

ON DIGITAL

Mark J. Barrenechea

ON DIGITAL

A Small Book on a BIG Idea

Mark J. Barrenechea
OpenText President & CEO

Barrenechea, Mark J.

ON DIGITAL

First Printing, November 2015

Printed in Canada

First Edition

ISBN

978-0-9936047-5-1

Published by

Open Text Corporation

275 Frank Tompa Drive

Waterloo, Ontario, Canada

N2L 0A1

(519) 888-7111

info@opentext.com

www.opentext.com

Copyright ©2015 Open Text Corporation. OpenText is a trademark or registered trademark of Open Text SA and/or Open Text ULC. The list of trademarks is not exhaustive of other trademarks, registered trademarks, product names, company names, brands and service names mentioned herein and are the property of Open Text SA or other respective owners. All rights reserved. For more information, visit: http://www.opentext.com/2/global/site-copyright.html_SKU.



Mark J. Barrenechea

Mark J. Barrenechea joined OpenText™ (NASDAQ: OTEX, TSX: OTC) as President and Chief Executive Officer (CEO) in January 2012 and also serves as a member of the board. Under Mr. Barrenechea's direction, the company has grown both organically and through strategic acquisitions into a \$1.9B company. Through its commitment to innovation and customer-centricity, OpenText has successfully realigned its products to transform itself into a leader in the Enterprise Information Management (EIM) market.

Before joining OpenText, Mr. Barrenechea was President and CEO of Silicon Graphics International Corporation (SGI), where he also served as a member of the board. During his time at SGI, he led the company's strategy and execution. Prior to SGI, Mr. Barrenechea served as Executive Vice President and CTO for CA, Inc. (CA), (formerly Computer Associates International, Inc.) and as a member of the executive management team. Mr. Barrenechea was also Senior Vice President of Applications Development at Oracle Corporation, responsible for managing a multi-thousand member global team. He has also held a number of other positions, including Vice President of Development at Scopus, a software applications company, and Vice President of Development at Tesseract, where he was responsible for reshaping the company's line of human capital management software. He holds a Bachelor of Science degree in Computer Science from Saint Michael's College. Mr. Barrenechea currently serves as a member of the Board and Audit Committee of Dick's Sporting Goods.

Mr. Barrenechea has authored several books about the evolution of the enterprise software industry, including *Digital: Disrupt or Die*, *e-Government or Out of Government*, *Enterprise Information Management: The Next Generation of Enterprise Software*, *eBusiness or Out of Business*, and *Software Rules: How the Next Generation of Enterprise Applications Will Increase Strategic Effectiveness*.

CONTENTS

1. Digital or Die.....	1
2. Hyperscale.....	6
3. Disruption.....	9
4. The Subscription Economy.....	13
5. New Barbarians.....	16
6. It Only Takes a Finger.....	20
7. The Customer Journey.....	23
8. Sold? But I Never Started the Sales Cycle!.....	26
9. Innovation Redefined.....	30
10. It is a Network, Not a Chain.....	34
11. The Internet of Things.....	37
12. A New Asset Class Emerges. Data.....	41
13. The Experience of Community.....	45
14. Trust and Security.....	49
15. Experimentation at Scale.....	52
16. New Digital Foundation.....	55
17. The Digital Mindset.....	58

#1

Digital or Die

The Hernán Cortés conquest of the Aztec Empire was not going well in 1519. After disease, famine, failed alliances, and lack of advancement, his troops only saw one way forward—and that was to sail back home. Before they could, one fateful evening, Cortés burned his fleet and gave his troops a simple choice: Conquest or Die.

It was true for Cortés, and it is true for Business Leaders today. There is only one path forward. Today's choice is Digital or Die. This is not hyperbole, it is reality. Let me explain.

There is a nexus of forces that are converging to create the greatest business disruption of modern times. New winners and new losers will be defined. In my view, five of out ten incumbents will be dethroned because of their lack of ability to adapt.

What is this nexus of forces?

Three billion citizens of the world are attached to a global high-speed, real-time network: the Internet. I would go further than to say attached. We live on it. You turn off the Internet, there is global chaos: ATMs stop working, senior citizens cannot cash checks, trains stop running, armies cannot fight, modern life stops.

Mobility is ubiquitous and the experience is as good as or better than being tethered. There are over 7.5 billion mobile connections worldwide.¹

There are NO barriers to entry for new ideas, except the idea itself. No barriers. Hardware can be rented and will soon be free. Software stacks are free. And the technical requirements of “coding”, a curriculum once opined on by the dark-arts professor of Hogwarts, is now democratized. The development of new products and services, from idea to product to global distribution, has never been faster, easier, or cheaper.

The workplace has changed. Over the next few years, Millennials will make up 50% of the workforce.² Millennials do not follow traditional social structures. They expect highly personalized products and services, they want immediacy, and they are omnichannel. They learned computing using one finger. They want it now and will go to the provider or employer who can deliver it now.

Mindsets have changed. Massive capital is flowing to businesses that are unproven and do not generate a profit. The theory being, of course, scale insanely fast, capture massive subscriber bases, and do not run out of cash (do not worry about profits). Profit is a four-letter word for disruptors. For incumbents, it is the golden mean.

Business models are changing: from products to services, from one-time transactions to subscription fees, from delivery on-premises to delivery in the Cloud. It is fair to say we have entered the Subscription Economy.

Digitalization changes everything. The way we think, who we compete against, how we innovate, how we experiment, the customer journey, our supply chains, the workplace, our pace and cadence.

The importance of this topic, “On Digital”, cannot be overlooked. As a business leader, it is top of mind for me. I have thought long and hard about it, and was inspired to capture these thoughts in this “small book on a BIG idea”.

Together, throughout this book, we will explore a collection of topics on digital. We can learn a lot from those companies who are emerging as Digital Leaders, but one differentiator that stands out for me is Hyperscale. Could you ever imagine having a billion subscribers? Their services are intentionally disruptive, both in the marketplace and via their business model. When you look at the Barbarians at the Gate, they are Millennials, and this is important. We need to understand the customer, and in this case the customer and barbarian are one and the same.

Peter Drucker's five basic questions to ask our organizations still hold true in the age of Digitalization:³

1. What is our mission?
2. Who is the customer?
3. What does the customer value?
4. What results do we expect?
5. What is our plan?

This is a journey revisited, and we will explore the Customer Journey, the Sales Funnel (that is not a funnel), Innovation Redefined and the Supply Network (it is not a chain).

What emerges from this is a new asset class, called Data. And oh the possibilities on arriving at this place to Experiment at Scale. Instantly.

Success relies on Trust and Security. In the old world, one disgruntled customer would tell five. In the digital world, one bad experience leads to 1,000 shares—and lost customers, broken trust, and deflated valuation. The Experience of Community is critical.

