IT NE**X**T

FOR THE NEXT GENERATION OF CIOs

Meetali Sharma

Pooja Chatrath

Leading the
Diversity Agenda

Young women leaders share their thoughts on why should enterprise IT attract more women--and how

Saloni Vijay

Sujata Barla

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Gender diversity is not charity!

> "This time, we have relied on the new generation of women leaders who have proven themselves to lead the chorus. Read their views to know how forcefully and convincingly they argue the case"
>
> **Shyamanuja Das**

After two decades of discussion, gender diversity is still not a 'business' agenda item for Indian corporates. At best, it is considered a 'social' responsibility; at the worst, it is not even on the radar.

We still get to hear the same arguments that we heard then — why do we need to specially 'do' something? Is non-discrimination—itself highly debatable—enough?

No sir, it is not. Men and women are different. That means diversity would give you access to different skillsets and emotional attributes. But it also requires you to recognize that the two genders have some differences when it comes to their requirements. Over hundreds of years, the workplace has evolved around the need of just one gender – which dominated the workforce. If some small intervention could help make the workplace equally comfortable for both the genders, then why not? That is a definite intervention.

I think most of you know the story of Sudha Murthy who was denied a chance to work in Tata Steel, not because the managers at Tata Steel discriminated against women but because they did not have a ladies toilet!

Sometime, the intervention could be as small as that. But it is required. That is why I say non-discrimination is not enough.

I am not getting into the actual issues. We have multiple stories that will delve deeper into that.

I want to point out one thing. Lack of enough women looks especially glaring in the case of enterprise IT. That is because it is often directly pitted against the IT industry, the alternative career option for IT professionals. And that is an industry which has taught the rest of Indian business why, how and what to do with gender diversity.

Finally, I agree that many of the questions that we are asking are not new. They have been asked many times in the past. But as long as they are not answered successfully, we need to keep asking.

This time, we have relied on the new generation of women leaders who have proven themselves—all NEXT100 winners—to lead the chorus. You need to read their views to know how forcefully and convincingly they argue the case.

Hope things change for better! ∎

Content

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EXTRA Curricular

The 'write' passion for a fulfilling life

The Writer Within...

NEXT100 Winner 2018 **Pankaj Gupta**, Global IT Director, The Boston Consulting Group, shares his immense passion for writing, books he had written and the influence of his family on his passion...

"Start writing, no matter what. The water does not flow until the faucet is turned on" **– Louis L'Amour**

"Every secret of a writer's soul, every experience of his life, every quality of his mind, is written large in his works." **– Virginia Woolf**

"I can shake off everything as I write; my sorrows disappear, my courage is reborn." **– Anne Frank**

"I believe myself that a good writer doesn't really need to be told anything except to keep at it." **– Chinua Achebe**

It was August 2010 and I was in Boston when, while on cruise, I got into an interesting discussion with someone about the difficulty of identifying one's passion in life. He used the analogy of one's sweet tooth, which, while being extremely hard to pinpoint, was the single source of great pleasure to all those people who enjoyed eating sweet things. Ever since that day, I was trying to find out my sweet tooth and finally, after lots of discussion and debate with various people like my mentor, friends, colleagues and my family, I was able to find my passion about writing.

Before that, I wrote few skits and poems but I never realized this as one of the most satisfying things for me. Post that, I started making genuine effort to start writing. I wrote few blogs, some

Pankaj Gupta

Pankaj Gupta is NEXT100 Winner 2018 and is the Global IT Director at the Boston Consulting Group. Earlier, he was associated with Bharti Airtel, Genpact and JSW Steel. He has an Executive MBA in International Business, MBA in Finance and BCA. He is also Project Management Professional (PMP) Certified.

The techie who wrote on slice of life

poems, few were inspirational and few were high on sarcasm. Every time I finished something, I found the day very satisfying and felt that day was worth living. In fact some of my long international flights helped me put my thoughts on paper without any disruption or them vanishing. After few such sporadic write ups, I decided something tangible and started putting my thought in the shape of a fiction story.
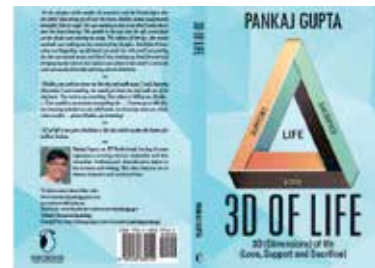
Finally, my first book, '3D of Life – Love, Support and Sacrifice' was published in 2014. Though it wasn't a big hit but I was able to manage to sell sizeable number of copies and also received great feedback from the booklovers that inspired me to continue my writing and now I am ready with my second book 'There was a Girl..' which will be launched very soon.

In between, I also continued to write some professional, social and political blogs and kept publishing on various channels based on the content as my personal views. For some of the blogs, I got lots of online/offline positive comments and that helped me to keep myself motivated, continue writing and putting my thoughts on various forums.

My first book, '3D of Life' was focused largely on the struggle of a middle class protagonist who had lots of dreams and was trying to achieve everything in his life by making the best plan for himself. But life never gives everything to everyone so easily.

If one tries to achieve something, one needs to be ready sacrificing something in-lieu of that. The entire story evolved around never-say-die attitude of the protagonist who was not willing to sacrifice anything. So his life kept taking him to never-ending rollercoaster ride around the three pillars, which are Love, Support and Sacrifice. I would say, it is a typical scenario in any IT professional's life when one is planning everything perfectly for their projects, some or the other issues keep them awake whole night. Hence, IT professionals like us are very familiar with risk assessment and mitigation plan. Probably, protagonist of my story was not born as an IT professional.

My second book, 'There was a Girl' is focused on one of the malpractices of our society. As we all know, India is one of the oldest civilizations and carries lots of legacy. We have several centuries' old rituals and social practices in our society instituted by our ancestors with their continuous effort and passion to bring up the life of humankind. Though they all aspired to make society evil-free but some of the malpractices built over a period of time, stay even today. This story is being narrated around an impact of those malpractices to the individual and how one can fight these evils if she has conviction. This is a beautiful, soft, emotional, heart touching love story that shows the cruel side of our society and one's determination to live her dream despite of all odds.

My wife, Deepti and my two sons, Tanay and Tejas remain my inspirations. Their unconditional support keeps me inspired and motivated to achieve all the goals at both personal and professional level. ∎

As told to Dipanjan Mitra, Team ITNEXT

How Wearables Can Transform Healthcare Services - And Business...

Wearables are moving from being a fitness freaks' gizmo to a clinically meaningful health tracking device. Will the healthcare industry grab the opportunity?

By Sohini Bagchi

Recently, Samsung launched an app, *My BP Lab*, jointly developed with the University of California, San Francisco (UCSF), intended to help its Galaxy Watch Active users monitor their blood pressure and keep better track of their physical health every day.

Apple's latest version of its smartwatch, the *Apple Watch Series 4*, features a built-in electrocardiogram feature and fall detection. The next generation of Apple Watches will reportedly feature glucose monitoring for people with diabetes. It has collaborated with L'Oreal to design the first-ever skin sensor that detects UVA and UVB exposure.

Wearables which have traditionally been a mix of fitness trackers and a fashion statement, are increasingly becoming key serious healthcare tools.

While fitness devices were floating in the market for quite some years now, the technology gained mainstream attention with the advent of the Fitbit and then of course Apple Watch that allows you to track your workouts, heart rate and daily step counters. The next wave of smart healthcare wearables is expected to revolutionize medical science and dramatically improve quality of life, believe experts.

Moving beyond wellness

Last year, health wearables experienced a boom in popularity when the latest series of Apple Watch arrived with a number of futuristic health

features, such as an electrocardiogram (ECG) sensor which can measure heartbeat. A Statista report has predicted, by 2019-end, revenue of almost USD 4.4 billion will be created from the sales of healthcare wearable device and the number would shoot up to a whopping USD 17.8 billion in 2021.

Another recent survey from Rock Health on digital health adoption found that wearable adoption increased rapidly last year, from 24% in 2017 to 33% in 2018. The use of medical wearables is evolving, with more consumers leveraging the devices to address critical health needs rather than just fitness tracking, according to the survey.

While monitoring physical activity remains the top reason for wearable use, only 44% of wearable owners cited physical activity as the top reason for their wearable use, down from 54% in 2017. This 10% decrease is corresponded by a 10% increase in respondents using a wearable to manage a diagnosis, growing from 20% in 2017 to 30% last year, the report shows.

"Wearables are morphing from their original fitness and wellness label into a tracker that can be clinically meaningful to patients—and perhaps even providers," the researchers say.

"With the industry thriving and innovating, clearly, wearable technology is moving beyond basic health and fitness devices like the heart rate trackers and daily step counters and providing the ground to enter the mainstream healthcare sector," believes Subrahmanyam Lanka, Senior VP-Digital Services, Siemens Healthcare.

A good example here would be Google Glass that is helping doctors with surgeries. The eyeglasses-mounted camera allows surgeons to record or livestream procedures and also serves as an auxiliary surgical tool. By wearing the glasses, data such as X-rays or patient notes will appear on the screen in the surgeon's peripheral vision, allowing them to access this data seamlessly without having to pause during surgery.

"With advanced healthcare applica-

tions, such as m-health, telemedicine, and fitness sensors, companies are leveraging data toward preventing and managing chronic health conditions like diabetes and heart problems and this will succeed in the long run," explains Lanka.

Also in a country like India, wearables can spur the tele-care market. Tele-care involves care of seniors and other people with physical or mobility limitations remotely. This is not only cost-effective, but also allows users to have the flexibility while making sure they get the proper care and treatment.

Security a concern

Despite healthcare wearables showing a lot of promise, there are still plenty of challenges the technology will face in the coming years.

"We are still at very early stages in the healthcare wearables journey, as there is still a gap in trust and adoption," says Rupinder Goel, Global Digital Technology Leader in IT and telecom and former Global CIO, Tata Communications.

"App and patient data security is a big challenge right now, more so, because privacy laws continue to play catch-up with the healthcare wearable industry. Once these laws are in place and security is assured, wearables may be used to collect data for electronic health records in the future. But we still have a long way to go," he asserts.

Lanka too believes that security is a major concern when such a large amount of data is in question. "Implementing wearables alone isn't enough to transform the face of healthcare. There also needs to be adequate security and safety measures to protect and prevent the breach of patient data," he says.

However, there is room for a lot of growth for health-specific wearables. Despite challenges, current statistics and market research present a bright picture for the future wearable industry. "Collaboration among medical professionals, healthcare firms, startups, and the smart consumer will help to

develop better healthcare applications and wearables devices. Only then will wearables find acceptance among the medical community and doctors can use them to fight more chronic healthcare issues plaguing the society," says Mukesh Garg, former Director - IT at AstraZeneca.

Leveraging wearables by healthcare providers

The most critical value proposition for wearables is to provide 'timely' help to patients. Data privacy issues apart (in India, it is almost a non-issue), there are a few basic challenges that need to be overcome.

