THE GIL CHRONICLES

LEADING AND WINNING IN AN ERA OF UNPRECEDENTED CHANGE

GROWTH, INNOVATION AND LEADERSHIP: A FROST & SULLIVAN EXECUTIVE SUMMIT
STRATEGIC IMPERATIVES AND ASPIRATIONAL IDEAS FOR GROWTH

OCTOBER 1 – 4, 2018
Paradise Point Resort & Spa
San Diego, CA

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Dear Colleague,

At Growth, Innovation and Leadership: A Frost & Sullivan Executive Summit, we brought together outstanding leaders, innovators and visionary thinkers to discuss and share the latest ideas about Leading and Winning in an Era of Unprecedented Change, the event theme.

In the following pages, we present the Growth, Innovation and Leadership: Executive Summit Chronicles, a collection of all the important ideas and action items discussed at this dynamic event. These valuable summaries will help executives address current business issues and prepare for the future as well.

Highlights include keynote summaries from Evren Eryurek, Technical Director, Chief Technology Office, Google Cloud Platform, Google, who gave the opening presentation, Accelerating Delivery of Business Solutions for the Digital Economy; Cate Gutowski, Senior Vice President - Global Sales and Service, Panasonic Avionics Corporation, who discussed Innovating Customer Experience and Engagement; and Michael O. “Coop” Cooper, Founder Innovators + Influencers, who led a presentation on Change: How Adaptive Leadership Helps Overcome Your Team’s Stuck in Their Ways Thinking.

You will also find valuable summaries from Think Tanks on Creating Value and Driving Better Outcomes from the Intersection of Healthcare and Technology; Technology Radar: Seizing Early Adapter and Fast Follower Opportunities for Growth; and Aligning Growth Vision and Innovation Strategy, to name just a few.

The Growth, Innovation and Leadership: Executive Summit Chronicles have been prepared to help you and your organization leverage the latest insights from forward-thinking leaders across industries. We hope you will learn from and implement all the valuable knowledge shared at Growth, Innovation and Leadership: A Frost & Sullivan Executive Summit.

I look forward to our continued partnership and welcome any feedback you might have.

Sincerely,

Brian Fitzpatrick
Partner, Frost & Sullivan
Growth, Innovation and Leadership:
A Frost & Sullivan Executive Summit

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KEYNOTE
Accelerating Delivery of Business Solutions for the Digital Economy

PRESENTER
Evren Eryurek, Technical Director, Chief Technology Officer, Google Cloud Platform, Google, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 8:45am

WATCH VIDEO HERE: https://vimeo.com/frostsullivan/review/295867955/6e8520c4f2
SESSION ABSTRACT
To survive and thrive in a time of unprecedented change, businesses must effectively tackle their challenges of today – and tomorrow. Transitioning these initiatives to the cloud and creating a center of excellence within your organization is a strategic imperative to achieve your growth objectives and seize new opportunities.

KEY TAKE-AWAYS
- Real world examples of the application of cloud ML to business challenges today
- Insight into the nature of opportunities and the application of ML to solve tomorrow’s high-impact business challenges
- Best practices to inspire innovation in your day-to-day business processes, including alignment with overall business goals, use of the new tools, and driving change in legacy behavior over time

OVERVIEW
We are moving from a mobile-first world to an AI-first world, and AI is the new ground for gaining competitive edge and growing your business. But, AI is useless without the right analytical environment to address high value questions. If, for example, AI is to be used in call centers to recognize facial expressions and translate languages, then high quality data analytics is required before the appropriate AI systems can be programmed.

Transitioning from current platforms to the next generation systems in the cloud and AI presents significant business implications. What worked in the past will not work in the future. A company cannot exploit AI unless and until it has a robust data analytics system. Additionally, the proper workforce is needed to develop a data analytics operation and there must be corporate buy-in to expend the time and resources to achieve development, and to gather insight into where the company wants to be in three to five years.

KEY INSIGHTS
Google estimates that there will be 163 zettabytes (ZB: a unit of information equal to one sextillion \((10^{21})\) or, strictly, \(2^{70}\) bytes) of data by 2025. Current legacy systems for data storage and analysis must transition to more advanced systems as data volume
and speed needs change. Cost to manage and store the large volume of data will also be a factor.

These issues are of concern to companies across a broad spectrum of industries. Regardless of industry, companies have the same wants and goals: they want to be data-driven, agile and stay ahead of the competition. They recognize that collaboration is necessary to meet future demands (no more silos); and that they must be prepared to fend off cyber-security threats.

**TAKE-AWAY**

- Big data must be actionable
- Robust data analytics is needed to make big data useful and to program AI
- Focus data analytics on high value questions
- Use existing technologies; don’t start from scratch
- Real time is where real value is

**IMPLEMENTATION GUIDELINES**

**Data analytics** - A company cannot take advantage of AI, or mine its big data, until it has a robust data analytics operation that, among other features, can provide real time answers, permits fast pivots and, facilitate just-in-time deliverables.

Data analytics capabilities can be developed in-house using existing manpower and resources, or can be acquired by new hires, acquisition, or contracting for third party development. Hybrid systems, which merge legacy data analytics technology with new technologies, are the rule; there are no “pure” systems. It is not necessary to start from scratch.

**Actionable Data and High Value Questions** - Data has value only if it is actionable, i.e., if a company will act based on the data. Using data analytics to answer high value questions results in actionable data and high value innovation. Time and resources spent on questions that are not expected to yield high value should be de-prioritized.

For instance, Disney employed actionable data to improve the experience its customers have at its park. Insurance companies have used customer data to develop customer-friendly ways to file an insurance claim. Importantly, these companies asked high value
questions and, based on results, took action that undoubtedly improved growth of the company and/or revenue.

**Skilled Workforce** - Google and other companies have formed partnerships with universities to help ensure that the talent needed in the coming years will be available. These partnerships take the form of scholarships, mentorships, competitions, and the like. This is an area a company may want to explore as it considers its needs for skilled workers in the coming years.

**Build for the future** - All Google products in current production have a model neural network that allows expanded capabilities for voice, response, translation, and a variety of other features that will allow its products to expand as new technologies and features are needed. Companies can undertake these developments through collaborations, synergies, hybrids; no need to start from scratch.

**BEST PRACTICE**
- Use big data, data analytics, new technologies to solve customer problems or improve the customer experience
- Focus and prioritize high value questions
- Identify short terms goals in long projects to keep corporate interest and enthusiasm
- Corporate buy-in often improves if a program is designed to deliver multiple small steps every 3-6 months, rather than a final result at the end of three years
- Collaborate, not just with potential industry leaders, but also within the organization – cross-functional collaboration will help keep everyone up to date on change
- Be more agile across the organization
- Take advantage of existing technologies; you don’t have to start from scratch

**FINAL THOUGHT**
Think bigger. Think about leading the way, leveraging the technologies discussed, including the work Google and other companies have done with neural networks, AI, and digital technologies, to innovate in your industry.
TECHNOLOGY OPPORTUNITY ENGINES
Rise of Machine Learning – AI in the Enterprise

PRESENTER
Nagraj Kashyap, Corporate Vice President, Microsoft, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 9:45am

SESSION ABSTRACT
What does it mean to infuse AI into all of your products and services and how do you drive innovation in these new technology spaces? The growth mindset culture at Microsoft has challenged everyone at the company to answer this question – not just the research and engineering teams developing new competencies. Participants learned how Microsoft’s corporate venture fund is doing their part to find cutting-edge AI startups that are augmenting human capabilities.

KEY TAKE-AWAYS
• Insights into the challenges both enterprises and startups face with implementing and scaling AI technology, where are we now
• Examples of startups creating enterprise value with AI shared use cases
• Fresh perspective on the future of AI

INTRODUCTION
Kashyap previously worked with QUALCOMM and the new platforms that were being used to change the business models there. He currently works for a division of Microsoft called M-12. His focus is on the enterprise systems and potential change models.

OVERVIEW
Kashyap presented a historical review as a reminder that information, artificial intelligence and machine learning in one form or another have been around for some time. Today, we are all using machine learning. Google, Amazon, IBM, Apple, Facebook, Salesforce and Microsoft all run on machine learning.
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KEY INSIGHTS
Microsoft’s corporate venture fund, named M12, currently has 65 companies, all of which are enterprise focused, exist to solve problems and use machine learning and/or augmented learning to augment humans. Collectively, these companies aim to solve many societal and business problems. As described on the M12 website:

At M12, we are building tomorrow’s future by giving entrepreneurs unparalleled access to Microsoft’s ecosystem, guided by the experience of trusted partners who move at the pace of innovation. We invest in early-stage B2B companies, with a specific interest in those with their heads in the cloud and on the edge. M12 is breaking the mold for corporate venture capital, with agility, fast decisions, and unsurpassed value-add.

Bonsai and Directly are two M12 companies mentioned in the presentation. Bonsai’s mission is to provide tools to enable domain experts to build systems without having to hire a team of expensive and in demand Ph.D.’s. “Bonsai offers an AI platform that empowers enterprises to build and deploy intelligent systems.”

Directly recruits product experts, such as Xbox power users, Airbnb super host, etc., and employs their deep product knowledge to immediately answer non-routine customer questions. Over time, such answers to complex questions may be used to program machine learning.

The goal of the M12 companies is to augment the human experience every day. But, AL/ML is currently too complex, not yet streamlined, and requires highly expert talent that is expensive and in short supply. Until these hurdles are removed, creativity and innovation are stifled.

By analogy, it was not until smartphones overcame the complexities of hardware and software that creativity and innovation exploded, e.g., any programmer could make an app, and customers began to use their phones for everyday activities, like making payments, health checks, entertainment, and so on.

ACTION ITEM
  ● Use and leverage existing tools and the future tools that companies like Microsoft, Google, and others will create for you
TAKE-AWAY

- AL/ML will be used to augment humans, not replace them
- Human understanding and decision making are hard for machines to understand. Over time, they can be programmed to replicate some of the human thinking processes, but this should augment humans, not replace them
- Augmenting humans can free up humans to undertake higher value activities, or compensate humans for their input used to program machines
  - It is neither necessary nor suggested for each company in the AL/ML space to build its own ground up systems
  - The M12 venture fund is one way that Microsoft is leveraging outside technology to develop its future systems
  - In return, it is providing its fund companies with access to the people and technologies found at Microsoft organization
  - Communities and collaboration are becoming essential in this time of exponential technological growth
- AL/ML have great power when applied to solve real problems for the benefit of society and business

IMPLEMENTATION GUIDELINES

- Prepare now to have the workforce necessary to utilize these technologies in the coming years.
- Recognize that innovation happens inside and outside your organization
- Consider how it would be best for your company to leverage others’ technology or partner with other organizations
- Create internal innovation centers, to prepare for AL/ML that will be commonplace within the next five years or so

FINAL THOUGHT
ML is here to stay. Quantum computing will be the next significant technology, as it will greatly decrease the speed of computing.
TECHNOLOGY OPPORTUNITY ENGINES
Imagining the Future of Consumer Hardware and Devices

PRESENTER
Richard Sear, Partner and Senior Vice President: Visionary Innovation, Frost & Sullivan
LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 10:05am

SESSION ABSTRACT
Can you imagine a world without smart phones? Or one where you never need to press another button? This session examined the very real activities taking place today that are shaping the future of how humans interact with the digital devices around us. From looking at consumer cars to everyday appliances, Sear explored how companies and futurists are designing a world of autonomy and symbiotic relationships that take humans and the technology that surrounds us to a place once only imagined in science fiction.

KEY TAKE-AWAYS
• Specific case examples of companies designing your future and how they go about doing it
• An understanding of the top consumer hardware platform innovations and what this will mean to end users
• Insights on how to integrate these consumer innovations into your business and every day actions
• Proven ways to prepare and plan for this known future. Today!

OVERVIEW
Current trends in computing are focused on 5G, (the 5th generation of cellular mobile communications) augmented reality (AR), and artificial intelligence (AI). Consumer devices and hardware that are exploiting these developments find markets with aging
humans and the expanding middle class. In fact, despite a slight decline in the median wealth in the U.S. population, the desire for computing devices is increasing.

The importance of phones will increase as they become the epicenter of our lives and the conduit to a variety of other data centers that will help manage our lives. Edge and fog computing will gain in importance as humans want/need their data analytics to be close by, without latency. Within the next five years, our phones will be instrumental in improving our experiences in real time. Nevertheless, computing still has a long way to go to mimic the human brain and the goal is to augment humans, not replace them.

**Key Question: What will future consumer hardware look like?**

**Phone as Portal** - The phone will be the portal/epicenter for consumers, i.e., the conduit for expression, communication. This micro data center will improve the human experience as we move around, communicating with other computing devices. Expect to see enhanced communications between phone and car, house, work, etc. For example, if you sit at a table at a fast food restaurant, your phone may pair with a computing system at table to recognize at which restaurant you are at and offer up customized choices or options for you based on location and past preferences.

**Location of Data and Analytics** - Expect to see a proliferation of edge and fog data centers, which perform advanced micro-analytics very close in location to where data is generated. The close proximity of data generation and analysis allows for faster data-driven decisions. These local systems will be bigger than cloud computing, but the challenge will be deciding which data to send to the cloud and which to keep local. Which data are needed in real time, and which can sustain latency, e.g., we probably want to keep health information local so it is available on-demand in real time.

**Enriching Human Experience** - We will continue to change the way we use our phones, shifting toward using the phone to enrich our experiences in real time. For instance, the phone will be able to provide quantifiable advice to consumers, literally telling you which watermelon to buy based on freshness and smell. And once the consumer returns home, the phone can communicate new data generated during your away time (e.g., health info, groceries purchased) to other devices and individuals.
Augmented Reality - Augmented reality (AR) permits humans to receive information feedback in real time. Compared to robots, AR-equipped humans perform 30% better. AR will not replace humans, but will augment their performance and, thus, improve efficiency. Expect massive, exponential growth in the consumer market and enterprise for AR computing, as compared to virtual reality (VR).

KEY INSIGHTS
- The idea that humans will be replaced by robots is false. Studies have found that humans that are augmented with technology tend to outperform robots in most cases
- Companies should look into the opportunities of augmenting employees instead of replacing them
- Although most news today centers around virtual reality, augmentation is actually the future of technology

IMPLEMENTATION GUIDELINES
- Understand your innovation level and how you can focus on the future
- Develop a clear future-cast of your company's core areas of influence and track it every single quarter; stay on top of it
- Ensure you have a future mindset to capture opportunities to lead the industry
- Companies will have to determine:
  - What the data needs are
  - What data needs to be kept local
  - What data needs to be sent to the cloud

FINAL THOUGHT
What do we do now? Some of the technologies discussed may sound a little far-fetched, but there’s nothing spoken about that is more than five years away. What should you do about it? Understand what level of innovation you’re at now, develop a plan for the future, track it regularly, and spend time focused on where you’re going. No one spends more than 5% of their time doing this… but the reality is that you need at LEAST 20% of your time focused on the future if you’re going to differentiate yourself in your job and in the marketplace.
TECHNOLOGY OPPORTUNITY ENGINES
Our Future is Autonomous

PRESENTER
Henrik Christensen, Qualcomm Chancellor's Chair in Robot Systems and Director of Robotics, University of California San Diego, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 10:55am

SESSION ABSTRACT
Autonomy is entering most aspects of our daily lives from manufacturing over logistics and transportation to management of your home and assisting dear ones. Major new opportunities are emerging from data science, smart cars, and new types of manufacturing.

KEY TAKE-AWAYS
- Examples of key business opportunities and emerging technologies that will impact many businesses
- An overview of the economic impact that these technologies will have
- Insight on a 5-year perspective on new technologies

OVERVIEW
Heinrik discussed several areas of the future of an autonomous world:
- Lean mass manufacturing and how robotics will help companies increase production while also allowing for customization of products. Examples included two auto manufacturers:
  - Audi allows for lots of customization – some of their high end cars will allow a customer to choose from hundreds of steering wheels for their car
  - Jaguar does not allow for this type of customization when ordering vehicles
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- **Urbanization**
  - With companies like Amazon working hard to shorten delivery times to less than an hour, it has become imperative to build more warehouses – especially in urban areas. This will allow for much quicker delivery of products.
  - In addition, these warehouses will need to have an extensive array of automation in the form of robotics. Amazon has changed the way picking items in a warehouse is accomplished – no more people running up and down aisles looking for items – robots now bring the items to the humans for packaging at a specified location. This allows for better space utilization.

- **Quality of life for an aging society**
  - As populations around the world age and become a larger part of the total population, technology will be needed to fill the gap in doctor to patient ratios – especially in urban areas. But also in rural areas where people are spread out geographically. This will include:
    - Video for doctor visits
    - Access to medical records
    - Dispensing of medications

**TAKE-AWAY**

- **An autonomous future will impact almost all aspects of business and commerce:**
  - **Supply chain** - Lean supply chains will be the norm with autonomous manufacturing that is more efficient and on-demand. Goal is to manufacture just-in-time, close to site of assembly and distribution, using autonomous or semi-autonomous technologies for manufacture, warehousing, assembly and distribution. One example given was a part that arrived at shop, was assembled into end-product, and was distributed to next stage of supply chain, all in 12 minutes.

  - **Warehousing** - Autonomous systems can greatly approve the efficiency of warehouses. If a current warehouse with stationary shelving and moving humans can move 60 items per hour, then an autonomous warehouse with moving shelves and stationary humans can move 600 items an hour. Autonomous
distribution centers require less square footage, but due to improvements in real-time delivery, there will be more distribution centers closer to customers

**Delivery** - As customers desire/require faster delivery, autonomous technologies are meeting the challenge. The future of package delivery is autonomous flying vehicles, like drones and aircrafts

**Real estate** - As cars and other modes of human transport become more autonomous, there will be less need for parking and commute times will decrease. Currently, 30% of San Diego real estate is parking, whether on the street or embedded within buildings. How can this real estate be transformed when no longer needed for parking? Automation has the potential to double transportation capacity, without investment in infrastructure

**Regulations, Ownership, Liabilities** - The autonomous transformation brings with it the need for some regulation. But, technology is advancing faster than regulations can be enacted. This slows down technology adoptions. Other issues such as who owns the interfaces, technology infrastructure and who is liable for injury need to be addressed too

**ACTION ITEM**

- We must increase training in high schools and colleges for the STEM areas. Organizations should engage with local schools to work on curriculum and interest
  - For example, in Georgia, 30 percent of the high school students do not graduate. There are opportunities to increase the available skill sets for students to learn and understand new technology
- Think about how the decisions a corporation makes today in the realm of manufacturing, supply chain, parking, and storage will be impacted by the coming autonomous culture
- Discuss/Answer: Who owns this technology, and where is it going? Who will own the plumbing of how we integrate all these services?
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KEY INSIGHTS

• In the future, commuting time will be used for productivity – sitting in an autonomous vehicle will allow people to engage in work, studies or social engagement rather than focusing their attention only on the driving experience
• Autonomous vehicles have the opportunity to finally reduce commuting time
• There will also be autonomous package delivery - eventually UPS will have a 3D printer in the back of a delivery truck, and your order will be printed straight from the truck and delivered to you, making the factory and warehouse obsolete
• We’ll start seeing a lot of self-driving cars as early as 2020, and kids who are born today will not have to learn how to drive

FINAL THOUGHT

There’s no doubt we’ll see autonomy in our daily lives, and soon. Mostly the dirty, dull, and challenging tasks will be “automated.” At the same time, we’ll be moving away from an economy of commodity to a service economy (e.g. mobility as a service, home care as a service, manufacturing services). We have the technology, but our challenges will be access to an educated workforce, and access to the right economic mechanisms.
TECHNOLOGY OPPORTUNITY ENGINES
The Path toward Real Spatial Computing: AR/VR and Mixed Reality

PRESENTER
Timoni West, Director, XR Research, Unity Technologies, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 11:15am

SESSION ABSTRACT
The potential for spatial computing to transform the way we understand, navigate, and experience the physical world is about to change our lives. Over the past decade and ramping up to 2018, technology companies have started seriously laying the groundwork for a digitized world map: all the way from low-fidelity GPS to high-resolution room scans generated on mobile devices. Computers will need continually updated, world-aware data in order to reach the ultimate goal of robust, intelligent, and useable spatial computing. Participants learned where the industry is today, which inputs and datasets need to be prioritized, and how the hardware is expanding to improve calculations in real time.

KEY TAKE-AWAYS
- A read on the types of real-world data available now and which companies are exposing them to developers
- A look at what’s possible with different types of hardware today and what we can expect over the next five to ten years
- Insight into how the current OS and app structure needs to be significantly revamped in order for spatial computing to work

INTRODUCTION
Unity Labs is a 3D game engine, used to make games, simulations, and now movies. Timoni West talked about building a future of real spatial computing - not interacting with a screen, but wearing headbands, interacting with holograms, and connecting the digital world with the human one. Unity Technologies objectives include:
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- Describing objects in a way that makes it easier for people to find them in video games for example
- Improving graphics to expand what one can do in real-time rendering
- Programming robots to make intelligent decisions

There are fundamental and significant differences between Augmented Reality (AR) and Virtual Reality (VR). With digital and VR, the computer knows exactly where everything is in the environment. VR immerses the user in a non-reality, 3D environment and allows user to interact in/with that environment. In AR, everyone moves around and the computer must be continuously updated so it knows where things are. AR takes our current reality and adds something to it, augments. Pokemon Go is a form of AR.

Advances in spatial computing will allow us to do things we have not been able to do before. Instead of turning our phone around to show someone a photo, think about how that photo can be shown using spatial computing. Instead of sending a document by email, think about how spatial computing can facilitate you reaching out and handing the digital document to someone. A variety of tools, permissions, and hardware need to be developed to realize the potential.

TAKE-AWAY
Spatial computing and designing in VR - New tools and interfaces are making it possible to see things at scale, making it easier to move things in virtual reality (VR) and have them stay put, and perform digital editing in 3D. For instance, a “digital desk” is a new development that allows one to cut-and-paste in VR. Tools such as Unity EditorXR are allowing users and programmers to design in VR.

Designing in AR - Unity is making tools for designing in AR, including the MARS project (Mixed and Augmented Reality Studio.) From the Unity website: “This Unity extension gives developers the power to create games and applications that deliver on the promise of AR: apps that react to, and live in, the real world.
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KEY INSIGHTS

- Unity is now working on developing augmented reality tools. This is uncharted territory and has huge potential pay offs in efficiencies and usability
- When involved in the digital world – through virtual or augmented reality – we will know everything that will happen – we are in control
- The experience must be robust to be practical

CHALLENGES

- Challenges still exist in both virtual reality and augmented reality worlds. Much work still needs to be done in this area of connecting with humans
- Interacting with computers really needs rethinking – how should we connect – hard wired or continue with wearable technologies?
- In the virtual world, people can hand you something directly, even if not in the same room. This allows for huge opportunities in the areas of virtual meetings
- Instead of showing an image to someone on a phone, it could be shared in a virtual world
- The challenge with world data:
  - Usually only available in apps on the device after shipping
  - Computer vision providers need to have their technology work on many kinds of devices
  - ML is often tied to specific hardware

FINAL THOUGHT

Spatial computing applications and technologies need to be fundamentally rethought before computers can truly interact with humans. Download the Unity Software for free to explore the capabilities and use the editor XR system.
TECHNOLOGY OPPORTUNITY ENGINES
Brainstorming the Convergence of Technology Opportunity Engines

MODERATOR
Richard Sear, Partner and Senior Vice President, Visionary Innovation, Frost & Sullivan
LinkedIn Profile

PANELISTS
Evren Eryurek, Technical Director, Chief Technology Officer, Google Cloud Platform, Google, LinkedIn Profile
Timoni West, Director, XR Research, Unity Technologies, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 11:35am

SESSION ABSTRACT
What do you do now about the future? In earlier sessions, we discussed autonomous decisions and AI; we looked at augmented and virtual reality and the future of consumer hardware. This session focused on what to do now! Bringing together our morning session presenters, we held a moderated discussion of the opportunities that now present themselves looking at how these technologies will arrive, often through convergence, to create an opportunity for growth. The panelists discussed how you should think about these issues in the context of today, and translate them into opportunities that are both near and far, to ensure you have an opportunity landscape over time.

KEY TAKE-AWAYS
- Multiple perspectives on how the future is being realized today
- Insight into the way leading thinkers imagine the use of technologies in today’s business environment
- Ideas on how to imagine the application of trends in specific industries and when to incorporate them into planning
- A new lens on convergence opportunities in light of new technology advancements
Highlights of the group discussion on next steps for the ideas and trends presented earlier in the day:

Moderator:

**How should we be talking to the C-Level about what to do now to plan for the future?**

Answers:

For VR, it is somewhat easy. We can use the technology as an example and immerse the person.

It was not easy in my early days talking to CEO's - where we fail is talking about the “how” part. You have to go with the story - what it will mean for them, in their world, from the customer's perspective. You have to stop using the technology lingo, (how it will get done), and focus on talking about how the customer’s experience will change and improve.

Explain the risk (of not moving forward) to C-level officers. Show how humans will continue to invent. Convince them now is the time to “jump into the tech.”

*Think about risk; to make the things that you do, it's not cheap, so there's an element of risk when these executives are making decisions. How do you bridge that conversation?*

If I can demonstrate that the idea is an enduring one, that it's a great idea that people have been wanting and moving toward again and again, AND it’s the right time, where the hardware and infrastructure is economical enough, that’s where I can make a great case for taking action.

*How do we neutralize skepticism and concerns about risk in an organization?*

Focus on the benefits to productivity, delivery, and new products that the technologies will bring to increase the bottom line. Avoid emphasis on “how,” and focus on the benefits.

Often the discussion is easier if focused on small steps; discuss one piece of value add, then over time introduce another value add. Make it an incremental discussion.
What is one thing that a CEO must do now to grow the organization?
Collaborate. We have to find new ways to collaborate and connect members of an organization that have not historically interacted; take down silos; rely on and look to all members of an organization to innovation.

Create digital records or replicas of business assets. Each product, process or service should have a virtual model, i.e., a “digital twin.”

