PECB Insights

ISSUE 28 | ISO STANDARDS AND BEYOND | SEPTEMBER-OCTOBER 2020

DIGITAL TRANSFORMATION

ARE BUSINESSES READY TO SEIZE THE OPPORTUNITIES?

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In This Issue

"THE ONLY WRONG MOVE WHEN IT COMES TO DIGITAL TRANSFORMATION IS NOT TO MAKE ANY MOVE AT ALL."

DIDIER BONNET,
SENIOR VP OF CAPGEMINI

FROM WORKPLACE TO WORKSPACE:

Leading Digital Transformation Post COVID-19

BY TONJE ELISABETH AARØE

Why Should You Accelerate Your Digital Transformation Efforts?

Have you heard about the bridge over the river Choluteca? A 484-metre-long bridge on the river Choluteca located in Honduras, Central America was built in 1996 to withstand storms and hurricanes.

Two years later, Atlantic's second-deadliest hurricane struck Central America. Hurricane Mitch caused over 11,000 fatalities and there were 75 inches of rain in four days, which was an equivalent of what the country would normally receive in six months. Sure enough, the bridge on the river Choluteca stayed put and maintained its pride.

However, the hurricane also swept away the roads leading to the bridge and rendered them as good as non-existent. The heavy rains caused the Choluteca river to change its course, so it no longer flowed below the bridge! Instead, it created a new channel and flowed beside the bridge. The bridge lost its purpose. It became a "bridge to nowhere." (The bridge was connected to the highway later in 2003.)

COVID-19 has affected and is still transforming the entire world, from economic and environmental fluctuations to changes in income, education, employment, and more. COVID-19 is an unprecedented crisis, which affects all aspects of our lives and unemployment has skyrocketed. UNDP and ILO report a huge drop in the global workforce in countries because of workplace closures.

And as if COVID-19 was not enough, Merrill Lynch anticipates $14-33 trillion in annual creative disruption impact in 10 years, including $9 trillion cuts in employment costs via automation of knowledge work and $1.9 trillion in efficiency gains via digitally enabled transportation autonomy. They also estimate that up to 50% of all jobs could be at risk of replacement in 20 years due to digital disruption coming from robotics and the Internet of Things.

Furthermore, a major study by researchers from the University of Oxford showing that almost one in two (47%) of jobs in the US are at risk of being computerized in 20 years. Likewise, for the UK, one third (35%) of jobs are at risk of being replaced (Frey and Osborne). This means that no one is secure in the future of work and that we all need to make sure we upskill ourselves and get our organizations through the digital transformation successfully.

Not only are our jobs insecure, there are analysts that say that due to technological disruption, 40% of today's Fortune 500 companies on the S&P 500 Index will have disappeared by 2025. Meaning not even your company, that has lasted for x number of years, is secure. This was documented by Prof. Mark J. Perry, scholar at the American Enterprise Institute in a famous study, which showed that 87% of the companies that were part of the Fortune 500 had disappeared by 2011. Nokia and Kodak should be good reminders of what can happen to any organization.

This is why you want to build to adapt to the changing global climate and not to last, so what you build loses its purpose. This way, you ensure that your organization keeps the competitive edge and you do what you can to give value in a disruptive market.

Barriers to Succeeding with Digital Transformation — Hint: It's about People, Not Technology

> **"There is nothing more difficult to carry out, nor more doubtful of success or dangerous to handle, than to initiate a new order of things."**
>
> Niccolo Machiavelli

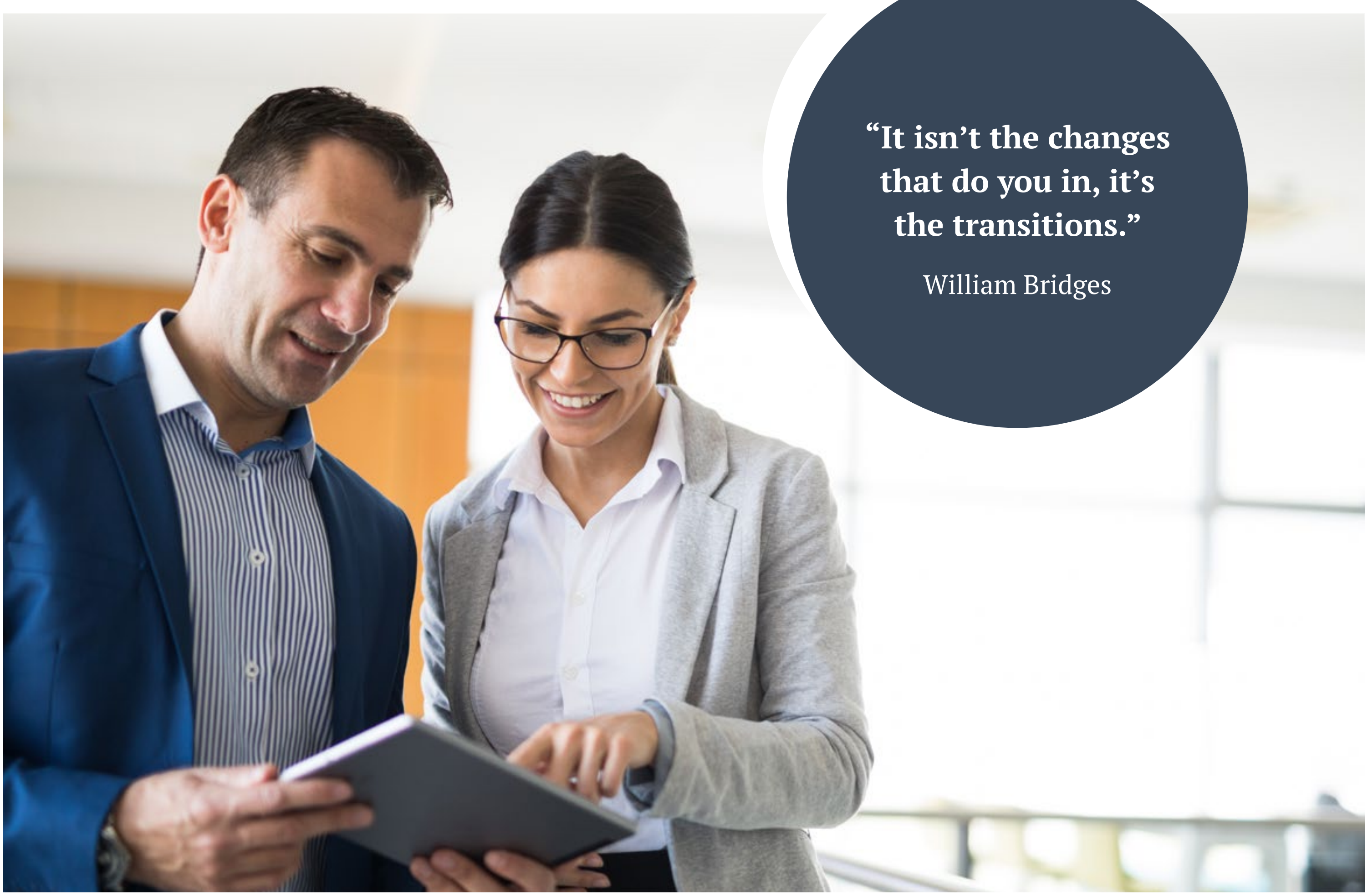
Delivering successful transformation is a good challenge at best, that is why the bi-annual change management study conducted by Prosci and filled in by organizations all around the world, concludes with only 30% of all transformation processes being successful. The fact is that organizations do not just change because of new systems and digital transformation, processes, or new organizational structures. They change because the people within the organization adapt and change too. Only when the people within it have made their own personal transitions can an organization truly reap the benefits of digital transformation.

Resistance from people in the organization and low engagement in the transformation are the main barriers to succeeding with digital transformation. Our general first rule is to include everyone in the organization, from day one, in the transformation. It may not be convenient and you may not have much information to give; however, it is crucial to eliminate negativity and rumors from the first get go.

A reason why your change project may fail is that no one thought of how to manage the impact of the ending of the old culture on the people in your organization. Naturally, people are concerned about the future, and, as a leader, you can sometimes forget that your employees have to let go of the present first.

The first task of any transition is to convince people to leave home and make them understand that they are going to be better off where they are going!

Many employees can be shielded from the consequences of change. To you, as a leader, the change may feel like "safety" as there is not any other choice that makes economic sense, but to employees it can feel like a loss.



> **"It isn't the changes that do you in, it's the transitions."**
>
> William Bridges

Figure 1. William Bridges' Transition Model

The three phases in the model are not separate stages with clear boundaries. They overlap, and you will be in more than one phase at any time as some people will move faster than others. Here are the types of loss people can feel in an organization going through transformation:

- **Loss of control:** If people are not fully engaged in the process, even if it is a positive change, it will feel like a loss.
- **Loss of pride:** Many leaders cheer — lead the future at the expense of the past, but employees built the organization through their hard work so remember this (appreciative enquiry can be a useful approach).
- **Loss of narrative:** The stamp employees have put their name to is connected to personal values i.e., it is their story often over many years.
- **Loss of competence:** Anytime you ask an employee to embrace innovation you ask them to move away from expertise.
- **Loss of time:** As leaders, you will need to be mindful that you need to take tasks off people to introduce something new.
- **Loss of familiarity:** We get comfort from what we know. Change takes our comfort away.

It is important to remember that as a leader, you have had months of planning to get on board with the change. You are at the front of the change curve while your people are way behind, at the back of the change curve. And, often, to the recipients of change, the announcement comes with little context of "why" the change is happening, what is in it for them, or the impact the change will have on them.

How to lead through endings:

- Identify who is losing what
- Do not be surprised by over-reaction
- Acknowledge the losses openly and empathetically
- Expect and accept the grieving signs
- Give people information repeatedly
- Be clear what is in and what is out
- Mark the endings in some way
- Treat the past with respect — take the good stuff with you
- Let people take a piece of the old with them

“Often when you think you're at the end of something, you're at the beginning of something else.”

Fred Rogers

The Neutral Zone

This is the sea between the old and the new. It can take days or months or even years to cross. This is where resistance can really kick in. This is how resistance can show up (Source: Prosci).

- **Emotion:** Fear, loss, sadness, anger, anxiety, frustration, depression, focus on self
- **Disengagement:** Silence, avoidance, ignoring communications, indifference, apathy, low morale
- **Work impact:** Reduced productivity/efficiency, noncompliance, absenteeism, mistakes
- **Acting out:** Conflict, arguments, sabotage; overbearing, aggressive, or passive/aggressive behavior
- **Negativity:** Rumors/gossip, miscommunication, complaining, focus on problems, celebrating failure
- **Avoidance:** Ignoring change, reverting to old behaviors, workarounds, abdicating responsibilities
- **Building barriers:** Excuses, counter-approaches, recruiting dissenters, secrecy, breakdown in trust
- **Controlling:** Asking lots of questions, influencing outcomes, defending current state, using status

Just as change is individual — person-by-person — so is resistance to change. The root cause for one person’s resistance is not the same as another person’s, considering factors such as personal history, current events in their life, and other current changes at work can help you help them through the resistance.

Resistance has costs — it is not free. And, to avoid these costs and the potential risks to a project or change initiative, it is important to develop a planned and intentional approach to manage resistance to change. However, the neutral zone can also be a time of creativity and engagement. How can you navigate and lead through the sea of the neutral zone?

1. Use this opportunity for reorientation and redefinition, and to do things differently and better.
2. Help people regain their balance by ensuring that systems, communications, etc., are fit for the purpose. Short-terms goals can be useful as they can help see “the light in the end of a tunnel” and can help them to manage the transition.
3. Engage employees in what the “new beginning” will look and feel like; enable excitement. Foster change ambassadors and champions — gather those who are enthusiastic about the future to help engage the ones who are not so enthusiastic about it.

Checkpoints for Your Successful Digital Transformation

Your role as leader of your future of work is crucial to the success of your digital transformation. What does it mean? You'll benefit from:

1. Leading by example, role modeling values and behaviors
2. Supporting the transformation by giving it your consistent and constant attention
3. Championing the change by leading and motivating others to do the changes you do
4. Being available to make effective and influential decisions regarding digital transformation

In addition, be consistent in your messaging, ensure partway milestones and quick success, celebrate successes among the way, small and big ones.

To make a fresh start and go well through digital transformation you need the Four P's:

1. **Purpose:** Clarify and communicate the purpose and translate into a language that front-line people can understand. Consider the point of view of "WIFFM" — what's in it for me?
2. **Picture:** Give people, or even better, use people to help create a picture of how the outcome will look and how it will feel. Be careful not to overwhelm people. Give the picture in bite size chunks if appropriate.
3. **Plan:** Make a plan that outlines the steps and schedule in which people will receive information, training, and the support they will need to make the transition.
4. **Part to play:** Finally, give people a role to play in the journey. Engage with them in the design and of the new beginning as far as you can. Because, everyone who plays a part will be implicitly implicated in the outcome.

How Can You Leverage Well-being in Your New Virtual Organization?

Practical Tips on How to Thrive Post COVID-19

The pandemic lockdowns put in place to fight the spread of the coronavirus have accelerated the already growing trend of holding virtual meetings. Virtual conversations, presentations, and meetings tax our brains much more than in-person interactions because they require higher levels of sustained concentration. You are concentrating on the other speakers, their surroundings, and yourself — how you appear on the webcam. And all of that intense focus is on a digital screen, an unnatural environment. What can you do and help your organization do to combat virtual meeting fatigue?

1. Keep your daily health routine and if you don't have one, what is the one thing you can commit to today to be more rested and have more energy.

2. Schedule breaks between online meetings. It is tempting to schedule back-to-back virtual meetings because the travel time is eliminated. We can easily jump to the next Zoom link instead of taking the elevator to the 5th floor conference room. Use the phone as well. You can also occasionally call in to that virtual meeting instead of videoing in. That gives you the opportunity to walk around and even step outside during it.

3. Build in breaks during longer meetings. It is amazing how much concentration it takes to engage in an online meeting. There are so many more distractions and things to look at than an in-person meeting in a conference room or someone's living room. Normal meeting actions, like looking out of the window while someone else is talking, can seem very disengaging on a video call. You feel the need to focus on the screen the entire time. That makes a two-hour virtual meeting feel more like four hours. It is important to schedule in five- to 10-minute breaks every hour for participants to use the restroom or just disengage from a screen.

4. Schedule shorter meetings. We know virtual meetings always feel longer than physical meetings, so plan for it and keep most of your meetings shorter. 25 minutes instead of 30 or 50 instead of 60 minutes to allow break before next meeting. At Google, all meetings are either 25 or 50 minutes long.

5. Keep a Zoom Free day. Having a day scheduled each week for no meetings is good advice anytime, but especially now with everything taking place in one location. As this isolation goes on, lines drawn in our lives will begin to blur. In this time it will be easy — and unhealthy — for the office to take over too much of our homes. Because of this you might consider, as a team, making certain days "meeting-free" or giving team members the right to decline meetings for various reasons.

6. Schedule technology breaks. Everyone's calendars are different, and there will be some of us who have more meetings.

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About the Author

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Tonje is a mother of four children living with her fiancé in Drøbak, Norway. She is also an ex-Googler and ex-Microsofter helping organizations lead digital transformation, culture, and behavior change in the workplace.

Working in various high-paced global organizations such as Google and Microsoft and also working and living in France and Switzerland has taught her change leadership, what it takes to be innovative and the value of staying agile and flexible, autonomous, being ready for perpetual changes, understanding different models of the world/cultures, and what it takes to lead in a global competitive landscape.

At Google, she got first-hand experience with how to engage and motivate all employees and what it takes to make sure the company keeps its competitive edge. She learned the power of transparent communication and collaboration across organizations. And she wants to give value and share this knowledge with the world of business; transform workplace cultures into thriving spaces where people's hearts are in their work, to increase engagement, deliver innovation, and tangible results – fast.

Growthitude helps organizations develop and engage their people and teams successfully and in that help reduce costs, increase efficiency, improve quality and profitability through good leadership and a good work culture.

Laying a Foundation for the Digital Future with a Solid Business Continuity Approach

BY WOLFGANG MAHR

Digital transformation is a young discipline. It is a welcome aspect of business transformation, reorganizing and streamlining business processes, in order to make existing processes more efficient or creating new processes which would not have been possible without digital technology. I am thinking, for example, of processes like ordering from a web shop, interacting with your city or provincial administration through e-government, or signing an electronic receipt on a tablet computer when receiving a shipment. These processes may have existed in paper form before the transformation or might not even have existed in that form at all, as outlined above.

The base for this evolution is the diminishing cost of electronic computing, made possible through advances in hardware and semiconductor technology, as well as advances in software development and design. Processing, storing, and transporting data has become more efficient and cheaper than ever before.

We are witnessing an evolution from hard-copy based processes, where people fill in forms and then send them to the next person in the process, repeatedly switching storage and transportation media (paper, fax transmission, copying, reentering, and manipulation of data, etc.). If based on an efficient IT infrastructure, these processes can be sped up and provided the fraction of cost.

Enter business continuity. Business continuity as a holistic discipline serves to mitigate the effects of business interruptions — following a two-pronged approach of both preparedness and efficient recovery — certainly is an indispensable foundation stone for digital transformation. Apart from some other roots of the discipline, business continuity can be considered to have become an essential business tool when organizations started to process electronic data, some 50 years ago.

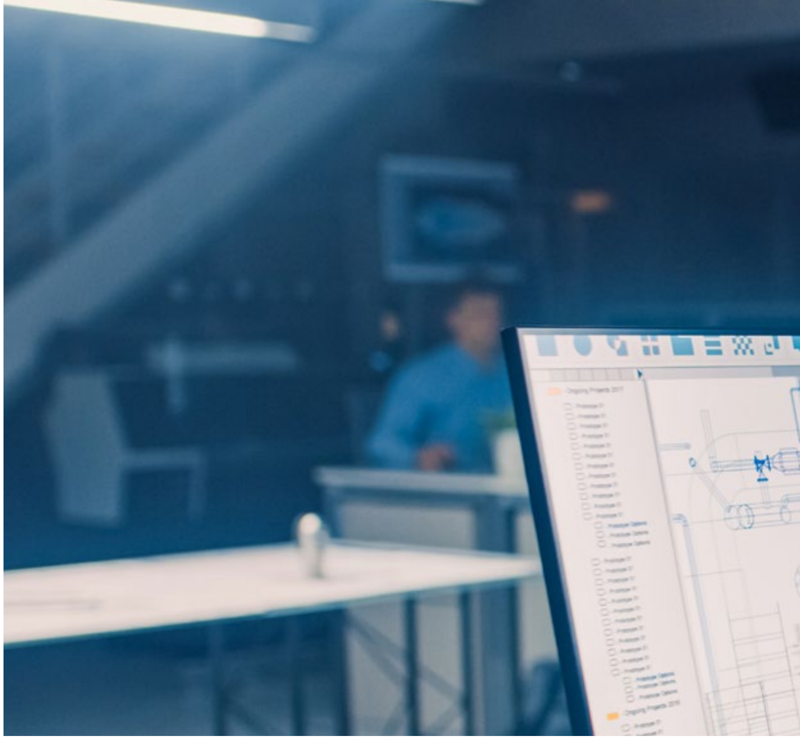
Before that era, business was mainly paper-based, all records were physical, and care had to be taken to safeguard the documents in the archive, the records governing all business processes (sales, purchasing, production documentation, worksheets, etc.) and, of course, the bookkeeping ledgers.

I think this was not an easy task, as the risk to lose everything in a fire or flood, for example, was high. You could not simply backup a whole cabinet of paper-based business documents with the push of a button. As a matter of fact, costly mitigation measures were put in place in order to reduce the risk of a total loss.

Where are we today? Depending on the type of business and its innovation maturity, many businesses are on the road to digital transformation. They have evolved and set up IT resources in order to save costs and/or to offer competitive services to their clients. As this is, in most cases, an incremental process executed in small and practical steps, the requirements to safeguard these processes (and their data) might receive secondary or no priority it all. At that point, a professional business continuity approach is needed. While the “b” in business continuity stands for “business,” indicating that all business processes need to be covered, in our context we will focus on the IT aspects. Actually, many people confuse business continuity with IT continuity and are of the opinion that when dealing with the latter, their whole business is safeguarded, which obviously is not correct.

As we deal with digital transformation aspects, let us have a look at the interrelation between digital transformation and business continuity. By now it should be clear that a resilient and solid path to digital transformation necessitates a business continuity approach. Ideally, this transformation process should not even start without considering a business continuity approach. While this is an ideal setting recommended by business continuity specialists and major globally accepted best practices, reality shows that this cannot always be attained. As a consequence, in most cases, we have to deal with a situation where insufficient focus was put on safeguarding IT resources and data, thus leaving the IT infrastructure (being the base for the digital transformation) in a vulnerable state. In such a case, a retrofit solution has to be applied. We have to deploy a business continuity approach preferably based on best practices. For example, ISO 22301:2019, the internationally accepted standard for business continuity management systems can be applied. This standard serves to guide organizations through their first steps in business continuity up to a degree of maturity where the organization may apply for certification against this standard. Let me first underline two basic principles laid down in this standard: it is crucial to obtain top management commitment for the undertaking before deploying a business continuity approach and we have to develop a habit to consider a business continuity approach to observe the principle of continual improvement.

