
AGENDA 2020
A Strategic Document
for Indian CIOs
99MEDIA

AGENDA 2020 TEAM

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Content

Welcome to Agenda 2020

It gives me great pleasure to bring to you Agenda 2020, the book that you are holding in your hands.

It is just one more way of our facilitating useful and effective interactions within the community. While our editorial team has done its bit to enhance the usefulness of the book, the core of the book essentially remains a labor of love by your fellow CIOs. It is truly for the CIOs; by the CIOs; of the CIOs.

As you can see, it is not a how-to guide. We could never have done that for thousands of companies from so many verticals and sub-verticals, of varying sizes, each following its own IT adoption cycle.

All that the book does is to channelize the practical insights of some of the leading CIOs in India to create an agenda that is forward looking but actionable. As you can see, it does not try to sound futuristic. It just tries to help you choose and prioritize; for some of you, it just makes you raise questions for yourself; for some others, it may just help in adding a little method to the madness; and for yet others, it may just serve as a confidence booster; you get to know the thinking of your fellow CIOs from leading companies.

The core content of the book comes from the deliberations of the CIOs during our recent annual conference at Udaipur. It would be impudent on my part to even thank them. It is essentially their work!

However, I will just like to mention the zeal with which some of them worked on this. While there was dedicated time for formal deliberations, some of them worked till 3.30 am in the morning to ensure that nothing but the most useful stuff goes into the book.

But ultimately, it is for you to judge. We will love to get your feedback on the book, especially as it is a completely new effort.

Finally, I will like to thank our partners for all their help and support. I would also like to acknowledge the efforts put up by my colleagues at 9.9 Media in running this program and producing the book in time.

Wishing you all the best in your journey to 2020.

Vikas Gupta
Director, 9.9Media & Publisher, CIO&Leader

Channelizing the Power of the Community

Shyamanuja Das
Managing Editor, CIO&Leader

last year, we ran a survey among CIOs about their media habits. On being asked what they turn to for information regarding new technologies and solutions, most of them replied it is 'talking to peers'. Talking to fellow CIOs was ranked above sources such as specialized media and analyst reports.

While it sounds so logical now, I would be lying if I say I was not at all surprised. We always knew that community is a great source for getting answer to specific questions; but for it to rank as the top source of 'information' meant it was time to make that process smoother; and scale it up.

The desire to do something to facilitate this task was born on the very day we saw those findings, though we were not sure what would be the exact way to take it forward.

When we started planning for CIO&Leader Annual Conference, our largest community engagement program, we knew this was the platform we could leverage to give shape to that desire of facilitating something 'for the community, by the community', in a formal and scalable manner.

Agenda 2020, the book that you are holding, is the outcome of that desire. The Prologue in the book which will tell you how we did that.

As Vikas writes, this book is a labor of love by your fellow CIOs—some of the most prominent among them—for you. All we have done is to facilitate that process. While doing so, there may be some gaps and omissions. They are all ours. All the great insights come directly from the participating CIOs.

This is essentially an agenda book and not a how-to book.

Finally, I would request you to share with us any other great ways of facilitating formal intra-community knowledge sharing that comes to your mind. We will try to use our platform to give shapes to some of those ideas.

Share all your feedback with me directly at *shyamanuja.das@9dot9.in*

Prologue

Agenda 2020 is a strategic agenda document for Indian CIOs. It suggests priorities for their journey to 2020 and has been prepared by a group of leading Indian CIOs.

The year 2020 is round the corner. It is not so near to plan low level execution. It is not so far to do kite-flying. For the CIOs, it is just the right time to finalize their priorities. *Agenda 2020* is designed to help in that exercise. It suggests a broad strategic agenda for 2020—an agenda that is actionable!

However, *Agenda 2020*, is not about the action itself. It is not a how-to book. As the name suggests, it is an agenda book; it helps the CIOs to set their agenda.

It concerns itself mostly with 'what', not so much with 'how' but in some cases those two are too interwoven.

By no means, it is the only such agenda available. A lot of consultants, experts and research firms have published similar agendas and in some of them reflect their expertise and understanding of the areas quite adequately. But an agenda should be actionable. It is difficult to even believe that someone else can create your agenda.

We thought the best people to create an *Agenda 2020* for the Indian CIOs are not the consultants, not the researchers, not us—but the Indian CIOs themselves. We did what we do best; we facilitated it.

And guess where? In the 18th CIO&Leader Annual conference, where some of the top CIOs converged. It was one of the top agenda items of the conference.

To reiterate, *Agenda 2020*, is a set of actionable priorities for Indian CIOs, keeping in mind multiple vectors that could influence the strategic priorities—technology trends, business environment, macroeconomic changes in India and in the world.

Agenda 2020 touches the entire range of enterprise technologies—mature and emerging—as well as management priorities such as talent management and diversity.

The topics were decided after thorough research by CIO&Leader editorial team and consultations with selected CIOs.

Methodology

Agenda 2020 has been prepared with the involvement of most of the participating CIOs in the 18th CIO&Leader Annual at Udaipur. All the CIOs were divided into 18 working groups. Each workgroup worked on one specific topic, which appears as one chapter in this book.

Each working group was led by a chairperson, a senior CIO. Some working groups were supported by some of our partners by nominating one of their representatives. See table for the list of such topics and the associated partners (from technology suppliers community).

CIO&Leader circulated a basic brief on each of the topic to the respective chairpersons. It also shared a framework for presentation, with full independence to chairpersons to modify it as needed.

While the chairpersons were decided by the team of editors at CIO&Leader, members of each group were selected through draw of lots. The names of chairpersons and other members of the working group appears under the heading panelists in each of the sections.

After being briefed on the first day of the event, dedicated time was given to all groups for deliberation on the second day while they were free to work on it till the time of the presentation which was scheduled for the last day. They were more than welcome to work on the topic even after the formal session. And many did. Some groups sat till late night to work on the agenda!

The presentations were handed over to the CIO&Leader editorial team which compiled them, edited them and added some supplementary information such as tables and charts. They also added an introduction to each chapter to set the context.

How to use it?

This book is not a how-to book. It is difficult to do a how-to book of 100 odd pages for CIOs of organizations of various size, various industries and various levels of IT maturity.

The greatest use of this book is to gauge where you stand in the areas specifically identified by the panels; and what you may aim for by 2020. What it helps you do is that it gives you the following

» A broad idea about where you stand
» What are the possible agenda items for 2020 in a specific area
» Enough knowledge about state of the market to talk to technology suppliers with confidence

Needless to say, if you have started the journey definitely in some areas, you may find the information very basic in that chapter. We have tried to keep it for the broad community. We have tried to keep it as a starting point.

Have a fruitful journey to 2020.

Working Groups & Chairpersons

Working Group	Chairperson
Cloud & Infrastructure (supported by Sify Technologies)	Vipul Anand, Group CIO, Jindal Steel & Power
Enterprise Mobility	Chander Khanduja, CIO, Luminous Power Technologies
Internet of Things	Alok Khanna, Executive Director - IS, Indian Oil
Artificial Intelligence & Machine Learning (supported by Microsoft)	Deepak Agarwal, Executive Director - IS, Indian Oil
BI & Analytics (supported by Teradata)	Lalit Popli, Head IT, ICICI Prudential Asset Management Co
Blockchain	Suesh A Shan, Head, BITS, Mahindra & Mahindra Finance
Customer Experience Management (supported by Aspect Software)	Deepak Sharma, CDO, Kotak Mahindra Bank
Smart Manufacturing	Amit Shukla, Group CIO, Kirloskar Brothers
User Experience	Pratap Pat Joshi, Head IT, Mercedes Benz India
Digital Enterprise (supported by Microsoft)	Rupinder Goel, Global CIO, Tata Communications
Managing IT	N Jayantha Prabhu, Group CIO, Essar Group
Reskilling	Suresh Kumar, Partner & CIO, Grant Thornton
GenNext	Aneesh Nair, CIO, NDTV Global
Transformation (supported by Sify Technologies)	Puneet Kaur Kohli, Group EVP & CTO, Bajaj Capital
Governance, Risk & Compliance	Sanjay Moralwar, Global CIO, Cadila Healthcare
Business Continuity	Ashish Mathur, CIO, Maersk GSC
Cybersecurity	K K Chaudhary, ED & Head IT &IS, Lanco Infratech
Securing Critical Infrastructure	Sanjay Prasad, CIO, Tata Power


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2
Preparing for the Session


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AVAYA
SUMMIT
CIO@2020
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14
User Experience


#CIO2020
AVAYA


15


17
Blockchain & Digital Ledger


CIO@2020
#CIO2020


4
AI & Machine Learning


Qlik
sas


9


Hewlett Packard Enterprise
stfy
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10


Hewlett Packard Enterprise
stfy
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18
BCP/DR/ Reliability


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Core Technologies

Cloud & Infrastructure

From Cloud-First to Cloud-Only

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Cloud computing is more than a decade old. Organizations have moved beyond the experimentation stage to a point where it is at the core of business transformation. Gartner predicts that by 2020, a corporate "no-cloud" policy will be as rare as a "no-internet" policy in 2017.

While cloud security continues to remain a concern for CIOs, they will have to think about protecting data in the cloud, ensuring platform availability and building an overall IT SLA on top of cloud.

The beginning of a cloud -only journey has to defined by the desired role the organization expects it to play in the organization. A majority of enterprises already have a multi-cloud strategy and private cloud adoption is seeing a gradual drop.

In short, becoming cloud-only will have a huge economic advantage, and organizations that aren't fully leveraging the cloud by 2020 will be at a competitive disadvantage in their market.

Our panel of CIOs feel that CIOs have a great responsibility on their shoulders when it comes to cloud.

The Panel

CHAIRPERSON

Vipul Anand

Group CIO

Jindal Steel & Power Limited

Ilango Nadar

Sr GM IT

UltraTech Cement

Manikkam Subramaniam

Sr VP IT

Heritage Group

Gaurav Agrawal

VP

Product - DCT & Cloud

Sify Technologies

What is the right time to migrate to the cloud?
» Identify where you are
» Govern how and when
» Define where you want to be

Why should I adopt a multi-cloud strategy?
» Faster access to infrastructure and IT resources and services
» Greater speed-to-market and global expansion
» Business continuity and disaster recovery

Impact on Business
» Better agility
» Higher efficiency driven by automation
» More self-service IT
» Openness for experimentation and innovation
» New business opportunities

My cost of compromise?
» IT buffet – take what we want and how much we want
» Remove when we don't need it
» Pay for what we use – fixed, variable | by hour or year or both

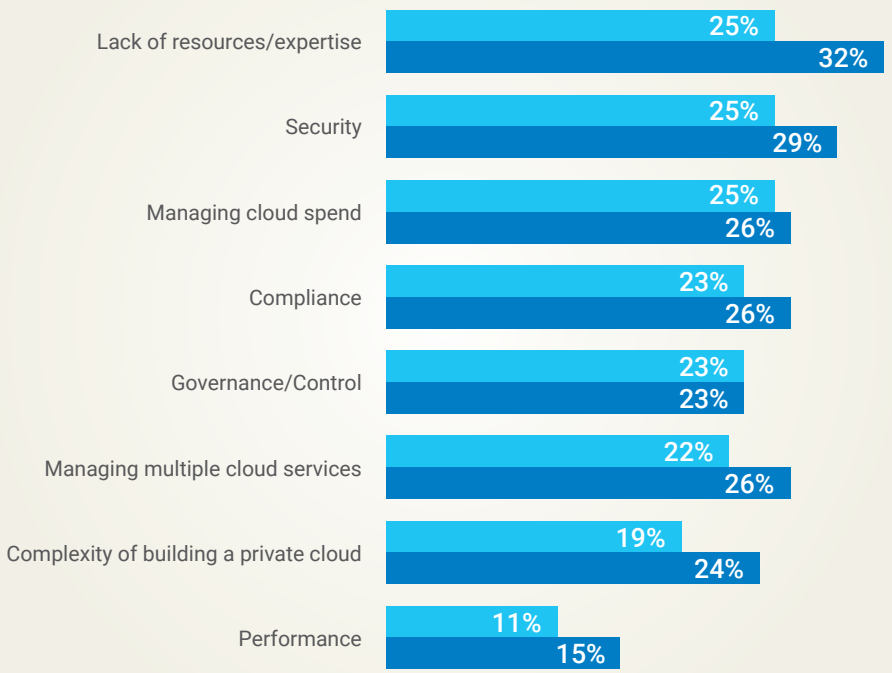
Partner responsibility and co-own liability?
» End to end management
» Cloud security is a shared responsibility
» Resolve integration issues
» Introduce new functionality and improvements
» Seamless connect to cloud & content hubs via cloud/DC interconnect

Surrounding ecosystem readiness
» Determine your needs for legacy applications migration
» Build resilience
» Choose the right cloud vendor(s)

Key cloud tenets
» On Demand
» Agility
» Self service
» Instant delivery
» Reliability
» Flexible cost models

Importance in2020?
» Ease of use and speed
» Traditional forte of enterprise IT losing relevance

