, 2018.**Innovate LA 2018, held throughout the Los Angeles area.
- **Nov 5-9, 2018.** CTMs Fall 2018 Advanced Management Program (AMP), gives your high potential employees the skills they need to anticipate, prepare, and communicate in an increasingly dynamic and technology-driven world. More details can be found in the course brochure. Registration is open and can be found here. *Special discounted rates are available for this highly regarded personal development program until the end of September.*
- **Nov 9, 2018.** SoCalBio Digital Health Conference, City of Hope, Long Beach CA
- Nov 13, 2018, CTM Annual Banquet on Disruption and Innovation, USC University Club, Los Angeles, CA
- **Nov 14, 2018.** I3 User Group and Conference (tentative), Los Angeles, CA
- **Nov 15-17, 2018.** LA Commotion, Los Angeles CA
- **Nov 28-29, 2018.** IOT Tech Expo, Santa Clara Convention Center, Santa Clara, CA
- **Nov 9-Dec 9, 2018.** Los Angeles Car Show, Los Angeles CA
- **Dec 4-5, 2018.**Impact > Cities Conference/Workshop, Las Vegas NV.
- **Dec 4-6, 2018.** DataWest 2018 Conference. UCSD San Diego, CA
- **Dec 13-15, 2018.** MedTech Impact, Las Vegas, NV
- **Jan 29-Feb 1, 2019.** IOT Evolution,Caesars Palace, Los Vegas NV
- **Feb 20-22, 2019.** NIST GCTC Expo, Washington DC
- **May 13-16, 2019.** IOT World, Santa Clara Convention Center, Santa Clara 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 Sokwoo Rhee, Associate Director of Cyber-Physical Systems Program, NIST

Dr. Sokwoo Rhee is Associate Director of Cyber-Physical Systems Program at the National Institute of Standards and Technology (NIST). He is currently leading the Global City Teams Challenge (GCTC) which aims to create a replicable and scalable model for collaborative incubation and deployment of Internet of Things (IoT) and Cyber-Physical Systems (CPS) solutions to improve the quality of life in smart cities around the world. He previously served as a Presidential Innovation Fellow on CPS, a program by the White House Office of Science and Technology Policy. During his fellowship, he co-led the SmartAmerica Challenge, which brought together IoT technologies and CPS across the nation to demonstrate how they can provide concrete examples of the socio-economic benefits. Prior to joining US government, he was Co-founder and CTO of Millennial Net, Inc., which was one of the first to successfully commercialize low-power wireless mesh/sensor network and Internet of Things technology from academia. His work and achievements have been recognized through awards including MIT Technology Review's Top Innovators under 35 and Red Herring's Top 5 Innovators. He holds more than a dozen US and International patents and numerous publications on wireless networks, biomedical sensors and embedded systems. He received his M.S. and Ph.D. in Mechanical Engineering from Massachusetts Institute of Technology.

1) What is GCTC and what are its objectives?

The Global City Team Challenge is a platform, a forum, and an information exchange that ultimately serves to demonstrate replicable and scalable models that can facilitate the deployment of standards based smart cities. While there are many interesting smart cities projects currently being undertaken, in general, these projects tend to be isolated and customized to the needs of a specific city. These practices inhibit efforts to achieve the economies of scale that are needed to fit within a city's economic footprint while still allowing companies to achieve profitability. The immediate objective is to identify and nurture best practices among the smart city community members but ultimately the goal is to allow these smart city projects to become replicable by multiple smart cities allowing cities to move away from a paradigm based on multiple unique, city-specific siloed smart-city projects.

2) Is this just another sharing group? Why is GCTC important? Why is it needed now?

GCTC is a relatively young organization and a lot of the early energy was put into sharing of experiences and documents. As GCTC moves to the next level, the team will begin documenting the results that these city cities can achieve so that other cities can decide whether they wish to pursue a similar program. Progress will be documented in a series of "blue-print" documents that come from Super Clusters that are targeted at vertical segments such as transportation, public safety, and utilities. As a complement to these clusters, there are separate horizontal Super Clusters that cut across verticals such as the Data Infrastructure and Wireless Super Cluster as well as Super Clusters focused on Education and Rural Issues. In addition, GCTC recently took cybersecurity and privacy as a primary concern and established Cybersecurity and Privacy Advisory Committee that also cuts across and collaborates with all SuperClusters. In fact, we are using the title "Smart and Secure Cities and Communities Challenge (SC3)" as the subtitle of the 2018 round of GCTC.

Smart Cities is not a new concept. Many cities have long using technology to improve city operations. As technology gets cheaper and communications becomes more ubiquitous, more cross the tipping point and become viable. GCTC recognizes that if we keep pursuing each smart city opportunity as a unique application, the economic model is weakened and the research opportunities will be limited. The more we can coordinate, the more beneficial these systems will be for cities and their citizens.

3) NIST is part of the Dept of Commerce but Smart Cities are focused on issues shared at a global level. Is GCTC a US thing or is it an international effort?