> **In other words, any implementation or deployment need not even be attempted if there is no top management commitment behind it, and business continuity is not a one-shot attempt which is implemented with a fire-and-forget mindset. From an organization's point of view, business continuity is a tool to help the organization develop and prosper in a protected way.**



So what are the primary phases of a business continuity approach? After obtaining management commitment, we need to analyze the key processes of the organization and their underlying resources. In the so-called business impact analysis (BIA) we need to identify the key products and services of the organization (those which are expected to be continuously delivered to the organization's customers). Also, we need to get an overview of the interdependencies of key resources within the organization, in our case, an overview of the IT architecture. As this architecture might have become more complex and multi-level, the visualization of the relationship between the different components in the architecture may not easily be obtained, but will be very rewarding in the end. One of the advantages of this procedure is the identification of so-called single points of failure. These critical elements — for which there are no redundant backups — need to be identified, as their failures would lead to unforeseeable consequences for the operation of key processes. Typically, these single points of failure need to be eliminated by deploying redundant components, thereby eliminating the threat to the organization. Another key feature of the business impact analysis is to obtain estimates about the accepted length of unavailability of certain business processes (which can be in the range of zero seconds to several hours or days) and, quite important in our context, indications about an accepted data loss (which might well be zero as well). Information derived during the business impact analysis phase is provided by structured interviews with key staff.

The next phase is the development of business continuity solutions or strategies, based on results of the business impact analysis. This is one of the reasons why a valid business continuity approach cannot be implemented without a business impact analysis. As already hinted in the previous paragraph, business continuity strategies are designed to provide answers to the range of problems unearthed during the business impact analysis phase. Depending on the severity of the identified shortcomings, a range of business continuity strategies might be identified. It is then the top management's decision to select one or the other strategy for realization. It is easy to imagine that the cheapest and most ineffective strategy is to do nothing (we accept the risk and live with it). However, in order to provide a substantial protection against the consequences of business disruptions, real strategies, which are scenario-based, need to be implemented. In most cases, organizations may decide for a cheaper and simpler strategy in the first place, postponing more effective countermeasures to future business years.

Up to now the organization has only produced documents (analysis and strategy) but is not much better protected than before. In the following implementation phase the protection approach needs to be rolled out. In most cases, this will result in more or less substantial investments into additional resources (e.g., redundant systems), or even a redesign of the current IT architecture. On top of that, the human and organizational resources dealing with

potential business interruptions need to be put together. We are dealing with a business continuity team or several teams dedicated to be summoned at short notice in case of a business disruption, in order to execute the predefined steps of the business continuity plans. Depending on the size of the organization, we may deal with a single small team or a hierarchy of teams with different tasks, distributed over several locations.

In the final validation phase, we need to verify that our business continuity approach is actually working. One of the components of this validation concept is to run exercises and tests. These exercises may range from simple table-top scenarios to full-scale realistic simulations of IT outages. Only through continual testing we can get the confidence that our business continuity teams will operate in accordance with the predetermined procedures during a real business disruption. Another component of validation is a review of the business continuity approach by independent specialists such as internal or external audit.

After having run through these four phases, 6 to 12 months may have passed. During that period the organization may have changed, grown or shrunk, may have acquired another organization, or simply the market situation may differ from when we initially started. According to the principle of continual improvement the business impact analysis needs to be rerun, either partially or completely.

As we have seen, digital transformation, heavily based on IT and telecommunication resources, needs to be properly supported by a holistic protection approach. Without underpinning digital transformation with a solid business continuity approach we are building castles in the air.

About the Author

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Dr. Wolfgang Mahr has over 30 years of experience in consulting and project management in the ICT environment and during the last 25 years has specialized in the field of Business Continuity Management. He has experience in IT governance, information security, business management, marketing, account and product management. He is also experienced in professional education, as an author of educational content and as an international speaker.

He is a member of global standards committees (ISO/TC 292, CEN TC/391) and a past president of the BCI Swiss Chapter (2011 to 2014). He holds a Ph.D. degree from the Swiss Federal Institute of Technology in Lausanne (EPFL), and is a Certified Information Systems Auditor (CISA) and a long-time member of the Business Continuity Institute (FBCI) from which he received a BCI Achievement Award in 2014. Since 2015, he has been a member of the DRI Future Visions Committee. He is a certified BCI and PECB trainer. In 2020, he published a book "BCM – Ihre Krisenstrategie," highlighting the application of global best practices for BCM approaches.

For more insightful information on the topic, check out Wolfgang Mahr's recently published book.

English version in progress

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#DIGITALTRANSFORMATION REMEDIES

The Steps of Successful Digital Transformation

BY STEFFEN DAMBORG

There is no digital transformation without empowering employees. Technology evolves at an exponential pace. This means that the pace of change will never be as slow as it is today. Organizations that have the ability and willingness to adapt to the "new normal" have the upper hand.

The pace of change has never been as fast as it is today, a famous The New Yorker quote says. One implication of being on an exponential curve is the paradox that at the same time the future pace of change will never be as slow as it is today. Pause for a minute to consider this.

Whether we are moving along an exponential curve we do not know, and we will only be able to determine this in retrospect. But it is unquestionable that we experience profound changes in the way we live our lives, and the way businesses operate. In the business realm, one consequence has been the rise of new unicorn businesses build on new digital technologies, platforms, and product offerings. We all know the most successful ones and today they are the most valuable companies in the world in terms of stock market valuations.

While these new stars are rising, legacy companies seem to have difficulties transforming themselves into the digital age. To fully understand this, you would have to look at each organization individually. But there seems to be commonalities: a) Most legacy companies are designed to minimize mistakes. This seems to be counterproductive when trying to invent and implement new business models based on more radical types of innovation. And b) It seems difficult to be innovative and constantly cost-cutting at the same time.

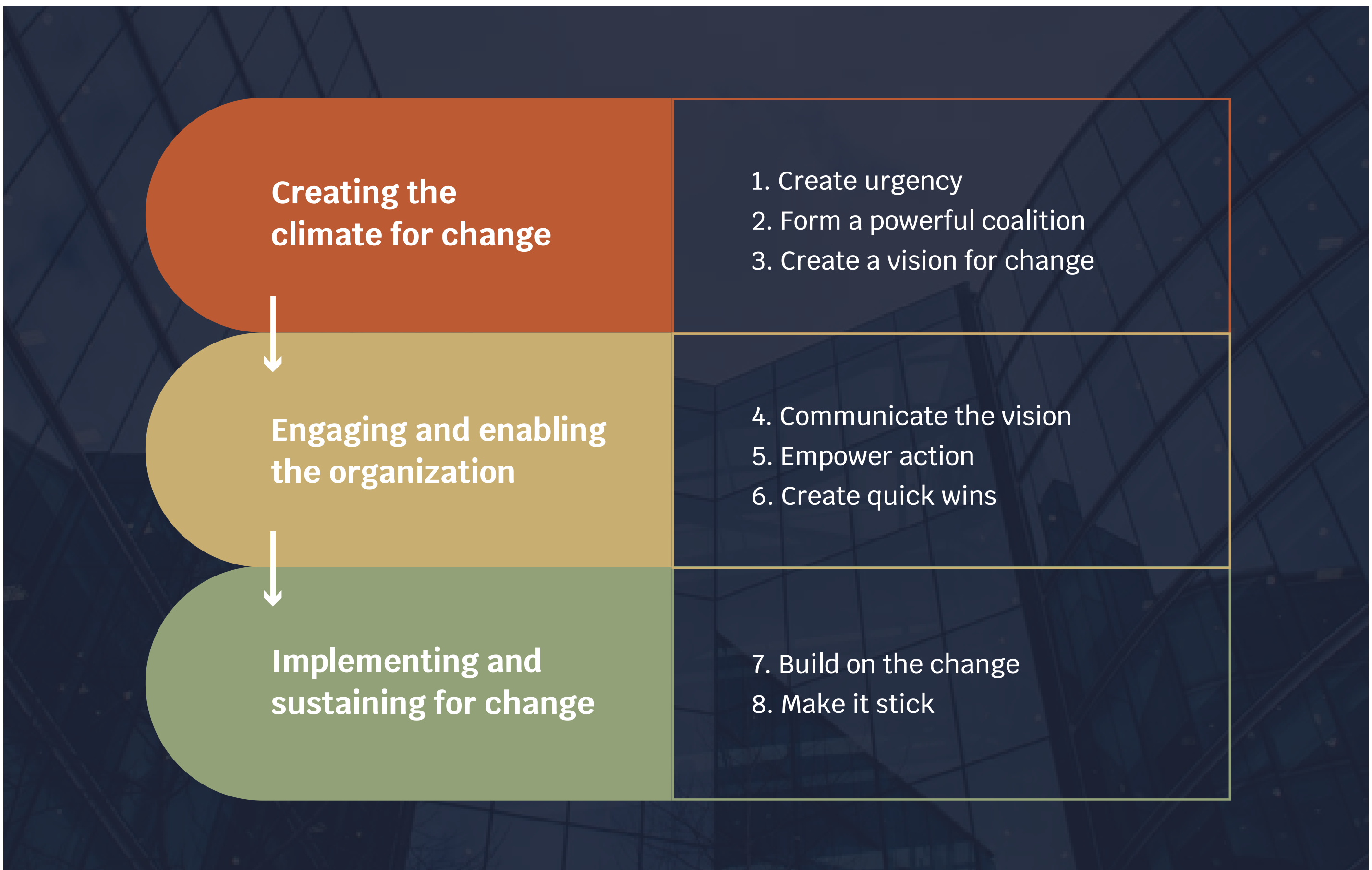
How to Create Change

Real change begins by creating a vision and empowering the people that should carry out the strategy. This is what leadership in the digital age is all about. In order to transform your business, you obviously need to establish a sense of urgency and create the vision for a new strategy.

Mature leadership knows the importance of human factor and digital capabilities. Digital transformation is first and foremost a cultural transformation. Going from doing digital to being digital. Companies that strive for a diverse culture and create cross-functional teams outperform companies that stick to more traditional approaches.

Research shows that behavior is the single factor that has the highest impact on a company's ability to execute digital transformation. Companies that go on a digital offensive generate three times more profit growth than their more defensive counterparts.

Your customers demand a multichannel and digital experience. However, to deliver this experience, you need the right skills and behavior and a tech stack that can utilize big data and deliver excellence across platforms.



Source: John P Kotter's model for corporate change

Cultural Aspects of the Winning Company in the Digital Age

Companies that focus on digital culture achieve breakthrough performance at a much higher rate. Building a digital innovation culture requires that you become able to act faster, be more flexible, think differently, and think beyond your past successes. At the same time, a digital culture also attracts and retains the top talent needed for your journey. 90% of top managers expect their industry to be hit by digital disruption. But more surprisingly, only half say they have a plan. Why is innovation so difficult for incumbents?

The Incumbent's Dilemma

Incumbents often fail to adapt to new technologies despite it being one of the bases of competitive advantages. It is a good place to start if you wish to stay ahead of the curve and survive. We may ponder as to what is it that keeps incumbents from innovating or why do they find it so difficult to implement. Here are a few reasons that apply to many players:

- Many organizations fail or refuse to cannibalize their previously successful products to make room for new products. Take the example of Kodak; they had important patents that were the basis for the digital photography, but they were very protective of their film business which became their demise as they failed to adapt to new technologies.
- Many organizations are also reluctant because they fear failure. They are afraid of taking the risk but fail to realize that failure is endemic to innovation.
- Many incumbents are too preoccupied with the present that they forget to pay attention to the future. They ignore the possibility and promise a product may deliver by simply deciding the future of innovation on the judgement of the executives.
- Incumbent organizations do not provide any incentives for innovation, do not invest in fostering innovation, and even depower/demotivate innovative thinkers. They follow old and outdated incentive methods that focus on employee loyalty or seniority level.
- Incumbents fail to appreciate or celebrate innovation. It is because of this that they do not have anything similar to internal competitions for innovative ideas or innovation fairs.
- And finally, most organizations fail to identify innovators and fail to appreciate or reward them, which kills innovation. Successful organizations have a culture for designing teams and units that are dedicated to creating and generating innovative ideas. They are provided with resources and means to do so and have the complete support of the organization in the process.

Research have shown that technology matters, but it is not the key driver of business model innovation. The more recent thinking is that organizations need to have intrinsic motivation rather than extrinsic motivation. So it is not just monitory awards but making people identify with the bigger goal of the organization which makes them feel like part of the bigger picture and allows them to establish a strong identity that allows them to deliver value.

An idea of self-managing teams exists where supervision is kept to a bare minimum and people are given more autonomy over their decisions. It results in increased creativity and productivity, when organizations erase these strict lines of command and give people freedom and lay trust in them to be more self-organized. This is a technique called Holacracy which is a fancy title for self-managing teams. Simply put, it is a way to manage teams that is not top-down or hierarchically driven and instead, more self-organized. So, organizations need a flexible structure for this, a new meeting format, more autonomy to teams and individuals, and a unique evolving decision-making process that allows it to evolve with the way different activities are carried out in the organization. This way of thinking is for instance embedded in the more and more widely used Agile SCRUM framework.

An idea for this Holacracy would be this large Dutch bank called ING which is quite ahead in its attempts to be a digitized bank. Their motto is “we want to be a FinTech” — to be this super agile and highly responsive bank. They even went to Spotify to look for their business model innovation and came up with new management innovations that could help them achieve their fast response times. Spotify is a well-known start-up in Sweden known for its music services. It is a completely different organization which makes us wonder, why would ING go to Spotify to learn? The people at ING were looking for ways to become more agile and reduce their response time, become faster to respond to the needs of the customers and they saw Spotify was good at it even if it is a completely different industry.

They took a lot of lessons from Spotify and tried to implement in ING. So, the idea of Holacracy is that you cut through bureaucracy and try to increase your flexibility, adaptability, and create quicker response time to environmental changes; an example of management innovation.

Another example is Zara. Zara is a famous fashion retailer that is part of this Spanish empire called Inditex which is one of the top three in the world along with H&M and Uniqlo. Zara has created a huge amount of value for investors and

it is known for fast fashion. They deliver changes in their fashion line swiftly by picking up on trends and produce new garments at a faster rate. They also create this urge in customers to buy those garments before they go out of fashion and are not repeated.

Zara designed this model by sourcing their manufacturers within Europe at affordable locations and reduced the time to produce garments and make them available online or in retail stores. Their offline stores attract people who are still looking to buy things they might not find again. Zara was able to create this business model through this agile form of organizing which allowed them to source locally for low-cost production instead of going overseas to reduce the build-up of time.

Coming back to organizational forms, the platform model is always worth mentioning. The platform is also a different type of organizing. Instead of having a firm, platform model makes customers a part of the organization. For example, Uber, the largest taxi company in the world, own no vehicles; Facebook, the most popular media owner creates no content; Alibaba, the most valuable retailer, has no inventory; the world's largest accommodation provider, Airbnb, owns no real estate. We can argue why Airbnb is worth more than Marriot if they do not have any property? Well, Airbnb does not have typical assets, but they are linking us to the service providers.

There is a famous tweet by the CEO of Marriot saying something along the lines of we are going to add X thousand rooms in the next five years, and the owner of Airbnb tweeted back, we are going to do so in three months.

It takes a lot of resources to build capacity for 1000 rooms but what does Airbnb need to do to have a thousand rooms capacity? They just need to link more service providers. Platforms can expand simply by linking more users and create more users and capacity in a relatively different manner than an organization would, such as a hotel trying to expand even 200 rooms. The way this is organized, it is completely different, and this model allows organizations to scale up these demand economies in different ways that traditional organizations can't. This is another organizational form that allows the organization to deliver value to a wide range of audience by making them a part of the value creation chain.

Co-creation

Happening more often across the board is the idea of co-creation. Although linked to the other three, it is the idea that you are co-creating value together rather than co-creating value as a firm. An example would be P&G innovate, where they take ideas from their customers, suppliers, and all the other stakeholders to inform their innovation process. For innovation to happen, smart people should be working in the organization.

There is no reason to limit innovation to or within your organization. Firms are increasingly realizing that innovative ideas can come from outside their organizations such as their dealers, users, suppliers, or partners. There is no reason you should not leverage the innovative potential of your ecosystem partner and rely only on the firm for innovation when innovation can be user-led, supplier-led, and customer-led as well.

Some people have talked about sharing economy approach within, for example, transportation services like Uber, sharing economy of accommodation, and hospitality services like Airbnb. The shared economy approach uses consumers as a part of value creation rather than just as recipients. This is seen in a lot of industries where users are used for value creation with many examples of sharing economy.

When it comes to co-creation, the focus should be on co-production and value in use on their Knowledge, Experience, Interaction, Equity, Personalization, or Relationships — as described in detail in the chart below.

The idea of thinking consumers as co-creators is important because:

- In the past, companies thought of customers as targets they could sell things to.
- If we reverse that logic and involve customers in value co-creation, both can create a rich experience and more value for the organization.
- Involving customers in the process creates a much richer experience and at the same time, more value for your organization.

International Keynote Speaker
Steffen Damborg on Digital Transformation

The real benefits and information lie in the use and interaction of the customer with a product.

> **Amazon is buying food stores to learn how people shop. To understand the value in co-creation, is to see value in use and co-production and to see how people use a product.**

I believe management (executive or academics) should learn more from anthropologists to get a deeper insight into what people do. Organizations deploying tactics to get a deeper insight into what is it that people want and how people interact with their product will win in the long run.

It really boils down to understanding and acting proactively on the fast-changing consumer habits in a customer-centric way. Behavior is changing rapidly forcing businesses to apply their overall business strategy and training employees to meet the demands of a disrupted new normal.

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About the Author

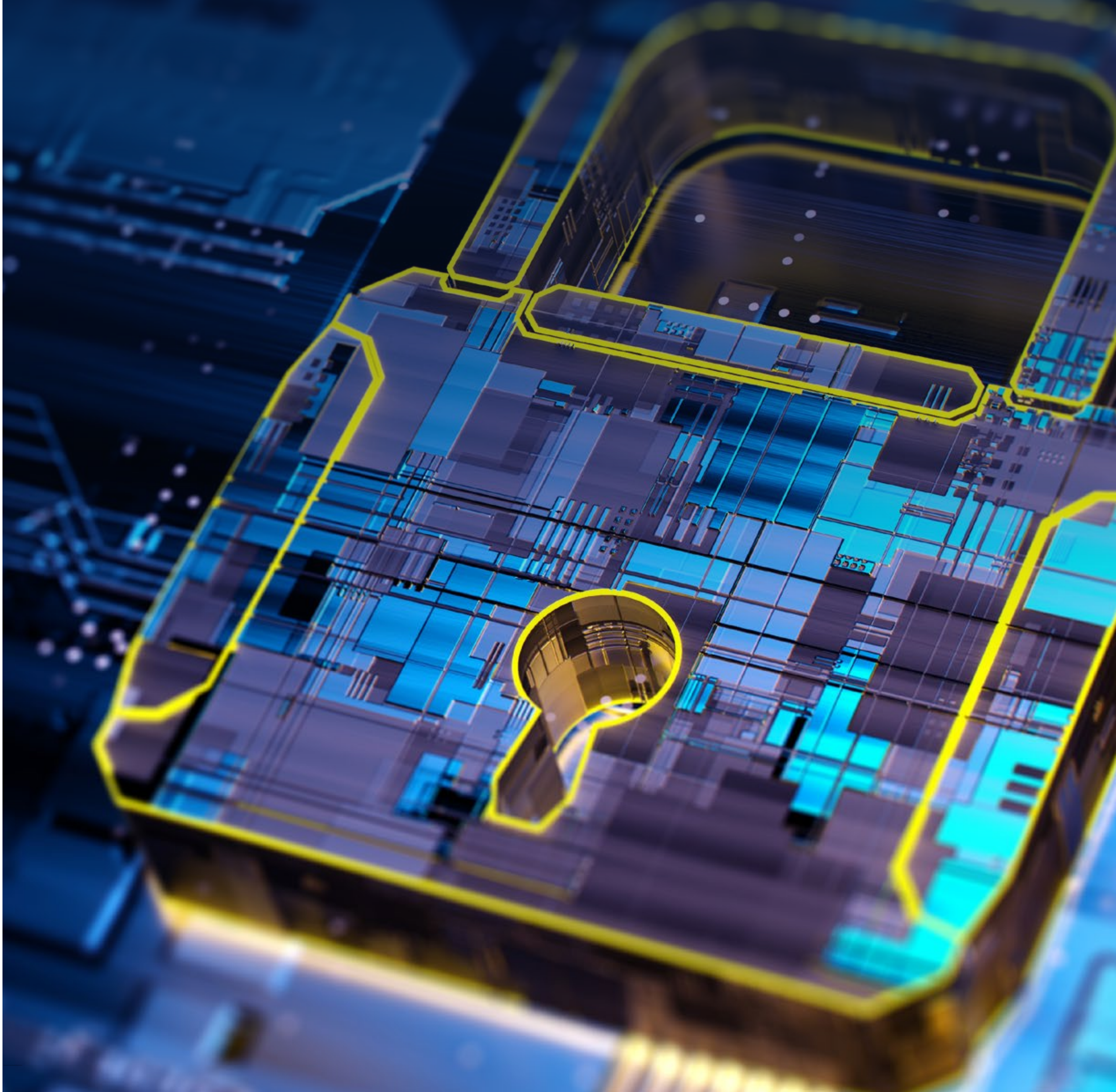
Steffen Damborg
Digital Transformation Strategist,
Board Member, Keynote Speaker

Steffen Damborg (MBA) is a digital transformation specialist with 10 plus years of experience in all aspects of running an online business in the media industry. He is a former Digital Director and Chief Development Officer at the leading Danish publisher JPP and is currently focusing on Digital Transformation for global organizations accrued from his knowledge of working extensively in the European market. His digital transformation experience includes different aspects of digital management, strategic development, and emergent approaches towards new sustainable digital business models.