This all requires a New Digital Foundation of technologies.

Further, one must have the Digital Mindset. And mindsets are hard to change. It takes an event, sometimes a dramatic one. We all know about IQ and EQ. How about DQ: A digital quotient? The word digital implies Zeros and Ones, On and Off toggles. But a DQ is “to the degree”. Where are you and how can you measure your digital journey? Perhaps by a digital quotient.

Let me end where I began, as if we come to this place anew. It is Conquest or Die. It is Digital or Die. Standing still is always the riskiest action to take—you are an easy target. Change is always the safer path.

#2

Hyperscale

Digital is a “bit” grab, that is, an Internet land grab. The theory being that the largest survive: Google, Facebook, Netflix, Apple, Alibaba, Tencent, Uber, and Airbnb. Scale insanely fast, build exactly what customers want, hire the best people, and don’t run out of money! What do they all have in common? Hyperscale.

Do a search on “hyperscale”. You will get a definition (on Wikipedia) along these lines: “Hyperscale is the ability of an architecture to scale appropriately as increased demand is added to the system. This typically involves the ability to seamlessly provision and add computers, memory, networking, and storage resources to a given node or set of nodes that make up a larger computing environment”⁴

This may all be well and true, but friends DO NOT let friends BUY data centers.

Hyperscale is an outcome.

It is about dreaming big, and delivering big, and imagining the reach of your business at new scale. It is digital scale in a gravity-free Internet. You can be assured a competitor of yours is in a conference room as you read this attempting to out-scale you. Some companies are scaling so large, they are pushing the edges of conventional thinking: Twitter with 500 million tweets in 150 countries daily⁵; Google with around 4 billion searches a day in 200 countries⁶; Alibaba with 254 million orders in one day⁷; and Facebook and China Mobile with about 1 billion subscribers each.⁸

Cars are producing 1.3 gigabytes of data every hour.⁹

Boeing 787s generate a terabyte of data every day.¹⁰ With 10,000 flights a day, it only takes a couple of years to get to a zettabyte.

You would not be able to process these amounts of data with today’s technology.

And imagine the possibilities (and warnings) when a company flexes their hyperscale muscle.

Heck, even my refrigerator is trying to talk to me.

Digitalization is redefining scale.

Scale requires a network effect for competitiveness and differentiation.

Scale creates captive ecosystems.

Scale creates barriers for competitors.

Will Digital redefine “bigger vs. better”? It will for those who achieve hyperscale.

What can we learn from this?

Leaders need to define what scale means for their business and learn from the early leaders that are smashing through conventional thinking about scale. Seek out the change agents in your business. If you cannot find them, hire them.

Or go buy a company to inject new DNA into your business.

#3

Disruption

A common thread of Digital Leaders is their ability to disrupt an incumbent, a market, or a business model. Compared to “web” disruption, digital disruption has 10x the innovators, it is 1/10th the cost, and 100x the power. Digital advances our thinking on competitive theory. To compete and win, one must disrupt, not just differentiate.

The Internet tore down and rebuilt entire value chains. Products and services could be distributed more cheaply with greater reach. Barriers to entry in many markets were obliterated. And the Internet was the foundation and early experience that has enabled digitalization, and what I like to say, is a new way to work.

Today's digital disruptors are using technology to disintermediate entire industries and unseat corporate giants. New nomenclature has emerged to describe this transformational process. In the Internet Era, we talked about being "amazoned". In the Digital Era, we are talking about being "uberred".

Uber has:

1. Tapped into labor at mass scale
2. Ripped down a hundred year history of "medallion" value
3. Exposed and cured the inadequacies and inefficiencies of a major incumbent
4. Made employee and employer one (though Uber claims it has no employees, we will see)
5. Demonstrated the most perfect example of matching supply to demand that I have ever seen
6. Operated a business in which cash is not used

Every industry is vulnerable. Every incumbent is vulnerable.

Let me share a story. I have raised chickens in the past. They are fun. When you let a chicken out in the yard, and you chase them to get them back into the pen, the chicken will sometimes stick its head in the grass or a shrub, with its rear sticking out in plain sight. The chicken thinks it is hiding from you. Is that how you and your organization feel right now?

A common thread to digital disruption is that the middleman is gone, in every industry.

The average age of an Insurance Agent in the U.S. is 59.¹¹ The middleman will be gone in Insurance over the next five years.

Movies are direct.

Music is direct.

Insurance is direct.

Logistics and supply chains are massively changing. Amazon is running algorithms on your buying behaviors. If you buy an outdoor table online, they are shipping an umbrella to a fulfillment center close by for same-day delivery.

Uber is ultimately a logistics business.

Salesforce redefined the partner ecosystem in software and services. Why do you need a middleman when you are selling a subscription service?

Simple answer: you do not.

These and other disruptors are part of a digital ecosystem that's growing. With more individuals and organizations interacting and sharing ideas and information, the pace of innovation is increasing exponentially. The formula is 10x the innovators at 1/10th of the cost and 100x the power.¹²

Today's digital disruption is faster, cheaper, and stronger than earlier disruptions introduced by the Web in the nineties. This gives digital disruption an even greater impact. Speed of development is faster. The magnitude of innovation, greater.

Whether you're ready or not, the next wave of disruption is here.

You've arrived at a fork in the road.

#4

The Subscription Economy

If you had any doubt, we are officially in The Subscription Economy. The model pioneered by magazines is now everywhere. Customers want the choice: to own the asset or have access to it. A subscription model is no longer optional. Shifting to a subscription model requires a Digital Mindset and different approaches to management, marketing, and money. The Subscription Economy is now a mainstream part of our lives.

Pre-digital, subscription was for periodicals, newspapers, cars, and book-of-the-month clubs. Today, it is a required part of businesses. If you do not have a subscription model in your business, you need to—and it is not easy to do.

Every business must have a subscription model. Millennials expect it. Your investors expect it.

There is a class of users that prefers to own an asset. Is it generational? In regulated industries? Is it for strategic or balance sheet reasons? Whatever it is, make sure your selection criteria are clear.

All others prefer to have access to the asset.

We have officially reached the tipping point. Access is the preferred method and thus we are in the “The Subscription Economy”.

Subscription models challenge the incumbent or can create a competitive barrier. Netflix challenged Blockbuster and continues to challenge the entertainment industry in Hollywood. Salesforce challenges Oracle and SAP. Apple challenges music and the mobile/telco industries. You can now subscribe to an iPhone via a new Apple service.

Heck, you can even subscribe to an IBM Mainframe today.

One of the prizes of subscription is loyalty.

But buyer beware. Subscription models are usually more expensive in the long term. Do your math. If you intend to subscribe for the long term, it can be two to three times more expensive than purchasing outright.