Is there an industry where these new technologies are not applicable?
Luxury goods, like wineries or ballet shoes, where historical mode of manufacture is important.

Healthcare has experienced a lot of innovation, but there are regulatory constraints to exploitation. The companies that are currently changing healthcare are Google, Amazon, and Microsoft – not the traditional healthcare organizations.

Are you encouraged by any big shifts or transformations?
There is more focus on AI and ethics now than there used to be. We don’t dismiss these issues anymore, and we don’t fear them. For example, we used to be concerned about email and spam; now, we’ve learned to deal with it and are no longer fearful of it.

The importance of jobs, skills, and training is recognized. Are we preparing students for future jobs in AI, AR, VR and the autonomous world? There has been a sustained effort to bring technology to K-12, but companies need to do more to partner with schools and universities. Students should be taught how computers work.

There’s the issue of humans still wanting to be humans to some regard. How big do you see the wall between what technology developers and what visionaries are trying to do, and societal acceptance of those technologies?
People’s societal concerns are going to change - people knowing what your living room looking like isn’t going to matter as much. Look back 10 years ago, and if I told you that you’d be carrying a device that knew all the time where you were within a yard, and that you’re probably sharing that location with your spouse all the time, you wouldn’t have liked that. Now, it’s not considered a big deal.
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Society adopts, eventually. We’re in a very different place now than we were ten to fifteen years ago. But that doesn’t mean we’re dismissive of those concerns. We have to really consider what it means for the people; so we can’t dismiss society’s concerns and say “oh, they’ll eventually come around.” You pay attention to concerns, pursue them, listen to them, and problem solve around them to accommodate those concerns.

Audience questions:
Studies have reported that limiting screen time improves cognition ability in children. Given this, what are the implications of AI on children?
Without knowing more about the reported study, the panelists questioned the conclusion. Studies have found that VR is not necessarily more addictive than other addictive behaviors.

There is a difference between doing the same action repeatedly for hours, and the type of interaction in VR that necessitates countless different actions and learning.

What have we learned from Facebook and its sale/use of personal information?
If users pay for software and support it, then organizations may be less likely to treat users as a commodity.

Users seek to regain control over their data as a commodity.

FINAL THOUGHT
Organizations must prepare now for an environment reliant upon AI, AR, VR and other modes of computing and connectivity. Engage senior executives using familiar concepts, focus on outcomes that positively affect the business (not nuts and bolts of the technology), and incremental steps to achieve those outcomes.
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 1
Creating Value and Driving Better Outcomes from the Intersection of Healthcare and Technology

EXECUTIVE BULLETIN
New Thinking on Technology Disruption of the Future

PRESENTER
James Mault, M.D., FACS, President and Chief Medical Officer, CQuentia
LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 1:30pm

SESSION ABSTRACT
For decades, routine clinical care has been episodic in nature and therapies applied on a one-size-fits-all trial and error basis. Healthcare professionals are overwhelmed by existing volumes of clinical data and guidelines that exceed the limits of human cognitive capacity. With the advent of rapid NGS for genomics and medical grade biometric sensors, vast amounts of new, actionable clinical data will be available to customize care for each patient in real-time at the moment of care.

In order to assimilate and apply these new data sets into clinical practice, new predictive and prescriptive algorithmic-based artificial intelligence (AI) solutions will be essential for analyzing patient specific data in real-time, thereby guiding clinical decision-making, treatments, and care to achieve optimal outcomes. These AI algorithms can become Software as a Medical Device (SaMD) FDA 510k solutions that will serve as the basis for Precision Medicine Solutions.
KEY TAKE-AWAYS

- Framework for how technology-enabled streaming digital is moving healthcare from episodic and generic to continuous and personalized
- Insight on how algorithmic-based AI solutions will become the pervasive basis on which smarter, better and cost-effective care is delivered

KEY INSIGHTS

We are at the tipping point. AI based healthcare will have such a big impact it will be another pivotal moment in healthcare. But we are not there yet. The practice of medicine is not yet “smart.” Patient care is episodic and sporadic. One-size-fits-all is universally applied to every patient. Trial and error is the normal way of determining success – ventilator weaning, blood pressure medication titration. Medical errors are the third leading cause of death. (Medical errors and hospital acquired infections kill up to 440,000 Americans each year.) We lack the data and analytics tools for “smart” care. Really, not much has changed in 2,000 years.

To enable smart care, data needs to be connected, real-time, accurate, secure, liquid and accurate. This only began with Meaningful Use requirements for electronic medical records. “Liquid” means the data need to flow. Just because it is digital and on a server is not much better than paper records. It has to flow to different users and departments. Actionable means real-time as well. Moving from witchcraft medicine to data-driven healthcare requires improvement in capturing and using data.

Unlocking Other Sources of Digital Data – Personal Genomics (PGx), Biometrics, Therapeutics

Microsoft study showed patients who had clinicians reviewing medical data captured digitally had better outcomes for cardiovascular data.

Virtual care market will grow as doctors get paid to not see patient but move from episodic care to tracking on an ongoing basis. Clinical practice will become all about seeing less and less patients who don’t need a visit and seeing more patients who need a doctor’s time and attention. Better allocation of resources and intellectual value.

Average clinical decision making is based on seven pieces of data because of human cognitive capacity. Evolving data volume exceeds cognitive capacity. Aviation field is
already doing this. In medicine, nurses try to track all the different pieces of information, but no way to keep patient from crashing because too much data to manage.

**TAKE AWAY**
Move away from hindsight to foresight on intelligent care. You want to be in a position of foresight, where you have the data to move to insight. Additionally, big data is useless without intelligence to tell you what it means. Move from Descriptive, to Diagnostic, to Predictive to Prescriptive in real time.

**Software as a Medical Device (SaMD) – the Next Big Thing**
SaMD outputs – inform, drive, diagnose and treat. Need amalgamation of data to determine what to do with patients. Doctors feel very threatened by this notion. How do we get over that hurdle?

The next ten year journey is about transitioning our healthcare professionals to a mindset of trust and reliance and ownership of what this technology does. Hopefully, clinicians will respect the results from better outcomes.

- Example: The Capsule system in 2,500 hospitals worldwide. The predictive Capsule tool tells the nurse anesthetist everything she needs to know. It combines data from different sources and amalgamates everything together. It has 97 predictive algorithms and updates every 10 seconds. You can download it on iPad or iPhone. Plugs into messaging system and flows into SaMD Command Center Dashboard. Red, yellow, green scoring to standardize care but individualized for each person
- Every area of medicine will have a new SaMD behind it because clinicians cannot process this much information. Then, add in genomics and wearable data. Capsule just got cleared to add in an obstetric module that is monitoring expectant mothers to make sure they are safe

**Pharmacogenomics (PGx)**
48% of the adult population does not metabolize one or more pharmaceuticals normally, some metabolize too quickly and others too slowly. How do we solve? Genetically, we can now start to better tell whether people will respond to a drug at a standard dose. Some people might need more and some people might need less. Narcotics have a
very genetically reliable type for low metabolism. Easier to overdose and get people addicted by giving them too much drug.

- Product from a leading pharmacogenomics company, (PGx) analyzes medication appropriateness – patient can take a spit test and then determine how anesthesia medicines will affect them BEFORE the operation
- Sensor data → algorithms → intelligence – patients getting sophisticated wearables that are Class II medical grade that will help with diagnosis. They go on patients before chemotherapy, cardiac procedure and surgery or specialty drug. Will be able to track data and generate report before wheeling someone into the operating room
- Biggest applications could be for drug costs; well-established guidelines indicating whether it is appropriate or not for someone. Health plans are very excited about this opportunity

**FINAL THOUGHT**

Data + Clinicians + Mathematicians = Intelligent Care. Take large cohorts of data, pool it, do pattern recognition development and crank it out for very specific use cases and high cost drugs.
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 1
Creating Value and Driving Better Outcomes from the Intersection of Healthcare and Technology

FROST & SULLIVAN INSIGHT
AI Applications in Healthcare, Today, Not Just Tomorrow

PRESENTER
Greg Caressi, Senior Vice President, Transformational Health, Frost & Sullivan
LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 2:10pm

SESSION ABSTRACT
While Artificial Intelligence is a much-hyped technology, especially with regards to clinical applications, there are current successes and applications of AI being utilized in healthcare today. Solutions leveraging artificial Intelligence (AI) and cognitive computing have a market potential of over $27 billion in the healthcare industry by 2025. Investments in startups and new solution development based on AI are rapidly ramping up across the healthcare ecosystem, from pharma and diagnostics to medical imaging and digital health. Frost & Sullivan presented their latest research on the current and future applications impacting the healthcare sector, along with where they believe AI will have the biggest opportunity in utilization and acceptance across the healthcare ecosystem.

KEY TAKE-AWAYS
- A read on the five biggest opportunities to apply AI in HC
- Insight on how AI will change the competitive landscape for HC sector stakeholders
- A look at where AI is impacting the HC ecosystem today, and what are examples of market leadership in AI applications
INTRODUCTION
AI in healthcare can be leveraged in combination with many other technologies including machine learning, natural language processing, analytics, structured data tracking, and more. AI will add value across the value chain – it will have an impact on governments, payors, clinicians, medtech vendors, consumers. Solutions for payors have the highest market potential over the next 7 years.

Drivers for AI Adoption Differ Globally
U.S. - Productivity, standardization
U.K. - Shortage, wait times
China - Access, expertise

AI vendors heavily target payors and providers as buyers today. Customer composition is approximately – 80% payors and providers. Pharma companies, academic organizations and clinical researchers (combined) make up about 20% of customers.

What Applications Are Driving AI Today?
Clinical applications - 50%
Operational applications - 30%
Financial applications - 20%

Operational applications are easier to bring to market. Hospitals are interested in speeding up revenue cycles to create processes, add documentation and improve billing.

Adoption of AI in Global Healthcare
Medical imaging has been one of the earliest adopters of AI in healthcare. Radiologists believe that AI applications that can automate manual-intensive tasks, representing the greatest short term potential for AI in radiology. Some solutions are being sold as add-ons to existing technology to augment.

Top Clinical Application Areas in Medical Imaging AI
Oncology - 34.8%
Breast Care - 20.2%
Stroke and Trauma - 20.2%
Lung Care - 19.1%
Since 2012, the vast majority of AI developments have been focused on automated image feature detection and analysis. Payors are big buyers of solutions incorporating AI now; for example, they want to know what therapies to authorize and whether they are most likely to deliver health outcomes. Prior authorization expected to be automated in the future.

We are expecting a lot of acquisitions in the field because it is very fragmented now. These companies almost always exit through acquisition and not an initial public offering (IPO).

**2018-2022 Predictions – AI in Healthcare**
- Ethical debates
- Increasing acceptance even by skeptics
- The rise of China
- Move to the Edge
- Hardening use cases with more clinical evidence
- All imaging procedures will have some AI influence
- There will be some shakeout of start-ups and there will be acquisitions

**Future of AI**
There is a trough of disillusionment – a lot of pushback from culture side from clinicians on using AI to augment versus automate what they do.

**KEY INSIGHT**
Software as a Medical Device (SaaMD) companies are low capital intensive and quick to generate revenue. FDA is fast tracking SaaMD regulation. As hospitals increasingly face bankruptcy, more hospitals are willing to listen to new technologies that can help them find ways to save money.

**FINAL THOUGHT**
How long will it be until we will get to the acquisition spree? It will happen in a few years. Investor payout prediction: seven years toward payout.
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CASE HISTORY
AI in Action: AI Innovations from Virtual Assistant to Imaging AI Marketplace at Nuance Healthcare

PRESENTER
Woojin Kim, Chief Medical Information Officer, Nuance Communications
LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 2:35 pm

SESSION ABSTRACT
While there has been increasing interest and innovation in AI in healthcare, many challenges exist when it comes to actual clinical implementation and adoption of this exciting technology in healthcare. Various AI innovation initiatives at Nuance Healthcare were shared, including virtual assistant, automated and computer assisted clinical documentation, and Imaging AI Marketplace.

KEY TAKE-AWAYS
- Insight on healthcare AI challenges
- Examples of using AI technology to enhance clinician workflow through a virtual assistant and automated clinical documentation
- Ways of developing and distributing multiple AI algorithms in radiology

INTRODUCTION
AI is a very hot topic across all sectors. It is an especially hot topic in radiology and medical imaging. In 2012 AlexNet (a convolutional neural network) showed massive improvement in computer vision for medical imaging. Since 2015, computers have been
better than humans. Since 2015, there has been an explosion in articles on the topic. There is a fear factor when it comes to AI replacing radiologists: “People should stop training radiologists now.” - Jeffrey Hinton, Godfather of Deep Learning. “Indeed, in a few years there may be no specialty called radiology.” - Andrew Ng, Computer Scientist and Entrepreneur, Co-Founder of Google Brain.

AI Challenges in Healthcare

1. Need to get access to data, and it needs to be good quality and labeled by experts. AI models are brittle and don’t transfer well from one application to another. There is the “black box” issue about AI machine learning and complex networks not being transparent about algorithms.

2. Successful business models: In medical imaging AI, there are very few business models that work. In the U.S. all these AI start-ups are not making any money yet. Investors now want their money. A lot of these AI companies will be acquired or go belly up.

3. Who is going to pay for it? Physicians get paid on Relative Value Units (RVUs) but if AI used, physicians won’t get paid. If AI model makes mistake who gets sued? Actual clinical practice of AI is limited.

AI Companies Develop Different Algorithms – What Is A Hospital To Do With All These Different Models?

- Nuance is creating imaging AI marketplace – define and build, publish and share, access/ subscribe and use
  - Kim recommends publishing AI models with Nuance because they are in front of so many radiologists they can bring it into their workflow in radiology
  - Industry leaders come together to speed up the adoption of AI in radiology
  - Nuance gets a percentage for selling and supporting these tools
  - Strategic AI innovation initiatives at Nuance include Imaging AI Marketplace, Virtual Assistant, Clinical Decision Support, Automated Clinical Documentation
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American College Of Radiology Has Taken Leadership In Validating AI Tools
- Currently, there is no standardization across AI vendors on how to measure and assess something
- AI system could help prevent clinician burn-out because patients are not crashing on them as often
- AI companies recognize that they need to build their application to work within existing workflow of physician

FINAL THOUGHT
Kim discussed a Virtual Assistant (VA) scenario where devices like Amazon Echo and the clinician can interact with voice commands. VA can warn clinician about potential drug interactions, for example.
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CASE HISTORY
AI in Health: Opportunities When the Data May be BIG, but the Solution Space is COLOSSAL!

PRESENTER
NL Shasha Jumbe, Ph.D., Co-Founder, Electronics and Data Science Stack, Context AI, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 2:35 pm

SESSION ABSTRACT
Minimal health data is collected outside a medical context. Even within a medical context, data collection is intermittent and based on symptomology or population aggregate risk based on demographics. Furthermore, within the medical context, data collection is limited to single or convenient time points. Therefore, a central challenge for AI in personal health empowerment is accurate classification of a population-of-one from sparse data, while also producing rich general representation of health and disease state, status and progression.

KEY TAKE-AWAYS
- Key findings that while available disease data is BIG, the solution space of health and disease is COLOSSAL
- Blueprint opportunities in methodology and application development are rife when the health problem is approached as a small data problem
- Framework of AI primitives to accelerate learning and knowledge generation for personalized preventive care; and diagnostic, predictive, prognostic, and therapeutic digital biomarker discovery
INTRODUCTION
According to presenter Jumbe, “AI is an inverse problem/solution finder because of gaps where AI fails.” Jumbe’s personal data journey: He was born in Rhodesia and was part of a clinical study when he was eight. Later in his life, as a Senior Program Officer and accomplished scientist at the Bill & Melinda Gates Foundation, he sought to learn more about the results of the clinical study he was in.

Data Sources
Weather Predictions: We spend $2.5 billion a year and there are 2,500 weather service workers, but how often do they get the weather right? Dimensions are so huge, it’s very hard to predict. Similarly, there is so much variability within and outside patients that it makes it hard to deliver good data that is predictive. AI may still be as bad as weather predictions.

Big Data in Medicine
Most big data is in illness, we don’t measure people who are healthy. We also don’t measure people who are healthy until they get sick. This is a big white space. Right now there is a disease management focus. We don’t talk about what happens as people move from wellness to disease, or disease to wellness. Most wearable medical devices today have too much variability to be medical grade.

Data Has Very Poor Predictive Value
- Need to move to contextual health analytics – who is going to have cardiac event, when, where, why?
- Novel data: discarded or unobserved bio-signals; sensors getting better all the time, materials science improving. He’s developed a stethoscope more sensitive at picking up very low and very high frequencies

Discussion Points
- While available disease data is large, the solution space of health and disease is colossal
- Approach health as a small data problem, but one app at a time is expensive and inefficient at delivering wellbeing
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- Need to implement a framework of learning and knowledge generation from primitive AI to accelerate personalized preventive care
- How can we get skilled existing clinicians together to narrow down the scope of the problem? You need to be careful about what doctors you bring in
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 1
Creating Value and Driving Better Outcomes from the Intersection of Healthcare and Technology

FROST & SULLIVAN INSIGHT
Moving Toward Consumer Focused Healthcare: Lessons to Learn from the Connected Home

PRESENTER
Reenita Das Partner, Senior Vice President Transformational Health, Frost & Sullivan
LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 3:10pm

SESSION ABSTRACT
In healthcare, the ‘anytime, anywhere care’ trend is driving several technology and care delivery innovations. One of the results is care delivery moving away from traditional settings towards the home, where patients spend most of their time. The hope with these trends is to catch diseases early on, and enable populations to live longer, healthier lives.

In parallel, the consumer industry is seeing the emergence of smart homes, or with the current maturity levels – connected homes. With telemedicine and remote patient monitoring concepts, healthcare as an industry is already leveraging technology for chronic disease management and post-acute care. This advancement provides the potential for healthcare to leverage the connected home concept to move beyond ‘sick care’ to actual ‘health care’, where preventive care techniques can truly be employed.
KEY TAKE-AWAYS
- Insight into how leading companies are enabling healthcare management outside traditional care delivery centers
- An update on the convergence of technologies that are being piloted to enable health monitoring, beyond the traditional definition of home health monitoring
- Key considerations and challenges in implementing regulated health technologies in a consumer environment of a connected home

OVERVIEW
The average healthcare cost of a person over 65 is $80K-$120K. There are 10,000 people turning 65 every day. 80% have at least one chronic disease. Cost per capita goes up with age significantly.

KEY INSIGHTS
Back to the Future 2030 Will Include
- Grandma with a smart toilet looking at blood glucose in the urine and sending the information to her primary care physician
- Teenager who is not sleeping well and exhibits other symptoms picked up by smart tools receives a potential depression diagnosis

Current Global Connected Home Penetration
Percentage of homes with at least five devices tracking health:
- U.S. - 32%
- Norway - 31.6%
- Estonia - 26.8%

Health and wellness is forecast to have the highest growth rates for the connected home, even if media and entertainment is far bigger overall.

Primary Area of Focus and Impact
- Aging-in-place
- Maternal infant and child health
- Chronic disease management
- Post-acute care monitoring
- Health and wellness for all
• Care for physically and intellectually disabled

**Growing Old in a Smart Home Can Include**
• Safety and security
• Antidotes to isolation and loneliness
• Better health and wellbeing
• Smart home features for aging-in-place
  o On-body wearables
  o Bathroom, bedroom sleep quality monitoring
  o Social engagement tools, etc.

**Current Home Healthcare Ecosystem**
• Very few traditional healthcare technology companies
• Smart home competitive landscape – IT, telecommunications and real estate companies all involved
• Connected medical devices companies as well
• Aging in place, chronic disease management companies

**Technology Interventions for Medical Specialties**
• Siloed solutions provide disease specific insights
• In the future, these platforms will be integrated together

**Impact on Healthcare Companies**
• Opportunities for partnerships, data truly is a new currency
• Key question: how to make data actionable?
• Product + service + intelligence for real-world evidence

**Top Growth Opportunities**
• Cloud computing
• Data analytics
• Remote patient monitoring
• AI

**Who Owns the Data?**
• By 2020, there will be 44 ZB of healthcare data
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CASE HISTORY
Connected Care – Care Beyond the Hospital

PRESENTER
Ravi Kuppuraj, Chief Executive Officer, Connected Sensing, Philips
LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 3:30pm

SESSION ABSTRACT
The increasing cost and generally ineffectiveness of past care paradigms in dealing with the challenges of chronic diseases and their management is clearly calling for change and innovation. The entire healthcare system is under significant strain to address this reality. The focus for companies, providers, payors and governments is to figure out how to move from diagnosis and treatment to prevent and enable healthy living. This means that care has to extend from the critical care units of the hospital to general and lower acuity areas, outside the hospital and the home. The ‘anytime, anywhere care’ trend is driving several technologies and care delivery innovations.

KEY TAKE-AWAYS
- Blueprint of care delivery models that move away from being restricted to traditional hospital settings to the patient’s home.
- Examples of how the convergence of these technologies allow us to move beyond ‘sick care’ to ‘actual Health care’
- A framework to show how and where preventative care techniques can truly be employed
- Best practices for key technologies and where more innovation is needed
TAKE AWAY
Healthcare as we know it cannot continue. There are too many chronic diseases and huge costs. One specific solution in the market that extends care beyond the hospital is connected sensing, consisting of clinical wearables. They are in the hospital today, and provide an example of extended care:

- Medical wearables – clinical-grade devices that collect a more robust dataset than consumer devices, and integrate more easily with other healthcare technologies
- Patient deterioration in the general wards has serious consequences – unexpected deaths in hospitals occur on the general floor; most patients demonstrate abnormal symptoms within six hours of cardiac arrest but a doctor is notified only 25% of the time; early warning of patient deterioration on the general ward can save lives

There are increasing demands for addressing chronic disease as patients are becoming more complex – CHF, COPD, Post-Op, etc.

KEY INSIGHT
- Key things for solutions:
  - Patient safety
  - Staff management
  - Quality of Care
  - Patient Management
  - Clinician Workload

What connections are required for chronic disease management?
- Sensors that are not cumbersome to wear; information alerts that are not specific or sensitive, zero patient compliance, focus not just on patient’s vital signs, but also on trends and deterioration
- Key things for solution: patient safety, staff management, quality of care, patient management, clinician workload
- Co-creation example: Philips connected sensing that captures information on an early warning system:
  - Device provides nurses with a reminder if patients need attention for early deterioration
FINAL THOUGHT
Philips created and deployed a pilot program deploying a wearable sensor for heart rate, respiratory rate and fall detection sensor. Patients could connect to smart watches and simple workstation for central monitoring. The system provides reminders and alerts for nurses.
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 1
Creating Value and Driving Better Outcomes from the Intersection of Healthcare and Technology

CASE HISTORY
Digital Technologies to Help Seniors Thrive at Home

PRESENTER
Alex (Jun) Gao, Head of Digital Health Lab, Samsung Research America
LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 3:45 pm

SESSION ABSTRACT
As healthcare moves beyond the four walls of hospitals and clinics, the home becomes the primary destination site for where care will be delivered. Digital health technologies have the potential to transform the home environment to a virtual hospital. Clinical monitoring may be performed at home using advanced sensors and connected devices. Moreover, the home enhanced with digital tools can help individuals with disabilities due to advanced age, disease, and/or injury lead a more independent life. This is becoming increasingly relevant, as every day in the U.S. 10,000 Boomers turn 65 and most if not all of them wish to live safely and independently at home.

KEY TAKE-AWAYS
- Insight on the key challenges that seniors face today
- Fresh perspectives of digital health technologies that may be used in the home by seniors to improve outcomes
- Framework of smart home and how it applies to seniors
OVERVIEW

Aging in Place: The aging demographic is a big challenge and global phenomenon. In the U.S., this demographic is underserved from an IT perspective and a lot of seniors do embrace technology. Many have disposable incomes. We need more and more caregivers to support patients. Most caregivers are unpaid spouses or children. Additional support can be found with the following:

- **IoT** – Intelligence of things for everyone. Unified Cloud beyond Smart Home, simple and unified experience across devices, AI to help IoT work better and easier
- **Home IoT Ecosystem** – 16.7 million connected devices, 3K+ certified devices
- **IoT** needs to have cross industry collaboration and take that mentality and embrace an open ecosystem
- **Smart Medical Home** – home based total patient/elderly care solution that monitors vital signs and safety for better health outcomes as a lower cost
- **Elderly/Patient Care** – fall, medication adherence, sleep, activity, air quality monitoring. Connect devices to SmartThings Cloud
- **Sensors located all around home for elderly/patient care** – monitoring many parameters

Samsung developing different engines – aggregate data signals all together and learn on ourselves and see progress or deterioration:

- **Wearable device** collects data passively
- **The more you ask of patients the less they will report**
- **Data needs to be passively collected**

Privacy is main concern when installing IP CAMs in living spaces. People don’t like feeling spied on, so:

- **New vision sensor developed** – will track motion of sensing without fidelity and images and color
- **Can address privacy concerns but still help with monitoring**
- **Solutions focusing on fall detection, activity monitoring, personalized exercise coaching, rehabilitation, etc.**
There are lots of companies outside of healthcare that want to get into Smart Homes and don’t think it is moving fast enough. Healthcare does not move fast for adoption:

- Difference between medical grade and consumer grade requirements. Very little money for medical consumer products
- Consumers don’t feel they should have to pay for a blood pressure meter and think the healthcare system should pay for it
- Direct to consumer market health devices – consumers don’t like to buy wellness things. But sick people will

**Move to Risk-Sharing Models**

- Lots of burn-out from payors and providers who might not be interested anymore
- Fights over outliers, devils in details, what the metrics are, how they are measured, etc.
- Need to be more collaborative

**FINAL THOUGHT**

Value based care has stalled, fee for service still dominant in most markets. Colorado has no value-based organizations because fee for service is alive and well and they perceive no need for risk based contracts.
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 2
Technology Radar: Seizing Early Adopter and Fast Follower Opportunities for Growth

FROST & SULLIVAN INSIGHT
Digital Technologies and Digital Transformation

PRESENTER
Brian Cotton, Partner, Global Practice Leader, Information and Communication Technologies, Frost & Sullivan, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 1:30pm

SESSION ABSTRACT
Digital Transformation (DT) represents a defining challenge to many companies today and technologies such as artificial intelligence, blockchain, and IoT seem like opportunities. But what’s coming next, and are you ready for the latest digital disruptors?