Cloud Challenges 2017 vs. 2016

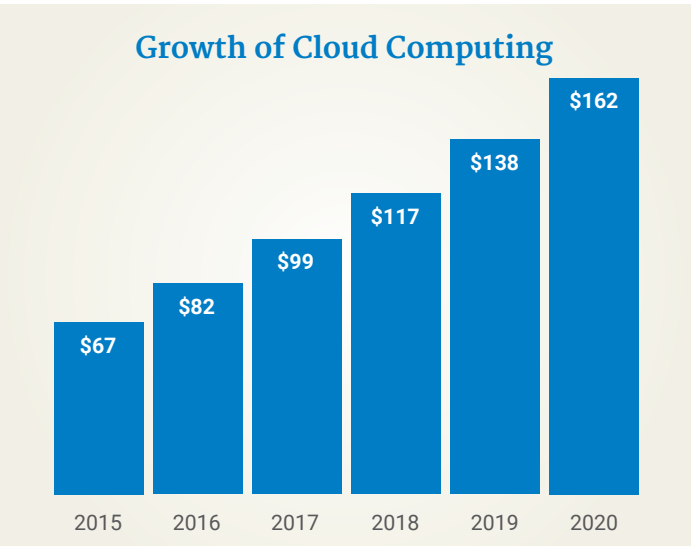


Source: RightScale 2017 State of the Cloud Report

» Cloud at the core of IT Transformation
» Creation of new digital businesses
» Upgrade existing, non-mission critical applications

Cloud @ 2020

» Hyper Scalability
  • Focus on business growth – IT platform will deliver..
» Hyper Flexibility
  • IT buffet – take what we want and how much we want, remove when we don't need it
  • Pay for what we use – fixed, variable | by hour or year or both
» Hyper Automation
  • Leverage the Global best practices and features built to deliver high Automation
» Solution Breadth
  • Wide breadth of services required to build Digital platform faster pace of technology adoption and deliver business outcome



» Global IT Platform
  • Reach to new markets seamlessly
  • Get IT closure to our end users. Place IT, where it matters most
» Pace of Innovation
  • Blurring of cost and time required for testing new Technologies enables business to innovate faster
  • Shortens the PADC cycle

Challenges

» End-to-end security
  • It is a shared responsibility
» Data availability
  • Cloud offers platform availability; data protection is our responsibility
» Infra/platform SLA
  • Cloud offers component SLA; we need to build overall IT SLA on top of that

Strategic cloud roadmap for 2020

» Carry out internal assessment for organization's cloud readiness
» Identify the low-hanging fruits and plan migration
» Deploy cloud-enabled technology as part of Data Center transformation
» Build internal champions and skillsets to drive this Change
» Leverage Partners for POC's & carve out a plan of action
» Build a 3-5 year Multi-Cloud Risk Governance Framework
» Remember to make choices keeping 2020 in mind
» Go for partners who have multi-cloud capabilities

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Enterprise Mobility

Better products, services...no less

In the cloud-based apps economy, the role of mobility within a business has gone through a fundamental shift. It is creating newer opportunities which were difficult to even imagine just a couple of years back. For some businesses, the changes have been truly disruptive. Mobility, for example, has been the fundamental building block in the entire Fintech revolution in India. The entire Digital India plan of Indian government has been based on mobility as the backbone.

Even the basic definition of enterprise mobility has gone through a change. From primarily being about mobile device management, now enterprise mobility encompasses application management, identity management and content management. In a young country like India, businesses—especially B2C businesses—have taken a mobile-first approach in functions such as marketing and customer service.

A multitude of factors such as a shift to digital delivery of services, falling data cost, a shift to cloud , increased dependence on apps and advent of technologies like IoT is making mobility a complete new proposition.

In short, mobility has transformed from a productivity enhancer to a business value booster in true sense. Expectedly, the traditional approach to enterprise mobility is not relevant anymore.

It is only apt that our panel recommends a strategy for 2020 that aims at delivering better product and service—not just cost-savings—using mobility.

The Panel

CHAIRPERSON

Chander Khanduja

CIO

Luminous Power Technologies

Gopinath TK

Head IT

The BKC Bank

Nagarajan V

Head, IT Infrastructure

Britannia Industries

Prasad Patil

CTO

JM Baxi Group

Vivek Vishnu

CDO

Intex

The Case for Mobility

» Consumerization of computing at hyper scale became a reality due to the vast adoption of mobile platform
» Last mile consumption of information has moved to smart devices
» Applications today are designed for smart device first interface
» The present and future consumer will be a "Mobicitizen" which forces enterprise to have a Smart Devices first strategy
» Businesses no longer operate in the confines of the offices and have moved to a mobile enabled ecosystem for continuous engagement
» Mobility has become a business differentiator due to impact at product and service level competitiveness
» Enhancement of connectivity infrastructure and penetration of cloud in enterprises has had a symbiotic impact on adoption of mobility

Vectors driving mobility adoption in India

Enterprise mobility is growing rapidly in India due to

» Adoption of applications in enterprise like ERP, CRM, SCM, Fleet and workforce management, billing and unified communication
» Proliferation of low prices smart devices in Market
» Enhancement of 3G coverage in country and recent launch of 4G services

Business changes

» Need for constant connectivity real time exchange in organizational information processes
» Demand for high productivity levels
» Accurate last mile capture of business processes
» Geographically spread workforce
» Work from home and BYOD adoption

Demographic/Market needs

» Millennials driving use of Smart devices
» Superior user interface and user experience expectations
» Focus on last mile applications to end users in rural India of solutions in agriculture, micro finance, education, etc

Regulatory/Policy

» Digital India drive by Government
» Broadband push across rural sectors in India
» Center and state e-governance drive for digitization of all documents

Macro-economic factors

» Rise of the middle class with spending capabilities
» Intensive competition in the mobility solutions market
» Proprietary nature of solutions in mobility market with lack of SOA

Threat considerations

» Data security against theft in form of ethical hacking, industrial espionage, etc.
» Lawful interception by governmental agencies at ISP solution providers Infrastructure

State of the Technology

1. Customer experience
Reimagining business ina mobile world, human-centric design, managing the multi-channel challenges and finally, customer centric IoT

2. Big and small data insights
Solving problems with data vs a focus on tools, fast access to data and data sriven organizations

3. Devices
Who will be the leaders in 2020? What's happening with wearables and what impact will virtual and augmented reality have?

4. Technology
The winners in cloud, hybrids taking over and accelerating development with DevOps

5. Big innovation for innovators
Innovation labs are failing and how blockchain, AI assistance and software in the car may impact you

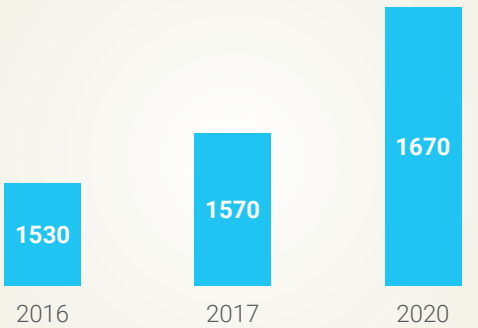
Challenges

» Absence of definite mobility strategy with long term defined benefits.
» Fragmented ecosystem owing to multiple business relationships (B2C, B2B, B2E), platforms, tools, devices & enterprise backends create lots of issues.
» High initial cost of implementation for mobility strategy.
» Devising end-to-end solutions

Overcoming Challenges

» Having a structured approach to mobility
» Understanding the stakeholders requirements thoroughly for maximizing the returns on investment

Enterprise Mobility Market Size*



*USD billions
Source: IDC

» Focus on solutions that stitch multiple technologies using mobility
» Use of variety of best in class platforms, tools, reusable frameworks through Internal capabilities and strategic partnerships for quicker delivery

Suggested Roadmap for 2020

As mobility moves from a new initiative to a foundational capability, the initial barriers have been reduced.

» Initial budget and development talent are in place
» The obvious apps have been created. Now the real work begins
» How can you find the next revenue generating app for your organization?
» How can you make sure that the apps reach as many users as possible?

Steps

A. Build on maturity by scaling your programs in both breadth and speed
B. Determine the market penetration of your custom app
C. Involve end users in App development
D. Contain complexity and maximize flexibility
E. Create a pipeline of great app ideas

The end goal should be to deliver better products, services and cost efficiencies through a focused and sustained endeavor leveraging mobile-enabled digitization

Emerging Technologies

Internet of Things

The challenges and opportunities of IoT

The coining of the term 'internet of things' is as old as the millennium bug. However, as we know it, the technology has been around for several decades since the inception of the internet. In the early 70s, a Greek-American scientist, Theodore Paraskevakos, invented the earliest known IIoT device: The smart meter. This automatic meter reader collected consumption and diagnostic data from energy metering devices and transmitted it to a central database for billing purposes. In the early 90s, the first toaster was connected to the internet.

Since then, the importance of IoT has only grown in Indian enterprises. The history of technology is proof that leaders have a tendency to label a trend as 'hype' when they don't understand its relevance in their industry.

According to a recent Gartner report, as IoT expands its senses, the CIO will be asked to step up and lead the effort. In three years, Gartner predicts that more than 10% of new IoT products from traditional industries will be headed up by the CIO. They will not only exploit IoT to improve efficiencies, save costs and enhance asset utilization, but also use the benefits to alter customer experience or improve revenue.

The Panel

CHAIRPERSON

Alok Khanna

ED– IS

Indian Oil Corporation

Selvan Mohan

AVP-IT

IndiaNivesh Securities Ltd

Sreeram Melarkode

SVP & Head - Business Solutions

Edelweiss Financial Services

A Sathyanarayanan

GM-IT

Ashok Leyland

Subrato Das

CEO

Calcutta Stock Exchange

Interpretation of the technology

» IoT is to be seen as an extension of OT with connectivity through the internet for providing AI services/ Analytics through cloud
» IoT data can be used to gain insight into business processes, tools, and predict customer behavior
» It improves efficiencies, save costs and enhance asset utilization
» It opens the doors to innovation, new business opportunities
» It can serve as a strategic as well as tangible asset for organizations

The Relevance of IoT for all industries

» Absence of relevant use cases in the industry
» According to an IDC report in 2016, industries that lead in the adoption of IoT include financial services (including insurance), retail, and manufacturing. Lagging sectors include government, healthcare, and utilities.

The scope of IoT implementation in your organization

» Internal – for production /process line
» External - Connecting with customers / vendors/ products

Shoud IoT be deployed for:

» Revenue Generation
» Process Improvement
» Both
» None

Challenges of IoT

» A customer would require an end-to-end solution i.e providing sensors, connectivity, secured data transfer, AI engine on cloud, Alert mechanisms and seamless integration with customer's enterprise systems.
» Absence of any use cases in industries
» Lack of standardized protocols/ API for connected devices
» Unavailability of robust/ certified sensors for industrial applications e.g. PESO certification for Oil and Gas industry
» Cost of investment may deter some organizations

Risks of IoT

» Companies are going to protect, use, and share your information
» Check for availability of IoT-based devices will be important to avoid potential operational and service failures
» Find out what types of security processes are being used to develop the software/ internet connected-device

» Detect malicious activity, but also improve customer support efforts and improve the services being offered to the customers
» How to protect, use and share IoT data
» The security concern in a single end user scenario like retail customer is relatively less
» Any cyber security attack in an industrial setup may hamper / bring down production in sensitive sectors such as Power/ Oil and Gas

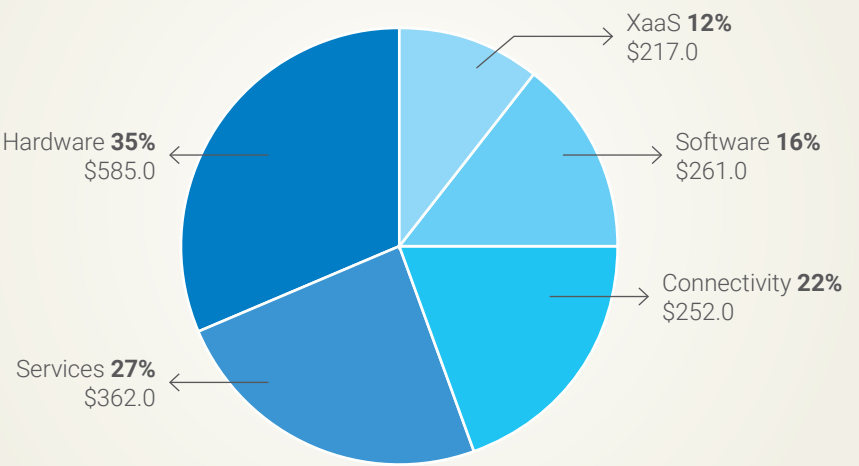
Potential drivers of IoT in India

» Rapid Digitalization
» The manufacturing sector
» The convergence of IT and OT creates a new revolution
» Cloud and big data adoption
» The decrease in the cost per CPU memory, storage and processing
» Devices such as sensors have proliferated

Strategic Roadmap for 2020

» There is scope for enhancing customer experience or business value.
» This will help the company to upgrade services to the next level
» An industry will have a specific application of the IoT and must identify the need for IoT and implement it.

Investment in IoT solutions: An exponential growth path



Worldwide Internet of Things Forecast, 2015 – 2020," IDC, May 2015

IoT is seen as an extension of OT with connectivity through the internet

Artificial Intelligence & Machine Learning

Defining the Future

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Artificial Intelligence is the defining technology of our age. Written off in the late early 90s, it has made a comeback in the last few years and how!

Greater computing power to handle large volumes of data has given this rebirth to AI. It is one of the two foundation stones on which the idea of the 4th Industrial Revolution rests. While IoT brings about the fusion of physical and digital, AI enables the marriage of physical and biological.

