Communications, Technology, and Management (CTM)

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THE EDITOR SPEAKS - True Disruption Disrupts Everything

Peter Drucker once said "Business has only two functions – marketing and innovation". The marketing function focuses on filling a market need, presumably better than the competition. Innovation is a related concept in that it is about finding ways to be different from the competition, in a way that the market appreciates. The innovation process is not inherently straight forward; it requires looking outside the normal paradigm and then discover a new or alternative concept that can be utilized to alter the status quo.

This year, I spent the holidays in Argentina; a few days in Buenos Aries, but most of the time was spent in the country where the Assado is a way of life. An Assado is something like a big barbecue. But in many ways an Argentine Assado is very different from my experiences as a North American. While an Assado might not seem something related to innovative thinking, non-traditional inspirations can come from any perspective-shifting experience.

As a bit of background, an Assado is not just the food one eats and it is much more than a cooking technique – it is an experience that lasts for hours. People gather before the cooking begins to share wine, to converse, share stories, and tell jokes while the fire is prepared. The Assado master willingly shares his cooking philosophies with those in attendance as the meat is placed over the fires to slowly cook over the hot embers. After a dinner with countless courses, the process continues with the tradition of *sobremesa* where the conversation can often run late into the next night (sometimes perhaps even into early the following morning?). For the Argentines, this is a way of life but I took the entire experience as an example of how the food itself was but the centerpiece of a much larger experience. Similarly, when a customer buys a product or a service from a company, the product is the centerpiece but customer satisfaction is driven by the totality of the experience.

During the process, I could not help but compare the Argentine cooking style with my experiences in the United States. While I have a library of barbecue cookbooks each with their own perspective on how to properly season and cook the meat, the Argentines dispense with the ideas of rubs, marinades, and other preparations – the only seasoning they use is salt. Their philosophy is that the flavor of the meat should be allowed to come though and not masked or decorated. This kind of thinking represents a fundamental shift in thinking – instead of the flavor being determined by seasoning, it is determined by the quality of the meat. In fact, during the cooking process, everyone at the Assado was very interested to hear about the source of each cut of meat. It seemed that the market share of each butcher was being immediately impacted with the success of each Assado. Likewise, Quality Assurance (QA) and Supply Chain professionals are quick to point out how proper sourcing of raw materials can reduce costs and reduce risks associated with the production process.

During the Assado, I had ample time to study the efforts of the Assado-master. The assado grill is different from a North American barbecue in that the grill consists of two very different areas. There is a distinct fire space where the wood is placed and a grilling space where the meat itself is cooked. The wood is set afire in the fire space and allowed to completely turn into white hot coals before the grilling begins. Once a sufficient amount of wood has turned to embers, the white hot embers are moved under the grilling space. The embers are then worked with grilling tools to create a relatively thin layer of embers under the entire grilling space before the meat is placed on the grill. From this point on, the meat remains almost undisturbed – it is only turned once. However, the bed of embers is managed carefully, continually, and with care. Embers are readily moved and adjusted in order to ensure there are no hot spots or cool areas and the meat cooks evenly. As a point of fact, when one examines the tool kit of an Argentine Assado-master, it includes a shovel, a poker, and perhaps a rake – all tools to manage the bed of coals. In contrast, the North American barbecue tool kit it includes a long fork, a spatula to flip the hamburgers, etc. – it is tool set to manage the meat. I saw the Assado cooking process as being somewhat analogous to Henry Ford's assembly process when he decided to move the work to the people instead of moving the people to the work. Moreover, mobility and cloud services have virtualized much of our IT needs and allows us to conduct knowledge based business anytime and anywhere, instead of forcing us to commute to physical locations where IT assets have been parked.

In the words of Peter Drucker, business is a process that exists to meet a need. All too often, we focus on the output of the process (the meat in this case) instead of truly understanding the market need (the larger customer experience) and the innovations that are born by looking at the problem differently.