KEY TAKE-AWAYS
- Insight into new digital technologies that promise to power digital transformation
- Key findings from our latest research into disruptive technologies
- Fresh perspectives on what digital disruptors can do for your organization

INTRODUCTION
Digital Transformation is a journey; not a goal. Companies are in different stages of digital transformation. These include pre-digital, digital literacy, digital competence and digital expertise.

Six Pillars of Digital Transformation
1. Product – Life cycle
2. Operations - Accounting and finance, manufacturing
3. People - Recruiting employees, retention, training
4. Information management
5. Customer journey – From sales, customer service, relationships
6. Leadership – Need a good steward; a champion to make it happen in the trenches

Transformational Business Models
- Mass customization - Starbucks
- Freemium - Spotify
- On-demand - Doordash
- Sharing economy - Uber
- XaaS – Salesforce .com
- Crowd sourcing - Waze

Technologies and Capabilities
“The future is here; it’s just not evenly distributed – William Gibson, The Economist

Add Engines of digital disruption chart here

Biggest Developments on the Horizon
- Natural Language Interface (NLI /like Siri)
- Human Intelligence Augmentation
- 5G – 5th Generation of Cellular Mobil
- Quantum Computing
- Human Brain/ Computer Interface

TAKE AWAY
- Technology is moving faster than we thought. Today, most people are still expecting operational improvements, (improving productivity, improving customer experience, reducing cost, accelerating decision making) with glimmers of transformational thinking

FINAL THOUGHT
How can we apply this to solve big challenges such as feeding a world of 8 billion people?
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 2
Technology Radar: Seizing Early Adopter and Fast Follower Opportunities for Growth

INTERACTIVE EXERCISE
Digital Transformation Maturity Model

PRESENTER
Mukul Krishna, Global Practice Head, Digital Media, Frost & Sullivan, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 2:15pm

SESSION ABSTRACT
To be digitally transformative, it's business critical to first understand where you are on the digital transformation continuum. This session took participants through an abbreviated version of the Frost & Sullivan Digital Transformation Maturity Self-Assessment tool.

KEY TAKE-AWAYS
- A proprietary framework to understand where you are on the Digital Transformation Continuum
- A blueprint to point you where your company needs to be to digitally transform
- Insight about Digital Transformation best practices as well as pitfalls to avoid

Participants expressed the following digital transformation challenges:
- Knowing where to start is the challenge
- Initiating digital – creating a factory of the future; seeing ROI
- According to a Venture Capitalist, cultural implications is a key issue; they are missing the people aspect of Digital Transformation
- Demands from customers is a key challenge
- Seeing SAAS and other competitors in digital marketing
- Product marketing
Growth, Innovation and Leadership: A Frost & Sullivan Executive Summit

- IT advisory company – helping customers transition; getting users to adapt
- Monetizing the sales process
- Lack of human resources to make it happen
- Can’t get budget
- Trouble getting someone to take ownership of the products and services portfolio
- Senior management is where the challenge is

How does digital information become a digital asset?
- Go through and take out the “garbage” so you don’t just move garbage on your premise to the cloud
- Contextual intelligence allows Amazon and Netflix to keep customers

Market drivers
- Blockchain
- Physical libraries
- Eliminating solos
- Being able to repurpose information
- Contextual data married to business intelligence ushers in an era of unprecedented accuracy with the decision making process becoming more predictive and even prescriptive through cognitive intelligence

What about risk?
So many unknowns you’ll never be able to address them all; but you still have to envision the future issues and manage the risks that are addressable.

Digital content explosion: manufacturing, banking, automotive, retail and healthcare industries seek seamless, intelligent and ubiquitous interactivity.

Four pillars for an effective digital transformation strategy (from a different perspective):
1. Storage
2. Information discovery and management
3. Digital intelligence and analytics
4. User experience
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Business outcomes
- Cost reduction
- Workplace optimization
- New revenue generation and customer experience

ROI
- Assume one hour per day per power user (salary benefits and overhead)
- Productivity gained by saving the person’s time (from mundane tasks)
- Opportunity cost
- 4th dimension to this is “what is my competitor doing; what can we do better than a competition"

Digital Transformation’s Bottom Line
- The promise of automation and Big Data analytics is real
- Implement behavioral targeting to increase customer loyalty and grow sales
- More effectively nurture prospects into warm leads, and warm leads into customers
- Make a bigger impact by discovering unknown unknowns
- Strike a balance between Big Data capabilities and analytics
  - Too much data, too little analytics – you’ll drown in information and lose customers
  - Too little data, too much analytics – you’ll draw misleading conclusions
  - Balance = ability to react quickly and accurately to raise revenue and profits

Strive for Three Clear Outcomes
1. Cost Reduction
2. Workflow Optimization
3. New Revenue Generation and Customer Experiences

Digitizing Your Organization – Important Questions to Ask
- Have you identified all of your different data sources?
- Are you using a system that ingests all of your data, puts it into a standardized format, and integrates it into a single information base?
- Have you enabled different parts of the organization to combine or federate their separate databases to enable them to “see” each other’s’ data?
Are you able to categorize and search through your data to do things such as locate and view information for multiple cases or records?

Can you generate reports on how your data is used; such as reports that indicate “who viewed what for how long?”

Have you applied strict security protocols to your data to ensure data protection, even in distributed environments?

Are you leveraging cloud services to lower your organization’s IT capital expenses or IT management burden, or enable a 3rd party to manage your IT systems?

Have you converted, or are you in the process of converting, your non-digital information into digital formats?

Are you converting or have you converted your legacy manual business processes into more automated processes?
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 2
Technology Radar: Seizing Early Adopter and Fast Follower Opportunities for Growth

INTERACTIVE
Ask the Experts! Panel Discussion on Internal Digital Transformation of the Organization

MODERATOR
Mark Simoncelli, Global Vice President, Growth Implementation Solutions, Frost & Sullivan, LinkedIn Profile

PANELISTS
Crystal Collier, Head of Strategy, Programs and Insights, Electronic Arts (EA) LinkedIn Profile
Kevin King, Director of Corporate Sales, Panasonic Avionics Corporation LinkedIn Profile
Mohan Nair, Senior Vice President and Chief Innovation Officer, Cambia Health Solutions, LinkedIn Profile
Brittany Rothnem, Assistant Vice President, Marketing, LPL Financial, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 3:00pm

SESSION ABSTRACT
Digital Transformation is occurring at varying speeds across most functional areas within certain organizations. It is important to be clear on the objectives and value extraction benefits that digital transformation can deliver while balancing the challenges. An expert panel commented on their respective experiences in a cross section of functional areas.
KEY TAKE-AWAYS

- Functional examples of what your peer companies did to implement Digital Transformation
- Lessons learned of successful digital transformations
- Insight into the techniques that companies who've digitally transformed used to make their leap

Question

*How do you strike the right balance between hiring outside or growing skills internally? Address concerns about employee morale – core work versus digital transformation?*

Answer

I have seen that the longest tenured employees (or those hired through referrals) get ramped up a lot quicker. However, if the company is in groupthink mode, it is better to find some new talent. Everything depends on goals. Does your staff enable you to achieve what you need or do you need new staff?

As long as leadership communicates what is happening and the reasoning behind it, employees should be much less disgruntled.

*Kick us off with a customer journey*

The customer journey is the most important thing. It is the sum of every interaction that customers have with your brand. Digital powers each step – from awareness to consideration and purchase.

Example: Net neutrality. Pilot program of FIFA 2018. Started reviewing data of users with overtly high disconnects to address their web connectivity issues (i.e. replace plug/chord/or modem)

Example: Netflix offers rebates for disconnections or freezes

Generating traffic in-stores but potential customers are not buying. Look at prices? Or create new target?

Set segmentation strategy based on what kind of player you are. What your behavior reveals. What we do to move you along the customer lifecycle matters more than when you were born. Traditional demographics matter less than behavioral psychographics.
How to understand the root cause? Huge hurdles to correct non-ownership problems. What is the driver behind taking action?
What is the key driver of behavior versus just a complaint? Will we lose market share if we take no action? Showcase key driver then influence what will really work to retain the player. Data reveals all.

It is an interaction economy.

Modernize the sales process. Use business intelligence scoring quality leads and measure engagement. Before handing leads over to sales, grade them by activity. They must hit a threshold to be kicked over to sales. Quantify meaningful interactions and defining which interactions are meaningful.

Measuring ROI: How do you justify leads scoring model?
You can do this by working with your business intelligence team. We made significant investments in technology overall. If you want to be a leader, it’s what you have to do.

How to gauge interaction?
Create a scoring model to suit your business needs and to gauge level of engagement. Come up with a threshold to quantify meaningful interactions.

Utilize an inexpensive platform to create sales enablement – to tee up conversations before the call and supplement marketing with better conversations and lead nurturing.

Marketing looks more at prospects than existing customers. Target your existing customers with new products.

Our team is highly focused on engagement of prospects. We are upselling to create sales enablement for our customers with content they are willing to share. Everything is scored.

How difficult is it to produce engaging content?
Balance ever-green content with agile content. Create a content calendar with reoccurring themes. Update content with data. Do webinars for an agile presence. Share content in different mediums. Create content partnerships with thought leaders.
How are sales teams using digital tools?
We are using them as in-flight entertainment for airlines. We know all the market participants. There are limited or no new customers. For us to grow, we need to extract more value from existing customers and create stickiness. Extract value without simply raising prices.

- Example: Use data and dig. Leverage tools to drive additional value. As connectivity technology improves, the quality of data and amount of data has exponentially grown. Now, we are doing a lot of data analysis.

One customer struggling to make connectivity products work. They buy data from us to sell internet to customers. We put algorithms on airplane usage models to massively impact their revenue line. This allowed us to go back to them in a model where we are reselling data.

We are a very digital company in terms of what we offer customers. We need to become platform-as-a-service. We are trying to find examples and case studies to help us with our own digital transformation.

Did you give targets to sales for the model?
Some targets do not fit every customer. We want to avoid behaviors which negatively impact our end-users.

What about healthcare?
Money flows where behavior flows. People are motivated by how they get paid. The consumer is lost in the process. How do we get the customer back into the fold? His company is now consumer-centric with a digital purpose. They have a cause greater than themselves. There are thousands of ideas generated by employees per year.

The wait time for a physician in the U.S. is 39 days. Out of pocket $352M in healthcare costs total. Innovation plays a major role to optimize experience and define new experiences consumers can live on to achieve their goals.

Enablement of digital access to healthcare to have experiences they choose. Customer journey in illness is a horrible process of treatment and challenges.
52% of collections in U.S. is from healthcare. Other observations:

- Healthcare gets some of the lowest customer care ratings
- Insurance companies care more about shareholders than patients
- Innovation can play a major role in defining a new experience that enables people to achieve their goals

**Change Leadership: People**

- Most companies still hire the same way. There is a lack of refreshing skill set requirements for open positions
- One new hire can change everything
- Technology will not solve the conversation or communication issue. Do not get caught up in technology for the sake of technology
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 3
The Transformation of the Industrial Sector

FROST & SULLIVAN INSIGHT
Surviving in a World of Rapid Transformations

PRESENTER
Kiran Unni, Vice President, Industrial Group, Frost & Sullivan, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 1:30pm

SESSION ABSTRACT
Technology convergences are driving a creative destruction and expansion of traditional business models. The Industrial market is already witness to halving technology refresh cycles which is steering the whole ecosystem to face the inevitable imperative - what to change and when to change and how to change. This session helped participants to understand key drivers of change and the underlying technology enablers.

KEY TAKE-AWAYS
• Insights into how to identify changes in the industrial ecosystem based on changes in the digital world
• Ways to better embrace the digital change and learn from industry best practices
• Key findings from proven examples based on Frost & Sullivan research

OVERVIEW
Changing Face of Industrial Ecosystem:
Shift Happens – Living in a Digital Era
• First shift – the convergence of operational technology and informational technology. No longer is race between the two disparate groups, more a partnership to provide value internally and externally
• Second shift – Fluidity, digital approaches and proof of concept (POC) are being driven on the plant floor, as well as many different approaches in various end
markets. Many are trying new models based upon client input and pain points. Everything from sensor on devices to SCADA/MES platform approaches (including outsourcing)

- **Third Shift** – Transformation, as companies look at agile manufacturing, they continue to improve their efficiency and effectiveness. Many business processes are being disrupted to improve efficiency and ROI
- **Fourth Shift** – New business models – disruptive business models are changing revenue streams. Examples include Amazon, Porsche (car sharing model, for a monthly fee you can swap car models, as often as you like). Creative service models are meant to address new user experiences

**TAKE AWAY**

**Why Digital for Industrial?**

Many companies are looking at capital efficiency with legacy systems they can’t afford to replace. The strategy is to increase resource and asset efficiency. Many knowledge workers are leaving causing shortages, and many younger employees not interested in these types of jobs. Focus on data-driven maintenance that’s schedule-based for cost savings.

Technology transformations: include digital platforms, advanced analytics, highly deterministic networking, smart gateways, and intelligent sensors to gather data (edge computing). Capitalize on Industry 4.0 components and capabilities and more importantly, develop organizational model based learning with an easy user interface. Cyber-security concerns do remain, which still need to be addressed in many digital business models.

Industry transformations: tectonic shifts affecting industries and markets for next decade. Many organizations are looking at various service models to eventually replace hardware sales (including CAPEX to TOTEX). Some of these models include the following:

- Break Fix
- Stand Up / Turnarounds
- Predictive Maintenance
- People or Outsourcing
ACTION ITEM

Critical Issues across Industrial Markets of the Future:
1. Discussed garnering relevant data from the sensors and more importantly creating revenue models for increased services and software
2. Outcomes as a Service – discussed companies developing a five year roadmap for Digital Transformation. Many clients have developed the best end markets and preferred types of services for each end market
3. Cognitive robots will change the face of the plant floor. There will be a change in knowledge workers as well

Four Emerging Themes Driving the Future of Automation
1. Augmented operator
2. Digitization – many predictive platforms are available from ABB, Rockwell, Siemens and Emerson to improve efficiency
3. Collaboration and Innovative Models – Blockchain custody transfer, still has some compliance issues
4. Lifecycle Services – 3D printing has provided the ability to make parts faster and increase revenues for the aftermarket

Frost & Sullivan’s Digital Transformation Framework
Digital Transformation should not be focused on strategy/technology, but rather on business outcomes and value:
• Determine your go-to-market strategy; business and revenue models will provide value creation for organizations

Process Industry: Segmented by State of Digital Maturity
The market is predominantly selective and non-digitizers, with very few being enterprise digitizers
• Capital spending and ROI payback models keep many companies in the non-digitizer bucket
• Selective digitizers – managing change is difficult, not enough process maturity in the organization
Digital Transformation Maturity Model
Data and data quality continues to be the single major issue underlying successful digital transformation projects

- Maturity in collaborating between OT and IT is an imperative to build success in an organization

FINAL THOUGHT
Strategic 5-Year Roadmap for Customers Going Digital
Start small, experience value, scale quick, drive organizational adoption. Shift from Proof of Concept (POC) to Proof of Value (POV). Building the right business model and aligning OT and IT can drive synergies for revenue models. Many new subscription models have been developed to meet client requirements.

How Should You Shift to Outcomes-as-a-Services?
Many aspects of current business models will be disrupted significantly with the move towards Outcomes-as-a-Service

- Traditional services and outsourcing models have already been disrupted
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The Transformation of the Industrial Sector

CASE HISTORY
Industrial Cybersecurity

PRESENTER
Jeffrey Worsham, Global Lead, Technology and Innovation, Northrop Grumman
LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 1:45 pm

SESSION ABSTRACT
The dangers of the Digital Age are well known, but who is winning, us or the hackers? Participants heard about several extreme cases of cyber vulnerabilities as we enter this new “IoT Age,” and hopefully left scared.

KEY TAKE AWAYS
- Case studies of specific cybersecurity pitfalls
- Insight into the scope of the problem, and its importance and permanence
- Critical factors in formulating a strategy for cyber defense

OVERVIEW
You won’t stop all attacks, and it is not just a problem for the IT team. From the basics of hardening infrastructure and ensuring adequate controls for identification and authentication, to the nuances of mitigating insider threats and evolving encryption, firms must establish a comprehensive and dynamic strategy for defense.
Industry Vulnerabilities to IoT Attacks:

Hospitality Industry
A recent attack in a resort in Austria left the hotel guests locked out of their rooms. The hackers bypassed a hotel room security barricade and deactivated all the hotel’s room key cards. This ransomware attack made issuing new cards impossible, but the ransom demand was only $1,800; a small price to pay compared to the cost of having dozens of disgruntled guests waiting in the lobby. While this was not a costly attack, when you scale this type of attack to hundreds of establishments, there is serious money to be made.

Automotive Industry
Similar hacks have happened in the automotive industry, where customers don’t realize that components such as seatbelts, steering, the rearview mirrors, etc. have digital footprints. Two case studies were discussed, one that involved a Jeep getting hacked while it was on the freeway, causing the seatbelt and brakes to malfunction. The other involved an early Tesla Model S that could be open and operated by a hacker in less than two seconds.

Medical Industry
Our medical devices are also vulnerable. For example, a lot of body implants are now connected devices and many devices are likely to have an IP address going forward. The medical industry knows about keeping us healthy, but they are not experts in cybersecurity. This could translate into potentially catastrophic results for patients if devices were forced to malfunction in dangerous ways. An extreme example would be Neurostimulators and Brain Computer Interfaces (BCIs). Imagine somebody being able to hack you, altering your perception of reality…

Other Examples
The examples go on and on. From a real-life example involving a casino that had a wireless fish tank that was not encrypted or protected in any way, allowing hackers to get into the casino’s main computers and steal 10 GB data, to baby monitors that hackers can leverage to access your personal computers and spy on you, nothing is safe in the IoT Age.
TAKE-AWAY

- Cybersecurity is not only an issue for IT personnel; every user has to be careful about accessing external data that could be harmful, i.e. opening links on emails.
- The optimism that you are never going to be attacked because you have done all the right things should not be embraced. If you believe hacking to be a certainty, you will be better prepared.
- Mitigating the risk of external attacks can be bolstered by external security. Breach detection is a way to identify an attack before it spreads.
- The bigger and more complex the passwords and encryption keys, the more difficult it is to hack… at least until quantum computing is perfected.
- Hire hackers to hack you, revealing where you need to focus.
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The Transformation of the Industrial Sector

CASE HISTORY
Leveraging Data and Analytics to Improve Safety and Reduce Asset Downtime

PRESENTER
Kristi Martindale, Chief Marketing Officer, Sarcos Robotics, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 2:00pm

SESSION ABSTRACT
Unplanned downtime of assets - including machine failures and outages - are costly to businesses. IoT, big data and analytics are proving to be key drivers in helping organizations reduce or eliminate these system shutdowns. Martindale highlighted how companies can better gather and analyze data for predictive learning and maintenance, and use this information to make workplaces safer, more productive and more efficient.

- Critical steps for better managing company assets to avoid asset downtime via data collection and analytics
- Insight on how machine learning and artificial intelligence (AI) will impact the future of predictive maintenance
- A real-world example regarding how robotics are being used as a vehicle to collect data and insights in order to mitigate operational challenges

INTRODUCTION
Unplanned downtime is a major, multimillion dollar pain point and harms productivity, and supply chain. It is painful for all industries, but in particular for heavy industries that run on a continuous mode.
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From reactive to preventative to predictive, data-driven paradigm shifts are being enabled by growth of sensors, cloud platforms and data science automation are being enabled by growth of sensors, cloud platforms and data science automation in industrial science programs.

Sarcos Robotics built a robotic platform that operates as a mobile IoT platform for inspection, surveillance and non-destructive testing. Their platform is waterproof and has AV and for real time testing and surveillance.

One case study discussed was in the manufacturing sector and involved metal processing anodizing metals for other processes. One of the issues included leak detection in tanks. A robot was used to replace humans in leak source detection and also to test the leak before humans were sent for remediation. This reduced man power cost.

Another example was in HVAC systems. Blockages are quite common in HVAC ducts which can often lead to fires, as happened to a Sarcos Robotics client. The current process is for humans to monitor all the ducts. But it takes four humans thirty-two hours to monitor the ducts and HVAC system. The robotic Sarcos platform monitors this by travelling through the length of the HVAC systems and collecting visual data on ducts.

The third example discussed occurred in the power generation sector. Remote visual inspection and hazard detection was used to reduce the cost of hazard detection and remediation. They have saved plant owners from $100k to $300k/ per day with their platform.

The robotic platform has several advantages including remote visual inspection and hazard detection. It can be a true enabler of asset optimization when it comes to tank inspection, duct inspections, and tracking hazard areas. Downtime can be significantly reduced with the implementation of predictive maintenance paradigms and also improve worker safety. Sending a robot to do a man’s job in a highly risky environment has many advantages.
The future is evolution of robotics to leverage the full potential of IoT and truly enable a RaaS business model.

**TAKE-AWAY**
- Robotic platforms can become a key asset in the spread of IoT
- A truly compatible, open, and interoperable platform can consist of installation of sensors in a mobile configuration in hazardous places

**FINAL THOUGHT**
- The challenge is to scale the versatility of the platform for various situations
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The Transformation of the Industrial Sector

CASE HISTORY
New Business Model and Service Transformation

PRESENTER
David Drake, Ph.D., Chief Innovation Officer and Founder, AMI Global, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 2:15pm

SESSION ABSTRACT
The industrial internet of things is changing the ways companies approach service models. Connected products, via IIoT, are creating new and innovative business models around service of industrial products. The days of transactional selling of products is transforming into a “product as a service” model.

KEY TAKE AWAYS
- Insights into how IoT is changing industrial business models through connecting products
- Pragmatic solutions to move from traditional product sales to “product as a service” model
- Best practices on how to effectively use data to transform service models

INTRODUCTION
The session broadly focused on the role of the Industrial Internet of Things (IIoT) and its ability to shape future business models for industrial equipment and services. IIoT is a key enabler of disrupting traditional business models, from selling to reselling the outcomes and services and can potentially take the hassle out of day to day operations of industrial customers.
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The industry is at turning point where business models are going to be disrupted completely and the industrial world is going to be dominated by IIoT, edge analytics and computing.

New business models:
TaaS (Things as a Service) Revenue is driven from high cost of ownership goods - great for complex products requiring experts such as jet engines or quality management machines
OaaS (Outcome as a Service) Revenue is driven from outcome, either in savings or output - great for product use on high value outcomes such as oil industry or medical devices

Data enables service models
Connected devices are a first step to generate data: Data on machines and data on humans using the machine. This interactivity of data presents the opportunity to create new service models that were historically unthinkable in the industry.

The muscle memory of organizations is one of the key restraints for IIoT; customers are still trained to sell things and not outcomes. Pumps is a 4.5 billion market in the US…but most buyers of pumps do not care how fluid moves from point A to point B. There is also a lot of pump renting going on for de-watering and other applications. AMI Global saw this as an opportunity. They asked renters how they estimated the pump usage for different customers. Is there an opportunity to charge a usage based fees to customers?

AMI Global has determined that selling the OaaS model is a lot more difficult than selling the TAAS model. If you can figure out the total cost of ownership of the equipment for a customer, you can charge them part of the savings you generate using digital technologies. This has been their mantra for success in the industry.

Service examples
Key examples include the use of pumps and variable frequency drives. In rental applications where the customer is buying the thing as a service, usually maintenance of the pump is OEMs responsibility. The traditional model is for someone to go out in the field every month to monitor the vibration sticking a probe into the machine. AMI
realized that if they could eliminate the need for field data collection using IIoT and they could save the cost of manpower.

The bigger benefit however, is harnessing vibration data using Fast Fourier Transform (FFT) analysis to see when the pump rod is going bad. The rod cost $35 to manufacture and sells for over $1800. If the original equipment manufacturer can predict the rod issues in advance, not only can they warn the customer in time, but they can also sell the replacement rod at a very high product margin and keep third party competitors out the way:

- The cost of shipping everything connected such as a pump is expensive. But they determined a way to develop gateways to monitor vibration and temperature at a cost that is affordable and provides return on investment that makes it sustainable
- Challenges remain with training the workforce to sell connected pumps and value added services, because most employees have been selling just pumps for most of their careers

Such was the issue with Sirrius XM when it first came out. The old model of selling it as a third party device in retail stores (as a replacement for analog radio) was challenging because sales people had a tough time convincing their customers to try it. So, Sirrius connected with car OEMs and started putting it in as a default for factory fitted radios in cars and added a trial subscription for each car. The car salesperson had nothing to sell, and customers actually ended up purchasing the subscription after getting used to listening to the Sirrius XM stations during the trial period.

**The Three A’s: Algorithms, AI and Analytics**

Algorithms are the first step - you have generated data every step of the way. By doing so, you generate a base revenue model to monetize data by monitoring and reporting it to customers. Then you move to analytics and AI to generate additional value for customers.

**TAKE-AWAY**

- OaaS, Paas, TaaS business models are enabled by IIoT
- IIoT monetization is challenging, but the first step is to collect data and follow up
with analytics and AI - in that order

- Selling Things as a Service (TaaS) is much easier than selling Outcomes as a Service (OaaS)
- The muscle memory of the organization has to be retrained to take advantage of new business opportunities from IIoT

KEY INSIGHTS

- Keep asking questions (internally and externally) about your key value proposition
- Find a way to translate it from equipment selling to outcome or service selling

BEST PRACTICE

Look for opportunities to collect data and leverage data collection devices in all equipment.

