THE Open GROUP

The Seven Levers of Digital Transformation

Guidance for Decision-Makers

A White Paper by:

Dave Hornford, Conexiam
Sriram Sabesan, Conexiam
Vidhya Sriram, Saashvata
Ken Street, Conexiam

September 2017

The Seven Levers of Digital Transformation

Document No.: W17D

Published by The Open Group, September 2017.

Any comments relating to the material contained in this document may be submitted to:

The Open Group, Apex Plaza, Forbury Road, Reading, Berkshire, RG1 1AX, United Kingdom

or by email to:

ogpubs@opengroup.org

Table of Contents

Boundaryless Information Flow ™
achieved through global interoperability
in a secure, reliable, and timely manner

Executive Summary

The magnitude of changes required to succeed in Digital Transformation efforts makes this an executive function. This is not about technology. It is a more about employing some of the scarcest resources in the enterprise, resulting in new organization models, culture, and collaboration with partners, suppliers, and customers.

For questions like:

- I just heard a great pitch on cloud (or DevOps) – is that the same as Digital Transformation? Do I need them for it?
- How is customer experience related to Digital Transformation?
- Will my business be impacted (disrupted) by changes happening in other industries?
- How does Digital Transformation apply to different industry segments?

the simple answer is to dig deep into your organization's DNA and configuration of the Value Chain, and to stay true to the purpose for which the enterprise came into existence in the first place. Cumulative effects of optimizations in logistics management, throughput management, and the downward spiraling of cost of silicon have opened up new opportunities to reconfigure an enterprise's Value Chain.

This White Paper presents the reader with key considerations, the seven levers that influence successful outcomes from the Digital Transformation journey. Once the impact of the seven levers is understood, a well-governed and innovative path can be defined to reach a positive outcome at each stage of change.

Introduction

Transformation as a concept appears with the advent of new technology and the optimization concept, ever since the age of steam engines. IT-based transformations started from the early 1990s with business process reengineering. Digital Transformation as a theme has been around since the mid-1990s, but it gained true momentum from 2012 when connectivity became ubiquitous and the cost of switching became dispensable due to the prevalence of cloud services. There are interpretations of the terms, but no clear definition.

With each technological wave, enterprises generate transformation projects. Most often these projects fail at the first attempt, then are resurrected over and over again until they succeed or give up. With this document, we want to provide guidance for leadership to reduce the number of attempts. We can provide our tested and seasoned approach as leadership guidance to engineer success in such ambitious undertakings.

Digital Transformation is fundamentally a strategy and an operating model change, wherein technological advancements are leveraged to improve human experiences and operating efficiencies, and to evolve the products and services to which customers will remain loyal. It is the consequence of:

- The ability to handle information in the digital form
- Using digital technologies to manage the process of creating, capturing, and analyzing information to deliver perceptive human-machine interaction experience

There is a lot that needs to happen to make this happen.

It is true that modern information and operational technologies have reduced the barrier to entry or have paved the way for substitutes for most industry verticals. It has created the perception that businesses are disrupted by start-ups or IT giants. However, the IBM CEO study[1] shows that the threat is high from the same vertical. The nuance to discern here is to prepare to self-disrupt; build a talent pool that balances digital technology and industry-specific Value Chain, and gain the freedom to invest in digital technologies; not to remain passive. On the contrary, many enterprises are resorting to outsourcing their digital initiatives[2] resulting in an in-house knowledge vacuum.

Another data point of interest is the ability of new businesses to break into the market. Between 2000 and 2010, non-farm industrial and labor productivity in the US grew between 0 and 4%. However, according to US census data, across all sectors, it is becoming very difficult for businesses to stay in operation for more than six years. Productivity gain should have translated into profitability and increased the longevity of a business – but this did not happen. Realizing the desired profitability requires clarity in leadership and direction, employee empowerment, and ease of logistics to move unfinished and finished goods.

[1] Refer to www-935.ibm.com/services/c-suite/study/studies/ceo-study and www.ibmsystemsmag.com/newsupdates/IBM-Study-CxOs-Set-Their-Sights-Back-on-Traditiona.

[2] A 2016 PwC study highlights the state of affairs: 45% of the digital projects faced scope issues; 25% of the projects required outside help for skills, despite internal teams getting trained; and 57% outsourced their digital projects.

The Seven Levers of Digital Transformation

Digital Transformation connotes varied implications to different audiences. Most common interpretations are focused on marketing, sales, IT, or customer service. This is not incorrect, just not complete. Enterprises have made investments based on this skewed understanding resulting in fragmented initiatives with underwhelming outcomes. Though their expectations from Digital Transformation were focused to invest in themselves, stay relevant, or outpace their competitors, they have failed to realize that there is no cohesive strategy. What's worse, there was no disciplined way to diagnose.

The final challenge is realizing that the technologies contributing to Digital Transformation such as cloud, mobile, and blockchain are mostly general-purpose in nature. These technologies enable exponential growth benefits due to new applications and business models. The time and effort required to harness a general-purpose technology into mainstream productivity solutions demands several years and iterations.[3] Given the plethora of technologies, methods, and growth models built on top, creating newer ways of operating may take even longer than the time it took for a single technology change (e.g., electrification). Notwithstanding, this should not deter enterprises to seize the possibilities they have to offer by iterating faster and reap progressive benefits.

Digital Transformation has been employed either extremely well across the enterprise or employed within a small team with no clear value realization. Our interaction with business and technology leaders reflects a mixed understanding of current technologies, their potential, and the definition of value. The other set of decision-makers, mid-level managers, see only part of the chess board that is in front of them today. Research has shown that inability to re-articulate corporate strategy or its implication accurately has resulted in this myopia. It manifests itself in the creation of projects that do not build on each other to deliver on the corporate strategy and goals. Without connecting other parts of the organization, return on technology dollar will always fall short of projected value. One common symptom is that projects run out of funding midway to value realization.

Digital Transformation is highly interconnected. It starts with leadership and strategy and permeates to every leaf-level process and employee. Unless the interconnected nature of products, services, technologies, and environment is understood, benefits will fall short of projections and expectations. This document is about creating an awareness about this interconnection; an awareness that would result in creating value for the enterprise and its customers. It is about framing the problems we are solving before decision-making.

This document is our attempt to provide a starting point for diagnosing the cause for the current muted outcomes. We believe that the seven levers will drive informed decision-making, improved portfolio management, and appropriate employment of technology. It is our attempt to reduce the time taken to realize productivity gains.

[3] Erik Brynjolfsson quantified that it took 30 years for American factories to see an increase in productivity from electrification.