Gartner says AI will be ubiquitous by 2020.

While the obvious applications—from industrial robots to chatbots—are already being tried commercially, it has been demonstrated convincingly that the scope is much broader. The truth is: AI can be used to enhance almost anything—in shopfloors to management decision making; from customer service to proactive cyber security.

On the other hand, the potential downside is so much that Tesla founder and OpenAI chairan Elon Musk calls it 'vastly more risky than North Korea'.

Since the potential upside and downside of AI is huge, businesses need to find their use cases taking into consideration various factors—from business outcomes to culture and social issues.

Our panel calls for responsible use and not to get 'seduced' by AI, even while offering tips both at strategic level and with examples to try AI for maximizing business value.

The Panel

CHAIRPERSON

Deepak Agarwal

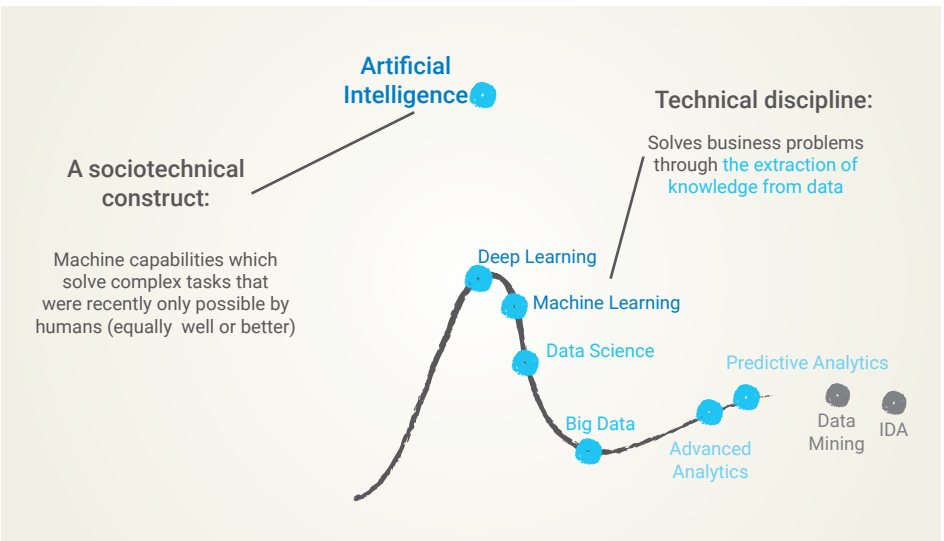
ED– IS

Indian Oil

Neehar Pathare

VP ICT

63 Moon Technologies



The Possibilities

» Through machine learning, a smart machine can change its future behavior
  - By analyzing vast databases of medical case histories, "learning" machines can reveal insights in treatment effectiveness. They can apply such insights at the speed of data ingestion, making them useful augmenters of productivity and accuracy.
  - In scenarios involving high precision, a smart machine using intelligent assembly techniques can achieve a reduction in error rates of 5% to 30%, or even more, which may result in substantial cost savings or extra profits.
  - Natural language generation dynamically increases the volume and value of insights and context in data analytics. It automatically generates a specialized narrative for each user in context, to explain meaning or highlight key findings in data.

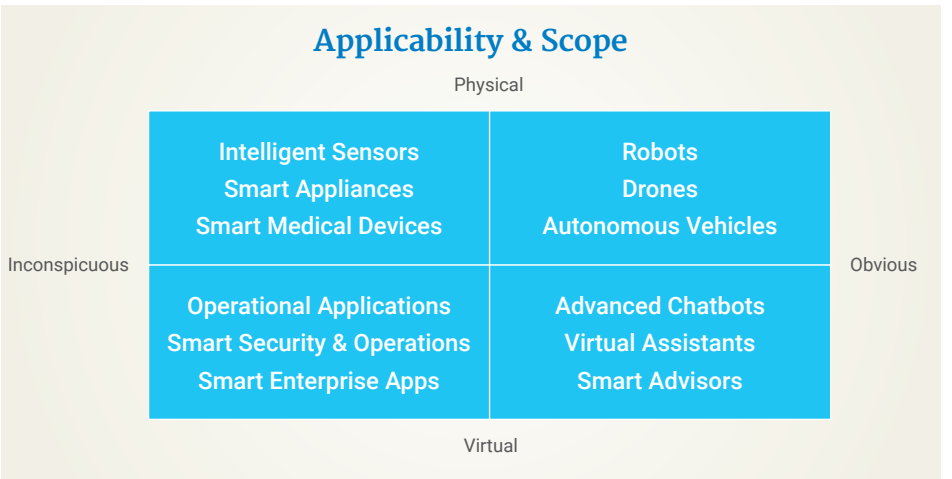
Tips for Early Investors

» Evaluate a number of business scenarios in which AI and machine learning could drive specific business value, and consider experimenting with one or two high-impact scenarios.
  - In a retail setting to pull together and analyze online purchase histories, and product likes and dislikes — from eye-gazing technologies in stores to sensory data from smartphones — to create propensity-to-buy models that predict which product a customer is most likely to buy.
  - In banking, you could use AI and machine-learning techniques to model current real-time transactions, as well as predictive models of transactions based on their likelihood of being fraudulent.

» If you're an early adopter or seeking to drive disruptive innovation, begin to implement predictive analytics, ensemble learning, and natural-language recognition and generation. If you're a mainstream user or have more modest innovation goals, use third parties and packaged solutions with embedded AI and machine learning.

Must-haves

» Well-scoped purpose
» Deal with complexity
» Understand, learn, predict, adapt
» Act autonomously



Major Drivers

Business

» Overwhelming Demand
» Smart Everything
» Competitive AI landscape by Cloud Providers
» Harnessing IoT data will drive need to automate
» Ability to talk back through NLP

Technological

» Explosion of new information sources
» The miniaturization of and increase of compute power
» Open Availability of machine learning tools and new and advanced algorithms

Scope in India by 2020

Type of Problem	Input	Output
Loan Application	Application data	Will the applicant repay the loan? (0 or 1)
Demand Prediction	Market situation	How many products will be bought? (n)
Automated Customer Services	Customer Speech	Guided Material from Knowledge base
Propensity to Buy	Profile and transactions	Will the customer buy or not? (0 or 1)
Failure Prediction	Sensor readings	Will a failure happen with 4 weeks (0 or 1)
Customer Churn	Profile and activities	Will customer cancel the contract? (0 or 1)
Medical Diagnosis	Pixel data from a retinal scan	Will the disease break out? (0 or 1)
Advertisement	Ad + context + user profile	Will the user click on ad? (0 or 1)

Suggested Roadmap for 2020

1. Sweep the competitive landscape: What are others doing?What is happening in adjacent industries? Is the time to act now?
2. Build your knowledge of AI/automation technologies and assess their maturity and potential to your organization.
3. Understand the business strategy – humans vs. machines.
4. Build bots and reuseable algorithmic engines.
5. Don't be seduced by AI, sometimes simple robotic process automation is sensible or an algorithmic business approach.

Don’t get seduced by the charms of AI;
keep your focus on business outcomes

BI & Analytics

Maximizing Business Value of Data

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For good three to four decades, IT helped create business value by automating processes, eliminating some of it and thus enhancing efficiency of a business. While it continues to do so, not the least by creating a completely newer financial models like cloud, that is not the way the big disruptions are now happening in businesses, especially in those that deal with the end-consumers.

If the Google, Facebooks, Ubers and Airbnbs have disrupted businesses, it is not by making things more efficient alone; they have used data and data analytics to replace human beings in some of the 'decision making'. Now, they are even training the machines to keep taking more and more such decisions.

That is true value of leveraging data.

Other organizations are waking up. Today, data scientists are much in demand; there are chief digital officers. While the technology and tools part still remain with the CIOs, sometimes they are no more the custodian of data.

Yet, a real data culture is not there yet. The general assumption is organizations will move significantly in that direction in next 2-3 years.

How do companies start preparing for 2020? Our panelists suggest a back-to-basics approach—by urging CIOs to ask and answer some fundamental questions and then go step by step to tackle them.

The Panel

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Head IT

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Rajesh Shewani

Head

Presales Technology and Solution Architecture, India, Teradata

The Big Question

How do we apply Analytics & BI in organizations for decision making, organizational strategy & competitive advantage?

- Data Exploding, types of data that would be relevant and what industries will be more impacted?
- How will organizations utilize descriptive, predictive, prescriptive & AI?

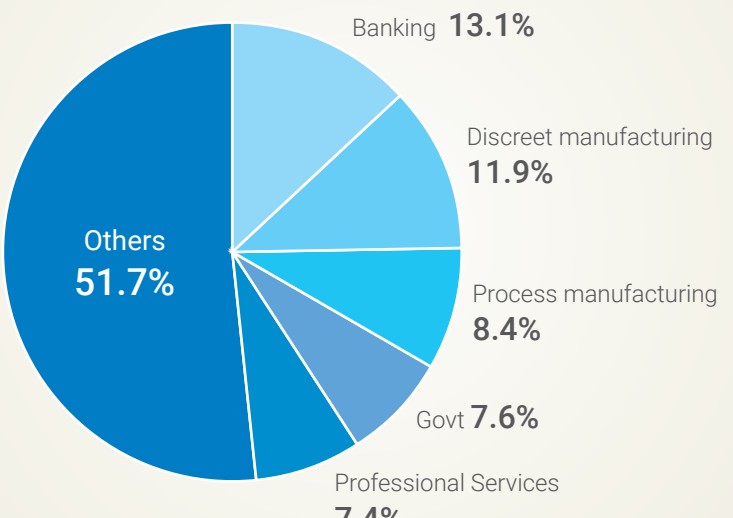
Major Drivers of Adoption

- **Technology**
  - Open Source
  - Cloud
  - New algorithms
  - Greater computing power
  - IoT
  - In-memory

- **Business changes**
  - Three vs – velocity (more real time), variety (unstructured and from different sources) and volume
  - Prescriptive
  - Business plan driven by data

- **Regulatory**
  - Privacy
  - Security
  - Governance
  - Government policies

Industry Share Today



Source: IDC; 2016

State of adoption today & in 2020

» Banking & Financial Services major users today
» It will get far more secular
» Will grow at close to 12% CAGR to reach USD 203 billion, according to IDC
» Cloud will help many smaller companies access advanced analytics
» Analytics will see a verticalized use case approach

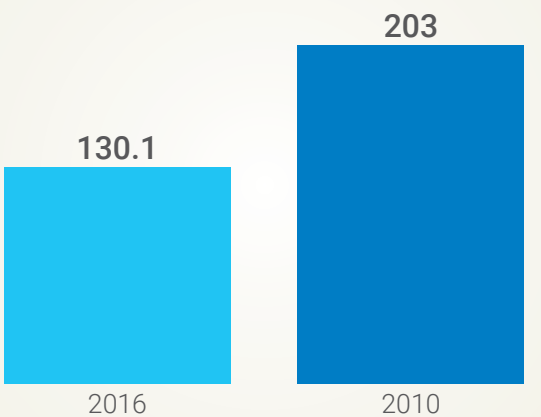
Useful step to create an analytics culture

1. Get accurate data from various sources within company
   a. Better data management practices
2. Don't ignore the data 'out there'
   a. Open data
   b. Social media
   c. Research data
3. Create a data culture
   a. Learn from open data community
   b. Don't control; allow users to play with data; create visualizations; experience the power themselves
4. Decide on and make available tools
   a. Use cloud innovatively
5. Throw out business challenges to users but do not disregard unsolicited ideas
   a. Create a datathon-like environment
6. Apply and share feedback
7. Measure the impact

Suggested Roadmap for 2020

» Create high priority and impact use cases
» What Data, Types & Quality of Data?
» What Analytic techniques? (ML, DL, AI??)
» How do you operationalize it?
» What kind internal team do you need?
» How do you measure ROI on an ongoing basis?

Big Data & Business Analytics Market



Source: IDC; figures in USD billion

Data is the new dollar

Blockchain & Digital Ledgers

Business value creation through Digital Ledgers & Blockchain

distributed ledger technology (DLT) is often called the biggest innovation since the Internet itself. Like the Internet, it has evolved—it is still doing so—by being tested directly on field, not in the controlled lab conditions of technology vendors.

Blockchain is shaping up in the real business world through numerous proofs of concept. Yes, vendors are involved; they are working on it in their labs. But the real progress, even in basic technology, is happening in the real world.

Though it has so far been trialed mostly by banks and the value proposition to banks is now beyond any doubt—why, the World Economic Forum even calls it the future of financial infrastructure—distributed ledger technology, the common noun for blockchain, is finding applications across different industries. Any system in any industry that requires a series of transactions to be done and that involves multiple (competing or otherwise) parties, blockchain can add value by making the process more trusted, the transactions more accurate and the system as a whole more efficient. After all, which business does not want trusted transactions and minimization of risk with efficiency gains?

In India, both banks and start-ups have been trying it out from users' and suppliers' side respectively. A few in other industries have begun their experimentations.

What could change the game is how innovatively DLT can use cloud; the two seem to have been made for each other.

Unlike other technologies covered in the book, blockchain is still fairly new and untested in enterprise conditions. Since the technology is still evolving by being tested on real use cases on the field, our panelists suggest that the only way to master blockchain is by wetting your feet: Be part of a consortium; try it out; collaborate and learn yourself. Keep an eye on the regulation.

The Panel

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What is distributed ledger technology?