UPCOMING EVENTS

- **Jan 6-9, 2020**, Consumer Electronic Show, Las Vegas Convention Center, Las Vegas, NV
- **Jan 21, 2020,** I3 Workshop/Conference, Doheny Library, USC Campus, Los Angeles CA
- **Jan 27-29, 2020**, CPX360 CyberSecurity Conference, New Orleans, LA
- **Feb 24-27, 2020**, Mobile World Congress, Barcelona, Spain
- **Feb 24-28, 2020** RSA Conference, Moscone Center, San Francisco, CA
- **March 13-22, 2020,** South-by-Southwest, Austin TX
- **March 17. 2020**, Future Festival, Landmark Theater. Los Angeles, CA
- **March 23-27, 2020**, Business Transformation and Operational Excellence Summit, Orlando, FL
- **March 28-31, 2020,** Horasis Global Meeting, Cascais Portugal
- **June 5-6, 2020**, International Conference on Smart-Cities, Transportation, and Buildings, San Francisco, CA

If you have an event that you would like us to include in our newsletter, please send an email to manager@i3-iot.net

NOTES OF INTEREST: CyberEmergencies

On Dec 13, 2019, the City of New Orleans suffered a cybersecurity attack of sufficient significance that they declared a state of emergency. At 5am on that Friday, the city's IT department began detecting suspicious activities and that prompted an immediate investigation. As the level of activity began to increase the city activated their emergency preparedness office and at 11am a tweet was issued directing all employees to disconnect from WiFi, power down their devices, and unplug their computers. Servers and other vulnerable infrastructure elements were also powered down to minimize potential operational impacts. During a press conference that day, the Mayor confirmed the city was under a ransomware-type attack but that critical city services such as police, fire, 911 support, and public safety cameras were still functioning. While the attack began with a phishing incident, no ransom demand was ever made and no city data was stolen.

New Orleans had at least 450 servers in operation and the time and 4000 computers all of which must be reimaged based on their backup images (luckily their automated backup systems were operating normally) but only after upgrades are put in place and security improvements are made to guard against reinfection. And while the city did have a cybersecurity insurance policy, the cost of the attack far exceeded the policy coverage.

The city believes that their declaration of an emergency stopped the attack from becoming much worse than it might have been. That said, the attack shut down the court system and forced many departments such as building inspections, electrical inspections, mechanical inspections, ticket processing, revenue collection and other automated systems to revert to manual processes based on paper reports (remember those?). Some systems were reportedly placed back on line after the holidays and while the city is still in recovery mode they expect to be fully functional by the end of January, in time to support their end of January property tax deadline.

READER CONTRIBUTION: How Professionals hamper Innovation
by Glenn Stencell, Intellectual Property Protection Expert

Glen's background in Security combined with his experience and training in a wide variety of positions in the fields such as of technology, Finance, Accounting, Auditing, Business Consulting, and his experiences as a theatrical exhibitor provides Glenn him with a balanced expertise in the field of IP protection, digital piracy, and innovation. Glenn's is an evangelist for including piracy, privacy, and security at the earliest stages of the innovation process in order to avoid the pitfalls that typically occur in the field.

To begin this expose it would be useful to elaborate on the term "professionals".

Professionals are normally considered specialists who have been educated, trained, experienced and "currently regulated" in a particular field or lol – "categorized and classified by society". Most of us have little trouble recognizing the designations of Accountants, Lawyers, and Engineers, as being professionals. Although there are numerous types of professionals, for the purpose of this article, a focus on the three listed should be enough to make this "argument".

Surprisingly, the recognition of these specialists in a regulated field has really only been for a relatively short time, being less than 200 years.