The Seven Levers

We assert that Digital Transformation encompasses seven levers of change. These levers will reduce the number of failed projects, guide investment decisions, and create a set of products and services to seal customer loyalty.

What is new in this view? The fundamental needs of an enterprise – agility, market sense, and efficiency – have not changed. The tools of the trade and the level of customer expectation have evolved. A response from the enterprise to this new demand can no longer be limited to thinking within the boundaries of the enterprise.

The seven levers are about framing a complete problem statement and a comprehensive realization of outcomes. Strategy, Ecosystem and Business Model, and Customer Engagement and Experience frame the problem statement. Business Process Transformation, Product or Service Digitization, and Organizational Culture are operational steps to realize the strategy. IT and delivery transformation span both sides and help realize agility, efficiency, and decision support goals.

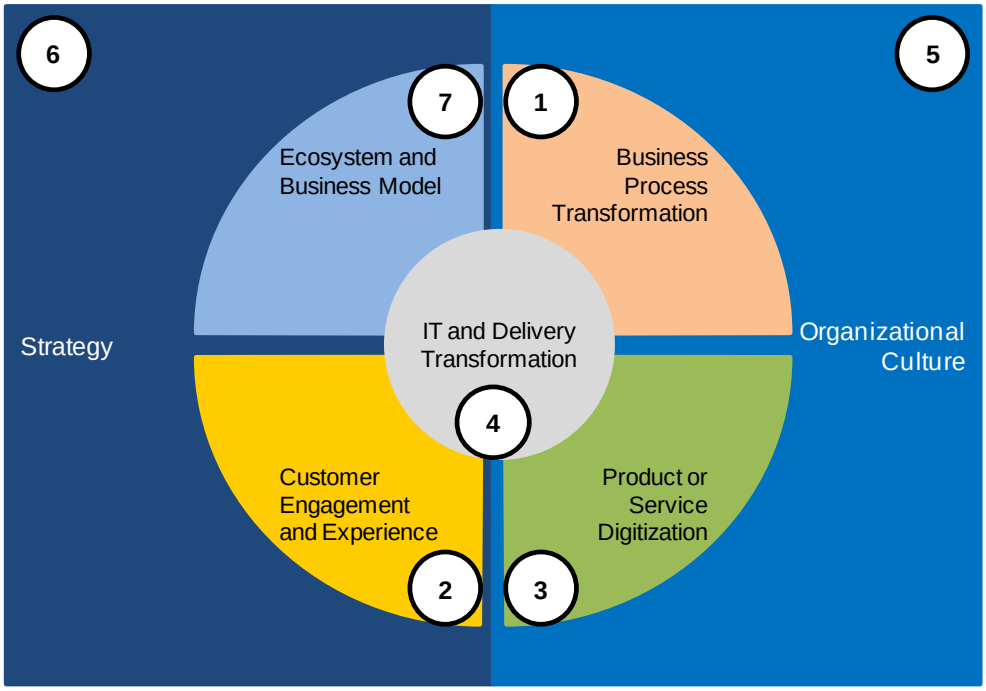

Figure 1: The Seven Levers of Digital Transformation

Figure 2: The Way Forward

The Seven Levers of Digital Transformation

The seven levers are:

Lever No	Name	Aspects Addressed
1	Business Process Transformation (BPT)	Creating the right balance of process discipline and instrumentation, with phased rolling-in of all parts of the enterprise to build intelligent insights Using the same concepts of productivity and efficiency to understand customer behavior and interaction patterns Building processes that match customer and partner touchpoints
2	Customer Engagement and Experience (CEX)	Experience is the emotion felt about how customers perceive the product or service has fulfilled their expectations – it is subjective, ephemeral, and qualitative, making it hard to measure Engagement is the behavior demonstrated by the interactions across touchpoints – it is intentional, measurable, and quantitative; a touchpoint is where a human or a system and the enterprise interact Correlating insights from business processes to deliver products or services that delight the customers, driving continually increasing revenue
3	Product or Service Digitization	Creating products or services that are focused on the outcomes the customer wants – it may involve the use of digitization and/or digital twins to promote effectiveness in the usage of the product or service
4	IT and Delivery Transformation	Applying the same business process optimization, interaction insights, and customer experience-driven product development to IT operations of the enterprise Arriving at consistent agility across IT and other functional areas of the enterprise that is in-sync with the market expectations
5	Organizational Culture	Achieving transparency in decision-making, informed by data Continuously learning to optimize the product and service portfolio Focused on sustainability over cost optimization This includes the considerations about the approach to operations, solution delivery, and organizational structure
6	Strategy	Choosing unique configurations of the Value Chain and making decisions to maximize the benefit from employment of concurrent technologies Making a deliberate choice to employ the levers mentioned for the benefit of the enterprise This includes the commitment and clarity of direction provided by the leadership and the vision
7	Ecosystem and Business Model	Building and collectively growing the share of customer wallet with partners Cultivating a thoughtful approach to attract and retain partnerships that virtuously impacts the brand Driving laser clarity about core the business focus of each player in the ecosystem

The Seven Levers of Digital Transformation

With the exception of lever 7 – Ecosystem and Business Model – all the levers are applicable to all enterprises. However, with the saturated market place, it is worth pausing to revisit your ecosystem and business model. All these levers should be engaged in tandem to amplify the returns. As we review each lever, it will broaden the understanding of the Digital Transformation landscape, help you assess where gaps exist within the enterprise, and successfully address them.

The seven levers fall into three logical groups. The first group consists of the following levers:

- Business Process Transformation
- Customer Engagement and Experience
- Product or Service Digitization

This group is about continuously delivering a product or a service that is of value to the user or the buyer. To keep delivering a product that satisfies the user, insights about usage and business process efficiency are needed.

The second group consists of the following lever:

- IT and Delivery Transformation

This is supported by the ethical and security standards the enterprise sets for itself. IT and Delivery Transformation is the catalyst and the glue between operational execution and strategy.

The third and final group consists of the following levers:

- Organizational Culture
- Strategy
- Ecosystem

This group is about the vision, culture, and partnerships the enterprise builds. These are key to building and delivering experiences to the users.

Business Process Transformation (BPT)

Porter's Value Chain[4] is well known. The Value Chain is normally broken down into business processes. These processes start and end within the boundaries of an enterprise. Using an example of a manufacturing unit, the processes start with sourcing raw materials and tooling to make sellable goods. These goods are distributed and sold. This broad process is supported by inbound/outbound logistics and financials controls. These are represented in blue in Figure 3, the product/service development flow. Inbound logistics involve the journey of the supplier, the procurement team, and the team that integrated the procured goods. It may involve partner experiences and business processes. Outbound logistics involve the journey of the sales and marketing team, partners, distributors, retailers, and customers. Finance teams follow their own journeys to recognize revenue and support compliance. Another evident journey is around supporting the product or the service. Business processes of corporate services – such as finance, legal, sales, and human resources – form the employee experience flow.