» DLT (most popular being blockchain) is an enabler of trusted transactions.
» It ensures trusted transactions through a shared ledger with access given to multiple entities that have traditionally maintained their own ledgers, and often compete with each other.
» It makes the system efficient, accurate and trusted.
» It removes the need for a trusted third party to secure the transactions by making transactions transparent.

DLT vs Traditional Transactions

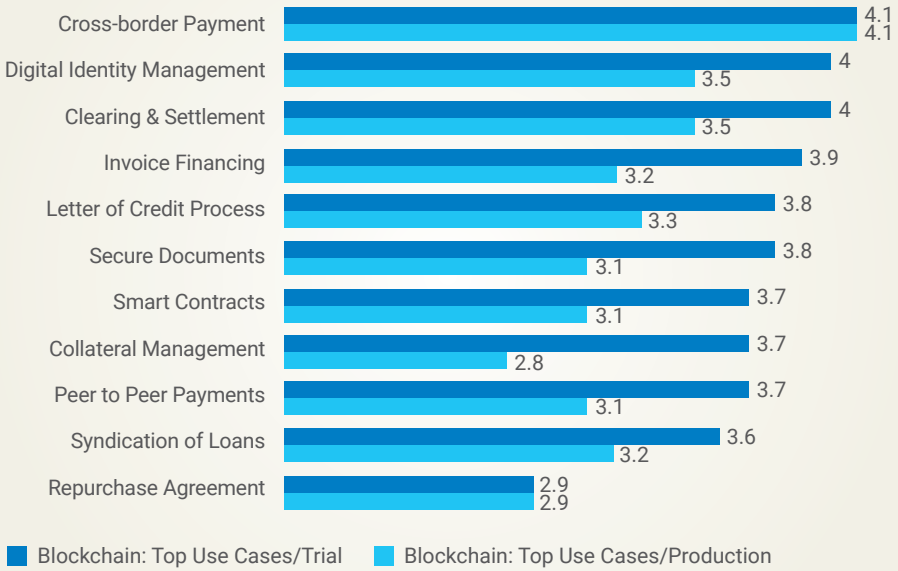
DLT is differentiated from traditional systems in two ways.

» The control of read/write access is not logically centralized
» It allows secure transactions in competing environments, without trusted third parties.

How does DLT create business value?

» Enhances efficiency
  • By removing the need for multiple, often heterogeneous IT systems to 'reconcile' with each other after a transaction; in DLT the entry is made just once in the ledger, which is shared
  • As the risk gets minimized, certain steps (checks and balances) can be removed
» Enhances accuracy
  • Single transaction recorded once does not leave any scope for inaccuracy
» Minimizes risk
  • By creating complete transparency, trust increases and hence risk is reduced
» Creates new possibilities
  • All kind of risk due to lack of visibility is bundled to financial products today. With DLT, new products can be created faster and can be provided cheaper

Blockchain: Top Use Cases by Banks



Source: Infosys Research, Blockchain Technology: From Hype to Reality, February 2017

State of adoption globally

» Blockchain is a new technology and most traditional businesses are conducting trials and proofs of concept
» A survey conducted by Infosys in early 2017, found that
  • 50% banks surveyed have already invested on blockchain or will do so in 2017.
  • Average investment in 2017 will be in the tune of USD 1 million
  • One in every three bank will see commercial blockchain adoption by 2018 while one will two would have done by 2020
  • Almost seven out of ten banks plan to invest in permissioned blockchains while 21% want to use hybrid variants

India: State of adoption

Multiple trials

Time	Trial Owner	Type Of Entity	Other Partners	Platform	Implementation Partners	Use Case
October 2016	ICICI Bank (Trial)	Commercial Bank	Emirates NBD	EdgeVerve Blockchain Framework	EdgeVerve Systems (Infosys)	Trade Finance, Cross-border Remittance
October 2016	Kotak Mahindra Bank (Trial)	Commercial Bank	Trade Finance			Cross-border Remittance
November 2016	Mahindra & Mahindra (Trial)	Non-bank financial co	NA	Hyperledger Fabric	IBM	Trade Finance
January 2017	Yes Bank (Trial)	Commercial Bank	Bajaj Electricals	Hyperledger Fabric	Cateina Techologies, IBM	Trade Fiance
January 2017	IDRBT (Trial)	Regulator promoted research/Academic institution	SBI, PNB, HDFC, Citibank, Deutsche Bank (Commercial banks), NPCI (Payment Co)	Hyperledger Fabric	MonetaGo	Trade Finance
January 2017	Axis Bank (Trial)	Commercial Bank	NA	Ripple		Cross-border Remittance
February 2017	SBI, ICICI Bank and more than 20 other banks and FIs	Commercial banks		Microsoft Azure cloud	Primechain	

Potential drivers of blockchain in India

- Rapid Digitalization
- Government systems (in future)
- India as a diverse testbed
- A huge use case in terms of cross border remittance (India is the highest remittance receiver)
- Private banks leading fintech in India; many actively trying blockchain
- Proactive regulator in RBI
- Cost efficiency needed in PSU banks through disruptive means
- Huge start-up ecosystem

Strategic Roadmap for 2020

- It is still new and evolving; understand blockchain well
- Find out what you are seeking primarily from blockchain: enhancing efficiency or reducing risk
- Think of use cases for your industry; work with peer CIOs in industry to experiment. blockchain is all about trust
- Join an existing consortium; if not anything, you will learn
- Try to leverage solutions available on your cloud (PaaS)
- Leverage India's dynamic start-up ecosystem to create industry solutions
- Start a trial, even if small and narrow; for a new concept, PoC is the best first step
- Keep an eye on compliance requirements in your business

Trusted, accurate and efficient transaction
is everybody's business

Application

Customer Experience Management

Creating value through integrated customer experience

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few businesses manage to do the entire customer lifecycle chain well, as traditionally they have been part of different functions. But technology provides the opportunity of making an impact across the value chain—attracting (marketing), onboarding (sales), engaging (customer service and targeted marketing) and optimizing business value (analytics-based segmentation). At the same time, giving that extra wow to a more aware, more connected, more demanding; yet, simplicity-loving customer is a challenge in itself.

As businesses are redesigned around customer experience—Forrester calls it From Customer Aware to Customer Led—an integrated customer experience strategy is a must.

And that is what our panel has suggested—an integrated, omni-channel approach, while clearly recognizing that the pace of adoption would vary from business to business and organization to organization.

The Panel

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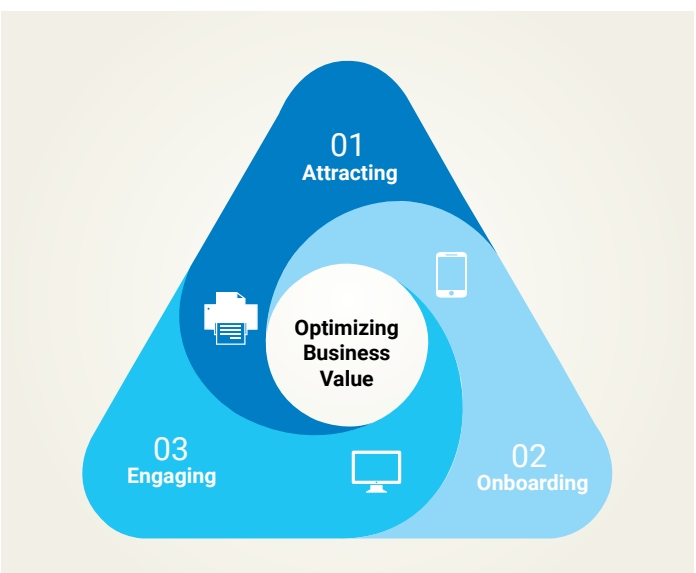
Aspect Software

Customer Experience Management Imperative

Creating integrated seamless customer experience (CX) across engagement lifecycle is a must for effective customer experience



Drivers

- Changing customer habits
  - Make it mobile
  - Fit into my life
  - Let me do it
- Customers are becoming demanding
  - Expect best in class service (Amazon, Netflix, etc)
- Margins are shrinking
  - CX to enable increase the value and in turn margins

Business that are not customer centric have higher chance of getting disrupted

State of technology today

- Lack of omni channel architecture with the missing link of orchestration layer
- Lack of single view of all the customer journeys across the organization
- Mix of paper based and digital data sources
- Organizations at various stages of leveraging data warehousing and analytics

How it will Evolve by 2020

» Organizations will gradually take up the journey based on their business strategies.

Major Drivers of Customer Experience Strategy

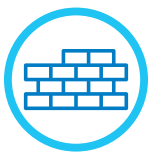
» Competition in all industries and pressure to retain customer and increase margins
» Digital Adoption
» Technology enhancements
» Integration of people, process & culture

Suggested Roadmap for 2020

» Clear priorities and the building blocks
» Measurable ROIs and Sponsors
» Organization wide buy-in (People+Process+Culture)
» Leverage new technologies like Artificial Intelligence

Redraw organization strategy keeping customer experience at the center

Smart Manufacturing



Building the factories of tomorrow

The most tangible manifestation of the Industry 4.0 or 4th industrial revolution—the fusion of digital, physical and the biological—is smart manufacturing. Internet of Things; ability of computing technology to capture, transmit, analyze and act upon data in almost real time; and technologies like 3D printing have taken manufacturing to a new level.

Yet, we have seen just the tip of the iceberg. While the gains have been huge in certain cases, they are mostly to do with efficiency gains—and in some cases, costs saved due to enhanced accuracy.

Businesses are just beginning to realize that there can be transformational changes through smart manufacturing by expanding possibilities that go beyond cost savings.

The key is to aim for, define, and measure business outcomes to smart factories investments. Smart factories have the potential to add USD 500 billion to USD 1,500 billion annually to the global economy in the next five years, according to Capgemini.

The same research shows, India and China will add maximum operational smart factories in the next 2-3 years—by 2020, that is.

Our panel suggests an integrated all-round approach that brings in various technologies—MES (OT)-ERP(IT) integration, IoT with industrial grade sensors, go all out for machine data analytics and 3D/4D printing.

The Panel

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Damodar Mantri

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Dr Reddy's Laboratories

Arun Kumar

Director – IT

Benetton India

Kishore Hirani

CIO

Amara Raja Batteries

Bharat Anand

CTO

Ministry of Home Affairs

Smart Manufacturing

Technology is transforming manufacturing with seamless automations and analytics. Smart manufacturing includes

- Digitization of processes
- Reduction of human intervention
- Machine to Machine Communication - Connected Assets & Sensors
- Interoperability
- Cloud, mobile, augmented reality
- Big Data

Enablers of Smart Manufacturing

- IIoT enabled platforms (end to end integration)
- Smart, cost effective and certified sensors/readers
- Machine level communication & industrial grade connectivity
- IoT gateways & data security
- Customer centric constant Innovations in products & processes

Smart Manufacturing can bring in…

- Productivity optimization/effectiveness
- Utility integration and automated utility control
- Genealogy/Traceability
- Cost reduction (inventory, wastage, scrap/rework)
- Predictive maintenance and leverage economies of scale
- Build robust ecosystem and scalability in operations
- Shop floor monitoring through central command room

State of Technology (Today)

- Evolving Manufacturing Execution Systems
- Industrial IoT
- Sensors
- Introduction of IoT enabled Platform
- Robotics, Augmented Reality, Cognitive, Bots
- Predictive Analytics

State of Adoption

- MES – increasing adoption in manufacturing industries
- IoT Platform – Several leading vendors have released their first versions of the platform; yet to mature
- Sensors – Increased availability for home automation, limited availability for manufacturing space but with high cost
- Lack of IoT communication protocols and standards

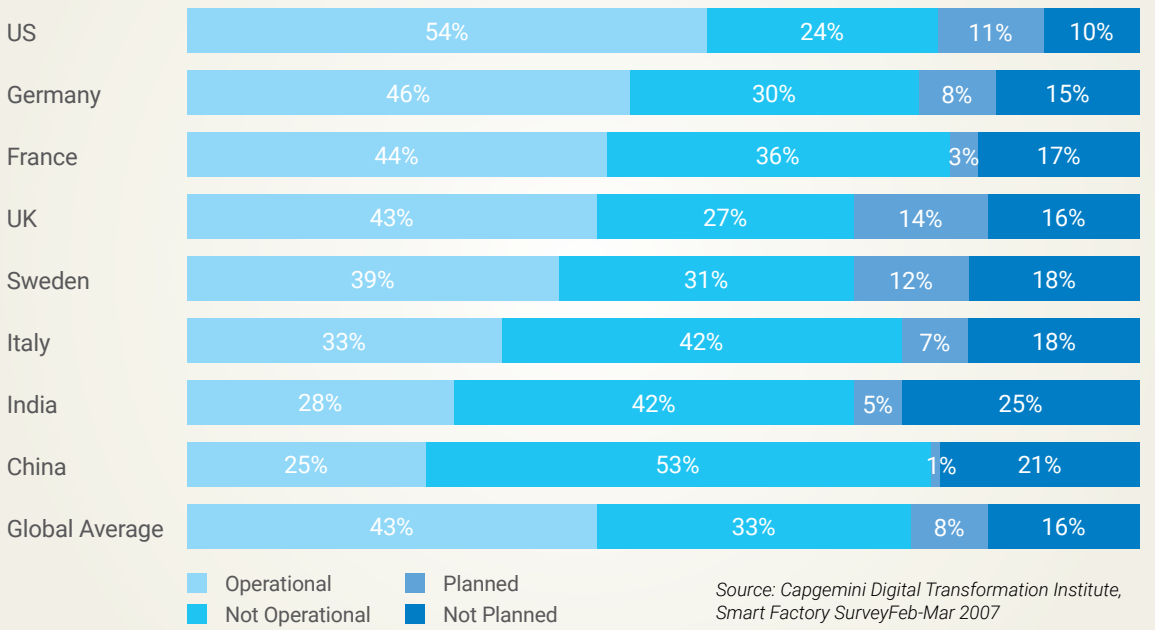
Evolution of Technology (2020)

- IoT-enabled governance and planning System
- Smart Connected Operations – IoT enabled production, quality, inventory, maintenance
- Availability of IoT-enabled cost effective sensors, readers,
- Availability of mature IoT Platform

Major Drivers

- Effective change management
- Cost-effective & mature technology
- Competitive business environment; increasing margin pressures
- Change in customer requirements
- Mobility & cloud

Smart factory implementation across the globe



Source: Capgemini Digital Transformation Institute, Smart Factory SurveyFeb-Mar 2007

Major Challenges

- Many data sources, formats, types
- Manufacturing process diversity
- Lack of system interoperability, flexibility, visibility
- Changing business, products, processes
- Demands on IT resources
- Deployment disruptions, risk and cost
- Data security and cyber threats

How to overcome challenges?