Some of them are:

- **Acceptance by the larger healthcare provider community:** For that, the doctors need to be convinced that it can do what they are looking at.
- **Acceptance by the users:** While the change from fitness tool to critical healthcare tool, for the technology community, is just about device capability, when it comes to actual adoption, there's a huge difference. Most fitness users are younger people who are receptive and comfortable of new technologies; on the other hand, most people who require critical timely medical care are people who are in an older age group. In a country like India, they are still not comfortable in using technology. This is going to be a huge challenge.
- **Availability and price points:** For wearables to be accepted as real healthcare tools, they have to literally be 'what the doctor ordered'. The healthcare service providers can be a channel for these wearables. They should see this as a long-term hook for their clients than making margins from the sale. This requires serious partnership between device makers, providers and increasingly healthcare insurance providers, who also need to accept this.
- **Standards:** Without industry standards, the rapid takeoff will not happen. Whether India needs its own standards or can be part of a global

alliance is a matter of debate.

■ **Regulation:** The privacy legislation in India is in the making. The Personal Data Protection Bill 2018 will probably be passed by the Parliament in 2019 itself. It clearly classifies healthcare data as 'sensitive personal data'. All organizations that collect personal data of citizens must abide by the regulations.

What is needed is meaningful collaboration among all stakeholders to make it work. It will help in:

1. Tackling the challenges together
2. Present a united voice to policymakers and regulator
3. Promote the usage
4. Build/initiate standards suitable for India

Challenge before Enterprise Tech

While wearables, by their very basic promise of real time data, can be hugely effective tools for the patients and medical fraternity, as businesses, healthcare providers' journey just starts there. Beyond the immediate benefit of better healthcare to the individual patient, the true value of wearables will accrue when the industry is able to make use of the data effectively.

The data can give valuable medical insights to the doctors. It can also give valuable business insights to the business. The wearable circle will be completed only when healthcare service providers manage to achieve that■

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Meetali Sharma

Pooja Chatrath

Leading the
Diversity Agenda

Young women leaders share their thoughts on why and how enterprise IT should attract more women

By ITNEXT

Saloni Vijay

Sujata Barla

Participation of more and more women in the workforce is the goal with social, economic and business dimensions. It cannot be the responsibility of one set of stakeholders, says **Meetali Sharma, Corporate Risk, Compliance & Security Leader, SDG Software India**

Attracting women to enterprise IT: Whose agenda is it?

Women are increasingly getting into traditionally male-dominated roles. In businesses, women can now be seen at the leadership and board levels. It shows that importance of women in such roles is getting realized.

Studies have shown that diversity at workplace brings in both tangible as well as intangible benefits to the organization, like, better decisions, mutual respect, conflict reduction, acceptable and practical decisions, increased profitability, organization reputation building, etc. However, the number of women is still too low, especially at the senior levels.

In a recent study (Source - https://www.hiremorewomenintech.com/), it was found that:

■ Fortune 500 companies with at least three female directors have seen their return on invested capital increase by at least 66%, return on sales increase by 42%, and return on equity increase by at least 53%.

■ In a study by Dezsö and Ross of 1,500 US firms in the S&P, female representation in top management improved financial performance for organizations where innovation is a key piece of the business strategy.

Whose Agenda Item?

Realization notwithstanding, if something at the vision level has to be translated into action, it requires specific action agenda. In an issue like this, it requires definite positive intervention.

Whose agenda should it be? I believe such an important goal cannot be the sole responsibility of just one set of people. I believe multiple stakeholders—employers (organizations), environment (society, regulations etc.) as well as the women fraternity themselves.

As they say, everybody's business is nobody's business. But since, it does require involvement of all the stakeholders, it is imperative that we know the role each of the stakeholder should play.

Role of employer: Organizations should not differentiate between a

male and a female employee. Equal growth and development opportunities should be given to women and men be it trainings, promotions, pay scale or managing difficult projects. Both men and women bring different perspectives to a situation and that's where their combination brings value. Having a balance at the leadership level, that is to have both men and women at leadership positions is crucial as it brings a broader view to the board and helps in making better decisions. It enables striking a balance between emotional, practical and futuristic approaches, thereby, helping organizations make policies which are more favorable and acceptable to employees. Most women take a break in their career either due to maternity or post marriage. There must be attempts to make organizations women-friendly. By adopting policies, such as work from home, flexible shifts, having day care in offices or nearby office, extended maternity leaves, online trainings, cab facility, anti-sexual harassment policy and mandatory inclusion of females in senior management roles can definitely help in making a gender-neutral workplace environment.

Initiatives like these may meet with some resistance because some may believe that women are being given a leeway or something 'extra'. There's a very simple counter-argument. The workplaces have employed mostly men and the rules and culture of workplace have evolved over hundreds of years around their needs. It does require definite steps to accommodate women's needs. It should be treated as a business goal—something that can tap into a hitherto underutilized workforce.

Role of environment: Government has already started making

> Equal growth and development opportunities should be given to women and men be it trainings, promotions, pay scale or managing difficult projects

attempts to promote the independence of women. Changes in the Maternity Act in 2017 have empowered women to look after their work-life balance in a very nice manner. Amendments like change in paid leave period to 6 months, work from home options and daycare facilities have given a lot of flexibility to women to balance motherhood without compromising on their professional life.

Role of women's fraternity: Women, themselves, also need to realize their importance in companies and be ambitious in pursuing their goals. Generally, women don't accept difficult projects due to their responsibilities at home and family. This needs to change. As women, we need to learn how to balance between the two (work-life balance) without curbing our dreams and goals in life. There are sacrifices which need to be given and adjustments that need to be made to pursue your professional career as well as manage personal life. Extra efforts need to be put in for enhancing knowledge, balancing goals at both ends, being available for community service (be it events, webinars, knowledge sharing, etc). While organizations and government are responsible for providing a platform to women leaders, women also need to step up and come forward and have a representation in various forums and showcase their talents. This will enhance the trust of employers in them to give them higher positions and critical projects to manage.

There are some organizations that have done really good work on this front. They just provide a support system, but the platform is created by women leaders who not just serve as role models but actively mentor the younger women.

Participation of more and more women in the workforce should be treated as a societal goal, which has social, economic and business benefits. The responsibility of achieving that has to be a coordinated, multi stakeholder effort ◼

Mentoring is a two-way street where both are benefited, as mentor gets wiser while mentoring and mentee gets more knowledge, says **Pooja Chatrath,** **Vice President - IT at Cryoviva India**

It's crucial for women in the workplace to have role models. For women to be more empowered in the workplace, it's crucial to have mentors where women can learn from each other. Women are in need of mentors in order to gain proper skills, learn how to build a wide network, access to role models and ultimate career success.

For example, if you have a women mentor, she can first of all teach other women – how to communicate effectively. Related to their own effective examples one can teach there is a solution for every problem – that problems are just projects in disguise, waiting to be solved...

Mentors are a critical part of both professional and personal development. Everyone is glued to their screens nowadays. We often forget the art of in-person communication, which is essential to be a strong leader. Studies have shown that women with mentors are more likely to be successful than those without. A mentor provides professional guidance and shares knowledge and advice with their mentee. Mentoring relationships have many long-lasting benefits and can offer opportunities that women previously may not have had. Mentorship can help an employee feel less isolated at work as well as encourage her to interact more with others.

Women oftentimes directly benefit the most from mentorship programs because it contributes most significantly to our employment retention. Oftentimes women indicate that the presence or absence of a supportive mentorship program is what ultimately drives their decision either to remain in an organization or to leave it.

Mentorship can also help women build networks. Your mentor can teach you strategies to have those skills that help you improve your methods for a successful outcome. Some women feel more comfortable when they know what they are negotiating for, what the parameters are, or who they are negotiating with. While men tend to be logical and practical when it comes to making decisions, women draw on both logic and their emotional intelligence skills when it comes to making decisions and leading a team. When women choose women mentors, they receive the practical and emotional advice and support they need. From toxic workplaces to confidence issues, women mentors are great at addressing and validating the emotional aspects of decision-making.

So, mentoring is a two-way street where both are benefited as mentor gets wiser while mentoring and mentee gets more knowledge ■

Mentoring: The crucial catalyst to build women leadership

Getting women to leadership: Why we need a comprehensive approach?

Even today, challenges are plenty for women in corporates. It needs an integration action agenda to close the gaps, says **Saloni Vijay, GM, Vodafone Idea**

Across many industries, there is still a big gap between the number of men and women in the workplace especially further up the leadership ladder.

Lack of women in leadership positions

According to me, there are many factors which contribute fewer women in top leadership. Lot of times the basic thing lacking is "Intent". There are few corporates which really focuses on gender diversity, rest are just there to report the numbers at workplace. If corporate really want to see equal ratios for male and female in leadership roles, they should not only hire the right women talent but equally important to nurture and make them ready for the higher roles, which I feel is not happening.

Another big thing is unconscious bias among managers. While discussing the promotion of potential women, there is a hesitation to offer them a higher position considering their dual role as worker and caregiver. It turns out that men more often get the kind of "high-profile assignments, mission-critical roles, and international experiences" that typically lead to the C-suite and above.

There is a lack of female role models in the industries. Statistics shows that while at the entry level there is almost 50-50 ratio which joins the workforce but in 8-10 years, the percentage of women in the workplace drops down. There are fewer women who feel very confident of taking on leadership roles. Sometimes there is lack of aspirations also which doesn't push women to believe in themselves and cross the boundaries of their comfort zone.

One major factor is stereotype that men "take charge" and women "take care" puts women leaders in various double-binds. For example, women are judged as being too hard, too soft, and never just right. Women leaders are also seen as competent or liked but not both. Also, men may be seen as having the "default" style when it comes to their ability to lead effectively, meaning women spend part of everyday repeatedly proving they too can lead.

Biggest issue for women in the workplace

I can't think of one biggest issue for women in the workplace as there are plenty. Topmost issue is gender bias that many women experience at their workplace. Jobs that require frequent travel, physical exertion, etc., are still open for men only as they are considered more eligible than women. Many companies while hiring women employees ask them openly about their marriage and further family planning as they cannot afford the maternity leaves and other flexibility perks.

Another most noticeable challenge that women of today face at work place is the work-life imbalance. Differentiating personal life and professional career becomes little hard for women in general. They tend to mix up work commitments with personal priorities and that's when all the issues start. Family feels neglected, friends feel lost and unfortunately she has to face the wrath of her entire support system just because she has forgotten to draw the line between work and life. This challenge is mostly self-imposed and to get out of this mess, the woman has to help herself. A noticeable challenge is pre and post maternity leaves environment. Once the lady resumes office post her maternity break, she may be in for surprise as her role would no more be the same. She may have to begin from beginning all over again.

Lack of role models is another challenge. Women have time and again proved their capabilities in the work front but still the top cream layer is mostly occupied by men. The challenge here is female leaders are many but role models are few. Hence, when women try and look for leaders whom they can emulate, they are left behind.

While male leaders are many and they train their successor with full vigor, a women leader learns everything the hard way. When women look up to men for guidance and mentorship they feel they are disconnected and disoriented as there is a great difference in their objectivity and style of communication.

Organizational changes to get more female leaders

Make a deliberate investment to help women colleagues. Be intentional about appointing highly qualified women to the executive team, corporate board, C-suite, and CIO position.

Sponsorship is essential for women. We know that women have a lot of mentors; but they also need sponsors who will give them visibility, talk about their accomplishments behind closed doors, and promote them for stretch opportunities.

Inclusivity is also an important aspect. Carefully and humbly listen to women colleagues, which can help them feel more included. When women feel like outsiders in the workplace because of their unique qualities or differences, they feel excluded. Exclusion comes at a great cost to organizations in the form of lower job satisfaction, reduced work effort, diminished employee voice, and greater intention to leave. Building an inclusive workplace means creating a culture that fully engages and supports all employees.

