ABILITA

DISRUPTIVE TECHNOLOGY

Our Industry has Changed

NEW CONSULTING OPPORTUNITIES

INDEPENDENT COMMUNICATIONS TECHNOLOGY EXPERTISE

ABILITA

What is Disruptive Technology …and why should I care about it?

- Harvard Business School professor Clayton M. Christensen coined the term **Disruptive Technology** in his 1997 best-selling book, “The Innovator's Dilemma”.
- He defines it as: A disruptive technology is one that displaces an established technology and shakes up the industry or a ground-breaking product that creates a completely new industry.

ABILITA

Christensen separates new technology into two categories: Sustaining and Disruptive.

1) Sustaining technology relies on incremental improvements to an already established technology.

2) Disruptive technology lacks refinement, often has performance problems because it is new, appeals to a limited audience and may not yet have a proven practical application.

- Case in point Alexander Graham Bell's "electrical speech machine," which we now call the telephone.

Other Examples of Disruptive Technology

- Fire: Allowed people to heat their living quarters, cook food, make tools. Changed human kind forever.
- The Wheel: Revolutionized how humans worked and transported goods.
- Television: Replaced Radio as mass media and literally changed the way people lived their lives.
- The personal computer (PC) displaced the typewriter and forever changed the way we work and communicate.

- Windows operating system
- Email / Cell phones / The laptop computer
- Smartphones: replaced cell phones, PDAs, pocket cameras, MP3 players, calculators and GPS devices. For some mobile users, smartphones even replaced laptops.
- Cloud computing has been a hugely disruptive technology in the business world, displacing many resources that would conventionally have been located in-house or provided as a traditionally hosted service.
- Social networking has had a major impact on the way we communicate and -- especially for personal use -- has disrupted telephone, email, instant messaging and event planning.

A BIT OF INDUSTRY TRIVIA

WHO INVENTED THE FIRST AUTOMATIC TELEPHONE SWITCH?

WHEN?

WHY?

ABILITA

- The first PBX was invented by Almon Brown Strowger, an undertaker.
- His business was losing clients to a competitor whose telephone-operator wife was redirecting everyone who called for Strowger.
- Motivated to remove the intermediary operator, he invented the first automatic telephone exchange in 1889 and received its patent in 1891.
- He formed the Strowger Automatic Telephone Exchange Company, and opened the first commercial exchange in La Porte, Indiana, November 3, 1892, with about 75 subscribers and capacity for 99.
- Strowger sold his patents to his associates in 1896 for $1,800 and sold his share in the Automatic Electric Company for $10,000 in 1898. His patents were subsequently sold to Bell Systems for $2.5M in 1916.

ABILITA

Lets Jump into the Modern Age

- What is the underlying wireless technology for Wi-Fi and Blue Tooth?
- When was it invented?
- Who Invented it?

ABILITA

- The underlying technology is based on a technology known as Spread Spectrum
- It was first patented in 1941 and was originally designed to be used by the Navy to provide remote radio controlled instructions to torpedoes and thus prevent the Germans from intercepting and redirecting them.
- Because of who invented it, the Navy disregarded its importance and filed it away for 20 years, when it was rediscovered and used by the Navy during the Cuban Missile Crisis.

ABILITA

- **Spread spectrum technology was invented by a glamorous Hollywood actress:**

- Hedwig Eva Maria Kiesler aka: **Hedy Lamarr**

Do companies adapt disruptive technologies?

- KPMG stated that “Technology has emerged as the only driver of transformation for a majority of U.S. CEOs.”
- In 2018, CEOs, buoyed by high confidence in the U.S. economy and their own growth prospects, ardently pursued growth through technology-driven disruption.
- Based on the CEO responses they see that the need for disruption has intensified even further.

What do you think will be the most influential technology of 2018?