There are also challenges in making your products or services available as a subscription. You have to move from one-time transactions to multiple transactions. You also move from receiving value up front to receiving a lifetime of value. And the greatest determinant to long-term value and loyalty is rapid and continuous usage of your service.

Financially, you spread your revenue and cash flow over time and you have to survive this “crossing of the desert”. If you are simply substituting a dollar of upfront revenue for a dollar over a period of time, say three years, this is the most painful of all crossings.

The best way to cross the desert without perishing is to identify new areas of revenue to reduce the distance you have to travel to break even.

Successful transitions to the Subscription Economy are well thought out, financially planned through, well communicated, and capture new spend.

#5

New Barbarians

Alaric led the Visigoths in the 410 A.D. sacking of Rome. “Why ruin a good thing?” I say. Digitalization is going to sack 50% of today’s incumbents in the next five years. They are called the Millennials and they are led by immediacy. Let us get to know the New Barbarians at the Gate. For history repeats itself.

There is a large and powerful group hammering at the gates. Unlike Alaric and his barbarians, they aren't demanding gold or silver, and they aren't looking to take over Rome. They are, however, disruptors. They are taking over the workplace and looking to change the world. They have usurped the Baby Boomers and GenXers as the largest demographic in the workplace¹³ and now account for over 25% of the world's population.¹⁴

They are Millennials. And, at almost 2 billion strong¹⁵, they are a force to be reckoned with.

Millennials are both creator and consumer, they are employee, employer, and user (think Uber).

Digital is second nature to Millennials and plays a significant part in their lives. They believe new technology makes life easier and brings people closer together. Millennials are mobile. They are hyper-connected and always on.

Based on their love of all things Digital, Millennials are introducing a whole new value system to the workplace. They eschew traditional hierarchical structures, prefer working in ways that are open, flexible and social, and are introducing new digital technologies into the enterprise (even if it means circumventing IT policy). They are multicultural, global, and believe in a work-life balance.

This demographic will soon make up 50% of the global workforce. To accommodate their needs, corporate cultures will have to create an environment that caters to them (flex hours, remote access, BYOD). And if their demands are not met, this band of talented nomads will simply move on.

Their influence extends beyond the enterprise. Millennials are making demands in the marketplace too. Being hyper-connected has created an “anytime, anywhere” expectation. As consumers, convenience and instant gratification are key—otherwise they’ll find another brand that can satisfy their expectations.

Millennials are informed. They are a generation of researchers. They consult blogs, social media, and peer reviews before making a purchase and have an integrated, omni-channel approach to shopping.

Millennials are communicators. After purchase, they post reviews and rate products online. They are brand ambassadors and alpha influencers. They tell brands what they want and even help define the brand itself through open dialogue using social media and other channels.

Millennials value authenticity. They want to be able to feel good about what they buy because brands are a reflection of their values.

They are promoters of technology and drivers of innovation. You can gain their loyalty by providing an engaging dialogue that empowers them to interact with and influence your brand.

Armed with new technology, influential opinions, and wallet power, Millennials have the means to supplant incumbents. If you fall short of meeting expectations—if you fail to deliver relevant and authentic digital experiences, provide flexible work environments, and adopt open communication—you will not survive the invasion.

These are the New Barbarians at the Gate and they are exerting their influence. They are young. They are powerful. They are passionate. And they will not be ignored. They are the future.

The Millennials are here and will sack the gates.

#6

It Only Takes a Finger

It has the power to create, it can also be your flying fickle finger of fate. To disrupt at scale, it needs to be available everywhere, on all devices, always on, with a wildly compelling user experience. Wildly compelling. The days of training, manuals, demos, and multiple clicks are gone. If you cannot download and go, you are in the Land of Luddites. Remember, your next generation of users has been reared on “it only takes a finger” to use a computer.

As the little girl in Poltergeist said, “They’re here!”

Touch screen computers have been around for nearly ten years.

My niece recently went up to my TV and said the “swipe” wasn’t working. When I read her a children’s book, she asked, “What’s a radio?”

New college graduates have been completely raised in the Internet Era.

In ten years, college graduates will have been raised on “one finger”.

Digital engagement isn’t optional, it’s required. And it has to go beyond easy, and be intuitive. When a five year old goes up to a TV to swipe it, that’s intuitive.

Consumers have grown accustomed to sending messages, downloading music, opening a bank account, and even purchasing a house—all with just one finger.

In the digital world, they have infinite choices at their fingertips. No longer at the mercy of the local department store or car dealership, customers can browse, compare, research, and purchase without setting foot into a physical location—at any time, from anywhere. The digital world is always on.

Decisions are made quickly, but they are informed. Gratification is immediate.

This means that you have mere seconds to captivate a customer. And you have to demonstrate that you “know” them in those few seconds. So that first impression (which can be your only and your last) is more important than ever.

Customers are growing increasingly savvy and fickle, and their loyalty must be earned. Every unnecessary click or irrelevant message aggravates, pushing your customer into the welcoming arms of your competitor.

The Digital Leaders know this. That's why they're already innovating and creating wildly compelling omni-channel experiences while the Laggards drag their multi-channel heels, and the Luddites bury their single-channel heads in the sand, content with being generic, outdated, and, ultimately, disengaging.

The experience has to be seamless, consistent, personal, and highly engaging. To produce these, you will have to digitalize your customer journeys and consolidate your information. This starts behind the firewall and extends outside the enterprise across the supply network. Only then will you be able to predict what content will positively influence your customers, respond in real time, and deliver highly curated and satisfying experiences.

Remember, your customers have the world in the palm of their hand, on their laptops or their mobile devices. If you don't impress, it only takes a finger... to unlike, unsubscribe, post a bad review, or buy now—from your competitor.

The finger has the power to create—it can also be your flying fickle finger of fate.

#7

The Customer Journey

In the sharp mountains of Digital, your Sherpa is always “The Customer Journey”. Never lose your guide and never follow false profits (ha!). Your Digital Sherpa is defining and creating a simple and complete holistic customer journey. Keep it front and center for your organization.

Peter Drucker was right when he said, “The purpose of a business is to create and keep a customer”.¹⁶ This is the goal of every business: to create and keep customers. This principle survives Digital.

Digital helps you keep this focus by giving you more ways to know your customer better.

Know Your Customer isn't just a regulatory obligation, it's a key competitive differentiator. The best way to satisfy your customer is to truly understand them. You can do this by mapping your customer journeys.

Customer journeys are made up of every point of contact a customer has with your brand. And now these journeys are Digital. Customers are leaving digital footprints. The transactions, videos, peer reviews on social media sites, blog posts, web forms, call center discussions, point-of-sale promotions, and devices people use on their purchasing journeys—these are your navigation points on the digital customer journey.