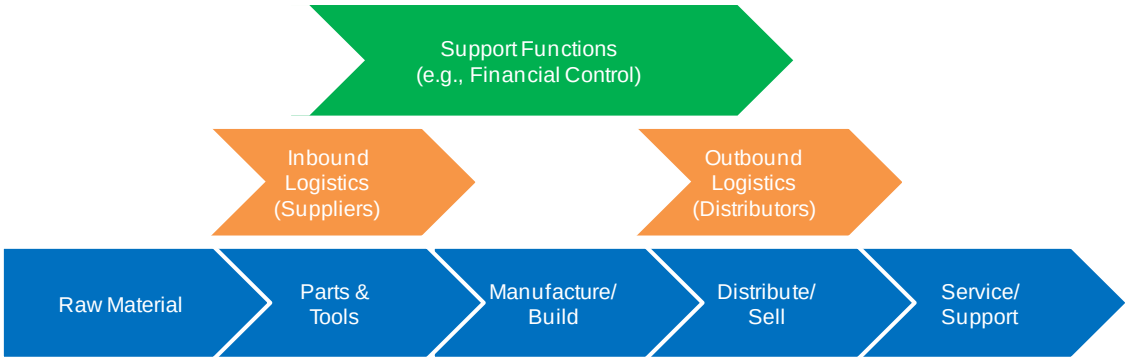

Figure 3: Typical Value Stream

These processes can be grouped into four buckets:

1. Product/service development
2. Cross-organization collaboration
3. Partner engagement (suppliers and distributors)
4. Customer engagement, service, and support

Until a few years ago, product and service development were relatively stable and modifications were effected in a planned fashion. Partner engagement processes were securely fastened or changes came about in a controlled fashion. Engagement with the customer was the only area fraught with variability, such as attracting customers via multiple marketing channels, selling to B2B and B2C consumers by responding to their motivations, appeasing customers via service and support by addressing diverse grievances, etc.

[4] See the referenced Competitive Advantage by Michael Porter.

The Seven Levers of Digital Transformation

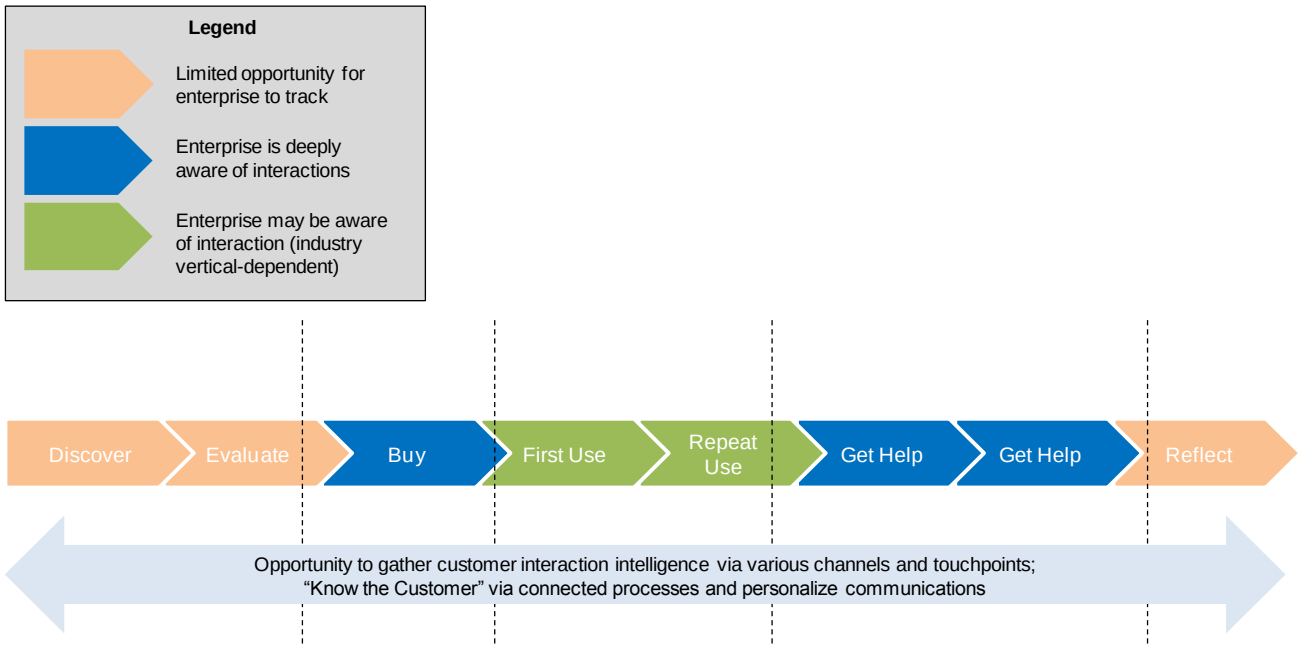

Figure 4: Typical Journey Map

Thanks to the Zero Moment of Truth (ZMoT)[5], enabled by the limitless access to information, proliferation of competitors shifted the predictable marketing funnel to a non-linear engagement model. The expansion of subscription of service-based business models reduced the risk of switching and necessitated companies to elevate every transaction into a relationship building interaction to foster sustainment of customer loyalty. Business responded well by increasing its footprint into mobile and social technologies, but misconstrued its efforts in the digital landscape.

Let's unpack this. Figure 4 visualizes a typical customer lifecycle journey. The phases Discover, Evaluate, and Recommend/Refer are grayed out because the enterprise does not have full grasp of the options and decision-making parameters that matter to the customer. Depending on the industry segment, "First Use" and "Repeat Use" may be opaque to the enterprise. Given the non-linear reality of the purchase process, it has become an imperative for businesses to be "in the know" about every customer touchpoint in a saturated market place.

Figure 5: Impact of Partial BPT Implementation

Without a connected, instrumented, non-silo'd business process, the enterprise is not positioned to make informed decisions about efficiency gains, customer insights, or a strategy to deliver products and services

[5] See the referenced Winning the Zero Moment of Truth (ZMoT) by Jim Lecinski,

the customers want. Without data flowing from across the enterprise, it is challenging to provide meaningful services via new technologies like bots, machine learning, and artificial intelligence.