The role of NIST within the Department of Commerce is to promote innovation and industrial competitiveness by advancing measurement science and standards. Standards lower costs and ultimately increases competitiveness. NIST understands that for a standard to have maximum impact, global standards are needed – a series of competing regional standards is less than optimal. This is why the "G" in GCTC is for Global – from the beginning, NIST knew GCTC had to be a global organization. Therefore, GCTC has embraced the idea that best practices may come from outside the US and the fruits of GCTC should be open for use by other countries. In fact, 40% of the GCTC members come from out-side of the United States and GCTC has extremely strong connections to the Netherlands, Japan, South Korea, Singapore, and Italy

4) How does NIST relate to other federal initiatives, to state programs, or to local governments – how do you juggle between all these different entities?

It would be best to characterize GCTC as a NIST led program rather than as a NIST driven program. NIST provides a platform for federal agencies to exchange ideas around smart cities with a broad spectrum of other GCTC members such as cities, suppliers, and other interested parties. As an example, Department of Homeland Security Science and Technology Directorate), is a primary partner of 2018 GCTC and jointly sponsor meetings in order to discuss issues such as data security and privacy. GCTC sees itself as a coordination vehicle and an administrator that serves to ensure that the group's progress is documented and shared.

5) Who can be and how does one get involved in GCTC?

Anyone can attend a GCTC event; GCTC events are mostly free but you do have to pre-register for these events. Inside GCTC there are a series of Super Clusters focused on a general issue; within each Super Cluster there are Action Clusters that are focused on a specific issues. Individuals can participate in GCTC cluster activities. If a city determines there is an uncovered topic that is worthy of becoming named as a new Action Cluster, they can work with one or more entities and apply for the creation of a new Action Cluster. This is the process that Los Angeles and the I3 Consortium went through links in early 2018. As a sidebar, many of the objectives of I3 line up with the GCTC objectives with the noted difference being that I3 is focused on a very specific issue and GCTC has a much more encompassing mandate. More information on GCTC can be found at https://pages.nist.gov/GCTC/.

STEVE SHEPARD: THINKING AMP: The Customer Experience

Let's talk about customer experience for a moment.

Interesting word, *experience*. In this context, it means to feel something, usually emotional in nature—which is *precisely* what we want customers to experience when they engage with us and our services.

All too often, customers experience what Tom Peters quotes in his seminal book, *In Search of Excellence:*

In too many companies the customer has become a bloody nuisance, whose unpredictable behavior messes up carefully made strategic plans, whose business operations screw up computer operations, and who stubbornly insists that purchased products should work.

Customers engage with us because they believe that through the engagement they will see a positive change in their business: their revenues will increase, their expenses will decline, their risk profile will become less onerous, their competitive position will become more favorable, their own customers will have a better experience, and so on. But this only happens through a collaborative approach based on a singular belief: *I am here to help my customer serve their own customers*. Without that philosophy, what's the point? A business based on one-time encounters with customers is not a business at all—yet that's what happens without a commitment to deliver a repeatable experience that keeps them coming back for the next engagement.

And the role of technology? Think about it: IoT allows us to collect real-time customer behavior data. Analytics allows us to make sense of it. And insightful leadership, meaning leaders who are committed to using insight as a competitive weapon, bring it home by steering the corporate ship in a direction that satisfies the hopes, dreams and desires of every customer.

THE I^3 CORNER:

The I3 project continues to move forward. A final approved membership agreement is now in place and with that the window for new founding members has closed. I3 now making its transition to a normal operational state. We are now turning the signed/countersigned membership agreement into a click through license to simplify the process of on boarding new members. We also have a technical architecture for I3 R1.0 and are in the process of signing up developer-volunteers to move the process forward on the development front. The pace at which we are responding to inquires is beginning to accelerate and the interest in applying I3 in support of new and interesting applications is definitely accelerating. If you want to volunteer to participate in this movement, be sure to send us an email

The I3 website needs some updating to reflect the progress we have made over the last month but by all means check out our web site at I3.usc.edu if you are interested in more details about project that is on a trajectory to change the way we think about IOT.

If you are a developer and wish to participate as a volunteer in the creation of the first opensource IOT data governance system that will change the way we think about IOT communities and how independent IOT device owners can work together for the greater good, this is a great time to get involved in I3. We are currently planning a organizational meeting of the development team on Sept 10 in Santa Monica CA. The link to register for the developer meeting can be found here .

READER CONTRIBUTIONS - Individualized Production for a Mass Market: Has Mass Customization Fulfilled the Expectations? by Michael Zaggl

Michael Zaggl is a Post-Doc Researcher at the Technical University of Munich's School of Management where he is leading a team that is investigating technology and innovation. His research interests include Distributed innovation systems, Task complexity and team complexity, and computational modelling

Digital technology opens a multitude of channels between companies and customers. Web-based configurators that enable *mass customization* are one such connector. Mass customization promises to align customers' needs for individualized products with companies' mode of mass production, enabling uniqueness and efficiency at the same time. Having the best of two worlds is a win for both sides, right? We can look back on almost 20 years of practical experience and research on mass customization, which tell us more about the idea of mass customization and its success.