Data accumulates (and becomes more valuable) at every intersection. This detritus is pure gold. It is key to differentiating products and services because it can be examined and analyzed to uncover insights into buyer behavior—to reveal wants, needs, and motives at each step in the journey.

Your Digital Sherpa is your guide in making sure that the experience is targeted and consistent, no matter what channels your customers are using.

With Digital, there is greater potential to learn more about your customers. The more that people consume online, the more touchpoints they use and the more information they share. Digital consumers are very transparent about their brand preferences, experiences, and sentiments.

Your Digital Sherpa will help you find moments of truth.

Good maps are based on accurate data. Accurate data gives you a 360-degree view of each customer. Once you understand what motivates your customer at each step in a journey, you can more effectively satisfy their expectations, in their moment of need.

Moments of truth can be tied back to actions that drive processes. When the journey is deconstructed and digitalized, the delivery of information or goods can be customized, automated, and real time.

The journey has to be smooth and the experience consistently great.

If you ignore your Digital Sherpa, the journey can be treacherous. One mistake, and you lose your way, or worse, you lose a customer. But chances are good the customer will come back, and when they resume their journey, you have to be ready for them. That's why it's important to map out and connect each navigation point, so you can anticipate your customer's needs at each step along the way.

Your Digital Sherpa helps you equip your customers with the right tools at the right time. You don't give a climber a 50-foot rope on a 100-foot cliff. And you wouldn't expect a Millennial to shop from a mailbox.

#8

Sold? But I Never Started the Sales Cycle!

Bingo. That is correct. Consumers of digital do not want a sales rep. They do not need a sales call, they need a compelling digital experience to take them from need to sold—regardless of the complexity of the product. Stores, configurators, demos, videos, testimonials, pricing... all self-service... all without a direct sales force. In the digital enterprise, purchasers are either 100% sold self-service or 90% sold by the time they call a sales rep.

Digitalization is the most direct route to market.

Consumers expect highly personalized products and services, delivered in real time. Instant gratification means no more waiting in long lines, no more trudging through shopping malls, no more cash purchases. Even tangible goods are fading into services delivered in the Cloud. But these are generalizations, and consumers don't want generalizations.

Customers expect customized, targeted, and immediate experiences.

In the Subscription Economy, the customer sits in the driver seat, creating ecosystems around products and services, driving distribution across networks (not chains), co-creating and crowdsourcing, and forcing product development and service availability to be “outside the box”.

Consumers have power. They navigate their own sales cycle in a digital, self-service environment. The sales funnel is being replaced by an orbital model, based on multiple interactions that create a lifetime of value. The focus is on nurturing long-term relationships with loyal customers and community members rather than funneling leads through the buying cycle.

Why would the process be linear when customers are building ecosystems?

The funnel metaphor is all wrong. It's not about quantity—or the more leads you feed into the funnel, the more deals you'll close. It's a more complex process than that and it's based on multiple interactions taking place across multiple touchpoints and channels.

The purchasing journey isn't a straight line anymore. Consumers jump from videos to reviews to success stories to free trials. They're not necessarily there to buy, they're also there to learn. So much so, that it's only once they've done their research and are ready to buy that they reach out to a sales rep for a price quote.

Customers want to try before they buy. And do so on their own.

Big Box retailers have attracted aisle browsers, where they look at goods in the store and immediately surf the Web for a better price.

No matter where they are in their purchasing journey (online or in a retail store), it's your job to support them by giving them what they need in a consistently branded experience. If customers leave the journey partway through, they have to be able to pick up where they left off when they return—it's all part of a seamless experience.

While the customer is in the driver seat, you are a passenger on the journey. A co-creator that makes sure all elements are contributing to make it the best experience possible. You control the interactions that your customers will experience. You can find out what platforms they're using and reach out to them there. If they're on Twitter, start tweeting. If they're on Facebook, build a community there.

In a pull-model of communications, when they ask for information, make sure you have it ready. Or anticipate their needs and send them recommendations preemptively. With digital consumers, you have a captive online audience that you can connect with directly.

Sales in the funnel are aggregate; whereas using the orbital metaphor, sales are individualized or customized, with the customer at the hub. This means that each lead has to be individually managed throughout the entire customer lifecycle. The good news is, communities of buyers are the people you can cross-sell and upsell to. To do this effectively, your programs must be adaptive and deft, sales and marketing tactics have to be constantly measured and refined.

Forget the funnel.

#9

Innovation Redefined

Digital radically redefines how we innovate, regardless of industry. How do we collect requirements? What products and services are really being used? Delivering new products and services happens instantly, globally, and across all users. Feedback is immediate. Waterfalls and Mythical Man-Months are antiquated tools. Ideas are presented with working products and users. Imagine experimenting at scale with 100 million subscribers.

It used to be that a startup would raise capital, hire employees, and purchase physical equipment all to produce version 1 of a product. And this process would take years. While this worked ten years ago, in a digital world, it would end in catastrophic failure.

Today, this process involves rented computers. Services are built fast and deployed globally using cloud services. A sales force often isn't required for years (if at all). Customers are able to take simultaneous advantage of the latest version of subscription-based services (which are centrally updated on a weekly basis). Technology stacks are free. And feedback is immediate via social apps and sensors built right into the software.

Innovation is redefined, with a whole new set of rules:

- Scale fast
- Build exactly what customers want
- Functional specifications are dead
- Storyboards are in children's books
- New ideas are presented with a working service and live customers

Innovation is about turning ideas into outrageously successful products and services. And that act of creation—from idea to concept to completion—is insanely hard. And to complicate things, it has to happen insanely fast.

When you think about it, innovation is a race. There's no time for Waterfall methods and Mythical Man-Months, and Agile just isn't agile enough. Sprints are becoming hyper-connected dashes. Innovation cycles are faster, compressed, and even approach the spontaneous.

Would you ever turn your business strategy and data over to a crowd in the hopes that they could help you solve a business problem? It sounds pretty risky. Data, after all, is currency, and a good strategy can be very valuable.

But companies are crowdsourcing to innovate new products and services and solving complex business problems. Facebook, NASA, GE, and Amazon have submitted their business challenges in the form of open competitions with rewards for the winning innovation. They know that in order to win, they have to think outside of the box—and even outside of the enterprise—to partner and innovate. And this includes partnering with consumers to co-create.

It's time to get creative about being creative.

In the past, technology has been fundamental in helping organizations reduce costs and increase productivity. Today, technology is transforming the very nature of business, making it more fluid, social, global, accelerated, risky, and competitive. And this is allowing startups to disrupt the incumbents.