Mr. Damborg holds an MBA degree from Aarhus School of Business and an MSc degree in political science from Heidelberg University/Aarhus University and executive educations from business schools at Harvard and Cambridge. In 2016, Steffen Damborg was appointed Media & Entertainment Group Discussion Leader at Harvard Business School. He has headed numerous digitization projects across several continents.

Automated Security Compliance: A New Horizon

BY STEVEN BRADLEY & BONNIE DEMEYER



Well before being accelerated by the current crisis, digitalization has been driven by the need to harness change for competitive advantage. The key to future prosperity in the online economy is recognized as a need for trustworthy networks and IT systems. This demand for trustworthiness is driving ever higher standards of maturity in cyber-risk management and both commercial and regulatory compliance. It is increasingly commonplace for organizations to be operating in a multi-regulatory environment in which audits become more frequent and numerous, and subject to higher levels of scrutiny with each passing year.

Maintaining continual compliance is extremely onerous. Organizations typically respond by first streamlining their operations: teams dedicated to specific compliance framework silos are re-organized into a single, enterprise-wide capability. They then find out that despite these efficiency savings, they are still left with a task of formidable scope and complexity that requires a small army to support what is still a largely manual operation.

It is clear that automation will be a key enabler to further progress, but it is not possible to automate anything without a very precise understanding of the problem domain.

Why Is Compliance Such a Headache?

The management of enterprise IT systems, even before considering the security aspects, faces a set of complex, multi-faceted, even “wicked” problems. The task being asked of compliance introduces a further set of factors:

- Control objectives
- Control requirements
- Control measures
- In-scope components
- Risk factors
- Implementation guidelines
- Alternative implementations
- Deviations
- Mitigations
- Remediation
- Systems/Firewalls/Gateways
- Network Zoning/Architectures/Topologies
- Application owners
- System owners
- Evidence acceptability criteria/QA
- Evidence collection and audit procedures

How are compliance teams equipped to respond to this multi-dimensional challenge? Usually with spreadsheets, a war-room tiled in sticky notes, and a process all too prone to becoming over-complex, chaotic, expensive, slow, morale-sapping, inconsistent, opaque, poorly-defined and understood, contra indicatory, inflexible, and of limited reuse.

What If This Could Be Automated?

The benefits of some kind of automated analytic capability for compliance are easily imagined:

- Improved efficiency, effectiveness, repeatability, and assurance with which the current compliance status can be determined
- The ability to monitor compliance status and audit readiness, not as an annual exercise, but on a continual basis
- Early identification (and remediation) of compliance issues
- The ability to run “what-if” scenarios (e.g., the impact of a particular change to an IT system, the granting of a policy exception, or a projection of what the compliance posture would be at some time in the future)

Currently, the creation of such a capability is a major undertaking for which very few organizations have the necessary skills, resources, and mandate. To be attainable as a mainstream best practice, the approach must evolve on a number of fronts:

- A means of representing and exchanging the necessary data in a defined and consistent format (ontologies, schema, standards bodies, etc.)
- Tools and techniques that support the creation and processing of artefacts expressed in this standard format
- Data analytics platforms capable of applying "intelligence" to visualize and extract knowledge from these data models
- A community of subject-matter experts and practitioners that have learned how to extract optimum value from (and avoid the limitations of) tools and techniques
- Early adopters willing to engage in pilot projects that provide feedback about which analytic functions prove most useful, which should be developed next, help explore and advance the capability, not only in the automation of compliance but also in related domains such as risk

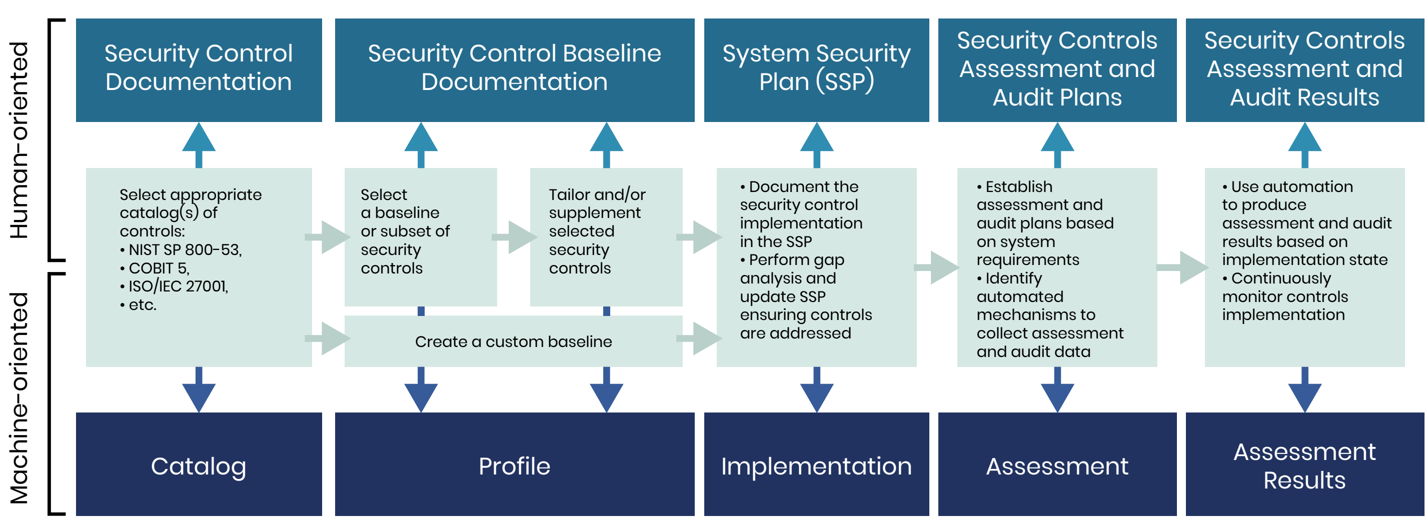
Automation on the Horizon

The most significant development in this field for decades is NIST's Open Security Controls Assessment Language (OSCAL). OSCAL defines a series of inter-locking data schema that progressively define the stages of a compliance process: "Security Control Framework," "Component Protection Profile," "Architectural Pattern and Reference Architecture," "Assessment Execution and Reporting."

Figure 1 depicts the five stages of OSCAL's data processing pipeline in which artefacts on the left are successively transformed and combined with those to their right. Conceptually, the Control Catalog is first overlaid onto a set of Protection Profiles (for components present in the target domain) to generate the applicable Baseline Control set.

The baselines are then arranged into architectural models (built from patterns, through reference architectures to Target Systems) to create an aggregate System Security Plan (SSP). The fourth stage defines the evidence generated by each of these controls and the fifth involves the evaluation of that evidence against the acceptance criteria required for compliance. The vertical axis of the architecture diagram shows that although OSCAL is natively a machine-readable format intended for automated processing, it is also meant to be rendered into human-oriented formats (e.g., MS Office or PDF) to facilitate process management and reporting. Aside from its technical vision, with the standing and resources of NIST behind it, the final pre-release of OSCAL (June 2020) is already established as a de-facto standard, with the full v1.0 release expected early next year.

Figure 1. OSCAL Architecture

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80
60

Technology

How to Start Automating

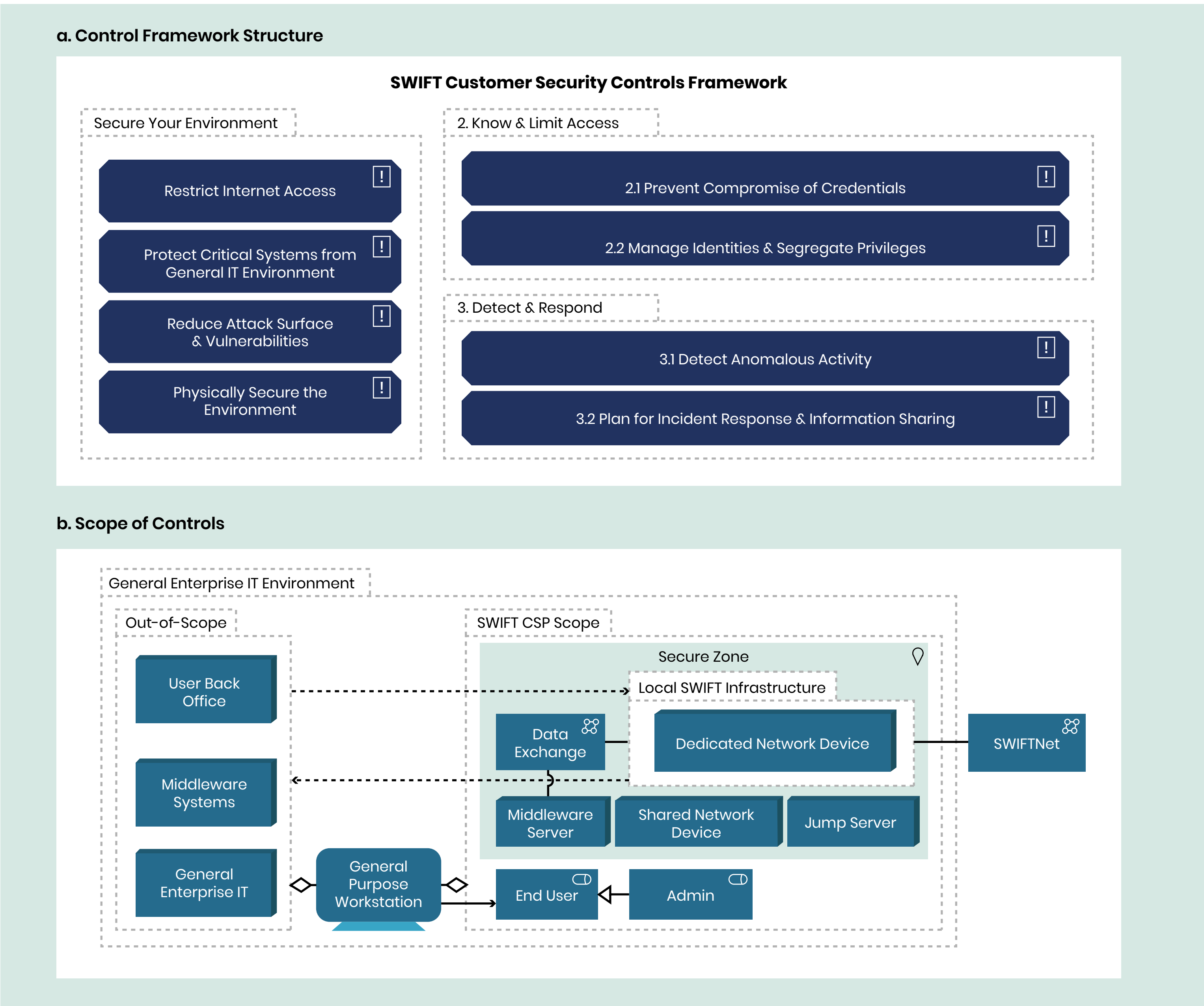
Accomplished as it is, OSCAL only provides a data definition layer. To become operational, practical "OSCAL-enabled" tools are required to handle complex interlocking sets of large XML documents. Two types of tool are needed

- Human-oriented OSCAL-aware editors used to create the artefacts that define the end-to-end pipeline in a specific organizational context
- Analytical engines capable of processing OSCAL artefacts in their machine-readable form, ideally in both ad-hoc, discovery mode, and via pre-defined analysis suites that produce formatted audit reports

Regarding the former, the unidirectional rendering to human formats shown in Figure 1 is ill-adapted to the "round-trip" processes of a real documentation life cycle: the creation, review, tailoring, merging, test, validation, and approval of artefacts are best performed using formats better suited to human cognitive processing than raw XML. What is needed here is a human-oriented format that can be transformed *into* OSCAL (as well as vice versa).

A strong contender in this space is The Open Group's Architecture modeling language, ArchiMate®. Not only is ArchiMate a visual language (light cognitive load), its tools are designed to facilitate the documentation of complex, highly-interconnected systems as a set of tailored

Figure 2. Creating OSCAL artefacts via ArchiMate Models



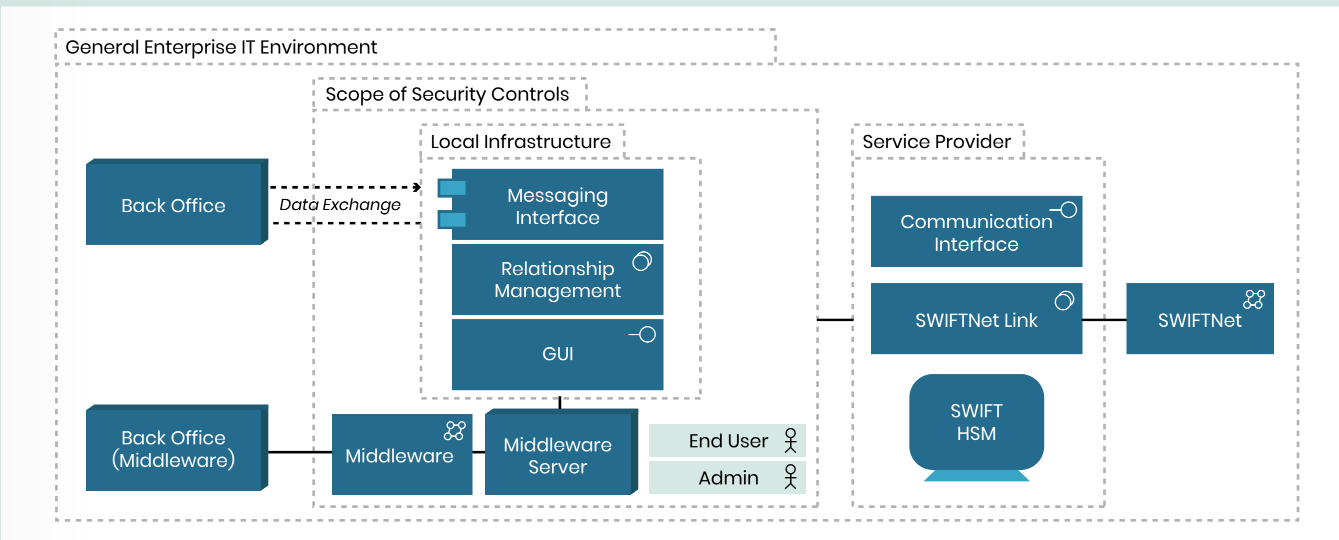
stakeholder views. Because all views are built upon a single, coherent underlying model, these diagrams always maintain their consistency. Best of all, all certified ArchiMate tools export models in a standard XML Exchange Format so round-trip conversions with OSCAL are fairly straightforward.

The only aspect of ArchiMate that is under-developed for this use-case is its ability to express the security perspective. Several core concepts such as Principal, Account, Asset, Control, or Trust, are not available in the standard vocabulary. Here we can turn to a joint initiative by The Open Group and security architecture specialists, The SABSA Institute, who are developing a Security Overlay that neatly fills this gap.

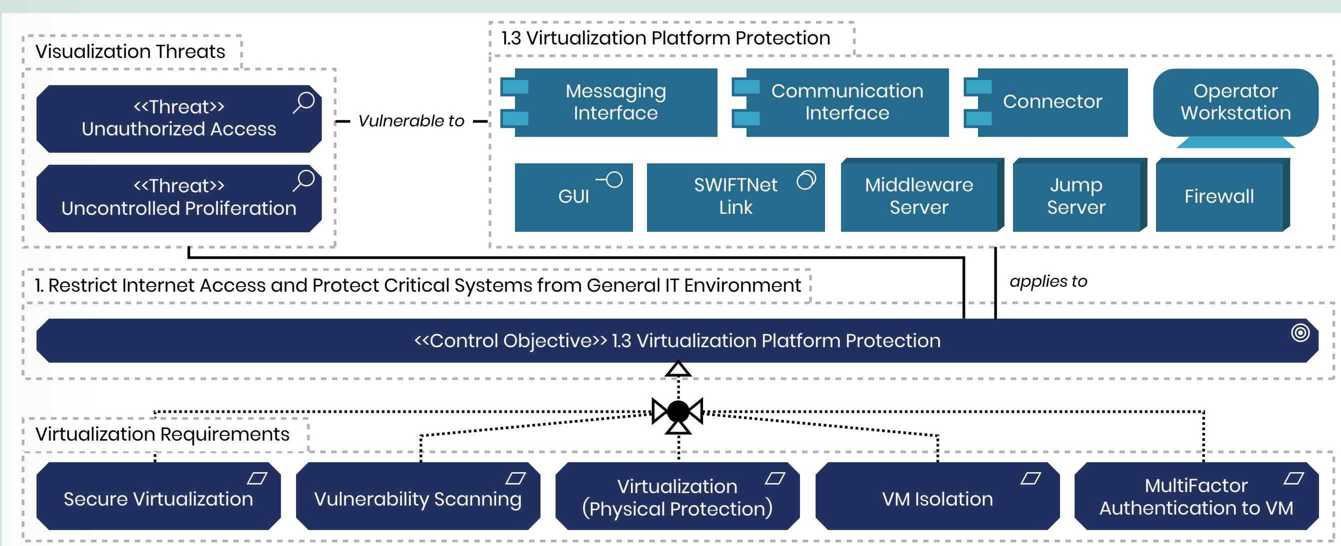
To illustrate the power of this approach, Figure 2 shows how the structure, scope, architectural patterns, and applicability of control requirements of a non-OSCAL Control Framework, (in this case the SWIFT Customer Security Programme[1]) can be faithfully reproduced in ArchiMate.

It is this ability to refactor the multi-dimensional problem into a series of simple, mutually-consistent stakeholder views that brings manageability to the automation. Because ArchiMate is simultaneously a human- and machine-readable format, the boundary between the cognitive and automated processes becomes seamless.

c. Reference Architecture



d. Applicability of Controls



[1] These diagrams are for illustrative purposes only and not in any way endorsed by SWIFT.

Automated Analysis

The OSCAL project has attracted broad participation, GRC tool vendors among them, but until mature, commercial OSCAL-enabled products reach the market, it is already possible to define and build basic analytical capabilities. The first step is to define a Compliance Metamodel like the one shown in Figure 3. On the left side (Standards Metamodel), we can define a Standard organized into Domains (like Figure 2a), each of which contain Control Objectives that can be realized through a set of Control Requirements with defined Evaluation Criteria. On the right-hand side, the metamodel of the Target System shows Architectural Components to which Control Objectives apply and Controls (physical, organizational, process, or technology) that implement the requirements and generate evidence.

Demonstrating compliance requires two predicates:

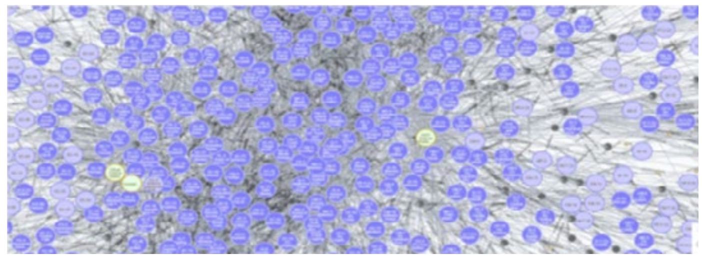
- First, there must be a "closed loop" path in the model that shows that the architectural component to which a control objective applies, is structurally/behaviorally dependent on controls that satisfy all requirements needed to realize the objective.
- There must then be evidence (e.g., audit logs) associated with each control that meets the evaluation criteria.

The compliance objective is met when, for all components to which it applies, a closed loop of requirements and controls can be found, supported by evidence that meets the criteria.