Customer Engagement and Experience (CX)

The cost and ease of availability of alternatives have reduced the barrier for customers to switch suppliers to satisfy their needs. If it is to understand usage need and patterns, avoid conflict in their use, and anticipate the renew/refer actions, an enterprise can no longer have internal process silos. It is the instrumentation that is done in the internal processes that informs the journey stage that builds the intelligence about a customer's need and behavior. Intelligence garnered at any stage of this journey should be exchanged with upstream or downstream stages as immediately and efficiently as possible.

The most common gap we see in the strategy is not realizing the need to connect all internal processes and to make the customers feel "known". Connecting the process is just the starting point. It has to be supported by an appropriate portfolio of investments in culture, talent, and technology.

Is the need to understand customer behavior really new? No. But the rationale has evolved with advancements in quality of life.

Here is a re-imagined Maslow's Hierarchy of Needs[6] (Figure 6) that illustrates how the importance of experience has evolved over decades. Businesses maximizing the functional value of products and the focus on intuitive design were very limited. Next, businesses expanded the design to address the functionality across diverse demographics, and to consider machinery in the production line to support manufacturing/assembling multiple products. This progressed to giving priority to ease-of-use and productivity needs, followed by the need to integrate with the ecosystem. In a market place where manufacturing, supply chain, and information mastery have all been democratized, experience is the only differentiation companies can preserve. Businesses that have come to grips with this reality are striving to offer services that connect with the customers emotionally to build resonant experiences and thriving relationships.

[6] See https://en.wikipedia.org/wiki/Maslow%27s_hierarchy_of_needs.

The Seven Levers of Digital Transformation

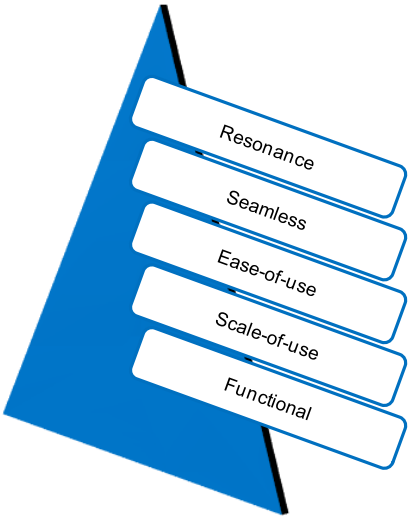

Figure 6: Experience Hierarchy

The interactions with suppliers and distributers (Figure 3) are not any less immune to the evolving expectations in the realm of experience. Employees in the procurement team of an enterprise follow the same journey shown in Figure 4 when they buy raw materials, parts, and other resources. When the distributors and resellers buy the products and services, they are evaluating the experience, in the same way that a consumer would do. The net result is that the internal engagement processes (the orange chevrons in Figure 3) that were perceived as stable are also changing at a rapid pace to remain a dependable partner.

Finally, the most insulated product and service management processes also cannot be blind to the increasing expectations. They ought to harness the customer intelligence emerging from the connected business processes to expand, refine, and innovate their value propositions.

Figure 7: Impact of Partial CX Implementation

Without experience, it is challenging to build products and service that enable outcomes for the customer. Without an outcome enabler, the economic relationship with the enterprise falls apart.

Product or Service Digitization

Creating successful products is not a new obligation for businesses. However, increasing expectations, fleeting preferences, and unpredictable social perceptions have made creating long-term value and continued differentiation a tough challenge. Smart product and service providers recognize the value of continuous learning; they gather data via connected processes, make sense of the customer's reality with empathy, and discern transient wants from persistent needs. They are committed to building an agile enterprise that is receptive, responsive, and proactive.

Digitization and digital twin[7] are rewarding techniques to augment an existing physical product or a service. The most commonly employed is a creative combination of modern technologies to reduce the cycle time taken from concept to realization. One such example is combining augmented reality, 3D printers, robots, wood, steel, and fabric to build a new workspace.

Digitization is the ability to handle information in the digital form. Digital Transformation is the consequence of digitization and using digital technologies to manage the process of creating, capturing, and analyzing information to deliver perceptive human-machine interaction experience.

Digital twin, on the other hand, can be used for real-time monitoring, diagnostics, and prognosis. These could range from installing a refrigerator to the process of filling regulatory forms. This is the result of the downward trend in the cost of sensing, imaging, computing, and visualization devices and cross-pollination of ideas from operational technology in the food, pharma, or chemical industries. It enables preventive maintenance and creates an ability to anticipate the customer's next need.

This paper does not advocate creation of a digital twin or a digital product or a service as a panacea to get Digital Transformation right. These are stress-tested techniques that advance organizations to be data-driven. They do not remove the need for decisions where intuition and judgment need to be exercised. Wise organizations are clear-headed about being data-informed over data-driven. They make room for qualitative knowledge to make sense of the quantitative data to understand customers, when making the right moral, legal, and situational calls, and when embarking on the long game that requires deep consideration for its enterprise.

Figure 8: Impact of Not Delivering Products or Services of Value to the Customer

Evidently, product and service digitization tremendously improve throughput, and aid in gathering predictive intelligence that spans contexts with a relentless focus on value addition to the customer. This treasure trove of data will most likely present opportunities to re-purpose and highlight new revenue streams. What can

[7] Digital twins refer to computerized companions of physical assets that can be used for various purposes. Digital twins use data from sensors installed on physical objects to represent their near real-time status, working condition, or position. (Extracted from Wikipedia.) This concept may also be referred in the context of the Cyber-Physical Continuum or Cyber-Physical Systems.

limit the creative digitization possibilities is the confines of the human imagination. The purpose of the enterprise is lost when its products and services are not in demand by the customer!

IT and Delivery Transformation

This lever cannot be considered to focus just on technology delivery. Technology solutions leave a footprint of data about the customer, partner, and the enterprise itself. Each enterprise has to govern itself in using this data footprint via a set of security and ethical standards.

Operational technology and IT are no longer efficiency drivers or cost savers. Continuous understanding of evolving needs and behavior of humans and machines require continuous capturing of data, processing it with context, and delivering insights. This requires radical changes to how operational, information, and communication technologies are conceived, built, and operated. IT costs have always been justifiable compared to the benefits and the savings businesses reaped. IT could also get away with many of the downtime issues with the business applications or the infrastructure. With the advent of globalization, outsourcing, and just-in-time resource deployment, IT is no longer the sole function claiming to enable agility or increase margins.

However, the rate at which data is being captured, processed, and turned into insights is continually increasing. The number of possible touchpoints to capture data is also geographically spread and varied. This makes use of operations technology and IT key to this transformation.