- Standardizations of IOT Protocols
- Skilling people on new technologies

Roadmap 2020

- Consider Implementing an MES solution integrated to your ERP
- Pilot IoT platforms/technologies to connect remote systems/machines/devices
- Leverage industrial grade connectivity technologies and sensors
- Build machine data analytics capability and explore predictive and cognitive analytics
- Explore application and use cases for 3D/4D Printing

Build the seamless connected manufacturing world where machines are intelligent, self learning, and talk to each other

User Experience

UX: The New Differentiator

If business is about human existence, UX makes it a civilized society. It is an acknowledgement that business is about satisfying basic needs and delighting the user.

Too much has been discussed and tried when it comes to delighting the user through effective communications. But interactions can do only this much. UX is about taking a similar approach to the entire business cycle—delighting the customer at each stage—product design, buying, product delivery, after sales, customer service.

User experience is fast emerging as a true business differentiator. What differentiates today's UX is from yesterday's is that it is not based on sheer creativity alone. It is based on a good deal of cognitive science, user research and some basic study of actual user behavior. UX by 2020 will be fundamentally based on loads of actual data, machine learning and artificial intelligence which are giving rise to newer technologies like virtual reality and augmented reality. You can find it in a car; in a retail store; on your customer service call.

Augmented reality (AR) and virtual reality (VR), the most tangible manifestation of new UX are going to see a spending of USD 143.3 billion globally, according to IDC.

Our panelists suggest right UX at every step of the business, while stressing on the need to standardize.

The Panel

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VP (Information systems)

Highbar Technologies

Arindam Singha Roy

CIO

SPML Infra

Anil K Singh

GM - (Management Services) & CIO

Krishak Bharat Cooperative (KRIBHCO)

What is UX?

» When a user feels enthused towards a business' services and/or products

Good UX manifests itself through

» Simplicity
» Data Driven/ Assisted Decisions
» Pervasiveness
» Speed/TAT
» Efficiency
» Accuracy
» Fun
» Novelty
» Right Outcome
» Right Mix
» Right Experience

Why UX in business?

» Digital world in 2020 is all about connecting everything and experience is all about smoothening the journey of user

How does it impact business?

» Evolve and involve experience of internal and external users
» Built it in every aspect of business
» New-gen product and service will have better impact over traditional business

State of technology

» Today
  • Evolving
  • Certain segment of business
  • New-gen better than traditional
  • Gen X is expecting

» 2020
  • Standard business norm
  • All across the product and service
  • If not built, expect de-growth/elimination

How to create effective UX?

» Identify user touch points and moments of truth
» Get into users psyche
» Look at the firm product/dervices from a users mindset
» Look beyond a users wishlist: The WOW Ffctor
» Harbinger of change
» Think like a user

Major drivers of UX

» Technological
  • Newer tech like AR/VR and underlying tech like AI/IoT
» Business changes
  • Competition
  • Multiple touch points
» Demographic/Market needs
  • Young India
» Threat considerations

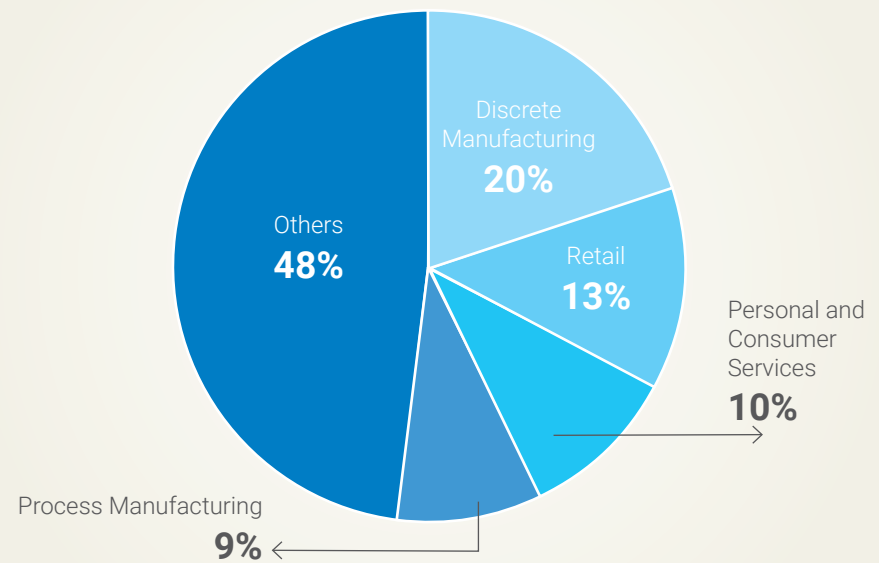
Challenges

» Capturing human mind and behavior
» How to overcome
  • Defining the latest design technique
  • Ergonomics
  • Rationalizing human factors

Suggested roadmap for 2020

» User experience strategy around every product, service and solution
» Defining standards over technology
» Check every step of user journey – make him happy at every step

Virtual Reality/Augmented Reality Market by Industry



Source: IDC

*(*Excluding Consumer Market)*

Good UX is good business

Digital Enterprise

The Future of Enterprise

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Microsoft

digitization is a buzzword.

There is no business worth its name that is not influenced by digital technologies. Yet, there are only a handful of enterprises that have leveraged digital in an all-round manner. We use the word 'all-round' and not 'fully' because it is virtually impossible for any business to claim it is fully digitized; the world is not.

Digitization journey of every business is different; because, unlike individual technologies, the businesses are different. While digitization will touch and significantly impact every part of business, the businesses have to take a call on where can they create maximum value by digitizing—marketing, sales, supply chain, customer service, or even by closing the gaps among each of these functions. Once the sweet spots are identified, it is time to prioritize and create a short-term and a long-term roadmap to proceed.

This book itself covers many of the technologies that are enablers of the digital journey; in this chapter, the panelists deal with what constitutes a digital enterprise, what are the driving forces and what are the possible challenges, while concluding with suggestions of a few first steps.

The Panel

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LN Bangur Group

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Manoj Gharat

VP & Head - IT

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Vijay Chowdhury

CTO

HRH Group of Hotels

Jagdish Lomte

VP - IT & CIO -BTG

Thermax

Julen Mohanty

VP

JP Morgan Chase

Jatinder Singh Pabla

Lead Office & Office 365 Business

Microsoft India

Digital enterprise characteristics

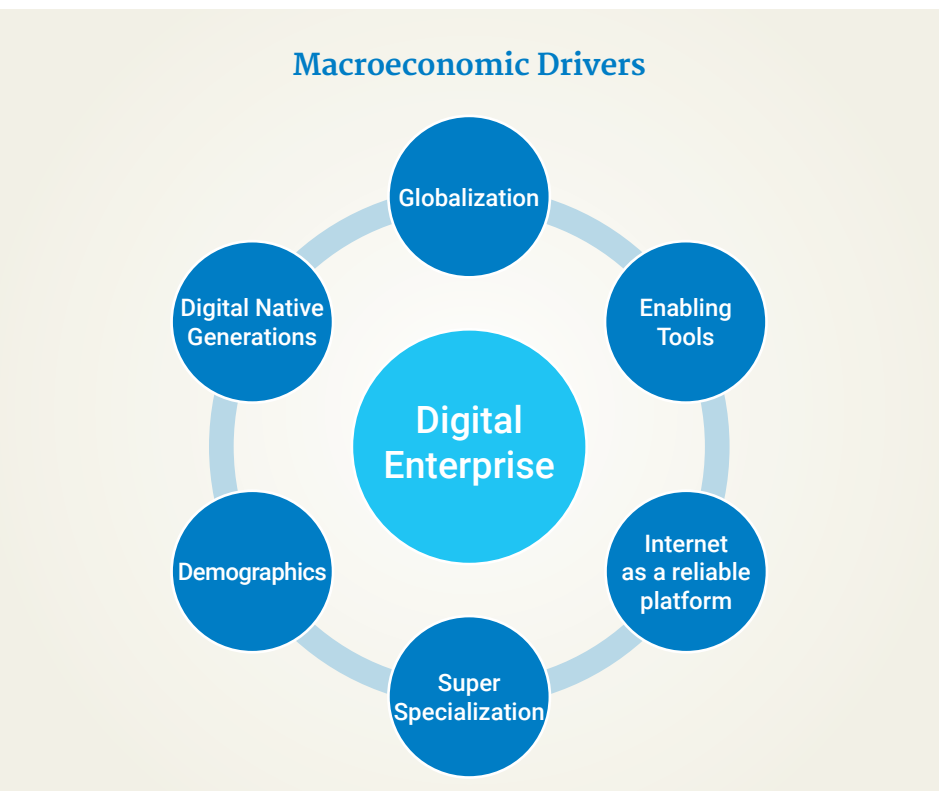
» Digitalization of products and services
» New streams of revenue
» Boundary less business
» Barriers of obstruction getting reduced
» Reducing cost of Innovation
» Flexible workforce / Virtual workforce will reduce war for talent
» Lean / Flat organizational structure.
» Adoption of new culture

How?

» 4th industrial evolution globally bringing new digital era
» The global competition is not limited to your industry & can be anywhere in the world and challenge business model from garage
» Skilled worker will be available to work with rest global standard workforce from anywhere.

Challenges

» Skilled resources
» Improved infrastructure
» Information security
» Regulatory compliance
» Social & political issues



Cases aligned with business

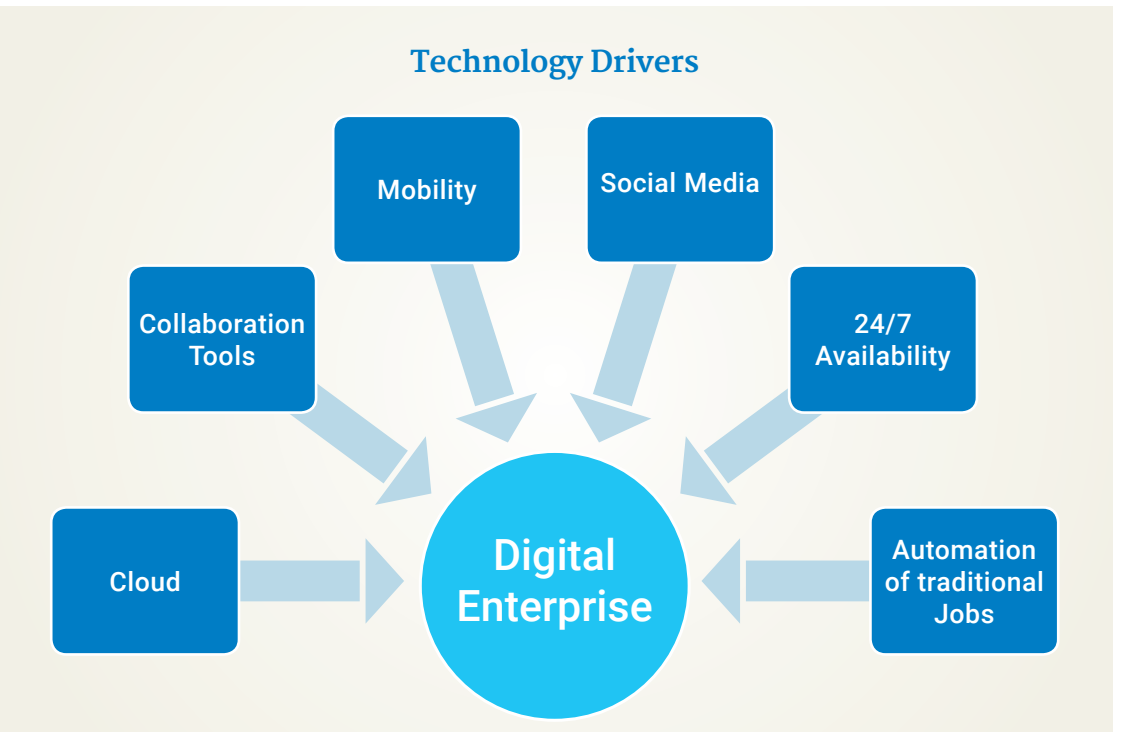
» 24X7 availability requirement with the augmented digital process i.e. bots
  • Eg Robo advising on Financial investments
» Scalability & deployability will be much faster to support business
» Opening of new channels of business
» Customer delight

Future technologies

» Virtual Reality/Augmented Reality
» AI/Machine Learning
» Robots/Virtual workers
» Distributed Ledger Technologies
»

Suggested roadmap for 2020

» Create a talent pool for digitization
» Improve infrastructure for the anticipated demand
» Awareness & Communication with all stakeholders



Every business is a digital business

Management

Managing IT

Running IT like a business

Paradoxical as it may sound, the rise of technology's role in business has often been talked in hyphenation with questions about the CIO's role—especially as SBUs and horizontal functional units now want to manage their own technology. Cloud has made that immensely possible. Add to that the new roles like chief data officer and chief digital officer who are supposed to have roles that overlap the traditional CIO roles.