Running the Analysis

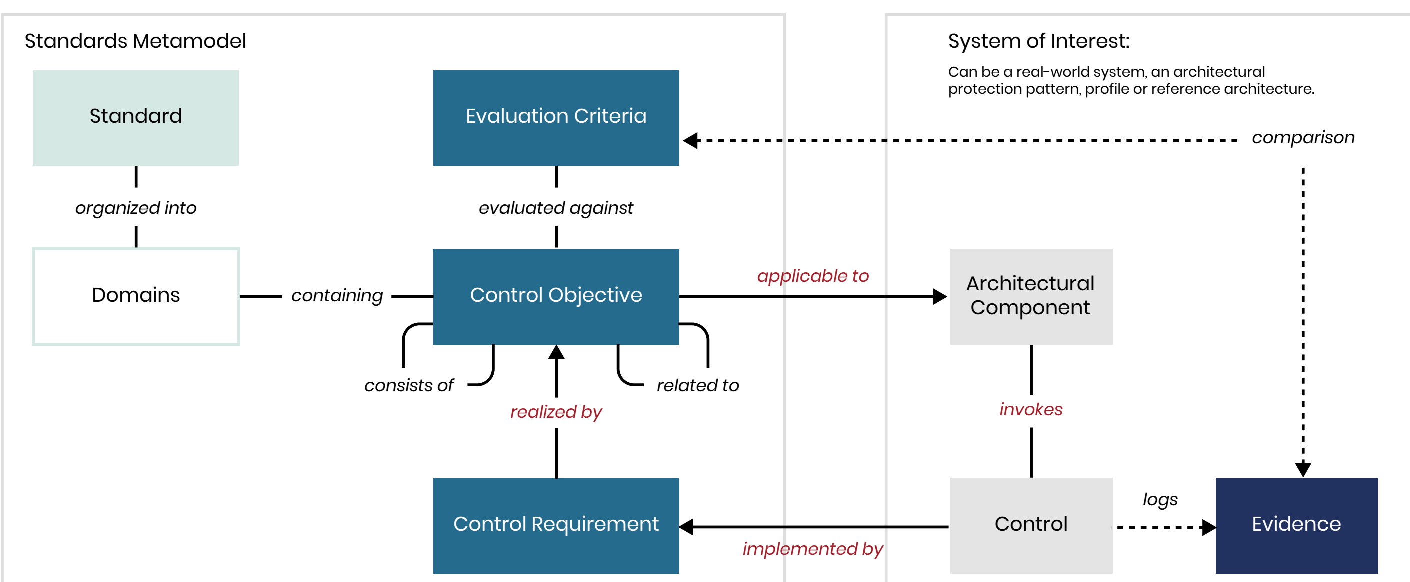
ArchiMate tools are available to suit all projects (and budgets). They focus on creating, maintaining, and publishing models but are limited when it comes to analysis. This goal can be reached with one final transformation: one that takes advantage of the natural synergy of ArchiMate (a well-defined ontology of elements and relationships) and the "nodes and edges" of a knowledge graph. Figure 4 shows an example knowledge graph of a multi-regulatory context: in this case the CSA Cloud Control Matrix and Questionnaire (the two green nodes on the left) mapped to the NIST SP800-53 (the green node center-right).

Figure 4. Multi-regulatory Compliance



The knowledge graph has the opposite qualities of the ArchiMate model: visually, it is a typical "hairball" that serves little purpose (other than to highlight the futility of trying to capture the complexity of the domain in a spreadsheet!). It does however open the door to powerful analytics, business intelligence, and machine learning. It becomes possible to answer complex queries with a few lines of code. For example, "Which NIST requirements must an organization implement as the consumer of a SaaS application that has been certified against AICPA

Figure 3. Compliance Metamodel



Note: These diagrams are for illustrative purposes only and not in any way endorsed by SWIFT.

Trust Services Criteria? Which additional CSA questions should be put to the SaaS provider in order to extend our NIST compliance posture to the extended enterprise?"

Summary

The compliance landscape and environment are not going to get any easier. Organizations are facing increasingly complex and stringent regulations to which they must attest at greater frequency and at ever higher levels of scrutiny. Compliance teams need to get on top of this challenge to continue demonstrating their value to the organization.

Manual processes won't scale.

Addressing each control framework as a silo does not scale. The economics of doing more with less demands a holistic enterprise-wide approach, but even with efficiency savings, the task remains formidable.

Automation is the next enabler.

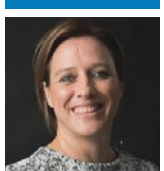
Current approaches based on largely manual processes are wholly inadequate for the size and complexity of the task. Further progress towards ever-higher compliance standards, while containing costs, requires the support of tools and automation, of which little currently exists.

Breakthroughs are on the horizon.

By defining a data model of the compliance process, NIST's OSCAL represents a game-changer for automation. It promises to make possible what has hitherto been a dream: continuous monitoring, constant audit readiness, and pre-emptive discovery of compliance issues. Although commercial tools are not yet on the market, it is time to start anticipating new approaches and techniques like the ones outlined in this article.

About the Authors

Steven Bradley and Bonnie Demeyer



As independent security consultants based in Belgium, Bonnie and Steven began working on security-enhanced architectural models in 2016. They are regular presenters on what has become to be known as "Cyber Enterprise Modelling" at COSAC and have presented at PECB webinars. As interest in this topic has grown, they plan to launch a niche consultancy specializing in the development and application of this technique in new scenarios. Both hold numerous certifications in security, architecture, and privacy.

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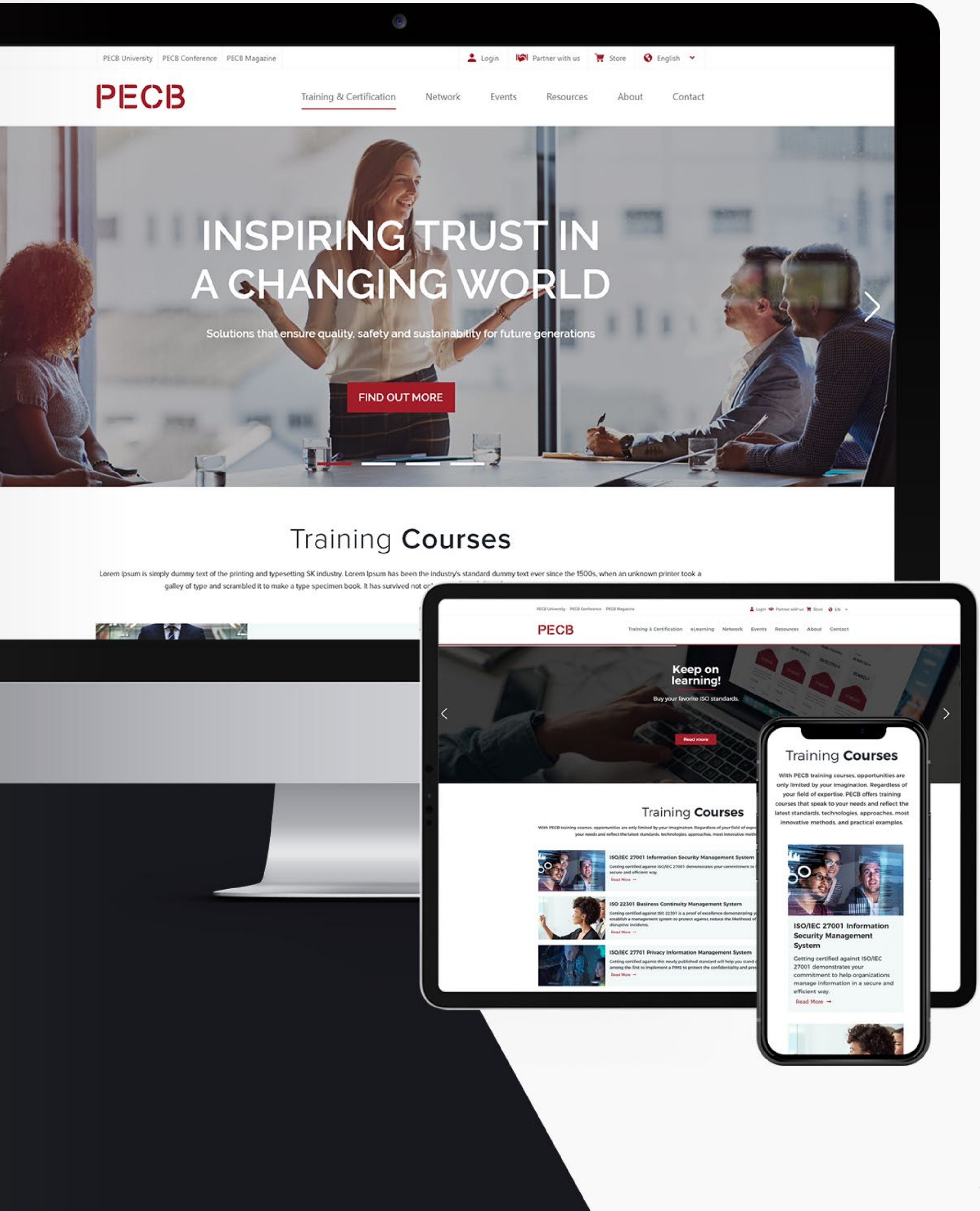
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Digital Transformation: How to Tackle Security Issues

BY JAMAL SAAD

A Global Context

We live in a digital revolution, and digital transformation is integrated and implemented in any society around the world, with more than half of the world's population connected to the internet at the moment of writing the article at hand.

The critical question for an organization is no longer to determine whether it should be transformed digitally or not, but rather how this transformation is processed — keeping in mind that such transformation requires an entire modification of not only data processing, but also internal and external flows of communication. New technologies are constantly and innovatively evolving, and all technological devices are increasingly connected to face-to-face platforms of communication via the internet, such as smartphones, smart TVs, smart watches, speakers, and smart lights connected to Wi-Fi, causing vulnerability and threats as well as a huge collected data base of personal and private information.

Today's digital world is facing several challenges: the increasing risks and threats in the cyberspace (virtual world), shift of attackers' profiles, and targets' attractiveness along with the abuse of internet by hackers, which undermine trust in digital transformation. In addition to the pro-work of hackers and cyber attackers who are dealing with organizations whose level of cyber protection is low and insufficient, the development of massive cyber-attacks (such as ransomware), data breach, and internet hacks, the loss of sensible and critical data, and many other cyber threats imply the huge challenges and threats to be expected, predicted, and dealt with in the digital transformation process.

Thus, in a constant flux and complex eco-system where virtual and physical (intangible and tangible) and professional and personal barriers are not identified nor considered, cybersecurity is on the forefront to preserve and secure an organization's assets as well as a nation's sovereignty (control and monitoring) during the digital transformation.

Digital Transformation: Dimensions and Challenges

Sovereignty dimension[1]

Digital transformation is a critical issue for a country's control (sovereignty) and represents one of the aspects capable of regaining institutional (governmental) trust. In fact, digital technology has to become a political subject, rather than just a topic limited to IT officials and experts.

Several dimensions surround the critical issue of digital sovereignty as well as the storage and possession of data we use daily, and every now and then.

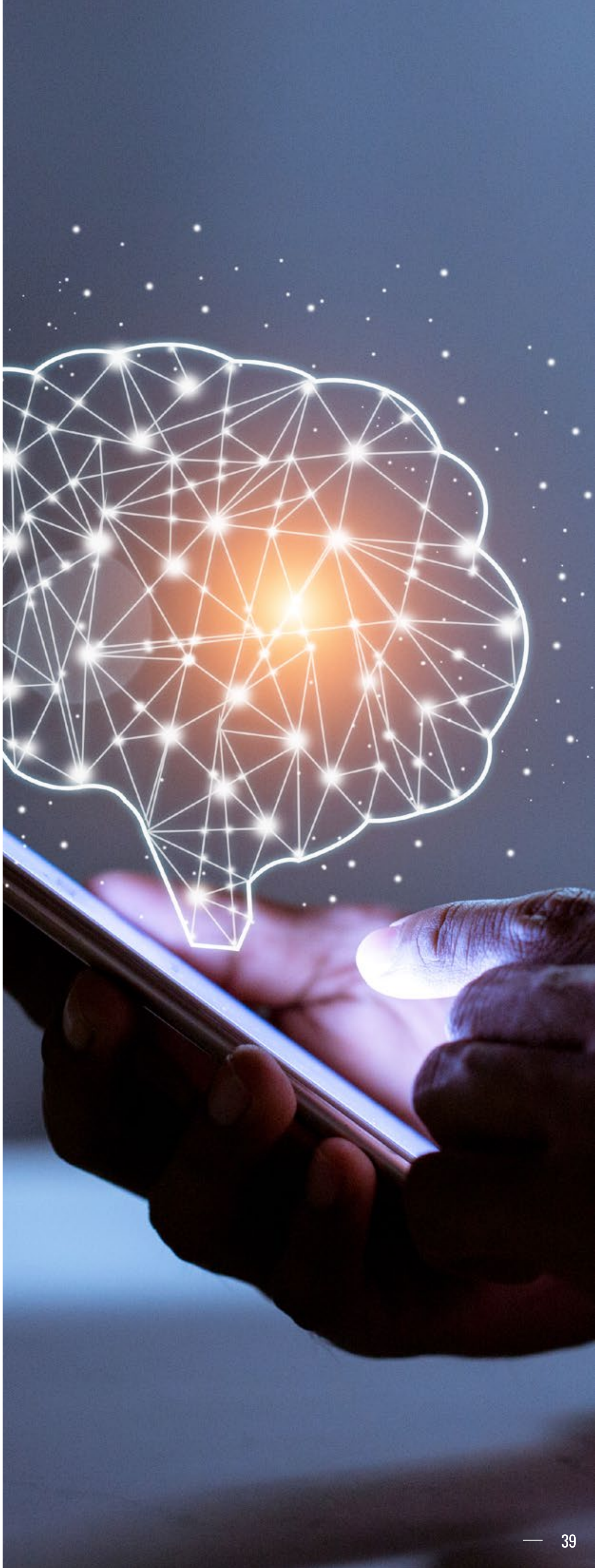
Challenges

The authority of a state or a government is restricted inside its borders and is consequently chained and constrained by multi-transnational organizations and companies. It is critically essential and necessary to defend oneself against threats (such as GAFAM), and to protect oneself from any potential violation from external aggressive strategies of growth.

Recommendations

- Creating and defining a national strategy to face digital transformation
- Working on and strengthening the right for competition as well as defending strategic data against any kind of external and foreign laws or authorities
- Controlling internet resources and restricting the dominance and influence of external and foreign authorities and increasing data protection control of individuals
- Promoting values and democratic standards and principles which we have helped to create and establish
- Setting the course by the state with a clear aim: Less than x% of digital tools from international authorities (parties) so as to limit dependence
- Establishing operational systems in accordance to the following course: Creating incentive mechanisms in favor of developing and adapting solutions for digital control (sovereignty) as well as providing practical recommendations to IT decision-makers
- Creating a team to provide control (sovereignty) solutions to essential needs and uses of digital technology

[1] It is worth mentioning that the term "digital sovereignty" should not be perceived in terms of a political and governmental dominance and control over population, or any kind of manipulation and influence on people's opinions.



Economic and social dimensions (Eco-social dimension)

The social issue is not only the replacement and substitute of human beings with machines; but also the drawbacks and negative impacts of a general or common use of specific information and communication technologies in a complex and vulnerable context. Furthermore, social engineering is recognized nowadays as one of the most serious and tremendous threats to an organization's cybersecurity, it differs from traditional hacking in the sense that the potential cyber-attacks are not necessarily technical.

As it is the case in any transformation and change, digital transformation can cause mistrust and resistance attitudes to some users as well as fear-of-changing-rooted psychological barriers, which sometimes slow down the implementation of innovative and effective digital solutions.

It is critically important to understand the changes that such transformation of technology may impose on social and economic organizations, and even on humans, with the evolution of daily-life technologies.

Challenges

Regardless of an organization's size, individuals (including managers) are the root source of vulnerabilities in the face of cyber-attacks. Human beings will always be and remain the weakest chain (link) and at the same time the most important source and factor in a successful digital transformation. Humanity is the core of this process, and digital revolution can only take place in real life through a deep rooted change in ways of thinking.

Recommendations

- Training human resources (employees and managers) and allowing them to take part in main concerns of cybersecurity
- Developing and updating intensive training programs and promoting people's awareness so as to make them able to face the growing cybersecurity challenges and threats in this digital transformation
- Raising public awareness through interactive communication and campaigns to clear away misunderstandings or ambiguities and establish digital trust
- Protecting personal and private as well as strategic and economic data
- Supporting change: A successful digital transformation project requires a coherent cross-disciplinary dimension with increased communication and collaboration between involved parties, a strong commitment of employees to conduct a collective reflection on work methods and functions, and support

of users in the transition as well as implementation of new collaborative ways and methods.

- Redesigning the clients' (users') journey, and most importantly, switching from offering a unique product to offering a complete overview of the associated and expected services

Legal and Regulatory Dimensions

Legal and regulatory aspects play essential roles in digital transformation since they can easily and quickly influence as well as disrupt a market by removing barriers to entry, reviewing the costs of licenses, or even selecting flexible channels (modes) of production, distribution, or delivery.

Cases in which states (nations) extend their authority and power beyond their national borders should also be taken into consideration. This phenomenon is known as extraterritoriality, in which data policy is based on a legible/legal aggressive extraterritoriality.

Challenges

Digital transformation is not limited to a specific scope or industry, it rather involves all areas and industries. Hence, the involved parties in the digital transformation must deal with various aspects, including taking into account new risks and legal as well as regulatory, legislative, and contract-based environments related to each area or sector.

Recommendations

- Informing internal (domestic) and external (foreign) stakeholders about their rights and obligations
- Adapting the legislative and institutional framework by identifying the practical and applicable laws as well as requiring to comply to them
- Providing tools and means of traceability through network monitoring and preservation of connection logs
- Using electronic archiving systems so as to permanently preserve data documents which must be in accordance with assessed regulatory and norms
- Ensuring traceability and management of the processes' phases and cycles
- Employing appropriate management of various documents' preservation period with tools that facilitate the management of documents' final release date, limiting legal risks
- Securing confidential and personal information in a safe virtual space, and smoothly controlling and monitoring the availability and access of data

Technical Dimension

Information and data analysis are the initial drivers for an organization's strategic planning in digital transformation. Under the influence of the digital transformation process, data has become the raw material of cyberspace, which is indeed composed of a material/tangible layer that corresponds to the whole set of routers, servers, and computers, allowing the interconnection of machines — a logical layer or software that covers the elements of communication between the machines themselves (i.e., the protocols). In order to make the best use of such protocols, it is crucial and compulsory to consider their security as a major innovative issue. Furthermore, it is important to take into consideration networks and infrastructures which are essential elements in the transmission of applications and data within an organization's internal (domestic) and external (foreign) departments and services.

Challenges

Cybersecurity must demonstrate enhanced protection of an organization's data, and in effect, its availability, integrity, confidentiality, and traceability at all levels (end-users, local as well as extended networks). To illustrate, network security is compulsory and essential to ensure the protection of infrastructures (and consequently of cyberspace). Most importantly, natural crisis as well as pandemics such as COVID-19 have forced us to use (telecommunicating) virtual spaces for remote work and learning purposes on a very large scale in a very short time.

Recommendations

- Choosing reliable tools to make remote work possible in terms of equipment and access
- Securing remote access via VPN so as to be able to perform collective remote operations in terms of work flow management
- Maintaining the cybersecurity of data flow and storage in relation to the context of remote operations by protecting access and setting up strong authentication mechanisms
- Saving data
- Using IDS, IPS, UTM, SIEM, and antivirus tools
- Having a support unit capable of dealing with problems and incidents that may face employees and collaborators
- Taking into consideration cyber resilience[2]

[2] To maintain the ability to deliver the initial outcome continuously, despite any unexpected or surprising cyber-attacks and incidents or vulnerabilities

Based on the above-mentioned aspects and this global context, digital transformation is fundamental and urgent for our competitiveness. Hence, cybersecurity should be considered as it is: not as a constraint, but rather as a support for a successful digital transformation. Such successful projects are those which carry out a strong vision (both understood and shared) with a real commitment to its vision values and milestones.

The variety of professions and majors, and other various aspects, should be taken into consideration, as they make the projects even more complex. Regardless of how these digital transformation projects are necessary or well-designed, they can fail to achieve the desired objectives without effective support from all involved parties in the physical and virtual eco-system, without limits or constraints. There should be a long-termed and broad vision that takes into account all the potential challenges and threats. It is through this (self) reflection that the following question is asked: Isn't digital transformation an eventual step to achieve a major societal change?

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About the Author

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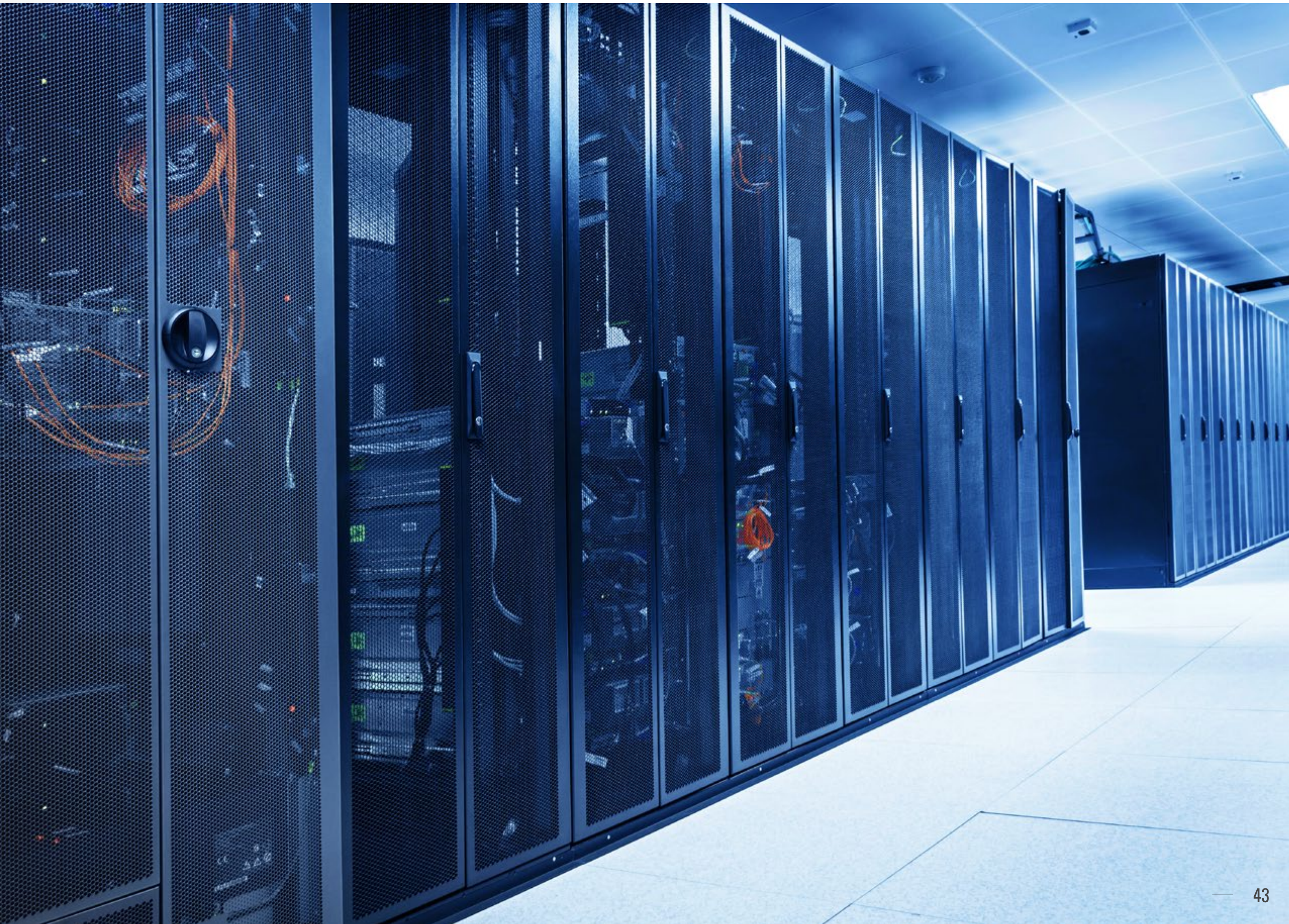
Mr. Saad has served as an auditor in various organizations and as a trainer on Security Management Systems and Information Systems Security. He is a member of the EBIOS Risk Management Club and the CCA Business Continuity Club. Mr. Saad is certified against many ISO cybersecurity-related standards, and is an accredited PECB Trainer.