People should not judge the effectiveness of women leaders based on gender stereotypes. There is a need to provide diversity and inclusion training to help employees understand the effects of gender stereotyping. Organizations need to introduce women-friendly policies, like policies against sexual harassment, flexi hours and pre and post maternity benefits.

Changes required of women to grow as leaders

Women should have a clear career plan and should share it as and when required. Women take a few breaks in their career due to childbirth and family responsibilities. Women who are successful in advancing upwards, plan their careers with a longer time horizon in mind, continuously share their plans, and get the support they need along the way to continue to progress.

Results do not speak for

themselves, and opportunities do not just fall in our laps. Self-advocacy is a critical behavior to learn, unfortunately most women struggle with it. Successful women know how to own their strengths and accomplishments, share how they add value to the organization, and ask for opportunities to grow and advance.

In order to move into new roles, advance into senior positions, or make time for projects and development

that will help with growth, women have to leverage the skill of delegation. They need to delegate or distribute work to free up time for strategic initiatives.

Women should believe that there are no barriers to advancement. There may have been factors all around them that could have prevented their success, but they shouldn't let that get in the way of their own beliefs about what they could personally accomplish.

Women leaders should be socially supportive and speak out for others. There is growing evidence that when women wield power and assert themselves on behalf of others, they are able to do so effectively and without incurring social repercussions. Women leaders can be seen as very effective if the beneficiaries of the female leader's efforts are her team members.

Women leaders can advance by others speaking out for them – conferring upon them the social status needed to endow female leaders with the legitimacy to be assertive. Beyond helping and encouraging each other, it is also important to help and encourage self. Success is a state of mind, and if they don't allow themselves to enjoy their current role and pat themselves on the back for the work they've put in to get there, they'll be miserable. Remember that a positive mindset and a great sense of resilience are both crucial to continuing to grow and progress in their career.

Outside of the office, women have to be sure to find something that allows them to get out of their own head a bit, as well. There is an entire world that exists outside of the promotions and politics of the workplace. No matter how great their responsibilities become, they shouldn't allow them to over-burden them.

Of course, at the end of the day, there is no "magic secret" to landing a top role. There is no passcode or God-given right for anyone to be in

the C-suite. They have earned that seat at the table, and they must not forget it. Lead confidently, and inspire other women to do the same.

Advice to women colleagues

Identify yourself, know who you are, what you believe in and where you want to go. You are unique as a fingerprint and the best way to succeed is to discover what you love and then find a way to offer it to others in the form of service. Surround yourself with women who might be in the positions you want to strive for or other leadership roles and get to know them. Be connected with them, listen to their stories on what works for them or what hasn't worked and use that to start building your own platform. The biggest thing in corporate world is building your own professional portfolio and how you set yourself apart from everyone else. By developing these skills early in your career you will be a step ahead. Have determination and persevere on when meeting roadblocks. Often the solution is just there when you are about to give up. To succeed in the corporate world, you need to take ownership and become accountable.

Challenges are everywhere. Pushing yourself out of your comfort zone and trying something new and good is the challenge that you must impose on yourself. More challenges one faces in life, her achievements and memories increase manifolds. Instead of dreading the challenges, if one learns to treat challenges as stepping stones to success, you will hardly feel its magnitude. Women have to break the soft sweet image in order to succeed in their work endeavor. Being as fierce, stable and aggressive as a lioness and working towards her goals without any distraction makes a woman achieve her goal with precision■

> *Identify yourself, know who you are, what you believe in and where you want to go. You are unique as a fingerprint and the best way to succeed is to discover what you love and then find a way...*

Diversity is a fertile ground for breeding creativity, innovation and productivity, says **Sujata Barla,** Chief Digital Officer, Integrace

Why diversity matters— even more now?

Gender diversity at workplace and its impact on business outcomes is a long-debated topic. While I was doing my research for this article I came across multiple studies and research stressing on why women leaders are better than men, how women manage situations differently, how women leadership's approach is healthy for driving company's bottom line and boosting the culture of innovation.

Well, as much as I agree with these, I equally disagree too. All men are not the same and so is the case with women. Each individual brings in a very distinct personality, character, perspective and working style to workplace.

The point is not so much men vs women as it is about diversity per se. Diversity in general is a fertile ground for breeding creativity, innovation and productivity.Endorsing and celebrating everyone's unique style is a win-win situation for the organization.

A diverse organization—like a pluralist society—has multiple strengths. It is not just more creative, it is more resilient too.

Gender Diversity

Traditionally organizations have been dominated by male who think in a particular manner.

Women as a gender bring in a very different perspective at the workplace. Nature and Nurture play a very significant role in shaping up a woman and the way she looks at the world and interprets it. A research by Harvard scientists shows that women use their brain differently than men.

So, by definition a solution to a business problem will cover all possible perspectives if there's diversity of workforce. Research shows that there are aspects—such as emotional implications—that come to women's thinking more naturally than men's.

With large scale automation and application of Artificial Intelligence, machine learning and robotics in the business, increasingly the route to efficiency will look more similar for different organization. What will make one organization more effective than another is their ability to apply the human values such as empathy and sharing—attributes research shows women are better at.

The World Economic Forum (WEF) just popularized a phrase— Globalization 4.0—that was the theme for its just concluded annual meeting at Davos. "With advances in robotics and artificial intelligence in the context of aging societies, we will have to move from a narrative of production and consumption toward one of sharing and caring," said WEF founder Klaus Schwab explaining the concept.

Can a global regime that is looking to put 'sharing and caring' at the centre stage afford to ignore gender diversity?■

Women @ NEXT100: The Trendsetters

No of women winners have increased over the years – but just a little

By ITNEXT

F or the last one decade, NEXT100 award by ITNEXT, has served as a good reference list for hunting the future CIOs. The awards—decided through a combination of achievements, psychometric tests, case study solving and in-depth interviews by senior CIOs—have also been a good indicator of where things are going when it comes to IT leadership talent.

It is, therefore, a good place to look for changing trends, if any. So, how do women perform when it comes to the awards from when they started in 2010 to today? The big message is things have surely changed for the better. But it is too little.

Take this. In the first five years—that is 2010 to 2014—the average number of women winners per year was four

WOMEN WINNERS OF NEXT 100 OVER THE YEARS

Y2010: 5
Y2011: 3
Y2012: 6
Y2013: 2
Y2014: 4
Y2015: 5
Y2016: 7
Y2017: 5
Y2018: 7

NOT EXACTLY IN THE PINK

5%

95%
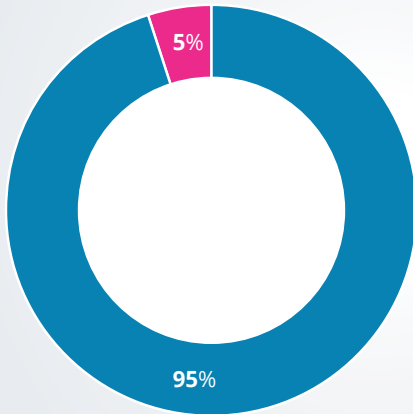
Of the 900 winners over the last nine years, only 44 are women. Even though the winners applicant retio is far better for women, the lack of enough women in the enterprise IT workforce is a reason for this not-so-encouraging data point

What it means is that you have lesser percentage of women applying for the awards as compared to men. This trait of women—not to claim credit/ being hesitant to show achievement—has often been blamed for their hitting the glass ceiling
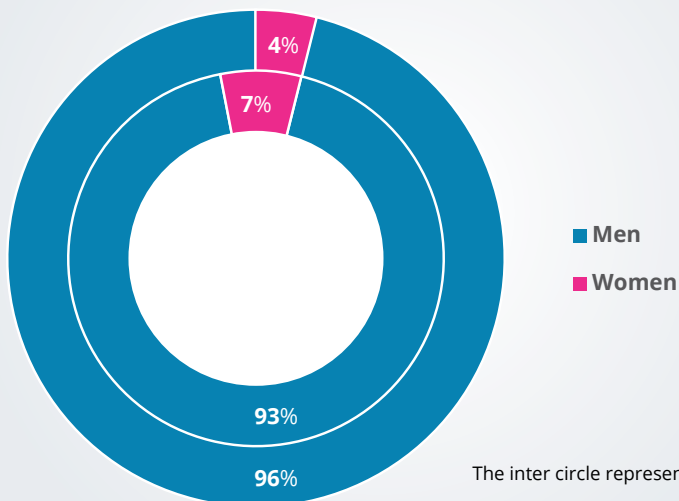
NEXT 100 2018: GENDER RATIO FOR WINNERS VS OTHER APPLICANTS

4%

7%

93%

96%

■ Men

■ Women

The inter circle represents winners

out of hundred. In the next four—this year's awards process has just begun—the number jumped slightly to an average of six winners in the NEXT100 list. That is not a change that one should celebrate or be proud of—but one that should be noted.

On the face of it, it does not look too different from the composition of the enterprise IT workforce and hence nothing unusual. But drill down a bit and you will have some explanation. Year after year, the gender ratio among winners remain far better than gender ratio among non-winners (and of course, all applicants). Take last year. While women bagged seven of the 100 NEXT100 Awards in 2018, there were only four women among 100 unsuccessful applicants. In short, what it means is that the winner: applicant ratio for women is far more.

Turn it upside down. What it means is that you have lesser percentage of women applying for the awards as compared to men. This trait of women—not to claim credit/ being hesitant to show achievement—has often been blamed for their hitting the glass ceiling.

The good news: Some of these winners have already made it to the CIO level. A few more are CISOs—which itself is becoming quite an important function within the enterprise, often outside of the enterprise IT department.

In short, if NEXT100 Awards are indeed a barometer for gauging the shape of things to come—as they have shown to be in the past in successfully indicating many future trends—the news is not too encouraging, though now at least, there is a definite trend towards better diversity. It does require positive intervention. For a story on that, read our next section, "Women CIOs Break The Glass Barrier, Say Mentorship Can Help".

As we celebrated International Women's Day, here's hoping that we will see a far more impressive performance by women applicants in NEXT100 Awards 2019■

Women CIOs Break The Glass Barrier, Say Mentorship Can Help

Women CIOs are not as rare as they used to be. Yet, the numbers are still small. Organizations should create support ecosystem and encourage mentorship, say top women CIOs in this year's Women's Day Special. **By Sohini Bagchi**

Even though the topic of gender diversity in technology has received much attention in the boardroom and many organizations are taking steps to improve C-suite diversity, it is no secret that the number of women in technology leadership roles continues to be abysmally low. According to a Nasscom study in 2018, India's technology industry currently employs nearly 3.8 million people, of which nearly 1.3 million or 34% are women. This number is much higher than the overall female share (24%) in India's total workforce. However, the concern is while over 51% of entry level jobs are taken up by women, only over 25% of women reach managerial positions and less than 1% is in the C-suite.

So, how does that pan out for the women in technology who are in the C-suite, namely the Chief Information Officers (CIOs)?

The number is still small. But unlike say just five years back, today, there is a critical mass of women CIOs. On this year's International Women's Day, we tried to find out why it is so and if they have faced challenges being women, while carrying out the responsibilities and growing through the ranks.