Configurators that enable customers to design products are well established. Virtually every car producer provides such a configurator. At the homepages of BMW and Porsche the first link leads the virtual visitor right to the configuration tool, capturing all models and providing an almost infinite variety of configurations. Looking at the garment industry, we find a very similar picture. So it is safe to say that mass customization has become mainstream, at least in some industry branches. But is it also creating value?

Research in mass customization has generated interesting insights. Experimentations with different configurator settings show expected and unexpected results. For example, customers are willing to pay more for a product simply because they themselves have it design [Franke, N., Schreier, M., and Kaiser, U. (2010) The "I Designed it Myself" Effect in Mass Customization. *Management Science*, 56, 125–140; https://doi.org/10.1287/mnsc.1090.1077]. So it is also safe to say that mass customization produces some value.

Interestingly, customers often do not exploit the main advantage of mass customization; that is, the possibility to consume individual products. Though many strive for uniqueness when designing their products [Franke, N. and Schreier, M. (2008) Product Uniqueness as a Driver of Customer Utility in Mass Customization. *Marketing Letters*, 19, 93–107; https://doi.org/10.1007/s11002-007-9029-7], this does not always hold true. Sometimes customers even strive to conform to the configuration of others [Zaggl, M. A., Hagenmaier, M. A., and Raasch, C. (2018) The Choice between Uniqueness and Conformity in Mass Customization. *R&D Management*; https://doi.org/10.1111/radm.12327]. Thus, the customer can get value through individualizing and conforming. However, a lot of questions are still open. New possibilities need to be explored, such as the combination of mass customization with 3D-printing or with Internet of Things technologies. They might lead to a further diffusion of mass customization.

In conclusion, I argue that mass customization is a success, but not in the way it was expected at its early beginnings. It achieved mainstream status in several industry branches and it generates value for the customer. However, it has not reached the penetration that many have foreseen at the time of its early origins. For the future, mass customization might further develop. 3D-printing and the Internet of Things provides new possibilities to individualize products and services.

READINGS FROM THE EDITOR'S DESK

- The differences between B2B and B2C marketing can be described being as night and day. While the differences are pronounced, each side can learn from the other because in the end, all customers want suppliers to help them be more efficient in a complex world. To read further.
- Government agencies, like companies, can benefit from access to citizen-centric data as this data allows them to be more efficient and allows them to provide better services for the citizens. However, citizens also need privacy protection so the government is prevented from using this same data against them. Laws like search warrants and Miranda warning were used to limit governmental over reach. There needs to be a similar set of limits that apply to government use of personal data before citizens will begin to feel comfortable allowing the government access to their data. To read further
- Artificial Intelligence (AI) can do wondrous things such accelerating decision making processes to a speed humans cannot match. AI can also sift through volumes of data to uncover hidden relationships but asking a computer to determine the value of new and potentially disruptive opportunities associated with a discovered data relationship is a tall task. To read further.
- Telehealth has evolved, services have improved, and overall quality improving for the patient and for the healthcare provider alike. While these services ease service convenience more work is needed to determine how these services might impact the relationship patients and doctors have with healthcare insurance companies. Perhaps telehealth systems can be used to promote wellness checks that lead to reduced premiums? To read further.
- Marketing has long taught that the four P's for success are Price, Product, Promotion, and Placement. As marketing redefines itself for a digital/networked world, it has been suggested that companies need to strive for relevance on a much larger stage. Accenture describes the five P's of hyper relevance as Purpose, Partnership, Pride, Protection, and Personalization. Interestingly, these same factors also serve to define trust between buyers and sellers. To read further.
- Privacy and trust are related issues in that the need for privacy protections are greatest when trust is lacking. There is a clear need for privacy management because trust varies depending on the party we are communicating with and no two people trust the parties in the same way. Trust and privacy are therefore very personal issues. WEF has created a framework for digital trust serves to improve conversations around privacy. Data can be categorized along 3 dimensions; first, by source, second by use, and lastly by the data's risk/benefit. To read further.

CTM RESOURCES

CTM has a history of making topical and thoughtful information available to the CTM community. In support of tour community, CTM has made the following available for those interested.

- **The Need for a Fourth Industrial Revolution Operating System.** 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.
- **Future of Media Program: Evolving Revenue Models.** The media industry is in the process of undergoing a radical transition that appears to be accelerating. At play are deep changes in the way consumers view entertainment and how the industry makes money. This report looks at the evolving business models for media monetization from advertising to subscription and transaction. Special attention is paid to Millennial consumers who will outnumber non-Millennials by 2030.
- **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.
- **AR/VR Serves to Humanize Interactions (free).** Augmented Reality (AR) and Virtual Reality (VR) are two poised to change the way humans interact with computers. AR/VR is having significant impacts to many different industries with applications that include advertising, customer engagement, employee training, and consumer entertainment.

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.