In 2011, he joined the Embassy of the United Arab Emirates as an IT Manager with the mission of defining and implementing projects to modernize and secure the information system. In 2015, he launched OGSBC and devoted himself to training as well as providing support and advice for DSI and CISO players in the implementation of risk analyzes.

In 2019, Mr. Saad graduated from the National Institute of Higher Studies in Security and Justice for business protection and economic intelligence.



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Digital transformation can also help improve sustainability. According to a report prepared by GeSI & Accenture Smarter2030, by 2030, Information and Communications Technology (ICT) can enable a 20% reduction in CO2 emissions.

SMALL ACTS. BIG IMPACT.

Managing the Myths of the Digital Transformation Toolset: It Is Not One-Size-Fits-All

BY JASON PYLE

Change is always difficult for each one of us as humans, but changing within a group and culture becomes even more challenging. Digital transformation is the necessary change to leverage not just technology but simultaneously improve your customers' experience and your staff's ability to service them. These investments should be planned and understood across your organization.

To further understand digital transformation, let's consider the metaphor of a 3-legged stool. The 3 legs consist of (a) technology, (b) operations, and (c) organization. To be successful with digital transformation, you need all three areas together, at the same time. For example, when moving your Enterprise Resource Planning (ERP) from on-premise to the cloud without understanding and making necessary operational and organizational changes, your ERP failure rate increases significantly.

Most senior executives understand the importance of digital transformation (Dx), but when faced with trying to manage these efforts, the options for tools are limited and siloed, and built for a previous era. At our company, we believe that Dx is a continuous process that places learning at the heart of all things. We believe there are four discrete and continuous steps:

1. Assess
2. Strategize
3. Transform
4. Measure

1. Assess

To start, each organization should get an independent assessment of where they are and benchmark across the broader industry. This assessment should highlight the operational, organizational, and technical strengths and weaknesses of an organization. For example, many organizations are looking at ERP replacements and before any work can be done, the organization will need to assess what works and does not work with their current ERP solution. For things that do not work, there are a variety of aspects to assess such as the cause of the con. It could be that the current ERP does have that feature and the organization is not using the ERP in the way it was designed.

- For most organizations, the assessment is typically done by working through a consulting group to come do the assessment. This effort is very manual and often costs hundreds of thousands of dollars to get a report.

- **Assessment tools**
  - There are vendors such as Oracle, BAE Systems, and Deloitte that have digital transformation assessments that may work although they do not appear to have been widely used. It is not clear if these tools are comprehensive enough to provide a complete assessment versus needing to use the assessment jointly with consulting hours.
  - There are also lesser-known vendors who are trying to replace the large number of consulting hours with an online assessment that an organization may utilize to assess itself. These companies include newcomers such as Axway, Scopism, Protiviti, and Higher Digital should be considered if the company needs an assessment done more quickly and cost-effectively.

2. Strategize

Once you have completed your assessment, the next step is to plan your digital transformation strategy. This entails looking at the assessment and focusing on the strengths, so you can keep doing them. You will also look at the opportunities for improvement and plan for ways to make incremental improvements in the organization. In the example of the ERP deployment, the plan will include the path towards getting a new ERP. There might be steps along the way such as writing up an RFP, completing the selection process, selecting a vendor, and planning for how to engage with that vendor.

By the end of this step, you will want a plan and have details on how you will track that plan. From my experience in digital transformation, the focus on the plan should be incremental improvements. Rather than having a five-year strategic plan, the suggestion is to focus more on incremental improvements that you can execute on, measure, and then iterate over and over. The iterations are especially important as your priorities might shift from month to month and something might end up as a lower or a higher priority. There are some examples of tools that can help with planning:

- **Task tracking and project management tools:** In order to do this, an organization must invest in a tool that will provide management of work tasks and allow you to manage the project by understanding resource utilization. For example:

  Azure DevOps | Jira | Trello

- **IT Service Management (ITSM) tools:** These tools help an organization track their entire IT organization's footprint and allow them to provide an enhanced customer experience to their internal customers (typically their employees). Some examples include the following:

  ServiceNow | Axios Systems Assyst | BMC Helix | IBM Control Desk | Cherwell Service Management | Ivanti Service Manager

- **Customer Relationship Management (CRM) tools:** Just as ITSM tools enhance the experience for the internal employee experience, a CRM tool is a must-have to enhance the experience for your external customers. A CRM tool is a technology solution that helps manage relationships with an organization's customers and potential customers. The following can be considered:

  Salesforce | Microsoft Dynamix | Pipedrive | SugarCRM | Oracle CX | IBM | SAP

- **Collaboration suites and communication tools:** As organizations begin on their digital transformation, one can expect that there will be more collaboration and communication across the organization. There are many collaboration suites to help support this additional collaboration and communication, including the following:

  O365 (and Teams) | Google G-Suite | Slack

3. Transform

After you have a plan solidified, it is now time to transform your organization or take action on the highest priority items in your task list. There is no shortage of tools that can help transform your organization. In the ERP example, this phase is when we start executing on the plan and working towards implementing a new ERP.

- **Cloud providers:** All digital transformation efforts focus on running software applications in the cloud as part of changing the technology.

  Amazon Web Services (AWS) | Microsoft Azure | Google Cloud | Oracle Cloud

- **DevOps tools:** DevOps is often called "infrastructure as code" which involves using code to automate as many operational tasks as possible. In addition to the technology, this also requires a change in culture

which will come later. This can include building an entire DevOps workflow that can build, promote to test, run automated tests, run security tools (DevSecOps), and promote the code to production without needing any human intervention.

Kubernetes | Amazon Elastic Container Service (ECS) | Chef | Puppet | Terraform

- **Integration platforms:** This is not necessarily on everybody's technology list, but I find this to be extremely important. As an organization begins to digitize itself, you will find yourself investing in best-of-breed solutions. When this is done, it means you will be left building many integrations between these solutions. Without the proper integration platform, you are left with building many fragile integrations between different solutions. Investing in the proper Enterprise Service Bus (ESB) can greatly aid you in building these integrations.

Mulesoft | Dell Boomi | Informatica | Jitterbit

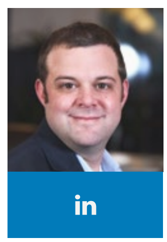
4. Measure

The final stage of the digital transformation journey is to measure and iterate. The idea is that an organization will measure the success of their digital transformation journey via metrics and KPIs. By focusing on an iterative process, measurements can be done at regular intervals of the journey to be sure that the organization is seeing tangible, measurable results. This also allows an organization to make sure that improvements are happening and if you happen to find out they are not, it will give you a chance to re-adjust priorities if necessary or to try something new if the results are not what you expect them to be. In the ERP implementation example, the idea is to measure progress after small iterations. This is a change from focusing on a three-year project with very few checkpoints. You will want to measure progress constantly within the project and adjust to the plan as the organization learns more.

- **Measurement tools:** In addition to executing on an organization's digital transformation plans, it is necessary to be able to measure specific KPIs so that the organization can understand where they are making progress. This can vary from using business intelligence tools to produce a dashboard using data captured in a data store, or finding a solution that is built specifically for KPI development.

Nuventive | Microsoft Power BI | Tableau

There are clearly many different tools available to help with an organization's digital transformation journey. However, there is no one-size-fits-all, and too often the focus is on tools to use when it should be on the other legs of the stool, so tools can be mapped properly to the organization's environment. By shortcutting to tools, an organization runs the risk of getting it wrong, so we believe in following the process of assessing, developing/refining strategy, transforming (execution), and then measuring. As an independent and agnostic consultant, I do not favor any particular tool over another, rather, our focus is often around helping organizations make use of the tools in which the organization has invested. I will utilize those tools and help bring them together into a single process of assessing, strategizing, transforming, and measuring. Overall, I believe there will be some maturing in the market around these fragmented tools so keep on looking for new tools that bridge the four phases of digital transformation along with the maturing of the classes of tools mentioned in this article.



About the Author

Jason Pyle
Vice President, Digital Integrations and Architecture at Higher Digital, LLC

Jason Pyle has almost 20 years of experience as a software developer/architect, leading both small and large product development organizations, almost entirely in the higher education domain. He has overseen server-side technology efforts involving integration, data modeling, APIs, SDKs, identity management, and more. Additionally, Jason led a joint effort between front-end development and user experience teams that introduced design systems to an organization. He has a wide array of expertise both leading and building on-premise software and implementing SaaS solutions.

Prior to joining Higher Digital, Jason managed a large development organization at Ellucian that focused on building out core technologies supporting the Ellucian Ethos Platform, including Ethos Integration, Ethos Identity, the Ethos Data Model, and Ethos APIs for two very different ERP products. Jason has also spent a great deal of time as a developer and architect leveraging both Java and .NET technologies to build web applications and middleware to support various software platforms.

Jason is a Certified Scrum Master who has led many teams transitioning from waterfall to agile methodologies. He is passionate about solving customers' problems and incorporating their feedback into the product development life cycle. He has an M.S. in Software Engineering from George Mason University and a B.A. in Mathematics from McDaniel College.

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ISO 22301:2019 IMPLEMENTATION GUIDE**

The ISO 22301:2019 Implementation Guide is a step-by-step approach to plan, implement, improve, and manage a Business Continuity Management System based on the ISO 22301 standard.

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Towards a Trustworthy AI

It's widely accepted that artificial intelligence will have a huge impact on our lives in the coming decades — but how can we be sure this new technology is not just innovative and helpful, but also trustworthy?

To address issues of trust in artificial intelligence (AI), a new technical report by ISO and the International Electrotechnical Commission (IEC) looks at concerns related to trustworthiness and provides practical solutions. ISO/IEC TR 24028:2020, Information technology – Artificial intelligence – Overview of trustworthiness in artificial intelligence, analyses the factors that can impact the trustworthiness of systems providing or using AI. It can be used by any business regardless of its size or sector.

Weather forecasts, e-mail spam filtering, Google's search predictions and voice recognition, such as Apple's Siri, are all examples of AI in everyday life. What these technologies have in common is machine-learning algorithms that enable them to react and respond in real time. Tech enthusiasts and experts say there will be growing pains as AI technology evolves, but the positive effect it will have on business in terms of productivity is immeasurable. A survey by management consultancy McKinsey has estimated that AI analytics could add around USD 13 trillion or 16 % to annual global GDP by 2030.

The question of trustworthiness is key, explains Wael William Diab, Chair of SC 42, Artificial intelligence, a subcommittee operating under joint technical committee ISO/IEC JTC 1, Information technology: "Every customer – whether it's a financial services company, whether it's a retailer, whether it's a manufacturer – is going to ask: 'Who do I trust?' Many aspects including societal concerns, such as data quality, privacy, potentially unfair bias and safety must be addressed. This recently published technical report is the first of many works that will help achieve this."

ISO/IEC TR 24028 briefly surveys the existing approaches that can support or improve trustworthiness in technical systems and discusses their potential application to AI. It also discusses possible approaches to mitigating AI system vulnerabilities and ways to improving their trustworthiness.

In addition to providing clearer guidance on trustworthiness and how it is being embedded in IT systems, ISO/IEC TR 24028 will help the standards community to better understand and identify the specific standardization gaps in AI and, importantly, how to address these through future standards work.

ISO/IEC TR 24028 was developed by joint technical committee ISO/IEC JTC 1, Information technology, subcommittee SC 42, Artificial intelligence, the secretariat of which is held by ANSI, ISO's member for the USA. The new technical report can be purchased from your national ISO member or through the ISO Store.

PECB CERTIFICATIONS:
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Industries are continually changing, together with practices and standards. In the fast-paced modern world, continuous education is essential for career growth and is required to stay current with new technologies and the latest developments. PECB Certifications are a mark of excellence, commitment to a life-long learning which enhances effectiveness, boosts confidence, and can lead to career advancement. Professional certifications of employees are considered as a criterion for hiring. Once you earn a certification, you join a committed group of individuals.

No matter which career path you aim to pursue, PECB Certifications will arm you with the skills and knowledge that will increase your earning potential and give you the power to fulfill your ambition. In such a fast-moving marketplace, our certifications will give you the edge that you need.

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Never let your career lapse. Transform your knowledge into excellence with PECB Certifications.

“One of the things that we happily discovered recently, is that the 3-4 year gap we had 12 years ago, is no longer valid. Currently, due to globalization and partnerships like the one we have with PECB, we are in a very strong position to compete with global or US-based companies.”

Gaining Worldwide Recognition

JORGE GARIBAY'S SUCCESS STORY

I started working back in 1985, at the time when I was a student of Information Technology, in one of the largest technological universities in Mexico (Instituto Politecnico Nacional). After three years as a systems programmer, I entered the network and connectivity world and was promoted to be Network and Communications Manager at Ministry of Health.

I worked for almost six years within the Mexican government and since then I started to work with some organizations and providers from different countries. As a Mexican public servant I got in touch with some central American governments offering them consultancy and helping them to design and install regional networking solutions within the health sector.

Finally, I left the public sector in 1991 and moved to work with a former provider of mine. They offered me to partner with this company called SAIT. The company was one of the first dedicated to install fiber optics networks in Mexico. For that, we made a partnership with a company based in San Diego, California, to offer their solutions to Mexican and LATAM customers, bringing state-of-the-art technology at that time.

Initial Steps in Information Security

By 1994, we started to offer information security solutions to Mexico and LATAM countries. We represented companies like Checkpoint, Websense, Storage Tech, and Security Dynamics (Today RSA), etc. It was a very challenging time because in December 1994 we suffered one of the most important devaluations in Mexico's history. Our Mexican peso was devalued from 3.5 Mexican pesos for one dollar, to 7.5 pesos for one US dollar. United States president, Bill Clinton, had to lend Mexico government 20 billion USD to cover our financial commitments!

Those were very complicated years for our company, but as oriental people used to say: "difficult times are also opportunity times." The investment contracted spectacularly in the country, the exchange rate gave us a bitter lesson, which I will never forget, where we lost a lot of money and that caused, among other things, the closure of our office in Monterrey and the cut of some jobs in Mexico City.

Fortunately, in 1996, we won a bid to start building fiber optic networks in some cities within Mexico. Our country opened the telecommunications market and we created a new company called Metronet which was dedicated to design, build, and operate last mile connections to carriers and private and public organizations.

Thanks to the hard work and a strict financial discipline, competing in a dynamic sector, we managed to increase our business on a very large scale and by year 2000, we hired a report from Gartner Group. They recommended we build information data centers. Since we have fiber optic links in more than 2,500 different buildings around the three largest cities in Mexico, (Mexico City, Monterrey, and Guadalajara) it made sense to offer these customers hosting and managed services.

At the same time, I was designated as Professional Services Director and started offering consultancy services to our customers. In 2001, we created another company called Xertix, specially dedicated to managed services and consultancy. After that year, I took some courses and obtained my CISSP, CISA, and CRISC certifications, and by 2005 we were offering Information Security, Business Continuity, and Information Risk solutions.

From being a company of 75 people with presence in Mexico City and Monterrey, we grew up to be a 350-people company and started to offer our services to some countries within the LATAM region. At that time, ISO standards, like ISO 27001:2005, became popular in Mexico and some companies were interested in getting certified. So, we developed a consultancy service to offer guidance to companies that wanted to get certified.

First Company Certification and International Experiences

In 2008, we decided to get our company certified against ISO 27001:2005 and ISO 20000:2005. At that time there were some companies already certified against ISO 27001:2005 in Mexico, but there was none certified against ISO 20000:2005.

After 14 months of hard work, in May 2009, and at four different locations, we were the first Mexican company to get ISO 20000:2005 certified and the second in Latin America, and the first company around the globe to obtain both certifications at the same time. In fact, Gartner Group, and some national newspapers wrote an article about this.

We certified 23 processes, 10 for ISO 20000, 10 for ISO 27001, and three for both standards. This achievement granted us a lot of confidence from our customers and helped us to win two large bids, one with a large financial institution called Grupo MONEX and one with the Ministry of the Interior.

During those years, I learned a lot and started to work closely with ISO and ISACA organizations. I was invited to be part of an international effort to work within one ISACA Board, called Governmental and Regulatory Agencies Board (GRAB). I was chair for LATAM countries within this Board and we worked with some countries in different initiatives related to information security, auditing, and use of ISACA frameworks like Cobit and Risk IT, and ISACA certifications like CISA, CISM, CGEIT, or CRISC.

At the end of 2008, with the financial crisis in the US due to the subprime mortgages, some companies had to leave part of their business, so we took that opportunity and bought another data center in Mexico which was part of a US company with investments in Mexico, Brazil, Colombia, and Argentina. By 2009, we had three different companies (Metronet, Xertix, and Diveo), and we wanted to enter the US market.

Again, we hired Gartner Group to conduct a study of data centers in California and due to their financial situation, we acquired a company called Castle Access. Finally, we had presence in the US market with two more data centers!

At the initial stages of this adventure, we discovered one big difference with the market in LATAM and that in the US. It was obvious for us that the maturity level was very different in end clients from the US compared to LATAM customers. We had at that time a 3-4 years gap talking about technological adoption.

In 2010, we decided to change the name of the company to RedIT and started a new marketing campaign to introduce this new brand consolidating operations for the four companies in this new organization.

Getting in Touch with PECB

2012 was my first approach with PECB. At the beginning of that year, I presented a request to represent Mexico at the ISO/IEC SC 27 forming a Mexican national Subcommittee. In addition, in 2012, Bernard Boily, a good friend of mine and former provider when I was CIO of RedIT, introduced PECB to me.

In October 2012, ISO published ISO 22301:2012, which was the best sold standard in the history of ISO, with more than 20,000 downloads on the first day of publication. By that time, I started to offer PECB training courses to my customers here in Mexico.

At the beginning of 2013, we sold our first ISO 22301 Lead Implementer training course in Mexico and since then we have been selling ISO/IEC 27001, ISO/IEC 38500, ISO/IEC 20000, ISO 22301, ISO/IEC 27032 and recently ISO 37001, all of them in all possible schemes (Foundation, Implementer, Auditor, Manager, etc.).

In 2015, I partnered with Pink Elephant, a consultancy and training company based in Canada and one of the most recognized worldwide organizations in the development of ITIL framework. I brought all the PECB training courses to the Pink Elephant Mexico portfolio and we started to offer the first information security services as well as business continuity solutions to Mexico's market and LATAM.

In May 2015, I also applied to represent Mexico at the ISO 292 TC (Formerly ISO TC 223) and received the responsibility to coordinate that task force. Again, at Pink Elephant, we decided to push our business continuity training and consultancy services around Mexico and LATAM.

We have been providing these courses not just to companies based in Mexico, but also to Mexican enterprises based in different countries or actual foreign Pink Elephant customers that ask specifically for our services. We do have offices in Chile, Panama, Spain, and Dominican Republic and a large partner network in different countries. We support and deliver IT projects, as well as training courses from Mexico, and locally in a large number in LATAM countries before the pandemic.

One of the things that we happily discovered recently, is that the 3-4 year gap we had 12 years ago, is no longer valid.

Currently, due to globalization and partnerships like the one we have with PECB, we are in a very strong position to compete with global or US-based companies.

Success Stories

In 2019, Kellogg's company hired us to develop the Business Continuity Plan and Disaster Recovery Plan for their production and distribution plant based in Queretaro, Mexico. We offered our consultancy services based on ISO 22301:2012 and the Disaster Recovery Institute International (DRII) framework. In addition, we offered to their personnel the PECB ISO 22301 Foundation and Lead Implementer training courses.