Challenges abound

The biggest, challenge, according to Priya Dar, CIO, Godfrey Phillips India is lack of enough women in C-level positions. "The challenge is that there aren't enough of us, be it in the boardrooms or at CXO level, or as HODs and so on. So, we need more presence of women among the decision makers. We need to recruit more women, give women more responsibility and groom women for that seat on the board," she says.

In most cases, it is seen that networking opportunities and promotions go to men in tech careers at a higher rate than to women. Company events and trade gatherings often provide platforms where male tech workers exhibit sexist attitudes toward their female colleagues. "While women can overcome gender-based challenges in IT by focusing on their skills and staying current with industry trends, the cultural norms still need to change in employment, family and educational settings," says Dar, adding that a change in mindset would help eliminate the problem of gender discrimination, so every woman can feel confident, supported and safe as they pursue their dreams.

Aruna Rao, CTO at Kotak Mahindra Bank and Group Companies agrees that societal pressure is the sole family caretaker while managing a high pressure career–preventing many Indian women from staying and thriving in technical roles. "The expectations of being a wife and mother leave little time to develop and hone an ambitious career in technology," she says.

Businesses are not yet sensitized about the need for diversity. "Many organizations are yet to recognize,

The challenge is that there aren't enough of us, be it in the boardrooms or at CXO level, says Priya Dar, CIO, Godfrey Phillips

Many organizations are yet to recognize, harness and embrace the different lenses and approaches offered by a diversified workforce, says Aruna Rao, CTO, Kotak Mahindra Bank

harness and embrace the different lenses and approaches offered by a diversified workforce. This natural tendency to 'stick to the comfort zone' of similar employees often leads to limited opportunities for women in the workplace and in senior roles," says Rao.

She also points out that female leaders continue to face societal and self imposed biases which can cause them to even avoid coming to the table or keeping a distance in their careers.

The issues that Rao and Dar highlight are corporate issues in leveraging women per se and are not restricted to technology roles.

I am not sure why we see many more women in HR, Marketing, and Compliance even Finance at least in the starting positions, but not in IT, says Nirita Bose, Senior Vice President & Head - IT, Axis Asset Management Co.

But Nirita Bose, Senior Vice President & Head - IT, Axis Asset Management Co. sees lesser number of women coming to IT. She says when her company is hiring for IT, she sees very few applications from women.

"I am not sure why we see many more women in HR, Marketing, and Compliance even Finance at least in the starting positions, but not in IT," she says. "I think people perceive IT to be a very male dominated area. And of course the obvious pressures of work life balance take a toll as you move up the rungs. I think we need to build a more positive perception of the IT field to encourage more women to join," she adds.

But just sensitization and pep talk may only help to some extent. The

organizations, which have majority of male employees over the years, are not geared up with the right support system to actually convince women to, say come back, say after a gap.

"A strong supporting mechanism and encouragement from colleagues play a big role for women getting back into the workplace and to rise to senior levels which otherwise can become the biggest challenge," says Lisa Zinn, Group Head, Global IT & Business Services at Apollo Tyres.

It is time organizations actively implemented programs that encourage women to join back in the workforce, after a gap, or a maternity leave.

According to Rao, a large percentage of women takes up STEM education in India, and gets recruited from the campus. However, the number of women who drop off at middle management levels continues to be high. "Improved mentorship programs can help in decreasing this. Also, more flexi-hours and work from home programs provides these women leaders stay in the corporate world during the years that they need more support for work-life balance," she says.

A study by McKinsey found that organizations that have diversity in the executive committees posted operating profits that were 56% higher than organizations with male only executive committees; hence a diverse work force makes good economic sense. The way forward for enterprises is to recognize this and institute women friendly policies and measures.

Mentoring can make the difference

Despite challenges, most women CIOs say that they can get ample opportunities to stand out from the crowd. With the shift in the CIO role where IT is required to drive digital business initiatives, three things that clearly come out as strong lessons are: Women CIOs should constantly upgrade their skills – toying with different technologies, including the latest disruptive ones that suit their business needs; choose a mentor or a trusted confidante who can help her grow more quickly in her career; and finally, effectively communicate, or in other words articulate their IT specific needs that can bring to table greater business value.

The corporate world is always looking for the best talent in technology and in leadership, believes Rao. She asserts, "One needs to constantly up-skill and have the thirst for knowledge, and this is particularly true for technology professionals. The right opportunities will always be available for the best candidate, woman or man."

However, hard skills can only take you this much and not more. To succeed, most women CIOs believe that

mentoring does play a very important role. Mentoring isn't just about bringing talent along so that they understand the workflow and process norms of a company; it's about culture and nuances of learning a profession, communication skills, leadership skills and growth as a professional and as a person. It's also about a building a deeper connection with someone who has 'been there, done that' and lived to tell the tale.

Emphasizing the importance of mentoring, Zinn says, "An organizational system of strong male and female mentors is needed to coach women through the career journey, teaching them to leverage their own core talents. This coaching model should also include awareness training to line managers of how soft skills can reflect differently between men and women hence enabling them to judge talent and potential on an equal scale across the sexes."

"It is important therefore for women CIOs to seek out strong mentors, both male and female, who can guide and encourage your growth and remind you of your strengths and aspirations and also nurture relationships, personally and professionally, which will support and grow you through your career journey," tips Zinn. Dar too opines mentoring is the key to get more women into leadership roles. Mentors are helpful because, in addition to expertise in their field, they have a network of business professionals and, most importantly, they are willing to share what and who they know. Often times, the expectation from CEOs and others across the business is that their women CIOs will step up and embrace the leadership reins. It's a matter of CIOs accepting the challenge of being both an advising expert and change leader. Communication plays a vital role here.

Women CIOs, who are helping accelerate the digital journey within their enterprise, should make sure that they develop a vision for their organization, just like their male counterparts. Rao offers a piece of advice to technology leaders, "Women should think of themselves as leaders and CIOs, not just female CIOs."

Women CIOs should spend time with the management at executive committee meetings. They should associate with the clients and prospects to stay relevant to business. This will help them develop a strategic influence. Towards this end, Zinn believes, budding women CIOs and IT leaders should commit to career goals and stay true to them.

The times, they are changing

While the representation of women in the CIO community has been increasing over the years, much is left to be done. With 'digital' taking the center stage and technologies such as cloud, big data, AI and IoT becoming increasingly mainstream, one can clearly see a big shift in the CIO's role today, which essentially is gender neutral.

A recent study by consulting firm Deloitte brings some good news to women technology chiefs, stating that the percentage of women CIOs is far higher than that of female CEOs and CFOs. The Deloitte analysts reasoned that this was evident because technology teams can benefit from women's unique combination of leadership skills, such as empathy, flexibility, persuasiveness, assertiveness and risk taking.

Likewise, Tina Nunno, VP and Gartner fellow, in her research, notes that while there are positive similarities between women and men in the CIO role, as they share similar reporting lines, priorities and technical challenges in the enterprise, a few variations in gender data show that women are embracing technology trends in the same way as their male counterparts and, in some cases, even more so and this is especially true in the digital era. As Melissa Woo, CIO at University of Oregon, mentions in a recent report, "As female CIOs, we have to be visible, approachable and make sure we're working within our communities to show other women that they can do it, and we support them." ■

A strong supporting mechanism and encouragement from colleagues play a big role for women getting back into the workplace and to rise to senior levels, says Lisa Zinn, Group Head, Global IT & Business Services at Apollo Tyres

I am not sure why we see many more women in HR, Marketing, and Compliance even Finance at least in the starting positions, but not in IT, says Nirita Bose, Senior Vice President & Head – IT, Axis Asset Management Co.

Citrix Breach Busts Four Myths

The recent attack on internal systems of software company Citrix Systems raises several questions

On March 6, 2019, the Federal Bureau of Investigation told Citrix that international cyber criminals gained access to its internal network.

Resecurity, a security firm, has claimed that the attack could be by an Iranian-linked group known as IRIDIUM that has hit more than 200 government agencies, oil and gas companies and technology companies.

Citrix said it has already initiated action to contain this incident.

"We commenced a forensic investigation; engaged a leading cyber security firm to assist; took actions to secure our internal network; and continue to cooperate with the FBI,' wrote Citrix Chief Information Security Officer Stan Black, in a blog in the company website.

"Citrix is moving as quickly as possible, with the understanding that these investigations are complex, dynamic and require time to conduct properly.

In investigations of cyber incidents, the details matter, and we are committed to communicating appropriately when we have what we believe is credible and actionable information," he further wrote.

Black said while the investigation was on, it appeared that the hackers may have accessed and downloaded business documents. The specific documents that may have been accessed, however, are currently unknown. "At this time, there is no indication that

the security of any Citrix product or service was compromised," he wrote.

Black also said while it was not confirmed, the FBI "has advised that the hackers likely used a tactic known as password spraying, a technique that exploits weak passwords." Once they gained a foothold with limited access, they worked to circumvent additional layers of security.

Password Spraying: A clever exploit
In May last year, UK's National Cyber Security Centre (NCSC), part of the nation's security agency GCHQ, warned about the emerging threat of password spraying:

"One common way that online accounts are breached is through password spraying, whereby lists of a small number of common passwords are used to brute force large numbers of accounts. These attacks are successful because for any given large set of users there will likely be some who are using very common passwords, and these attacks can slip under the radar of protective monitoring which only look at each account in isolation," it said in a blog.

NCSC's raising the alarm followed a research that it conducted to understand how vulnerable the UK organizations could be to password spraying attack. It found that:

75% of the participants' organizations had accounts with passwords that featured in the top 1,000 passwords and 87% had accounts with passwords that featured in the top 10,000.

This data suggests that password spraying attacks are likely to have some success against these organizations, and many other organizations across the UK.

"Whilst account lockout policies may limit attackers to trying (for example) 10 passwords against a single account per day, the account lockout counters usually reset over time. This allows persistent attackers to try more passwords, and they can (and do) end up trying hundreds or even thousands of

common passwords," it said.

It also provided some possible mitigation strategies.

Warned earlier
Security firm Resecurity said it had reached out to Citrix in December 2018 and had shared early warning notification about targeted attack and data breach. "The attack," it said "was planned and organized specifically during Christmas period."

Resecurity said the incident has been identified as a part of a sophisticated cyberespionage campaign supported by nation-state due to strong targeting on government, military-industrial complex, energy companies, financial institutions and large enterprises involved in critical areas of economy.

"Based our recent analysis, the threat actors leveraged a combination of tools, techniques and procedures (TTPs) allowing them to conduct targeted network intrusion to access at least 6 terabytes of sensitive data stored in the Citrix enterprise network, including e-mail correspondence, files in network shares and other services used for project management and procurement," it said.

The arsenal of IRIDIUM includes proprietary techniques allowing to bypass 2FA authorization for critical applications and services for further unauthorized access to VPN (Virtual Private Networks) channels and SSO (Single Sign-On), Resecurity explained.

"We forecast a continued growth of targeted cyber-attacks on supply chains of government and large enterprises organized by state-actors and sophisticated cyberespionage groups," it said.

Four Myths that it busted
The security breach at Citrix has implications beyond Citrix and its customer. It raises important questions and busts some myths. Here are the four myths that it busted:

Myth 1: IT companies are less vulnerable
Citrix is not just a technology company.

Security firm Resecurity said it had reached out to Citrix in December 2018 and had shared early warning notification about targeted attack and data breach. "The attack," it said "was planned and organized specifically during Christmas period"

It is an enterprise tech company that has security solutions too, albeit in a different area. Its Citrix Web App Firewall is a web application firewall that it claims protects web applications and sites from both known and unknown attacks, including all application-layer and zero-day threats.