5G 9.97% (106 votes)

Artificial Intelligence 42.33% (450 votes)

Mixed Reality 4.42% (47 votes)

Blockchain 24.55% (261 votes)

Internet of Things 15.9% (169 votes)

Other: 2.82% (30 votes)

Total Votes: **1,063**

Two main Drivers:

1) Cybersecurity:

- CEOs understand that full preparedness requires longer-term sustainability of cyber risk mitigation versus point security projects
- In other words, just providing passive or piecemeal security solutions are not adequate to protect their business assets or grow their company

2) Customer Experience (CX)

- Whether hype, created by and pushed by tech companies, or real demand created by customers, companies are scrabbling to provide that "Perfect
- CX also takes on new meaning and importance as countries start to enact laws to protect private data, and consumers are more protective of data they

Opportunities Start to Emerge

- In his book, Christensen points out that large corporations are designed to work with sustaining technologies.
- They excel at knowing their market, staying close to their customers, and having a mechanism in place to develop existing technology.
- Conversely, they have trouble capitalizing on the potential efficiencies, cost-savings, or new marketing opportunities created by low-margin disruptive technologies.
- Using real-world examples to illustrate his point, Christensen demonstrates how it is not unusual for a big corporation to dismiss the value of a disruptive technology because it does not reinforce current company goals, only to be blindsided as the technology matures, gains a larger audience and market share and threatens the status quo.

What are the current Disruptive Technologies?

- Rob Prevett, Co- Founder & CEO of Disruption, posted what he considered to be the most inflectional disruptive technologies and trends in 2018
- While it may be impossible to predict exactly which trends will become the most disruptive over the course of 2018 and beyond, there are a number of developments that have and will continue to shape business strategies.

AI (Artificial Intelligence)

- A major shift in business thinking has placed Artificial Intelligence at the very heart of business strategy.
- For us especially, AI is going to continue to emerge as a major area of development.
- 2017 saw tech giants including Google and Microsoft focus on an “AI first” strategy, leading the way for other major corporations to follow suit.
- Companies are demonstrating a willingness to use AI and related tools like machine learning to automate processes, reduce administrative tasks, and collect and organize data.
- Understanding vast amounts of information is vital in the age of mass data, and AI is proving to be a highly effective solution.

AI Decoded

- AI is often vilified in the media as the enemy of jobs.
- The truth is that like any new automation tool, it will displace some jobs, but creates other new job opportunities, even whole new industries.
- Many businesses have undergone a transformation in mentalities, viewing AI as enhancing rather than threatening the human workforce.

Other Disruptive Trends:

- Personalization & Customization
- Personal data value platforms
- Huge growth in the As-a-Service model
- Voice based virtual assistants become ubiquitous
- Industry 4.0 and the factory of the future
- Blockchain comes of age

Other Disruptive Trends:

- Prescriptive Analytics
- Convergence
- Commercial drones and UAVs
- Growing interest in digital twins
- Voice based virtual assistants become ubiquitous
- Increased cross sector innovation

Personalization and Customization

- In consumer goods, life sciences, aviation and financial services businesses will continue to personalize products and services to satisfy individual consumer needs without unduly increasing costs or waste.
- Personalization has become a key customer requirement that companies need to offer in order to remain competitive.

ABILITA

Personal data value platforms

- Personal data has become an economic asset.
- Personal data value platforms will help to inform individuals about the value of their data, driving a wave of new products and services aimed at helping consumers to take ownership of their personal information.
- The introduction of legislation like GDPR will also contribute to this goal as organizations will have to comply with strict data protection rules.

ABILITA

Huge growth in the As-a-Service model

- The growth of the As-a-Service business model has resulted from changes in both corporate and consumer needs.
- Between 2016 and 2020, the global XaaS (anything as-a-service) market is forecasted to grow by 40 per cent each year.
- For businesses, as-a-service solutions cut costs by simplifying IT infrastructure.

Voice based virtual assistants become ubiquitous

- The wide uptake of home based and virtual assistants like Alexa and Google Home have built confidence in conversational interfaces, familiarizing consumers with a seamless way of interacting with tech.
- Amazon and Google have taken prime positions between brand and customer, capitalizing on conversational convenience.
- The further adoption of this technology will enhance personalized advertising and sales, creating a direct link between company and consumer.

Industry 4.0

- Industry 4.0 aka the Fourth Industrial Revolution promises a more connected world in which machines carry out mundane tasks.
- The wider use of automated processes powered by AI, advanced robotics, and IoT connectivity will contribute to realizing the ambitions of Industry 4.0.
- Many companies, such as Amazon, have taken tangible steps to implement this in using various automated response applications and physical applications such as robots & drones.
- The installation of smart sensors (IOT)and the application of data analytics will help define the factory of the future.