Guiding IT Transformation

Like any other transformation, IT delivery transformation is a complex endeavor. The distinctiveness of IT reinventing itself is that IT must keep the business running, keep pace with business change, and change itself. In addition, the cascading effects of interim loss of functionality or the unexpected outcomes of any experimentation will be felt not just by the employees. They also impact customers, partners, and suppliers who did not sign up for absorbing the effects of the enterprise's IT transformation efforts. It is imperative that the learning curve for people outside the enterprise be kept to a minimum to enable movement through the complexity.

There are four concepts that IT needs to account for:

1. The need to interoperate within and outside the enterprise boundaries – such interoperability requires stability in interfaces and supporting structures
2. Security – ensuring that humans and machines with appropriate credentials are interacting for the intended purposes only
3. Time-to-market
4. Ways to reduce cognitive overload for humans and increase throughput

The transition from the traditional model is not easy. Current solutions used by most enterprises are not ready to work with modern distributed infrastructure.[8] Changing these applications to leverage cloud technologies is an uphill task. Using beta products (in today's vernacular, minimum viable product) is a big leap for any enterprise. Stability and enterprise-grade support are key to reducing technology risk, which is another challenge to overcome.

Most cloud service providers have created migration assistance services. The maturity of such migration services and the strengths of these providers will result in multi-cloud environments for enterprises. Fragments of business processes may end up executing in different clouds, increasing the complexity of coordination within and outside the enterprise boundary.

Building business processes as the backbone, then developing customer focus – based on understanding of the purpose of the business and implemented by digitization of products and services – is the contemporary challenge for businesses. Given that these are significant reasons for any enterprise to thrive, a multiplier for IT investments is a given. They also mean that IT must deliver at the rate of market change. Hence, its delivery pipeline can no longer follow traditional methods. IT must embrace the principles of automated BPM and lean practices such as continuous monitoring, self-healing, and efficiency gains; must support decision-making and deliver products; and must transition from differentiator to the backbone of the enterprise.

Spend management is a good enterprise practice. Evolving billing models from cloud providers and "everything-as-a-service" providers brings a dynamism that could trigger tighter oversight over an already strained IT organization. To work around this, IT teams have to evaluate their algorithms in terms of return on investment, retention, and customer satisfaction. This way of thinking introduces a healthy tension between a well thought out foundational architecture and time-to-market. These are the priorities to be navigated by the leadership, factoring brand affinity, profitability and shareholder value, and customer expectations on a case-by-case basis.

The following characteristics govern anything to be delivered as a service:

- Low barriers to entry (infrastructure cost, common way to expose base services, unlimited ability to scale, etc.)
- Sharing of resources (or multi-tenancy)
- End-point independence from resources and services
- Location-independence of providers and end-points
- Cost of maintenance included in service usage fee

Here is a sample list of approaches that reduce the cognitive load:

- Compute without Server Administration Overhead (Serverless Computing)

[8] Balancing localized intelligence and computing with use of remote infrastructure for computing, storage, configuration, and control.

The Seven Levers of Digital Transformation

- Natural language – voice and text-based interaction
- Gesture-based interaction
- Virtual interaction (VR/AR/MR)
- Robotic process automation
- Low-cost machine assistance (semi-autonomous systems)

If your team knows the value of great customer experience, the cost of execution of logic, and delivering productivity gains to its own IT, business, and customers, then congratulations! You are among the IT transformation leaders. The laggards are 25% of enterprises with no cloud or mobile strategy, followed by the next 30% with some transformation effort without fully-baked outcome definitions.

Figure 9: Impact of Not Employing Modern Technologies

Why would one forget the glue and the catalyst for transformation?

Security

The quantity of data created by IT and operations technology components (IoTs and control systems) is vast. Retention of this data for analytics has long complicated the security concerns. Digital Transformation has not added new security concepts or concerns.

Information created by process automation, digital products, and customer engagement telemetry is opening up new revenue opportunities. With that, the number of vulnerable points goes up. Data is available everywhere, increasing the need to maintain confidentiality and the integrity of this data. The challenge is not the increase in the attack surface, but the ease of reach for the attackers. Vulnerabilities in the supply chain and the ripple effect can cause significant financial damage.

It is important consistently to create a way for trust to be established between the supplier and the consumer. This starts with building security into the strategy and validating the entire pipeline, often.

Ethics

Digital Transformation discussion is not complete, even at a simplistic level, without the mention of digital ethics and digital trust.

A flawed view about technology is that it is neutral. For example, bias can creep into AI systems as part of training or the algorithm creators. Losing the ability to exercise free will can also be an unexpected consequence when delegating intelligence and judgment to machines. This risk is heightened with the applications of the Internet of Things and autonomous technologies.

Consumers, while excited to have self-driving cars, are uneasy about relinquishing control, anxious about how their privacy is breached, and question any sense of discretion in their lives.

Trust and ethics are admittedly abstract concepts, and organizations can begin with transparency about what data they collect, use, share, sell, and dispose of. They need to establish regulations and policies anchored to brand ethics that the organization is willing to commit to, defend, and uphold.

The moral sands are still shifting and this may always be so. The best way to keep up is to be an organization of your word, the brand promise, and be mindful of "do no harm" as the first-order tenet when encouraging a dialog.

Organizational Culture

"Culture eats strategy for breakfast" is never more relevant to an organization than when it is on the path to reinventing itself. After all, all the big plans have to be believed in and executed by the employees with commitment, ownership, and gumption. And that takes more than a top-down mandate and budget approval.

A successful enterprise made most of its choices in the past, with a set of assumptions and constraints that may not be valid in today's conditions, let alone in a digital future. While embarking on a change journey, the enterprise moves from stable operation to experimentation, successful scaling, and back to stable operation. Reinvention requires experimentation and nimble adjustments until the product or the service reaches its tipping point. Solving for scale requires developing new approaches complementing the technology and techniques used. Transitioning from scaling to stable state requires development of structures, new or reused from the enterprise's existing knowledge base. The objective is to maintain the uniqueness of the enterprise while traversing each stage that requires a different leadership and execution approach. Progressive enterprises acknowledge the need, create a different growth path, and design a reward structure for the teams that innovate, scale, and structure.

To do this well, ensure that you are responsibly addressing at least three different evaluation criteria – one for sustaining or retiring current solutions and methods; one for exploring and succeeding in the new way; and, finally, one to transition the new way to a scaled and stable state operation. The new way may at times require heroics and cowboy tactics. If the current culture is already dependent on heroics, it is worthwhile to inculcate a culture in which people feel empowered by the data from instrumentation and are unafraid to volunteer intuition, yet also ready to examine the cascading risks and impact.

