

IT NEXT

FOR THE NEXT GENERATION OF CIOs

WHEN THE GOING GETS

TOUGH.....

By responding quickly to the situation, IT managers have decisively won the first battle against the COVID-19 pandemic by keeping the lights on for their businesses. But as business dynamics change completely post it, are they prepared for the long war?



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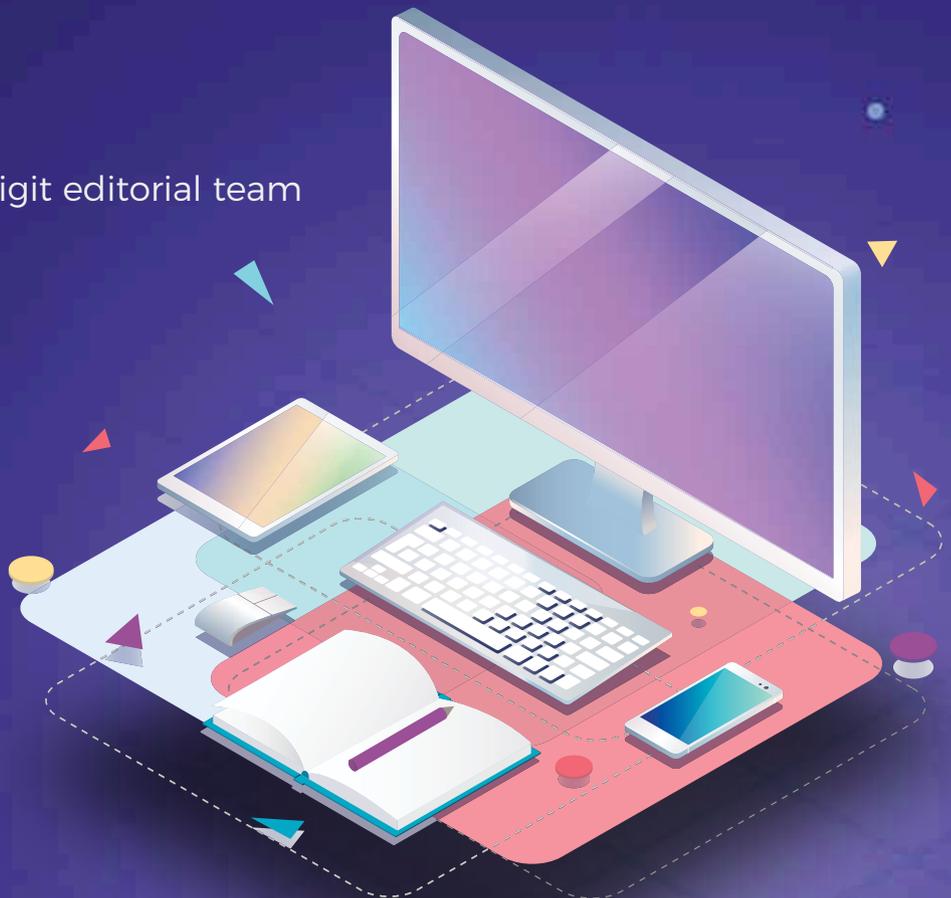


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Because of IT people....



Today there is a sort of competition among IT people to show how close to business they are and not to maximize their contribution to business value creation by excelling in the work that is expected from them

Shyamanuja Das

I am not exactly a WhatsAppian but I loved this WhatsApp forward. "Because of IT people," it said..."all banking systems continue to function", "all hospitals are functioning", "your kids are learning online,"...it went on, giving at least a dozen examples.

IT managers are not recognized by common people because they work in the background. That is quite understandable. But don't the other functional managers know their value? If some of them pretended otherwise, I am sure they would have no excuse after the COVID-19 outbreak and what IT managers did to make the business running. Or should I say our economy, our country running?

Within IT too, there's a pecking order that has been created. An infrastructure guy, a development guy, a security guy, a data guy and a business applications guy...have different perceived value in that order. I do not want to get into the specifics, but look at what each of these groups have done during the COVID-19 crisis in making your organization run and compare it with the pre-existing pecking order and see if the two (importance of the work done during COVID-19 and the perceived importance pre-COVID) are in sync.

The reason I raised this is, today there is a sort of competition among IT people to show how close to business they are and not to maximize their contribution to business value creation by excelling in the work that is expected from them.

Of course, being in IT today means understanding business requirements thoroughly. That could be the market dynamics, HR needs, financial challenges and so on. But that does not make you a marketing or sales guy or an HR person. You are supposed to do IT well. If to do that, you need to understand business well, so be it.

Five years back, I wrote a piece for CIO&Leader (ITNEXT's sister publication): Should you be apologetic about being in IT? That was before I joined 9.9 Group. There I had given example of a discussion between celebrated director, Mehboob Khan and music composer, Naushad about the role of each of them in a movie to illustrate my point.

In these five years, things have changed even more. Thanks to easier availability of tools that are easy to use, many business users today are not scared of using IT. That is good for business. Yet, some, who relied on IT executives for help in every step, think this independence of being able to use IT is synonymous with being at par with IT guys in terms of their tech knowledge.

While everyone recognizes the value of technology in business, not all realize the importance of Enterprise IT function. COVID-19 showed everyone the value of Enterprise IT.

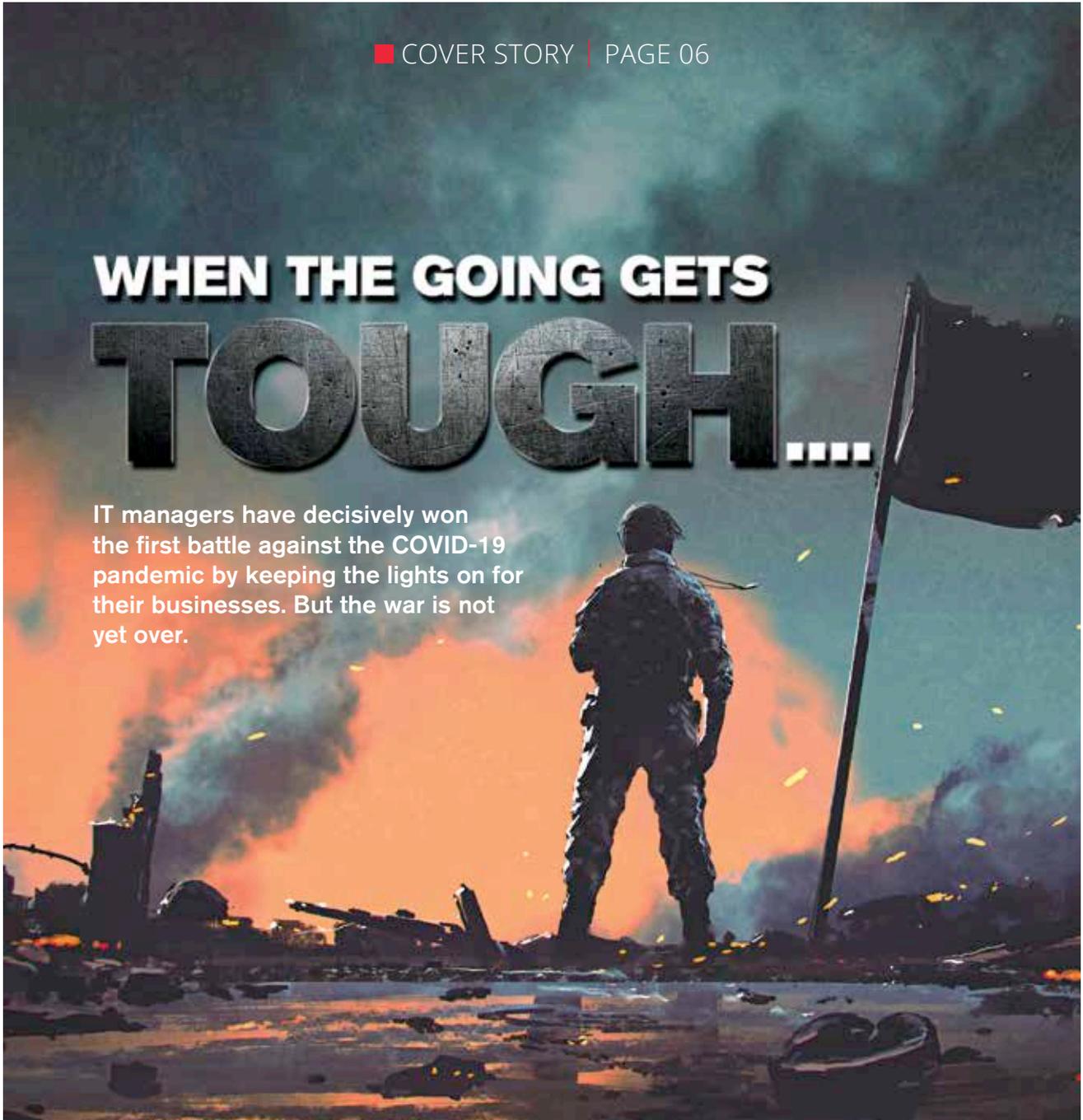
Let's steer clear of the constant bombardment of marketing messages from vendors that try to confuse and realize each other's value and have a healthy respect for each other. ■

Content

■ COVER STORY | PAGE 06

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■ INSIGHT | PAGE 12-13
COVID-19: Time To Rethink BCP



■ INSIGHT | PAGE 14-15
How To Stay Relevant In The Digital Era?



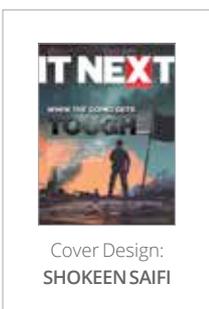
■ INSIGHT | PAGE 21-23
10 Non-Tech MOOCs That Can Add Value To You



■ INSIGHT | PAGE 24-25
5 Ways To Keep Your Data Safe While Working From Home: IEEE Experts



■ TRANSFORMATION: A SECTORAL VIEW | PAGE 28-37
Part I: Mining, Oil & Gas and Manufacturing



ADVERTISER INDEX

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It's not just photography, it's a philosophy of life

Through My Lens...

NEXT100 Winner 2018 **Rajeev Verma**, Associate Vice President - IS, SRF shares his passion for photography as well as his keen interest in writing...

I use my camera to capture and document moments in life, through visual story. Photography is my favorite way to express myself. My photos give people a chance to see the way I think. My photos help bring attention to the little things that are often overlooked. Almost like collaborating thoughts, photography shows people new angles and perspectives on life. I love presenting my work to people, because my photos are like a peek through my eyes. My photos show my unique thought process and my interpretation of the world around me. My goal and ultimate feeling of success draws other people into that moment as well.



Rajeev Verma

Rajeev Verma is Associate Vice President - IS at SRF. He has been a NEXT100 Winner in 2018. Verma had earlier served in companies like Ameriprise Financial, Wipro

My subjects of choice are people and landscapes. There is so much to love about landscape photography—the grandeur, the epic light, the massive scale of it all. It gets me out in nature, to see new places, and to see old places in new ways. Unlike most other genres of photography, I can choose to shoot with good company or go solo. Getting up before sunrise or staying out after sunset ensures that you'll have places when they're least crowded. The slower pace of this craft is meditative and healing. Because of changing weather, light, and seasonality, the landscape is different every time, which tests my ability to plan, pre-visualize, anticipate and improvise.

Why portraits, the answer is: More than I love photography, I love people. I have always been drawn to people, despite being an introvert. I am not sure if “peopling” can be a hobby, but if it can, then it is mine. Portraits get me really excited. My driving force is not the end image, but rather the inner experience of personal expression. Exploring new places or finding new ways to see familiar ones is creatively and emotionally fulfilling.