It took the human species over 150,000 years to move from cave drawings to the printing press, a few more centuries to get to the steam engine, and two decades for the Internet Revolution to get up and running. When you look back in time, it becomes apparent that the speed at which we are innovating is constantly increasing.

New digital technologies are contributing to the accelerated pace of innovation. It's estimated that by 2020 the number of mobile phones will surpass the human population¹⁷—which is phenomenal when you consider that smartphones and tablets haven't even been in wide circulation for a decade. The next wave of innovation will be based on a mobile, hyper-connected world.

If we can learn anything from this progression, it's that the pace of innovation is quickening. Which means that, in order for organizations to thrive in the digital world, they must not only operate at the speed of digital, they must innovate at the speed of digital too.

#10

It is a Network, Not a Chain

A chain is a series of connected links: slow and vulnerable. A network is a multi-path set of links: fast and reliable. Transactions need to move at the speed of digital. It is a network, not a chain. The Digital Experience requires a network, trading partners, extreme automation, and deep visibility across all your key functions, from transactions and cash management through to your physical “supply chain”.

In the digital world the supply chain is not a chain, it's a network.

The network is made up of connections between businesses, suppliers, partners, and customers. The customer sits at the hub of this network, driving the supply chain, assembling goods and services from a variety of vendors. Participation is plug-and-play, with suppliers filling in gaps to deliver satisfying customer experiences.

The customer experience is really only as good as the supply network that supports it.

The “value chain” of the past has been replaced by the consumer’s “whole-life platform”. As part of this platform, consumers expect mass customization, same-day delivery, dynamic pricing, and real-time visibility.

All of these expectations are impacting today’s supply chain (which is really a network).

The full potential of Digital cannot be realized without reinventing the supply chain.

In the digital world, supply networks are flexible, with fully integrated end-to-end processes and commerce. Low-cost suppliers and digital manufacturers have agility built into their production lines. Operations can scale rapidly—at a global level—so they are digitalized and run in the Cloud. New channels are used to serve new markets.

The entire network is enriched through analytics and the Internet of Things (IoT). There is visibility at all nodes in the graph. Analytics move beyond contributing to supply chain optimization, revealing customer preferences and new paths to value. Better decisions can be made, so that better products and services can be delivered, faster.

The IoT will streamline the exchange of data and commerce across the network, with B2B integration operating as the collaborative platform for managing global business transactions, securely and compliantly.

Over the next few years, more than half of the global 2,000s will re-design their supply chains into networks to support digital business.¹⁸ Every high-performing supply chain is essentially a dynamic digital network.

Now is the time to re-conceptualize your supply chain.

#11

The Internet of Things

If a refrigerator talks to the Internet, but no one is there to listen, does it make a sound? The Internet of Things (IoT) is an opportunity for all businesses to have products communicate to their customers and to themselves—from insurance companies with devices in cars to thermostats talking to home owners to software products communicating what paths of software are most commonly used. The IoT is about the Zen of Things, to help customers consume services and help businesses build better products.

The IoT will transform the world as we know it, creating a giant, global network of devices and machines that are connected, communicating, and exchanging data. Current estimates find that in the next decade, the IoT will add trillions of dollars to the global economy.¹⁹

The rapid growth of the IoT will be driven by low-cost sensors and beacons, cloud computing, analytics, and mobility. It promises a future in which every sector will be part of a hyper-connected world.

Sensors in software make better software.

Sensors in cars create optimized insurance policies.

Sensors in jet engines drive performance, utilization, and efficiency.

Sensors in the home lower electricity costs and increase security.

And sensors in car emissions can create problems, when used inaccurately.

While the IoT is viewed by many as a nebulous, futuristic concept, in reality, it already exists: we wear pedometers, smart watches, and cameras; our pets are microchipped; and we drive cars with built-in sensors. Wearable devices are becoming mainstream, contributing to the trend of the “quantified self”—or data-driven knowledge gained through tracking with technology.

Thanks to the IoT, many of our everyday appliances will have the ability to self-monitor and communicate with a network—think Marge’s fully automated “Ultrahouse 3000” in the Simpsons. Over one-third of U.S. consumers already have IoT devices like the Nest Learning Thermostat and smart TVs in their homes.²⁰

Consumers are collecting their own first-party information, and they’re using it to improve their lifestyles. Once everything is digitalized and automated across the IoT, organizations will become equally “self-aware”. Just as the quantified self is able to make healthier choices, the quantified enterprise will be empowered to make more strategic business decisions based on more accurate information.

As new information in new formats crosses the IoT, the supply network will be wired, intelligent, and instrumented. Big data analytics will add pervasive visibility into inventory, product and shipment status, and allow for the proactive replenishment of stock and predictive maintenance. Sensor-based systems are already in place in many industries to improve inventory control and maintenance.

Measuring the impact of the IoT is difficult, but its potential is enormous. As the IoT introduces new streams of data, the enterprise will have to be prepared to handle this information before it even arrives. Information management strategies and solutions will help manage, store, and scour this information for insight.

Information security will be an issue as grids get smarter and processes that underlie infrastructure increasingly rely on machine-to-machine communications. The U.S. national power grid is already under constant cyberattack.

The convergence of technology and the Internet has created a perfect storm for innovation. Self-driving cars, refrigerators that suggest recipes based on their contents, warehouses that automatically replenish stock, and equipment that schedules its own maintenance... these sound like futuristic, sci-fi fantasies—but they are all available today. The future is here.

#12

A New Asset Class Emerges. Data.

Oh I love the smell of fresh clean Data in the morning. As an executive, I could not make decisions without knowledge (some confuse this with micromanagement). Imagine billions and billions of pieces of data a day, to inform and guide a digital organization. How fantastic is that? Data emerges as a new asset class, as powerful as oil. And a new role needs to emerge with it, the Chief Data Officer.

We live in a digital world. A testament to this new reality is the growing value of digital content: we design complex products, manage our pipelines, transfer cash, procure trillions, hire employees—all in the form of digital content. This is the new digital reality.

Information is the new currency. The impact this is having on society, business, and government is profound.

Will data replace the Dollar, the Euro, the Yen? It certainly has started to. New businesses and whole industries are emerging to support the digitalization of content. Google, Facebook, and Twitter have built their businesses on the economics of data. They're collecting it, analyzing it, and monetizing it at great profit.

When we consider the rate of increase in the amount of data generated by today's society, we can understand how this new business model is a lucrative one. There is more data in more formats being exchanged at faster rates than ever before. Each day, we produce massive streams of data.

More data is shared across the Internet every second than was stored in the entire Internet 20 years ago. Google processes 20,000 terabytes (roughly 20 million gigabytes) of information a day.²¹ Video content is added to YouTube at the rate of 300 videos per minute.²² It would take longer than 1,000 years to watch all of this content in linear time. Retail giant Walmart collects 2.5 petabytes (or 2,500 terabytes/2.5 million gigabytes) of data an hour based on customer transactions.²³

Every digital business has data to monetize.