Accounting dates back to even before currency when the need to record debts claimable by some government (which includes various forms of monarchy – Pharaohs, Sultans, Kings, Emperors, etc.). The earliest known documentation of what is referred to as double entry accounting was done in 1494 by Friar Luca Pacioli. However the first regulation as a profession was not until the late 1800's. The Institute of Chartered Accountants of England & Wales was established by Royal Charter in 1880, and in the USA, the establishment of CPA (Certified Public Accountant) was legislated in 1896.

The legal profession is thought to have originated in ancient Greek and Roman times and they were then known as orators. Since that time there have been various means of regulating people in the practice of law which can vary by country. However before 1761 in the US there was no special training required in order to be called a lawyer. And it was not until 1869 that the first regulated law society (New York Bar Association) was established.

Engineering, being defined as: exploiting basic mechanical principles to develop useful tools and objects can be dated as far back as the pyramids. However it was not until 1325 that the first recorded use of the word "Engineer" has been documented, and at that time it was referred solely to the assembly of military "engines". Then over the next several hundreds of years new and more specialized subsets of the use of engineer have been developed like civil engineer, mechanical engineer, electrical engineer, chemical engineer, and so on. However the regulation of engineering as a profession is relatively new. For example, it was not until 1907 before licensing (regulating) of engineers was first done in Wyoming, and the last state to license (regulate) them was Montana in 1947.

So, what does this background and being a professional hamper innovation?

First of all, the more regulation, the more a professional must train and spend more and more time specializing in their particular profession. Then when you compound this with the natural tendency of people to congregate with similar like-minded people, the willingness and even time it takes to explore how concepts used by one profession could be used by them is not a concern to them. How could they be concerned? They have been trained by people known as experts in their profession, how could it be possible that someone in such a dramatically different background could teach them something new relating to their profession? And yet don't most new ideas come from the outside and often require the challenging of established concepts? There are also ego and perception issues that are known to vary between professions and their perceived values to society. What professionals are really the most valuable to society?

Another problem with professionals is that they become acutely aware of not only is "time is money", but also that "their time is money", and as such are reluctant to discuss anything that is not personal unless they are being paid or as accountants and lawyers like to say it is "billable" – lol.

If you have read this far and are not being paid, congratulations!

Please allow me to give you something interesting to think about.

First of all give credit or acknowledgement of certain pre-conceived notions regarding the various professions.

The engineer has somehow claimed expertise in what is normally considered "invention". This probably couldn't be helped since the very word engineer is derived from "engine" which has its roots tied to the Latin definition of "ingenium" meaning "innate quality, especially mental power, hence a clever invention." However invention is only one part of what can be claimed as "innovation" which is more widely defined as the process of translating an idea or invention into a good or service that creates value.

Lawyers have been since the Middle Ages trying to ride themselves of a perception of being greedy, cut-throat, and questionable in ethical areas, especially with so many also being (gulp!) politicians. And yet when it comes to controlling people, they are the experts, since laws are expected to control the general public to a great deal.

Accountants (yawn… more yawning…..) don't have much of a perception of being great in the exciting world of personal relations. And yet accountants have being dealing with intangibles long before the term "intellectual property" became a concern. That's right "money" is at its very heart an "intangible" since even though it can be represented by a coin, a piece of paper, a recording on a ledger (like in the bank), or whoa – bit coin. And since money has been around long before the term and concept of "data", is it possible that an accountant could have some insight regarding the protection of "data" and or "software"? Could the concept of double entry data be useful? And, if not that, could there be other accounting and/or legal concepts useful in protecting software and/or data? Mmmmm.

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THE I³ CORNER (I3.usc.edu)

Let's all offer USC's Viterbi School of Engineering a virtual round of applause for making the version 1.0 of the I3 IoT opensource software publically available via GitHub. The software was officially released on December 19, 2019 and can be downloaded from https://github.com/ANRGUSC/I3-core. This is a momentous event as the I3 software would not have been realized without the efforts of the entire I3 Community. All involved provided the ideas, suggestions, and the support that was needed to create the first release of an I3 node. This system will eventually evolve to support a large scale IoT driven data network. With the accolades and words of appreciation behind us, now let's all dig in and begin work on release 2.0 J.