While there is much discussion about business alignment, alignment can only make current and planned IT investment more effective, it cannot maximize business value leveraging technology.

That requires a CIO thinks like a venture capitalist to seek where can value be added; like a start-up CEO to get everything done to make that happen; like a board member to show/sell those ideas to rest of the management team; in addition to get the IT services delivered. Today, a strong element of risk management has been added to the portfolio. It is not about IT risk alone. Today, cyber threats are a significant business risk and it is usually the CIO who has a direct or indirect role to play there.

In short, the CIO has to run IT like a business to get the best out of it. It is easier said than done. Just defining metrics and meeting those is not what it means. It requires a CIO to think like a business leader.

Our panel suggests 10 ways to run IT like a business.

The Panel

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Essar Group

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GM - IT Compliances & Project Management

Hindalco Industries

Rushikant Shastri

AVP-Tech

State Bank of India

Ashok Jade

CIO

Shalimar Paints

Rajeev Mittal

CIO

Endurance Technologies

Amit Agrawal

AVP

Reliance Industries

Managing IT: Why run like a business?

» Many organizations consider IT function as internal service providers for business departments.
» The IT budget is defined by the business and IT's role is to expend that budget delivering the services requested by the business. This approach results in a fixed capacity.
» It is limited by the overall budget and IT's ability to re-deploy that capacity in response to changing requirements.
» Many IT organizations do not track the cost of individual services and business departments are not accountable for the cost of their services. This approach leads to conflicts across business departments for access to the limited resources and causes business executives to question the value of IT.
» If these challenges are common to service organizations, how do we transform IT to operate and deliver value like a business?

IT as a Business

Delivering value distinguishes a business from a service organization. Too often, IT departments focus on delivering products or services and fail to consider whether they are delivering value

A typical mission statement for an IT organization that seeks to provide value

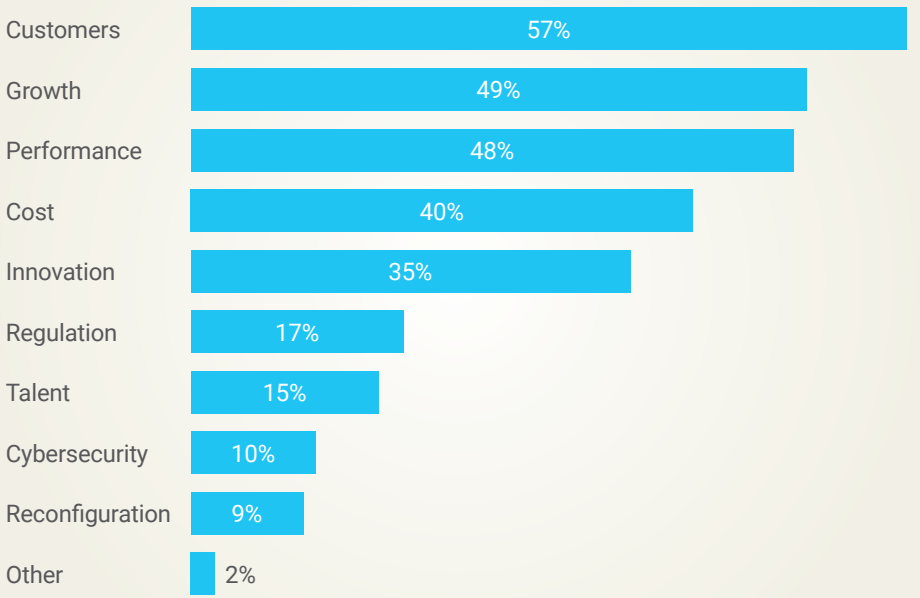
Deliver information processing capability by setting up appropriate infrastructure & information processing applications required to support business current and future needs at a cost that represents value and safeguarding information assets of the organization

The Path

Running an IT organization like a business requires three key, tightly interwoven components:

» Clearly defined and tracked processes
» Performance visibility
» Cost management

Top Business Priorities for CIOs



Source: Deloitte 2016-17 CIO Survey (Global)

10 ways to run IT like a business

1. Start with strategy and define roadmap
Align with organizational objective by meeting current and future business needs of various functions and processes of the organization

2. Communicate Big Plan Initiative and create awareness at senior management level percolated down the line across organization
Communication is the key and alignment with senior management is vital to roll-out and plan and effective usage of any facility created.

3. Purchase/Procurement with the purpose and efficient manner
Tech investment must seek to be better/faster/cheaper, as opposed to solely best of breed.

4. Centralize, Standardize, Consolidate
One platform is better than five; three data centers are better than 15; etc.

5. Cultivate collaborative culture
Collaborate with line of business or business functions to get buy-in and alignment for any facility being provided by IT.

6. Establish Accountability
IT teams must know who makes decisions and who is responsible for what and deliver best.

7. Get Leadership on Board
You need at least one major influencer's backing for ideas to move forward.

8. Identify Early Adopters to take Technological Advantage in the Business
Within the rank-and-file, they'll provide support for often-dreaded changes.

9. Make a Managed Services Menu
Let every internal customer find the IT they need, along with value in it for them.

10. Track Performance with defined Performance Tracking Methods
Translate technical metrics into business-value creation – like IT cost vs. Revenue created.

The key to running IT like a business is realizing that the true objective is providing business value, not only efficient service

Retraining

Reskilling IT workforce to remain competitive

According to the World Economic Forum (WEF), the Fourth Industrial Revolution—the fusion of digital, physical and biological—will lead to a net loss of over five million jobs in 15 major developed and emerging economies.

Earlier, automation replaced mostly physical and/or repetitive jobs. But with newer phenomenon like AI and machine learning, automation does threaten to replace some of the knowledge jobs as well.

The research by WEF last year concluded that a clear majority of businesses believe that investing in skills, rather than hiring more short-term or virtual workers, is the key to successfully managing disruptions to the labor market for the long term. As many as 76% respondents in its research said that workforce planning is a leadership priority.

IT is significantly impacted. Be it in managing infrastructure or security, IT services is seeing more and more automation.

Today, the advent of cloud, outsourcing, automation and AI-based tools are making businesses to deploy the human workforce not where they can be deployed but where they should be deployed. It is easier said than done. Automating with not-so-mature technologies, and getting people with new skills but no actual experience are not great ideas for a mature business. More and more organizations are looking for reskilling of their IT staff.

What are the basic questions to ask? How to take a balanced approach to automation? What are the first steps? Our panel approaches the issue from both the businesses' and employees points of view and suggests its solution based on both these considerations.

The Panel

CHAIRPERSON

Suresh Kumar

Partner & CIO

Grant Thornton

Prasenjit Mukherjee

Head IT

BSES Power

Vikas Singh Yadav

Director IT

Govt of India

Ramkumar Mohan

AVP – IT

Air Works India Engineering

Panish Javagal

GM - Global Process Automations (ITS)

Hinduja Global Solutions

Why Reskill?

Reskilling has become imperative for business. It is important for

- Survival
- Growth
- Agility
- Success

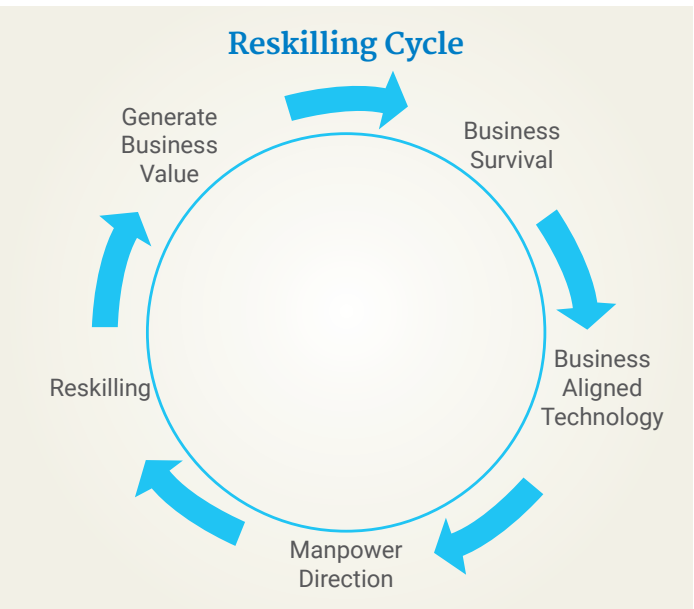
Challenges

Organization

- We are well placed!
- It's an additional cost!
- They will leave us !

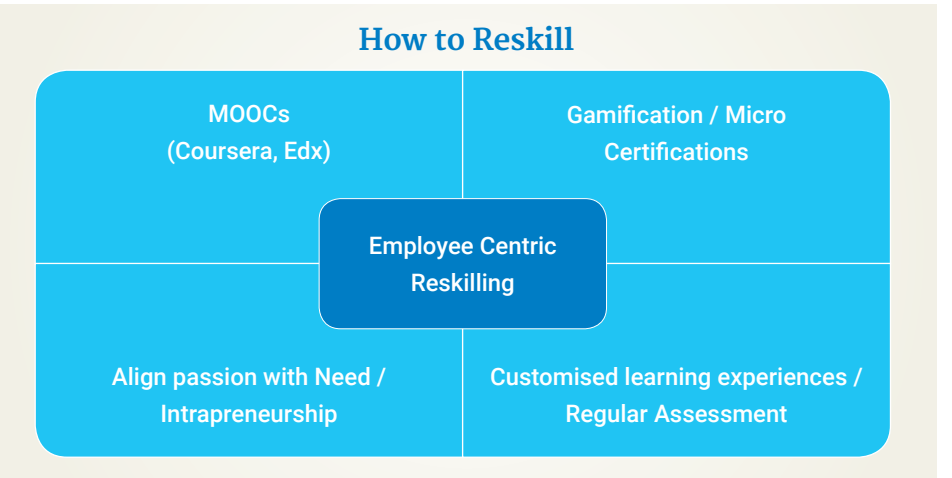
Employees

- I don't need it
- Where is the time ?
- What is the incentive ?



Reskilling Plan

Step 1: Identify requirements
Step 2: Identify critical jobs
Step 3: Forecast future workforce outlook
Step 4: Identify drivers
Step 5: Formulate plans
Step 6: Execute and monitor



Strategy 2020

» Reskill at the top of the house
» Keep building on what you have
» Change the mindset to "learning as a way of life"
» Use digital to learn digital
» Accelerate reskilling people
» Redesign work to unlock human potential
» Strengthen the talent pipeline from its source
» Create personalised employee experiences
» Navigate the (L)Earning Curve
» Make learning personal and shareable
» Crowdsource your organization's knowledge

Reskill or Retire*!

*Whether you are an individual or a business

Reskill or retire

GenNext

Enriching UX is key to serve GenNext

More than 46% of India's population today is below 24 years of age. Every one out five people below 24 on this earth is in India. Many of them have already become consumers. Many more will become so in the next three years—by 2020.

They are digital native. They have grown with using mobile and digital technologies. Their expectation of personalization—that is not accepting something just because that is easily available—is far more. They are more demanding; less patient; more knowledgeable; more conscious as consumers.

That is a challenge.

But they are also far more comfortable with cost-efficient digital channels; it is easy reaching them; time and cost to reach them is far less. And they are willing to experiment.

That is an opportunity.

In short, the GenNext customer offers a huge challenge and opportunity to the companies that can adapt to the change.

The world—which is looking at these youngsters as a market—is looking eagerly as these experiments. By 2020, one out of five GenNext persons in the world will be in India.

Our panel of CIOs feel that drastically enhancing user experience is key to serve them.

The Panel

CHAIRPERSON

Aneesh Nair

CIO

NDTV Worldwide

Sanjeev Kumar Shrivastava

AVP and Head Solutions and Architecture

Mphasis

Bhalchandra Ghanekar

Director, Software Development

Angel Broking

Importance in 2020

» India's huge GenNext population
» They are digital native and hence receptive to new things
» The world is looking for lessons from India
» In India, it is a question of survival

Preparing for GenNext

» Thinking like GenNext Consumers (empathy)
» Understand the journey map
» Deliver 'wow' user experience

Impact on Business

» Technology disruption will create new business models forcing business to design/create new models for revenue
» 'Data' will be oil of future driving market growth

Does it impact any industry significantly more?