Myth 2: Early warning prevents breach
Going by the claim made by Resecurity, it had warned Citrix in December 2018. This means it had some knowledge about the possibilities of such an attack. Yet, the infiltrators managed to get onto its internal systems means that information was not effective in thwarting the attack.

Myth 3: Once the attack starts, at least tech companies can detect
Citrix admits that it got the information from FBI about the attack. The fact that FBI 'had to' tell them well after the attack started means even post-attack, detection is not easy.

Myth 4: An attacker requires highly sophisticated tech to carry out an attack
As evident, the attackers used password spraying, which is a clever way of exploiting the vulnerability rather than using more sophisticated tools.■

The M&E Datacenters VR/OTT War

Consumer entertainment VR and OTT video content is touted to be among the fastest growing categories in the M&E sector

By Sanjay Motwani

The demand for video content today has reached a tipping point. Increasingly Media & Entertainment (M&E) companies are adopting advance technologies like VR/AR to provide consumers with richer more immersive content experiences. In fact consumer entertainment VR and OTT video content is touted to be among the fastest growing categories in the M&E sector.

But managing this kind of video data isn't as straightforward, in fact industry experts say VR content may need up to 20 times more storage space and up to 6 gigabytes of bandwidth per second than an HD video. For example Google Video content depends on 360-degree views that require the content to keep running while people turn their heads and interact with VR environments. Additionally speed plays an important role in storage, too, especially since

many of these applications support real-time environmental changes and viewpoints served up to users almost instantly. In the case of OTT, a 25mbps bandwidth connection typically only supports one over-the-top stream and one or two smartphones. In a country like India which is all set to become one of the top OTT markets in the world, the bandwidth and storage implications it will have on M&E datacenters will be enormous.

As worldwide media consumption evolves inexorably towards digital, M&E companies will increasingly seek infrastructure solutions that can enable them to meet consumer demands. Datacenters would need to be built for high performance that can facilitate the seamless experience that such type of immersive content would require. High-performance computing (HPC) is among the suggested methods to equip datacenters for OTT and VR. HPC increases the processing power and data performance capabilities without increasing rack space.

M&E datacenters adapting to high performance computing workloads often require intelligent power management solutions, DCIM solutions and KVM-over-IP that can help them monitor and optimize space, power, and cooling. Workload behavior analysis and intelligent workload placement should be the key driver for technology selection.

Rack PDU metering is one of the fundamental features that sets intelligent PDUs (iPDs) apart from basic PDUs. iPDUs provide more compute and memory power to support new applications and help gather and analyze data on electricity used by IT equipment, available power capacity in datacenters, and cabinet environmental health. They also have more sensing and infrastructure data collection points.

With DCIM (Data Center Infrastructure Management) solutions, M&E datacenters are able to mitigate the risk of downtime by

Datacenters would need to be built for high performance that can facilitate the seamless experience that such type of immersive content would require. High-performance computing (HPC) is among the suggested methods to equip datacenters for OTT and VR

offering real-time alerts. It enables accurate measurements, device and cabinet-level monitoring.

Delays or latency can be devastating for M&E datacenters. This is why they need to consider storage solutions that can handle dynamic needs and produce the content quickly to avoid latency. KVM-over-IP supports traditional IT and datacenter applications, and is perfect for broadcast, entertainment, and other dynamic applications that require high performance video streaming. It delivers stellar virtual at-the-rack video performance, using next-generation features, such as ultrafast screen refresh, high-definition remote video resolution, advanced color calibration and per-server video optimization. Users view the full video display from the target server without window borders or tool bars. In addition, KVM-over-IP also features lower Total Cost of Ownership

(TCO), multi-vendor support, enhanced security and flexible user management.

Staring ahead at a video-propelled future, M&E companies cannot ignore the demands it will place on storage, speed, power and computing capacities it will need. In fact experts believe it is a matter of time before multi-user VR content experiences gain momentum. In order to facilitate a seamless immersive viewing experience M&E companies will need to invest in High-performance computing (HPC) datacenters that can adapt to artificial intelligence workloads, Companies that fail to be mindful of these needs and changes with the increase in user volumes will be considered less competent than other players in the marketplace■

The author is Vice President at Raritan APAC

Amazon EBS Vs EFS Vs S3: What's The Difference?

Amazon EBS, EFS and S3 have their own strengths and purpose...

By Rishiraj Nandedkar

AWS gives us three different storage services – EBS, EFS and S3. Each has its own strength and purpose. Here are the key features and architectural benefits of each of these:

Amazon EBS

Every server needs a drive. Amazon Elastic Block Storage, or EBS, is essentially a cloud-based storage for the drives of your virtual machines – just like a D drive or an E drive (in case of Linux, its //Data/ etc. The core principle of EBS is that it stores data as blocks of the same size and organizes them through the hierarchy, similar to a tra-ditional file system.

Amazon EBS is designed to store data in blocks (volumes of a provi-sioned size) attached to an Amazon EC2 instance, similar to a local disk drive on your physical machine. In physical environment this volume might be coming from storage or server. The key difference is that EBS is elastic (easily scalable and extensible) as compared to a local disk which has finite capacity.

There are 4 types of volumes in Amazon EBS. To understand the differ-ence, you need to know what IOPS is. "IOPS" stands for input/output opera-tions per second or, put it simply, the maximum amount of read/write oper-ations you are able to perform per second. To choose the right Amazon EBS volume type you need to consider a number of parameters such as:

- OPS and through put requirements for your application
- Read and write ratio
- Data type (Random or sequential)
- Chunk size of data (to align EBS vol-ume to your application)

Amazon EFS

At some point, it became clear that EBS may be good for setting up a drive for virtual machines, but what if you want to run an application with high workloads that need scalable storage and relatively fast output? Amazon Elastic File System was created to cater to these needs.

Amazon EFS is automatically scal-able - that means that your run-ning applications won't have any problems if the workload suddenly becomes higher - the storage will scale itself automatically. If the workload decreases - the storage will scale down, so you won't pay anything for the storage you don't use.

You can mount EFS to various AWS services and access it from various virtual machines. Amazon EFS is especially helpful for running servers, shared volumes (like NAS devices), big data analysis, and any scalable workload.

Amazon S3

Amazon S3 stores data as objects in a flat environment (without a hierar-chy). Each object (file) in the storage contains a header with an associated sequence of bytes from 0 bytes to 5 TB. Objects in Amazon S3 are associ-ated with a unique identifier (key), so access to them can be obtained through web requests from anywhere.

Amazon S3 also allows host-ing static website content. It is a highly scalable storage service with famous "eleven nines" data durability (99.999999999%)■

The author is DGM and Practice Head for Data Protection, NTT Com - Netmagic

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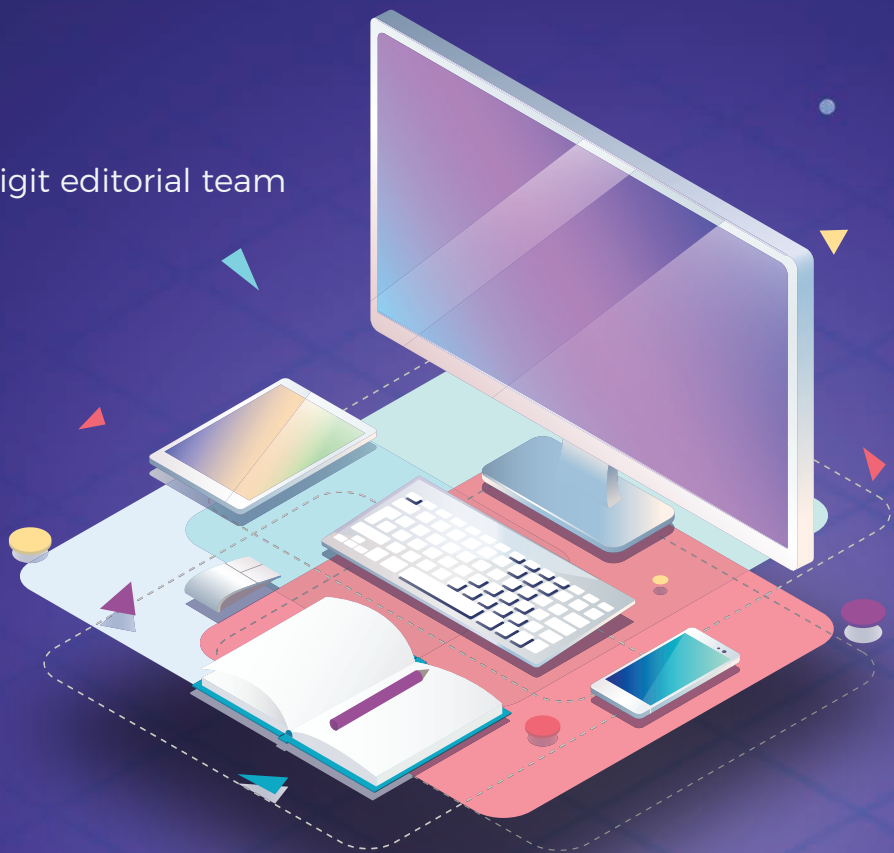
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The Sublime Architecture In Hyper Converged Infrastructure

HCI enjoys a sleek new operational model which removes unnecessary redundant resources (to maintain high availability) and minimal downtime and the management of compute, storage and networking can be done in a single window
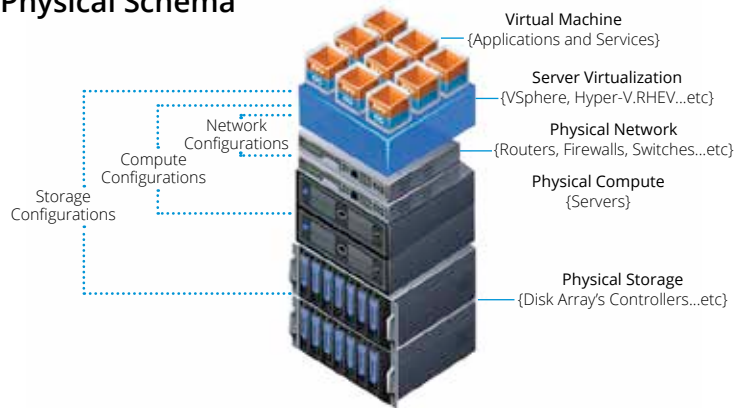
By PM Dutta

The third generation of technology convergence has plumed "Hyper Converged Infrastructure (HCI)" a scale-out software-defined architecture to dated datacenter infrastructure – SDDC. It clubs together compute, storage and network services in an accelerated industry and acclaimed logical unit to deliver scalable and minimally complex infrastructure services in a helically integrated software layer — hypervisor, delivering a plausible virtual computing engine as to the previous DC's required operation wise tagged/ear-marked hardware/s. The advent of HCI has sent the concept of legacy DC's to obsolescence. The SDDCI creates a simple and manageable agile and secured data protection services, high availability and VM mobility built on cloud principles and economy.

HCI consists of 3 software layers: [1] compute virtualization [2] storage virtualization and [3] network virtualization as well as service management. The virtualization software abstracts and pools the underlying resources and dynamically allocates them to applications running in virtual machines or containers. HCI enjoys a sleek new operational model which removes unnecessary redundant resources (to maintain high availability) and minimal downtime and the management of compute, storage and networking can be done in a single window. Advanced smart management features further reduce manual intervention setting a cosy recline to automate entire operation/s in a clocked managed accountability with a perpetual event logging.