Blockchain comes of age

- Although originally developed for Bit Coin, enterprises across a wide range of business sectors are already experimenting with blockchain technology to establish trust networks, improve transparency, and reduce friction and costs.
- Industrial applications will expand, encompassing the obvious financial uses as well as innovative solutions for energy, trade, marketing, healthcare, security and more.
- In our industry companies are using Block Chain to secure data, ensure it authenticity and provide secure transactional exchanges.

Prescriptive Analytics

- The emergence of smart data discovery capabilities, machine learning, and the automation of the entire analytics workflow is enabling organizations to handle vast amounts of information.
- Through machine learning techniques and big data analysis, companies can unintentionally collect unstructured data that is not readily available. This is called dark data and it is inside every email, text, Word document, invoice and contract. From a business perspective, data generally tends to positively inform decision making. However, dark data can be more of a hindrance than a help.
- Using this data, organizations are able to predict market developments bringing greater depth to prognostics.
- Prescriptive analytics goes beyond knowing, providing recommended actions based on prior outcomes. A recommended course of action to achieve a specific outcome.

Convergence

- As emerging technology and new business models transform sectors, the lines are blurring between what were previously seen as distinctly different industries.
- The convergence of industries opens up huge opportunities for organizations to evolve, offering new products and services to their customer bases.
- Automotive companies, for example, are investing in ride sharing apps as they look to reinvent themselves as mobility solutions, and banks are working with FinTechs to evolve alongside consumer needs.

ABILITA

Commercial drones and UAVs

- Moving beyond the hobbyist and warfare applications, commercial drone use has begun to grow across a wide range of industry sectors.
- Drones are a relatively cost effective solution for surveying physical processes, whether they are happening on a construction site, in a field, or to aid security control in urban centers.
- No longer a novelty, drone application is set to balloon – provided that suitable regulations can be made.

Growing interest in digital twins

- A digital twin is a simulation model that updates and changes in accordance with real world assets to enable better decision making and improve understanding of the state of systems.
- A digital twin could be used to simulate a piece of complex machinery, for example, predicting how it will respond in certain scenarios and how best to optimize performance.
- Digital twins will provide businesses with the ability to respond to changes, improve operations and add value to the Internet of Things.

Spatial computing augments the real world

- We are on the cusp of a major shift in how we interact with the real world, with our smartphone or smart glasses as our gateway and guide.
- Advances in Augmented and Mixed Reality technologies will see an explosion of commercial applications way beyond entertainment.
- Notable steps by major companies – such as MagicLeap's long awaited headset release and Apple's commitment to mobile AR – are opening up previously unimaginable opportunities for corporations.

Increased cross sector innovation

- Convergence, collaboration and the open source movement have all contributed to the encouragement of cross sector innovation.
- Companies are looking to businesses in other industries for insights and expertise that can enhance their own products and services.
- AgriTech and FinTech, for instance, are developing alongside each other to tackle financial issues within farming.
- As cross sector innovation becomes the norm, we will see the greater application of successful strategies and business models from one industry to another.

ABILITA

Practical Applications

- I spoke with Randy Carter, a next generation product marketing architect at Genesys, and Steve Forcum who is underbilled as an Avaya systems engineer, about how their companies are using "Disruptive Technologies" and where they may see possibilities for consultants.

Randy Carter - Genesys

Our conversation touched on just about everything but much of it around AI. Genesys is very heavily invested in AI on many fronts including:

- Security: Genesys is using AI in multiple systems: it's a key part of our approaches for detecting attacks and monitoring behaviors.
- Machine Learning: All our cloud approaches use Machine Learning
- Good cloud systems don't use or trust traditional data indexing (such as SQL).
- Instead we re-index everything with MapReduce (Hadoop, ElasticSearch).
- We find many relationships in data that customers did not map and graph them for use.
- We convert noisy data to standard ISO formats (example: phone numbers). We can get parallel with updates and handle large data sets.

Event-based Architecture:

- Key to scaling big cloud systems without collisions: some consider this to be AI-related.
- All requests, activity, API-API work goes into a river of events.
- API to add Listeners for specific events - that triggers work.
- This is also where you set time-outs for tasks started with no response so you can recover before a human notices!
- Events for reporting are found by listeners and added to separate reports databases
- All native events go into deep storage (very compact notation, plus you can rewind/replay history later if needed).