» All industries

Major approach

» Enhancing User experience

State of technology today

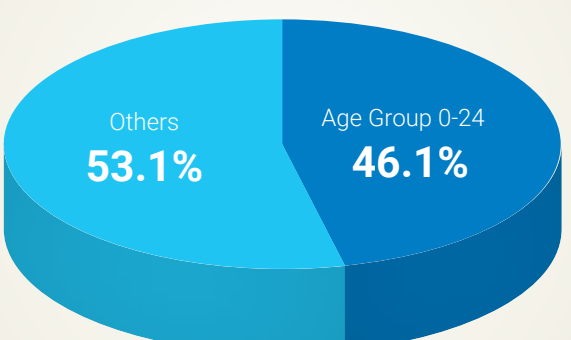
» Self Service e.g portals, apps etc
» Disconnected data being correlated to enhance user experience in few industries e.g retail
» Initial foot prints of AI/ML to create personalized experience (Though this has achieved high maturity in few industries e.g retail)
» Social media

How it will evolve by 2020 (It will be era of digital Darwinism)

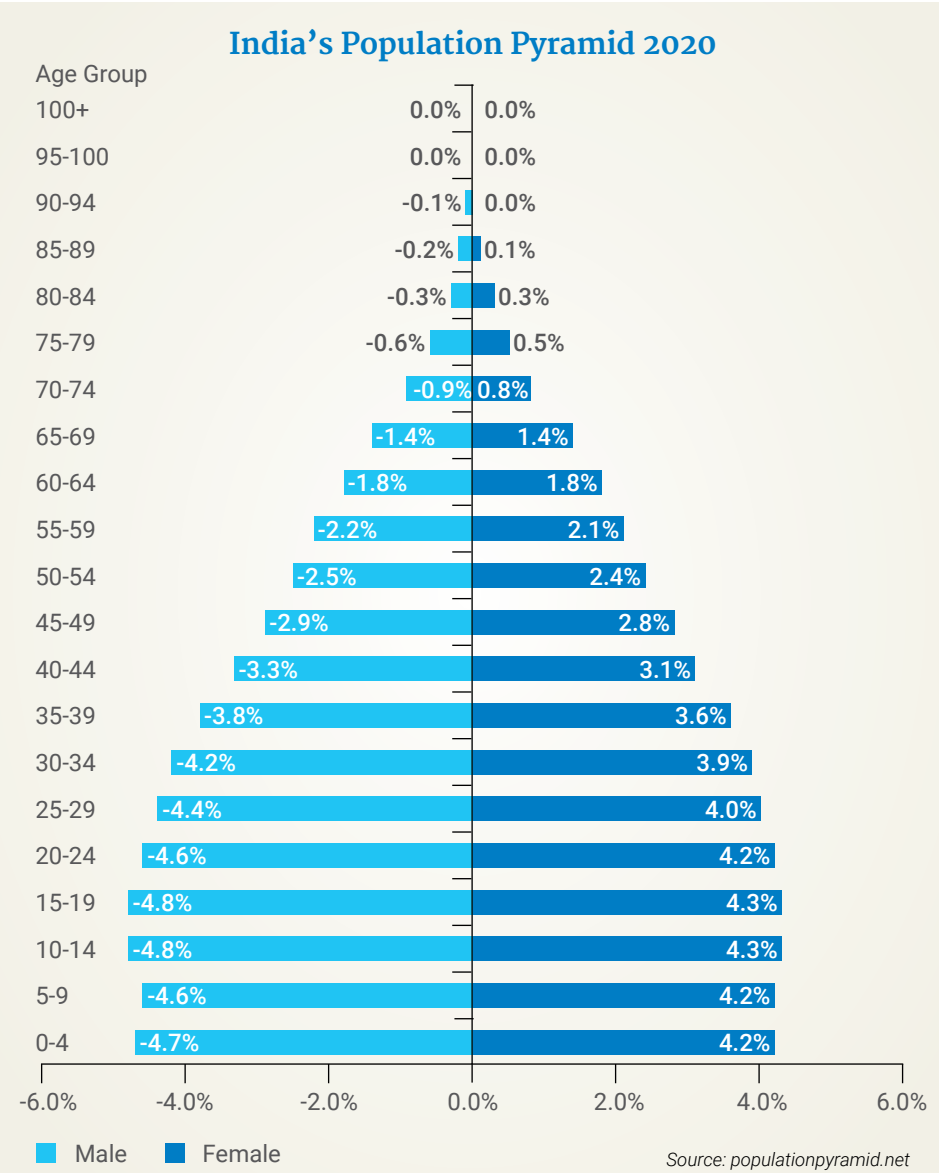
» AI and cognitive first approach
» Personal virtual assistant for NexGen consumers in form of Siri,Cortana,Alexa etc to provide 'Personalized Experience'
» Connected world (Apps, wearable gears, daily life activity tools and utilities etc)
» Technology will considered for granted (e.g no body will give security requirement it will be hygiene)

GenNext: Half of India's Population

India's total population: 1.342 billion



Source: populationpyramid.net



Major Drivers

Technological

» Technology will start predicting personalized needs and start catering to that

Business changes

» Every consumer will be unique
» Micro Billing will be the norm

Regulatory/Policy, if any

» Ethical and privacy related laws will evolve
» Political environment will also get impacted due to technology disruptions
» Environment concerns (Higher energy requirement e.g under sea data centers etc)

Threat considerations

» Biggest area of concern will be changing threat landscape
» AI/Cognitive will play a big role in pervasive threat management

Suggested Roadmap

» Empathy in whatever you do
» Respect them
» Personalize
» Principle of - Plan Big, Start small, Act Fast
» Understand Technology in much more details (go mile deep)
» Principle of coexistence (technology, business, society etc)

Mission Statement

» Digitalization = User Experience, User Experience, User Experience

Know me better to serve me better

Transformation

Outcome led business transformation

IN ASSOCIATION WITH

sify

The increasing emphasis on outcome-led business transformation is a manifestation of the growing maturity of digitization. In the maturity lifecycle, it is the logical next phase of making a business impact. While the early stages of digitization marked making small and incremental changes to business through digital technologies, the next evolution was making clear and significant business gains, through digitization of multiple processes and functions. With more mature digital technologies—most significantly the flexibility and the low-risk innovation platform provided by the cloud technologies—businesses are confident enough to drive business outcomes using digitization.

Traditional IT has driven business efficiency such as productivity, process efficiency and has helped in controlling cost. Today, digitization is being leveraged to alter outcomes in all possible areas—new revenue streams, geographical expansion, revenue growth, customer experience, product development, tapping global resources—in addition to efficiency.

Outcome led business transformation needs a different planning cycle wherein technology is embedded in the business decisions to create a solution and not applied in the post business decision stage. For the CIOs, it means not just being able to add business value by helping fellow CXOs to appreciate what is possible, but also being part of the business decision themselves.

Outcome-based transformation has reached a tipping point within the enterprise and there is no going back; if anything, today, organizations are trying to explore even emerging technologies like AI and IoT to drive business outcomes. That is a sure sign of growing comfort level with digitization.

The Panel

CHAIRPERSON

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Group EVP IT and CTO

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Anoop Mittal

AVP-IT

Bajaj Capital Limited

Atul Govil

CIO

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Pankaj Kankar

CTO

Lenskart

Pradeep Chankarachan

Director – IT

Harman International (India)

Surajit Chaudhuri

Head Manufacturing North

Sify Technologies Limited

Questions that you will seek answer for?

» What kind of a business outcome am I looking to obtain out of this transformation initiative?
» How to draft the blueprint for transformation?
» What structural, process and cultural changes need to be addressed for the transformation initiative?
» Are we aware of the risks associated with the transformation project?
» How to create agreed on metrics for tracking implementation effectiveness or the transformation initiative?

What is the business outcome of this transformation initiative?

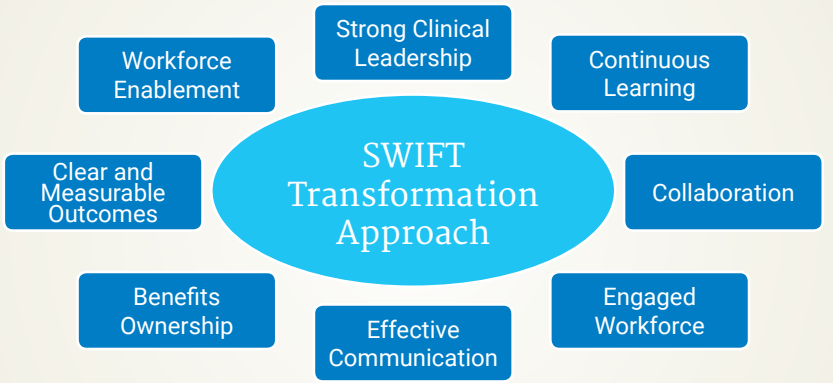
» Tangible business outcomes such as:
  • Revenue growth
  • Profitability
» Intangibile business outcomes
  • Increased operational efficiency
  • Accuracy and effectiveness
  • Productivity

The blueprint

» What investments that you need to make?
» Build the right team
» What technologies would you need?
» Create the POC
» Find the business partners and other external stakeholders

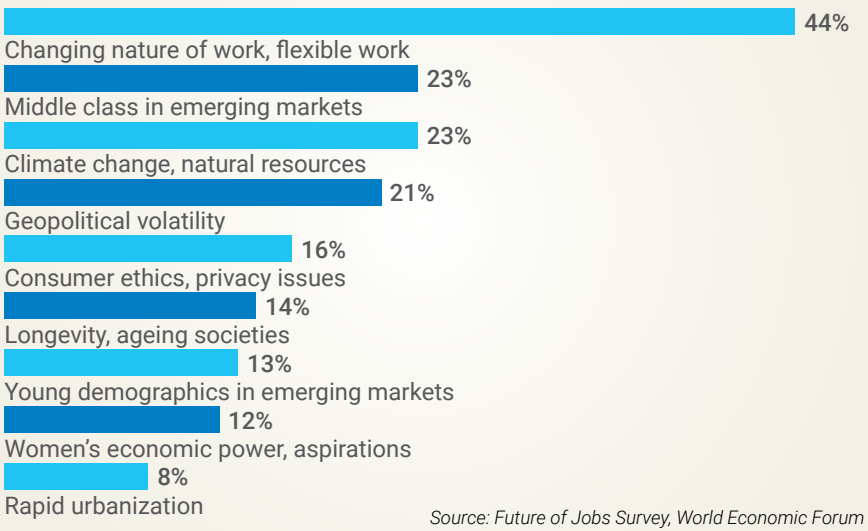
State of transformation today

» We are today at the beginning of a Fourth Industrial Revolution. Developments in previously disjointed fields such as artificial intelligence and machine learning, robotics, nanotechnology, 3D printing and genetics and biotechnology are all building on and amplifying one another.
» Smart systems—homes, factories, farms, grids or entire cities—will help tackle problems ranging from supply chain management to climate change.



(Capgemini's SWIFT Approach to Oracle Fusion HCM)

Demographic and Socio-Economic
Share of respondents rating driver



Source: Future of Jobs Survey, World Economic Forum

» Concurrent to this technological revolution are a set of broader socioeconomic, geopolitical and demographic developments, with nearly equivalent impact to the technological factors.
» We also find that on average respondents expect that the impact for nearly all drivers will occur within the next 5 years, highlighting the urgency for adaptive action today

Potential drivers of outcome-driven transformation in India

Demographic and socio-economic

» changing nature of work
» middle class in emerging markets
» climate change, natural resources
» geopolitical volatility
» consumer ethics, privacy issues
» Longevity
» Young demographics in emerging markets
» Women's economic power
» Rapid urbanization

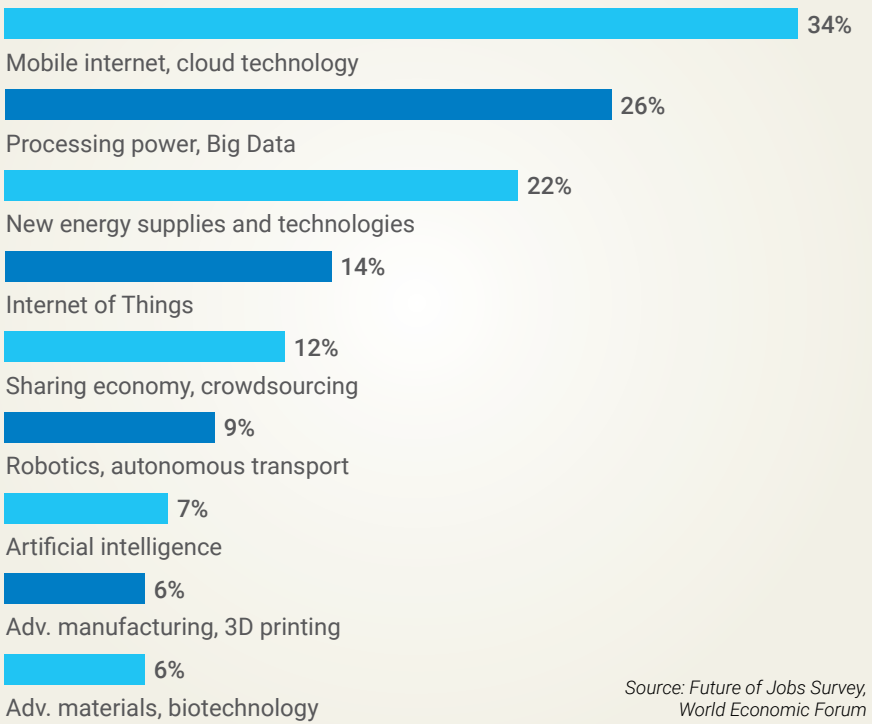
Technological

» Mobile internet, cloud technology
» Processing power, Big Data
» New energy supplies and technologies
» Internet of Things
» Sharing economy, crowdsourcing
» Robotics, autonomous transport
» Artificial intelligence
» Advanced manufacturing, 3D printing
» Advanced materials, biotechnology

Strategic Roadmap for 2020

1. Develop specific business outcomes linked digital strategy and a shared vision within the enterprise
2. Identify cultural traits, org structure that needs to be changed –to prioritize & facilitate the transformation process
3. Establish a funding model and generate momentum & scale from initial success which is measured without bias
4. Sense early sign of failure and adapt through the transformation journey

Timeframe to impact industries, business models



Source: Future of Jobs Survey, World Economic Forum

sify keeping you ahead

powering India
through
digital transformation

The technology landscape is waking up to new disruptions and demands with every defining mission. We at Sify, the pioneer in converged ICT services in India, are bringing together the best of digital transformation solutions, to help businesses move to the next level of possibilities. Our deep industry insight of over two decades is helping us focus on specific verticals, more effectively than ever before. The legacy of offering industry-leading, single-window solutions to over 8000 organizations, is now propelling our nation towards a digital tomorrow.