While we were working with them, we suggested to use ISO 22316 to develop the Business Impact Analysis (BIA) and Application Impact Analysis (AIA).

Some consultants of my team at Pink Elephant, used to work with me 10 years ago at Xertix Data Center doing recovery strategies and implementing BCP and DRP solutions to many companies. Also, some used to work with me for the same solution (BCP and DRP) to the Mexican Stock Exchange during the 2017-2018 period.

At the beginning of the project, Kellogg's corporation suggested Kellogg's Mexico to use their US provider to replicate BIA exercise, not just in Mexico but also in five different subsidiaries in LATAM (Colombia, Panamá, Puerto Rico, Guatemala, and Ecuador). We presented our methodology and a robust solution for the BIA, AIA, and Business Continuity Governance that convinced Kellogg's Mexico that we can deliver the complete solution instead of their usual US provider.

During the prior project with the Mexican Stock Exchange, we developed not just the typical BCP/DRP solution but also Cybersecurity and Pandemics strategies to recover their business in case of interruptions. On this project, we presented our methodology with the Mexican regulators (Comisión Nacional Bancaria y de Valores – CNBV) which is analogue to the SEC at the United States and the Central Bank (Banco de México). In this project, we also delivered ISO 22301, ISO/IEC 27001 Foundation, Lead Implementer, and Lead Auditor as well as ISO/IEC 27032 Lead Cybersecurity Manager training courses.

It is fair to say that in both projects we presented Pink Elephant as a PECB regional partner for delivering world-class training courses and that having this partnership helped us to raise our brand recognition and have our customers' confidence to be part of their main projects.

From our perspective, we think that in LATAM we have talent, competitive people, and experience to deliver strategic IT consulting services and educational paths in all ISO standards and some other IT frameworks.

CYBERSECURITY AWARENESS MONTH 2020

Do Your Part. #BeCyberSmart

This year's theme puts an emphasis on the message "If you connect, you must protect!" All organizations and individuals must be empowered to do their part in the fight against cybercrime. With increased awareness, employee training, stronger security measures, our interconnected world will be safer.

Let's take a look at the 3 biggest data breaches of 2020

Since the COVID-19 outbreak, there was a global shift to remote working. This has caused data breaches to rise dramatically. Cybercriminals are attacking every industry. They are using these tough times to launch sophisticated cyber-attacks. The main target in the first six months of the year were different Fortune 500 organizations, which suffered data breaches that included breach of confidential and financial data, sold account credentials, etc. According to a report by Kaspersky, until May, there were 726 million cyber-attacks confirmed.

1. Twitter Breach

In July 2020, Twitter suffered a breach where accounts of prominent U.S. personalities like Bill Gates, Barack Obama, Elon Musk, etc., were hacked. Hackers posted fake tweets with the attraction of doubling your money. Through 300 transactions, they managed to solicit $121,000 in Bitcoin through the social engineering hack.

2. Marriott Data Breach

The data of more than 5.2 million hotel guests were breached, where hackers took login credentials, by only hacking the user credentials of just two staff members. The data exposed included contact details, loyalty account information (account number and points balance, but not passwords), additional personal details (gender, birthday), partnerships and affiliations, and guests' preferences.

3. Zoom Data Breach

The ongoing pandemic has made different organizations around the world to work from home. That is why the Zoom video conferencing app became the most used application during this time. It became popular for cybercriminals too. In April 2020, more than half a million login credentials were stolen, which included accounts of different organizations, including banks, financial institutions, and more. These accounts were sold in the Dark Web.

Security Tips for Remote Working during the COVID-19 Pandemic

Update devices: Even though it is a habit to ignore update notifications, you should always run the updates, especially when working remotely.

Secure the Wi-Fi connection: Creating a strong and unique password as well as turning the password protection on and enabling wireless encryption are some simple steps to take.

Be cautious during video calls: Choose a platform that has strong security features, make regular software updates, and do not share confidential information during video calls.

Do not let family members use your work devices: Despite that this can be well-intended, it can substantially increase security threats, considering that they might have the necessary information when it comes to protecting sensitive data. This will prevent any unintended outflow of information.

Use a webcam cover: When you finish the working hours, it is a good practice to cover the webcam because hackers can access your webcam without your permission. If you are using a webcam that is not built-in, you should unplug it whenever you are not using it. You can also purchase a sliding webcam cover.

Make sure that the VPN is secured: Although connecting to VPN can be done simply using a username and password, you can think of upgrading it to the use of smart cards. Also, you should be updating the passwords frequently.

Use a centralized storage solution: It is important to use a centralized storage solution as well as make sure that all employees are using it, and not saving their files locally. This means that documents are more secured.

If you are interested in diversifying your cybersecurity skills and learning more on how to stay safe from rising threats, our cybersecurity training course will help you build a firm foundation of knowledge.

The Great Unknown: How to Thrive in the Era of Digital World

Each passing year brings up endless technological advancements and opportunities, and organizations want to take advantage of these exponentially improving technologies. Organizations should adapt to new demands and pressures. Even though it challenges both workers and customers, at the same time, it empowers them. The adoption of the technologies is expected to increase efficiency and make organizations more customer-friendly. As competition increases across every industry, the pressure to digitally transform increases parallelly.

The ongoing pandemic has snowballed into a worldwide crisis. Digital transformation is changing the way businesses function, by transforming their operations and processes. As such, leaders are in front of many difficult situations deciding on how and where to invest, and which new technologies will best meet their needs.

Whatever the sector or industry, the latest years have seen the fast evolution of technology in business, from Blockchain to Artificial Intelligence and the Internet of Things (IoT). These technologies are poised to impact the way we live and conduct business. These developments are blurring the line between the physical and digital world. The growing demand for IoT and AI as well as Blockchain is expected to drive large investments.

Blockchain will push digital transformation to new levels. In the times where security remains one of the biggest challenges, this technology offers a promising solution, by bringing in the missing element of trust, which is necessary for organizations to fully adapt to these emerging technologies. The Internet of Things (IoT) is just part of this transformation, which received much praise. Blockchain plays an increasing role in the IoT, because it can be an effective weapon for improving security challenges related to it.

According to Statista, it is estimated that there will be more than 21 billion IoT devices by 2025. Furthermore, according to Gartner, today, less than 10% of enterprise IoT projects have an AI component, and this will increase up to 80% by 2022. Whereas, by 2021, it is estimated that the global Blockchain technology sector is forecasted to reach 39 billion U.S. dollars.

These three technologies are considered the catalysts for digital transformation and can be a perfect fit in helping organizations achieve successful digital transformation. The digital transformation of businesses is unstoppable and this transformation means security transformation too. This adoption of new technologies is associated with increased security issues because the current speed of change makes it easier for security vulnerabilities to slip through. In addition, considering the rise of cyberattacks, regulatory bodies have established rigorous regulations to protect important data. As such, organizations should be attentive to compliance requirements. By following best practices such as automation and integration, organizations can embrace digital transformation, while reducing security and compliance issues.

As organizations move towards digital transformation, there are many options to consider. However, one of the most essential elements of the digital transformation process is business continuity management. Organizations that do not embrace digital transformation, will find it harder to achieve business continuity. Therefore, it is important to take a realistic view of the current situation, because failing to keep business continuity as a top priority can have a serious impact on the organization.

Is COVID-19 the most substantial digital transformation catalyst? How can organizations be more resilient and re-invent themselves to remain competitive? What are the different ways to adapt business continuity strategies to overcome unpredictable events such as the ongoing pandemic? What are the main security risks associated with blockchain technology? How does the adoption of biometric technology protect our privacy? What are the risks associated with remote working, and how can we overcome them? Learn more about these topics (and many other related matters) on the upcoming PECB Insights Virtual Conference, scheduled for 16-19 November.

The best and brightest minds in the field of Information Security, IT, ISO standards, and more, are gathered virtually for four days of learning and expertise sharing.

To have stimulating discussions, the conference will be designed in virtual panel sessions. During these panels, experts will discuss technology's role in Cyber Security, Blockchain, IoT, AI and Business Continuity, in both English and French.

To celebrate the first ever Insights Virtual Conference, you will be able to attend all of the sessions for free.

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TCHABLI DJARK
Business Unit Director of GRC at DATAPROTECT

ADLEN LOUKIL
Founder & CEO at Resys-consultants

ADRIEN CHAMBADE
CEO & Principal Consultant at ONYL ROCKS

NIKOLAJ WÆDEGAARD
Chief of Staff for Microsoft European Government Affairs

CLAIRE BALVA
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JOSINA RODRIGUES
Academic Advisory Board Member at INATBA

ADEDOYIN ODUNFA
MD/CEO of Digital Jewels Ltd

FRANÇOIS TÊTE
Business Continuity and Crisis Management Consultant

ROMAIN HENNION
Professor, Auditor, Author

ABDELMALEK NAJIH
ISMS Manager at KPMG Luxembourg

ROBERT HELLWIG
Managing Director at CARMAO GmbH

DRAGAN PLESKONJIC
Senior Director Application Security at IGT

ANTHONY ENGLISH
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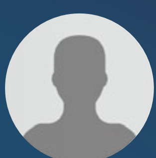

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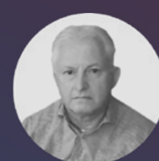

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The Age of AI: Surviving and Thriving Through Digital Transformation

BY ROBERTO CELESTINO

We are living in a digital era, an unprecedented moment in which the technological evolution, connectivity, and smart devices are driving a huge digital transformation in the way we live. We are more connected than ever, throughout the internet we have access to tons of information in different formats — videos, articles, images, audios. Smart devices, such as the phones, have provided unique digital experiences in education, logistics, entertainment, and many other areas. Digital technology is present in several moments of our daily activities, for example, it is highly probable that the last thing you do before going to bed and the first thing you do when you wake up is to check your smartphone. Am I right?

The digital transformation is not only changing the way we live, but also pushing many companies to adapt themselves to this new reality in order to survive. The 21st century customers require instant, digital, and smart experiences and companies have to readjust the way they do business. In addition to this requirement, in a more digital world, young startups can quickly threaten big and centennial companies and shake an industry. Startups are faster to modify their paths, while big companies, due to their legacy, are slower to make those movements.

Regardless of whether you are part of a large company or a startup, digital transformation is knocking on your door. In order to succeed, your company will have to build a digital strategy and rely on the main technologies that are driving this transformation. One of these technologies is Artificial Intelligence.

Artificial Intelligence has many definitions, but I like the following: AI is the machine or computer's ability to mimic human intelligence, which can be exemplified by the ability to see, hear, speak, reason, predict, learn, and so on. The evolution of AI requires not only to master the technology but also to understand better how perception, learning, problem-solving, and decision-making capabilities of the human mind work.

I have to tell you that AI is not a brand-new technology. The first studies about AI started in the 50s with Alan Turing, the father of computer science and Artificial Intelligence. Since that, experts have been developing and improving this technology. However, AI has never been widely used until recently. I understand that AI's prominence in the last decade happened by the following six factors:

1. The enormous volume of data that is being generated daily. It is estimated that we generate around 2,5 quintillion bytes of data. Besides that, the volume of data is growing exponentially, since 90% of all data was generated in the last two years. Some might say that data is the new oil, and when it comes to Artificial Intelligence, it is true. Data fuels Artificial Intelligence.

2. Computing power and its availability has grown substantially. For example, the smartphone that is in your hand has 10 times more computing power than the machine that took humanity to the moon for the first time. The computing power has an inverse relationship with the time needed to train and implement an AI system.

3. There are more complex Artificial Intelligence algorithms available in the market. More computing power and data allowed experts to create and develop more sophisticated machine learning and deep learning algorithms. Those algorithms allow more complex projects to be implemented and feed the experts and developers community to evolve this technology.

4. Some companies created accelerators for AI projects. Technological companies such as IBM developed AI-embedded applications that quickens other companies' adoption of AI systems. Rather than take months to build an AI-based solution, by using these accelerators companies can have an AI-based solution production, ready in weeks.

5. There are more AI experts available in the corporate world. Before AI's prominence, data scientists working with AI were more frequently found in the academy. Once the companies started to invest more in this technology, two things happened: there was an expert migration from academy to corporate world and companies started training staff to apply AI in their business.

6. But not least, with all the previous elements combined, companies started to see the real value that AI could provide to their business. Companies started to understand that AI has a huge disruption potential to drive cost reduction and boost revenue through the creation of new business models.

It is clear that Artificial Intelligence is one of the most disruptive technologies in the last years. A study from PwC states that Artificial Intelligence will drive $16 trillion gains in the worldwide economy in 2030. To seize this opportunity, I will share several different ways that AI can be embedded in business areas.

In terms of **Customer Service,** AI has a huge potential to improve the customer experience and to reduce costs. In the 21st century, customers want to communicate at the perfect time for them, in the channel they prefer, and in a way that is more suitable for them. Instant experiences are the new must in the customer relationship. To support all of that, companies have to use conversational AI-based systems to automate the short tail customer engagements in order to give more time to call center agents to solve complex questions. Thanks to the AI evolution, companies can use it in all channels to provide a standardized and omnichannel service to their customers.

In **Marketing and Sales,** companies can use Artificial Intelligence to have a deeper understanding of the current client base through customer segmentation and churn propensity analysis. With better customer comprehension, the marketing and sales team can provide unique experiences through recommendation and next-best offer systems that are more efficient with AI. All of those insights will give inputs to actions with potential clients and with AI companies will be able to analyze the propensity to purchase and provide more personalized offerings. For example, without AI, we would not be able to present an advertising to a specific person who is more willing to click or interact with that.

The Financial business area can also benefit from AI applications especially regarding credit risk analysis and fraud detection. As time goes by and the technology evolves, fraudsters become more creative. As soon as that happens, companies have to adapt their systems to try to reach fraudulent transactions before they are concluded. Without AI, fraud detection systems are major ruled-based and cannot adapt as fast as needed to follow the market movements. Further, as more data is generated daily, financial institutions can make use of this data to improve the credit risk analysis more often and have better accuracy in this analysis.

In **Supply Chain,** Artificial Intelligence can improve the accuracy and benefit of the demand forecasting analysis by providing experts the opportunity to use and correlate many more variables than they do in a traditional way. Variables such as historical demand data, macroeconomics data, and raw material availability data optimize combined can bring gold nuggets in the supply chain analysis process. Furthermore, telemetry data joined with maintenance historical data can enhance the preventive maintenance activities to avoid undesired malfunctions that impact the whole supply chain process. Lastly, logistics can be optimized by finding the best routes for a specific purpose, for example, finding the preferred itinerary that spends the least time or is more gas efficient.

In **health business,** hospitals and healthcare workers around the world are using AI to help convey health and safety information to patients, frontline workers and the public.

As you can see, there are thousands of ways that companies can apply artificial intelligence in their business to operate more efficiently, enhance customer loyalty and boost profit. A study from MIT Sloan shows that a major part of the pioneer enterprises (72%) expect to lift revenue while others expect to reduce costs. Either way, those companies are willing to increment profits through the usage of this technology.

When executives ask me if they should invest in Artificial Intelligence, I promptly respond that it is not a matter of IF but WHEN they will invest in AI. Some might say that an enterprise can live without AI, and I agree with that, but this enterprise will miss tons of opportunities to get insights from the huge amount of data available.

> **So, if you are an executive and you are thinking if your company should adopt an AI strategy, we recommend SIX steps to help you to take the ownership[1].**

1. MODERNIZE

Given the dynamic nature of AI, your data estate needs a highly elastic and extensible multi-cloud infrastructure to unify capabilities within a fully governed team-platform. Clients are also looking to automate their AI lifecycles across an array of contributors through collaborative workflows. To modernize your data means building an information architecture for AI that provides choice and flexibility across your enterprise. As clients modernize their data estates for an AI and multi-cloud world, they will find that there is less "assembly required" in expanding the impact of AI across the organization.

How to scale the AI ladder: Watch these enterprises[1]
The AI Ladder: Accelerate Your Journey to AI[1]

2. COLLECT

Collecting data simply means gathering and storing it. Collect data of every type, regardless of where it resides, enabling flexibility in the face of ever-changing data sources. And make accessing the data simple. Get data out of corporate silos and be aware of public data sources that may be useful. Find out what data you need but don't have, and make plans to get it. Make the data as broadly accessible as possible, subject to regulation, and your own internal policies. Enable people to work with data and be prepared to use data of all types. If you can combine structured transactional data with unstructured clickstream data from customers, you'll be able to build applications that are far more valuable than anything you could construct from either data type on its own.

3. ORGANIZE

Organizing data means creating a trusted, business-ready foundation with built-in governance, protection, and compliance. The first step is making sure your data is organized and cataloged. Next, you need to clean your data to ensure it's accurate, compliant, and business-ready. Finally, access to the data needs to be controlled. Only users who have permission should be able to access the data, and they should only be able to access the subset of the data that they need. The average thinks "governance for compliance." The heroes think "governance for insights," and compliance comes along for the ride.

4. ANALYZE

Analyzing data is where you build and deploy your AI models. Start simple; you don't always need to use complex neural networks where a simple regression will do. Always remember to KISS (keep it simple silly) your AI solutions where you can. Building models often consumes more compute power than using the models in production. While many models seem to be built on a developer's laptop, it's usually the case that behind that laptop is a cloud—so think about the kind of cloud (public, private, or hybrid) and what cloud providers you use. To avoid problems with production, it's wise to integrate developers with your business SMEs and operations (DevOps, DataOps, etc.) teams as soon as possible.

Your teams will inevitably be responsible for monitoring your AI, and in particular monitoring for compliance and fairness. Also, as the environment changes—and as the AI changes the environment—models tend to become less accurate. You have to watch for this gradual degradation in performance, and see that the model is retrained periodically (how often will depend on the data and the use case of the AI—it could need to be retrained weekly or monthly, or perhaps daily or hourly).

5. INFUSE

Infusing AI is where things get really exciting. Can you use AI to eliminate boring, rote tasks? There's no limit to what you do when you reach the top of the AI Ladder. Breaking an AI strategy down into pieces—or the rungs of a ladder—serves as a guiding principle for organizations. First, the AI Ladder helps organizations understand where they are in their journey: Are they still wrestling with the problems of collecting and organizing data? Or have they had some wins, and are now poised to push AI through the company?

Second, it helps them determine where they need to focus. It's not uncommon for an organization to adopt AI solutions at the Infuse rung, while still building out their Collect and Organize strategies across the organization. It's important to understand that you never leave any rung behind. You may be building AI tools for every group in the company, but you still have to make sure that you're collecting the data you need, cleaning it, cataloging it, and controlling access to it. Your processes for those tasks may (and should) be simple at first, but as your use of AI grows, so will your requirements.

6. FOCUS ON TALENT AND EXPERTISE

Organizations still experience significant difficulties in finding and attracting good talent, and today the lack of skills is among the main barriers to the adoption of artificial intelligence. Today, 62% of organizations are challenged to acquire talent to deliver AI capabilities. IBM's Data Science Elite Team tackles the challenges facing many organizations in the area of data science and AI, their skills shortage, by assisting clients in their AI and digital transformations. To date, the Data Science Elite Team has grown to almost 100 data scientists around the world and has been deployed on more than 130 AI, Data Science, and Machine Learning projects.

At the same time, these skills must be developed across the organization, focusing on conceptual understanding of data to interact with tools that enable or are driven by AI to identify opportunities for AI in the enterprise.

Keep in mind that those steps are not a recipe that guarantees success, but it is an excellent start on your AI journey. I recommend that you document your learnings in every step you make for future consultations from you and your team. With me, you have an open door to share your concerns and learnings. I will be more than happy to talk about your AI journey.

About the Author

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Roberto Celestino is a curious, technology enthusiastic, and explainer. As a TEDx speaker, he teaches public speaking techniques. At IBM Brazil, he is the Artificial Intelligence (Watson) Sales Leader, and at ESPM, a graduate professor. Graduated in Electrical Engineering at the Federal University of Uberlândia, with an emphasis on Automation and Control, he participated actively in the Junior Enterprise Movement and traveled to an international extension at the University of Guelph in Canada. He has a post-graduate diploma in Strategic Business Management and another one in Artificial Intelligence & Machine Learning, both from FIAP. Roberto is also working at Instituto Viae to help people make more critical, conscious, and autonomous professional decisions.

Computer Vision

AUGMENTING HUMAN CAPABILITY

BY MANISH GOYAL

The COVID-19 pandemic has acted as a catalyst for digital transformation which has gained accelerated attention across enterprises to transform themselves holistically. As transformation becomes quintessential for the survival of enterprises, the journey starts with understanding where the enterprise currently stands and what do they want to achieve from the transformation. The "how" part involves mapping people, processes, and technology to make the journey impactful. It also means ensuring the use of multiple technologies which can be leveraged to meet the goals.

Artificial Intelligence (AI) is recognized as one of the strong technology pillars which enables enterprises to transform themselves digitally. The usage of AI has augmented the human capability in many ways and has enabled enterprises in meeting their business goals. However, the real power of AI can be unleashed if the technology deployment is linked with the overall transformation strategy enabling enterprises to use it in the right places.

Though AI has many use cases, some of the quick wins for an enterprise include projects which involve developing solutions like sales forecasting, predictive maintenance, recommendation engines, etc. As the organization dwells deeper into more complex deep learning-based solution, the ability and performance parameters change dramatically. Deep learning is a subset of AI which can learn from huge amount of unsupervised, unstructured, or unlabeled data. Deep learning techniques are used in most of the Computer Vision (CV) based solutions.