The other passion I have is writing...but some other time! ■

As told to Dipanjan Mitra, Team ITNEXT

Snapshot

and SafeNet. He holds a BTech degree in Computer Science and Engineering and possesses certifications in Ethical Hacking, ITIL and BS25999.



Keeping India's rich cultural traditions alive with theatre and anchoring

Staging The Right Acts

NEXT100 Winner 2018 **Santosh Kumar Shukla**, Deputy General Manager (IT Services), IFFCO Phulpur shares his passion for anchoring and stage performance...

India is a country of intangible cultural heritage. It is richly diverse in folk/classical music, dance, dramatics and other regional traditions.

Anchoring and stage performance are my passion. These give me a platform to portray my extracurricular skillset and we also give out a positive message to society through our performances. Stage also gives us an opportunity to spread awareness regarding social issues. It is my natural interest for which I have never received any kind of specific training or direction from experts. My elder brother was also associated with theatre and I grew up watching him perform right from childhood. This might have ignited the flame of my passion towards it.

Since school days, I have participated in numerous dramas and public speaking events at school functions. It has removed the so called stage fright or performance anxiety from me. So I always say that "the greatest fear is just the fear itself."

I can just correlate my passion with my IT profession. As designing, developing (coding), testing and execution are common processes of application development in IT profession, similarly, in a theatrical or a cultural performance – theme selection, script writing, rehearsal and final performance are common processes involved.

The interesting relationship, which I found, between the conceptualization of cultural program and IT program is as follows:

SR.NO.	EVENT	IT PROFESSION	CULTURAL PROGRAM
1	Designing	Project Design	Event Design
2	Platform Selection	Staging Area	Staging Area
3	Coding	Script Writing	Script Writing
4	Trail Runs	Testing	Rehearsal
5	Final Run	Play	Play

Whenever I find time during the available breaks or holidays, I enthusiastically participate in any cultural event. It not only releases stress but also gives freshness and energy which helps me work with enhanced productivity. My organization, which is IFFCO, also promotes Indian Art and Culture on a large scale.

Here at IFFCO, we organize Inter Unit Cultural Festival (IUCF) for our employees and their family members to promote and preserve the rich theatrical arts, classical and folk dances and music and other elements of our cultural heritage on the national level.

I have performed in numerous events as an anchor and performer in several places. My hobby has given me some memorable moments to cherish throughout my lifetime. ■

As told to Dipanjan Mitra, Team ITNEXT



Santosh Kumar Shukla

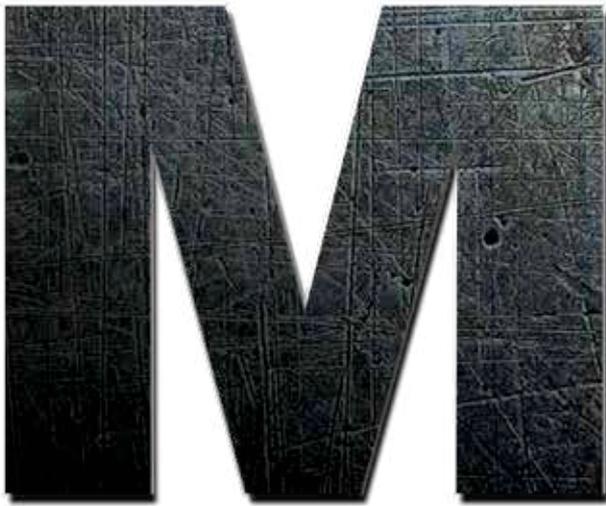
Santosh Kumar Shukla is Deputy General Manager (IT Services) at IFFCO Phulpur. He has been a NEXT100 Winner in 2018. Shukla

Snapshot

was earlier at IFFCO Aonla and Oman India Fertiliser. He completed his MBA in IT & Systems and BE.

WHEN THE GOING GETS TOUGH....

IT managers have decisively won the first battle against the COVID-19 pandemic by keeping the lights on for their businesses. But the war is not yet over.



Most of you would have received this WhatsApp joke about COVID-19 being a far more effective driver of digital transformation within enterprises than either the CIOs or CEOs. The joke has an element of truth in it, like all good jokes do.

Executives who were finding all the excuses not to use spreadsheets on their computers are now working on collaborative documents quite smoothly. Organizations in certain industries who maintained that remote working was not just possible for their business, have most of their 'working' executives working from home. In other words, COVID-19 did make organizations realize the value of digitalization, automation and IT in general. This is likely to accelerate digitalization.

We discuss these in social media; publications carry articles on this; self-styled experts project this as a big change; analysts, as always, throw in a few numbers, hoping for some good coverage.

But there are two gaps—or should we say fallacies—in this COVID-19-enabling-digitalization story.

One, the fallacy that COVID-19 made it happen.

Without taking credit away from COVID-19, it must be told in no uncertain terms that this change of attitude did not happen by itself. It happened because senior executives 'experienced' that it is possible to work remotely without glitches. Just imagine—if this switch to WFH would have resulted in major breakdowns, major service disruptions, large-scale security attacks! Would the organizations still have got 'convinced' about the value of digitalization?

They got convinced because they found a smooth experience. COVID-19 did not do that. IT managers did. Let there be no confusion—this was enabled by the IT managers, against all odds—in a matter of hours or max a matter of days, most certainly not in weeks. They kept the business running.

The second fallacy is that all this will automatically lead to large-scale

digitalization. This is a dangerous oversimplification. Appreciating the ‘utility’ of IT—an executive was already refusing to call it value—and making large investments in digital are not synonymous. Not in normal conditions, let alone in such an uncertain, cash-starved business situation like today’s, when many organizations are operating at a fraction of their capacity.

We must examine the future—whatever little we can do—keeping these two false narratives in mind.

The value of IT managers

In recent years, as the decibel level about technology’s role in business was rising, it was accompanied by a strange, supplementary narrative—that technology is too important to be left to techies.

This was based on half-baked knowledge about how technology can add value to business. It started in the mid-2000s, when SaaS as a software delivery model became popular and since it was a subscription-model, the spend on applications came under operational expenditure, prompting the business units to bypass IT by going for apps, purely by their promised functionality, being happy that they have speeded up things. It took almost

Work from home was anything but **simple for the IT managers**, especially in industries that were not used to this mode of working. And this simple change in working style **could change many things—corporate practices, culture, strategy, ecosystem, and many more**

a decade to understand that there is something called integration with enterprise systems, seamless data movement, and of course security.

The next big driver of this tendency was what was called consumerization of enterprise IT—users demanding what they wanted. This was a take-off from the SaaS trend but was broader as it included using own devices and expecting personal application type experience in business applications that led to user experience getting significantly better, and executives being able to do much more without asking the IT guys. That resulted in a (false?) sense of independence.

On their part, IT vendors fueled it by trying to reach out to functional heads. Even network security and infrastructure vendors wanted to talk to CEOs.

As technology played a bigger role in business, major management gurus and think tanks integrated technology to their discourses on economy, public policy and business. The World Economic Forum (WEF) had tech-related themes in multiple of their annual meetings at Davos. The CEOs and board members got convinced that they could do much more with technology. Blockchain, AI, IoT, Big Data became business buzzwords, and the CXOs expected ‘use cases’ for these technologies in their businesses. The IT managers were seen by some as mere nuts-and-bolts guys.

When a situation came, it is the nuts and bolts guys who saved the day. Not data or DevOps but IT infrastructure and security managers ensured that businesses ran with secure access to employees and with a reasonable experience.

This disruption—the first real one since we have started using it as a business jargon—if anything, has reinforced the value of enterprise IT.

They did it

Work from home—the three words sound so deceptively simple. But it was anything but simple for the IT managers, especially in industries that were not used to this mode of working. And this simple change in working style could change many things—corporate practices, culture, strategy, ecosystem, and many more.

But first things first. Before getting into the future, it is imperative that we touch upon, albeit briefly, what were the challenges faced by the IT managers and what technologies they used to make it possible.

In a research among IT managers, we examined these questions. We sought responses from 44 IT managers from diverse industries and at

various levels – mid level to senior level. to get into the bottom of it. Even as these IT warriors were still figuring out how to take COVID-19 head-on to make their companies—and indirectly the nation—keep running, they were enthusiastic in sharing their experiences and the learning.

We briefly summarize the findings here. Most IT managers pointed to a combination of one or more of the five below-mentioned tasks:

1. They ensured that everyone **has a secure access** to all applications that they needed to access. That is why VPN features such overwhelmingly in the responses. Many sectors used to remote working, it was familiar territory but they still had challenges such as allowing access to specific applications to a wider base of users and ensuring that the infrastructure supports everyone accessing remotely.
2. They also ensured that those who worked on desktops are **given laptops**. Many turned to **VDI** too. Some smaller companies even went for a non-technical solution: they allowed their employees to take home the desktops.
3. The next step was to **enable collaborate working and videoconferencing**. A few had software like GoToMeeting and WebEx. Microsoft Teams is also popular. But what emerged as a cult application in the time is Zoom, which has now become a household name, even for non-business applications.
4. Of course, WFH required **extra security features**. That were enabled by the security teams.
5. Some organizations where there was need to access bandwidth hungry applications, the organizations had to **ensure extra bandwidth and Internet access** for the employees. Employees were given dongles, data cards and often, it involved a non-technical solution like reimbursing the access fees.
The battle was decisively won. But what about the war?

Short-term challenges

We spoke to about a dozen CIOs in businesses where digitalization was not exactly a given—businesses like steel, heavy engineering, chemicals, textiles, cement and pharma.

Most CIOs agreed that the naysayers to technology have now been convinced about its ability to make businesses run. The CIO of a large company described how some CXOs, when they had to work from home, struggled because they did not even know the use of basic applications

like Excel, which their secretaries used for them. “But some of them, thanks to the post COVID-19 reality, are now not just able to use collaborative software but are even excited to discover newer features—starting from screen sharing onwards,” he said, a sense of happiness and satisfaction oozing out from his voice.

But there are challenges.

Large projects have been stalled. Some of the new or planned projects have been abandoned. And the focus has shifted to cost-saving.



The word cloud represents the technologies that IT managers relied on

This is because almost all companies—which are operating at anywhere between 30-50% of their capacity, because of the lockdown, expect that there will be a liquidity/cash flow issue going forward, because of both volumes dropping significantly and many of the smaller distributors defaulting on credit. While they can plan for the first one, the exact magnitude of impact of the second factor is still unknown.

“The mood is cautious. And quite rightly so,” says a CIO of a group company in a diversified group. “Budgets will have to be reworked, you cannot pretend that nothing has happened,” adds Jitendra Singh, CIO of JK Cement. Atul Govil, Chief Transformation Officer of India Glycols says, “It is difficult to think of major new investments now.”

In other words, while there has been an increase in appreciation of role of IT in business, we are not going to see huge investments flowing in, thanks to budget constraints. While there is no estimate yet, this is going to be the biggest downturn we have seen in our lifetime.

The diagram shows how the IT managers' challenge has changed over time—especially pre- and post-COVID.

Does it mean that companies will stop investing completely, at least in the short run?

Not really. It is big money that will be elusive. That is not just because of the cash crunch. It is also because of drastic changes in operational models expected post recovery.

Yet, one thing will define this recovery phase. As companies realize the small but impactful gaps in their processes, they will try to close those gaps. This means smaller, tactical investments will be made that give an immediate return in terms of efficiency, lesser utilization of manpower or safer operations for people.