Building a learning organization starts with facilitating a culture at every level where questioning the *status quo* is an indicator of a growth mindset. A climate in which initiatives are rewarded and collaboration is effortless, a safe space where risks taken and mistakes made are volunteered, an atmosphere that does not shun intuition or look down upon people who voice complex problems without quick solutions.

Figure 10: Impact of Amorphous Culture

Heroics also come with a fatigue factor! An unengaged employee is a drag to himself and everyone around.

Strategy

An article by Gerald Kane & Co. in the July 2015 MIT Sloan Review summarized the situation by saying: "Strategy, Not Technology, drives Digital Transformation". The best strategies are about making hard investment and process configuration choices, identifying symbiotic priorities that produce value for the customer and profitability for the enterprise. Responsible strategies employ policy-based governance, and hold themselves accountable for the causality of the outcomes. Strategy exercises introspect the business model, define its view of disruption and success, and do not shy away from clearly outlining unacceptable consequences and behaviors that could result in dismantling of the enterprise. They champion the necessary freedom to innovate. Strategy for Digital Transformation also realizes that the end state of the journey may not be firmed up and encourages learning, cross-enterprise collaboration, and human-centricity.

Strategy is not limited to bringing a vision to fruition through execution excellence. It provides a decision lens rooted in risk and impact analysis to pursue initiatives. Successful strategies are formed by leaders who have kept an ear close to the ground and an eye on the trends in adjacent industries. These leaders listen to customer calls, encourage internal improvement suggestions, and directly engage with front-line employees. These organizations set transformation objectives with a clear focus to reduce the impact of friction in business process, customer frustrations, and value proposition failures. Their passion is not to race to the end, but to fulfill the unmet needs of the customer who is loyal and willing to pay a premium.

A virtuous strategy enables culture (internal) and fosters the enterprise's ecosystem (external). It requires the organizational leaders to step back from day-to-day operations to see internal and external patterns. Objective strategy values data, both qualitative and quantitative. It simplifies decision-making at the leaf level, making the rank and file focus on customer outcomes.

One of the essential elements to include in the strategy is to explore, develop, and deploy operations technology and IT. The required controls for the use of these technologies are to:

- Match the speed of delivery with the speed of market demand
- Guide portfolio decisions
- Highlight gaps in gaining insights from mapping the customer journey to business processes

Portfolio Changes

Organizations pledging to transform are playing the long game. They separate the value of enduring commitment and the flexibility to be nimble to change course.

McKinsey's research shows that "digital savvy" organizations invest the same amount of money in their portfolio as any other enterprise, but they revisit their portfolio often to adjust the priorities. However, their returns are multi-fold higher and have consistently out-performed their peers across almost all success measures. A robust portfolio explores the entire Value Chain, as shown in Figure 3, forward and backward without leaving any blind-spots.

The long game does not mean not making ongoing changes; it is about directional correctness and continuous fine-tuning of the family of products, services, and delivery to changing customer demographics. In such organizations, the managers do not apply processes as a proxy for decision-making. They are data-informed,

willing to bind analytics with intuition, and are empowered to accommodate exceptions to account for outliers.

While most of this is relatable, these enterprises are evidently ambitious. It is normal for enterprises to seek external help to springboard the transformation, set basic habits and patterns, and demonstrate the possibilities. Some others went through an internal recruiting process and created a physical separation between the teams that execute current and forward-looking modes of operation. Few others have changed their staffing mix.

Figure 11: Impact of Myopic Strategy or Leadership

Regardless of your approach, protecting tribal knowledge and the precious intuition that was matured over time is salient. Technology can offer acceleration, but judgment and experience expertly steer the direction.

Just count the number of enterprises that are no longer in the Fortune 500 listing! Who wants to drop out of that list?

Ecosystem

A keen look at the ecosystem is an inevitable step when establishing strategy. The concept of ecosystem is not new, but the contemporary landscape requires leaders to take cues from crowd sourcing and shared economy.

An ecosystem is a composition of multiple businesses that come together to deliver something of value to the customer. Businesses are beginning to fund open platform initiatives that benefit them three-fold: accelerate their time-to-market, stress testing and evolving the ecosystem, and amplify their brand. For example, products developed via Apache Foundation[9] focus on solving for an audience that is broader than the customer base and the ecosystems of each participating enterprise.

We see enterprises creating two kinds of business models – those addressing "a unique stand-alone problem" and those addressing a "contextual scenario" or "outcome by employment of an extended Value Chain". Both will co-exist, one feeding the other. It is a question of how owners of the enterprises will perceive "value" that determines the survivor. For example, online shopping and package tracking solved separate problems, and they came together to improve overall experience. Now, businesses are integrating one experience within the other.

The cardinal flaw when mapping ecosystems is neglecting to include suppliers and customers.

The first step in building a business or ecosystem model for this new world will be the ability to traverse end-to-end and from surface to core[10] (see Figure 3 and Figure 4). Taking the forward and backward passes from raw material to customer will render surprising gaps and findings. To traverse these two paths, organizational leaders will have to hunt for a new talent – one that is keenly aware of substitutes, and economic and geographical needs. We think it will be an evolution from the customer journey map technique.

The definition of ecosystem is also undergoing a shift. The current trend in "smart cities" will open new ways of interaction among the citizen humans and machines of the city. Such interactions are composed of permanent and transient players. It could also bring about business models that are primarily based on public-private partnerships.

Figure 12: Impact of Incomplete Ecosystem

However, as things stand today, it is not a necessity for a business to reinvent its business model or its ecosystem. It needs to develop a deep awareness of these two concepts to increase its share of the market. Recent economic and political changes around the globe have added new constraints, such as available disposable income, restrictions in flow of information, and mobility of individuals. These scenarios forced

[9] www.apache.org

[10] A concept promoted by Erik Flowers.

hard choices on existing business models, so that enterprises could stay relevant and hold and expand their market shares.

Collective growth with partners actually increases customer retention. Partners from the ecosystem strive for synergistic growth and actively remove blindsides for all.

Closing Notes

Each lever does not act alone. They are symbiotic and amplify the effects of one another. By the same token, missing or reduced output from each lever will have an exponential impact on the overall efficiency of the enterprise. Engaging these levers in conjunction with equitable investment is key. Additional benefits can be reaped by automating the relationships and connections from strategy to sensors in the field or by combining more than one technology. The common denominator is continuous improvement of west-to-east customer journey and north-to-south enterprise communications.