Our next I3 event will be the workshop/conference on Jan 21 2020 held at the Doheny Library on the USC campus (Room DML-240). You can register for the event at https://www.eventbrite.com/e/jan-2020-intelligent-integrated-iot-conference-and-workshop-registration-79658200823

Agenda

- 8:00-9:00   Check-in
- 9:00-9:15   Welcome
- 9:15-10:00   Keynote and Q&A (Bill Kehoe County of LA CIO)
- 10:00-10:30 Getting Started with I3 (Gowri Ramachandran USC)
- 10:30-11:00 Long Beach's vision toward the future (Ryan Kurtzman City of Long Beach)

- 11:00-12:00 City of Los Angeles Parking Initiative (Joyce Edson, City of LA Deputy CIO)
- 12:00-1:00   Lunch with Keynote by City of LA Deputy Mayor Miguel Sangalang
- 1:00-1:30   I3 Technical Roadmap (BhaskarKrishnamachari).
- 1:30-2:30   Vision Analytics for Smarter Cities (David Carter)
- 2:30-3:00   The I3 IoT Consortium and IOT Systems (Jerry Power)
- 3:00-4:00   Integrating Existing IOT systems into complex environments (Georgios Bouloukakis UCI)
- 4:00-4:15   Closing Comments: The Next Generation of IoT Systems
- 4:15-5:00   Reception and Conversation

Opensource is well and good for development and hobbyist environments but it is understood that before the I3 opensource software can be deployed in a production environment, operators will need operational support. We have been working to create a shared services organization that will allow the I3 members (and others) to share support costs and to jointly benefit from the support experiences of one another. True to the I3 vision, the focus of this services organization will be on complex IoT ecosystems that cross the larger I3 community. Toward those ends, Jerry Power has left USC to focus on the creation of such a services organization. This new organization will focus on supporting the ongoing evolution of the I3 ecosystem while also driving funded research and development programs at academic institutions such as USC and UCI. As a byproduct of separating the research and operational objectives we also create an environment where people have the choice of investing in an profit focused operational entity provides a return on their investment or they can contribute to a research focused non-profit research program with associated tax advantages. .

READER CONTRIBUTION: Ripe for Disruption
by Erik Nicholson, UFW

Erik Nicholson is the United Farm Workers (UFW) National Vice President of Tech and Ag. He oversees the development of programs and services that improve the lives of farmworkers that are not predicated on collective bargaining. He also helped to establish and continues to support the innovative Equitable Food Initiative (www.equitablefood.org), a multi-stakeholder, certification and workplace skill development organization.

 "Ripe for disruption" is the catch phrase those of us who work in agriculture are hearing with much greater frequency. With the support of Silicon Valley, venture capitalists have now set their sights on our industry. It appears that we're supposed to unquestionably welcome their technological developments with open arms.

Agriculture is indeed an industry in need of disruption. Growers are facing labor shortages, food-borne illness outbreaks are unrelenting, and farmworkers toil in conditions that few US born citizens would tolerate. Yet the farmworkers I've had the honor to work with over the past thirty years are proud of the work they do. They know that they're literally feeding the world; it's a deep source of pain for them that the consuming public fails to afford them the gratitude and respect they're due.

Silicon Valley's version of agricultural technology will create clear winners and losers. First on the chopping block with be those farmers who can't afford whatever's introduced. Informal estimates where I live in Washington State are that upwards of a third of the State's tree fruit orchards are for sale. Farmers see the writing on the wall: not only will they need capital to buy or lease the forthcoming robotic harvesters, but they'll also need tens of thousands of dollars per acre to replant their orchards and then survive for several years as those orchards come back into production. This is money many farmers simply don't have.

Farmworkers will also lose their jobs. They'll no longer be able to afford rent, buy groceries for their families, pay for medical care and other necessities, and they will be forced to search for employment elsewhere.