FINAL THOUGHT

IIoT and AI are challenging, but the first step is to understand customer usage habits and determine the cost of ownership imperatives for your customers.
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 3
The Transformation of the Industrial Sector

INTERACTIVE
Fireside Chat with Industry Pioneers

PRESENTER
Roberta Gamble, Partner and Vice President, Frost & Sullivan, LinkedIn Profile
David Drake, Ph.D., Chief Innovation Officer and Founder, AMI Global, LinkedIn Profile
Kristi Martindale, Chief Marketing Officer, Sarcos Robotics, LinkedIn Profile
Jeffrey Worsham, Global Lead, Technology and Innovation, Northrop Grumman
LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 2:30pm

SESSION ABSTRACT
This session enabled all to interact with industry leaders who are championing the transformation of their own companies and driving change in their industries.

KEY TAKE AWAYS
- The real-world challenges encountered
- The best practices employed
- The successful outcomes

OVERVIEW
The main takeaway from this discussion among digital transformation leaders was that it all comes down to ROI. Other sub-themes that emerged from their exchanges included:
Theme 1:
Use IoT to help the bottom line and reduce costs. Reduce your down time. Move to the cloud. Manage cyber risks.
The panelists discussed how they needed to change their thinking around cybersecurity. They once thought the cloud would be less secure, but recent and continuous attacks on businesses, buildings and infrastructure are indicating that storing data on-site is a riskier proposition. Jeff Worsham from Northrop Grumman presented earlier in the track about how vulnerable some businesses can be, and he referred back to that presentation’s examples on how vulnerable any business can be.

Theme 2:
Leverage IoT to expand the top line. Create new revenue streams such as outcomes as a service, develop and drive new business models, and lifecycle services. The panelists talked about how IoT can bring more functionality and services to a company. For example, Kristi Martindale from Sarcos Robotics discussed optimizing assets and reducing downtime - while these factors can help a company have a healthier bottom line, they can also provide these guarantees to customers as part of extending their value propositions.

Theme 3:
Internal and external interests should come together for smarter businesses. Key questions included: Where do they remain distinct versus where do they merge? How does upstream information reduce manufacturing bottlenecks and sales? How do demand-side metrics change purchasing decisions or production?

FINAL THOUGHT
David Drake from AMI global further reiterated the revenue generation potential in discussing outcomes-as-a-service. Solution providers are no longer tethered to selling equipment - they can sell what the equipment is supposed to do for their customer (for example, providing power or compressed air) in a manner that is both better quality and value for the customer, and at a better cost for the supplier. The panelists discussed pumps throughout the session, and how a "smart" pump can provide several advantages over a simpler, analog pump. These advantages can then be bundled into a more comprehensive offering that helps not only with immediate need (pumping air or liquid) but with their overall business.
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The Transformation of the Industrial Sector

STARTUP PERSPECTIVES
Innovative Startups Transforming Upstream Oil and Gas

MODERATOR
Ethan Smith, Vice President, Frost & Sullivan, LinkedIn Profile

PANELISTS
David Bradley, Founder, QPilot.cloud, LinkedIn Profile
Andrew Bruce, Chief Executive, Officer, Data Gumbo, LinkedIn Profile
Daniel Carter, Investment Director, Saudi Aramco, Energy Ventures, LinkedIn Profile
Rob Ratchinsky, Chief Executive, Officer, Engage Mobilize, LinkedIn Profile
Naser Tamimi, Ph.D., Head of Business Development, and Data Science, NeuDax
LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 3:15pm

SESSION ABSTRACT
The upstream oil and gas industry is increasingly focused on reducing operating costs and improving recovery rates through radical innovation and digital transformation. While Oil & Gas companies themselves are developing some of these innovations, it behooves operators and service companies to invest in startups to truly disrupt the status quo. A panel of experts discussed and debated which technologies, business models, and partnerships will need to be adopted for the Oil & Gas industry to achieve its full potential.

KEY TAKE AWAYS
• Insight into which industries will likely contribute the greatest innovations to transform Oil and Gas
Key findings on which segments of upstream Oil and Gas are ripe for disruption, and how an emerging technology or new business model can significantly improve the efficiency of the industry

Success stories from those who have overcome the lack of transparency between operators and their partners

OVERVIEW

Oil and Gas companies must attract external innovations to survive in an era of lower priced Oil and Gas. Historically, Oil and Gas has been a laggard in bringing in technology and new business models from other industries, however Wall Street is exerting pressure on operators to improve their margins by lowering their cost of production per barrel of oil. Leveraging innovation from IT, Automotive, and Aerospace can help leverage established technologies that have helped automate many processes that are labor-intensive and costly.

Question for Dan Carter: What types of technologies do you seek?

Answer: I’m very excited about using Blockchain for commodity trading and physical trading. I think the downstream side is far bigger in terms of volumes and it’s going to the bigger players in Oil and Gas that are able to leverage the Blockchain technology. We are currently pitching ideas to our trading desks, for example.

Question for Dan Carter: Can you give me an example of a great technology you did not fund due to poor business plan or value prop?

One time we reviewed a promising technology presented by a startup. However, there was concern regarding the IP as it may have been developed while working for a major services company. As it turns out, the developer came up with the product over his lunch hour using his company’s software, which may have created a dispute in IP ownership.

Question for Dan Carter: How important is it for the start up to have a proven application in Oil and Gas before investing?
Answer: It is far easier to invest in a startup that has completed a pilot with at least one other operator. However, we did invest in one startup that takes Mass Spectrometers. Their customer base is mostly security and governments, but we do see application in Oil and Gas.

Question for Panel: Oil and Gas is a notoriously cyclical industry. Are you hedging your bets by diversifying your portfolio into non Oil and Gas technologies?

Rob Ratchinsky: Our procurement platform can reduce transaction costs throughout the supply chain in any industry. However, we focus on Oil and Gas as we see a unique opportunity to leverage our platform along with our industry expertise to help our customer reduce their supply chain costs.

Question for Panel: Can you provide an example of how your innovation has impacted the bottom line for your customers?

David Bradley: I'll talk about one particular merchant supplier that has complete supply chain control over their farmers as a cooperative and can sell a particular type of beef directly to an end customer that's actually verified through Blockchain technology. This allows our customer to command its prices changed to their customer.

Andrew Bruce: Our distributed ledger can help verify drill pipe connection in deep water drilling, allowing for performance contracts to be enforced. Historically, performance based contracts have been expensive to enforce. This has driven the industry to maintain its dated day-rate model. Allowing performance contracting can save an operator up to $250,000. We are starting to see large companies negotiate incentive contacts using Blockchain.
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 4:
Connected Intelligent Autonomy: Drones and Cars of the Future

FROST & SULLIVAN INSIGHT
Future Forward Thinking on the Industry

PRESENTER
Mike Blades, Research Director, North America, Aerospace and Defense, Frost & Sullivan, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 1:30pm

SESSION ABSTRACT
Autonomous drones, cars, and other vehicles will inevitably become ubiquitous in urban environments and will drive the economy of the future. Where are these industries now with regard to regulation, technology, and public acceptance? How is this connected ecosystem developing and how can we expect it to progress in the future?

KEY TAKE-AWAYS
- An understanding of current autonomous drone and vehicle capabilities
- The landscape of regulations and policies shaping the ecosystem
- Insight into how future development might proceed and what could accelerate, or hinder, progress

OVERVIEW
Blades discussed the current state of vehicle autonomy, drone delivery, and urban air mobility. He also led a discussion about autonomy levels, current regulatory requirements and restrictions, and current trends and challenges facing the integration of autonomous vehicles and drones into urban environments. Blades stated that autonomous vehicles were far ahead of the regulations and policies being shaped by government and that these issues are shaping the ecosystem of the industry.
TAKE AWAY

- Over $3 billion invested in self-driving car start-ups during 2017; a lot of interest from large and small investors
- The technology developed to enable autonomous, driverless cars will drive the entire automated transportation ecosystem
- Small advances such as inexpensive sensors will eventually spread to all platforms
- Delivery bots are outpacing drones for last mile delivery, mainly due to regulatory issues and payload limitations
- New UAS Integration Pilot Program (UIPP) seeks to allow more (and easier to obtain) waivers for testing various drone use cases, including delivery
- Full UAS integration into the airspace (at least in the U.S.) will not occur until there is some sort of remote identification (ID) standard on all drones so they can be tracked and there is an assurance that they were obtained and are being used legally
- A low altitude traffic management system will be required before widespread drone operations can be allowed to occur in populous areas
- AI will drive advancements in autonomous vehicle operation as well as data collection and distribution and its inclusion in Big Data

KEY INSIGHTS

There are 5 levels concerning the state of autonomous vehicles and how they are operated at any given time:

Level 1 – Feet off the pedals
Level 2 – Hands off the steering wheel
Level 3 – Eyes off the road
Level 4 – Attention off the driving of the vehicle
Level 5 – Mind off – could sleep during transportation

Level 1 started in 2012 and level 4 is currently being developed. Level 5 could be implemented by the year 2025.
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CHALLENGES
- Cars need a lot of data from onboard sensors
- Cars must be able to identify the situations in the immediate area around the car
- Regulatory issues
- Public acceptance – the public notices an autonomous vehicle accident more vividly than an accident where the driver is at fault
- FAA guidelines and limits
- FAA regulates air space over homes
- Height limits must be followed

ACTION ITEM
- Safety and security for companies involved in this technology:
  - The vehicles must be autonomous
  - Companies must engage with the FAA and any world body involved in setting standards around the world.
  - Must develop advanced sensors
  - Must keep developing advanced software and A.I.
  - Must develop low altitude systems
  - Test, test, and keep testing

IMPLEMENTATION GUIDELINES
A solid plan must be developed for integrating manned aircraft, autonomous aircraft, and small drones into the urban environment. Regulators must develop and put into place procedures for certifying unmanned aircraft for operations such as heavy lift and passenger transport.

Technology providers, regulators, and city planners and leaders must work together to properly test and integrate autonomous transportation capabilities into the ecosystem. City infrastructures must be developed, augmented, and/or altered to support autonomous vehicles, drones, IoT, and smart cities decades into the future.
BEST PRACTICE
Still being developed as this nascent industry is in the beginning stages of research, development, and testing. As technology providers, government agencies, and operators work together, best practices will be developed to determine the best way to integrate, implement, and utilize autonomous vehicles and drones.

FINAL THOUGHT
Lots of coordination, technology development, testing, and data collection will be required to properly develop and implement the future autonomous transportation and delivery ecosystem. Data collection and testing will lead to the advancement of AI which will, in turn, lead to advances in autonomous vehicles capabilities. Development of a low altitude traffic management system and a method for certifying flying vehicles to transport goods and passengers in an urban environment will be required for a robust and safe ecosystem.
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 4:
Connected Intelligent Autonomy: Drones and Cars of the Future

INTERACTIVE
The Ecosystem of Autonomy

MODERATOR
Gary Leikin, Global Vice President, Security and Mobility, Frost & Sullivan
LinkedIn Profile

PANELISTS
Dave Bowen, Vice President, Products, Measure, the Drone as a Service® Company, LinkedIn Profile
Erik Caldwell, Economic Development Director and Interim Sustainability Director, City of San Diego, LinkedIn Profile
Biren Gandhi, Founder and Chief Executive Officer, Speak to IoT, LinkedIn Profile
Ken Stewart, General Manager, AiRXOS, a GE Venture Company, LinkedIn Profile
Koby L. Tanzer, CFA Head of Israel Office, Senior Vice President, Investment Banking Imperial Capital, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 1:50pm

SESSION ABSTRACT
The highest cost to any service provider is the manpower cost. Therefore, autonomous vehicles will inevitably populate our roadways and airways. As this ecosystem develops autonomous platforms will not only move people and things, they will collect, transmit, store, and utilize increasing amounts of data and contribute to the IoT. The panelists discussed a variety of issues including technological hurdles, regulatory considerations, handling of big data, and investment opportunities.
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KEY TAKE-AWAYS

- A portrait of the current capabilities of autonomous technologies as well as shortcomings
- An understanding of the data workflow in the autonomous vehicle ecosystem and how it will feed IoT
- Insight into current regulations and how they will need to change or be altered to promote development
- The pros and cons of autonomy in transportation • Potential future investment opportunities

OVERVIEW

Before taking questions, panel members introduced themselves to the audience and spoke about their backgrounds and companies.

Question: How is autonomous evolving?

Answers:
In Israel, the small geographical area makes it easy to meet with drone companies face to face; it’s just a short drive to have a discussion. This is important for developing new ideas.

Speech controlled drones and drones that communicate with each other are on the rise.

Currently, companies are seeking waivers from the FAA to operate large drones to carry large packages or humans.

Cities need to evolve their technology before drones can be truly efficient in urban areas.

How can public/private partnerships help to grow the autonomous businesses?
Most public officials are not looking into these types of partnerships.

With crumbling infrastructures, autonomous vehicles could help with transportation issues; we need more government involvement in development.

We need to get past public disdain of towers in their back yards to enhance the communications systems with autonomous vehicles.
Big challenge in getting municipalities to move forward with the technology needed.

Government needs to allow Integration Pilot Programs – this will allow the collection of data to assist in creating regulations more quickly.

**How do politicians talk to the population about spending tax dollars on technology?**

Chula Vista (near San Diego), lets the public know where the money is coming from – in their case, the money is generated from savings enjoyed from installing energy efficient systems.

Communicate with the population about how technology will save additional dollars that can be used for other things in the communities

**How is technology helping society?**

Technology is helping society by providing increased safety in the communities.

Police now have apps to warn of no fly zones during crime investigations.

Autonomous vehicles can be used for repair work in very remote areas.

Drones will most likely have specific flight corridors – so they may not be able to deliver packages to every front door – will have drop off points for people to go pick up packages.

**What is the Association for Unmanned Vehicle Systems International (AVSI) take on autonomous vehicles, drones and cars?**

Washington does not lead in the area of regulating for technology.

**Politicians are always asking “Why now?” Why not wait for more data?**

We must get the oil and farming industries involved because of their influence in Washington. We have been somewhat successful here since both industries see drones and on ground vehicles as necessary for future profitability and safety.

Need a huge political footprint in Washington to move legislation forward.

Need to identify what is common across all regulatory domains and work on those things.
CONCURRENT INTERACTIVE SESSIONS - Think Tank 4:
Connected Intelligent Autonomy: Drones and Cars of the Future

FIRESIDE CHAT
The Pathway to a Future of Autonomous Transportation

PRESENTERS
Brian Wynne, Chief Executive Officer, AUVSI
Mike Blades, Research Director, North America Aerospace and Defense
Frost & Sullivan

TIME
Tuesday, October 2, 2018 at 1:50pm

SESSION ABSTRACT
AUVSI provides a platform where companies providing hardware, software, and services for autonomous systems in all domains can collaborate and partner to overcome the barriers facing the development of an autonomous transportation ecosystem. This session was focused on what needs to be accomplished with regard to regulations, technology, connectivity, public perception, cybersecurity, and other areas in order to facilitate a successful path toward a future where robotic vehicles and aircraft function seamlessly and autonomously in and above urban areas.

INTRODUCTION
This was a discussion of what the CEO of the world’s largest organization advocating for the use of autonomous systems views as the way ahead for developing and implementing a connected, autonomous transportation ecosystem.

TAKE-AWAY
- Inter-agency coordination between the DOT/FAA and local governments will be integral to creating safe regulatory policies as well as common standards for collecting, processing, and distributing data to navigate, operate, and include IIoT while utilizing autonomous vehicles and drones
Education campaigns will be needed to help alleviate any cultural or privacy stigmas associated with drones or driverless vehicles.

Remote/electronic ID will be paramount to building a low altitude traffic management system which will be necessary to allow widespread implementation of drone deliveries and integration of drone taxis.

Private/public partnerships will be paramount to advancing technologies as well as determining what requirements must be met to ensure safe operations in two and three dimensional spaces.

Focus cannot be only on the platforms and sensors. It is also imperative that robust datalinks, spectrum, and data security exist because the autonomous transportation ecosystem will rely on the secure collection, processing, and transfer of data within the IoT/Big Data construct.

**KEY INSIGHTS**

- Uber is at the forefront of creating demand for Autonomous vehicles with their ride sharing platform.
  - As urban dwellers get more comfortable with Uber ride sharing with drivers, the transition to driverless cars is becoming easier.

- All new technology – blades, batteries, etc. are starting to bring new players into the industry wanting to be first – more competition – good for all.
  - As different technology companies identify the need for better products, innovation is stepping up in other areas.

- The pull from industries like coal and oil are also driving demand for A.V.

**FINAL THOUGHT**

Brian Wynne provided a solid perspective on what technology exists and what still needs to be done to create a safe and efficient ecosystem that utilizes autonomous vehicles, trucks, and drones. While the technology exists to implement many capabilities, a modicum of testing still needs to be accomplished (and will likely take years to fully assess) to ensure safe operations and help determine what requirements must be met in order to achieve various levels of autonomy to a standard measure of safety. This will be a longer process then some would hope because the ability to regulate new technologies often lags behind the rate of change of these enabling technologies. The bureaucratic process can be frustrating but, in the end, it is designed to ensure that new technologies do more good than harm.
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 4:
Connected Intelligent Autonomy: Drones and Cars of the Future

INTERACTIVE
Roundtable on Connected Mobility and Logistics

FACILITATOR
Veerender Kaul, Global Vice President – Commercial Mobility Automotive and Transportation, Frost & Sullivan, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 1:50pm

SESSION ABSTRACT
How will autonomy impact passenger travel and the delivery of goods? What is the timeline for autonomous vehicles both ground-based and aerial? What technologies still need to be developed, improved, and/or tested in order to facilitate the integration of connected, autonomous mobile platforms in both logistical and urban mobility ecosystems? This roundtable focused on discussing the future of robotic fleets and how they will contribute to IoT.

KEY TAKE-AWAYS
- Robotic feet use cases and expected cost savings
- Insight on how future robotic fleets will likely develop considering technology, connectivity, and regulatory considerations
- Future mobility scenarios and how they could play out
- A realistic assessment of implementation timelines for autonomous vehicles for passenger travel, drone deliveries (both ground-based and aerial), and drone taxis
OVERVIEW
This presentation focused on the future of autonomous fleets. It discussed the autonomy levels, how AI will drive fleet asset utilization and supply chain efficiencies. In addition, market estimates for medium and heavy autonomous trucks were provided as well as a discussion of what trends will be shaping the future of autonomous fleet.

TAKE-AWAYS
• Delivery bots and drones quickly make the delivery logistics ecosystem more complex
• Labor unions could still be a challenge when it comes to autonomous vehicles due to the number of potential driving jobs that could be lost
• There will continue to be debate, as technology is implemented and tested, as to where liability lies if there are losses (life and property) due to accidents and/or technology failures in autonomous vehicles and delivery bots/drones
• There is a laundry list of benefits that can be realized by using connected, autonomous vehicles in fleets
• One participant did not agree with the costs used to estimate the automated truck market
• Level 5 autonomy is supposed to be universal, but it will likely need to be “geo-fenced” as some urban environments will have limitations to the technologies they can support well into the future
• There is a considerable amount of venture capital and corporate internal research and development resources being committed to autonomous vehicles and urban logistics
• There are still many challenges that need to be overcome to create a safe and cost efficient ecosystem for autonomous driving and delivery of goods

IMPLEMENTATION GUIDELINES
Strategies discussed included technology partnerships, private-public partnerships, and testing to bring solutions to regulators. The importance of developing standards for communications, sensors, cybersecurity, and other safeguards was discussed. The technology is advancing more rapidly than the ability to regulate it, so it is imperative that companies work with federal and local governments to ensure smart and safe integration of technologies. This ecosystem is still very nascent in development.
BEST PRACTICE
In general, best practices are a work in progress. Lots of testing needs to continue to determine which sensors, which procedures, which regulatory restrictions/allowances, which communications protocols, etc. must be put in place to ensure safe operations of autonomous vehicles and drones in the transportation ecosystem.

ACTION ITEM
Continue the discussion and strategy development between contacts made at GIL, as well as existing industry and government contacts, and develop strategies as technologies, testing, and regulations advance.

FINAL THOUGHT
There is much investment, technology development, and testing occurring to implement and integrate connected, autonomous vehicles into the transportation ecosystem. While there are obvious benefits, many obstacles still exist before there can be a homogenous system where autonomous vehicles can operate within urban environments with a mix of manned and unmanned vehicles. It will take close coordination between technology providers, regulators, city planners, and platform/infrastructure manufacturers/builders in order to properly develop an autonomous transportation and logistics ecosystem.
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 4:
Connected Intelligent Autonomy: Drones and Cars of the Future

CASE HISTORY
Smart/Safe City of the Future

FACILITATOR
Dennis Gakunga, Chief Sustainability Officer, City of Chula Vista, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 3:30pm

SESSION ABSTRACT
To effectively respond and adapt to increasing challenges from population growth, congestion, infrastructure and public safety demands, cities are searching for ways to become more connected, efficient and responsive to community needs. In this session, participants discovered how the City of Chula Vista is building a Smart and Sustainable city environment, including how Chula Vista is collaborating with regional partners to accelerate the deployment of smart city services.

KEY TAKE-AWAYS
- Blueprint of Smart City Strategic Action Planning - understanding the current urban environment in comparison to vision for the future
- Guide to identifying ways to address challenges and achieve sustainability goals through smart technology
- Best practices for maximizing on regional collaboration for better success

OVERVIEW
The session began with a quick discussion on environmental issues facing the Bay area of Chula Vista. In the past the Chula Vista Bayfront was under-utilized due to the presence of an outdated power generating facility. Once the power facility was removed several years ago, it opened up the Chula Bayfront to allowing the city to realize its
vision to re-develop the area into a world-class tourist destination that includes convention center facilities with recreational areas for locals too.

IMPLEMENTATION GUIDELINES
The city is attempting to have all the new facilities be developed as a “smart” waterfront area – with plans to reduce traditional energy consumption by as much as 50 percent.

ACTION ITEM
A joint smart bay front assessment project between the City of Chula Vista and Port of San Diego was conducted where an outside consulting firm was engaged to assist with assessing the project and how to best utilize the space within the constraints of government regulatory bodies. At each end of the project, there are habitat areas that are protected by the federal and state government. The bay front development sets forth necessary steps to ensure the protection of the sensitive wildlife habitats.

FINAL THOUGHT
Raising the funds necessary will require innovative approaches for a project of this size (amount was not discussed). The Bayfront development is a Public Private Partnership between the City of Chula Vista and the Port of San Diego and a private developer. As part of the joint smart bay front assessment project, it was necessary to form an innovation council with various companies in the area for additional feedback on site usage and technological abilities. The innovation council was coordinated by Cleantech San Diego.
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 5
The Final Frontier - Digital Transformation of the Chemical, Material, and Food Industries

FROST & SULLIVAN INSIGHT
Industry Digital Transformation Outlooks

PRESENTER
Christopher J. Shanahan, Global Director - Visionary Science, Frost & Sullivan
LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 1:30pm

SESSION ABSTRACT
Historical changes are occurring in the traditional process manufacturing sectors, including the chemical, material, food and beverage, and biotechnology sectors, due to the adoption and integration of digital technologies. Consequently, 2018 will be a critical year for process manufacturing companies as many are beginning to formalize more coherent and connected strategies around the theme of digital transformation.

Frost & Sullivan has identified seven key domains in which the process manufacturing sectors are being transformed by digital technologies. These domains correspond to unique points in the industry value chain, from innovation and raw materials sourcing, via digital plants, to digital customers and consumers. For process manufacturing companies to make the best use of digital technologies, they must be aware of their effect on each industry domain and also their interconnectedness.

KEY TAKE-AWAYS
• Fresh perspective of each of the seven identified domains and insights on the enabling technologies behind digital transformation
• Insights and the pitfalls on the potential impact of automation, AI and the robotics on process manufacturing companies future operations
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- Best practices for leveraging digital technologies to drive operational efficiency and new revenue streams

OVERVIEW
Why Chemicals, Materials, and Food? We also include personal protective equipment and safety applications. It has to do with processing - they have unique challenges and attributes that lend themselves to the applications of digital technologies in certain ways. It’s the means of production when dealing with raw materials as inputs. In many respects, we deal with resources in general in the same way and interact with them downstream.

TAKE-AWAY
- Companies with more holistic views that address all areas of digital transformation will realize larger returns in the future
- The increase in the number of Chief Digital Officers acknowledges that digital transformation is becoming more of a priority in the chemical, material, and food industries
- Digital technologies will be used to meet some of the biggest challenges in the industry, specifically as consumers become more aware of and sensitive to chemicals in their foods and environments

KEY INSIGHTS
In the past few years, the chemicals industry has been booming in terms of returns and profitability, but recently it has slowed down a bit. The next really big step to propel growth is digital transformation of the industry. The chemical industry at large doesn’t have a strong mission statement in terms of digital transformation. We’ve identified seven different buckets, from supply chain all the way down to the customer.

The chemical industry has been thinking about digital transformation. How can we use digital disruption to drive revenue growth? We targeted the top 50 chemical, materials, and food producers with a survey to get a sense of the lay of the land, and identified 4 key drivers:

1. **Automation.** More efficient, less people to pay, more productivity. Combine current technologies with AI into systems that work autonomously and organize
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themselves.
2. **Connectivity.** Interconnect the supply chain via mobile or fixed-line high-bandwidth networks to synchronize and shorten times and cycles.
3. **Digital (Big) Data.** Capture, process, analyze for better predictions and decisions
4. **Social and Mobile Access.** Find more connections to downstream customers, collaborators.

We also did our own research: Margin improvement potential is enabled by digital transformation: smarter organizations leads to decreased cost to serve, leads to improved pricing, additional market shares, and total improvement overall.

**We identified 7 key areas where technology can support in driving down cost, and increasing marketing effectiveness:**

1. Digital Innovation
2. Digital Sourcing
3. Digital Plant
4. Digital Business Models
5. Digital Products
6. Digital Customers
7. Digital Marketing

In a processing ecosystem, there are applications for digital transformation all over the place. There are opportunities in the hardware, software and platform spaces, connected sensors, biosensors, food transportation technologies and cold chain assurance, retail and food safety technologies, and more.