Personalization

- Customer Journey (history + context across all channels and integrated systems).
- Expanding to include relationships around a customer (households for consumers, business offices for B2B) to calculate offers.
- New! Altocloud - analysis of behaviors across website, derives patterns and can make reliable predictions of next steps for individuals (we're using it to narrow AI context decisions, and get agent choices front and center for support).
- New! Predictive Routing - when a customer contact is incoming we can calculate the best match agent or system available now based on satisfaction and other data, and direct their call to the best fit.

5G

For Genesys, 5G is more of a transport technology for Mobile Apps and activity

- Yes, Genesys has a cloud-based hub for connecting to many mobile message platforms.
- Working on an SDK to add chat from PureCloud iOS/Android Apps into customer apps for support conversations.
- Seeing big demand by consumers for async behaviors. Customers like using slices of “in-between” time to go back and forth to solve issues instead of finding 20 minutes for a phone call. AI amplifies this technology - you need AI to support these conversations with gaps with an ability to pass the interactions to a human when needed (Blended AI)

ABILITA

Blockchain

- Yes - we're evaluating and have some pilot projects.
- From Dennis: would be good to validate household members, source/audit for origin of offers)

ABILITA

What's next:

Platforms for AIs

Genesys has been working on AIs for a few years now and has seen a need for a common platform to connect AI and data and interactions, call "Kate".

1) From building their own AI features they know that AI data is not the same as legacy data (i.e. SQL data)
2) AIs are not born smart; they need context to do useful work and recognize customer intents
3) Kate leverages all the data available through Genesys
4) Customer interactions

What's next:

5) Merged data from other systems

6) Events from other systems

7) Existing agent workflows and automation

8) Knowledge bases and agent scripting

9) Kate can connect AIs to all of the channels already used by a customer for support

10) Great AIs work in parallel - change will continue and you need a system that can scale and easily connect to other systems

Steve Forcum: Avaya

Steve masquerades as an Avaya systems engineer but don't let that title fool you. He is a very humble but brilliant strategist and futurist.

- Steve also thinks AI is the most active of the technologies in our space & many systems going forward will be developed using AI.
- One of its biggest applications will be in the Contact Center.
- Uses we haven't even imagined or thought of yet
- Thinks it will replace WebRTC, Chat, SMS, IVRs
- Will help agents become more effective and efficient by providing almost real time scripting resulting in faster call resolution, allowing less agents to handle more calls & reduce operating costs
- Will not replace humans as the final decision makers

Blockchain/ 5G/SD-WAN

- Avaya is developing Blockchain applications that will verify who the user is, authenticate and secure data transactions and track entire customer journey.
- 5G in the short term will improve communications, and CX.
- As a whole it is too futuristic to predict its impact, where it may go and how it will revolutionize communications beyond what we can think of today.
- SD-Wan will in all likelihood get swallowed up as offered as part of a bundled service from carrier/cloud service providers.
- Displace MPLS as a service
- Wouldn't suggest in investing in SD-Wan hardware.

ABILITA

Conclusions

- Our industry drivers have changed, and so are our engagement opportunities. We recognized this several years ago when we changed our name from the STC to the SCTC.
- I think for us to remain relevant as Communications Technology Consultants, we will need to be able to identify new technology trends, and learn to adapt our practices to provide guidance to clients.
- With regard to finding new consulting opportunities, while perhaps not as clear cut as billing optimizations, or PBX implementations, there is a whole new frontier of untouched opportunities. They are spread out over many technologies, applications and use cases.

ABILITA

Conclusions

- Remember; Disruptive technology is not proven. Our clients will be looking for help and guidance in evaluating which technologies can help them grow their business, stay current, and or hopefully stay ahead of the technology curve.
- One thing that is certain is that our clients are going to need expert help and guidance more then ever before, and we are going to have to be prepared to deliver !

Additional Tips

- The purpose of this presentation was to help to identify current Disruptive Technology trends, show where our industry is heading, and what our clients will be facing in making future technology decisions.
- This may mean stepping out of our comfort zones in order to provide strategic guidance and technology recommendations to our clients.
- Fortunately for us, we have a good head start on learning about and understanding how these technologies can help our clients.

Additional Tips

There are several resources available to us:

- Become more active in SCTC listserve discussions
- Become better acquainted with your fellow SCTC members, and look to partner on projects in which someone else may have more experience or knowledge
- Become more active in attending vendor briefings, and attending industry shows
- Subscribe to newsletters
- Be more proactive in researching technology trends
- Become a subject matter expert