So the poorly capitalized farmers will be wiped out and jobs will be lost. Those farmers who will survive into the future will need to stay on top of the latest technological developments or risk being taken over by those who do. Rather than reinvesting resources in the local community, an ever greater percentage of whatever value is created will now flow to Silicon Valley.

A friend of mine grows hundreds of acres of strawberries across the California and Mexico. He's been looking at a robotic harvester as a possible way to address labor shortages. After attending an agriculture and technology forum at a large software company in Seattle, he realized there's a more insidious side to what's happening. Rather than simply developing labor saving technology, he shared that what's really at play is an effort to use technology to control agriculture for the tech companies' own economic benefit. We compared ourselves to taxi cab owners and drivers, all the while the ubiquitous Uber and Lyft apps are being developed.

When technology is introduced to the market in a top down fashion, it creates a technology divide that often cannot be bridged.   When new technologies are designed to first meet the needs of large, well capitalized growers, it damages smaller farmers who don't have such deep pockets by making it harder for them to compete and risks further deteriorating the quality of work for farm workers. Consider an alternate scenario where new technologies might be targeted to enhance the work experience for farmworkers, while ensuring the needs of all growers, regardless of size or access to capital. So rather than abdicating our future to whatever the programmers in Silicon Valley dream up, now is the time for those of who care about a vibrant food system to "disrupt the disrupters."

Together, those who care about our food system, rural communities, farmers, and farm workers can define the future we want together. We can partner with programmers to ensure the resulting technology builds the viability of our rural communities, makes agricultural work safer, healthier and more satisfying while increasing the safety of our food supply. Together, we can say no to what Silicon Valley proposes if we find it undermines our vision of a just and safe food supply.

READINGS FROM THE EDITOR'S DESK

- **Ikea 2.0**. As Ikea moves into the smart-home market they are rethinking how their products fit into a tech friendly environment. They spend a lot of time working to understand the market before attempting to introduce new technology into these environments.   They start with the idea that tech has to fit into the existing lifestyle – lifestyles cannot be expected to adapt to make use of a new technology. In their view, we should not be trying to change the environment to support tech.
- **Can AI Fix Medical Records?** In the healthcare industry, like other industries, data is a raw resource (like oil) but it has to be refined to make the value tangible. Artificial Intelligence (AI) tools can do that. But if the system restricts access to the data, as is often the norm in the healthcare industry, then only those with permissioned access to the data can build the needed algorithms. By implication, this means that the AI systems have to be managed as employees, given access to the data, and then most importantly overseen by a manager.
- **Rethinking Patient Data Privacy In The Era Of Digital Health**. A HealthAffairs blog suggests that a complete revamping HIPAA (Health Insurance Portability and Accountability Act) to be more relevant in our digital age. While this might sound like a good idea, relying on legislation to manage an organization's privacy policies is not a good basis for data management. Legislative action is designed to establish a minimum framework and to punish bad actors. Ideally companies would strive to be doing better than the minimum and therefore it may be better to create an ecosystem where companies actually compete to provide privacy policies that are rewarded by the market.
- **The secret to winning at customer experience: 3 takeaways**. Deloitte/Forrester have published a report that maps out customer satisfaction/experience ratings. Their research shows that customer experience ratings are directly linked to the company's ability to win market share. Further, the customer experience ratings are significantly impacted by the organization's data management strategy. By implication, organizations that are able to get a handle on their policies that impact data collection, protection, and application of data have the ability to expand their market share and increase revenues (compared to the competitors).