Take Spoton Logistics, a tech-leveraged express logistics company that is growing fastest in the industry and is challenging the biggies in the game. It has already implemented a contactless PUD solution to minimize, if not eliminate roughly 11,000 human touch points daily using technology. "With the help of different platforms like Web Shipping Tools, Self Service Portal, API Integration and Manual Con Note Elimination, customers can book and generate and print the e-Con Note or e-labels and provide to the pickup executive to minimize paper exchange and processing time," says Satya Pal, AVP - Business Engineering, Spoton Logistics.

As discussed, many companies have already started digitalizing paper approval processes.

As companies quickly automate some of the processes and as work from home continues for a while, security is in the minds of most CIOs, though many hasten to clarify that they are not looking for organizational security overhaul.

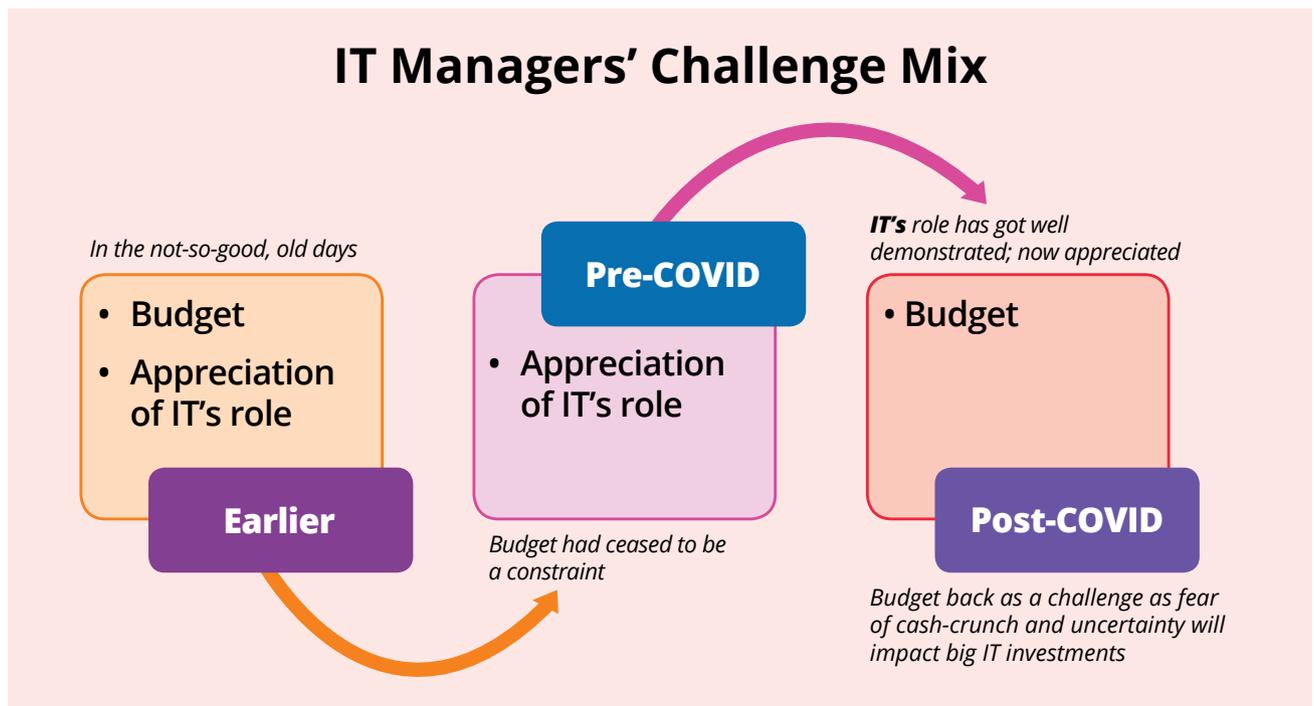
But 'secure access' is clearly an immediate focus, based on the learnings that they have had.

When it comes to manufacturing, CIOs identified a number of business challenges in the recovery phase. Most of them could be put into three baskets:

- Liquidity challenges
- Supply chain challenges
- Managing human resources

And they are not exactly mutually exclusive. And all the three have implications for IT—both in terms of expectations from it and in terms of budget available. Take liquidity challenge. As articulated by several CIOs, large projects are kept in abeyance for the time being. But there are discussions too around how IT can help in minimizing the impact of cash flow. In supply chain, the focus is not just in automating approvals and other manual processes, but also to ensure that human beings are safely deployed.

Similarly, when it comes to people's work, WFH is going to stay, if not fully, but significantly. In the last few years, many large companies like Microsoft and Cisco have created a major focus on Future of Work. But the way COVID-19 has accelerated the movement towards digital



working, even these companies would never have imagined. Today, almost all companies—more so the lesser digitalized manufacturing companies—have to realign many resources to make that happen.

The long shot

What about post-recovery?

Well, to put it straight, no one has an iota of an idea what it will be like.

But based on the analyses globally and CIOs' inputs, some of the areas that will be significantly impacted will be the following:

1. **Huge change in distribution of workforce:**

While that itself is a no-brainer—TCS has already announced that in two years, 75% of its workforce will work from anywhere—the implication for it is still lesser understood. It will impact information storage and access, culture, events, security, real estate, transportation and many, many other aspects of business. And in each—and we emphasize on each—of these areas, technology will play a major role in making the shift happen, some of which cannot even be envisaged now. It will not be surprising if this becomes the biggest innovation plane, with a number of startups.

2. **Industry 4.0:** What we in India just keep debating, China has already done. The typical Indian narrative is the West is going for automation because it does not have people and it is a compulsion. But China has shown that even in the thick of crisis, large plants were run by less than 20% of people who run a similar size of plant in India. That is not just safe. That is hugely efficient. How can you compete with companies who have that kind of efficiency? Of course, the role technology will play there does not need elaboration. It is an out and out technology game.

3. **New way to look at BCP:** The Business Continuity Planning (BCP) so far has been focused on protecting data repositories and infrastructure. They were planned to protect against not just human threats but even natural disasters like cyclones, floods and earthquakes. The focus was data center. In COVID-19, data centers were hale and hearty. It is people who needed secure access. Beyond the details of difference, it teaches one big lesson. BCP is a risk planning, not a process planning. Processes are the means of achieving. We will see huge shift in the way organizations do BCP.

4. **Security getting bundled:** Interestingly, in our

With better **appreciation of IT's ability** to make an impact, in most projects with visibility, **technology would be required** to play a major role

research, we would hear the adjective, at least five times more than the noun. Everyone was talking of secure access, secure application, secure network, secure cloud—very few about security. The expectation is: whoever provides these components has the onus of making them secure. Organizations will focus on the core part of their data protection. This will see a huge shift in security planning and the role of chief information security officers.

As of now, we know little to be talk anything more specific.

But one thing is for sure. There will be new times. And there will be new rules of the game.

Some of them will be drastically different. Many organizations will also fail to assess what is a long-term change and what is a short-term one. This confusion and uncertainty mean long-term investments—including technology investments—will not be made in any transformational areas.

Yet, with better appreciation of IT's ability to make an impact, in most projects with visibility, technology would be required to play a major role.

For the IT managers, this means a number of short-term investments, distributed over many areas with little investment in long-term projects. Vendors will continue to pitch for long-term commitments, giving their own logic.

Digital transformation, platform building, long-term planning will be overshadowed by quick ROI investments, as in small companies. This will turn the technology investment strategy which has become fashionable in the last few years, upside down.

That precisely will be the war many IT managers will have to fight—not just during COVID-19 or the recovery phase but for some time well beyond the recovery phase. ■



COVID-19: Time To Rethink BCP

Having the right BCP and its effective implementation is the need of the hour

By Meetal Sharma

Pandemic like COVID-19 has made us all rethink our Business Continuity Planning (BCP). For some organizations, BCP was just a term and a tick in the box until the arrival of COVID which has made every organization test and replan its defences. This implies that BCP should be a key element of your cybersecurity program.

But how to make sure what all to have in BCP and where to start from? Here are a few steps:

- 1. Determine Critical Elements** – As a first step, you need to identify the projects, services and critical operations of your organization.
- 2. Form a BCP Team** – It is important to have a well trained and competent team

to manage any crisis situation. It is always a good idea to have members representing most of the functions in the organization rather than just leaving it to compliance & security personnel, for example representatives from HR, IT, Admin, PMO and Compliance. Regular training of team members as well as employees should be included in the BCP team roles and responsibilities.

3. Conduct BIA – Once the critical elements of your organization have been identified, the next step is to conduct a BIA (Business Impact Analysis) for the same. You can use any of the sample BIA templates available on web and customize the parameters based on your business needs. BIA is very helpful to understand mission critical vs normal projects or services. This can help prioritize the way in which these services or projects need to be managed during a crisis. For customer projects, it is very important to agree upon the BIA ratings with the customers and include RPO/ RTO in the BIA template. This helps in setting up the right and measurable expectations with the customers for service resumption in case a crisis is invoked.

4. BCP & DR Plan – A BCP should be prepared based on the threat landscape of your organization. For example, organizations having offices in seismic areas would consider earthquake as one of the threats while others may not. Once the top threats and risks of the organization are identified, BCP should be prepared and it should clearly identify the steps that need to be taken in case of a disaster. Some of the elements of BCP can be – communication plan (including internal employees and customers), call tree, trigger point for BCP or in which scenarios will BCP be invoked, infrastructure needs, DR site (backup site where operations would shift in case the primary site is affected), process flow/steps to



It is important to have a well trained and competent team to manage any crisis situation. It is a good idea to have members representing most of the functions in the organization

be taken should a disaster occur (for example, evacuation, moving to DR site, remote working, etc.), backup strategy (backup of critical data, its storage, access control and accessibility).

Another key element that should be part of BCP is the restoration process or DR plan. How will you restore the operations/functionality? How much time will it take? Who will be responsible to manage this? How will it be communicated? What all would be required to do this? All these and many more can be the starting points to create your DR plan based on your organization environment.

5. Test your BCP/DR Plan – A plan is as good as its implementation. Since the risks & threats keep on changing every day, it is important to keep testing your BCP. These

can be full-scale tests, mock drills or table top tests. Idea is to always keep the plan current and updated based on the changing landscape. For example, with the pandemic like COVID-19, people are suddenly looking at Digital Transformation and moving applications to cloud and encourage remote working, which were earlier long term goals. Such scenarios would require changes to BCP.

At the end of the day, objective should be to keep the business up and running with minimal or no disruptions. Therefore, having the right BCP and its effective implementation is the need of the hour ■

The author is Corporate Risk, Compliance & Information Security Leader, SDG Software India and NEXT100 Winner 2016



How To Stay Relevant In The Digital Era?

Individuals who can demonstrate their versatility in this ever-evolving professional environment, invest in their ongoing development and build their networks will have a competitive advantage in this digital era

By Konika Chadha

We all are living in the digital era, which is creating shifts in the workplace and a disruption which is changing the world of work. This change is not only reshaping companies' bottom line but also forcing the employers to think about their

workforce and how and what skills do they recruit. We hear many discussions on either 'digital disruption' or how to create a 'meaningful workplace', but very few bring these two concepts together.

We have two options, either as humans we could attempt to compete and outperform a machine, which

seems to be unlikely, or create an augmented workforce, which implies that individuals' roles and competencies need to be redefined to work effectively alongside robots with clever cognitive computer capabilities like Artificial Intelligence (AI), etc. in order to create a meaningful and balanced workplace for all.