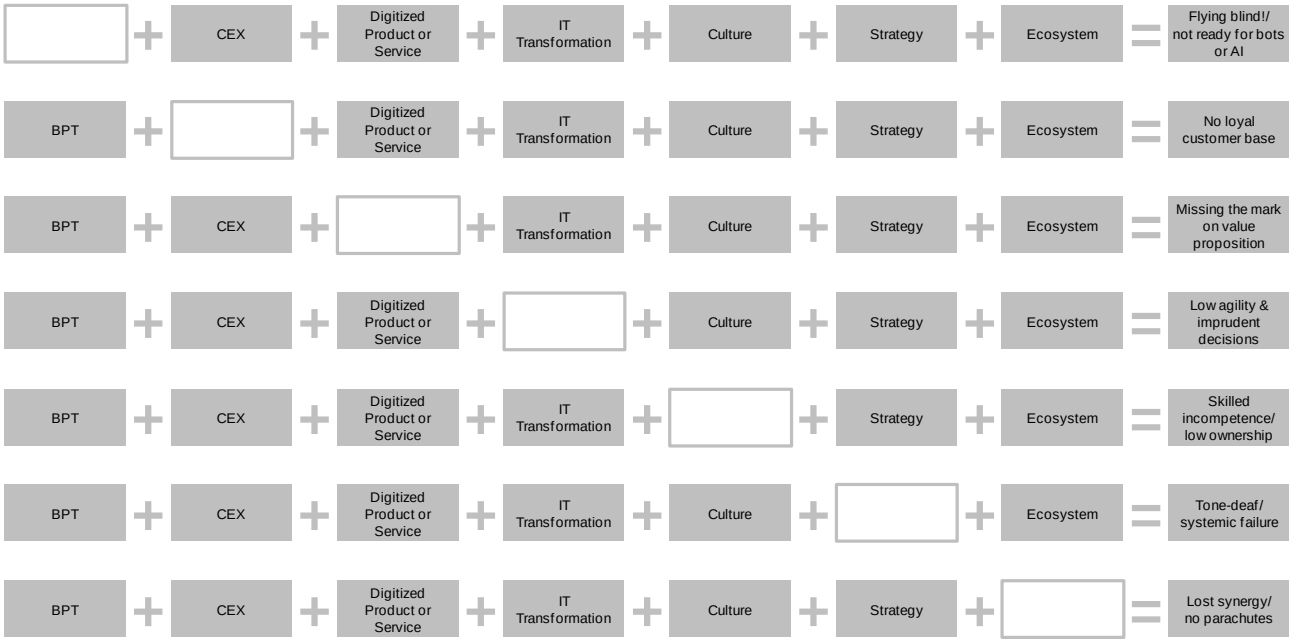

Figure 13: What if a Lever is Partly Implemented?

Business processes, in addition to being the operational backbone, provide the basis for artificial intelligence engines and the guidance framework for autonomous bots. Transforming technology delivery drives time-to-market, agility, and margins. Transforming organizational culture ensures nimble operations and seamless governance.

If this were to be changed into simple set of "go-do" catch-phrases, it would be:

- Get a handle on the rate of change (processes, rules, behaviors) to get ahead of the curve
- Reduce the need to change every component of the enterprise from the surface to core
- Enable agility and nimbleness by fostering a culture to learn and evolve

It is the responsibility of the decision-maker to control the portfolio – to guide the value realization with strong foundations and governance. You have made conscious choices to configure your Value Chain to sustain or lead in your industry segment – don't let mundane operational issues let you lose sight of those

configurations. Digital technologies and the resulting transformation are another opportunity to maximize the benefits of your Value Chain configurations.

Figure 14: The Way Forward

Govern the transformation for value, not activities performed. To support governance:

- Gain as many empirical insights as needed
- Develop your roadmap top-down and change course often based on bottom-up learnings
- Exercise all seven levers – be a learning organization that is future-ready!

References

The following are referenced in this document or provide useful background information.

(Please note that the links below are good at the time of writing but cannot be guaranteed for the future.)

- Accenture: Digital Talk: What is a Digital Strategy?, March 2015; refer to: www.accenture.com/us-en/blogs/blogs-digital-what-is-digital-strategy
- Brignull, Harry: 90 Percent of Everything, October 2009; refer to: www.90percentofeverything.com/2009/10/20/just-add-an-egg-usability-user-experience-and-dramaturgy/
- Capgemini Consulting: Digital Transformation: A Roadmap for Billion-Dollar Organizations, 2011; refer to: www.capgemini.com/resource-file-access/resource/pdf/Digital_Transformation__A_Road-Map_for_Billion-Dollar_Organizations.pdf
- Cisco: Digital Transformation; refer to: discover.cisco.com/en/us/digital-business/whitepaper/transformation
- Defining the Business Model in the New World of Digital Business, Mutaz M. Al-Debei, Ramzi El-Haddadeh, David Avison, August 2008; refer to: bura.brunel.ac.uk/bitstream/2438/2887/1/AMCIS2008.pdf
- Docurated: Top Digital Transformation Blogs: 50 Blogs for CIOs on Leading Digital Transformation; refer to: www.docurated.com/transformation/digital-transformation-blogs-cios
- Forrester: George Colony's Blog: The Counterintuitive CEO, December 2013; refer to: blogs.forrester.com/george_colony/13-12-10-your_opportunity_in_the_age_of_the_customer
- Forrester: The Digital Maturity Model 4.0, January 2016; refer to: forrester.nitro-digital.com/pdf/Forrester-s%20Digital%20Maturity%20Model%204.0.pdf
- Gartner: Magic Quadrant for Enterprise Architecture Tools, November 2015; refer to: resources.idgenterprise.com/original/AST-0163997_Gartner_Reprint-Gartner_EA_Tools.pdf
- (The) Guardian: What is Digital Transformation?, November 2013; refer to: www.theguardian.com/media-network/media-network-blog/2013/nov/21/digital-transformation
- Harvard Business Review: Know Your Customers' "Jobs to be Done", September 2016; refer to: hbr.org/2016/09/know-your-customers-jobs-to-be-done
- Harvard Business Review: The 30 Things Customers Really Value, August 2016; refer to: hbr.org/2016/08/the-30-things-customers-really-value
- Harvard Business Review: The Company Cultures that Help (or Hinder) Digital Transformation, August 2015; refer to: hbr.org/2015/08/the-company-cultures-that-help-or-hinder-digital-transformation
- Harvard Business Review: The Industries that are Being Disrupted the Most by Digital, March 2016; refer to: hbr.org/2016/03/the-industries-that-are-being-disrupted-the-most-by-digital