**Digitalization technologies that stand out as having the most transformational impact:**

- Autonomous Robotics
- Artificial Intelligence
- Blockchain
- 3D Printing
- The Internet of Things
- Drones
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Secondarily:
- Big Data Analytics
- Pervasive Connectivity
- Wireless Energy Transfer
- 4D Printing

TAKE AWAY
Chemicals: It is a relatively good performing industry overall. It’s a guaranteed product, there’s not a lot of uncertainty, there’s higher willingness to pay for these products for specific use scenarios. This space is continuing to see diminished returns on M&A. So, what do you do? Look for and implement those opportunities in the hardware, software and platform spaces, connected sensors, biosensors, food transportation technologies and cold chain assurance, retail and food safety technologies, and more.

Only one year ago, 14% of the top chemical, materials and food companies had a Chief Digital Officer (CDO) with responsibility for digital affairs. One year later, the number of CDO’s doubled to 30%. When we surveyed chemical companies, we asked them how important digitalization was for their growth strategy. Of those, 42% had no comment. They may be doing something (everyone uses digital technology to some extent), but there was no easily recallable, defined, intentional statement given about their digital strategy.

Most industries don’t approach digitization with a holistic view - most initiatives have focused on transforming business in just one domain. A full comprehensive strategy for digitization across all 7 domains is ideal.

KEY INSIGHTS
- The chemical plant of the future will be connected, modular, and sustainable
- Smaller and smarter plants are excellent examples of what digital technologies can allow the chemical, material, and food industry to achieve
- Bringing together a team focused on a singled digital enabling technology, such as Big Data, will allow companies to apply it to multiple business needs
- Digital strategies focused on a single business domain are, to date, less prevalent than those focused on applying a single digital technology to multiple domains
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DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 5
The Final Frontier - Digital Transformation of the Chemical, Material, and Food Industries

INTERACTIVE
Ask the Experts! Panel on Partnering for Innovative Solutions

MODERATOR
Shomik Majumdar, Vice President, Frost & Sullivan, LinkedIn Profile

PANELISTS
Kevin Nohelty, Vice President, Supply Chain, WD-40 Company, LinkedIn Profile
Joe O’Brien, Founder & Chairman, Corvex Connected Safety, LinkedIn Profile
Danny Smith, Advisory Principal & Industry Team Lead – Energy & Manufacturing Sectors, SAS, LinkedIn Profile
Brian Standen, Head of Scouting and Partnerships, Digitalization in R&D, BASF
Vinit Verma, Senior Technology Advisor, Technology Scouting & Ventures, San Francisco/Silicon Valley, ExxonMobil, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 1:50pm

SESSION ABSTRACT
The process manufacturing plant of the future will be “connected, modular, and sustainable.” Smaller and smarter, some plants that were commissioned in 2017 are excellent examples of what digital technologies can allow the process manufacturing industry sectors to achieve. Despite the pace of development, more than 60% of the top chemical companies in the world still have no strong corporate message about digital transformation as a strategic Mega Trend and how this will tie into driving future revenue and operational efficiency growth. Much of this gap is due to a lack of technology partners that can expedite and enable digital transformation.
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In this panel discussion, leaders from the IT and process manufacturing sectors will discuss the history, present, and future of intra-industry collaboration among the two sectors.

TAKE-AWAYS
- Insights from industry leaders on Best Practices and potential pitfalls of intra-industry collaboration between the IT and process manufacturing sectors to drive growth
- Fresh perspectives from industry leaders on how new technologies and business models have transformed tactical and strategic decision making
- Proven techniques on how to lay the groundwork for identifying and qualifying best fit technology partnerships

What are some of the risk factors or challenges that companies are facing when considering implementation of digital technologies?

Corvex has developed an IoT platform that’s generally applicable to connecting the workers. When we talk about digital transformation and our products, the risk is seen as creating real solutions that can be accepted by a team or workforce, implemented, and delivered with value. Many of the companies we’re looking at are looking at a theoretical level, rather than a real one.

Looking at R&D, one of our key risk factors is safety: especially in the lab. More fundamental to safety issues is adoption and mindset. What roles and tasks will be automated? What are the opportunities for people in those jobs? We have to be careful about how we deliver automation. Helping people understand that we’re harnessing creativity and eliminating redundant tasks to create greater efficiencies and innovation will help.

The other thing is mindset. You can’t wave a magic wand and say “you’re all sensored up, go digital.” One of the biggest challenges is that it has to happen over a period of time. When you get something new, such as building a new manufacturing plant from scratch - of course make it the best, most advanced you can. When you’re working with existing assets, those changes just happen more incrementally.
We're at the magic button stage: not even understanding what it means at an executive level (just push the magic button and things happen). But there’s a is-connect between the magic button and ground reality. It starts with “do you have a problem?” and then what can you do and how can you utilize technologies to solve that problem. It always starts with a problem - start with knowing what’s happening at ground reality.

We’re in discrete manufacturing, so we focus on how to comply with regulatory and safety issues. We need to know what’s in that can, the chemical composition, pressurization, absence of leaks...for us, that’s the risk. So we need to really understand what’s coming down the line, catch the analytics as it’s coming through, to know if we’re trending badly and shut down the line if necessary.

**Role Play: You’re the key person that’s responsible for going to the CEO and executive team to lobby for new digital transformation technologies. How will you do that?**

For us, there’s a small company called Amazon, you may have heard of them, and they are changing the way that the landscape works. We need to participate in some way with social media, e-commerce, and all the aspects around that digital space. What we provide, and what we can do for the business is to explain how we can enable the solutions they are trying to deliver to the marketplace. What solutions can we provide to allow them to go forward and execute with a better e-commerce strategy? How can we deliver a solution for a better return on investment or presence in the marketplace?

People have data everywhere. And it sits in a storage thing right next to the production line and doesn’t get looked at until something builds up. Is data valuable? If it is, it’s a capital asset. If data is considered a capital asset, if it’s considered valuable, it needs to be protected, maintained, and used. CEO’s are in their positions often because they’re very good at making decisions with the lack of data. The way they prove it out needs to be high value, go solve a problem, show how it works, how more data / analytics can help. Don’t go build the platform first. The way I approach them is to ask, “Do you budget for innovation?” “Do you invest in R&D?” And if you do, carve off some of your budget, discretionary budget if needed, and go spend it on innovation, and see what comes back. It’s more of a philosophical discussion.

We’ve been applying data for a long time. The challenge for us isn’t using data to find oil (we’ve been doing that for a while). The challenge for us is a fight for relevance -
directing toward where the market will be. In innovation, it’s about products and services. We do products well - services, not so much (here comes Amazon with services). Business models are our challenge. We’re stuck in a very old business model, and a lot of us are. So how do we take a new product, and innovate not only with digital technologies but with business models.

I think the C-Suite understands the value of data. It always comes down to the same thing: what’s the value? From an R&D perspective, it’s always about the bottom line and efficiencies. I’m interested in Business Model innovation, because that’s what’s going to drive top-line innovation. I heard about a Chinese company that sells chemicals online. I thought, “Who’s buying these chemicals?” “Who buys chemicals online?” And I realized it doesn’t matter - they’ll build it, change the market, and if we don’t pay attention, they’ll become the Amazon of chemicals.

My question is “What are you trying to accomplish?” I think we can all agree there is a lot of data, and a lot more than could be collected. What are you going to do with it? If you have a project or if you’re being challenged by a CEO to come up with a project (give us 4 digital transformation projects by next quarter!), there’s no real concrete definition of what it means, what the data is going to do, and what the value of that is. I advocate solving problems. Collect the data, analyze and process it in a creative way to deliver incremental value and solve real problems. If you can do that, executives will be able to understand it.

There’s a gap though - we all are trained in business school to look at hurdle rates, and ROI’s and all that stuff, and there’s a fundamental assumption under all that that we know the outcome of our actions before we do them. And that’s a really foolish assumption. When someone asks “what’s the return,” that’s a big issue with digital transformations, because you just don’t know. So, incremental proof of concept is critical to building confidence to allow for bigger risks and innovations.

**Joe, can you tell us a bit more about your business model?**

We're trying to develop a platform that delivers value directly, and also allow other companies to develop specific platforms for their specific problems that can run on our back-end infrastructure. One of the barriers we’ve seen is if you have a small, niche project, it could take you way too long and too much money to build the whole back-end, and your project will never get off the ground.
We're a commodities chemicals business (chemical company with Exxon). One of the challenges is seeing changes in the consumer market. I was shocked to find out that Gen Z’s main interest is not about sustainability messaging anymore. We always try to project 15 years out, but I don’t know if that’s practical anymore - I don’t even know what’s going to happen in 5 years. I’m trying to figure out how those trends are changing at the consumer level to prepare ourselves even better. Can you really have a firm belief on the trends by using digital tools?

I think you can, and I think you have to. We do a lot of customer market research, and that’s shifting to the digital world (social media, other mediums) to get at the real questions our customers are facing. To know that, you have to do be doing your market research. It’s going to be more about social media, A/B testing, and less about big market studies like we used to do.

Instead of having a 9 month marketing survey and collecting that over a long period of time, why don’t we just collect data about everything and look at the data points that matter? A lot of this is happening in real time. And you have to rely on sentiment analysis and real-time monitoring to know what’s going on. One of the challenges is getting closer to your customer, even if that’s your B2B customer, so you can better understand the end user (your customer’s customer).

*We’ve heard about the retail experience changing - are you seeing any kind of pull to change the in-store, retail experience with your products to be more interactive?*

Not really - it’s a low cost product, so how much cost do you want to add to that product? Our customer wants a low cost product. So we don’t see technologies being used in that retail space. It’s more in how we go to market and what the technology applications for sales and marketing are.
DIGITAL TRANSFORMATION DISCOVERY SESSIONS - Think Tank 5
The Final Frontier - Digital Transformation of the Chemical, Material, and Food Industries

VISIONARY PERSPECTIVES
Artificial Intelligence (AI) in Process Manufacturing

PRESENTER
Vinit Verma, Senior Technology Advisor, Technology Scouting & Ventures, San Francisco/Silicon Valley, ExxonMobil, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 2:50pm

SESSION ABSTRACT
Frost & Sullivan predicts that the technology likely to have the greatest impact on industry will be Artificial Intelligence (AI), though today the level of adoption and successful integration of this enabling technology have been mixed. Vinit Verma of ExxonMobil, a visionary expert on AI, discussed the advantages and consequences of AI on the process manufacturing sectors to date and describe possible futures for the leaders of the process manufacturing sectors need to know.

KEY TAKE AWAYS
• Expert insight from the field on the impact of AI on the process manufacturing sectors
• Lessons on how to assess whether these technologies make sense for your company’s planned growth trajectory
• Insight on how AI could be a critical enabler of developing a truly circular economy within and among the process manufacturing sectors
INTRODUCTION
For the continuous manufacturing industries, it’s important to understand machine learning and computing machines. But the real challenge is to communicate to the C-Suite what the future of AI could mean for your organization.

TAKE-AWAY
- Put together a team; don’t look for the unicorn who can do it all for you
- Don’t automate the human; humanize the automation

IMPLEMENTATION GUIDELINES
- People
  - Assemble the best team possible
  - Seek expertise
  - Matrixed team
- Process - Think about how you want to change the process, and then put the human in the loop, and use them for the process that makes sense:
  - Eliminate data silos
  - Historians
  - Response time
  - Diagnostic
    - Operating window
    - Drift
    - Human monitoring/control rooms
  - Temporal Maintenance
- Technology - We are stuck in a niche, and with a certain kind of architecture which presents constraints
  - Niche
  - Legacy DCS
  - Capacity constrained
  - L1/L4 Architecture
  - IT and OT layers - one of the biggest things that gets in the way of the digital journey is the separation of data between Information Technology and Operations Technology; it’s so hard to get them together. Figure out how to work that cooperation into your culture, because innovation won’t happen if those layers can’t interface
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Next Generation
People
- Fundamental Science + Data Science
- AI.X – How to explain what you are prescribing based on AI intel
- Process
- Data integration
  - Manufacturing + Supply Chain
  - Bull Whip Response
- Autonomous
  - Augment the human
- Predictive
  - Condition based monitoring
- Manufacturing Fleet Level analytics

Technology
- Open Systems
  - Feature extraction
  - Model training
  - Improving algorithms
- Modular
- Performant
- Edge Compute/ML

KEY INSIGHTS
Machine learning and AI is a collaborative discipline between computer science, domain science, and statistics. When something goes wrong, we need to ask ourselves a series of questions:
1. What happened?
2. Why did it happen?
3. What can I learn?
4. What will happen?
5. What could be done?
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Most of us are at level 2 - we know what happened and why it happened. We use data science to understand the trigger, but we need to use fundamental science to explain why a problem will happen, and what to do about it. Predictive analytics will tell you that an issue will happen, but then you run into the challenge of explaining the AI.

**ACTION ITEM**
Even if a system is good, figure out what to do with an alert once you get it. Otherwise, there will be fatigue in an organization.

**FINAL THOUGHT**
In machine learning projects, 80% is analyzing and modeling your data, and 20% is implementing innovations as a result. We need to turn that around.
DIGITAL TRANSFORMATION DISCOVERY SESSIONS- Think Tank 7
Aligning Growth Vision and Innovation Strategy

PRESENTER
Brian Moelich, Founder, Arrisio, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 1:30pm

SESSION ABSTRACT
Saying you want to be innovative and find new opportunities for growth is easy. Developing a strategy to guide your innovation efforts and establishing a program to explore, develop and commercialize new ventures that are meaningful to the organization is hard. This interactive and experiential session utilized case studies for successfully, and not so successfully, building innovation programs that create value to highlight the frameworks and best practices to do so.

Participants were taken through sections: 1) Developing an innovation strategy that aligns to and serves the organization’s vision for growth 2) Determining what type of innovation program is best suited to drive your innovation strategy 3) Understanding the capabilities and support necessary to ensure your innovation program’s success.

KEY TAKE-AWAYS
- Framework for developing an innovation strategy that leverages existing capabilities and aligns to the organization’s vision
- Blueprint for successfully building innovation capabilities and programs to deliver on your innovation strategy
- Insights into the typical challenges to driving innovation strategy and proven techniques to overcome the barriers to progress
INTRODUCTION
Through his work at large organizations like IBM, Citrix and Cisco, Presenter Brian Moelich learned that innovation programs can fail because:

- Innovative outcomes were not being implemented in the organization
- Organizations were hyper-focused on the right-now; and implementation of new ideas wasn’t always a priority
- Innovation programs can be shut down if there is an expectation of fast success and they are not repeatedly and quickly showing tangible results
- There can be too much focus on the front end of an innovation program (identify problem, build team, brainstorm solutions) and too little focus on the necessary steps to meet the organization’s goal of actually launching a product that the innovation program generated

In short, innovation programs often don’t explore problems that are important to the organization. Also, even when the broad goals of the innovation program and organization are aligned, the solution is not always executed in the manner desired by the organization. End result: a failed innovation program.

It is from these learnings and conclusions that Arrisio, an innovation agency, was started to help organizations design programs and capabilities that architect ventures built for transition, i.e., help companies build innovation programs that can successfully transition ventures from beginning to end.

TAKE-AWAY

- Define an innovation program that aligns to the objectives of the organization and is focused on exploring how innovative outcomes can transition to the organization. In short, don’t build something the organization does not want or is not prepared to commercialize
- Identify a stakeholder/champion of the innovation program and check-in repeatedly throughout the process to confirm continued buy-in and support
- Revise the program as necessary to align the objectives of the innovation program and the organization
- Have clearly defined end-product, information needs, go/no go decision points, resources and time expectations; minimize surprises
IMPLEMENTATION GUIDELINES

1. Define the existing corporate strategy and identify how an innovation program can solve a corporate problem
   - Identify a stakeholder (CEO, business unit leader, etc.) to whom the innovation program will support. The stakeholder must be someone who can say “yes” to the program and/or be its champion and support the team with resources, encouragement and vocal support, i.e. air cover.
   - Interview the stakeholder about the challenges their group is facing. Questioners should dig below the surface, and circle back often to ask follow up questions, seek more information to more precisely define the problem and the desired outcome. For example, we “need new products” is too vague. Why are new products needed? What market do you want to target? What do customers in that market say they want?
   - Do not problem solve at this stage. Instead, explore general ways the team can approach the problem to reach a solution. Seek feedback from stakeholder that he is onboard with approach you’re planning to use for the innovation program.

2. Explore potential landscape; dig deeper
   - Start brainstorming at this stage about what is possible to solve that problem, again without focusing on solutions. Work with the stakeholder, customers and business partners. Expect a lot of back and forth and circling back to ensure the stakeholder is comfortable with some of the ideas generated of where to explore with the innovation program.
   - Ask questions like, why do they have the problem and how did it arise? What are trends and technologies in the space that could be leveraged? Are there potential arenas that could help solve the problem (e.g., healthcare, education)? What business models are in decline, and why?
   - Explore areas, beyond products and services, where additional value can be created for existing customers, i.e., the customer experience.

3. Formulate a clear and concise innovation strategy
   - The goal at the end of this stage is to articulate a clear and concise statement about where to explore that has buy-in from stakeholders and that, if successful, will be used by the organization. Minimize surprises. Make sure you propose a solution the organization cares about.
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- Identify where in the organization potential outcomes from the innovation program could reside? Unless and until there is a commitment on this question, the project has nowhere to go and much time/effort will be lost at the end of the innovation program.
- Identify how projects will be funded. This is an area to explore with stakeholders.
- Identify which core capabilities of the organization can be leveraged for the projects. Legal, compliance, marketing, accounting, manufacturing, and so on. Describe how the project will interact with other business units. What does “fit” look like?
- Tell a story about what transitioning projects could look like. How does the project/venture/start-up move from beginning to end? Address how the solution will be commercialized, whether pilot studies are needed, if some of the work is sent outside the organization and then brought back in.
- Describe what innovation might look like, e.g., form hypothesis, test it, refine. Involve stakeholders at every stage. Identify where the team members come from, how they will access data, how often the team will report out its progress, whether directly to stakeholders or as corporate event.

4. Decision making and accountability

- Define, with particularity, how the stakeholder will make a go/no go decision at the end of the program and what information is needed to make that decision. For instance, it is not unusual for a stakeholder to require concrete evidence of customer demand before reaching a decision, or to see a prototype. A successful program must provide the information the stakeholder has identified as necessary for go/no go decision. Expectations of stakeholder should be less for a horizon 1 product, as compared to a horizon 3 product.
- Be realistic about what a team can deliver at the end of the program, based on time and resources. Often, data must be generated to address what future demand will look like. Align the activities that can be accomplished and the activities that are needed to transition the solution to the organization.
- If a project team is made up of actors from various parts of the organization or outside groups, then define clear performance measures, which, if not met, results in an individual leaving the team.
BEST PRACTICE
Optimize success and minimize surprises by involving the stakeholder at every stage of the process through updates and questioning. Align the objectives and requirements of the innovation team with the objectives and decision metrics of the organization to ensure that if the team solves the identified problem, then the corporation is ready and willing to commercialize the solution.

FINAL THOUGHT
Keys to aligning growth vision and innovation strategy:
- Identify stakeholders early and connect with them often
- Make sure the product developed is what the organization wants
- Align product sought by innovation team with the corporate objective
- The business and customer perspective must be explored in the innovation process. Not one or the other
- Do not innovate a solution that the corporate is not prepared to launch
EXECUTIVE ALERT
Getting Your Corporate Approach to Cyber-Security Ready for What’s Coming

PRESENTER
Scott Borg, Director, Chief Executive Officer and Chief Economist, U.S. Cyber Consequences Unit, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 4:30pm

SESSION ABSTRACT
The landscape of cyber-security is changing in frightening ways. Your Chief Information Security Officer can no longer protect you. Your security people are almost certainly wasting money protecting the wrong things in the wrong way. You haven’t given them a chance to do anything else. Your own job might be on the line. You need to approach cyber-security differently at a corporate level – starting as soon as possible! Find out how.

KEY TAKE-AWAYS
• Best practices for focusing your company’s cyber-security efforts on the things that matter from a business standpoint
• Insight on how the right approach to cyber-security can help with broader strategic issues
• An understanding of how better cyber-security can become an enabler of corporate growth

OVERVIEW
Most organizations are managing cyber-security in a manner that is obsolete: protecting the wrong things, against the wrong threats, using the wrong methods. About fourteen years ago, most cyber-attacks were viruses. Now, cyber-attacks take the form of system breaches, often into customer account information. Further, cyber-attacks are increasingly orchestrated by nation states and shape the global flow of information.
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Some target organizations often don’t even know they were attacked and may just be a stepping stone to another company, like one of their supply customers.

As organizations employ more tools to create value, they are also creating more cyber threats. It is no longer enough to have cyber-security handled by a team of technical specialists. To properly combat cyber threats, a cyber-security team needs to know about the whole organization, and have guidance, information and tools to address new world challenges.

KEY INSIGHTS

- Cyber-security is based on this triad: Threat x Consequences x Vulnerability = Risk (annualized expected loss)
- Most cyber-security plans only address vulnerability, with the goal of stopping system penetration. But, it is the consequences suffered by an attacked company that is the most important from an economic perspective. Consequences are measured by loss in value
- An organization cannot understand the threat of cyber-attack by looking only to the past. Instead, the focus must be on the actor – asking what group would profit from attacking the organization, what are their capabilities, how are their technologies changing over time
- A comprehensive business overview is required to define and enact a robust cyber-security program. There can be easy fixes to significantly reduce risk. Often the best way to decrease risk of cyber-attack is to change your way of doing business

IMPLEMENTATION GUIDELINES

Identify Value within the Organization

An organization can measure the consequences of an attack by measuring value creation – what is the value an organization can create before and after the attack? The difference is the economic consequence of the attack. For instance, if a company creates value by manufacturing at low cost, and suffers a cyber-attack that disables its ability to uniquely perform low cost manufacturing, then that attack will have high economic consequences.
Organizations Need To Identify Where They Store and Create Value
Another way of thinking about this is by defining an organization’s competitive advantage. The components (e.g., intangibles like loyalty, customer base, stellar personnel) as well as tangible advantages and the whole of its competitive advantage define the value that is susceptible to cyberattack. Most cyber-security technicians today do not know this about their organization.

Identify Who Would Benefit from Attacking Your Corporation
Because current cyber-attacks don’t look like past attacks, and often are one-off types of attack, an organization cannot understand the threat of cyber-attack by looking to the past. Instead, the focus must be on the actor – asking what group would profit from attacking my organization, what are their capabilities, how are their technologies changing over time.

Cyber-security Includes Changing Some Business Practices
A comprehensive business overview is required to define and enact a robust cyber-security program. This must include an understanding of which actors may target your business, what they would be after, and what they would do with the information. Moreover, another way to decrease risk of cyber-attack is to change your way of doing business.

Identify Where Cyber-Attackers May Focus
For instance, if a company creates value by manufacturing at low cost and suffers a cyber-attack that disables its ability to uniquely perform low cost manufacturing, then that attack will have high economic consequences.

Several examples were provided to illustrate how relatively simple changes in business reduced cyber risk including:

- Two production facilities side by side, wherein the first contains information that gives the company a competitive advantage (e.g., design capabilities) in the defense industry and the second contains information that is generally publicly available. If the first production facility suffered a cyber-attack, then the impact on value creation would be great and the company may be put out of business.
- But the second facility could suffer a breach and the value consequences would be minimal. Nevertheless, the company spent the same amount of money protection each facility. Action plan: Decrease resources on cyber-security for the
second facility and, if the high value information at the first facility did not have to be consolidated, then distribute it to different sites

- In a hospital setting, x-ray machines and dosage levels were being calibrated using internet tools. This created a vulnerability to cyber-attack that aimed to remotely change calibration and harm patients. Action plan: Don’t calibrate machines with an internet-based system and consider separating x-ray machine calibration from dosage levels

TAKE-AWAY
- Cyber-security is the dark side of everything. The problem is everywhere, the attack surface is everywhere
- Cyber-attacks are so varied now - we think about them in terms of the big, newsworthy ones we hear about it. But cyber-attacks can be very different, and are executed for many different reasons
- Many companies that go out of business never know that they’re out of business because of cyber-attacks from competitors

ACTION ITEM
- The proper way to understand threats is economically: who is out there, how they could profit from a cyber-attack, how they would choose targets, what those capabilities are, and how those capabilities will change over time
- If you track them and those elements, you can see how those elements change over time, and can begin to predict those threats

FINAL THOUGHT
Seize control of cyber-security. Use all the intelligence and assets that you have, that you deploy every day for running your business, and apply it toward cyber-security. Give your team all the resources you can to answer those questions that you haven’t considered: where do you create value, who would want to target you to interfere with that value creation, and how would they do it?
FUTURE FORWARD
Space: Exploring the Next Frontier

PRESENTER
Naveen Jain, Chief Executive Officer, Viome, LinkedIn Profile

TIME
Tuesday, October 2, 2018 at 5:15pm

SESSION ABSTRACT
Disruptive ideas for solving big problems form the cornerstone of entrepreneurship. Exponential technology developments will forever change how we live and work. Drawing from his experience at Moon Express, a startup that wants to mine the moon for natural resources, Naveen Jain shared how civilian space exploration is being redefined. Participants learned how he is tackling the problems of living on the moon, such as modifying our genes to use radiation as energy. From the creator of Viome, Moon Express and other groundbreaking companies, this session unpacked how to reach for your own highest moonshot and how to live in a world where illness becomes a choice.

KEY TAKE-AWAYS
• Fresh perspectives on the old and obsolete scarcity-driven mindset and discover an emerging new era of abundance
• Insight on how to awaken your own moonshot potential by believing in possibility and pursuing your dreams
• Specific insights on how to care for your microbiome and living your healthiest life

OVERVIEW
Moonshots are challenges that most people believe are impossible or very difficult to achieve. But, the presenter’s perspective was that the easiest problems are the ones no one else is approaching. To be innovative, you must be a non-expert, unconstrained by knowledge of what did and did not work in past and without regard to standard rules of
the industry. In other words, keep an open mind. This philosophy led the presenter develop and succeed at seven different companies in seven different industries!

Moon Express is one such company, which Jain explained is the only company in the universe that has permission to leave orbit and land on the moon. When Moon Express reaches the moon, it will be able to explore the resources available there. He discussed two ideas:

1. Helium 3 can be obtained from the moon and can be used to power plans for three generations. If we make energy plentiful, then fights over energy (e.g., oil) become obsolete
2. What if we could take genes from bacteria, insert them into humans in a manner that would allow humans to live on the moon and Mars and be protected from radiation?