This disruption will continue to impact the workplace and that too at a rate faster than we anticipate. Business professionals, regardless of their industry, will have to keep pace, adapt and expand their existing skill set in order to be considered a valuable candidate or employee. The shift of the digital era can be seen in the rise of numerous new jobs and job titles in recent years like the Chief Marketing Technologist (CMT), whose job is equal in parts to a strategist, creative director and technology leader. The Digital Storyteller, or Chief Digital Officer (CMO), is another new role that has evolved recently as the need to collaborate across marketing, sales, and technology teams to foster digital thinking through a creative and distribution context has evolved. There is an explosive demand for the role of UX/UI Designers, Campaign Managers, Data Scientists, etc. which is another proof of jobs being created, as in this case, companies need to ensure that the experience their consumers have on their websites are simple, intuitive and fun.

In this digital era, humans are left with this big question on what I should be doing to make myself valuable and employable. The answer at a high level to this question is quite simple: To stay relevant in the digital era, professionals must demonstrate the capability to constantly learn. More powerful than the possession of a laundry list of skills, what will make one an indispensable employee is the proof that you can learn new skills and adapt to solve complex and novel problems. Agility is going to be the key in adapting, thinking and implementing in this dynamic work environment. Versatility is king today!

While it's impossible to identify all the skills that are required, some key skills which are needed today and will continued to be relevant even tomorrow are:

The ability to ride and enjoy the wave to change

The need for candidates today is not

A strong network, which enables you to understand a new challenge that you may face at work is invaluable and may also be able to support you in learning new skills and abilities

just to be able to do well with sudden changes. Organizations are looking for candidates who are creative individuals, welcome change and more than that anticipate, drive and relish it. In a job interview, it is best for one to be able to demonstrate their change management skills with relevant examples. We have all gone through this wave of change in the current or prior jobs. It's important to reflect and think through these instances where we were required to demonstrate our ability to decide in an instant or change the course of our project. It will be an added advantage if one is able to talk about a situation like this, where they anticipated change and how they were able to influence and drive it.

Your value proposition and networking skills

While one must be able to talk about their own value proposition depending on their field of work like working alongside AI, understanding of cloud; analytical thinking and intuitive abilities to work with data are also critical to be able to have the right professional and personal network to know what skills you may need in the future. A strong network, which enables you to understand a new challenge that you may face at work is invaluable and may also be able to support you for learning new skills and abilities. Organizations today are increasingly

looking for candidates who bring a strong network to work with them. Not only will such candidates be able to solve problems quicker they may also be able to attract the right talent to build teams.

Thus, it is advisable to invest the necessary time in building your network and for you too to support your network in turn so that you can leverage it when required.

Desire to constantly learn and grow

Today, organizations are investing heavily in talent. There are some serious investments being made in talent development and developing in-house learning programs so that they have resources that are future-ready. One can ride the wave of digitization by taking advantage of these career development and educational opportunities which will help to keep one's skills sharp and relevant. Asking your employer about continued education opportunities not only shows you're committed to furthering yourself professionally, it also reinforces that you anticipate your job and industry evolving in the future and want to be prepared. It is also recommended that you enroll for mentorship programs and career development seminars. Most of the time even though these options exist we are just afraid to ask. In a situation that your organization is still in the process of setting up such programs, it's never too late to make that investment yourself in any of these programs which may be available externally.

The world around us is constantly changing, thus pushing us to keep reinventing ourselves in this dynamic environment. Individuals who can demonstrate their versatility in this ever-evolving professional environment, invest in their ongoing development and build their networks will have a competitive advantage in this digital era. ■

The author is Head - Professional Search, India at Korn Ferry



Your #1 Cloud Threat - Excessive Permissions

Hackers take advantage of unnecessary permissions for malicious purposes

By Nikhil Taneja

Migrating workloads to public cloud environment opens up organizations to a slate of new, cloud-native attack vectors which did not exist in the world of premise-based data centers. In this new environment, workload security is defined by which users have access to your cloud environment, and what permissions they have. As a result, protecting against excessive permissions, and quickly responding when those permissions are abused, becomes the #1 priority for security administrators.

The Old Insider is the New Outsider

Traditionally, computing workloads resided within the organization's data centers, where they were protected against insider threats. Application protection was focused primarily on perimeter protection, through mechanisms, such as firewalls, IPS/IDS, WAF and DDoS protection, secure gateways, etc. However, moving workloads to the cloud has led organizations (and IT administrators) to lose direct physical control over their workloads, and relinquish many aspects of security through the Shared Responsibility Model. As a

result, the insider of the old, premise-based world is suddenly an outsider in the new world of publicly hosted cloud workloads. IT administrators and hackers now have identical access to publicly-hosted workloads, using standard connection methods, protocols, and public APIs. As a result, the whole world becomes your insider threat. Workload security, therefore, is defined by the people who can access those workloads, and the permissions they have.

Your Permissions are your Attack Surfaces

One of the primary reasons for

migrating to the cloud is speeding up time-to-market and business processes. As a result, cloud environments make it very easy to spin up new resources and grant wide-ranging permissions, and very difficult to keep track of who has them, and what permissions they actually use. All too frequently, there is a gap between granted permissions and used permissions. In other words, many users have too many permissions, which they never use. Such permissions are frequently exploited by hackers, who take advantage of unnecessary permissions.

As a result, cloud workloads are vulnerable to data breaches (i.e., theft of data from cloud accounts), service violation (i.e., completely taking over cloud resources), and resource exploitation (such as cryptomining). Such promiscuous permissions are frequently mis-characterized as 'mis-configurations', but are actually the result of permission misuse or abuse by people who shouldn't have them.

Therefore, protecting against those promiscuous permissions becomes the #1 priority for protecting publicly-hosted cloud workloads.

Traditional Protections offer Piecemeal Solutions

The problem, however, is that existing solutions provide incomplete protection against the threat of excessive permissions.

- **The built-in mechanisms of public clouds** usually provide fairly basic protection, and mostly focused security on the overall computing environment; they are blind to activity within individual workloads. Moreover, since many companies run multi-cloud and hybrid-cloud environment, the built-in protections offered by cloud vendors will not protect assets outside of their network.
- **Compliance and governance tools** usually use static lists of best practices to analyze permissions usage. However, they will not detect (and alert to) excessive permissions, and



are usually blind to activity within workloads themselves.

- **Agent-based solutions** require deploying (and managing) agents on cloud-based servers, and will protect only servers on which they are installed. However, they are blind to overall cloud user activity and account context, and usually cannot protect non-server resources such as services, containers, serverless functions, etc.
- **Cloud Access Security Brokers (CASB)** tools focus on protecting Software-as-a-Service (SaaS) applications, but do not protect Infrastructure-as-a-Service (IaaS) or Platform-as-a-Service (PaaS) environments.

New Approach for Protection

Modern protection of publicly hosted cloud environments requires a new approach.

- **Assume your credentials are compromised:** Hackers acquire stolen credentials in a plethora of ways, and even the largest companies are not immune to credential theft, phishing, accidental exposure, or other threats. Therefore, defense cannot rely solely on protection of passwords and credentials.
- **Detect excessive permissions:** Since excessive permissions are so frequently exploited for malicious purposes, identifying and alerting against such permissions becomes paramount. This cannot be done

just by measuring against static lists of best practices, but must be based on analyzing the gap between the permissions a user has defined, and the permission they actually use.

- **Harden security posture:** The best way to stop a data breach is preventing it before it occurs. Therefore, hardening your cloud security posture and eliminating excessive permissions and mis-configurations guarantees that even if a user's credentials become compromised, then attackers will not be able to do much with those permissions.
- **Look for anomalous activities:** A data breach is not one thing going wrong, but a whole list of things going wrong. Most data breaches follow a typical progression, which can be detected and stopped in time – if you know what you're looking for. Monitoring for suspicious activity in your cloud account (for example, such as anomalous usage of permissions) will help identify malicious activity in time and stop it before user data is exposed.
- **Automate response:** Time is money, and even more so when it comes to preventing exposure of sensitive user data. Automated response mechanisms allow you to respond faster to security incidents, and block-off attacks within seconds of detection. ■

The author is Managing Director - India, SAARC & Middle East, Radware



Strategies For Navigating Challenging Times

CSOs need to ensure that security and productivity remain resilient irrespective of normal or extraordinary circumstances

By Rajesh Maurya

The one thing that all CSOs have in common is that they are risk owners. No matter the situation, even during times of extreme business transition and the need to maintain operational continuity, they are all responsible for assuring the confidentiality, integrity, and availability of data 24x7x365. Their job is to keep their heads during a crisis and to make sure that even while rapidly transitioning an entire workforce from a fixed

brick-and-mortar framework to a dynamic teleworker environment they don't overlook critical security fundamentals that could expose the organization to risk.

Regardless of how situational requirements might change, the goal is for the core functions of the organization to remain consistently available, reliable, and secure. Resilience is one of the critical elements of risk management – it's all about delivering the same expected outcomes even when the

environment producing and delivering those outcomes is experiencing rapid transformation and stress.

Of course, maintaining resilience in extreme circumstances is easier said than done. Here are some tips to ensure that security and productivity remain resilient irrespective of normal or extraordinary circumstances.

The Fundamentals of Ensuring Reliable and Secure Network Access

The first goal is to ensure that all users and devices have access to the resources they need to do their jobs. And that also means ensuring that they can't access resources they don't need, as well as preventing unauthorized users and devices from exploiting a transition to a new networking model to gain access to network resources for malicious purposes. Ensuring this access requires two things.

First, all users and devices need to be classified. Here's a timely opportunity to ensure your data and process classification is up-to-date. That way, regardless of how or where they access network resources, they can be quickly identified and matched to their corresponding network policy.

Second, based on their roles, users should be assigned access to specific resources based on a variety of contextual information. This is why data and process classification, along with understanding underlying dependencies, is so important. Access controls should be based on a need to know basis and assessed based on roles, the type of device being used, access methodology, geo-location, and even what time of day they are attempting that connection.

Know the Capabilities and Limits of Your Existing Resources

Next, CSOs need to understand the abilities and limitations of the resources they have in place so they can quickly determine what can and cannot be done with those resources.



...ensure that all users and devices have access to the resources they need to do their jobs. And that they can't access resources they don't need

For example, it is not enough to know that an installed NGFW platform, for example, can terminate remote connections. The CSO should also know, or be able to find out quickly, the capacity of that device – such as the number of connections per second and simultaneous connections it can support, its capacity to inspect encrypted VPN traffic, its ability to scale to protect a new networking paradigm, and how much effort is involved in setting up those functions.

These and similar details need to be understood before additional technologies are brought in to shore up any gaps. And these contingencies should normally have been considered long beforehand to:

a) Make sure that as many of the required tools and capabilities are already in place.

b) Understand the ability of existing tools to support and collaborate with third-party systems and technologies. That requires having already deployed tools designed around things like common standards and open APIs.

Know and Support the Different Access Requirements of Your Users

If these precautions have been taken, then there is little need for panic when you need to transition your traditional workforce to a teleworker strategy. Essentially, all workers can be broken down into three categories:

- 1. Basic teleworker:** This group represents the majority of your remote workforce. The basic teleworker only requires access to email, internet, teleconferencing, limited file sharing, and function-specific capabilities (Finance, HR, etc.) from their remote work site. This includes access to Software-as-a-Service (SaaS) applications in the cloud, such as Microsoft Office 365, as well as a secure connection to the corporate network. Most organizations should have most of the technologies needed to accommodate these users already in place. The biggest issue is likely to be one of scalability.
- 2. Power user:** Power users are employees that require a higher



It is critical as you move employees to a more autonomous and exposed remote worker status that you heighten their security awareness

level of access to corporate resources while working from a remote location. This may include the need to operate in multiple, parallel IT environments, such as system administrators, IT support technicians, and emergency personnel. They will need access to fixed, high-performance, and secure tunnels back to core- and cloud-based resources. Addressing the needs of these users will likely require the distribution of a secure access point or even a desktop-based NGFW that supports zero-touch provisioning.