- Klomp, Carsten: 2016: Digital Transformation at HEMA, January 2017; refer to: www.linkedin.com/pulse/2016-digital-transformation-hema-carsten-klomp
- Krost, Robert: The Architecture of Change – Business Architecture and the Meaning of Digital Transformation, August 2016; refer to: www.linkedin.com/pulse/architecture-change-business-meaning-digital-robert-kost
- McKinsey & Company: How Enterprise Architects can Help Ensure Success with Digital Transformations, August 2016; refer to: www.mckinsey.com/business-functions/digital-mckinsey/our-insights/how-enterprise-architects-can-help-ensure-success-with-digital-transformations#0
- McKinsey & Company: Raising your Digital Quotient, June 2015; refer to: www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/raising-your-digital-quotient
- McKinsey & Company: Six Building Blocks for Creating a High-Performing Digital Enterprise, September 2015; refer to: www.mckinsey.com/business-functions/organization/our-insights/six-building-blocks-for-creating-a-high-performing-digital-enterprise
- McKinsey & Company: Strategic Principles for Competing in the Digital Age, May 2014; refer to: www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/strategic-principles-for-competing-in-the-digital-age
- Mindtree: Dynamics of Digital Transformation; refer to: www.mindtree.com/sites/default/files/mindtree-thought-posts-white-paper-dynamics-of-digital-transformation.pdf
- MIT CISR: Designing Digital Organizations, March 2016; refer to: cisr.mit.edu/blog/documents/2016/03/10/mit_cisrwp406_designingdigitalorganzations_rosssebastianbeathscantleburymockerfonstadkaganmoloneykrusellbcg.pdf
- MIT CISR: Digital Design: It's a Journey, April 2016; refer to: cisr.mit.edu/blog/documents/2016/04/21/2016_0401_digitaldesign_rosssebastianbeath.pdf
- MIT Sloan Management Review: Strategy, not Technology, Drives Digital Transformation, July 2015; refer to: sloanreview.mit.edu/projects/strategy-drives-digital-transformation/
- MIT Sloan Management Review: The Nine Elements of Digital Transformation, January 2014; refer to: sloanreview.mit.edu/article/the-nine-elements-of-digital-transformation/
- Oracle: Digital Transformation The Challenges and Opportunities Facing Banks, February 2016; refer to: www.oracle.com/us/industries/financial-services/efma-digital-transformation-wp-2904165.pdf
- PEGA: The Top 6 Success Factors for Digital Transformation, October 2014; refer to: www.pega.com/insights/articles/top-6-success-factors-digital-transformation-part-1-2 (Part 1) and www.pega.com/insights/articles/top-6-success-factors-digital-transformation-part-2-2 (Part 2)
- Porter, Michael.: Competitive Advantage: Creating and Sustaining Superior Performance, ISBN: 978-0684841465, Free Press; 1st Edition (June 1998)
- Solis, Brian: The Six Stages of Digital Transformation Maturity; refer to: www.cognizant.com/whitepapers/the-six-stages-of-digital-transformation-maturity.pdf

- Strategyn: Outcome-Driven Innovation; refer to: strategyn.com/outcome-driven-innovation-process
- The Open Group: Digital Transformation Strategy to Implementation using The Open Group Standards, White Paper (W170), January 2017, published by The Open Group; refer to: www.opengroup.org/bookstore/catalog/w170.htm
- UCI Paul Merage School of Business Center for Digital Transformation; refer to: merage.uci.edu/research-faculty/centers/digital-transformation/index.html
- United States Census Bureau: Business Dynamics Statistics; refer to: www.census.gov/ces/dataproducts/bds/data_firm.html
- Winning the Zero Moment of Truth (ZMoT), Jim Lecinski, June 2011
- World Economic Forum: Digital Transformation of Industries (in collaboration with Accenture), January 2016; refer to: reports.weforum.org/digital-transformation/wp-content/blogs.dir/94/mp/files/pages/files/digital-enterprise-narrative-final-january-2016.pdf

About the Authors

Dave Hornford is the former Chair of The Open Group Architecture Forum. He is a key developer of Conexiam's Navigate Roadmap Atlas and was a key contributor to the TOGAF® 9 standard. Dave serves on the board of trustees of The SABSA® Institute. Based in North America, he leads Conexiam's Boston practice and works in a variety of industries including financial services, oil and gas, and capital-intensive industry. Typically, he helps clients develop and execute a roadmap to transform.

Sriram Sabesan is a practicing digital strategist and management consultant guiding enterprises through their transformation journey. He has co-authored white papers and guides in Digital Transformation and Enterprise Architecture. Sriram serves on The Open Group Governing Board as an elected representative of suppliers. He also serves on The Open Group Architect Certification Board. His deep experience working across multiple industry segments and Fortune 1000 clients enabled him to see patterns and leverage ideas from adjacent industries. Leading teams spread across multiple geographies finessed his approach to adopt evolving practices in delivering architecture and solutions.

Vidhya Sriram is a Customer Experience strategist and a product manager at Saashvata. She leads the practice and supports clients to establish a lean approach to customer research, product vision, and continuous refinement of sticky-features. She works with start-ups in the US and India as well as Fortune 1000 clients. She is a Certified Customer Experience Professional and a Project Management Professional, who lives the principle "reduce the cognitive load".

Ken Street is the current Chair of the Big Data project and is active within The Open Group IT4IT™ and Open Platform 3.0™ Forums. Based in Canada, he leads Conexiam's Governance and Big Data practices. He works primarily in financial services and oil and gas, helping clients to develop their Enterprise Architecture Capability, improve their IT organization, and execute architecture-driven change programs.

Acknowledgements

The authors would like to thank Sukhi Gill, VP and Fellow, HP Enterprise UK, for stimulating our thinking to explore the contextual and correlation possibilities with the use of technologies; discussing a challenge about use of Value Chain and digital tools to transform a manufacturing company; and emphasizing the need to use ecosystem as a lever, and not as a context.

We are indebted to the artists and creators of some of the images used in this document. We have used The Noun Project and Creative Common image library extensively.

About The Open Group

The Open Group is a global consortium that enables the achievement of business objectives through IT standards. With more than 500 member organizations, The Open Group has a diverse membership that spans all sectors of the IT community – customers, systems and solutions suppliers, tool vendors, integrators, and consultants, as well as academics and researchers – to:

- Capture, understand, and address current and emerging requirements, establish policies, and share best practices
- Facilitate interoperability, develop consensus, and evolve and integrate specifications and open source technologies
- Operate the industry's premier certification service

Further information on The Open Group is available at www.opengroup.org.