Healthcare, education, viability of water, land and energy are a few “terrestrial moonshots.” Healthcare and education are two systems that people frequently say are completely broken. But, both are doing exactly what they were designed to do – healthcare treats sick people and education teaches skills. Today, we need an education system that teaches us to learn, including learning to solve problems collaboratively.

What if being sick was optional? The speaker described the connection between the gut microbiome and disease, as well as mood, behavior, decision making, and much more. His current company, Viome, focuses on analyzing the gut microbiome and providing information that can be used to improve health. From the Viome website: “

“There is no such thing as universal healthy food. What's healthy for one person can be inflammatory for another. Viome analyzes your gut using the most cutting-edge technology developed for National Security at the Los Alamos National Lab. We are the only company to be able to detect all of the nutrients and toxins being produced by your microbiome and give you personalized recommendations of the foods and nutrients your body needs to balance your gut with the goal of keeping you healthy!”

When we know what the microorganisms in our microbiome need, and how they can keep our body healthy - that’s how we can help them keep the U.S. healthy.
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Viome uses technology now to determine how your specific microbiome responds to things. For Jain, the things that were hurting me were almonds and eggs. For his spouse, it was spinach and oats. That’s what they do at Viome.

TAKE-AWAY
- Think big, and cultivate an “anything is possible” mindset

IMPLEMENTATION GUIDELINES
- Read a lot. Speaker noted that he reads several dozen books in a subject before he can form his own opinion on that subject
- Find a problem you care about
- Ask: what you would do if you had a billion dollars to address the problem?
- Enjoy the process of discovery

BEST PRACTICE
Think about the possibilities and then think about solutions. Keep an open mind.

FINAL THOUGHT
What would you do if you had a billion dollars, and everything that you wanted in life? When you wake up in the morning and you don’t want to jump out of the bed to do what you’re going to do that day - find something that will make you want to jump out of the bed like I do, and DO THAT.
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KEYNOTE
Innovating Customer Experience and Engagement

PRESENTER
Cate Gutowski, Senior Vice President – Global Sales and Service, Panasonic Avionics Corporation, LinkedIn Profile

TIME
Wednesday, October 3, 2018 at 8:30am

WATCH VIDEO HERE: https://vimeo.com/frostsullivan/review/294830297/850b371df1
SESSION ABSTRACT
Most commercial teams believe that they can only hit their operating plan if they have new products to sell. But - this isn’t true anymore. Today, every single person in your organization can innovate tomorrow when they use “commercial innovation.” Want to know the secret to creating the next Uber or Airbnb? It’s all in the commercial innovation.

KEY TAKE-AWAYS
- Principles and methodologies that can enable you to drive profitable growth with SPEED: unlock new innovation in “hours and minutes” not “weeks and months”.
- An understanding of how to inspire those enabling Functions to work together as #ONETEAM to serve your customers and deliver the outcomes they require with SPEED
- New frameworks for how you can unleash the Commercial Innovation that already exists in your organization: its fast, its (sort of) easy and its CHEAP

INTRODUCTION
An introductory video, CHANGE² was shown to highlight the journey to improve the customer experience. The video can be found here: https://www.youtube.com/watch?v=ystdF6jN7hc. Key take-aways included:
- Business as usual is not good enough
- Science fiction is becoming science fact
- The way we work will never be the same
- Are you driving change or are you being driven by it?
- Change is exponential
- Anything that can’t be automated or digitized will be extremely valuable, and we will be able to focus on such things
- Machines are good at simulating some human interactions, but not at being human
- Humanity is where true value is created

TAKE AWAY
- In a world where technology is a great equalizer, human interaction between a company and its customer becomes a competitive distinguishing factor in the
marketplace. Those companies that can deliver a better customer experience will win

- We live in a customer-centric world where instant gratification is expected. Think of Amazon, Google, Apple. B2B customers also have raised expectations. Customer experience is the new brand and can rise or fall based on a tweet, yelp review, Instagram photo or YouTube video
- Today, the customer experience is the real differentiator among companies. No longer is it about the technology, culture, etc. of the company itself – it is becoming increasingly about the customer

The following learnings touch on key points to improving customer relationships and brand favorability.

**KEY INSIGHTS**

**Learning #1 – Culture matters.** USAA© is an organization that has a corporate culture, and fundamental belief, that the customer is paramount. USAA© encourages all employees to participate in innovation and, as a result, employees have provided over 1000 ideas about how to improve the customer experience.

**Learning #2 – Know who you are as a company and share it with your customers.** Customers are more willing to form a meaningful relationship with you if they understand the “why” of your company; those relationships can be helpful when/if you have to navigate some tricky areas with them. Customers don’t buy what you do, they buy why you do it. For example:

- Panasonic Avionic’s Purpose: We exist to demonstrate caring for the airline passengers with new personalized experiences
- We exist to make the world a better place

**Learning #3 – Making a deeper emotional connection with customers drives innovation.** As companies experience more competition, the connection a company makes with its buyer will be an important distinguishing feature – both in terms of customer loyalty and being able to tap into who the customer base is and what they want. When the customer understands your purpose as a company, you have a new way to influence the customer based on feelings and behaviors.
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Learning #4 – We live in the age of disruption, and we are experiencing more technological change now than ever before. The idea of commercial innovation is thinking differently. For example, Airbnb is the largest hotel company in the world, but owns no hotels. Commercial innovation can be fast, easy and cheap.

Learning #5 – Commercial innovation can be more valuable than technical innovation. Again, Airbnb is a good example of commercial innovation that brought together someone with a need (wants a hotel) and someone with a solution (have a room to rent) and did not require high level technical development or development of a tangible product. There are ten types of commercial innovation, with the three primary types being: configuration, offering, and experience. Companies that are finding the most success are using multiple types of commercial innovation.

Learning #6 – Don’t be frustrated by those that don’t “get” it. Neither technology alone nor products alone will result in customers. A movement starts with the innovators and early adopters and success will follow once the tipping point is reached.

Learning #7 – Adopt a growth mindset instead of a fixed mindset. A growth mindset is prepared to ask the right questions and to fight hard against “this is how we have always done it.”

IMPLEMENTATION GUIDELINES
- Implement “culture matters” by training all disciplines/departments within organization as to the company’s culture and desire to have innovation input from all levels
- Emphasize growth sprints and working/acting/thinking like a startup. One tool is to have a weekly call to encourage and listen to new ideas
- Establish relationship with customers by sharing the “why” of your company, not the “how.” Put customers first and every day seek to improve their customer experience
- Think differently. Commercial innovation does not require changes to tangible products, but does require changes that benefit the customer and, therefore, the business
BEST PRACTICE
- Do not use just the engineers and executives to push and pull innovation – use all levels of the organization

FINAL THOUGHT
Transformative efforts are 84% more likely to be successful if integrated with purpose. And here’s the thing: not everyone’s going to get it, and not everyone has to get it. All you need are the first 2.5% (innovators) - find those who believe what you believe, and engage them to help you evangelize. Then find those early adopters, and you’ll win over the first 30%; that’s enough to drive change. That’s the tipping point.

The speaker offered two book recommendations: *Start with Why* by Simon Sinek and *The Lean Startup* by Eric Ries.
EXECUTIVE INSIGHTS
Industry Blueprint for Disrupting Your Culture and Turning Employees into Innovators

PRESENER
Alex Goryachev, Managing Director, Corporate Strategy and Innovation Group, Cisco Systems, LinkedIn Profile

TIME
Wednesday, October 3, 2018 at 9:10am

SESSION ABSTRACT
No matter the size or market of your enterprise, you must keep pace with rapid changes in today’s digital age. Every company must reinvent itself, disrupt its entire workforce and transform into a companywide culture of co-innovation. Co-innovation can come from anyone anywhere, and the most brilliant game-changers often bubble up from diverse employees with passionate ideas. Participants learned how to ignite a grassroots movement across all functions in organizations that enables employees to think and act like entrepreneurs in a startup.

KEY TAKE-AWAYS
• Proven success factors to jumpstart an innovation revolution that drives an entrepreneurial mindset companywide
• Award-winning, best practices that engage and inspire all employees to tap into their purposes, as well as lead and bring winning ideas to life like collaborative entrepreneurs in a startup
• Barriers to success, metrics, and lessons learned to sustain a companywide mindset of constant innovation

INTRODUCTION
It is estimated that in 10 years, 40 percent of the Fortune 500 companies will no longer exist. Companies have not paid attention to the market – most are too focused on internal issues and other things. Alex showed the organizational chart below as an example of how companies are structured to fail:
KEY INSIGHTS

- Companies like Airbnb are changing us - not only our experience, but the revenue model for cities, because of hotel occupancy taxes
- Stay aware of innovation and market changes, lest you are added to the list of these cringe-worthy quotes:
  - “Neither RedBox nor Netflix are even on the radar screen in terms of competition” Jim Keyes, CEO of Blockbuster (2008)
  - “I think there is a world market for maybe five computers” - Thomas Watson, president of IBM
Best Practice

Based on Cisco’s experiences, this is how they look at disruption:

Step #1: No single company can do it alone. You have to get outside of your own company. Co-develop, invest, partner with others, buy/acquire, and build. Most importantly, realize who you’re doing it with. Do it with the talent on your teams, do it with fresh talent and new ideas. Who is on your team determines if you get the funding or not – it can be more important than the idea.

Step #2: Bring everything together. At Cisco, they built an open idea platform to engage with others. It’s about connecting people together in the workplace around the things that they care about. They also have several maker spaces.

Step #3: Empower everyone to innovate. Cisco has 70,000 people, and only 22,000 people were creating. So, we re-framed innovation: it’s not necessarily about a portfolio: it could be about a better business model, and shorter line in the cafeteria. Anyone can be an innovator, and they will be celebrated as one when they innovate in their particular space or area of work. They have encouraged people to build teams, and found a way for everyone to participate.

Step #4: Connect employees to strategy. Then ask them to focus on business outcomes. Cisco started to educate their employees about what they do, and why it is essential that they win in certain markets. Every year they run a challenge where they ask people to come up with their ideas in particular markets, technologies, and business models, and specifically ask them to look at things that are not parts of our core business. The side product of this is that they actually started to define strategy, align our stakeholders, and define what our goals are. If you don’t define your goals, employee won’t innovate, or they’ll come up with inventions that aren’t practical or strategically aligned.

Step #5: Execute with precision and walk your talk. Cisco doesn’t just give an award and send an employee back to their cubicle. Year 1, 60% of their workforce participated in the challenge. Year 4, 68% of employees participated. We discovered that 30% of the ideas had to do with innovations employees proposed for their communities, and 24% had to do with day-to-day innovations that make improvements in their workflow to help people work smarter.
Step #6: Take is seriously. If you’re an employee and you have an idea as part of the challenge, you get to present it to our board and CEO.

FINAL THOUGHT
Disruption wins. Listen to your employee, give them voice, and actually implement their ideas.
CRITICAL ISSUE THINK TANKS: Think Tank 8
Building Winning Strategies with Strategic Intelligence

PRESENTER
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TIME
Wednesday, October 3, 2018 at 9:35am

SESSION ABSTRACT
Strategic intelligence is about understanding the competitive environment so as to develop the most effective competitive strategies and execution tactics. It is about helping executives understand “where to play” and “how to win.” A strategic intelligence program helps companies identify and capitalize on business opportunities and also supports strategic risk management by anticipating developments in the market. To be strategically effective, intelligence needs to be integrated the long term planning processes of a business to ensure all decisions are made on valid assumptions. This interactive session focused on key elements of world class strategic intelligence and how to integrate that into your strategy development and execution.

KEY TAKE-AWAYS
• An understanding of the role of intelligence in the long term planning process
• Key findings for managing strategic risk through world class early warning capability
• Best practices for providing evidence based intelligence instead of strategic assumptions
• Insight into the role of scenarios in strategy

Defining Intelligence:
• Competitive Intelligence (CI) provides actionable intelligence used to inform and align all departments or units of the organization on the strategic risks and opportunities facing the current and future business.
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- **Actionable intelligence (AI)** is tangible, focused, critical information, used to inform decisions about your current and future business opportunities and risk. *Focused* is key, as data overload will dissuade someone from digesting the information and, therefore, it won’t be acted upon. An example was described where 900+ power point presentations were distributed to healthcare executives on a CD. The CD was not viewed/used because there was too much information to digest.

- **Interesting Intelligence** is everything about a competitor, whether critical to competition and decision-making or not.

- **Tactical Intelligence** is reactive and describes how a company competes right now.

- **Strategic Intelligence (SI)** is based on provable facts and evidence-based assumptions regarding your competitor’s business plan. SI is used to define a company’s corporate strategy to effectively compete and win in the market in the future.

- **Strategic Early Warning System** is based on SI and AI and guides an organization to prepare for the future. It If you have a strong sense of what your competition is doing, then you can form your strategy to compete. The objective is to be able to make decisions, before events happen, about the actions your company should take to beat the competition in the future.

**Fact and assumption-based intelligence is illustrated by a simple analogy:**

- **Fact** – You brought an umbrella to work
- **Assumption** – We assume you think it will rain today
- **Data points** that may have informed your assumption – TV weather report, web-based weather report, yesterday’s weather
- **Challenge** data points and assumptions – look outside and reach your own assumption based on your outlook

**SI includes three types of assumptions:**

1. Those made about the primary company
2. Those made about its competition
3. Those made about the marketplace
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The assumptions have to be valid. In general, the larger the data set upon which you make assumptions, the more validity in the assumption. If you can break down the elements of an assumption, then you can predict the future. The speaker provided several examples of his team, as well as teams of students, developing strategic intelligence that did successfully predict events that occurred 1-2 years in the future.

For instance, the speaker’s team identified six crucial drivers for a retail environment in a business unit and built 80 assumptions on these drivers. There were two super drivers – one was brand and the other was big data. Each driver had a narrative and predicted scenarios for the future, like battle of the brands and big data deluge. This was a three-year plan, which was regularly updated. Several years later, predictions in the plan occurred.

At minimum, a strategic plan should include:
• A business goal, e.g., Amazon’s goal is to control global retail
• Definition of what winning looks like
• Identifies the activities it will perform different than its competitors, e.g., will it create value in a different way than the competition, or just make product in less expensive manner?
• Identify the choices made, e.g., pursue X in lieu of pursuing Y
• Decide where to compete and how to win

IMPLEMENTATION GUIDELINES
To persuade management that a SI program is necessary:
• Compile evidence of market shifts and how existing strategy is no longer aligned with market
• Expect to fight denial that the company needs to change
• Be prepared to break down the thought process behind the facts and assumptions relied upon to reach the conclusions
• If management disagrees with your conclusions, then walk through the facts and assumptions and see exactly where there is disagreement
• Examples of how SI accurately predicted the future activities of competitors and the market are very useful
  o Speaker provided several examples of SI programs his team produced that accurately predicted activities a year or two before they occurred
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ACTION ITEM

• Seek data from a variety of sources. The bigger the data set, the better the assumptions
• Ask the CEO or stakeholder how they will amend their strategic plan if you answer the question they pose. Helps to focus question and not waste resources.
• For instance, what would corporation do if information was given with 80% certainty? Need alignment and certainly on this so that you can tailor your program to deliver actionable information
• A transparent framework is critical for delivering impactful intelligence
• Evidence + transparent assumptions + collaborative analysis = aligned view on competitive environment
  o If executives disagree on conclusions, then break down each assumption and fact to more precisely determine upon which fact or assumption there is disagreement

Early Warning System:
1. Implementation of an early warning system first requires focus based on corporate strategy
2. Timeliness needs to be defined. How far in the future are stakeholders looking and when are early warning signals desired?
3. The process must be clear to all, e.g., is an early warning system wanted for general competition or a specific issue?
4. One of the biggest issues with an early warning system is the focus and that appropriate stakeholders are alerted when appropriate

BEST PRACTICE

• To be strategically effective and to ensure all decisions are made on valid assumptions, intelligence needs to be integrated in the long term planning processes of a business
• Assumptions need to be valid, which can be accomplished through reliance on various sources of information and monthly/quarterly review of assumptions and current facts
• Strategic intelligence programs and early warning systems should be continually reviewed and revised as necessary monthly or quarterly based on then available facts and valid assumptions
CRITICAL ISSUE THINK TANKS: Think Tank 9  
The Corporate Innovation Map: An Actionable Leader’s View  

PRESENTER  
J. Oseas Ramirez Assad, Board Member, Zulu.vc, Serial Entrepreneur, LinkedIn Profile  

TIME  
Wednesday, October 3, 2018 at 9:35am  

SESSION ABSTRACT  
Innovation in large organizations is a key activity to remain competitive and seize new opportunities. However, achieving sustainable innovation capabilities in an organization is an elusive pursuit. This interactive session will present a systemic view of all the areas impacting corporate innovation and their interaction, giving participants the actionable components for each area. The session offered a laser focus on what you can do from where you are now to get to where you need to be.  

KEY TAKE-AWAYS  
- A simple, comprehensive and actionable framework to help corporate senior management drive the different components that enable corporate innovation, and how to avoid the most common pitfalls  
- Lessons learned from each of the components of corporate innovation coming from experiences of Fortune 500 companies  
- Cross-pollinate among participants through guided interactions, in order to share different innovation approaches, success factors, insights and best practices from different industries  

OVERVIEW  
Large corporations are trying to adapt and thrive in a business environment where disruption is around the corner. The state of many corporate innovation efforts: you take your time building a huge road - and then you fall off a cliff. The state of many startup innovation efforts: you leanly create an amazing, innovative idea in less than 6 weeks - and then you don't have funding.
KEY QUESTION

Address the Why of Innovation: What does your organization want to achieve by investing some time or resources in innovation?

We want to innovate because we want to make money, spend less money, we don’t want to get our butt kicked (we want to kick someone else’s). What I want you to think about: is the “why” you have behind your innovation motivation clear enough? If you’re leading, you need to be bringing that clarity with you and communicate it to your team. “We want to make more money” is not clear enough. In many cases, innovation initiatives are not well connected to a why that matters.

There’s the thing we say, and there’s the thing that matters. The clarity of thought in Netflix’ Culture Code is incredible - look it up. The things that the company values include what gets you hired, promoted, or fired. If you think your organization values respect, but the sales guy who is a real jerk is getting promoted because his numbers are good - you can tell what your company values more…. numbers over respect.

PROCESSES:

There are processes that allow you to run the business, but the processes that allow you to change the business are different

Processes for running the business:
- Metrics for traditional projects
- Accountability measures
- Incentives and rewards
- Compensation

Processes to change the business:
- Go really fast
- Put the customer at the center
- Give permission to experiment
- Put your employee at the center

Have you been able to change processes, to offer exceptions, to circumvent them - so that the processes that are required to run the business do not become obstacles to innovation?
Example: I was trying to do something, and so I put together a team of people - I went around and asked them to participate on this team. They're adults, if they want to designate a portion of their time to this team, great! So I put a team together, and then was asked “who said you could do that?” and my response was “who said that I couldn’t?” We didn’t have a budget, so I thought, “why can’t I crowdfund the budget? Directors and VP’s have a certain amount of discretionary budget, so I went around and collected little bits from here and there, and then we had a budget. People get tied up with their imaginary boundaries.

Think outside two of these three boxes.

- Box #1: The imaginary box - the assumed, perceived, or unspoken boundaries
- Box #2: Rules, processes, and culture: All the rules are made up! Every single rule in your organization was made up by someone who was trying to do something
- Box #3: What is moral and ethical? Do not think outside of this box. In fact, if you’re thinking outside of this box, you’re not being intelligent enough or innovative enough to work within this box

Human factors and culture:

- Silos
- Finger-pointing
- Cultural dimensions
- Power distance (the distance between us and our boss is very high)
- Uncertainty avoidance
- Long-term orientation
- Fast decision making: Jeff Bezos: “make high-quality, high-velocity decisions”
- Most decisions should be made with 70% of the information that you have. If you wait for 90% of the information to make decisions, you’ve waited too long
- Promote digital collaboration unequivocally. Jeff Bezos laid down the law: we are not going to have information silos in this company

**Lessons Learned:**

- Do not underestimate the power of our human nature: one big enough ego can kill ALL your innovation experts.
- Leaders have a disproportionate impact on a company’s culture - beware of inconsistency between supposed and enacted values
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- We love to say “fail fast and fail cheap,” and yet how often does our CEO stand up in front of everyone and say “We failed, and this is what happened” - no, we protect our CEO’s reputation above all else. This tells people that failure is NOT ok

**TRAINING, METHODOLOGY, AND TOOLS**

Methodologies
- Design thinking
- Lean startup
- Agile or X Sprints
- Canvases and other…. Rehashing the same principles with new canvases
- The underlying principles have lots in common
- Talk to people, empathize
- Test stuff, because you don’t know what’s going to happen
- Do it quickly

Once you’ve selected something, just GO with it. So many people get stuck trying to optimize their methodology, and they just spend so much time playing around with it. There are marginalized returns with optimizing your methodology. Just get started, then you can improve after you are actually implementing and innovating.

**Lessons Learned**
- There’s a trend to adopt the language but not the method. If you “make it look like” a lean startup/design thinking/agile process, you’re missing the point. A pig with lipstick on is still a pig.
- Don’t have Holy Wars over methodology (e.g. DESIGN THINKING v AGILE) - Sometimes even those working in the space of innovation can get a bit too attached to their views
- Don’t let senior management off the hook. As you grow, differentiate your innovation training: some need the nitty-gritty know how (boots on the ground), some need to not get in the way (middle management), and some (decision makers / executives) need targeted training to provide proper support

**RESOURCES**
- Metered funding
- Time
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- If you don’t systematically give them time (and/or money), they might get into the ideation stage, but you won’t get any output
  - Maker/Hacker spaces
  - Mentors and sponsors - if you don’t give them support to fight the gatekeepers or move through the system, they might have the idea and output, but they’re not going to get anywhere

**Lesson Learned:**
- Constraints force focus. We live in a sea of abundance. If you compare what a 2-3 person startup goes through, we don’t deal with any of those issues (making rent, buying a new computer when yours fries up). What’s the smartest thing I can do with $10K in 3 weeks, because I can’t get $1M in 6 months?

**ACTION ITEM**
- Read the Netflix Culture Code as an example of clarity of thought and company values.
- Watch Ray Dalio’s Ted Talk on making fast decisions: *How to Build a Company Where the Best Ideas Win*

**FINAL THOUGHT**
- While you’re busy innovating, remember to plug back into the mothership. Even if you’re doing it all, and have all these things in place, don’t lose sight of your alignment with existing corporate priorities, or relationships with business units. If you lose sight of that, your efforts will fail
  - An incomplete innovation effort will accelerate you - off a cliff
  - Innovation requires some resources but always requires a great amount of resourcefulness
  - Remember to be grateful for the opportunity to work in the space you are in. If you are involved in innovation in any way, you actually have the opportunity to make things better for everyone
CRITICAL ISSUE THINK TANKS: Think Tank 10
The Journey of Monetizing Digital Services

MODERATOR
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PANELISTS
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TIME
Wednesday, October 3, 2018 at 9:35am

SESSION ABSTRACT
Product and service companies are increasingly looking to capitalize on digital revenue opportunities. The evolution is underway: Product as a service business models capture data across assets/ processes, monetizing the insights and eventually moving to outcomes as a service. Drawing from Frost & Sullivan’s insights gained from extensive work with clients and the real world experiences of companies that embarked on this journey, this session examined the valuable lessons learnt along the way.

KEY TAKE-AWAYS
- The ideal methodology to adopt in order to develop these connected offerings
- An understanding of the various business models to be considered when developing your own
- Best practices and lessons learned
INTRODUCTION
Moderator Mark Simoncelli highlighted the conflict of operational technology versus information technology and how currently there are over 460 different platforms for IoT. He noted also that customers are willing to adopt new technology.

Before going into the question and answer session and discussion by the panel, Mark gave an overview of Emerson Electric as a backdrop for the discussion:

Emerson Corporation Product
- New Valve
  - Had to create a new business model
  - Digital innovation was involved in the creation
  - There is a large installed base of these items now
- Who were the purchasers
  - The end market is non-digitizers
  - Selective digitizers
  - Enterprise digitizers
- Why were they willing to adopt this new tech
  - To many unexpected equipment failures with older tech
  - High maintenance spending
  - Increase in monitoring solutions and expense
- How did Emerson help
  - Identified the customer pain point
  - Offered a value proposition
  - Had to overcome this question – “Will the customer pay the price?”

TAKE-AWAY
Why digital transformation?
- Must disrupt yourself to stay relevant
- Important to know “where” you want to play in the market
- Must identify the pain point to determine where to spend your dollars and efforts
- Identify the problem of the customer
  - Then determine if solving this is worth time and effort
  - Expensive to start before the analysis is done
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**Question:** What is the best way to sense what is happening in the market or identify who wants to engage in disruption?

**Answers:**
- The consultant must have technology and ideas that are disruptive to be used for early integration
- People must understand competitive trends
- Let market trends guide you
- Digitization cannot be done alone – emotionally attach with the customer

**KEY INSIGHTS**
- Must understand stakeholders, both internal and external
- Get feedback from both internal and external stakeholders before moving forward
- Must answer to the corporate level – “What is the value of digitization?”
- Digital platform is a journey
- Once data is collected – company can determine how product is being used
- With data, you can monitor customer and equipment
- If monitoring equipment, you must let the customer know how the data will be used and that the data will be secure
- The maturity of the company may determine how much or if data will be shared
- Monetizing data
  - Data belongs to the end user or the firm – it may not belong to you any more
  - You must have a written agreement on how the data will be used for legal reasons
  - Pricing models on collecting, sharing and using data vary widely and are quite complex
  - The pricing model depends greatly on who is selling the data
  - Pricing models are evolving rapidly
  - Scientific data should belong to the end user/customer
Question: How does a company monetize platforms?

Answers:

- Nobody was able to fully answer this question. However, a comment was made by one person that how specific the IoT platform is will determine how or if it could be integrated with other platforms.
- Each company has their own platform, these companies must identify what and how to use the opportunities.