HCI Physical Schema

Virtual Machine
{Applications and Services}

Server Virtualization
{VSphere, Hyper-V.RHEV...etc}

Physical Network
{Routers, Firewalls, Switches...etc}

Physical Compute
{Servers}

Physical Storage
{Disk Array's Controllers...etc}

Network Configurations

Compute Configurations

Storage Configurations

Simplification of Operation

CIO's seemed to invoke compute (servers) and storage (external storage arrays) resources separately and then establish an intricate connectivity between these devices to make a shift arrangement. Now each of these augmented components calls in a under par silo operational expertise (often disorganized and in dismay). With sleek manual intervention, HCI reduces such operational costs and continuum to a borderless integration of hardware and software solution/s that eliminates the complexities associated with fibre channel networks, purpose-built storage and complex LUN planning. A thin layered, converged IT team can now monitor and manage the compute and storage resources, freeing IT resources to focus on other strategic priorities.

Total Cost of Ownership (TCO)

HCI Logical Schema

In-house storage arrays brim up within five years of data holding. In addition, augmentation of external arrays workout to be expensive and are often dedicated to networking performance enhancements. HCI allows businesses to lower their CAPEX expense by invoking a scale up/ scale out architecture with industry-standard x86 servers. Focus will be on the compute and storage they need for a short period of time and add capacity as needed.

Phenomena to Agile Managing

HCI can deliver a zero day support for the latest technologies, leveraging the agility to increase application performance from business-critical applications extensible to VDI, without a major infrastructure change. Because of the flash-accelerated capabilities of HCI, virtual desktop interface (VDI) and cloud native applications are common

workloads due to the harnessing of high-throughput, low latency storage that scales out to context. Business-critical applications, such as relational databases have become the primary HCI usage case spectrum.

HCI

The plinth to any digital foundation construe to computing and SAN for hyper-converged infrastructure. SAN helps customers to seamlessly augment to the state-of-the-art data-center with a transition to a high performance experience—expansibilities making HCI software choice for both in premise deployments and on to public cloud providers.

HCI Components

• Enables a virtualization platform
• Storage for virtual machines and containers/cylinders
• Integrated and scalable management solutions

Varied deployment options:

• Resilient integration to multi-vendor platform
• HCI-as-a-Service from the largest HCI cloud ecosystem including top cloud providers like, Amazon, CISCO, IBM, Microsoft, Nutanix, VMware, etc.

HCI delivers:

• Edge technologies porting on diversified range of servers
• Pay for the compute slice (a shift in paradigm) to trim costs
• Simulate a native HCI encryption
• Span to virtual storage and pay for the space used only
• Distributed storage operations
• Freeing up from obsolescence and near zero capex investments
• Application on CaaS, PaaS, SaaS, etc.
• Seamless built up on multi-vendor cloud services
• Minimal redundancy with 99.99% of uptime
• Cutting down bottom-line expenses (TCO)■
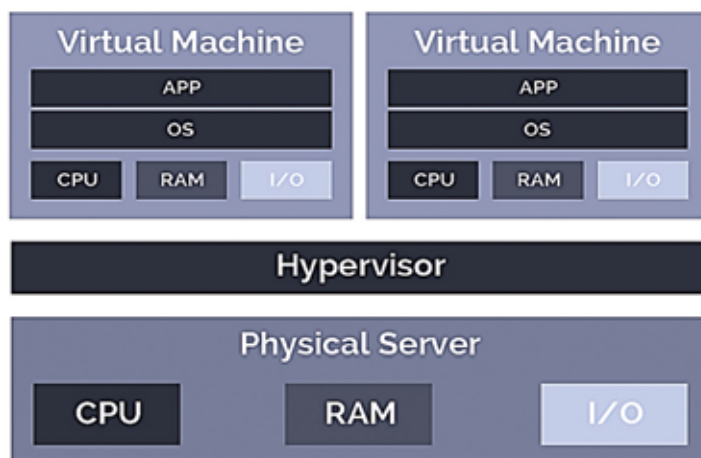
The author is Senior Manager - IT at Balmer Lawrie & Co

Threat Hunting – Need Of The Hour!

To build a threat hunting team, one needs threat intelligence mindset, excellent technology engineers and pro-active tools which can give threat feed of an exploit/ attack vector being seen in world space

By Aditya Khullar

hreat Intelligence – a term we all have heard various times recently. The subject has been under constant scrutiny for a while now, but do we understand it? Moreover, since it has been viewed very differently from different viewpoints of various security professionals, to start with let's get to the crux of it. The ultimate goal is to provide a binary answer to the question, *"Do I have a compromised system in my* *Infrastructure?"* This system can be a server or an EUD (End user device).

To understand about compromised system, there is a wonderful saying by John Strands, *"Beaconing + Blacklisting=OMG! We are in trouble".* This means that any system that makes a continuous connection to a blacklisted IP is a compromised system.

In simple words, threat hunting is the black box that takes input and gives output. What are all the things it encompasses? Well, we

need some way to collect info and figure out whether we are already compromised or not. We also need to understand that those outputs may be a formalized incident handling process put in place, or a team that does forensic investigation of subject, or it might be just a simple policy which says, *"Hey, when a system gets compromised, throw it away and put a new system on the wire."* Even though that may sound silly but that is a possible answer for most of the organizations.

The process of threat hunting spans throughout various technology teams. For example: 'I just found a system which is beaconing to unknown/blacklisted IP?' Now to reach that point, we need a lot of work before and after identifying the system. We require complete scanning of the system, leading to putting in incident response plans in place and after that we turn to forensics mode to get to deeper end of the cause. To resolve this chaos, it is beneficial to implement Pro-active Threat Intel rather than reactive mode monitoring.

All in all, global threats can be listed as the following 5 types:
1. Remote Exploits (Public àPrivate)
2. Local Exploits/ Insider Threats
3. Browser-based attacks (Malicious advertising campaigns)
4. Document based attacks (Malicious attachments like excel files, PPT , Word docs delivered through Phishing campaigns)
5. DOS/DDOS (Volumetric/ Computational and Asymmetric attack vectors)

Then the next Question that arises is, *"We have a lot of tools which gives a lot of feeds and so what is different in threat hunting which makes it difficult to implement?"* In a typical security tool, the process is to collect a lot (I mean tons) of data because it is satisfying to see whole network on a single dashboard, 'it will give data to the management team' and then 'the team will educate itself and find

The process of threat hunting spans throughout various technology teams. For example: 'I just found a system which is beaconing to unknown/blacklisted IP?' Now to reach that point, we need a lot of work...

threats out of it'. And this last part is the distinguishing element of the threat hunting process, in comparison to other mainstream tools.

So going further, *"What are the basic frameworks that could to be used as the helping hand for the threat hunting process?"* One of the most common frameworks that is taken into consideration when talking about the tool is - MITRE ATT&CK framework. It is a curated knowledge base and model for cyber adversary behavior, reflecting the various phases of an adversary's life cycle and the platforms they are known to target. Secondly, while rating vulnerability, always do a manual assessment basis NIST/NVD

calculation with an automated scan using tools like Qualysguard, Nessus, etc.

In the end we should understand that - The process of threat hunting may seem to be a great alternative to proactively monitor assets but a threat hunting program cannot be implemented by every organization.

To build a threat hunting team, one needs threat intelligence mindset, excellent technology engineers and pro-active tools which can give threat feed of an exploit/attack vector being seen in world space◼

The author is Tech Security Leader at Paytm
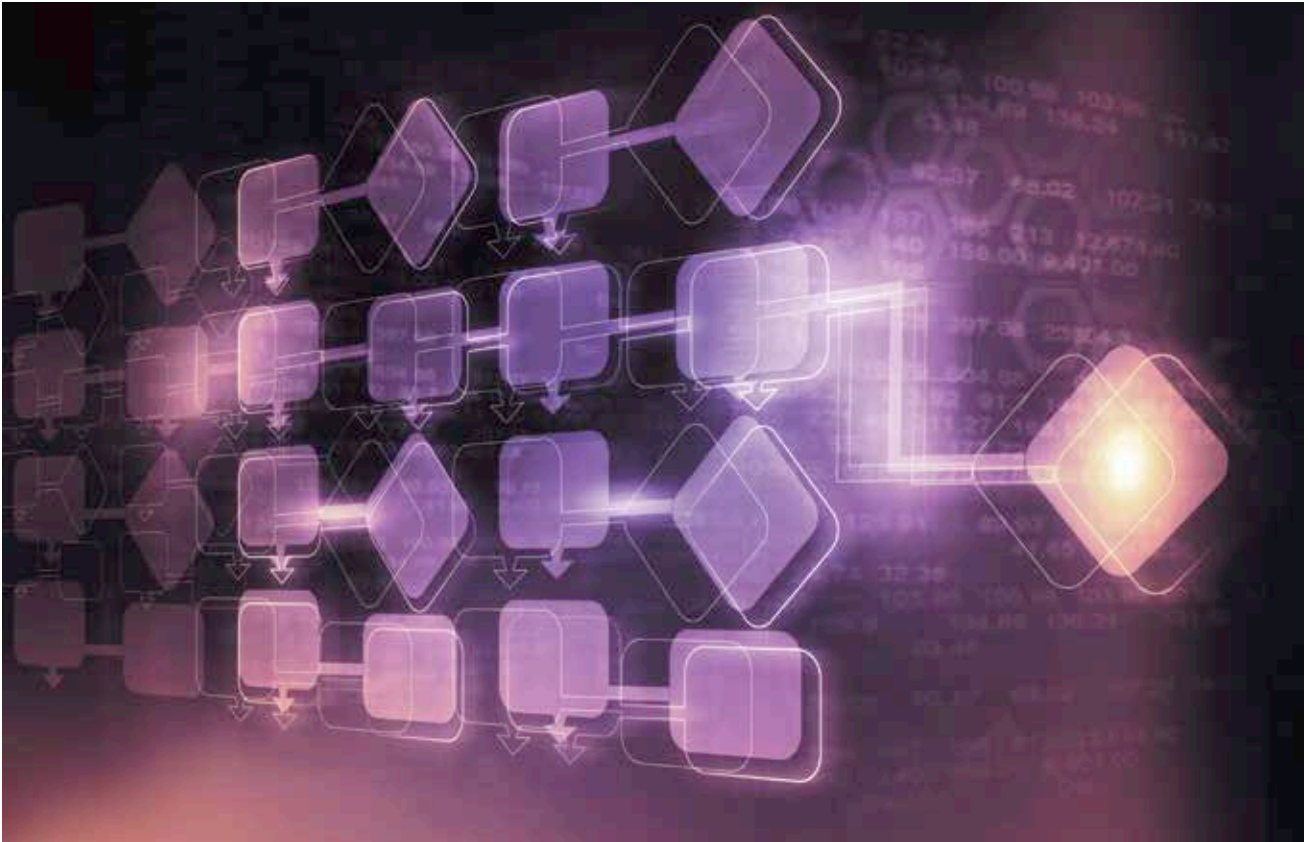
How To Evaluate
And Optimize Your Setup

It is important for application leaders to realize that there is no one-size-fits-all solution for designing their application organizations, but rather a set of trade-offs and choices that must be evaluated before charging forward

By Matthew Hotle

n the application industry, one of the most common questions for leaders is how to choose the "right" structure to achieve optimal business results and delivery for their organizations. The advent of digital business has huge ramifications on the future of the application organization. New models of business engagement, different skills, and the increased number of an organization's applications that directly touch the customer are requiring a different design of the application organization.