- **AWS, Verizon Team To Put AWS Services On The Edge Of The 5G Network**. The economics that drove the development of the cloud services market was largely based on the cloud service provider's ability to create a centralized virtual computing system that could be accessed from anywhere. In such an environment, employees are no longer tied to their deskside computing tools allowing their work to become independent of the physical location. Since those early days, the cloud has now become much more decentralized. Compute resources are still virtual and independent of a specific physical location, but the virtual instance of these resources can be moved to be closer to the actual need. In doing so, these systems are capable of a much higher level of performance and as a result the customer experiences have been further enhanced.
- **CIOs concerned IT not providing enough of a competitive edge.** IT was once treated as a strategic differentiator; companies capable of investing significant resources in their IT departments (people, equipment, and infrastructure) could outperform their competitors. But, given that access technology has become ubiquitous and costs have fallen so significantly, such perspectives are being changed. Companies know they cannot operate or innovate without IT - IT is the enabler of competitiveness but IT technology in and of itself can no longer be considered the source of it. Differentiation comes from the application of technology and this is driven by the talent of the IT department more than it is driven by the tools.

IN CONVERSATION WITH Paul Hoekstra, SFMTA

This is a repeated article from December 2020. Some of you received the December newsletter with an article from November instead of Paul's piece. From the system, I cannot tell who received the mis-set version of the newsletter. To make sure everyone got to see Paul's perspective, I have reproduced Paul's article here.

Paul is an independent strategy execution consultant who specializes in helping technology organizations make the leap to become the driver behind high impact customer centric service improvements. He has built and led the Service Strategy and Planning team at Oracle and helped Cisco with the transformation to become much more software (DNA) and service focused.

A little over a year ago, the San Francisco Municipal Transportation Agency (SFMTA) CTO asked him to help establish a new service execution framework based on the ITS Architecture and System Engineering. This is well underway now and Paul is now leading the Proof of Concept to use advanced technology to understand traffic flow, obstructions to the flow, and curb management. This is the first step in a much more ambitious vision San Francisco has to reduce accidents, improve public transport performance, infrastructure utilizations, and reduction of greenhouse gas emissions.

When people first think about "transportation" they tend to focus on components of the larger issue such as roads, buses, trains, etc. How would you describe "transportation" and what are the big picture issues faced by the industry?

What is absolutely critical for municipals to stay competitive is to take the perspective of the customer, in the San Francisco Municipal Transportation Agency's (SFMTA) case, the resident, worker and visitor in San Francisco. This sounds obvious, but when you list to various organizations providing pieces of how the people actually move throughout the city, how they plan, operate, receive budgets, and their increasing competition (city vs. city and transportation service within the city), the picture becomes very complex very fast.

What we are transitioning to within SFMTA is to deeply understand what our customers need and want, then define the multi-modal transportation services meeting the needs. Not all wants can be met for everyone, but the needs can taking our challenges in space, budget, assets, and unique San Francisco culture and politics into account.

This is a high level, fundamental shift we are trying to achieve going from individual divisions to a much more integrated approach.

The other big issue we are trying to tackle is the promise of technology. Many new developments have emerged but piecing them together and scaling is still not available of the shelf. We are all very aware of the promise of technology and several pilots are underway to proof out use of advanced technology like LiDAR to collect detailed real-time traffic flow information, but how to optimize the flow of traffic based on priorities, constrained based planning, dynamic recalculations and able to set traffic lights remotely does not exist yet at a scale to optimize all traffic flows at least in the main corridors. Many vendors have platforms, but a system that can be bought off the shelf and configured does not exist yet as far as I've seen. Huge opportunity (18000 cities in the USA alone), but I'd love to talk to the company who would like to co-develop.

Because transportation projects are expensive, necessary, and provide a community benefit they are often government funded but the industry is exploring different business models that provide alternate funding models. What new business models do you think are most promising?

What I would love to see develop more is the realization of the value of the data. Government agencies collect large amounts of data which is often given away for free. Companies like Google capitalize hugely with products like Google Maps showing public transportation travel predictions. We, as the taxpayers, have invested in this infrastructure and the return can't be contingent on us giving a company more data when and how we want to travel, nor drive up the stock price.