FINAL THOUGHT

- How to monetize is enabled by the technology used and the people
- Must manage a portfolio of initiatives like a venture capitalist
- One firm set up a “Chief Transformational Officer” instead of a traditional CTO
- One firm created an innovation team to incubate across departments – like a venture capital structure
CRITICAL ISSUE THINK TANKS: Think Tank 12
The Transformation of the Healthcare Industry

2018 Mid-Term Elections - Impact on U.S. Healthcare Policy

PRESENTER
Joe Smith, Chief Executive Officer, Reflexion Health, LinkedIn Profile

TIME
Wednesday, October 3, 2018 at 9:35am

SESSION ABSTRACT
The upcoming midterm elections in the first week of November will determine the outcome of elections for 435 members of the US House of Representatives, nearly a third of Senate seats, and two-thirds of governor’s races. Voters are routinely placing healthcare (more specifically, the COST of healthcare) as their #1 issue, forcing candidates to be clear on their healthcare agendas. The midterms will also put a wide range of specific health policy proposals to voters. Florida, Maine, Idaho, and Utah will vote on whether to expand Medicaid. Alabama will vote to eliminate state funding or provision of abortion, Nevada will vote on a sales tax exemption on feminine hygiene products and Massachusetts will vote on an anti-discrimination veto that would roll back trans-gender equality legislation passed in 2016.

Sharply partisan politics will likely continue to dominate the healthcare debate, though there will doubtlessly be more pressure of the cost of healthcare goods and services, and an unrelenting search for value.

KEY TAKE-AWAYS
- An understanding of the role that the public’s concern for healthcare costs will play in the midterm elections
- The implications of a potential “blue wave” on healthcare policy following the mid-terms
Examples of the dominant healthcare policy planks being advanced across the political continuum

KEY INSIGHTS

• Amid rancorous partisanship, prediction is difficult especially about the future. Hard to think about how to weave into the future when battle lines so staunchly defended
• Don’t think we will see anything dramatic for healthcare innovation from midterms
• 6665 state positions including 36 gubernatorial races will be contested. Over the last 21 mid-term elections the President’s party loses an average of 30 House seats, Democrats need to gain 23 to take control of the House. Likely Democrats will take House
• Last opportunity for healthcare reform scuttled with McCain’s vote down on reform. Healthcare is the biggest issue when people go to the polls. Everyone thinking about insurance because of Open Enrollment period and how much it costs
• Red states annual premiums – minor cost changes. Blue states will see significant increases in costs. That will have some bias on people when they go into the polls. Some stabilization on healthcare premiums but sentiments may influence polls
• Red states +3.5% and Blue states +8.5%. Our healthcare expenditures up for average person. Between red and blue states is green – what healthcare issues matters most to voters – prescription drug pricing, universal single payor coverage, Medicare funding, Medicaid funding.
• It’s all about the cost of healthcare – it’s a money issue. Healthcare affordability is the American Anxiety
• We are divided in our division – Democrats are divided between those who are committed to defending, reinforcing, saving the Affordable Care Act (ACA) and those who champion a government-run single payor Medicare for all plan
• Republicans divided between those who want to dismantle the ACA and shrink control of Medicaid to states and those who worry about the long term implications of ACA costs
• Fractured states of American healthcare – action happens at state level. States want to manage this cost at their level. Voting populations have very different views about what they want
Medicaid expanding in most states but not all (N=34) States based individual insurance mandates (N=4 but going to 7)

Very diverse approaches to healthcare. Beginning to see people move to states based on these decisions. We are not going to achieve sweeping policy reforms at a national level. States should be experimental places for policy to be worked out

**KEY QUESTION**

Is there common ground?

- Democrats trying to maximize the number of people with decent health insurance and Republicans want to keep taxes lower
- We struggle with issues of coverage and payment, but cost is the root cause of our conflicts. That gives us the opportunity to focus for innovation – looking at cost of healthcare delivery

**International Context**

The U.S. ranks 54th in national efficiency of healthcare. To break into the Top 10 we either need to extend life expectancy to 84.3 years or drop per capita healthcare spending to $2,266 per year. We are currently at $10,000. Neither of those is likely to happen in the near term. We can look at models around the world for ideas on how to make our healthcare system more efficient.

**Value Based Healthcare: Patient Value = Health Outcomes/Cost**

- Value can also be patient’s values, not just payors. If we can deliver better outcomes at a lower cost, then it will be perceived well regardless of politics
- Addressing the root cause of cost of care – value based healthcare innovations in technology or service will be well adopted
- Very difficult to work in current setting where value based care is talked about a lot, but not actually implemented. So you have to find those customers who are actually doing that. We are slowly moving in that direction. Right side of history to be on even if it is only slowly evolving

**More Healthcare Is Not Necessarily Better Healthcare**

- We don’t need to do everything to everyone all the time. Still is this notion from American healthcare consumer that more is better
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- Struggle to align business innovation and incentives around prevention
- Lots of technology that really works but no business model to justify why people want to buy it
- CDC likes it, but until we revamp that element of coverage, not going anywhere
- U.S. not set up to reward that. Outside the U.S. you can more easily get interest in population health savings
- When do we start paying for prevention?
  - Rise of Medicare Advantage programs and put them in plans which have latitude for coverage. Some of those plans pay for prevention programs

Moving Toward a Value Based Healthcare System

- Moving away from device-iterative innovation that is not having a real impact
- Start with where is the problem that is causing a lot of pain, longevity or dollars spent. Personalized medicine for cancer – outcomes per cost. Not whiz bang but subtle improvement in technology
- Pay for performance – this has been so mired in what performance is and what metrics are? Providers pushing back because they don’t want to keep up with them all. Look at outcomes measures and not operational measures instead
- Presenter met with an insurer who was excited about the data they have – not everyone who is diagnosed with diabetes actually has diabetes!
- Understand exactly what the risk profiles are of insurance cohorts and understand what is going to work. We simply have to lower costs

FINAL THOUGHT

- Tremendous opportunity to improve quality of care at hospital level. Institute performance programs for preventive measures, e.g. falls.
- Average hospital medication error is one per patient per day. They accumulate to be second leading cause of death in the United States
CRITICAL ISSUE THINK TANKS: Think Tank 12
The “Netflix Effect”: Driving New Growth Opportunities for Life Science Companies

MODERATOR
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PANELISTS
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David Purdie, Vice President, Medical Affairs and Clinical Development, Proteus Digital Health, LinkedIn Profile
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TIME
Wednesday, October 3, 2018 at 9:35am

SESSION ABSTRACT
The convergence of bio pharmaceuticals, drug delivery devices and companion diagnostics – enabled by digital connectivity – is driving regulatory and commercial changes in the industry. With U.S. tax reforms now kicking in and the synergistic effect of advanced technologies such as artificial intelligence, big data analytics, and cloud computing on the traditional life sciences industry, growth could be even faster in 2018.

Participants heard from all the players on their perspective of how business models are changing to maximize growth in life science companies as they embrace the new trends and technology.
Key Take-Aways

- Top five growth opportunities in biopharmaceutical industry
- A solid understanding of the convergence of real world and virtual world data
- Perspectives from game changing companies on collaborative projects and the impact on disruptive technology platforms

Industry recognizes challenge in unique way. In pharmaceuticals, you still have premium products, but there are also lower cost lines being launched and lower cost product lines as well. It is necessary to support both premium and low-end markets.

Discussion and Insights from the Panelists

Disease is not just about genomics, but also environmental and other variables. However, the lower cost to run genomes makes the data sets more available. Pharma companies have taken greater use of those. For example, Genentech did a deal with 23andMe. Pharmaceuticals (Pharma) looking at genomic information for drug discovery. These datasets don’t reflect diversity of the world. Moving forward, these datasets need to be more comprehensive from a racial perspective. Need to move beyond genomics to get comprehensive data on fitness, nutrition, lifestyle, etc.

Pharma companies have made big investments in genomics. Bring healthcare big data to make more sense of biology. Try to translate science into outcomes, not just therapy. We are all continuously looking for better ways to do that. Doesn’t matter what people think, disease is the disease. We are competing against biology and not against each other. We will see more partnerships and collaborations in the future.

Medication is another example of waste in the system. They have been doing work focused on adherence. Pharma companies care about prescription being filled, but don’t care about patients taking them. Patients don’t understand what drugs are for or to take them. Proteus can take waste out of the system. Have a way of following up with patients to make sure they are following up and closing that loop between healthcare team and patient. If they can just stop giving new pills before finishing old ones, they can add a lot of value.

Yet, this market moves so slowly and is so resistant to innovation. We are seeing just incremental benefits at significant higher price. In general, apart from doing innovation, pharma is very content with incremental benefits and extending the product lifecycle. A
lack of interest in value based contracts – so much time and effort just put into these contracts, just want a rebate instead.

It is really difficult for the pharma industry to evolve in any kind of rapid way to reinvent healthcare to be part of solution instead of part of the problem.

Cost of bringing drug to market – big appetite about how to lower that cost and yield to manufacturers – other industries have gone through this, like aerospace, can manage their costs from end to end, but pharma struggles with that. This can take costs out of the healthcare system.

Blend of virtual and real – virtual is computer and real is clinical trials and labs. How can pharmaceutical companies better blend these two and get more data to fail faster in drug discovery methods? Evidence based data and real-world. Drug companies bad about gathering their own data to determine whether a target will use. No pharma company on Earth really does it today with these predictive models.

What about using robotics and automated labs that can synthesize millions of molecules and interoperate with virtual world of pharma companies? That is where we need to go and that is what will drive costs down.

Believe patients should own their data and want to actively engage with those patients. Medical records are not easily accessible. Need patients engaged and willing to update over time. Additional thing is that these patients should be compensated fairly and treated equitably. Operationalize those concepts. Believe in transparency and let them know exactly how their data is used anytime. Believe patient should be in control of their data and it never leaves their platform. If members provide DNA file, they do not retain it. All focused on privacy, security and control for patient information.

It’s not about huge data averaged over, but finding right population across data and then going deep with them. When Cloud first arrived, it was about lowering barriers. Less editing of ideas based on what has worked before. Disruptive innovation is about trying something new. Certain parallel in pharma industry with scientific services, hard to find external expertise in capabilities to do professional scientific customers. Merck is one of two companies to push that field forward.
Healthcare is such a regulated space and that prevents innovation from going forward. There is a big lawsuit in California with Amgen and other companies getting sued by governments for what was seen as kickbacks for nurse navigation services provided by pharma and that could have meant getting patients on drugs. When this type of thing happens, ranks close and industry becomes disillusioned with trying something new. Legal and compliance environment slows down creativity and innovation.

**FINAL THOUGHT**
Even in employer groups, there is resistance to thinking about value-based care approaches. All of the other countries in the world are already thinking about population health and a single payor system. We are not there and are too fragmented. It remains to be seen whether a digital health solution is really going to save money or not. There is potential with digital technology solutions, but whether they can make money and help people remains to be seen.

The industry is moving from a science to an outcomes orientation. Go for big bets in smaller projects.
CRITICAL ISSUE THINK TANKS: Think Tank 13
Translating Digital Technology into Competitive Advantage

PRESENTER
Brian Cotton, Partner, Global Practice Leader, Information Communication Technologies, Frost & Sullivan, LinkedIn Profile

TIME
Wednesday, October 3, 2018 at 9:35am

SESSION ABSTRACT
Building on the prior day’s Discovery Session on Technology Radar: Seizing Early Adopter and Fast Follow Opportunities for Growth, this session featured a group of use cases of digital transformation. These cases were delivered and discussed by people who have done it and you can learn valuable lessons from their journeys to take back to your own enterprise strategy.

Case History Presented By:
Jennifer Schulze, Vice President, Product and Demand Marketing, GE Digital

SESSION ABSTRACT
Business as usual doesn’t exist in today’s climate. Innovators stay ahead by combining data and operational improvements with organizational change to unleash impactful business results - including greater productivity and analytics driven decision making. These advances come from delivering an asset intelligence strategy, where proactive decision making is the norm. The days of unexpected equipment corrosion, safety incidents, and non-productive downtime should be over. But are they? How do we deliver more intelligent assets for our industries? Learn how one highly intensive industry leverages digital to redefine their processes and address their most pressing issues today.
OVERVIEW
Baker Hughes is a subsidiary of GE, which allows them to operate more like a start-up and allows for more transformation.

KEY INSIGHTS
- They determined that it is necessary to go from product sales to outcome sales
- They don't have to use GE technology
- They need to choose technology that allows them to be nimble
- They need to transform from industrial to digital:
  - Cloud based is imperative
  - Need to future proof and use probability models
  - Data silos need to be broken down
  - Analytics and self-learning are digital twins
  - Connect industrial with digital
- GE Needs to:
  - Optimize production
  - Improve uptime
  - Enhance design and build
- Value based marketing: 80% of the decision work is done before sales meets with the client. Marketing is already doing much of the work. Need to have outcome based conversations

TAKE AWAYS
- Change management is important
- Trial and error is inherent - celebrate mistakes

Case History Presented By:
Philipp Gröne, New Wave Digital, Senior Delivery Expert, Unitymedia

SESSION ABSTRACT
Like many organizations, Unitymedia is continually looking for new and better ways to service and engage customers. This is at the core of the company's digital transformation. Unitymedia's decision to use big data analytics is a way to accelerate this digital transformation by increasing operational efficiencies and proactively identifying and resolving issues faster to increase overall customer satisfaction.
Growth, Innovation and Leadership: A Frost & Sullivan Executive Summit

This session examined how Unitymedia is using big data analytics and key learnings from our digital transformation journey.

KEY INSIGHTS

Business transformation needs to be powered by machine learning and intelligence, based on live data

- As an Internet Service Provider (ISP) they must control operating expenses
- Data is very unstructured
- Customer experience is critical

ACTION ITEM

Business Needs:

- To improve NPS
- Reduce expenses
- Provide a better customer experience
  - They spend 3 to 4 euros per call and 15 to 20 euros per truck roll
- Need to identify stakeholders within the organization and choose who to work with based on priorities

Key Learnings: Success factors for the proof of value in retro perspective

1. Identify all stakeholders early
2. Use a clear picture to explain value
3. Involve data privacy early
4. Set up data dictionary
5. Assess real time capabilities and requirements
6. Close collaboration between vendor and customer
7. Have means to measure success (KPIs)
8. Use real users to assess – application is tested by end-users
9. Use real data to assess – buy in is much higher
Growth, Innovation and Leadership:  
A Frost & Sullivan Executive Summit

Case History Presented By:  
Randy Boyd, Infrastructure Architect, World Vision, U.S.

SESSION ABSTRACT
Communications is at the core of every business, and as digital technologies transform the workplace, cloud communications and collaboration platforms are becoming a must-have for enterprises as we move away from legacy on-premises voice systems. In this session, participants heard how World Vision consolidated nine separate phone systems involving six different telco providers for 12 locations onto one unified platform.

World Vision is a Christian humanitarian organization dedicated to tackling the causes of poverty and injustice worldwide.

KEY DISCUSSION POINTS
• Consolidated 9 systems and 6 providers
• Meetings and mobility were critical components
• Ease of use enables focus on mission

TAKE AWAY
• “We are just like any other business…moving away from Oracle ERP”
• SaaS is a big initiative for them
• Their PBX system is 20 years old - they have been trying to modernize it for 7 years and it is a priority
• Not all will join the journey but you have to do it

Case History Presented By:  
Jim Krasovic, Regional Manager, Gemalto Software Monetization

SESSION ABSTRACT
Customer expectations around software value are changing. People want to pay for the value they consume and subscription and software-centric business models are starting to dominate across all verticals. How do you go about enhancing your offerings to be more customer-focused, and use software as a way to innovate in your business? This session simplified some of the complexities involved in digital transformation and
offered some real-world examples of customers who are transforming the way they create and provide value in this new digital age.

TAKE AWAY

- Device manufacturing -> Product lifecycle management -> Integrated solution -> outcomes
- Moving to services, software and data centric
- Philips example of enterprise monitoring as a service

FINAL THOUGHTS FROM ALL PRESENTERS

- Be aligned and take small steps instead of doing too much too fast
- Be brutally honest
- Be clear about the outcome you want
- Get executive sponsorship and understand different KPIs like ROI or retention
SESSION ABSTRACT
At the core, technology convergence involves overlaying two or more emerging or existing technologies to create unique value propositions which could be commercialized for current or new applications. While each emerging technology on its own represents an area of intensified R&D, heightened investments, increased IP activity, and tremendous market potential, the possible convergence of several technologies opens up unprecedented opportunities for new revenue models and the next generation of innovative product and solutions.

KEY TAKE-AWAYS
- A blueprint for identifying and evaluating technology convergence opportunities
- Best practices for convincing internal stakeholders to pursue technology convergence strategies
- Ways to leverage new business models to drive monetization
- Action steps to leverage the ecosystem of technology partners to enable convergence

INTRODUCTION
Most innovation opportunities arise at the intersection of divergent technologies; this is called “technology convergence.” The overriding inquiry is determining which combination of technologies should be optimized for investment and monetization.

Frost & Sullivan's Visionary Innovation Group identifies today's top 50 technologies and megatrends. Over one thousand analysts track technologies in all spaces, e.g.,
healthcare, automotive, retail, etc. The 600+ technologies identified are put through a screening process to address four specific categories: intellectual property, competitiveness, growth impact and time to market. A printout of the top 50 technologies was handed out at the presentation. Highlights of the key ideas and applications discussed at the event included:

**Examples of Technology Convergences:**

**Labs of the future** will see technology convergence with equipment, big data, novel sensors, digital notebooks. Digital transformation already is happening at core research labs. Sensors can transfer data generated automatically into digital notebooks and other processes that rely on those data. Companies that supply the laboratory industry also are exploiting digital technologies.

**Autonomous vehicles** are already underway at Tesla and Volvo; BMW is working on the next wave of electric vehicles. The convergence of autonomous technologies with energy storage technology is a current endeavor. Industry is seeing a greater willingness for autonomous car makers to adopt safety-related features like collusion sensors, lane sensors, sleep detectors. Autonomous technologies also lead to cost savings; the cost of fuel and tire replacement dropped (more than the saving in labor costs) when autonomous trucks were used in Canadian off-road mining.

**Healthcare** is another area where the convergence of new genetic analysis technologies will converge with new genetic manipulation technologies, resulting in new treatments and drugs. 3D printing technology will converge with drug treatments to create highly precise drug treatments in real time, e.g., a single multi-dose drug that can address multiple diseases in an individual patient. This would solve the problem of patient compliance often seen with complex protocols required to treat multiple diseases separately, but in parallel.

**Traditional manufacturing industries** are pushing hard to leverage internet-of-things (IOT) and big data.

**Oil, energy and gas (OEG) industries** are another sector that is using digitization in every stage of OEG processes to drive more efficiencies, to counter the fall in oil prices. Despite the labor-intensive nature of the OEG industry, there is talk of autonomous oil rigs in the next 15-20 years.
Audience members shared several examples of technology convergence in their industries:

- Merging electronic sensors with construction materials
- Optimize maintenance of undersea cables by sensors and new tools
- Predictive maintenance and preventive maintenance use sensors and data
- Devices that track driver sleepiness (sensors, ECG, blink rate) and send an alert before the driver falls asleep
- “Wearable” sensors that allow remote connectivity to experts and internal company data/tools
- Local, less experienced technicians use “wearables” to transmit data to remote, more experienced technicians who can assist and problem-solve

Technology convergence will also impact ancillary industries, such as insurance, and will raise ethical and moral issues. Positive and negative changes in workforce are to be expected. Increased autonomous technologies will allow older workers to stay in the workforce longer as mentors and remote workers and will give new opportunities to individuals who today are barred from physical jobs. As has happened with previous bursts of automation and new technology, some jobs will be lost and some workers will be displaced in the short term. In parallel with technology advances, regulatory policy will have to be transformed.

**TAKE-AWAY**

- A process is needed to evaluate, select and implement technology convergence
- Executive sponsorship and ownership are musts
- Whatever technology convergence your organization selects, a business model is required to monetize it and drive revenue growth
- Cultivate a change management mindset to embrace the need for technology convergence and effectively compete

**IMPLEMENTATION GUIDELINES**

**How to Monetize Convergence Scenarios**

**Executive sponsorship.** Executive must buy-in to convergence scenarios. Change management is a stumbling block that must be addressed from top down. In the OEG industry, the executive teams were forward thinking, but met resistance at lower levels.
Cross-functional teams. Each organization must identify its core competencies, and technologies that may have a positive impact on business going forward. At the early stages, it is nearly impossible to determine which technologies will win out. But, working at various levels in the organization, with cross-functional teams, and testing various scenarios will yield a specific convergence plan that the organization can get behind.

New technologies. Most technology convergence scenarios will require technology/resources that do not currently reside in the company. Some companies will address this by establishing innovation centers, or embedding experts in teams, or new hires, technology acquisitions. Each company needs to have a deep understanding of what works in their organization. In some companies it is easier to acquire new technologies from the outside, whereas in other organizations organic developments are preferred.

Business model. The organization must be able to articulate how the technology convergence it identified will translate into a new business model. The cross-disciplinary team should consider what an evolutionary change looks like versus a revolutionary change. What value is created by each type of change? For instance, taking the dealer out of the car buying experience is a disruptive/revolutionary change.

FINAL THOUGHT
- Establish cross functional teams and executive sponsorship
- Identify convergent technologies scenario and translate into business model. Be sure to precisely address which point of the value chain is the focus
- Product as a service model – look at it from a structured process
- Drive change management
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A Frost & Sullivan Executive Summit

CRITICAL ISSUE THINK TANKS: Think Tank 15
Strategic Partnerships for New Competencies

PRESENTER
Steve Currie, Vice President Strategy and Corporate Innovation, Communitech
Member – Growth Innovation Leadership Council, LinkedIn Profile

TIME
Wednesday, October 3, 2018 at 9:35am

SESSION ABSTRACT
Market change and customer demands will only increase in speed and complexity in the future. Organizations can’t handle this complexity alone. As an “adaptable” organization, companies must combine both internal and external innovation efforts to survive and succeed. This interactive session focused on models for partnership and examined how leading innovators have leveraged external partnerships to stay ahead of the competition.

KEY TAKE-AWAYS
• Framework for aligning business strategy with innovation strategy and identifying gaps in internal capabilities
• Examples from leading innovators of external partnerships that have worked (and have not)
• Ways to effectively extract value from Ecosystem engagement

INTRODUCTION
Currie talked about partnerships, about how to align business strategy to innovation strategy, extract value from external relationships, and create a 90 day plan!

Communitech is a not-for-profit organization, a community of tech. They have more than 1,400 tech company members, and have seen firsthand the way startups and corporate entities try to engage. An example of an ecosystem, including a partner ecosystem: TD Bank LAB has been at Communitech for 4 years, they have 150 co-op students, and
they have developed 275 prototypes, hosted 12 hackathons, and engaged over 200 startups.

**Why Partnerships?**
Disruption is coming - like it or not. One of the points to emphasize is that it’s hard to see it from the inside. You get busy with customers, targets, quarterly reports, and it becomes harder and harder for organizations to stay on top of the innovation and disruption ecosystems.

How can partnerships help?
- Idea generation
- Design/development
- Commercialization / go-to-market
- Optimization/ process efficiency

**Survey Results:** Out of 700 companies, 30% said they were good at idea generation. There’s lots of room for improvement here! Half of surveyed companies said they build new innovations themselves, 30% will partner, and the rest will buy. Because companies prefer to build their own solutions, corporate innovation is slow. 60% of companies say it takes a year or longer to create new products, with almost 25% saying it takes over 2 years from ideation to launch.

**Speed is one reason to partner - what are the other reasons?**
- Take advantage of opportunities that exist outside of our core competencies
- Access to the market
- Expensive capabilities used infrequently
- Knowing the business you don’t want to be in - we develop software, and we don’t want to be in the hardware business
- Marketing research and learning
- Access to technology
- White space
- Close capability gaps
- Brand Awareness / Exposure
- Partnering with universities for R&D, and pipeline for talent (though sometimes that doesn’t work out so well)
Linking Business and Innovation Strategy

Creating the conditions for success:

- What are the things you need to do (beforehand) when working with partners?
- How does innovation connect with strategy?
- What capabilities (internally and externally) will you need to create or develop?
- Partners add an extra layer of complexity:
  - are you aligned in your goals (we see that on the startup side, there is often a misalignment of goals)
  - do you have complementary strategies
  - is there mutual value creation
- What is the Win-Win?

Disruptive Tech changes market rules. Moore’s law suggests that computing power doubles every 24 month, and costs are cut in half. What happens when the marginal costs of disruption approach zero? Your disruptors, your competition, will come from unusual places. Who would have thought that Google would get involved in the medical field? You may not be in a position of having the luxury of doing things the way a startup does….

Case Study: Philips

Ultrasound business: we had an interest in expanding into a new clinical area, the anesthesia area. We wanted access to innovate in that space. We partnered with a company called B Braun. They did not make ultrasounds. So we co-developed an ultrasound machine, and worked together on our competencies (Philips for manufacturing, B Braun for go-to-market). They lacked anesthesiologist expertise, so they used B Braun as the sales channel for the product. That set up a pathway to continue developing new point of care solutions: visualization tools and clinical tools for anesthesiologists.

Lawyers were involved quickly to deal with IP issues. You have to be very diligent with outlining IP ownership; establish clarity as soon as possible, and link it to the revenue portion as soon as possible.

So much of partnering is relationship management. And speed isn’t always best for partnerships - sometimes it takes time to establish the right relationship, and then maintain it well throughout the project (and after deployment). The project took about 3
years from ideation through going to market. Both sides needed full-time, dedicated people working solely on project. They brought in subject matter experts, so the core team morphed over time depending on what element they were working on, but having those primary members involved through the whole process was critical.

They set up a co-collaborative business case, clearly outlined business investment and revenue streams. Companies care about different things too, so it doesn’t always have to be equitable in terms of revenue streams - some sides care more about brand exposure, others traffic, or reaching new markets. So one side might invest and/or realize more revenue from the partnership than the other (it’s actually very rare for both companies to invest the same amount monetarily and receive the same returns as well).