3. Super user: A super user is an employee that requires advanced access to confidential corporate resources, even when working from an alternate office such as their home. This includes administrators with privileged system access, support technicians, key partners aligned to the continuity plan, emergency personnel, and executive management. In addition to the resources required by power users, they will also need access

to advanced VoIP telephony and secure video conferencing.

Provide Additional Training and Support

It is critical as you move employees to a more autonomous and exposed remote worker status that you heighten their security awareness. While you can compensate for many of the new risks they pose to the organization (such as updating or upgrading your secure email gateway and web filtering solutions), it is also essential that you understand that these workers have become, in many ways, both your most vulnerable targets as well as your front line for defending the network.

Because of the widespread transition to employees working from home, bad actors are now explicitly targeting remote workers with phishing attacks designed to prey on their concerns about their health and well-being, or their novice status as teleworkers. End-user training, therefore, is critical in helping them spot, avoid, and report suspicious emails and websites.

Additional measures you should take as more work is done remotely:

- Confirm your VPN capabilities/utilization and determine if they are adequate
- Require the use of multi-factor authentication
- Log and monitor everything and pay attention to anomalous behavior
- Monitor the final disposition of data accessed by privileged access users
- Monitor your key applications and dependencies for anomalous behavior

In addition, you will need to identify your systems administrators, executives, executive assistants, and others with elevated access privileges to not only implement additional layers of authentication and validation but also to actively monitor and log their connections for anomalous behavior.

Final Steps

There is an adage used by carpenters that goes, “measure twice and cut once.” The same goes for cybersecurity. It is essential that all plans and strategies are double-checked, and that, things like data and process classification are under constant review to ensure that everything is up to date. All dependencies also need to be noted and followed up on.

And finally, make sure that you review your BCDR plan to ensure everything is up-to-date and accurate, including the contact information for your extended crisis and event response team.

Risk management and resiliency require careful planning, combined with an experienced team trained to deal with critical situations in flux. It is essential that teams keep their heads, understand their objectives, and execute strategies with a common goal in mind – maintaining operational consistency, including ensuring that your organization does not compromise on security for the sake of expediency. ■

The author is Regional Vice President - India & SAARC, Fortinet



10 Non-Tech MOOCs That Can Add Value To You

All the courses can be completed in about two weeks

By Shyamanuja Das

At the time of writing this, we are in a lockdown. While the lockdown may open, it will not be a while before we can actually go all out. Till such time we are largely at home, we have to keep ourselves engaged beyond professional work and passive pastimes such as watching movies, if we want to have a sense of satisfaction.

Unless we have an active hobby that can be pursued at home—such as painting or singing—we are likely to develop anxiety and depression, if we do not engage ourselves in a multitude of activities that include, but is not restricted to, work, physical exercise, mental exercise other than professional work, according to psychologists.

The lockdown will have an impact on the mental health of people, according to Sir Simon Wessely, a psychology professor and Chair of UK's Independent Review

Anything that is too much about your core work may not be the mental deviation that we are looking at. While you may still do that, it may not be the 'fulfilling escape' of 'creative balancing factor' that we are seeking



of the Mental Health Act, reported The Telegraph, UK. The newspaper quoted Sir Wessely saying that humanity has never faced a challenge like this. 'Even during World War II, people could still go out to restaurants and spend time with their loved ones,' he was quoted as saying.

One of the best ways to get out of that is to take to activities that are challenging to some extent, yet not taxing and at the end, there is a sense of accomplishment.

One does not have to look beyond MOOCs (massive open online courses) to find such engagements. Many of the courses are interesting, engaging, fun and at the end gives you a sense of accomplishment and sometimes, even a certificate.

However, there is a caution. Anything that is too much about your core work may not be the mental deviation that we are looking at. While you may still do that, given you have time, that may not be the 'fulfilling escape' of 'creative balancing factor' that we are seeking.

For example, try learning about history of Western Classical Music or The Gandhar Art or Brazilian Customs. They would be a complete deviation, and should be done.

We recommend here a set of MOOCs that are more middle-of-the-road.

The reason for doing that is two-fold. One, you all have different hobbies and interests and we do not know them. Even if we do that, we can never create a list of ten such courses.

Second, while the topics are different enough from what you do every day in your profession, they will still create some value for you at the end, which you can, in future, apply to your career. That will give you sense of accomplishment.

We screened courses in six platforms - Coursera, edX, FutureLearn,

The lockdown will have an impact on the mental health of people... One of the best ways to get out of that is to take to activities that are challenging...

iversity, Swayam and Udemy. None of the courses from edX and Swayam, however, have made it to the final list.

All the ten recommendations here are selected applying the following basic filter:

- They must be fairly different from your regular work. So, technology, data science, project management, finance are out.
- They must have some value to you as a professional/leader, in the future, if not immediately. They may not be for doing your job better or for getting a promotion, but for being more respected and appreciated.
- They must be interesting enough to sustain your interest.
- They should make you use your mental agility and not be just for passive consumption.
- They must be available to pursue now. We are not giving you a career guidance. It is for completing in this period.
- And yes, they must be short enough to be completed within two weeks

The above are the basic filters, but while selecting the ten courses, we have given importance to four factors when selecting one from the other.

They are:

- 1 Relevance for IT leader
 - 2 Rating of the course
 - 3 Organization/University (not the platform) offering the course and certificate, and
 - 4 Cost of the course
- So, here is our Top 10, in no particular order.

1. Design Thinking for Innovation

Platform: **Coursera**

Course Offered by:

University of Virginia

Duration: **Flexible Deadlines**

(**approx. 10 hours to complete; suggested: 5 weeks of study, 1-3 hours/week**)

Certificate: **Available**

Fees: **INR 2780**

2. Business Metrics for Data-Driven Companies

Platform: **Coursera**

Course Offered by: **Duke University**

Duration: **Flexible Deadline (approx. 14 hours to complete, suggested: 4 weeks, 3-5 hours per week**

Certificate: **Available**

Fees: **INR 3493 per month after trial period**

3. Digital Skills: User Experience

Platform: **FutureLearn**

Course Offered by: **Accenture**

Duration: **3 Weeks, 2 hours/week**

Certificate: **Available**

Fees: **Free**

4. Getting Started with Agile and Design Thinking

Platform: **FutureLearn**

Course Offered by: **University of Virginia**

Duration: **4 Weeks, 4 hours/week**

Certificate: **Available**

Fees: **Free to learn, pay USD 74 for certificate and unlimited access**

5. Effective Delegation

Platform: **Udemy**

Course Offered by: **LearnSmart**

Duration: **Self-paced, 1.5 hours of**



on-demand video

Certificate: **Available**

Fees: **INR 2880**

6. Fifteen Great CTO Leadership Hacks: All the skills you need to become an outstanding CTO

Platform: **Udemy**

Course Offered by: **Udemy**

Duration: **Self-paced (2 hours on-demand video)**

Certificate: **Available**

Fees: **INR 700**

7. Spiritual Insights for Businesses, Leaders and Entrepreneurs

Platform: **Udemy**

Course Offered by: **Sadhguru**

Duration: **Self-paced (5 hours on-demand video)**

Certificate: **Available**

Fees: **INR 700**

8. Cyber Expression: Be an Emotionally Intelligent IT Leader

Platform: **Udemy**

Course Offered by: **The Cyber Leadership Coach**

Duration: **Self-paced (4 hours of on-demand video)**

Certificate: **Available**

Fees: **INR 700**

The courses must have some value for you as a professional/ leader in the future, if not immediately. They may not be for doing your job better...

9. Diversity and Inclusion in the Workplace

Platform: **Coursera**

Course Offered by: **ESSEC B School**

Duration: **Flexible Deadline**

Certificate: **Available**

Fees: **INR 2067**

10. Thinking Complexity

Platform: **iversity**

Course Offered by: **Toulouse B School**

Duration: **Self-paced**

Certificate: **Available for a fee**

Fees: **Free to learn, pay EUR 29 for certificate ■**



5 Ways To Keep Your Data Safe While Working From Home: IEEE Experts

IEEE Impact Creators and cybersecurity experts shared their tips for staying safe online while working, as well as practicing social distancing

As more and more organizations implement company-wide work from home policies as a way to protect the health of employees in the wake of COVID-19, they are also considering how to continue business as usual under a whole new networking situation.

Many employees beginning a remote work situation for the first time may not be up to date on how to keep their

devices safe, confidential information private and networks secure.

IEEE Impact Creators and cybersecurity experts shared their tips for staying safe online while working, as well as practicing social distancing:

1. Ensure Your Wi-Fi and Router Passwords Are Secure

“One of the simplest things you can do to secure your home network is to ensure

your Wi-Fi and router passwords are secure,” advised IEEE member Carmen Fontana.

It’s important that your home network has a strong password that contains a variety of characters and symbols to prevent cyber attackers from easily breaking into your network. Keeping an industry-set password or not having a strong password is like leaving the door open for someone to walk into your house. Changing your password regularly is also a great way to keep the door locked on your devices.

“Consider using separate security for your guest/family/IoT devices than your work Wi-Fi,” says Fontana. “If you want to go even further, think about implementing a firewall and/or Domain Name System (DNS) server.”

2. Check In With Your IT Department

Spending more time working from home may expose new privacy vulnerabilities and information to bad actors — your IT department can be the first line of defense.

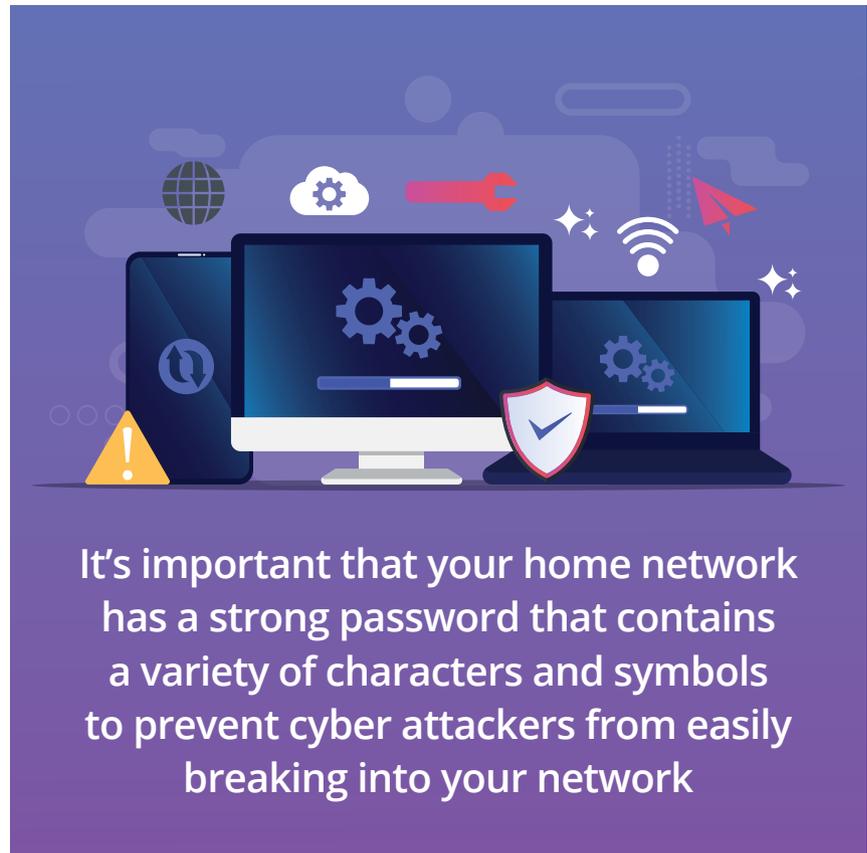
“Unfortunately, nefarious actors use situations like this to prey on our insecurities,” says Fontana. “Your company’s IT support team should never unexpectedly email you to ask for account information, home networking information, etc. Exercise excessive caution if you are contacted in this manner.”