Data is new digital legal tender and everyone's getting in the game. As it is commoditized in its various formats, businesses will have to find ways to reward customers in exchange for their data. Marketers will have to be more sophisticated in their use of personal data. Individual consumers will sell their personal data to organizations that are currently benefiting from collecting vast amounts of it for free. This will become common practice.

If data is the new asset class, then analytics is the next frontier in deriving value from information, uncovering “moments of truth” that empower organizations. Analytics has the power to transform facts into strategic insights that deliver intelligence for profound impact. Think “Moneyball” and the Oakland A's in 2002, when Billy Bean hired a number-crunching statistician to examine their odds and changed the game of baseball forever.

Across the board—from sports analysis to recommending friends to finding the best place to eat steak in town—analytics is replacing intelligence reports with algorithms that can predict behavior and make decisions.

Analytics can create that 1% advantage that could make the 100% difference between winning and losing.

But where there is opportunity there is also risk. Data is vulnerable. Like money, data can be stolen. As information grows in value, so will the need to protect and manage it—and this will be increasingly mandated by governments and regulatory bodies.

But how will governments and regulators monitor and protect personal data that is stored in the Cloud? As more personal data is shared, and the Internet propagates a faster pace of crime, businesses will need to focus on the development of governance policies, standards, and systems to prevent identity theft and online fraud.

The Chief Data Officer as a role will emerge to help the enterprise focus on the strategic importance of information in a digital economy.

As the executive advocate for data management, the Chief Data Officer will use the exploding volumes of data and analytics to improve decision making and identify new revenue opportunities. Across the organization, every function will want access to data and insights about their operations. The Chief Data Officer will make this possible by optimizing the management of data (integrating, deploying, securing, governing) and mobilizing their organization around an information management strategy.

#13

The Experience of Community

With 3 billion connected citizens on the same network using a handful of tools, it's much worse than "Oops, I just replied to all". It lasts forever: the good, the bad, the ugly. The new Digital Echo Chamber of Twitter, Facebook, LinkedIn, Instagram, Snapchat, WhatsApp, Weibo, and WeChat has Brahma-like powers of creation and Shiva-like powers of destruction. The Experience of Community has a dual nature and needs to be actively managed.

#thisbrandsucks

All it takes is a single tweet or post and a groundswell of followers. Digital consumers are empowered. The Experience of Community can build brand loyalty almost overnight, and it can tear it down just as quickly.

What happens when a brand is able to harness the power of its community? The Airbnb “Hollywood & Vines” campaign is a great example. Using the #AirbnbHV hashtag, the company collected more than 750 global submissions in a video contest. It then edited the top picks into a short film about travel and adventure. As a result of the campaign, Airbnb received 75,000 Twitter impressions with 10,000 new followers in only five days.²⁴ In the analog advertising world, these results would have come with a hefty price tag, over a considerably longer time frame.

Instead, they used digital to get big results at very little cost.

These results aren’t limited to business-to-consumer markets. Companies like GE, Deloitte, and InVision are using the community experience to share ideas and engage with their consumers.

Every person that is active on the Internet belongs to at least one online community. In the digital world, community building is a necessary component of a digital business.

While Digital provides new opportunities to connect online, it’s about the people, not the platform. Long-term communities are built on a deep understanding of their members’ (or consumers’) lives.

Successful communities recognize that members are real people with real needs (they're not just Nielsen ratings). In fact, Millennials don't even have a landline to pick up, so Nielsen can't get to them.

Communities are organically built around a common sense of purpose. And this commonality has to be relevant. A community also has to be a safe place to play. As responsible digital citizens, members of a community can participate if they can demonstrate the proper online ethics, or “netiquette”.

In successful communities, Freedom of Speech and Freedom of Choice flourish. And this is a good thing because feedback allows for better content, better products, and better services. Control should be minimal. Allowing a community to self-direct leads to greater interaction and innovation. If this is not part of the Experience of Community, members (and potential brand advocates) will leave.

As easily as it's built up, a brand can be taken down—with devastating results.

Digital memory is infinite.

Remember “United Breaks Guitars”? A Canadian songwriter wrote a trilogy of songs about how United Airlines broke his guitar during a flight and the videos went viral, receiving 15 million views on YouTube. The songs were a public relations fiasco for United, who failed to respond quickly enough to undo the damage to its image, demonstrating the power of one disgruntled digital customer.²⁵

Or how about the Lululemon SNAFU? One of the cofounders blamed women's bodies for a dysfunctional product line, causing mass outrage from female consumers and contributing to a 20% drop in the company's stock.²⁶

In the old days, if a customer was dissatisfied with a product they would speak to a manager and get their money back. Today they post blogs, comments, ratings, or reviews. And the moment a tweet, video, or post goes live, users can comment and share. This happens faster than companies can respond, and when they do respond, the story has spiraled out of their control into a PR crisis. Once customers complain, they can move on.

Your competitors are just a click away.

The Experience of Community is leaderless, outspoken, ubiquitous, immediate, has a conscience, and has the power to create and destroy. And like quantum mechanics, the mere fact that you are measuring it changes the outcome.

#14

Trust and Security

If you cannot trust the Internet, it will fail. It is that simple. The Internet is the Autobahn for Digital. The security state of the Internet is fragile, and it is up to companies and employees to take control. If your user base cannot trust your services, you will not succeed. You need to think unconventionally and assume the bad guys are in your house at all times. Digital raises your profile, raises your risk, and requires new techniques to build, earn, and keep trust.

If trust breaks down on the Internet, then the Internet as an economic platform will collapse.

From governments to healthcare providers to employers, all of our valuable and highly confidential data floats around behind firewalls, hidden in the Deep Web.

On the Public Web, millions of people access their personal data every day. Transactions are made and money is exchanged—but how safe is the Internet?

I recently read in the Financial Times that customer data at a large telco was breached in the process flow between themselves and a credit check company as credit checks were completed on phone purchases. And some “bad actor” had been breaching this data for years. Wow.

Our economy is online, and companies are more vulnerable to cyberattacks.

The list of casualties grows every day, with big names falling victim to cyber breaches. The attacks are becoming more sophisticated and harder to trace. And they’re becoming more frequent.

You need to assume you are under attack every day. You need to assume the bad guys are on your network. And you need to assume that other nation states may not share your integrity.

Ultimately, you need to build a moat around your most important systems.

It’s not the Internet that’s not safe, it’s the businesses that protect information that are not safe.

Most companies forget that security is all about “back to basics”. Employees need education. Fifty percent of all cyber security issues are caused by a lack of education and “naive” employee actions.