**ACTION ITEM**
- Define the problem. Just pick a project, and start small to pave the way for future opportunities
- Decide to Pay, Pray, or Play - what approach are you going to take to solve that problem?
- Exercise: write a press release, before the project even starts. Visualize what the future looks like. View it like a scoping document. It can be a work in progress, but keep it short, sweet, concise like a press release
- Build your execution plan, including internal systems and engagement model
- Establish clear expectations, deliverables, and timelines
- Clarify IP and determine metrics
- Determine the internal champion. And make them look good!

**FINAL THOUGHT**
So here is a system to help you create repeatable outcomes. That might seem counterintuitive for having an innovation vision. But it helps to define a few things: What is (and is not) innovation in your organization? What is your innovation strategy, innovation portfolio, innovation process? What about innovation governance, and do you have an innovative workspace?
CRITICAL ISSUE THINK TANKS: Think Tank 16
Data as a Strategic Asset for Global Enterprises

PRESENTER
Matt Coblentz, Data Scientist, Dell EMC Corporation, LinkedIn Profile

TIME
Wednesday, October 3, 2018 at 9:35am

SESSION ABSTRACT
Many businesses believe that increased access to data will free their employees to innovate more. Yet simply throwing data at employees does not increase organization performance in terms of revenue or agility. Why, and what is needed to change this?

KEY TAKE-AWAYS
- Framework to create a culture of knowledge transfer – because internal ‘social’ networks and communities of practice are competitive advantages that do not transfer to the competition
- Examples of how executives can create a corporate culture that shares organizational knowledge through personal interaction
- Proven ways to show that holding your partners close and sharing information will pay you back 10-fold

INTRODUCTION
Matt asked the question: How does Microsoft use data to help with development?
Answer: Microsoft takes data from all levels seriously and does pass this to the developers. Processes and tools are developed to use for decision-making based on feedback from the consumers.

OVERVIEW
Several comments from the participants as the session got underway:
- A firm must define the data as it pertains to a specific industry and firm
- Some data more important than others –can depend on the risk to human life
KEY QUESTION
Key data question: Is it valuable and how will it be used?
  • Example: Boss asks for a new report. Need to ask the boss, what is the data going to be used for and will the data change your behavior?
    o If there will be no change, why waste time and energy for nothing?

When Amazon introduces new products or business models, the company thinks about how the press release will read before starting on the initiative. This is flipping the process

One participant indicated that her company has so much data that they are challenged about where to begin and how to use it.

Another participant stated that she should start with the problem to solve and make a list of data points needed for that project

A game to demonstrate the challenges of finding data needed:
  • Cards were passed out
    o Various colors indicated the management level of the individual
  • This was a room level conversation – too many people stayed at their tables. This prompted Matt to stop the conversations and explain that this was a cross-functional exercise and they should be talking to other tables to answer the questions:
    o What should C-level managers do
    o What steps need to be taken
    o All this based on the data and questions on the cards
  • As a room, people needed to move to other tables to share insight and determine if data is relevant

Insights from the game:
  • Huge challenges in finding data on the problems presented
  • Lost customers complain about quality
    o Talk to lost customers, not necessarily current customers
  • Data is not useful by itself – must be put in context
  • Cross-functional discussions will bring new insight into the problems
Growth, Innovation and Leadership: A Frost & Sullivan Executive Summit

- Need to ask the right questions to get relevant data
- Companies with data silos will fail

FINAL THOUGHT
Too many times, people will do extensive research and the research data will be disposed of after the initial use. A librarian can help archive the information for later use.
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MOVER & SHAKER INTERVIEWS
Where the Ventures Are Venturing

MODERATOR
Brian Cotton, Partner, Global Practice Leader, Information and Communication Technologies, Frost & Sullivan, LinkedIn Profile

PANELISTS
Ricardo Angel, Managing Director, GE Ventures, GE, LinkedIn Profile
Kara Bortone, Ph.D., Head, JLABS San Diego, Johnson & Johnson, LinkedIn Profile
Matt Garratt, Senior Vice President, Managing Partner, Salesforce Ventures LinkedIn Profile
Zain Gulamali Venture Investor, Amazon Alexa Fund, LinkedIn Profile
Michael Yang, Managing Director, Comcast Ventures, LinkedIn Profile

TIME
Wednesday, October 3, 2018 at 1:50pm

WATCH VIDEO HERE: https://vimeo.com/frostsullivan/review/296094802/145edff28d
SESSION ABSTRACT
Through a series of candid discussions, leading corporate venture capital investors share insight into the breakthrough technologies and discoveries they have on their radars and in their portfolios. From AI and AR, through Gamification, to VR and Voice and more, this esteemed group revealed the strategic value they find in financing entrepreneurship.

KEY TAKE-AWAYS
- Thought leadership on startups and scale ups in new industries and technology spaces
- Insight into investing for innovation advantage and mutual growth
- What’s next? Industries in their infancy

INTRODUCTION
The panelists introduced themselves and highlighted the various investment areas they are currently focused on:

- All aspects of healthcare – especially if there are benefits to the customers
- Broad range of tech companies – Dropbox, Survey Monkey, etc.
- Tech-enabled companies in any sector – consumer, enterprise, healthcare, automotive, etc. All stages, ranging from seed-stage to more established, growth-stage companies. Focused both on companies applying voice technology, as well as innovating in the voice technology stack (e.g. AI and ML, speech science, computer vision, etc.), especially if they can integrate with Amazon Alexa
- GE Ventures invests in all industries – tech, manufacturing, etc. Always looking for a strong team

**Moderator: What are the most important criteria you consider when adding a company to your portfolio?**
We look at market opportunity and the team.
We look at market opportunity and medical need.
Can they provide a solution our customers need or want?
A unifying theme is voice technology; eventual interaction with Alexa.
We look at innovation, large markets, strong team, a proven technology.
At some point, the venture funds will compete for companies to join their fund. How do the panel companies differentiate themselves from other venture funds?

Comcast Ventures sees value in collaborative investments, so they encourage their portfolio companies to bring in other investors. They also seek diversity in focus, as innovation in healthcare and software will help the overall corporation. Comcast can help its fund companies navigate buying TV ads, how to use TV to their advantage.

JLabs looks for earlier stage healthcare companies and expects to offer assistance in business plans, investor pitches, serving as mentors. Building relationships early is an important feature, even if they don’t make an investment now.

The Alexa Fund is focused on selecting growing companies that can advance voice technology and uniquely impact Alexa. Amazon can offer resources beyond a financial investment, including early access to technology and features, and access to key leaders from across the company. In addition to core investments, the Alexa Fund also offers the Alexa Fellowship, to support researchers and entrepreneurs around the world, and the Alexa Accelerator, to support early-stage companies building with voice.

GE tries to identify synergies between portfolio companies and parts of GE business, and seeks multiple shots on goal.

Can you name an opportunity you passed on, but wish you could do over?
Pinterest, was passed over because it didn’t seem to make sense that three 20+ year old men had a winning formula that would be a sought after service for women. We also passed on Ring, which was eventually purchased by Amazon for $1B.

Because J&J focuses on healthcare companies very early in corporate life, and it is very difficult to pick winners at that stage, we establish a lot of relationships, nurture those relationships and see what rises to the top.

Zoom, a teleconference company. An experience with another company biased many on the venture panel against Zoom, and Salesforce did not invest in Zoom for that reason. Mr. Garratt was a “yes.”
There are several companies that we might have invested in earlier. However, the Alexa Fund does not close the door to future investments in companies, and we’ve invested in several companies on which we passed initially.

Tesla. Like the Salesforce experience, past experience with another electric car company, which was a failed investment, soured many on the venture panel against investing in Tesla. The panel did not want to make two wrong choices in the same market.

**Audience question: What happens to assets of failed startups?**

Good entrepreneurs will find a landing spot for users of a service that goes belly up, or reserve capital for the service to continue for a short while. This can go a long way toward preserving the reputations of founders among customers.

**General discussion regarding incubators and accelerators:**

All venture funds come across people with cool technology in search of a market; that is backwards. It’s important to keep up with what’s current and the direction the technology is headed.

Salesforce has an internal incubator, which is a good way to get insight and promote what the organization is doing, although unlikely to launch many successful companies.

The Alexa Fund started an accelerator to interface with early-stage startups, and in terms of the amount raised by participants after the program, the first class was among the most successful in Techstars’ 10-year history. The Alexa Fund also sponsors fellowships at universities to support emerging talent and ideas and, equally important, establish relationships.

**Audience question: How do you support the partnership you form with portfolio companies?**

Personal relationships are important. Comcast pays for market intelligence and uses it to build meaningful relationships.

For every investment, there is a GM that owns the product, which makes it easier to plug companies into the Salesforce platform and create value.
Audience question: **Will corporate investors still be there when there is a downturn in the market?**
Yes. When investments from healthcare-centered funds dried up, healthcare corporations stepped up.

Corporate investors are not always different than venture investors. A corporate investor with a good track record has something to stand behind.

We educate the corporation to look for strategic returns, along with economic returns. For instance, there can be a strategic reason to stay invested in the funded business when the economic return is not immediately evident. There is strategic value in being able to have a say in the way a new company is run.

Audience question: **How do you identify good founders?**
Look for entrepreneurs who can tell a story about how they can help your customers and your organization, who can manage the business and product teams, and understand the market. If a company steadily makes good progress, then that’s usually a sign they know how to manage.

Look for people who have been the space for some time, know where the gaps are, and what their strengths and weaknesses are. Also, consider whether a leader will stick around if the company/product is acquired.

**TAKE-AWAY**
Important criteria to look for in a portfolio company:
- A good team and good management
- A market opportunity for what they are selling or developing
- Good fit with the investing company’s business objectives
- As an investor, consider what you can uniquely offer to portfolio companies that differentiates you from other investors
FINAL THOUGHT

*What is the next transformative technology, like blockchain and AI were?*

- Sensors and human computer interfaces
- More integration across sectors
- Wrapping around and integrating services together
- Computer vision and personalized medicine
- Biology and fuel
CAPSTONE ADDRESS
TechVision 2025 - Welcome to the Power Packed World of Top 50 Technologies

PRESENTER
Mark Simoncelli, Global Vice President, Frost & Sullivan, LinkedIn Profile

TIME
Wednesday, October 3, 2018 at 2:50pm

OVERVIEW
Most innovation investment happens in areas around products and services, followed by some operations and processes. Not a lot of innovation happens in business models, which is where speaker Simoncelli challenged participants to think about the business model opportunities for innovation.

TAKE AWAY
Seven key steps of innovation from Frost & Sullivan
1. Input - You need good input. And there’s no shortage of sources. A few:
   - Customers
   - Employees
   - Startups

2. Insights - Customer validation, understanding pain points to turn inputs into value. Insights come from customers, consumers, market research studies, observations, interviews, and outsiders:
   - Align with corporate objectives
   - Market size
   - Growth objectives
   - Financial indicators
   - Risk

3. Problem - Problem statements. Good opportunities are converted into a problem or set of problems to be solved. Test that problem, understand it, and ask: are we
really solving it?
  • Quantifying how big that problem is

4. Solution Generation - The process of generating ideas for solutions to the identified problems
  • Be creative, open-minded
  • Intentionally design a very diverse team
  • Scan the market for startups
  • Partnership - use the ecosystem

5. Qualification - The process to define, evaluate, and prioritize ideas
  • POC, POV’s
  • Partnership Alliances, Consortiums

6. Research and Development (R&D) - The process to research and develop a proof of concept for an ideal industrialization of idea

7. Implementation - The process to select, identify, and secure business for the implementation of the solution and to prepare technology for implementation
  • Define milestones
  • Don’t underestimate the time that you need to take for implementation
  • Implement organizational alignment - all working toward the same goal
  • Measure
  • How do you scale?

KEY QUESTION
What is working or winning?
  • Connectivity is the key enabler
  • Think about product as a service
  • Unbundle the value chain
  • Open innovation and collaboration
  • Software oriented for future scalability
  • New revenue models are more volume based than value; make sure you lead with right pricing
IMPLEMENTATION GUIDELINES

Pipeline Creation Process:
1. Outline a structured process
2. Source innovation opportunities
3. Leverage best practices
4. Develop innovation blueprint

Business model ideas:
- Everything’s a service

FINAL THOUGHT
There’s a lot of value at stake for innovation: you’ve heard about open data, e-commerce, the sharing economy, the internet of things...the estimated value of innovation markets to global GDP is $10 trillion.
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INSIGHTS AND IDEAS ROUNDP
Implementing the Best, Brightest, and Boldest Ideas from the Program

MODERATOR
Alpa Shah, Global Vice President, Digital Transformation, Frost & Sullivan
LinkedIn Profile

PANELLISTS
Rodney Davenport, Vice President, Strategic Insights, Alliance Data, LinkedIn Profile, Member – Growth Innovation Leadership Council
Lori Heino-Royer, Director, Business Development, Daimler Trucks North America, Member – Growth Innovation Leadership Council, LinkedIn Profile
Mary Beth Navarra-Sirio, Program Director, Advanced Innovation, Philips, LinkedIn Profile

TIME
Wednesday, October 3, 2018 at 3:20pm

SESSION ABSTRACT
Participants at our Growth, Innovation and Leadership Executive Summit look to come away with a wealth of key learnings; however with so many concurrent sessions this objective can be challenging. During this interactive session, members of the Growth Innovation Leadership Council reviewed the event and highlighted the most important themes, key take-aways and lessons learned that could be readily operationalized once participants are back in the office.

What brought you to this event, and what are you hoping to get out of it?
Seems like corporate innovation is all the buzz - at Philips, we’ve been doing that for five years, but we’re currently in the middle of re-thinking our strategies as we go into the next year. I’m interested in some of the ways that you all are successful in these areas so I can take that back and incorporate it into my strategy plan.
I am in the trucking industry, and I try to do everything BUT truck shows - that’s what everyone is doing in our industry. I want to know everything outside of the trucking industry. I’m interested in other leaders who are solving the same problem that we are dealing with, but are in other industries so there’s a lot of open sharing about how to solve those problems.

We’re having issues internally, so I am looking at how we can internally disrupt our business before someone else disrupts it from the outside.

**So you have all these wonderful new technologies and ideas, and a lot of these ideas come from startups. How do you get through the contracting process with a larger corporation?**

Real life example: our credit card company was very interested in getting on board with Paydeck (a web-based service where you can pay vendors via credit card). We missed that opportunity. I think the key for me is that you have to find that person who believes in it to push that up the corporate tree - but it’s got to be quick. We’re still very slow and risk averse, and sometimes we miss out.

I’d suggest you look to see if the corporation has an innovation group, because that would indicate they might have an expedited path through the company.

Find the champion within a large organization that believes in the startup. The startup has an idea of what they can do for us. Many startups don’t take the time to understand what my vision for their startup is in my company, they just try to tell me the way that they envision themselves.

**Regarding diversity and innovation - does a company need to have a diverse workforce in order to be innovative?**

Our company certainly has diversity and inclusion. I think it’s critical that we do that, because the end-products and services that we are offering are not to a homogeneous group, they are for a much broader audience.

In our division, we have a manager that just focuses on diversity and inclusion, so we have a lot of diversity. I’m fortunate that I work for a global company and we have a hugely diverse talent pool to work with. In Germany, we actually have quotas, and I have a different feeling about that - I became an executive before the quota was in
place, but there was an instance where someone was advanced to meet the quota, and they weren't the best fit for the role.

We have to think globally about the product and services that we’re launching, so we depend on a diverse organization in order to deliver that. I also think about diversity from an age perspective - some of my best teams are diverse in age, not just gender and ethnicity, which is extremely helpful for evaluating market segmentation and use case.

**What are some of your “aha” moments (from the event)?**

Hearing Richard Sear (Frost & Sullivan Senior Vice President) take us through his deck, which was great, it was more targeted, rather than an overall approach. The server-less analytics interested me, because all I hear is “cloud, cloud, cloud.”

The thing I heard repeatedly is how important the human is to make the tech effective. The human aspect of what you’re doing with the tech is really going to make a difference.

An obvious “aha” was going back to the basics; yesterday Brian encouraged us to think of the strategy with the end in mind, and how we get wrapped up in the now. It was an excellent reminder of ways of working. Secondly, think about the people from the perspective of those on your team. It’s important to be aware of the mix of the people, the culture, and the spirit of your team to bring together the right team to make innovation happen. Thirdly, the deep insight - we need to remember to understand what customers really want, and go to them rather than focus on what we do and trying to drive people toward us.

**What reflections do you have on the way customers integrate with these emerging technologies?**

I was surprised to see a lot of the innovations loops not have the customer in there. In a lot of our models, we put the customer in that loop. The customer doesn’t always know what they want - they have an idea, and pain points, but it’s a cycle, not just a single touchpoint. We capture a lot of the customer’s voice, but I don’t think we necessarily act and implement based on what we hear.
Growth, Innovation and Leadership: A Frost & Sullivan Executive Summit

For me, the voice of the customer is always changing. If we’re talking about an automated vehicle, most companies talk about positioning the driver rather than moving freight. We’re asking them to imagine something that is unfathomable in today’s moment, so figuring out how to engage with them takes a completely new approach - like sitting with some of the psychology experts in our organizations to help us figure out how to do this.

From a provider perspective, innovation can seem scary; they think “am I going to lose my job to a robot?” So we’re looking at how can we develop technologies that support the professionals, take away some of the process burdens, and enable them to better do what it is that they do - interfacing with patients.

*What’s your “smart phone” moment? Referencing the next five years - how is your company preparing for the reality of the future?*

We are certainly on board, a large segment of our clients are in the retail space, so you’ll see more smartphones, IPads in that space. We focus on that, but also other technologies that are going to influence the consumer. If we can figure out who you are and where you are going, we can give you targeted displays that will encourage you to go into the store. We are looking at multi-tender opportunities (I want to get tickets to a football game and use a gift card, some cash, and some AMEX points to get them).

Our world is shifting all the time. If you asked me five years ago who our competitors were, I would have never thought Tesla and Google would be looking at trucking. We’re going to be shifting from being an “engineering” company to being a “mobility” company. What does mobility mean for passenger car versus a truck? Our organization as a whole is doing lots of things to interact with the new technologies. We understand that we have to do something about these technologies today (e.g. auto-driving trucks) to be relevant tomorrow.

When I think about the future of healthcare, can I imagine a world where you can lie down in a bed and everything is being monitored with sensors, contact-less... I think we’ll be there in five to ten years. The interface, and the way we collect healthcare data and interact with those who provide our care will change.
The dream of the customer versus the voice of the customer - what resonates with you about that?
I think about Apple Pay… everyone thought it was going to be great, but I had to go around and ask people, “What is it really going to solve in this space? Is a credit card actually that cumbersome?” And people thought I was being old-fashioned, but turns out I was right. Even though early customers were so excited about it, Apple Pay is a relatively small segment of payment options. We can’t always buy in to what customers are raving about, because it often doesn’t end up being that big of a deal.

We talked about how important teams are - do you sample your innovators, and how do you deal with some of the frustrations that surface as a part of those surveys?
We do sample, and I think it depends on what some of the frustrations are. We hear that speed is a major frustration - everyone wants to go faster, and it’s harder to do that as a large organization. We’ve come up with this approach where we empower our teams to form problem-solving team to deal with issues, and that’s worked really well for us.

We do an annual survey, and it puts a very open space in front of people where they can write just about anything. Our company has actively made changes based on what they’ve read. In our division specifically, I have an open door policy, and people come in and express their frustrations on a very regular basis. I listen, and see if I can help them pursue solutions to those frustrations and barriers.

Being in a holding company, I have three different groups. In our credit card business, we have a lot of employees, and they think about credit card services as their dad’s business. Our loyalty group has very little turnover. I think it’s culture.

We talked about the data, but we haven’t talked about the privacy issues (e.g. GDPR). What are your thoughts about that?
GDPR certainly got everybody’s attention, and every company needs to understand what it is, and what it could mean. I think we’re looking at a couple of things. We still need to wait and see about GDPR. But privacy is a huge concern, and I hope we’ll be able to navigate it properly.

It’s the same with healthcare; no one wants their healthcare information out there, until they are in the ER in another city and need their health data right there, right then.
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Event Calendar

2019
### The Payor & Provider Ecosystem Evolution

**Collaborative Innovation in Healthcare:** A Frost & Sullivan Executive Mind \(\times\) Change

**Who Will Participate**

Payors, providers and healthcare technology executives will collaborate for three days to discuss and advance a shared vision of the changing world within the healthcare ecosystem. Network with Chief Executives Officers, Chief Medical Officers, Chief Technology Officers, Chief Digital Officers, Vice Presidents and Directors of:

- Innovation
- R&D
- Strategy
- Information Management
- Information Security Analytics
- Business Development
- Partnerships
- Reimbursement
- Digital Health
- Population Health
- Chief Experience Officers

**January 27 - 30, 2019**
San Diego Marriott La Jolla
La Jolla, California
www.frost.com/hci

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### Building Peak Performing Sales Organizations

**2nd Annual Sales Team Alpine Retreat:** A Frost & Sullivan Executive Mind \(\times\) Change

**Who Will Participate**

Sales executive leadership and management aiming to optimize sales team performance, processes, and technology in order to exceed revenue expectations. Network with Chief Sales Officers, and Vice Presidents, Directors, and Senior Managers of:

- Sales
- Sales Operations
- Sales Enablement
- Sales Development
- Business Development
- Inside Sales
- Channel Sales
- Rising Sales Stars

**February 11 - 13, 2019**
Hyatt Regency Lake Tahoe Resort, Spa and Casino
Lake Tahoe, Nevada
www.frost.com/star

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### Re-imagining Business, Strategy and Innovation in the Digital Renaissance

**13th Annual New Product Innovation & Development:** A Frost & Sullivan Executive Mind \(\times\) Change

**Who Will Participate**

Executives seeking to learn benchmark and share best practices in product excellence, innovation and strategic marketing. Network with Vice Presidents, Directors, and Managers of:

- Consumer Insights
- Engineering
- Innovation
- Product Development
- Product Management and Marketing
- Technology
- Research & Development
- Intellectual Property

**March 25 - 28, 2019**
Hyatt Regency La Jolla
La Jolla, California
www.frost.com/pds

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### Realizing Your Customer First Vision

**Customer Contact East:** A Frost & Sullivan Executive Mind \(\times\) Change

**Who Will Participate**

Customer contact, customer experience, and operations executives seeking to lead their organization into the future and drive customer experience as a key strategic priority for the organization. Network with Vice Presidents, Directors and Senior Managers of:

- Call Centers
- Contact Centers
- Customer Analytics
- Customer Care
- Customer Contact
- Operations
- Quality Assurance
- Customer Experience
- Customer Satisfaction and Loyalty
- Customer Service
- Customer Strategy
- Customer Support

**April 7 - 10, 2019**
JW Marriott Marco Island Beach Resort
Marco Island, Florida
www.frost.com/ccs
Next Generation Intelligence
34th Annual SCIP International Conference & Exhibition

Who Will Participate
Strategic, integrated and competitive intelligence executives driving the skilled use of intelligence to enhance business decision-making and organizational performance to create competitive advantage. Network with Vice Presidents, Directors and Managers of:

- Competitive Intelligence
- Market Intelligence
- Technical Intelligence
- Business Intelligence
- Business Development Executives
- Strategy and Corporate Development
- Strategic, Business and Market Analysis
- Strategic Marketing Executives
- Marketing Research Executives
- Business Research Managers
- Information Professionals

In Pursuit of an Effortless Experience
13th Annual Customer Contact Europe: A Frost & Sullivan Executive Mind Change

Who Will Participate
Customer contact, customer experience, and operations executives seeking to lead their organization into the future and drive customer experience as a key strategic priority for the organization. Network with Vice Presidents, Directors, Senior Managers and Heads of:

- Call Centres
- Contact Centres
- Customer Analytics
- Customer Care
- Customer Contact
- Customer Experience
- Customer Satisfaction and Loyalty
- Customer Service
- Customer Strategy
- Customer Support
- Operations
- Quality Assurance

In Pursuit of a Complete Reinvention of Marketing
Marketing Impact 2025: A Frost & Sullivan Executive Mind Change

Who Will Participate
Marketing executives who own the digital and strategic marketing plan and the execution and implementation of strategic initiatives and go to market strategy including Chief Marketing Officers, Chief Growth Officers, Vice Presidents, Directors, and Senior Managers of:

- Branding
- Business Development
- Client Development
- Content Marketing
- Corporate Communications
- Creative Media
- CRM
- Customer Experience and Loyalty
- Customer Insight
- Customer & Marketing Analytics
- Demand Marketing
- Digital Marketing
- Digital Transformation
- Digital Strategy
- Digital Business
- Digital & Brand
- eBusiness/eCommerce
- Global Marketing
- Interactive/Online
- Marketing Automation
- Marketing Analytics
- Marketing Communications
- Market Development
- Market Strategy
- Marketing
- SEM and SEO
- Social Media
- Strategic Planning

Leading and Winning in an Era of Unprecedented Change
Growth, Innovation and Leadership: A Frost & Sullivan Executive Summit

Who Will Participate
CEOs and other Growth Team Members, including:

- Business Development
- Corporate Strategy
- Customer Experience
- Innovation
- Investor
- Marketing
- Manufacturing
- Product Development
- R&D
- Strategic Intelligence
- Sales
- Technology
In Pursuit of An Effortless and Engaging Customer Experience
Customer Contact West: A Frost & Sullivan Executive MindXchange

Who Will Participate
Customer contact, customer experience, and operations executives seeking to lead their organization into the future and drive customer experience as a key strategic priority for the organization. Network with Vice Presidents, Directors and Senior Managers of:

- Call Centers
- Contact Centers
- Customer Analytics
- Customer Care
- Customer Contact
- Customer Experience
- Customer Satisfaction and Loyalty
- Customer Service
- Customer Strategy
- Customer Support
- Operations
- Quality Assurance

October 27 - 30, 2019
Hyatt Regency Huntington Beach Resort and Spa
Huntington Beach, California
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