If you do encounter a situation you are unsure of, contact your IT department to see if this was a company-approved initiative.

“If you receive a call purportedly from your helpdesk, call them back on the number listed in your corporate directory,” reiterates IEEE member Kayne McGladrey. “Threat actors are actively calling employees in the hopes that they are unfamiliar with working from home.”

3. Only Use Employer-Provided Devices

“Employees should only use employer-provided and approved



hardware to connect to the corporate infrastructure when working remote,” says McGladrey. “This is to limit the risk of accidental or unintentional data loss or exposure when using a personal device.”

It might be tempting to use your personal device if you were not able to take home all of your hardware or if you feel your devices are easier to navigate. Your IT department has worked hard to set up infrastructures to protect you and your company from unintentionally sharing confidential information. It’s safer to continue using the devices your company has provided.

4. Keep Your Software Up-To-Date

“Running the most recent versions of your mobile operating system, security software, apps and web browsers is among the best defenses against malware and other threats,” says IEEE Senior member Kevin Curran. “When

you see a message on your computer or mobile to update, then do so immediately. These updates often contain security patches which protect against new vulnerabilities.”

As mentioned before, if you are feeling uneasy about updating anything — check in with your IT department before you hit download. They can confirm what seems suspicious and what is necessary for the health of your device.

5. Be Patient with Slower Network Servers

Remember to allow extra time as you navigate this new remote-only world of work. Network servers are expected to be a little slower as more people all take to their computers to get all necessary work done.

“With many people now working from home, we can anticipate some service outages and slowdowns,” says McGladrey. “Be patient. We’re all in this together.” ■



Can Lawyers Be Automated?

AI does not threaten to replace legal professionals but promises to improve their efficiency

By **Karan Kalia**

The first most talked about use of AI perhaps was when IBM developed a chess playing computer named Deep Blue which beat the then reigning world champion Gary Kasparov in its second attempt, way back in 1997. In the year 2005, Stanford robot won the DARPA Grand challenge by driving autonomously for 131 miles along a desert trail thanks to tedious engineering application and

increased speed and capacity of the computer. AI was soon used throughout the technology industry in fields like data mining, industrial robotics, logistics, speech recognition, banking software and medical diagnosis. Not to forget Google's search engine.

In the legal industry too, AI is becoming increasingly crucial in enhancing legal research and analysis, helping in law practice management as well as providing eas-

ily accessible legal customer service. Many people are actively wondering whether Artificial Intelligence will gradually eat into the jobs of legal professionals or will it eventually lead to the creation of automated lawyers? The answer lies somewhere in between.

Increasing role of AI in the Legal domain

When it comes to legal research, AI-enabled systems are assisting lawyers in finding relevant material pertaining to their case by quickly filtering through related documents and sites. These systems also help law firms prepare for big cases with immediate court dates quickly as well as help them cut costs on manpower required to analyse large amounts of data in a short span of time. Law firms are also reaping the benefits of AI's predictive power that allows them to examine years' worth of legal data and predict the outcome of these cases. The systems are so advanced that they can even use court docket databases and other key sources of information to give lawyers valuable insights into how a judge may rule in a particular case.

Artificial Intelligence software is also being used as a second set of eyes to recheck important contracts and look for any incorrect, missing or improper clauses. Contract intelligence systems are able to sift through thousands of credit agreements and analyse them for consistency in a few seconds, saving weeks of manual work. Moreover, intelligent document management systems enabled with machine learning can rapidly confirm facts and find background information which in turn helps accelerate arbitration and litigation proceedings.

Lawyers can also easily access intellectual property information with AI's assistance and search huge quantities of patent filings, existing claims, pending or granted trademarks and copyright filings to know if an existing filing, claim or trademark infringes on an existing intellectual property claim.

AI capabilities employed in legal practice management software also

help lawyers as well as law firms keep track of billable hours of each client and automatically generate invoices. More importantly machine learning AI applications help in document classification as well as text summarization by digesting and examining enormous quantities of legal documents from contracts to court notices. This reduces the need of junior legal assistants by simplifying law practice management.

Customer Service is another area that has got an AI boost with AI-enabled tools and chatbots providing quick legal support to consumers with the help of an online interface.



Will AI make lawyers redundant?

Coming to the moot point; while AI-based technology is making a series of manual legal jobs automated, it will certainly not make lawyers and judges redundant. What it is doing is increasing the efficiency of legal professionals, significantly reducing time and energy spent on a series of mundane jobs and allowing lawyers more time to bolster their practice.

Law firms who enrol AI-based technology in a major way will certainly save a few positions of researchers

and legal professionals. However, this is how Artificial Intelligence has been impacting all industries across the board by refining processes and adding value. Much like the advent of computers did eat into a series of manual jobs but also created entire new avenues of work, AI is also unleashing greater specializations and better avenues for early adapters.

The freedom from hours of research based drudgery will allow lawyers and prosecutors more time to interview clients, derive deeper insight from their investigation and focus on improving legal processes and outcomes. This will also serve to acceler-

ate the judicial process and help the courts dispose off cases faster.

However, if you are envisioning a courtroom where chatbots or intelligent robots will replace lawyers, you are stretching your imagination a bit too far. Artificial Intelligence is not here to automate lawyers, it is here to automate their manual tedious work and allow them more time to improve their work outcome. Lawyers and judges are not becoming redundant any time soon. ■

The author is Founder, LegitQuest



TRANSFORMATION: A Sectoral View

How industry value chains can be positively impacted by digital transformation initiatives, especially leveraging big data, IoT and AI

By Saumya Chaki

PART I: ▶ MINING ▶ OIL & GAS ▶ MANUFACTURING

The author is Data Platform Solutions Lead at the Services Integration Hub in IBM and has written three books



MINING

Digital Mine – Rise of the Machines!

With ever increasing focus on leveraging digital technologies to transform the mining business, it is expected that newer use cases will emerge around the mining value chain

The pioneer in the concept of 'Digital Mine' has been Rio Tinto, the Australian mining major which transformed Pilbara mine into a mine of the future, with a real-time operations center in Perth, automated haulage, drilling and trains. This has resulted in significant productivity gains at lower risks due to optimized operations.

Transforming Mining with IoT and Automation

The mining industry has been at the cutting edge of innovation for several decades. For instance, Automation solutions have been in use in both surface mining and underground min-

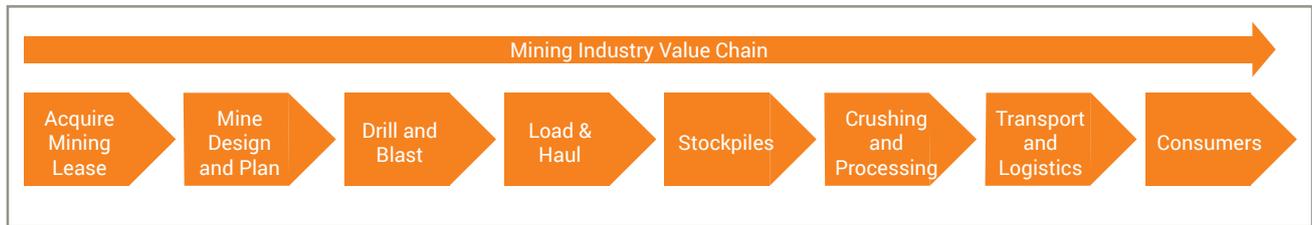
ing to reduce human labour, optimize costs and enhance productivity. In recent years significant investments in Big Data Analytics, Information Management and Internet of Things (IoT) are helping mining companies enhance productivity, reduce equipment downtime and manage environmental emission standards. A recent survey of mining companies in Canada revealed investments in Big Data and Analytics tooling (53%), autonomous vehicles (30%) and robotic process automation (29%). To understand the transformative value these technologies, bring to the mining industry let us quickly review how technology is transforming the mining industry across its value chain.

Acquire Mining Lease

Mining companies must acquire a mining lease before starting of mining operations. The mining lease is again a decision point based on exploration done in the area. The results of exploratory drilling are analyzed using Data Integration, Big Data solutions and commercial value of the lease and feasibility analyzed. A lot of historical data on similar leases and lessons learnt are vital in taking strategic investment decisions.

Mine Design and Plan

Companies can leverage data from mines designed for same mineral type, on similar geological formations. Such mine plan designs can be stored



in a Data Lake for future analysis and trends. Geological modelling data from similar mines can be leveraged to help structure the bench plans and capacity can be derived based on the resource and production plans.

Drill and Blast

Placement of drill holes is done based on ore body orientation and is key to ensure overburden to be cleared is less. The GPS co-ordinates and ore body digitized maps from the Data Lake can be used to layout the drill hole efficiently. Automation is being used in drill hole blasting for accuracy as well enhancing productivity

margins in open cast mines like Coal. In open cast mines like Coal, drilling and blasting account up to 10-15% of mining costs, hence the outcomes of drilling and blasting need to be effectively managed.

Load and Haul

Once the raw mineral is blasted, it needs to be loaded and hauled into dumpers and shovels. IoT sensors, Automation and Big Data Analytics play a pivotal role in optimizing mine operations. Dumpers run on automation solutions with dynamic route planning based on real-time dashboards. The sensor data from drill

machines and dumpers mashed with GPS co-ordinates of routes help make the operations digitally aware.

Stockpiles

Dumpers carry the ore and place them in stockpiles. Stockpiles serve two purposes: 1) raw mineral/ore is stored temporarily before moved for processing; 2) use in blending of ore depending on ore concentration. Stockpiles are now measured using drones and laser-based measurements which provide a 3D model of stockpiles thereby enabling companies to track the size and quantity stored.



Crushing and Processing

The ore is taken for crushing where the ore is passed through a screen to transfer the ore depending on size to either a primary crusher or secondary crusher, thereby reducing the ore size to enable transport by conveyors into the processing plant. The crushing plant must run 24*7 and hence sensors embedded in the machines provide useful data around throughput of crushing as well as equipment performance metrics that enable predictive maintenance schedules to be planned. Post crushing, there are numerous processing activities, such as sizing, ore concentration wherein the increase in percentage of the mineral in the concentrate. There are various methods of concentration like froth flotation and electrostatic separation.

IoT sensors, Automation and Big Data Analytics play a pivotal role in optimizing mine operations. Dumpers run on automation solutions with dynamic route planning based on real-time dashboards

Transport and Logistics

Most mining sites are in remote areas, resulting in transportation and logistics playing a crucial part in moving the processed minerals as well as



Consumers often leverage Big Data Analytics for pricing simulations and potential demand for specific minerals based on global demand and technological disruptions like rise of electric vehicles to manage pollution

the ore from mine site to processing plant and then by railway or shipping to consumer destinations. Use of Big Data Analytics and IoT can help track ore and processed minerals across the mining value chain. A study by US Bureau of Mines indicated that transportation costs ranged from 22-26% of the total operational costs.

Consumers

Consumers of minerals are mainly energy companies (like power companies for coal), cement manufacturers (for limestone, dolomite) and steel manufacturers (iron ore, manganese, etc.). In case of rare earth elements, the consumers could be drug manufacturers or battery manufactures. Minerals are also stock piled by commodity companies that trade on the commodity markets. Consumers often leverage Big Data Analytics for pricing simulations and potential demand for specific minerals based on global demand and technological disruptions like rise of electric vehicles to manage pollution level and reduce greenhouse gas emissions.