Computer Vision is defined as the ability of the computer to process and identify videos, images, and objects which is deciphered to understand the content and context of a video or image. The content could be anything from an animal, place, object, or human face enabling an enterprise to generate many use cases.

In simple terms, CV is executed through the powerful deep learning algorithm of Neural Networks (NN). NN are a type of interconnected networks which process information like a human brain through a series of connected network elements. NN differentiate and learn by example, hence, they need a lot of training data which gets fed into the computer in the form of raw jpeg images, live camera feed, etc. As data gets fed into the computer, the algorithm learns and deciphers patterns for the multiple data sets and shows output based on its learning. While most of the data ingested in the CV systems are labelled data ingested in supervised manner, modern day CV solutions can also ingest unsupervised and semi-structured datasets.

The rapid development of the CV technology can be attributed primarily to the data in digital format but it is also the low cost of computing power and availability of open-source libraries from organizations like opencv.org which has further augmented the development and adoption of this technology in mainstream industries. AI-assisted computer vision platforms are also capable of functioning in increasingly complex environments. They work continuously and in conjunction with humans, leading to improved efficiency, fewer errors, and better output.

The use of CV is increasingly proliferating across many industries bringing in efficiencies to many business processes and cutting down the cost. Few such industry specific use cases are the following:

Autonomous Cars

Driverless or autonomous cars are now being tested and used with limited mobility space (airport transfers, luxury resorts, etc.). The development modality of driverless cars is that it uses multiple cameras, lidar, radar, and ultrasonic sensors to acquire images from the surroundings so that their self-driving cars can detect objects, lane markings, signs, and traffic signals to safely drive around the area. All of this is a reality, possible through CV, with many manufacturers such as Tesla, BMW, Volvo, and Audi getting deep into developing and commercializing them.

Retail

Retailers have started developing autonomous retail stores which are equipped with overhead cameras. Once the consumer enters the retail stores, it switches its app on. As the customer picks up products, it gets added to his cart and final payment is then made as the customer leaves the premises from his mobile wallet. Such implementation is done by Amazon Go.

Agriculture

A lot of countries are now mapping their agriculture land images captured by satellite and drones. The image data is captured during different times after the seeds are sown which helps in estimating the production quantity of the crop ensuring cost management of future contracts. This information also empowers the government to take preemptive measures beforehand on shortfall or higher growth predictions.

CV in agriculture is also being used to analyze crop quality as it gets harvested and to find the optimal route through the crops, driven by autonomous tractors. John Deere, an agriculture equipment manufacturer, has developed such tractors. A startup in India, Farmbeats, uses drones to map the farm and monitor various crop and soil parameters through the images collected on a regular basis. It is expected in the future that CV identifies weeds so that herbicides can be sprayed on them directly instead of on the crops.

Healthcare

CV provides a plethora of use cases in the healthcare industry. Since 90% of all medical data is image-based, CV-based technology is making quick inroads. From enabling new medical diagnostic methods to analyze X-rays, mammography, and other scans to monitoring patients to identify problems earlier and assist with surgery, CV is playing a very important role in the development of next generation healthcare systems. Tampa General Hospital in Florida deployed a CV-based solution to capture potential patients with symptoms of COVID-19.

Manufacturing

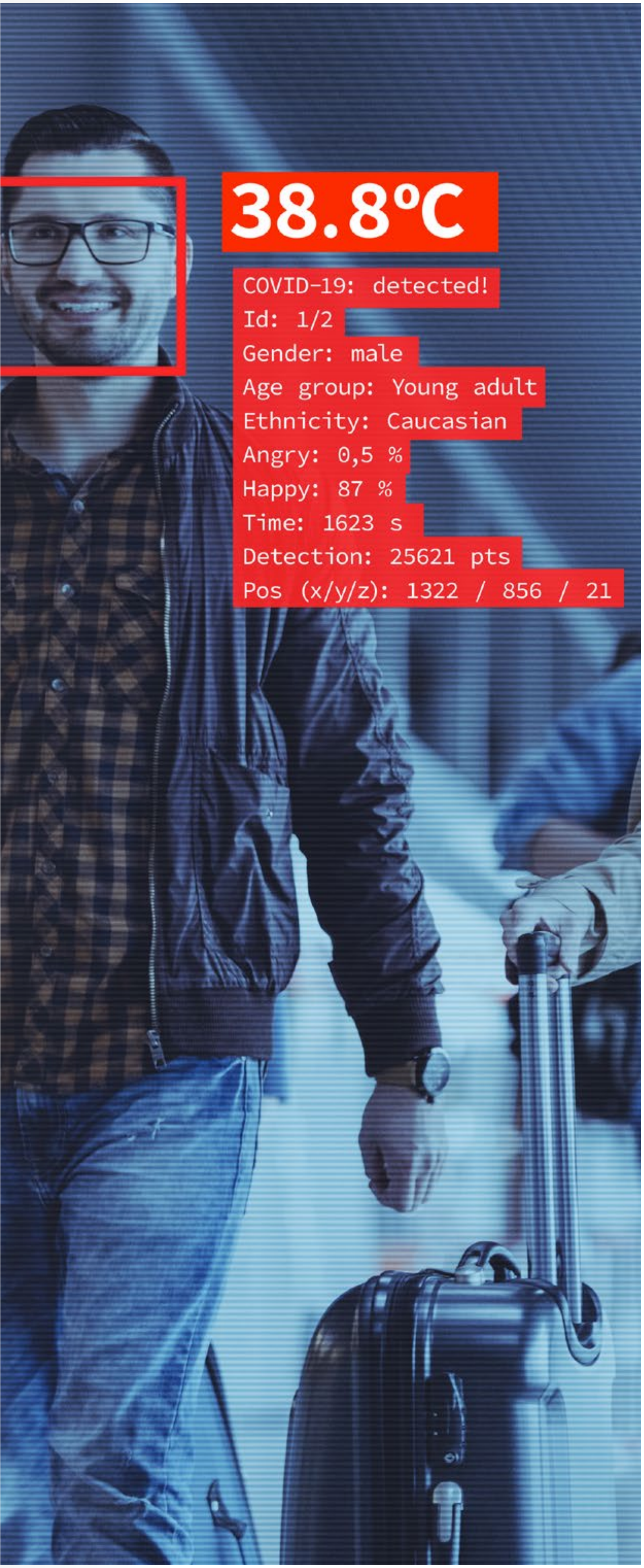
CV is also helping manufacturers to run more safely, intelligently, and effectively in a variety of ways. It is not only helping them to monitor the equipment and raise an alarm before the breakdown happens. It is also being used for packaging and product quality monitoring by identifying defective products.

Logistics

Logistics providers like DHL and Amazon are using CV in their warehouses to sort different products which is helping them to improve the efficiency by reducing the sorting time.

Banking and Financial Services (BFSI)

BFSI is changing the way they work and slowly adopting CV in their business processes with different use cases. From retail to commercial banking and insurance, it has different use cases. It is being used to bring in efficiencies in processes concerning fraud detection, enhancing cybersecurity enhancing customer experience, back and front office processing, etc. CaxiaBank is a Spain-based bank which allows its customers to use facial recognition technology to draw cash from its ATMs — improving user experience and enhancing security. The claim processing in the insurance industry is still a tedious task, however, the use of CV in claims processing has started to make the work of insurers somewhat easy. China Pacific Insurance (CPIC) has transformed its claim processing by using CV-based solutions in partnership with Baidu which has tremendous impact on the operational efficiency.



Security

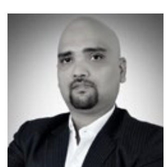
CV is also being used to augment the security of strategic locations. The facial recognition solution running at the backend constantly scans for unidentified people and raises an alarm on finding one. China is much ahead in using facial recognition technology, and they use it for police work, payment portals, and security checkpoints at the airport. The facial and vehicular recognition solution deployed at Taoyuan International Airport in Taiwan helps authorities to boost the safety of the airport and shorten response times in case of any emergency.

However, there are many challenges in developing a CV-based solution:

Huge data requirement: Solutions like facial recognition or autonomous cars require huge data sets to train the algorithm. It is certainly difficult for machines to process all the image and video data when training a computer vision model. While today there are no computational problems due to the availability of GPT-2 & GPT-3, doing a CV solution based on live video feeds is still a complex task.

Privacy threat: A lot of CV-based solution encroach upon the privacy of individuals and cannot be implemented due to various regulatory and complaint issues like GDPR, PDPA, etc. Considering privacy threats, governments of a lot of countries have either banned facial recognition-based solution or ensure strict regulatory adherence.

As much as CV is constantly evolving into a better technology and solving various use cases, it is difficult to simulate the actual vision of human into a machine. Such marvel will take few years before machines can perfect it. As AI is still perfect at doing one task at a time, doing complex work through CV will take some time for perfection and becoming into a fully mature technology.



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Manish has 17 years of experience in advising companies on growth and transformation strategies. As a digital transformation consultant and AI evangelist, Manish focuses on advising organizations on their AI strategy and helps them in developing relevant technology solutions. Manish has worked with clients from various industries including FMCG, Retail, Telecom, Manufacturing, BFSI across US, Middle East and SEA markers. He currently advises various startups based in India and the U.S.

WAR

PECB advises you to avoid traveling nowadays due to the ongoing COVID-19 outbreak. However, make sure you add this incredible destination on your travel bucket list.

RSAW

WHERE RICH HISTORY AND MODERN BUSINESS LIFESTYLE MEET IN THE GREEN HEART OF CENTRAL EUROPE

BY JOANNA SOBURA

Warsaw is a fascinating city, where turbulent history and modern-life ambitions merge into an alluring patchwork of architectural styles, incredible cuisine, and vibrant cultural life. Rebuilt from the ashes after the World War II, the city was partially reconstructed, and mostly became a playground for socialist realism and, in the last decades, state-of-the-art architectural ideas. Even though Warsaw is a great weekend trip destination, I strongly recommend spending more time here to explore this amazingly green, spacious yet walk-able, and not overcrowded city.

Getting around

You can begin your discovery at the Warsaw Chopin Airport, located barely 8 kilometers away from the very center of Warsaw. Although it may seem insufficient that the capital has only two underground metro lines, its public transport is comfortable, clean, affordable, and very well organized. A dense map of buses, tramways, city trains, and ferries on both sides of the Vistula River make sightseeing easy and fun. Indian summer (babie lato in Polish) with sunny and pleasant weather encourages both locals and tourists to use sustainable transport solutions, such as ubiquitous city bikes and electric scooters. These seem the best to move around such places as Bulwary Wiślane — a promenade where one can admire currents of the wide and majestic Vistula River.

The Vistula Boulevards

Various cafés, bars, and outdoor sport facilities located along the left river bank make this area a magnet for people to spend their free time. The place I find most fascinating is the Copernicus Science Center. It offers a wide variety of science and technology-related exhibitions, educational events, and a planetarium. In a nutshell, a visit in the center is knowledge-broadening and extremely exciting both for kids and parents. Back to the boulevards, breathtaking views of the other, eastern side of the Vistula with its sandy beaches and forest bank give you the feeling of being in nature while still exploring a rapidly developing, busy, and modern metropolis of Europe.

The Old Town

One of the most representative streets of Warsaw, Krakowskie Przedmieście, which takes us straight to the Old Town closes for car traffic at the weekends in warmer months of the year, so you can hop on a bike, a scooter, or just walk around and admire some emblematic spots of this historic area. The Old Town is like a colorful and lovely postcard from the past, not without a reason.

> **Recognized by UNESCO as a World Heritage Site, the Warsaw Stare Miasto was meticulously reconstructed from ruins to become the most prominent tourist attraction of the capital.**

The reconstruction mirrors its medieval spatial arrangement and the 16th and 17th century architecture. Narrow, cobbled streets, late Renaissance style buildings, and vivid market squares full of shops, restaurants, and street artists are surrounded by city defense walls with a fortified gate called Barbakan and amaze with the beauty and craftsmanship of this outstanding reconstruction.

The Palace of Culture

It is unthinkable not to mention the symbolic relict of the Soviet past, and the highest building in Warsaw, the Palace of Culture and Science. Its solid, geometric body guards the city center and unavoidably catches the eye of a visitor. This incredible, social realist building seats four theaters, a cinema, a swimming pool, various museums, offices, shops, bars, night clubs, and much more. You can admire Warsaw from above from its viewing terrace located on the 30th floor.

Polish Cuisine

Warsaw was chosen third most vegan-friendly city in Europe and sixth in the world in 2019 by Happycow.net community. Plant-based eaters can easily enjoy great and various foods, including even vegan versions of Polish cuisine must-haves, such as cabbage rolls (gołąbki) or dumplings (pierogi). However, the green culinary scene of the city isn't necessarily exploring national traditions only.

> **A hungry vegan will be served almost anything like falafel, burger, Indian, Italian, Japanese food, to mention just a few.**

The most interesting plant-based restaurants are Krowarzywa – with five places in the city – specializing in vegan burgers and Vegan Ramen Shop with three locations. The list is much longer and still growing, as vegan and vegetarian food is gaining popularity.

An exceptional foodie experience and something not to be missed here is a lunch in one of milk bars (bar mleczny), a sort of canteen serving Polish comfort food on available prices. Milk bars are a post-communist cultural phenomenon, back in fashion in the recent times, in response to a bit nostalgic perception of Soviet era in Poland. A two-course lunch menu opens with a soup. Dense and nutritious soups are a big part of Polish cuisine. Two most popular being żurek (sour rye soup) and barszcz (borsch), both fermentation-based dishes (fermentation being yet another huge chapter in Polish cuisine). The former is often served with kiełbasa (sausage) and hard-boiled egg, and the latter, with smaller version of pierogi, called uszka, filled with mushrooms.

A typical second course could be, for instance, kluski leniwe — similar to Italian gnocchi with meat, plant-based sauce or butter and sugar – a childhood comforting memory of most Poles. Another recommendation for the main dish is buckwheat served with sunny-side-up-egg and mizeria, a simple cucumber salad.

Green, Greener, Warsaw

Warsaw is truly a green city, full of nature perfectly married to the urban tissue of the city. The amazing, natural river bank, several stunning parks and at least two forests within the reach of the metro line make escaping the busy city life and finding relief in nature easily done.

Cabbage Rolls (Gołąbki)

Wilanow Palace and Garden

Teatr Wielki Opera Narodowa

Royal Gardens – a summer residence of the last Polish king – is a beautiful, diverse mix of gardens, baroque palaces, monuments, and water. It is an absolute must-go and you can combine it with a visit to the Botanical Garden located just a few steps away.

It is surprisingly simple to reach forests and have a stroll in nature. Big open parks located within the city are Las Kabacki (Kabaty metro station) and Las Bielański (Słodowiec metro station). For more adventurous travelers, at the north-west frontier of Warsaw, you encounter an astonishing, enormous forest area – Kampinoski Park Narodowy – a perfect place for hiking, biking, and relaxing in nature. Its symbol, a moose, is one of many animals you could meet during your trip there.

Vibrant Culture and Night Life

When late summer meets early autumn, Warsaw still seems to flourish, due to numerous cultural events making the city energetic and rich in cultural and artistic platforms. Warsaw Summer Jazz Days host each year the most renowned musicians of the world jazz scene and the festival fills different areas of the city, Old Town included, with sophisticated tunes.Warsaw Film Festival, in October, brings best world motion pictures to various Warsaw cinemas. If you happen to be a theater lover, you won't be disappointed.

> **The Polish capital scene offers a broad spectrum of theater art, from Broadway-like plays in Teatr Roma, through Teatr Wielki Opera Narodowa with world opera and ballet classics, up to avant garde Teatr Nowy and TR Warszawa.**

Non-Polish speaking theater connoisseurs can enjoy plays subtitled in English mostly in Nowy Teatr, Teatr Wielki Opera Narodowa, and TR Warszawa.

Although Poland is known for delicious vodka, Warsaw lately has become a hot spot for craft beer bars and also, recently fashionable, speakeasy cocktail bars. These places are hidden from the general public and their locations are spread by the word of mouth. I cannot give out their names or exact addresses, because you would lose the whole experience, but I can reveal that the Krucza street and its vicinity is where you might have a taste of Warsaw nightlife mystery.

Wola Business District

Business Centers in Revitalized Areas

As Warsaw teaches us how to merge the traditional with the modern at almost every corner, so are the newest architectural investments, such as Browary Warszawskie, the old Warsaw Brewery premises revitalized in an ambitious, 4,5-hectare urban complex of office buildings, apartments, public open spaces and gardens. A renovated 19th century brew house and almost 200-year-old lagering cellars served as an inspiration for architects to design luxurious buildings with surrounding public space and reintroduce it into Wola district's contemporary life. Carrying the memory of the Warsaw Uprising, Browary Warszawskie are a successful combination of honoring the past while answering present needs and heading for the future.

This new complex is centrally located and perfectly communicated with other parts of the city. The business area attracts with high-quality restaurants, steel, and glass buildings and fast, modern street life vibe. Nearby, you can find another great city square — Plac Europejski — a multifunctional, open, public space, which in winter turns into a skating rink and in the summer hosts open-air cinema as well as many cultural and artistic events.

> **Most of all, it is a friendly place where you can admire the newest architecture of surrounding skyscrapers and relax during your business day break.**

Praga district, on the right side of the Vistula River, is yet another fascinating place where, on the one hand, you find buildings with remaining holes from the World War II bullets, and on the other hand, you can make business in a co-working space of Google Campus, located in a center for business, leisure and arts, Centrum Praskie Koneser. The venue hosts big concerts and shows, as well as business conferences and many artistic events. As the complex is located in the historic vodka factory turned into a living, business and entertainment area, you can explore, among others, the Museum of Polish Vodka and learn more about the worldwide acknowledged Polish spirit.

Warsaw's Praga district offers plenty of attractions for a visitor, including, of course, parks. The most beautiful Warsaw green area in the author's opinion is Park Skaryszewski, located nearby the National Stadium. It can give you all kinds of sensory experiences, starting from the overwhelming smell coming from the chocolate factory WEDEL. Not only can you smell it, you can also taste hot chocolate served in Wedel's shop in a lovely, classicists building, a historic toll house. The owners of the factory are considered pre-war business masterminds, as they put an extravagant and successful vending machine with chocolate bars at the entrance to the park in the early 1930s. There is a possibility of canoeing around the park's lake, having a snack or lunch in one of restaurants, or just chilling out in charming company of small, ginger squirrels running around. Another interesting place nearby is the Neon Museum, dedicated to neon signs from Cold War times which used to make pretty gloomy times more colorful and pleasant for the eye.

Warsaw as a Place to Be for the New Wave of Young Business

It seems that apart from being appreciated by vegans, Warsaw is also considered expat-friendly, as it scores high in their rankings of best livable cities. No wonder why it attracts many young entrepreneurs and more experienced business players. It is noticeable that being a busy metropolis, the ambient here is pretty laid-back and the quality of life is enjoyed by incomers. Warsaw definitely enchants with its omnipresent nature, walkable distances between attractions, great public transport, fascinating history and architecture, all of which melt into a future-oriented, vivid and energetic, modern city.

About the Author

Joanna Sobura
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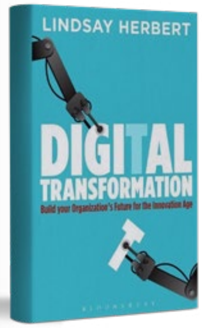
Joanna Sobura is a creative writer and manager for arts and culture based in Warsaw for over fifteen years. She is the former president of a NGO dedicated to music and arts education. Musician, team-building workshop animator for business teams, and translator, in love with European and Latin American literature and culture. She works with Atea Agency in the field of content creation and digital marketing. Atea Agency has been cooperating with CTS Customized Training Solutions for over two years.

CTS has continuously been PEBC's business partner since 2013 in the area of training courses of the following: ISO 22301, ISO/IEC 27001, ISO/IEC 27032, ISO 31000, and ISO/IEC 27005. CTS has always been connected to Warsaw and its business environment.

Leading Change and Innovation

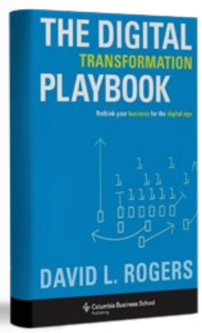
FOUR MUST-READ DIGITAL TRANSFORMATION BOOKS FOR YOU TO GET STARTED

Change is difficult. However, in the wake of digital transformation, change is required, because it currently is and will continue to impact every business. Undergoing transformation has its advantages, but several things must be taken into account, including innovation, processes, and methodologies. The pace of change means that organizations need to be proactive in order to face these challenges. Being a successful digital leader means realizing that people are just as important as technology. Creating harmony between technology and people is the answer to a digital future. Leaders should foster a digital culture and be ready to embrace change and innovation. In order to get started, and get insightful information and then apply them into your organization, we recommend you put these books on your reading list.



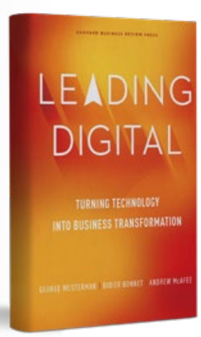
Digital Transformation: Build Your Organization's Future for the Innovation Age
by Lindsay Herbert

When dealing with innovation, organizations face multiple challenges and try to answer questions on where should they start, how to allocate the necessary resources, and what data should they measure. This book is an excellent resource which will help you to champion digital transformation within the organization. Through her own experience, the author writes about the ways to lead change and innovation successfully. The book shows that the most important ingredient for the digital shift is in the culture and not only in the tools. It further shows how to digitally transform successfully in five actionable stages. The book is also rich in providing features and insights from leaders and experts of known organizations, such as Harvard University, Morgan Stanley, the United Nations High Commission for Refugees, and more.