There is no "right" way to do it. Add in size, agile, platforms, products, bimodal, pace layers and cloud, and organizational design becomes even more challenging. It is now almost a given that any organization will have to live with a hybrid structure.

A large number of organizational redesigns are unnecessary — and often harmful. This is because they address the structure, but not the operating model itself. This is why application leaders must have forethought and planning. It starts with analyzing the information and technology (I&T) operating model.

Application organizations are not stand-alone entities

The I&T operating model of any organization describes "how things get done." Because the organizational structure component is only one part of an operating model, it is imperative that the structure relates to other components, such as an organization's tools, performance, financials and talent. A change in the organizational structure might result in an unintended change to a different component. Any change to an organizational design causes disruption in delivery for a period of time, typically 6 to 12 months. The moral of the story is that the organizational design matters within the context of the operating model, not separately.

Two basic models for organizing application teams

There are two basic models for organizing an application team: the silo and the system integrator. In the silo model, a senior application manager is responsible for a group of work based on various areas — geography, business function or process, technology stack or product.

It is important for application leaders to realize that there is no one-size-fits-all solution for designing their application organizations. The system integrator model, also referred to as a pooled style, groups similarly skilled individuals together into resource pools or centers of excellence. These pools are based on roles and become the primary mechanism for assigning work.

Deciding which model works more effectively in your organization requires a fundamental understanding of how IT is perceived in your organization. Organizations where IT is a cost center typically choose a silo model. Organizations where the distribution of the IT budget may shift often choose a system integration construct due to its flexibility.

Hybrid organizational structures are the norm

As organizations move toward the cloud and digital delivery, it's nearly

Because the organizational structure component is only one part of an operating model, it is imperative that the structure relates to other components...

impossible for an organization to use only one of the constructs successfully. Given the dynamism of new products, applications, tools and platforms, a hybrid structure is an appropriate approach for application leaders to move toward. A cloud hybrid, for instance, is a popular structure used to move a portion of an organization's application portfolio to the cloud while keeping the remaining portion on-premises or elsewhere.

It is important for application leaders to realize that there is no one-size-fits-all solution for designing their application organizations, but rather a set of trade-offs and choices that must be evaluated before charging forward.

Product-centric delivery organization structure is emerging

The number of organizations using a product-centric approach for a significant amount of their software delivery has doubled in the past two years and is expected to double again over the next four. This increase is driven mainly by two factors: an attempt to reduce cost by using a product construct to rationalize, and the need to adopt agile methods to improve business agility.

This shift also impacts a critical role within the organization: The role of the digital product manager. As of 2018, the majority of digital product managers were located in the technology organization. Gartner expects that, in the longer run, since product management is or will be closely linked to achieving a set of business results, the function will migrate from the technology organization into business teams.

Gartner predicts that by 2023, 65% of organizations that moved to a product-centric delivery model will have embedded their digital product managers in a business area.■

The author is Matthew Hotle, VP Analyst at Gartner

The Evolving Sophistication Of Cyber Attacks

As per Fortinet study, half of the top 12 global exploits targeted IoT devices

Cybercriminals are constantly evolving the sophistication of their attacks—from continuing to exploit the vast insecurity of IoT devices, to morphing open source malware tools into new threats, according to Fortinet's latest quarterly *Global Threat Landscape Report.*

Key findings of the report include:

■ **Exploit Index All-time High:** According to the *Fortinet Threat Landscape Index,* cybercriminals remained hard at work even during a holiday season. After a dramatic start, the Exploit Index settled in the latter half of the quarter. While cyber adversary activity overall subsided slightly, the number of exploits per firm grew 10%, while unique exploits detected increased 5%. At the same time, botnets become more complex and harder to detect. Time for infection of botnets increased by 15%, growing to an average of nearly 12 infection days per firm. As cybercriminals employ automation and machine learning to propagate attacks, security organizations need to do the same to combat these advanced methods.

■ **Monitor the Monitoring Devices:** The convergence of physical things and cybersecurity is creating an expanded attack surface, one that cybercriminals are increasingly targeting. Half of the top 12 global exploits targeted IoT devices, and four of the top 12 were related to IP-enabled cameras. Access to these devices could enable cybercriminals to snoop on private interactions, enact malicious onsite activities, or gain an entry point into cyber systems to launch DDoS or ransomware attacks. It is important to be aware of hidden attacks even in devices we use to monitor or provide security.

■ **Tools Open to Anyone:** Open-source malware tools are very beneficial to the cybersecurity community, enabling teams to test defenses, researchers to analyze exploits, and instructors to use real-life examples. These openware tools are generally available from sharing sites such as GitHub, and as these are available to anyone, adversaries can also access them for nefarious activities. They are evolving and weaponizing these malware tools into new threats, with ransomware comprising a significant number of them. An example where openware source code has been weaponized is the MiraiIoT botnet. An explosion of variants and activity continues to be catalogued since its release in 2016. For cybercriminals innovation continues to be the land of opportunity.

■ **The Proliferation of Steganography:** Developments in steganography are bringing new life into an old attack type. While steganography is typically not used in high-frequency threats, the botnet Vawtrak made the list of "bursty" botnets. This demonstrates increased persistence for this attack type. In addition, during the quarter, malware samples were found to use steganography to conceal malicious payloads in memes passed along on social media. During the attack process after attempting to contact a C2 host, the malware looks for images in an associated Twitter feed, downloads those images, and looks for hid-

den commands within the images to propagate activity. This undercover approach demonstrates that adversaries continue to experiment in how they advance their malware while evading detection.

■ **Adware Infiltration:** Adware is not just a nuisance, it has become a pervasive threat. Globally, adware sits at the top of the list of malware infections for most regions—exceeding one-quarter of all infection types for North America and Oceania, and almost one-quarter for Europe. With adware now found to be in published apps and posted on authorized app stores, this attack type can pose a serious threat especially to unsuspecting mobile device users.

■ **Keeping an Eye on Operational Technology:** With the ongoing convergence of Information Technology (IT) and Operations Technology (OT), a year in review shows the relative change in prevalence and frequency in attacks targeting industrial control systems (ICS). Unfortunately, most attacks gained ground on both scales of volume and prevalence. A cyberattack

that successfully targets an OT system, could result in devastating physical consequences to such things as critical infrastructure and services, the environment, and even human life.

The Need for Integrated and Automated Security

To stay ahead of the ongoing efforts of cybercriminals, organizations need to transform their security strategies as part of their digital transformation efforts. A security fabric is needed to span the entire networked environment from the IoT endpoint to multi-

Half of the top 12 global exploits targeted IoT devices, and four of the top 12 were related to IP-enabled cameras. Access to these devices could enable cybercriminals to snoop on private interactions...

clouds, to integrate each security element to address today's growing threat environment, and to protect the expanding attack surface. This approach enables actionable threat intelligence to be shared at speed and scale across the entire distributed network, shrinks the necessary windows of detection, and provides the automated remediation required for today's threats■

The author is Matthew Hotle, VP Analyst at Gartner
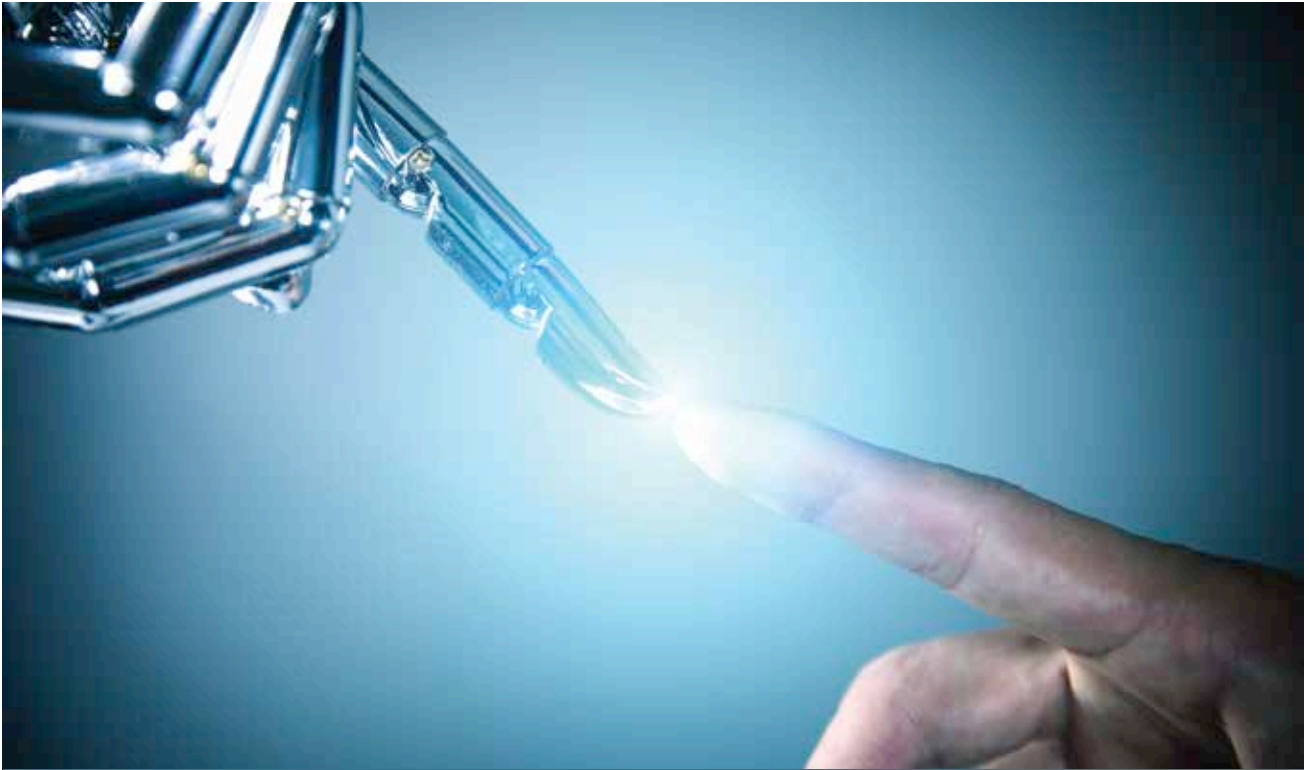
Human Touch In The Age Of Automation

When automation is properly integrated with skilled human intervention, elevating the customer experience becomes a much simpler task

By Sohini Bagchi

Brands are increasingly using Artificial Intelligence (AI) and automation tools to enhance customer experience and bringing trust and transparency. But concerns have been raised over the possible loss of human touch, as level of automation increases.

The human-robot war

Gartner has estimated that by 2020, as much as 85% of the customer interactions by business organizations will be handled without human involvement. Even today, it says, 69% of consumers interact with a virtual assistant or chatbot at least once a month.

So, are bots taking over the most 'human' component of a business – customer service—from human beings? That is a question many observers and business leaders alike have been asking.

Customer satisfaction largely comes from establishing good relationships. These relationships are essential to the success of every business. And without human interaction, there can be no relationship in the first place.