The next 25% comes from hardware or software assets that are not “up to date”. Are you running an outdated email client, for example, that has known vulnerabilities?

Is your perimeter defined and protected, or did you leave the gates open?

These basics get you to 95% secure.

Do you store credit card data?

If so, why? If you do not store it, people cannot steal it.

In the underworld of dark fiber and cyber criminals, their reality is not our reality, and their reality has elastic properties pulled in directions we could never imagine. But we need to.

#15

Experimentation at Scale

Dream Big. If you do not, someone else will. An exciting outcome of Digital critical mass will be the ability to experiment at scale. This will require some mind shaping. In the pre-digital world, we may test market an idea or feature with a working group. In the digital world, you have the opportunity to think differently and create experiments at massive scale.

The Web is the greatest and most accessible research lab that ever existed. The ability to rapidly deploy and iterate and reiterate (often in randomized experiments) at mass scale is one of the most significant platforms for innovation in the field of technology today.

Large Internet companies are already doing this. Amazon, eBay, Etsy, Facebook, Google, Groupon, LinkedIn, Microsoft, Netflix, Yahoo, and Zynga are using Experimentation at Scale to drive innovation and improve their online products and services.

Whether you have 10 or 100 million subscribers, you can add a new button or feature to your website and see what happens. Instantly, all your subscribers can see it. Don't like where it is going? Turn it off. Instantly.

Experimentation at Scale helps organizations make data-driven decisions about product development based on consumer behavior. It's especially valuable when it's used with Agile Development. Highly scalable systems can be engineered to process data, support millions of users, and run hundreds of simultaneous experiments. This is a new approach to engineering; standard testing and debugging techniques don't belong here. It's about immediate causation and correlation.

The goal is to conduct a large number of experiments, rapidly, to evaluate and learn at a faster pace and a larger scale. Running thousands of experiments at the same time can produce results that typical approaches—based on iterative product releases, fixes, and customer feedback—do not.

The outcomes are focused around larger effects based on data and the sheer number of users involved. Experimentation at Scale can make huge leaps forward in innovation. Then there's the bottom line. Imagine if just a percentage of a percentage of revenue was increased by experimentation, and then multiply this by hundreds of thousands. It could mean increases in revenue by hundreds of millions of dollars.

The key to effective Experimentation at Scale is the ability to admit that mistakes will happen, to iterate, and consider each idea.

Digital experimentation has awesome potential. Research into the field will continue as more and more companies (and industries) adopt its practice. Ethical issues about privacy, accessibility, and consumer data will become more important. As the boundaries between reality and digital blur, Experimentation at Scale will play a critical role in the evolution of science, technology, and medicine. And it can change the way you do business.

#16

New Digital Foundation

Was your company born Digital or are you re-born Digital? The re-born Digital can learn from the early pioneers on people, processes, and products. The New Digital Foundation includes extreme automation, centralized and consolidated architectures that are pristine and scalable (built with speed and agility in mind), predictive analytics, and new, lightweight development tools.

Digital is impacting every aspect of enterprise IT infrastructure. Achieving balance between supporting new business models (the business) and delivering support and services (technology) is hard. To survive in the digital world, radical shifts will be made in enterprise architecture, core IT competencies, and development approaches.

For any organization that is “re-born digital,” this requires implementing a New Digital Foundation.

This means no more legacy infrastructure. No more siloed repositories. No more disconnected data. A New Digital Foundation is a modernized platform approach that includes:

- Extreme automation
- Predictive analytics
- Centralized and consolidated architectures
- Lightweight development tools

Follow the disruptors and you’ll see that their processes are digitalized from end-to-end. This means every transaction, every process, and all of the data that flows in between is digital. Their underlying systems are fast and configurable. They support technologies that enhance automation, like sensors, machine-to-machine communications, and Artificial Intelligence (AI). This is extreme automation, and it lies at the core of any digital business.

When processes and data are fully integrated, predictive analytics can be applied to add value all across the supply network—to offer insights into better performance, customer behavior, and product innovation.

Consolidation is key. Consolidating different operating systems and applications onto a single platform is one of the most challenging IT projects, but the risk of not consolidating is greater. It could mean obsolescence.

Adopting a consolidated, modern platform produces benefits in process efficiencies and reductions in IT costs. Standardization is achievable. Silos of information are united and more secure. But consolidation does more than this: It helps to lay the groundwork for Digital.

With a consolidated infrastructure, your organization will be better equipped to add digital technologies and hyperscale your capabilities. A consolidated infrastructure paves the way for a modular approach, based on the development of lightweight, easy-to-integrate apps. Flexibility is a key element in future, pristine enterprise architectures, along with the ability to include global operations in a digital supply network.

This may sound self-serving, but you need to challenge your entire existing platform, and in many cases, re-platform. Remember throwing away the Mainframe? Remember throwing away your client-server platforms? Remember throwing away COBOL, OS/2, Lotus Notes, WordPerfect, and PageMaker?

Whether you're a born-digital startup or a re-born incumbent, the future of your business is intrinsically tied to building a New Digital Foundation.

#17

The Digital Mindset

Wallace Stevens writes, “One must have a mind of Winter” in *The Snow Man*. So true. And once you have that mindset, all things follow naturally. One must have a mindset of Digital. And once your organization does, it will move with speed and purpose. The Digital Mindset is driven by disruption, immediacy, scale, centrality on journeys, experience, and a real-time-ness. Just like we have an IQ and EQ, we also need to develop a DQ, a digital quotient, where strategy, culture, people, and capabilities converge.

Today's startups are tomorrow's Wall Street winners. These are the businesses who are not afraid to risk it all. They are not afraid to fail. They are the game changers, the disruptors, the new thinkers. They are creating a sharing, Subscription Economy based on Digital and information.

The Digital Mindset is the cacophony of ON DIGITAL. It includes these top 10 tenants:

1. Immediacy
2. Urgency
3. Ease of use (aka not just easy, but intuitive)
4. Grabbing subscribers
5. Scaling really fast
6. Redefining business models (aka disruption)
7. Creating a sense of community
8. A journey-based approach
9. Always on
10. My data is omni-present and accessible anywhere, anytime

The Digital Leaders are ahead of the game. They have identified opportunities for digital transformation. They are thinking and acting in entrepreneurial ways, and shaking off the shackles of legacy to move forward.

They have adopted a Digital Mindset. And the Digital Mindset stands out in the crowd. You can spot it a mile away. Embrace it. Promote it. Give it freedom from structure and convention.

To digitalize or not to digitalize is NOT the question. There is no question.

If you do not have the mindset, you cannot even get out of the gate. You are simply throwing Krugerrands down the toilet.

Creative leadership will succeed.