As is evident from the transformational impact of digital technologies at each stage of the mining value,

companies are increasingly looking at leveraging these technologies not only for productivity enhancements and cost optimization but also to comply with stringent environmental impact parameters. For open cast mines, Suspended Particulate Matter (SPM) and dust must be effectively managed, as well as impact of mining on ground water. Mining companies manage dust through process control systems and water spraying trucks. Real-time dashboards using Data Integration and Big Data Analytics monitor metrics like dust and moisture levels at haul roads. The key benefits of digital transformation in mining industry can be summarized as:

Digital Mine

A real-time insights into the mining operations from mine planning, to drilling and blasting, loading and hauling, stockpiling to transportation and delivery to end consumers.

Cost Optimization

Managing costs by automation and leveraging IoT and Big Data Analytics to reduce costs of transportation, labour, logistics and equipment down time.

Environmental Hazards

Manage environmental hazards like air quality, dust levels, impact on ground water etc. Mining companies need to comply with stringent environmental regulations worldwide. This enables mining companies to engage with local communities on crucial issues like water management, waste management, etc.

Productivity

Automation in haulage, transportation and drilling has brought about significant productivity benefits. Using Big Data Analytics has enhanced route planning to dumpers and transportation systems from mines to processing plants and to downstream consumers. Historians and MES systems help define better control loops within a process, department across the value chain.

In India, Hindustan Zinc has built a digital mine prototype at its Sindesar Khurd mine as is adopting transformative technologies. With ever increasing focus on leveraging digital technologies to transform the mining business, it is expected that newer use cases will emerge around the mining value chain ■



OIL & GAS

Disrupting Oil & Gas - With the Big Data Tsunami

Digital disruption in Oil & Gas is about understanding how to harness the changes brought about by digital technologies and incorporating them into the business strategy

Data is the new 'oil' and the Oil & Gas industry is at the cusp of an ongoing digital transformation dealing with its key differentiator 'Data'. While it can be argued that the Oil & Gas industry has always been about data, recent advancements in Cloud Computing, IoT, Analytics and Automation has brought numerous opportunities for transformation and created business value that was not possible even 5-6 years back.

The rise of digital disruption is not new to the industry, however what is truly transformative is the ability to weave data from multiple sources in near real-time that provides a 360-degree view of operations from Exploration, Production to Refining, Supply Chain and Marketing. This creates numerous opportunities around enhancing productivity, reducing equipment downtime, extending life of oil wells to optimized transportation models to name a few. With the increasing impact of oil prices on the

sustainability of the industry, there is a push towards use of Machine learning and Artificial Intelligence (AI) in Oil Exploration. Recently, ExxonMobil has tied up with the Massachusetts Institute of Technology (MIT) for design of AI robots for hydrocarbon seep detection, a technique used to identify and confirm hydrocarbon presence in ocean basins.

Transforming Oil with the Data Deluge

Oil & Gas companies are truly disrupt-

ing the industry by building digital ecosystems with vendors and suppliers. Let us review the value chain of an integrated Oil & Gas enterprise to visualize the disruptions that digital technologies are bringing.

The industry can be broken into 3 segments – Upstream (companies dealing with exploration, development of oil fields and production operations, for example ONGC), Mid-Stream (companies involved in transportation of crude oil, storage and distribution to downstream industry, for example Transneft) and Downstream (companies that have refining operations or produce Petro-chemicals and distribute and market petroleum products or Petro-chemicals to wholesalers and retailers, for example HMEL)

Automation in Exploration

One of the challenges that the oil industry faces are the risks associated with exploration and the safety issues in the exploration environment while drilling. Automation is transforming drilling by eliminating manual intervention in pipe handling and pressure drilling. Weather monitoring can also be automated by use of sensors which can help understand potential outages due to events like earthquakes or hurricanes.

Exploration Operations Optimization

To reduce the risks associated with

the high cost of exploration, companies are continuously looking at ways to optimize exploration operations. Use of Big Data Analytics tools help identify and map new oil reservoirs as well as identify potential drilling locations.

Drilling Optimization

Use of IoT sensors enable the drilling equipment to provide real time data of drill operations that can enable supervisors to monitor drill performance and optimize drill operations through real-time Dashboards.

Risk Assessment

One of the key risks faced in the Upstream business is the viability of oil fields and life of oil fields. Increasing use of Big Data Analytics and Machine Learning is helping Upstream companies manage the exploration better, based on drilling data combined with data from other sources like seismic surveys, geological mapping to manage the exploration within budgets. Even for operational oil wells, techniques for enhancing oil recovery using digital technologies are being leveraged to extend life of wells.

Asset Maintenance

IoT and Big Data Analytics help in collecting and analyzing data from equipment sensors in near real-time which help in planning maintenance schedules and reduce equipment

downtime, this results in more optimized operations.

Pipeline Risk Assessment

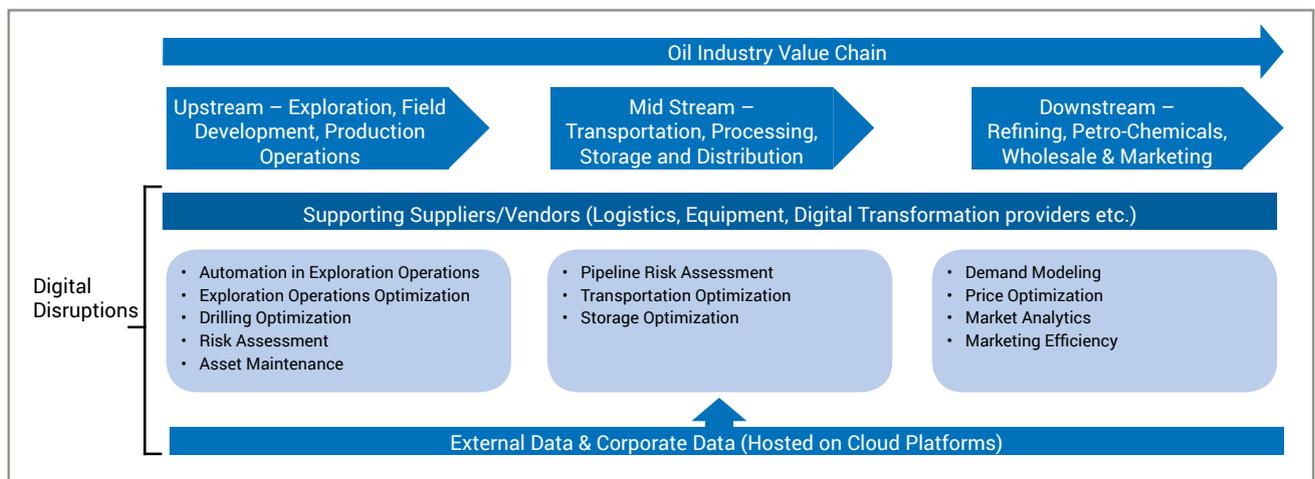
One of the key risks around transportation of crude oil from production wells to depots and refining plants is leakage/spills. The other areas of risk include seismic risks if the pipeline passes through a seismic zone and internal/external corrosion of pipes over time. With sensors used in leakage and measuring pressure, real time analytics can be performed helping companies plan maintenance and optimize costs.

Transportation Optimization

With crude prices constantly in flux, managing transportation of crude through pipelines, ships or railways becomes crucial. Complex analytical models help derive route planning and mode of transport for optimization of transportation costs.

Storage Optimization

Storage optimization is crucial both for crude oil storage in terminals and for storage of refined products before distribution. Storage models need to factor the throughput from oil fields as well as transportation rates to avoid capacity issues. For finished product storage in storage tanks, mixed products can be stored provided there are no impacts, for example petrol cannot be stored in a tank where residual oil



■ TRANSFORMATION: A SECTORAL VIEW

is kept due to the high sulfur content in residual oils. IoT and Big Data Analytics can help mid-stream companies manage their storage effectively.

Demand Modeling

For Downstream companies demand modeling is crucial to ensure they produce the right product mix in the refineries and store products with the desired demand levels. Analytical models based on demand planning and production planning is crucial.

Price Optimization

Price Optimization and planning is crucial for downstream companies as their profitability is impacted by crude oil prices. With lower crude prices, feedstock costs go down and demand for petroleum products rises, hence pricing models need to factor in both feedstock costs as well a demand for petroleum products. Use of Machine Learning that looks at the end-to-end data can help companies price products optimally.

Market Analytics

A strategy that works in a given market, may not work in another market. Hence market analytics tools are required by large companies that have a global presence, which factor in the dynamic factors like economic demand, product demand and price trends in a given market.

Marketing Efficiency

Downstream companies use Advanced Analytics to analyze the marketing efficiency of distribution channels and ability to create new segments based on understanding of new areas of economic growth and changes in product demand.

As is evident from the transformational impact of digital technologies at each stage of the Oil & gas value chain, companies are increasingly looking at leveraging these technologies not only for productivity enhancements, cost optimization but also as a differentiator in enhancing revenues and meeting compliance needs. The



Artificial Intelligence robots are being used to detect faults in equipment and send alerts in case of gas leakage

key benefits that digital disruption has provided the Oil & Gas industry can be summarized as:

Automation

Automation in exploration and production has brought about cost optimization and lowered risks. Underwater drones and unmanned submersibles can help monitor equipment under water aiding in the inspection process and help manage equipment maintenance schedules.

Cost Optimization

Digital technologies have helped optimize the cost of exploration, operations and transportation and storage of petroleum products. The end to end visibility across the value chain has been truly disruptive. Cloud computing models have enabled enterprises to offload data sets to service providers and handle large volumes of data at lower costs as well as can use historical data sets in exploration and production.

Decision Making

With Self Service dashboards that provide end-to-end value chain visibility to enterprises, decision-making is based on near real-time data. This provides enterprises to take actions before serious events like weather events, changes in geopolitics or crude oil prices.

Productivity

As we have seen right across the value chain digital technologies have brought significant productivity gains through Automation, Big Data Analytics and IoT. Ability to handle and process unstructured data in form of maintenance reports, weather reports has also enhanced productivity of enterprises which would spend many man hours analyzing such data sets.

Health and Safety

Digital technologies have ensured better health and safety environment during exploration and production. Ability to measure emissions, perform automated inspections, sensor data on equipment performance and has helped manage health and safety indicators and meet compliance needs. AI robots are being used to detect faults in equipment and send alerts in case of gas leakage.

Financial Management

Predictive financial management systems have access to cross functional data sets that help analyze KPIs across multiple dimensions and provide enterprises a better picture of how to remain profitable.