"If you truly value your customers, you cannot just rely on automated interfaces, which has its own limitations," says Krishnan Chatterjee, Chief Customer Officer and Head of Marketing, Indian sub-continent, SAP.

If companies make chatbot their primary customer touch-point, very limited number of queries will actually be handled by the humans, and the business will be at risk, says Chatterjee.

However, he regrets that the biggest challenge companies face today is that their offline model does not provide any experience.

In other words, where a self-service model can allow people to get access to the information or service they need more quickly and easily than speaking with a person, then automation will be appropriate. However, in solving more difficult issues, human interactions would be your best bet as that cannot be resolved by automated interface.

As AI-based voice assistants, chatbots, and self-service kiosks are increasingly making customers' purchase behavior more intricate, Sridhar Narayan, Enterprise Manager, Digital Transformation at Adobe India believes there is a need to find the right balance between digital and human interactions.

"Companies need to focus on customer's convenience, fast and reliable service, personalization, and the use of technology to their advantage. And a hybrid approach that incorporates automation with live agents can become an indispensable tool for customer service," he says.

A new report from MIT Technology Review, sponsored by Genesys, reveals that iconic firms are more likely to recognize that automated AI tools are most effective when they supplement and extend the capabilities of their customer support team, rather than replace human investment. The reports noted that 91% of "iconic" companies – those that maintain both the highest levels of customer experience satisfaction and have world-leading brand recognition – deploy technologies, such as virtual assistants, chatbots, big data analytics and also had the right mix of human experience to increase customer satisfaction.

Iconic companies are also nearly three times as likely to consider leadership in technology adoption as a crucial component of maintaining customer experience excellence. These firms invest heavily in training and re-skilling programs offered by various bodies to prepare employees

Customer satisfaction largely comes from establishing good relationships. These relationships are essential to the success of every business

for the futureand successfully manage customer relationships.

Tech firms, who earlier relied on data scientists, design thinking specialists and those with computer science degrees are now hiring people from liberal arts. Deborah Harrison and Jonathan Foster, brains behind Microsoft's Cortana, explained in a recent interview that by involving people from the humanities – artists, philosophers, journalists and playwrights – "we are encouraging them in creative problem solving and thinking outside the box and more importantly looking at bringing more humanness to technology."

In her company blog, EY Global Accounts Committee Chair Alison Kay mentions that our intelligence combines both cognitive and sensory abilities, something that AI – despite its speed and computational power – still struggles with.

There are attributes that are uniquely human, say for example, empathy and judgment where computers cannot fathom. So, while AI and robotics are here to stay, so is this truth: Organizations are ultimately a collective of people, working and making decisions together.

Striking the right balance
While robotics and AI are here to stay and machines will make things easier for both agents and customers, businesses need to invest in people's uniquely human attributes, to ensure them a meaningful future. Humans must step in when something goes wrong or processes involve greater empathy and care.

Hence, the best solution for managing customer relationships would seem to draw from combining both; the efficiency of automation with human engagement.

It's important for companies implementing automated processes to recognize when a person should take over and find the right balance of automation and human interaction for delivering the highest quality of customer experience■
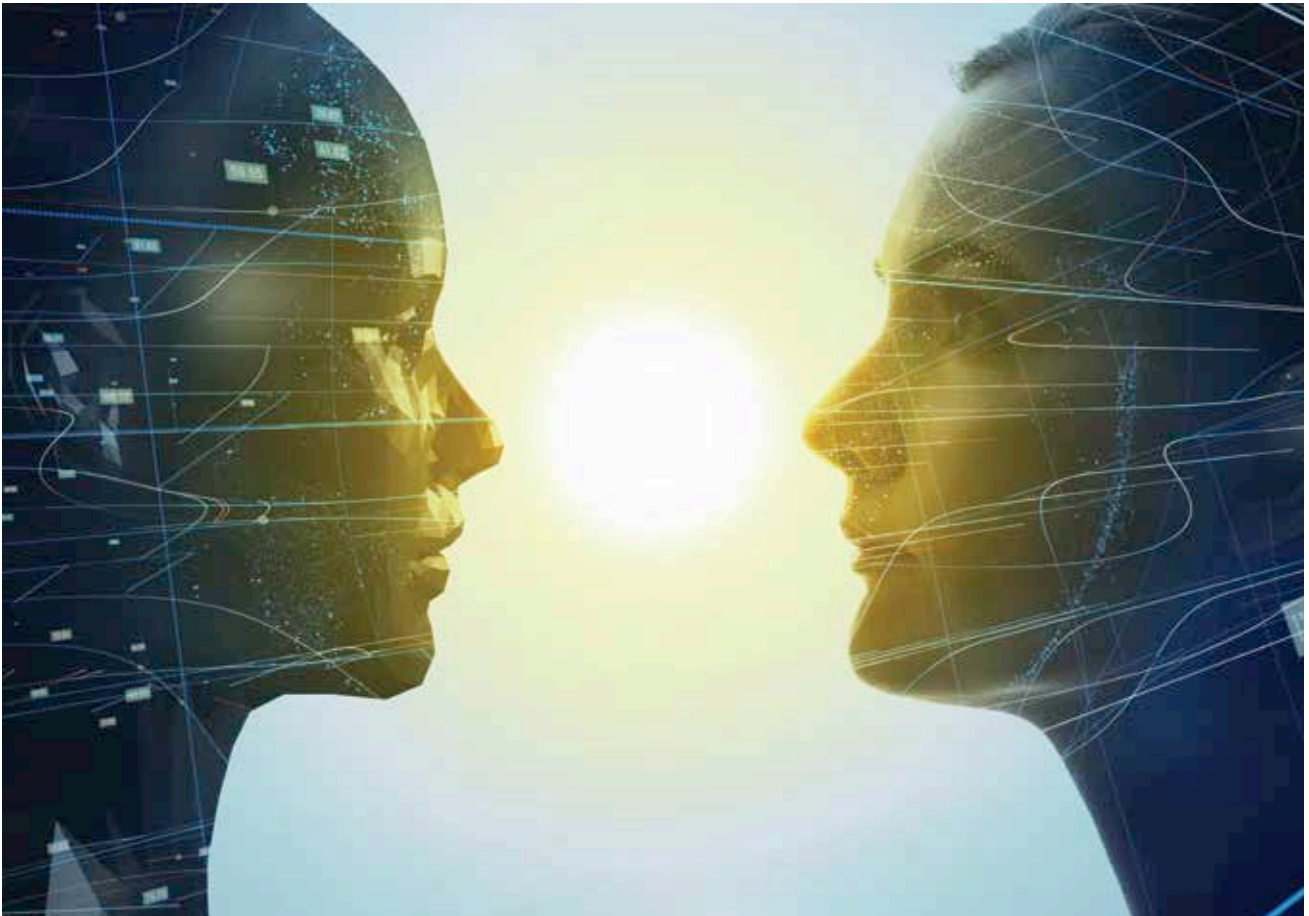
Digital Twins Enter Mainstream Use: Gartner

13% of organizations implementing Internet of Things (IoT) projects already use digital twins, while 62% are either in the process of establishing digital twin use or plan to do so

13% of organizations implementing Internet of Things (IoT) projects already use digital twins, while 62% are either in the process of establishing digital twin use or plan to do so, according to a recent IoT implementation survey by Gartner.

Gartner defines a digital twin as a software design pattern that represents a physical object with the objective of understanding the asset's state, responding to changes, improving business operations and adding value.

"The results — especially when compared with past surveys — show that digital twins are slowly entering mainstream use," said Benoit Lheureux, research vice president at Gartner. "We predicted that by 2022, over two-thirds of companies that have implemented IoT will have deployed at least one digital twin in production. We might actually reach that number within a year."

While only 13% of respondents claim to already use digital twins, 62% are either in the process of establishing the technology or plan to do so in the next year. This rapid growth in adoption is due to extensive marketing and education by technology vendors, but also because digital twins are delivering business value and have become part of enterprise IoT and digital strategies.

"We see digital twin adoption in all kinds of organizations. However, manufacturers of IoT-connected products are the most progressive, as the opportunity to differentiate their product and establish new service and revenue streams is a clear business driver," Lheureux added.

Digital Twins Serve Many Masters

A key factor for enterprises implementing IoT is that their digital twins serve different constituencies inside and outside the enterprise. 54% of respondents reported that while most of their digital twins serve only one constituency, sometimes their digital twins served multiple; nearly a third stated that either most or all their digital twins served multiple constituencies. For example, the constituencies of a connected car digital twin can include the manufacturer, a customer service provider and the insurance company, each with a need for different IoT data.

When asked for examples of digital twin constituencies, replies varied widely, ranging from internal IoT data consumers, such as employees or security over commercial partners

This rapid growth in adoption is due to extensive marketing and education by technology vendors, but also because digital twins are delivering business value and have become part of enterprise IoT...

to technology providers. "These findings show that digital twins serve a wide range of business objectives," said Lheureux. "Designers of digital twins should keep in mind that they will probably need to accommodate multiple data consumers and provide appropriate data access points."

Digital Twins Are Often Integrated With Each Other

When an organization has multiple digital twins deployed, it might make sense to integrate them. For example, in a power plant with IoT-connected industrial valves, pumps and generators, there is a role for digital twins for each piece of equipment, as well as a composite digital twin, which aggregates IoT data across the equipment to analyze overall operations.

Despite this setup being very complex, 61% of companies that

have implemented digital twins have already integrated at least one pair of digital twins with each other, and even more — 74% of organizations that have not yet integrated digital twins — will do so in the next five years. However, this result also means that 39% of respondents have not yet integrated any digital twins; of those, 26% still do not plan to do so in five years.

"What we see here is that digital twins are increasingly deployed in conjunction with other digital twins for related assets or equipment," said Lheureux. "However, true integration is still relatively complicated and requires high-order integration and information management skills. The ability of to integrate digital twins with each other will be a differentiating factor in the future, as physical assets and equipment evolve."■

Double Scoop

Two times the revelation

MY FAVORITE WEB SHOW

Inside Edge
(on Amazon Prime)

Pragnesh Patel
General Manager - IT
Reliance Power

MY FAVORITE TECH TOOL

Reliance Information Assistant (AI-powered Interactive Information Assistant)

A TECH IDOL I LOOK UPTO

Ashish Chauhan, MD & CEO, BSE

A PLACE WHERE I WOULD LOVE TO GO:

Switzerland

A FESTIVAL WHICH I LIKE THE MOST

Holi

MY PEER IN THE IT COMMUNITY

Devesh Arora
Consultant, Infosys

MY FAVORITE SPORTSPERSON

MS Dhoni

A TECH SHOW I FOLLOW

Click (on BBC)

MY FAVORITE POLITICIAN

Atal Bihari Vajpayee

MY FAVORITE CUISINE

South Indian

AN EMERGING TECH THAT'LL HAVE MASSIVE IMPACT IN 2019

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Launch video conference calls quickly with collaboration keys saving you time and boosting productivity.

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Our most secure and manageable PCs

First-class security and manageability with features that provide automatic threat detection and system recovery.

Name	Contact	Email	Address
Mr. Sunil Sutar	9920610402	sunil.sutar@mpcl.in	Micropoint Computers Pvt Ltd. 17/18, Navketan Estate, Opp. ONIDA, Mahakali Caves Rd. Andheri (E), Mumbai – 400 093
Mr. Parag Suvarna	9892890696	parag@mpcl.in	