A transformational leader has to overcome outmoded structures and old management styles to empower Millennials to self-direct, make decisions, experiment, generate ideas, and take risks.

At OpenText, I wrote a whitepaper called “The OpenText Way”. It is about Top Talent. I call them “G.O.D.S”.

G.O.D.S. **G**et stuff done and are **O**bsessive and **D**etail oriented—and they are the dab of grit that seeps into the oyster to make the pearl. They are not a bunch of bean-bag sitting oysters at a pearl making convention. And they are **S**mart. They are wicked smart.

G ... Get stuff done

O ... Obsessive

D ... Detail oriented

S ... Smart

G.O.D.S. move at the speed of Digital.

To attract and retain G.O.D.S., companies will have to invest in effective capital management and create a culture built on their values.

The pace of change in markets underlies the urgency with which the enterprise must transform itself. The time to disrupt business and capture opportunity is now. To operate outside of traditional comfort zones and partner with startups or build out capacity to diversify products and services. These are ways to scale and grow new revenue.

It's time to take stock. What is your digital quotient? How digitally mature are your operations, your workforce, your supply network? Do you have the strategy, culture, technology, and mindset it takes to transform your organization into a digital enterprise?

True transformation requires a pervasive shift throughout your enterprise. The only path forward is to digitalize.

Cortés' lesson endures. Disrupt or Die.

ENDNOTES

- ¹ “Number of mobile connections worldwide from 2008 to 2020 (in billions),” Statista, 2015, <http://www.statista.com/statistics/371828/worldwide-mobile-connections/> (accessed October, 2015).
- ² “Millennials at Work Reshaping the Workplace,” PriceWaterhouseCoopers, 2011, <https://www.pwc.com/gx/en/managing-tomorrow-people/future-of-work/assets/reshaping-the-workplace.pdf> (accessed October, 2015).
- ³ Peter F. Drucker, “*The Five Most Important Questions You Will Ever Ask About Your Organization*,” USA: Jossey-Bass, 2008.
- ⁴ Wikipedia: <https://en.wikipedia.org/wiki/Hyperscale> (accessed October, 2015).
- ⁵ “S-1 1 d564001ds1.htm FORM S-1,” United States Securities Exchange Commission, October 3, 2013, <http://www.sec.gov/Archives/edgar/data/1418091/000119312513390321/d564001ds1.htm> (accessed October, 2015).
- ⁶ Statistics Brain: <http://www.statisticbrain.com/Google-searches/> (accessed October, 2015).
- ⁷ Rachel King, “Alibaba’s \$1 billion IPO: The numbers to know,” ZDNet, May 6, 2014, <http://www.zdnet.com/article/alibabas-1-billion-ipo-the-numbers-to-know/> (accessed October 2015).
- ⁸ Statistics Brain: <http://www.statisticbrain.com/facebook-statistics/> (accessed October, 2015).
- ⁹ Claudia Bacco, “Is Your Car in the Cloud?” RCR Wireless News, April 10, 2015, <http://www.rcrwireless.com/20150410/connected-cars-2/is-your-car-in-the-cloud-tag11> (accessed October, 2015).
- ¹⁰ Jon Gertner, “Behind GE’s vision for the industrial Internet of Things,” Fast Company, June 18, 2014, <http://www.fastcompany.com/3031272/can-jeff-immelt-really-make-the-world-1-better> (accessed October 2015).
- ¹¹ Caitlin Bronson, “One in four insurance agents will be gone by 2018,” Insurance Business America, February 23, 2015, <http://www.ibamag.com/news/marine/one-in-four-insurance-agents-will-be-gone-by-2018-17943.aspx> (accessed October, 2015).
- ¹² James McQuivey, “*Digital Disruption: Unleashing the Next Wave of Innovation*,” Forrester Research, 2013.
- ¹³ Richard Fry, “Millennials surpass Gen Xers as the largest generation in the U.S. labor force,” Pew Research Center, May 11, 2015, <http://www.pewresearch.org/fact-tank/2015/05/11/millennials-surpass-gen-xers-as-the-largest-generation-in-u-s-labor-force/> (accessed October 2015).

- ¹⁴ The Millennial Generation: Another Baby Boom: <http://www.newstrategist.com/store/files/AmGen6SamplePgs.pdf> (accessed October, 2015).
- ¹⁵ International Data Base World Population by Age and Sex: <http://www.census.gov/population/international/data/idb/worldpop.php> (accessed October, 2015).
- ¹⁶ Peter F. Drucker, “*The Practice of Management*,” USA: Harper & Rowe, Publishers, Inc., 1954.
- ¹⁷ Chetan Sharma, “*2013 Mobile Industry Predictions Survey*,” Chetan Sharma Consulting, January 2013, <http://www.chetansharma.com/MobilePredictions2013.htm> (accessed May 2013).
- ¹⁸ Yogesh Malik, Alex Niemeyer, & Brian Ruwadi, “*Building the supply chain of the future*,” McKinsey & Company, January, 2011, http://www.mckinsey.com/insights/operations/building_the_supply_chain_of_the_future (accessed October 2015).
- ¹⁹ Justin Koufopoulos, “*The Ultimate Internet of Things Guide for Marketers*,” Percolate, 2015.
- ²⁰ Ibid.
- ²¹ Susan Gunelius, “*The Data Explosion in 2014 Minute by Minute – Infographic*,” ACI, July 12, 2014, <http://aci.info/2014/07/12/the-data-explosion-in-2014-minute-by-minute-infographic/> (accessed October, 2015).
- ²² YouTube Statistics: <https://www.youtube.com/yt/press/statistics.html> (accessed October 2015).
- ²³ Andrew McAfee & Erik Brynjolfsson, “*Big Data: The Management Revolution*,” Harvard Business Review, October, 2012, <https://hbr.org/2012/10/big-data-the-management-revolution/ar> (accessed October 2015).
- ²⁴ Wally Narwhal, “*The Power of Online Communities and Crowdsourcing*,” Tribute Media, July 8, 2014, <http://www.tributemedia.com/tuesday-tips/tuesday-tip-%E2%80%93-power-online-communities-and-crowdsourcing> (accessed October, 2015).
- ²⁵ “*United Breaks Guitars: Did it Really Cost the Airline \$180 Million?*” Huffington Post, August 24, 2009, http://www.huffingtonpost.com/2009/07/24/united-breaks-guitars-did_n_244357.html (accessed October 2015).
- ²⁶ Eliana Dockterman, “*What Lululemon Could Learn From Abercrombie About Fat Shaming*,” TIME, November 13, 2013, <http://ideas.time.com/2013/11/13/forget-feminist-outrage-by-shunning-plus-size-customers-lululemon-is-making-a-terrible-business-decision/> (accessed October, 2015).