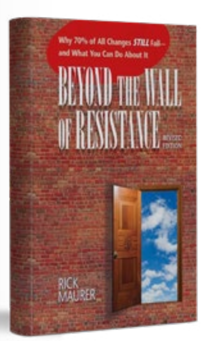
The Digital Transformation Playbook: Rethink Your Business for the Digital Age
by David L. Rogers

Many leaders are puzzled by the constantly changing business environment and are concerned about the ways they can keep abreast of these changes. In this book, the author explains that digital transformation is not only about technology, but it is about upgrading the strategic thinking. The author outlines the changing business landscape and more importantly gives practical lessons on how to transform and adapt in a digital economy, no matter the age or industry of the business. Every strategy in this playbook is illustrated with real-world case studies from globally known organizations such as GE, Google, Airbnb, etc. If you are an executive and looking to take the organization to the next level with growth, you cannot afford to miss this book.



Leading Digital: Turning Technology into Business Transformation by George Westerman, Didier Bonnet, and Andrew McAfee

When we think of digital transformation, the first impression we get is it being only relevant to some industries like media and tech. However, in today's modern world, every industry and business is impacted. In this book, the authors illustrate how different industries are using this to achieve a strategic advantage. Read what it takes to become a Digital Master based on a study of more than 400 global organizations such as Nike, Burberry, Lloyds Banking Group, and more. This book is organized in a two-part framework which shows where to invest in digital capabilities and how to lead the transformation. It offers a complete guide with useful practices on how to become a Digital Master in just 12 steps.



Beyond the Wall of Resistance: Why 70% of All Changes Still Fail--and What You Can Do About It by Rick Maurer

Change is part of our everyday life. If you are dealing with it, this engaging read will help you increase the chances of your success. In this book, the author explains the reasons why most changes fail and how to deal with significant change through practical approaches with new case studies. This book is the benchmark for change. It is a cornerstone of the understanding of change management. The author explains this complex topic with simplicity, which makes it easy to understand. This is a great book where with an extensive experience and lots of case studies the author shows how you can benefit from the opportunities that change brings rather than look it as a threat.

Business Communication during the COVID-19 Pandemic

BY BESFORT AHMETI, PECB UNIVERSITY

The COVID-19 pandemic has hit the world hard! The lack of experience with such a pandemic led countries into taking different defense mechanisms.

Among many aspects of our lives, the COVID-19 pandemic has certainly affected the economy, markets, and consumption behaviors. From a consumer perspective, we have noticed changes in the behavior, quantity, and types of products consumers are buying and consuming. From a business perspective, many companies have witnessed a declining business turnover, amongst other challenges.

I have conducted brief interviews with 16 business owners or managers from companies across Europe, from various industries, including business consultancy, gastronomy, real estate, wood production, agriculture, etc., asking them about the main challenges they have been facing throughout the pandemic. The main challenges these businesses have been facing are: significant declines in sales due to movement limitations and fear of the unknowns about the virus, liquidity issues, (over) stock management. In terms of business communication, the main challenges are presented below.

Communication within the Organization

A significant number of companies have encountered resistance from workers to go to work, due to fear of infection. Beyond other challenges, this problem has stagnated business activity even deeper.

In terms of facing these communication challenges, companies that were more open to process digitization, have survived the pandemic with much lighter hurdles. Few of the companies interviewed were using online platforms of team communication before the pandemic. The pandemic crisis forced them into shifting the communication online, including holding business meetings, monitoring task progress, and arranging projects with teams online. Businesses that have digitized their internal and external communication processes have had a smoother transition to the new normal. Some businesses declared they plan to continue using these digital tools even after the pandemic is over.

The ability to work from home has had its benefits for employees; however, one major concern they have expressed about working remotely is surveillance. For employees having to use work laptops and communicate through company's selected platforms, there seems to exist a state of discomfort; they are ambiguous about the extent to which their companies can monitor them.

Communication with Buyers/Customers

Direct physical communication between buyers/consumers and businesses has been very difficult, which reflected in the lack of proper and timely information of buyers/consumers about business offers and products; consequently, declining purchases and interest in products.

Fear and restrictions on movement have caused business activities to shift online, and have highlighted the advantages of doing business online. With the majority of consumption concentrated online, social networks, own company websites, and CRM platforms became crucial in the communication and value exchange between businesses and consumers.

The world has learned to embrace this pandemic, adapting to a new normal way of living and communicating mainly using digital tools to do so. We have yet to see how comfortable we will get with this new normal and whether we will get back to the old way of doing things when the pandemic is over.

SPENDING THREE DAYS IN THE CITY OF SKYSCRAPERS

TORONTO

Looking for a perfect three days in Toronto itinerary? As a vibrant and dynamic destination, Toronto is full of life, character, and actions. There are so many things to do in Canada's largest city that it can be overwhelming. To narrow down the choices, we developed a detailed, easy-to-follow itinerary to help you maximize three days in Toronto.

ARTICLE TAKEN FROM BOBO & CHICHI, WRITTEN BY CAT LIN

PECB advises you to avoid traveling nowadays due to the ongoing COVID-19 outbreak. However, make sure you add this incredible destination on your travel bucket list.

DAY1

Nathan Phillips Square

Distillery District


Canoe © Image

Morning

Get ready to spend three amazing days in Toronto! Start your Toronto visit in the downtown core at Nathan Phillips Square. This public space is a popular gathering place for Torontonians. It is easily recognized by the gigantic Freedom Arches over the reflecting pool and the 3D TORONTO sign. Together with the City Hall, they make an iconic landmark in the city worth visiting.

Stop by Osgoode Hall for a quick visit. This heritage building houses the Ontario Court of Appeal, the Superior Court of Justice, and the Law Society of Ontario. But what makes it especially unique is the Great Law Library, which not only holds the largest private collection of legal material in Canada but also has an enchanting antique design. The wood paneling and spiral staircase retain all the old-world charm and elegance. It will make you feel as if you have been transported to Hogwarts.

Take a guided tour around Elgin and Winter Garden Theatre —Toronto's best-kept secret. This double-decker theatre is the last operating one in the world, making it even more impressive! Go behind-the-scenes at Elgin & Winter Garden Theatres to take a closer look and learn about its fascinating history. You will be surprised how different the old-fashioned Elgin Theatre is from the forest-like Winter Garden Theatre on the upper level. Tours are only offered on Thursdays and Saturdays.

Lunch

Fuel up at Lena, an Argentine restaurant in downtown Toronto. Their menu showcases the complex flavors of South American cooking. Highlights of the menu include Susana's gaucho empanadas and charred beef tartare. End the meal with mouthwatering desserts. Their churros and alfajores (shortbread cookies) are to die for!

Afternoon

Take a walk to St. Lawrence Market. This indoor public market is a must-visit during your three days in Toronto. Located in the Old Town district, the historic market is the best place to shop for fresh produce, gourmet items, and all other culinary treats.

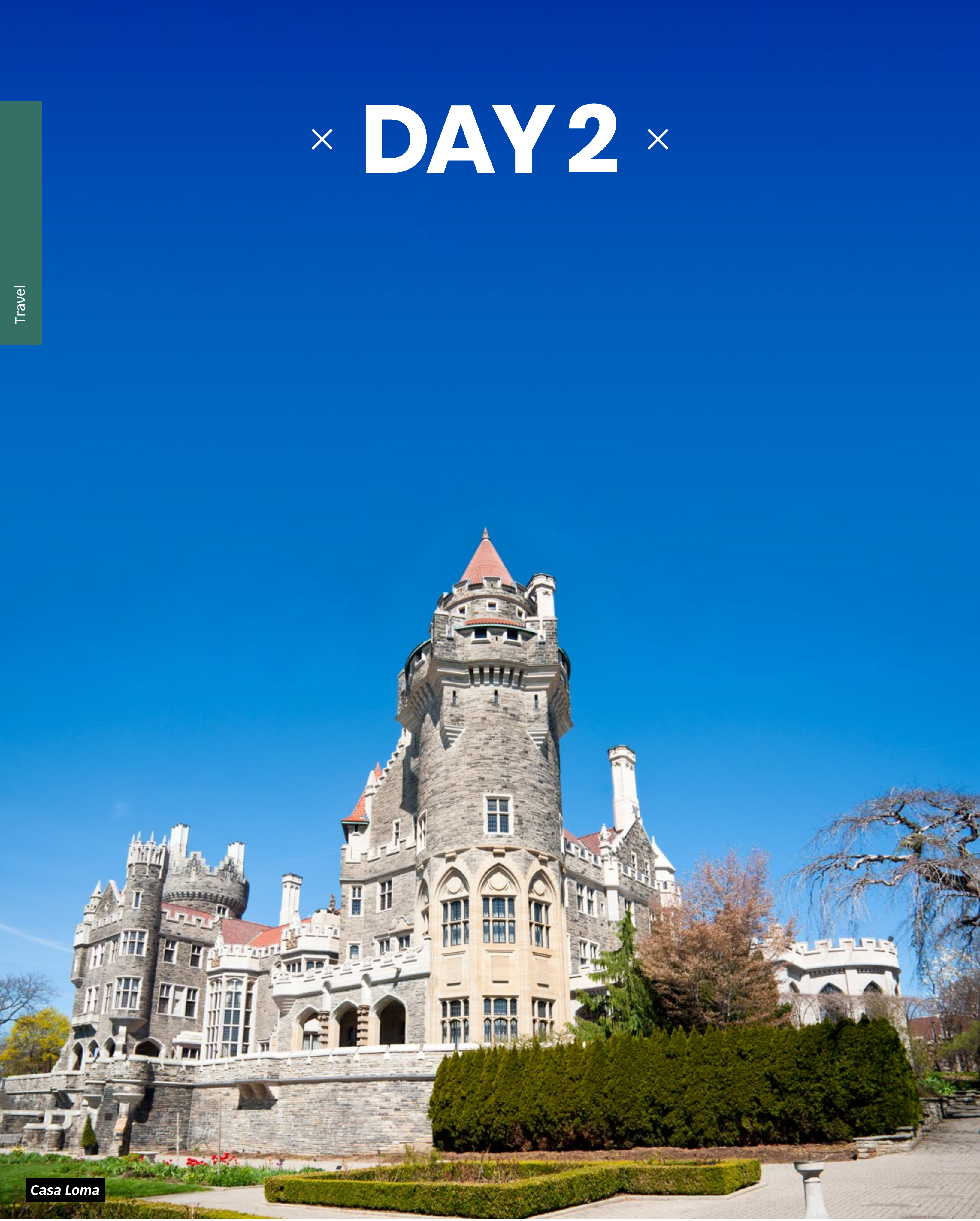
Also, check out a food tour through St. Lawrence Market! Not only do we find food tours to be the best way to get to know the city through its food, you also learn about the history.

After feeding your belly, visit the Distillery District that is just two blocks over. This lively area is a National Historic Site and a hot spot for those looking for boutiques, galleries, and restaurants! Walking around the Victorian industrial buildings, you will feel like you have stepped back in time. While you are there, grab a cup of joe at the popular Balzac's Coffee Roasters. Or do a sake tasting at Izumi — North America's first sake brewery!

Dinner

Enjoy a meal with a stunning view at Canoe. Sitting high atop the 66 Wellington TD Tower, Canoe is the perfect place to get a taste of contemporary Canadian dishes. The menu focuses on unique Canadian ingredients and flavors. For the best experience, order the seasonal six-course tasting menu. You will not regret it!

× DAY 2 ×



Casa Loma

Morning

Do you know that there is a castle in Toronto? Yes, do not be surprised. You can find one in midtown, Toronto!

Completed in 1914, the famous Casa Loma used to be a private residence of a multimillionaire called Sir Henry Pellatt. After he went bankrupt, he sold the castle, which was then turned into a hotel. Now, Casa Loma operates as a museum and is often rented out as a wedding venue. The Gothic Revival mansion is also used as a backdrop in many Hollywood films, including X-MEN, Cocktail, Chicago, The Tuxedo, The Pacifier, and The Vow.

Lunch

Grab lunch at The One Eighty — one of the highest patios in Canada! Perched high on the Manulife Centre in Yorkville, the restaurant offers a fantastic vantage point in the city. You can choose to sit in one of the two patios — the one facing North Toronto or the other overlooking the CN Tower and downtown Toronto. No matter which one you choose, you are guaranteed the best rooftop view in the city. Pair the view with a few small plates like sweet Thai chili chicken drummies and Baja Halibut tacos, life can't get much better!

Afternoon

Your days in Toronto itinerary is not complete without a trip to Canada's largest museum — Royal Ontario Museum. With six million objects in its 40 galleries, you can immerse yourself in the world of art, world culture, and natural history. Dinosaurs, mummies, and ancient costumes are just a few things you will see at the Royal Ontario Museum. The museum constantly installs new exhibits and programs to reflect the changing world. The current exhibit on #MeToo & The Arts is one example.

After your museum visit, take a leisurely stroll around the University of Toronto district nearby. There are many Gothic Revival buildings worth exploring and capturing. When you are tired, take a break at Sorry Coffee. Tucked at the back of the Kit and Ace store, this little café is a popular spot among locals. Not only is it aesthetically pleasing, but it also serves great-tasting high-quality coffee!

Dinner

During your three days in Toronto itinerary, you gotta hit the best foodie spot in the city! JaBistro should not be missed. This cozy Japanese eatery is considered by many as the best sushi restaurant in Toronto. It is the perfect place to get the freshest seafood. Every bite is rewarding and packed with deliciousness. Whether it is just sashimi or blowtorched sushi, you cannot go wrong with what you order. If you cannot decide, simply treat yourself to a five-course prix fixe menu. It is totally worth it!

Since it is a small place, reservation is strongly recommended.

The One Eighty © Image

Royal Ontario Museum

Travel

× DAY 3 ×

CN Tower


Scenic view of Toronto Islands


Toronto Islands

Morning

It is your last day. It is time to pay a visit to CN Tower — the real highlight of the three days in Toronto itinerary! This iconic landmark not only is the symbol of Canada, but also one of the tallest buildings in the world (currently ranked 9th)!

You can take in the stunning Toronto views up high from three observation levels.

First, take the glass-fronted elevator to the LookOut Level for stunning Toronto views. The floor-to-ceiling windows promise a full panoramic view of the city. Then, board a separate elevator to go further up to the SkyPod, where you will stand 447 meters above the city. On a clear day, you can even see Niagara Falls and New York State! Finally, test your nerve on the Glass Floor. Stand, walk, or sit on the glass floor while you look 342 meters down and get a clear view of what is beneath you! If that is just a piece of cake for you, why not try the Edge Walk? This adrenaline-pumping adventure will let you take a walk around the ledge outside and test your limits with a few stunts!

After CN Tower, stroll through the Harborfront neighborhood. Overlooking Toronto Harbor and the Toronto Islands, this scenic area is the ideal place to picnic and soak up the sun! There are many photogenic spots worth stopping by, including Sugar Beach, Cabana Pool Bar, and Canoe Landing.

Lunch

Satisfy your lunch craving at Wvrst. This German-style beer hall in the Entertainment District specializes in artisan sausages, beer, and cider and is the go-to place for meat lovers. You can find more than 25 different sausages in house. Selection for beer and cider is way beyond your imagination. Go wild, choose a few sausages, and find your favorite. Do not forget to try their award-winning duck fat fries.

Afternoon

Spend the rest of the day exploring Toronto Islands lying in the south of downtown Toronto, this small island chain is just a quick 10-min ferry ride away.

Rent a bike and explore the three major islands — Centre, Ward's, and Algonquin — all connected by bridges. As you make your way through, you will be surprised by its unexpected beauty and picturesque settings.

You can take a one hour Toronto Island Harbor Cruise if you are in a hurry or tight on time where you get to see the islands and epic skyline views!

You will come across a few beaches and picnic areas, as well as a disc golf course. There is even a farm, a maze, and even one of the best amusement parks in Ontario! If you are brave enough, head over to the lighthouse — rumor has it that it is haunted. Mysterious moaning and footsteps were heard when no one was actually there. Before you leave, snap some souvenir photos of the Toronto skyline.

Dinner

It is your final night in Toronto. Go to PAI for a casual dinner. This funky, busy restaurant dishes out Northern Thai cuisine that will make your mouth water. Must-try dishes are khao soi (fried egg noodles dipped in golden curry), tom yum kung (spicy and sour shrimp soup), and green papaya salad.

It is time to say goodbye. This concludes what to do on a three-day trip to Toronto, highlighting all the main attractions and best places to eat. Toronto has so much more to offer, but with only three days in Toronto, this is a good start to get a good taste of the city. Hope this post inspires you to book a flight and visit Toronto soon!

Ritz Carlton – Image


Wellesley Manor Boutique Hotel – Image

Where to Stay in Toronto

$ Bond Place Hotel Toronto

This is an incredible option for your three days in Toronto if you are on a budget and want to be in the center of all the action. The rooms are decorated in minimalist and contemporary decor. Some rooms even have lake or city views! There is also a fitness center on site.

$$ Wellesley Manor Boutique Hotel

This is our favorite option because it is unique and we love boutique hotels. This hotel is inside a Victorian mansion with elegant rooms decorated with antiques with modern amenities. Guests rave about the rainfall showers and the lobby lounge with a fireplace. This is the perfect cozy place to stay for your three days in Toronto.

$$$ Intercontinental Toronto Centre

This beautiful upscale hotel is set in a high rise building in the heart of downtown Toronto. The rooms are modern with views of Lake Ontario or city views. Upgrade to a split-level suite with unique spiral staircases and loft bedrooms. Upgraded rooms also feature extra bathrooms, libraries, wet bars, and whirlpool tubs. Do not miss out on the indoor saltwater pool, hot tub, spa, chic restaurant, and fitness center all on site.

$$$$ The Ritz Carlton Toronto

This is an absolute dream hotel for the luxury travelers looking for elegance and opulence during their three days in Toronto. The rooms feature Italian linens, marble floors, heated bathroom floors, and soaking tubs to wind down in at the end of each day. On-site there is an Italian restaurant with a cheese cave, a sophisticated bar, and chic lounge with a patio. Do not miss out on the indoor pool and fitness center on site either.

Extra time?

Have extra time during your three days in Toronto itinerary or an extra day? Check out these other fantastic options to enjoy in the city.

- Check out the cool bohemian neighborhood and Kensington Market by foot. Stroll through the shops, boutiques, and eat your way through this cool area full of international influences. Try this 3 hour guided food tour if you have time to taste your way around the globe through this amazing market. Book here.
- See graffiti artists in action at Graffiti Alley, one of the most Instagrammable spots in the city! The alley stretches a half a mile right off of Spadina Avenue.
- Visit one of the most Canadian attractions of all time at the Hockey Hall of Fame during your three days in Toronto! With over 15 exhibits any hockey lover can get lost in here for a few hours.
- Check out the scenic and gorgeous trails along the Scarborough Bluffs. These magnificent bluffs are along the shoreline of Lake Ontario Scarborough, you will want to make sure you have a camera for this one!
- Admire beautiful artwork at the Aga Khan Museum full of Islamic art, Iranian art, and Muslim culture in a state of the art museum. You can book a tour that also provides transportation to and from the Aga Khan Museum as well. Book here.
- Take a day trip to Niagara Falls from Toronto! Do not miss one of the most impressive waterfalls in the world when you are so close during your three days in Toronto. Only a 2.5 hour drive away you can join on a great tour that takes you from Toronto to Niagara Falls all in the same day and be back for dinner in Toronto. Book here.
- Try a Toronto Private Tour with a guide for two hours giving you tons of information and history about the city while seeing some of the most iconic spots. Book here.
- Are you a beer lover? Check out this awesome four-hour walking beer tour through Toronto's Old Town and discover how beer is integral to the history of Toronto while you sip on suds along the way. Book here.


Scarborough Bluffs


Aga Khan Museum


Niagara Falls

The PECB Certified Lead Ethical Hacker training course will soon be available.

This is a recently developed training course that will offer brand new hands-on experience of penetration testing tools and techniques. Packed with practical examples, real hacking techniques, and easy-to-follow theoretical part, this training course is great if you want to build one of the top job skills of the 21st century.

This training course will not only provide the theoretical knowledge on penetration testing methodological framework through its four days, but will also train your skills to actually hack three target machines through its labs.

You know what is the most exciting part?
The participants will be "hacking a bank."

Start your path towards obtaining valuable Ethical Hacking certification. For more information contact us at marketing@pecb.com.

Subscribe to our newsletter and be the first to know when the training course will be available!

UPDATED TRAINING COURSES

To exploit new opportunities, digital transformation requires putting equal emphasis on technology and human skills development. Give yourself the gift of continuous learning and career growth.

Status	Training Course	Language	
Updated	ISO 45001 Lead Auditor	English	→ VIEW
Updated	ISO 22000 Lead Auditor	English	→ VIEW
Updated	ISO/IEC 27001 Lead Auditor	French	→ VIEW
Updated	ISO/IEC 27001 Lead Implementer	German	→ VIEW

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Digital transformation is no longer an option, it is a necessity.

Lead it to be on the winning side.