According to Accenture's Upstream Oil and Gas Survey, 80% of companies are looking to invest the same amount or more in the next 3-5 years. Digital disruption in Oil & Gas is about understanding how to harness the changes brought about by digital technologies and incorporating them into the business strategy of the enterprise. Digital technologies are also creating a need for a digitally enabled workforce and companies need to train manpower to meet the needs of the changing enterprise ■



MANUFACTURING

Disrupting Manufacturing with Digital Transformation

With increasing challenges of globalization and competition, manufacturers are looking at leveraging digital technologies to transform their business and share insights with partners

At the end of the 19th century and beginning of the 20th century, the Industrial Revolution transformed the manufacturing industry. With the advent of digital technologies, a new revolution is ushering in the manufacturing space, which experts refer to as Industry 4.0. With ever increasing chal-

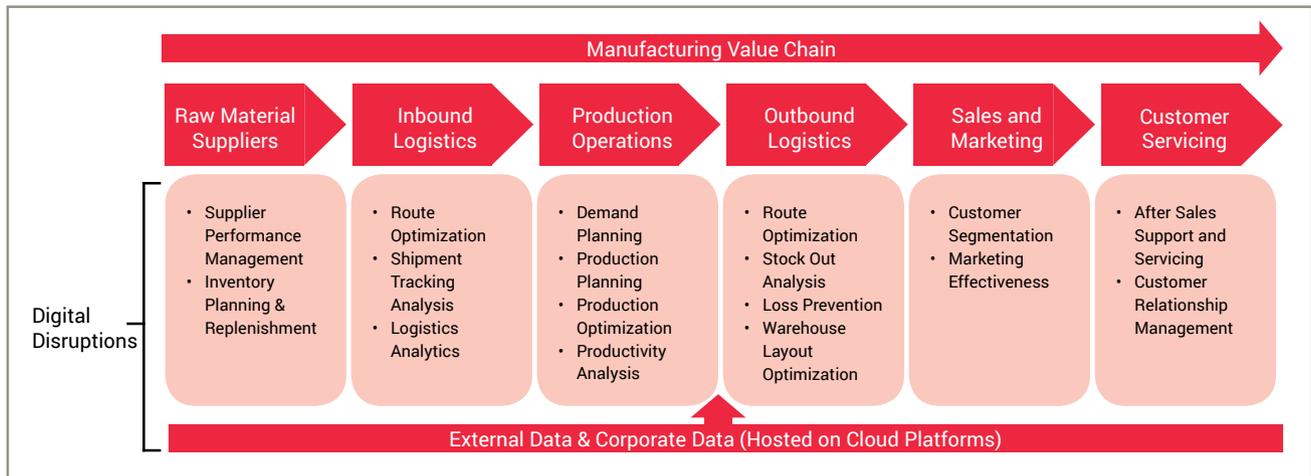
lenges of globalization and competition, manufacturers are now looking at leveraging digital technologies to transform their business models and sharing data and insights with partners across the manufacturing value chain. While Industry 4.0 promises efficiency of processes and operations and a paradigm shift from products to data driven services, the benefits

extend beyond traditional manufacturing output. The digital value chain can be applied across the manufacturing value chain as we shall examine in the next section.

Transforming Manufacturing with Digital Technologies

At the cusp of digital disruption in manufacturing is 'the insights from

■ TRANSFORMATION: A SECTORAL VIEW



data' generated at each stage of the value chain, that is empowering manufacturers and their partners to transform their business models. Let us examine the value chain and how digital transformation is a differentiator at each stage of the value chain.

Raw Material Suppliers

Manufacturers are dependent on raw material suppliers for meeting their production plans based on projected demand. The key to managing the supply demand gap is through effective Supplier Performance Management. Manufacturers are sharing key performance metrics with Suppliers to help them perform better. Inventory Planning and Replenishment KPI's are also crucial in measuring the efficiency of raw material supplies and this data is shared with suppliers and partners to help them understand the supply-demand dynamics.

Inbound Logistics

Manufacturers are dependent on third party logistics providers to provide both inbound and outbound logistics. Inbound logistics is related to movement of raw materials from suppliers to the manufacturing plant. The key transformation drivers are Route Optimization to manage the time for the feedstock or raw materials to reach the plant. Shipment Tracking and Logistics Analytics help manufacturers have an end-to-end view of

logistics operations and efficiency of transportation methods.

Production Operations

At the core of any manufacturing enterprise are the principles of Demand Planning to measure the market demand for specific products based on economic parameters and market growth plays. Demand Planning in turn helps enterprises define their Production Plans to meet the market demand for products. Manufacturers are using Big Data Analytics, IoT and Artificial Intelligence (AI) to identify Production Optimization opportunities as well as performing Production Analytics to see efficiency of plant operations.

Outbound Logistics

Finished goods/products stocked in plants are transported by outbound logistics providers to warehouse or wholesalers. Transportation routes are analyzed to see the optimal routes (Route Optimization) helping transporters provide on-time delivery. Weather data is being integrated into route planning to ensure impact of weather events on delivery timelines is minimized. Stock-out Analysis data is analyzed to determine fast moving products from warehouse and wholesalers, helping manufacturers replenish the stocks and use outbound logistics more effectively. Warehouse providers plan their layouts (Ware-

house Layout Optimization) leveraging IoT and Big Data Analytics to derive optimal storage patterns. Outbound logistics providers also analyze losses during transportation which helps plan better transportation operations.

Sales and Marketing

Manufacturers are increasingly driven by customer demands and preferences and are going all out to collect data around Customer Segmentation and Marketing Effectiveness of campaigns. Customer Segmentation helps understand customer demand for products based on their business value needs and helps target customers with the right set of products thereby increasing efficiency of marketing campaigns.

Customer Servicing

For manufacturers to succeed, they need to retain customers and at the core of customer retention is After Sales Support and Servicing. Enterprises are performing client satisfaction surveys and collecting data from 3rd party data providers on customer satisfaction levels from After Sales Support and Servicing. Customer Relationship Management (CRM) programs are leveraging the customer feedback data to manage customer preferences and retain customers.

The key disrupting technologies that are reshaping the way manufacturers are making the transition to a

connected, intelligent enterprise are as follows:

IoT and Industry 4.0

At the core of the connected enterprise is the use of IoT sensors in industrial equipment, which provides real-time insights and alerts about defects or equipment issues or damaged goods. Industrial plants with IoT embedded in processes helps manufacturers get a real-time view of operations with an ability to monitor and respond to potential issues like equipment performance or process bottlenecks.

Artificial Intelligence (AI) and Machine Learning (ML)

AI and Big Data are crucial differentiators for manufacturing by ingesting data from across the value chain that help optimize processes and boost production capacity by 15%. Machine learning algorithms help determine which factors impact production quality and service. Insights shared with suppliers and logistics providers help them optimize operations for an efficient supply chain.

Robotics

Robots have been used in manufacturing assembly lines in the past for repetitive tasks. Today robots are enhancing productivity and safety by replacing human works in hazardous work environments like undersea rigs or mining environments. Robots are being used in material handling systems, spot welding, spray painting, etc. A recent PwC survey revealed that at least 59% of manufacturing companies are using robots.

Blockchain

Blockchain has huge potential to transform the manufacturing industry through its distributed ledger that provides secure and transparent records which can be of significant value to enterprises with global supply chains that are often complex and riddled with transparency issues. Data held in a blockchain is decentralized

and shared across nodes, which provides insights into the complete supply chain and identify the bottlenecks and issues. Blockchain can help auto manufacturers identify faulty parts and the suppliers supplying them.

The key benefits that digital disruption has provided are as follows:

Collaboration across Supply Chain

Ability to ingest data from across the supply chain has provided numerous opportunities to collaborate better with suppliers, logistic providers as well as end customers. The data collected at various points in the supply chain enhance decision-making around quality of suppliers and has helped in supplier consolidation and better information sharing with suppliers. The same applies to logis-

Today robots are enhancing productivity and safety by replacing human works in hazardous work environments like undersea rigs or mining environments

tics providers as well, where data shared around demand helps logistics providers factor in optimized delivery plans and route optimization. Use of blockchain solutions can also bring in transparency across complex supply chains.

Cost Optimization

Digital technologies have helped optimize the cost of operations by analyzing data across the supply chain which can be analyzed to generate insights across Raw Material Sourcing, Inbound and Outbound Logistics, Production Operations, Sales and Marketing and Customer Servicing.

Customer Retention

Armed with the digital technologies and enhanced customer service capabilities, manufacturers are better placed to handle customer churn as well as acquire new customers by understanding customer demand bet-

ter. However, customer loyalty can be earned by continuous innovation in optimizing the supply chain as well as enhancing customer experience.

Productivity

As we have seen right across the value chain, digital technologies have brought significant productivity gains through Automation, Big Data Analytics, Robotics and IoT. Ability to handle and process unstructured data from social media sentiment analysis around product and service quality, weather data for route planning optimization has also enhanced productivity of enterprises.

Revenue Models

With customer centricity at its focus, manufacturers will look to create cus-

tomized offers/product bundles to meet customer-buying behavior. This creates an ability to generate new revenue streams as well as look at Cross Sell opportunities based on market demand and competitive intelligence. The ability to merge multiple data sets and generate insights creates new revenue generating models and opportunities.

McKinsey surveyed over 300 manufacturing companies and found only 48% consider themselves to be Industry 4.0 ready, while over 70% of suppliers were found ready. While manufacturers have embraced digital technologies, adoption across the value chain is still at different stages of maturity. Industry 4.0 is developing in India, with Bosch implementing smart manufacturing in India while GE is investing USD 200 million to build a multi-modal facility with digitally interlinked supply chain, distribution networks and servicing ■



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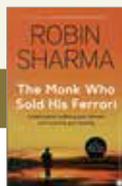


A TECH EVENT I ATTENDED RECENTLY

CIO Masterclass on 'Agile IT Security', organized by CIO Klub, in association with Juniper & EY, held in New Delhi in Feb 2020

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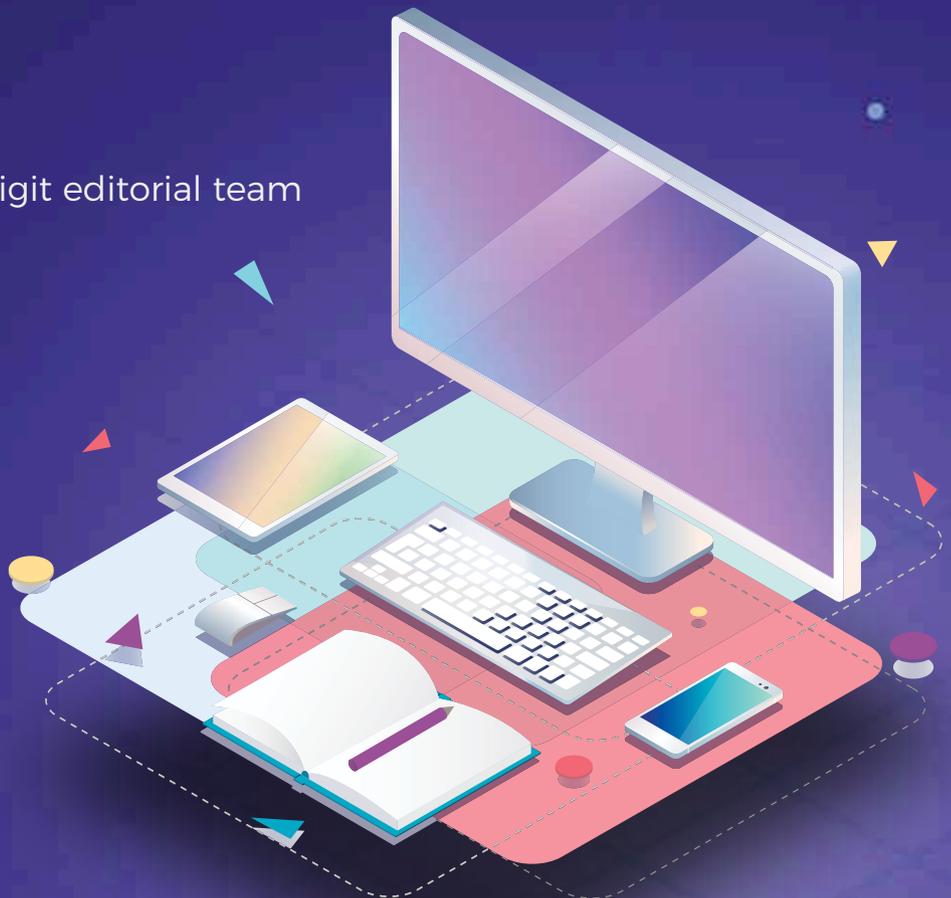


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