Government agencies should consider different data licensing models, allowing new service development for free, and when going to production, a form of payment. This would provide a return on the investment and the opportunity to fund further investment in new technologies focused on proving better services to the citizens, integration of data, while at the same time fueling development of new businesses.

As transportation systems become more integrated, they need to shift from insular operating models that support specific modes of transportation to more systemic operating models. This seems like if could be a seismic transformation. Thoughts?

If you mean with a seismic transformation people within the transportation industry move their thinking from "operating the vehicle" to "how do we better serve the people sitting in the cable car," then yes, that is the big one. To deliver that, integration and cross-functional / cross-agency initiatives will be the new norm. From an operational perspective, automation will support the multi-modal travel, but I foresee a need for a central transportation center managing traffic flow far beyond the current train control and bus dispatch.

Technical configurable solutions will become available, cities will continue to grow, people will demand safety in the streets, and maybe we'll see self-driving cars at scale in the next decade. The streets are not going to be made wider, so we have to realize optimization of the use of existing infrastructure. Data is going to drive all this, so we'll have to find the people who can interpret and find the actions to take from that data and leverage AI to optimize the use of the limited space.

As the transportation system becomes more tech-centric, one could argue that this will drive the transportation industry to become more agile (relatively speaking). We are already seeing greater use of field trials and proof-of-concept projects – what else might we see in the future?

Yes, that is absolutely true. In San Francisco we're conducting proof of concepts to proof out technology has reached a state it actually works in the real world. What this means is that we are delivering value in terms of optimizing flow by adjusting signal phasing, acting on near misses observed instead of collisions. This requires us to go deep in the data, understand what is noise, sift out actionable insights. All this while we're installing new technology we apply to use cases maybe for the first time.

As a new norm, experimentation is going to be key. This is obviously not possible with large projects like digging a new tunnel for the light rail, but e.g. implementing new technology in one corridor and compare to other corridors, then make small adjustments in street lay-out and signal phasing, do we see less accidents and near-misses? Did the average speed increase for public transportation and biking, while reducing speed for cars, but with less stops (reducing GHG emissions)? If so, how do we package this up and replicate across the rest of the city?

Secondly, we do have to unite and realize that an integrate approach is the most beneficial path forward. All can get what we need, but maybe not what everyone wants.

LET's CONTINUE THE CONVERSATION

Please feel free to forward this email to your friends and colleagues who you believe would benefit from participation in our community. For those of you who wish to be included among those who believe that technology is a tool and that business success is achieved by skilled wielding of the tools available to us, feel free to reach out to us. If you have suggestions, topics you want to see included in future newsletter updates, or other general inquiries, feel free to email me at manager@i3-iot.net.

The ideas 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 any other member of our community of interested people.

ABOUT CTM

Originally founded in 1985 under the guidance of USC, the Institute for Communication Technology and Management (CTM) was originally formed to support the newly deregulated US telecom industry. Over time, the telecom industry evolved from being a voice focused service to become a backbone element of the internet. As the internet grew and shifted from being a digital exchange network to become a consumer focused social/media distribution system, CTM grew to include entertainment and network companies both domestically and abroad interested in serving these expanding network need.   These efforts to understand and embrace transformational disruption led to the emergence of The CTM Newsletter, a vehicle to foster continued conversation about transformational issues that transcend specific technologies and specific industries. In time, CTM conducted some foundational research in the blossoming Internet-of-Things arena and this led to the creation of a community driven IoT network vision. Working with the engineers at USC's Viterbi School of Engineering, the cities of Long Beach, Los Angeles, the County of Los Angeles, and a host of supporting companies, academic institutions, and private individuals, this vision was turned into a opensource software development project that resulted in the public release of the I3 software in December 2019. Operational management of the I3 program was spun out of USC in 2020 as the I3 Consortium to allow the university to focus on needed research programs while the consortium works to support the operational needs of the I3 community.