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Governance, Risk & Compliance

Building GRC as a business

It is no secret that the world is becoming a riskier place. A significant part of today's business is about risk mitigation. Technology plays a dual role here. It helps mitigate those risks while introducing some new risks such as cyber security threats.

In India, as consumer awareness grows, sector specific regulations across many industries are becoming stronger and stronger. The advent of new ways of doing business—like using digital channels—are just adding to the list of needs for a dynamic regulatory regime. Certain industries such as banking, insurance, financial services, telecom and pharma have traditionally been subjected to a greater level of regulation. These are the very industries that have led in terms of deployment of IT in general and security and GRC technologies in particular.

Regulatory compliance has become one of the most significant responsibilities of the CISOs. In a recent survey conducted by CSO Forum, CISOs see compliance taking most of their time in the next 12 months. With India preparing to enact—there is already a government appointed committee for that—a data protection legislation, need for compliance will grow even further.

Thankfully, most of the regulation is about information and processes—something that technology does very well. IDC estimates that the 2018 spending on Risk IT will be USD 97.3 billion. This, the research firm says, is 17% of the total IT spend, which is significant.

However, the full value of that will accrue only if there is an integrated approach. Our panelists suggest that the approach to Governance, Risk and Compliance should be comprehensive and should involve all three—people, process and technology.

The Panel

CHAIRPERSON

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Global CIO

Cadila Healthcare

Makarand Sawant

Sr. GM – IT

Deepak Fertilizers & Petrochemicals

Prakash Kumar

Head IT

BMW Group India

Gopal Rangaraj

Head IT

Alembic Pharmaceuticals

Why GRC is critical?

» Unprecedented data growth for each organization
» Accurate and timely availability of data already mission critical
» Digital & automation to drive business operations
» Multiple sources, multiple destination, multiple platforms and multi-channel access of data
» Data safeguards important from competitive and regulatory perspectives

State of technology today

» No comprehensive approach
» Lack of processes
» Lacks ongoing risk assessment/control
» Lack of people with digital skills
» Too many solutions
» Manual control and reporting
» No risk sharing approach

Indian context

» Low emphasis on prevention
» GRC : seen as a regulatory need than an business driver
» Not a boardroom priority

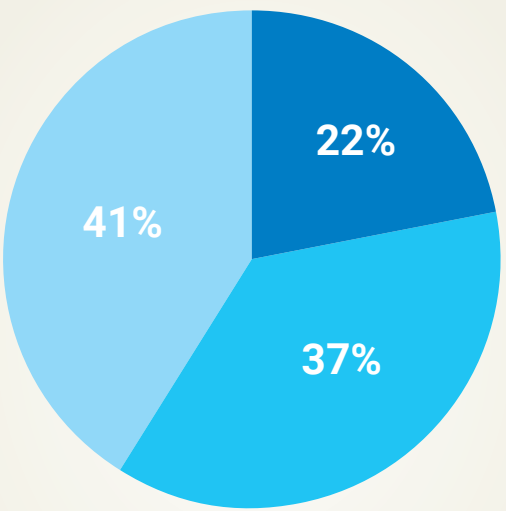
Drivers of change

» New age digital businesses
» Government mandates & regulations
  • SOX, PCI DSS, FDA, HIPAA, RBI Mandate, IT Act 2008 etc.
» Customer awareness & insistence
  • Changing Demographics / Millennial
» Global expansions / M&A
  • Need to adopt global best practices
» Threat Impact severity much higher than investments in protection
  • Revenue/Monetary loss, loss of reputation, customer loss, exploitation

Needed changes

» GRC as culture
» Comprehensive people, process, technology (PPT) reorientation to GRC

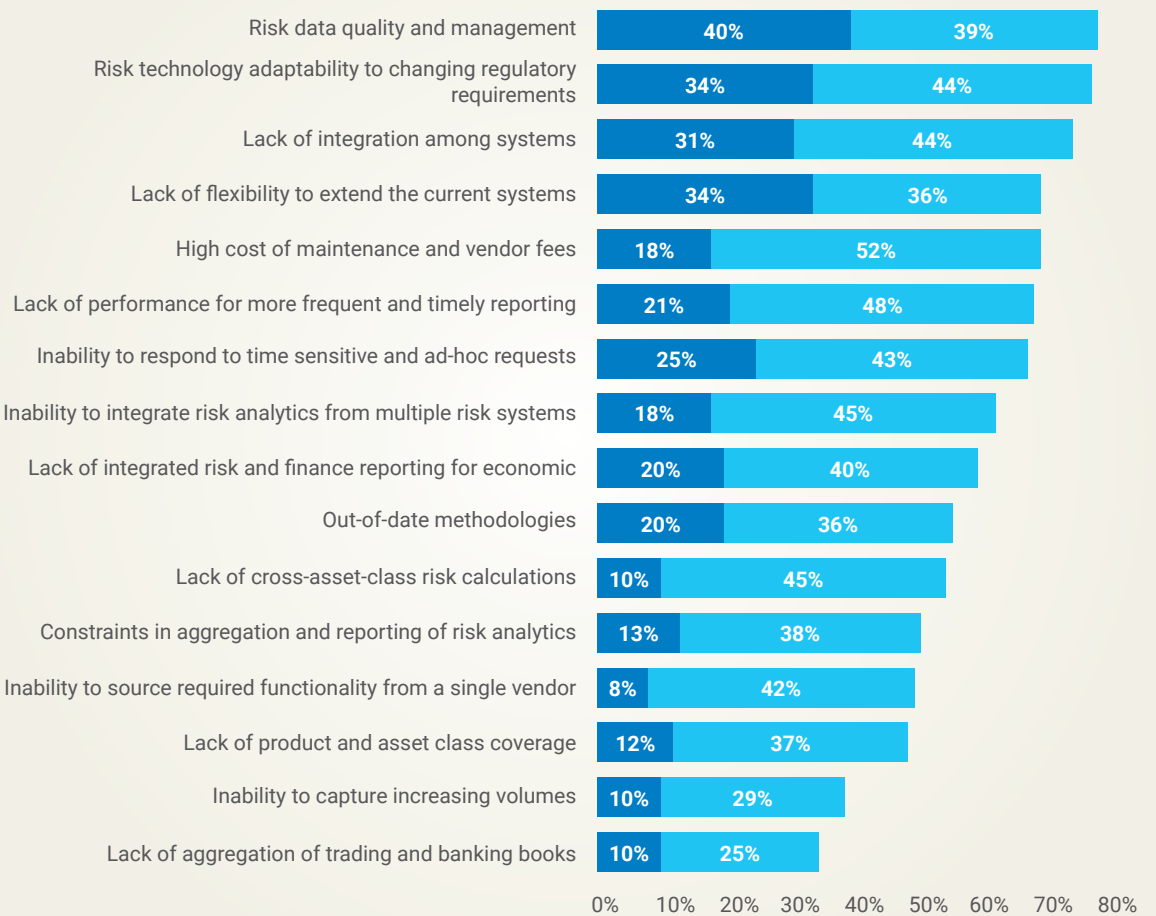
Current Approach to GRC



SILOED: Processes and technologies remain largely siloed
INTEGRATED: Fully or substantially integrated processes and technology across many or all organizational silos of operation
STANDARDIZED: Some Standardized processes and use of technology but not across the entire enterprise

Source: OCE G Survey 2017

How concerned is your organization about?



Source: Deloitte Global Risk Managment Survey 2017

» Non availability of comprehensive & reliable technology solution
  - Fragmented offerings
» Government/industry partnership for policies around data protection

Suggested Roadmap

» Need for comprehensive approach
  - Process + People + Technology (PPT)
» Comprehensive process framework to address:
  - DoA/SOD
  - Ongoing Risk Assessment/Controls
» People Orientation
  - Training & orientation to work in Digital workspace
  - Tech skills to operate technology
» Technology
  - Risk sharing approach, with fail proofing guarantees

"Why do we have brakes in a car"?
"To stop"
"To reduce speed"
"To avoid collision" etc.,
"Nay, it is to enable you to drive faster"

Business Continuity

Resilience:
Back in the agenda

While business risks arising out of cyber security threats have got into boardroom agenda, 'basic infrastructure' issues like reliability and resilience seem to be taken for granted of late. The ubiquity of cloud is shifting the attention further away from it. In the bimodal or two-speed IT discourse, its position is further diluted.

In World Economic Forum's annual Global Risk Report 2017 (GRR), the risk 'critical information infrastructure breakdown' now features in quadrant III, denoting that it is a low-impact, low-likelihood risk even as 'cyberattacks' features in quadrant I, denoting it is a high-impact, high-likelihood risk. Even 'data fraud/theft' is perceived to be a much higher likelihood risk as compared to 'critical information infrastructure breakdown'.

Yet, recent experiences with Delta Airlines, British Airways and our own National Stock Exchange show that it is not always an external attack that is responsible for major breakdown of business. And once such a breakdown happens, the direct loss due to business breakdown is immense. Add to that the compensation cost. And finally, of course, the reputational cost.

We may be taking the reliability of our IT infrastructure for granted too soon and too naively. Our panel recommends a practical roadmap while reminding some 'back to basics' mantras of business continuity planning.

The Panel

CHAIRPERSON

Ashish Mathur

CIO

Maersk GSC

Abhishek Gupta

VP – IT

Dish TV

Pawan K Sharma

Head IT Service Operations

Tata Motors

Why is it important for 2020?

» Preparing for DR and having a good Business Continuity Plan (BCP) has always been important, and more so in today's day and age where the cost of outage is huge and competition fierce.
» Businesses may have to deal with huge financial penalties apart from loss of reputation and brand value
» It is very important today, and will be even more important tomorrow

What type of companies can be impacted?

» All companies in today's day and age are vulnerable to various type of risks. These could include natural disasters, cyber attacks, strikes and political unrests, and so on

How does it impact business?

» Half of all businesses have experienced an outage (Average outage 18.5 hours)
» Over 80% outages last longer than a day
» Only 35% of SME have DR plans & only 25% of medium & large enterprises have effective, low-cost DR plans
» Only 35% of outages are due to natural disasters, while the businesses plan mostly for these only (45% due to operational reasons, 19% dues to human error, remaining due data breach & others)
» About 20% of businesses have perished after a major disaster
» And 75% companies believe their DR plans are inadequate

State of adoption

» BCP and DR are not new concepts, and yet the state of real readiness is surprisingly low
» With the advancement of technology and digitalization, many services companies are utilizing the cloud services and the "virtual" and remote setups to put in effective DR strategies
» For the manufacturing units, the DR is based more on multi-location presence, creating robust supply-chain alternatives, and even looking at multiple customer base to spread their risks (A disaster to a customer can also have serious implications to an organization)
» Professional services are now available for setting up DR solutions – and concepts like WAR (Work area recovery) setup, Hot (or cold) sites, Load balancing across multiple units / locations and DRaaS (Disaster Recovery as a service)

Challenges

» Lack of understanding of key business outcomes needed for a DR plan
» Management vision, support and funding
» Theoretical "on-paper" plans with not enough testing
» Not able to visualize & plan for all possible forms of disaster
» Not able to plan for the right durations of disaster (will the plan work for disasters lasting one day, one week, one month or more than a month)
» No clear roles and responsibilities – for planning, and then if needed, for execution of plans (and depending on type of disaster and what kind of personnel are available)
» Incorrect assumptions (example, assuming staff will be available to re-locate to an office in another city during a city-wide flood situation; and assuming airline, train and bus services will be plying in these situations
» Not setting up a pre-determined "command and control" center and not pre-booking services (example, paying for a smaller alternate site even though it's not used)

Key step to build effective BCP

» Start now with a "here and now" plan, a short-term plan and a longer term plan
  - **Understand your business** (key customers, processes (SLAs), products, services, & staff. Then identify needed service levels, RPO, RTO etc. for each "outcome".)
  - **Measure the risk** posed to key each business element (above) by these 5 threats: power outage, fire, hardware failure, fraud/theft/terrorism, weather issues. The measures are: Likelihood of failure, max period of failure that can be sustained, impact on business, worst-case scenario
  - **Define strategy to cope:** immediate response (e.g. evacuation, first-aid) and long term response (e.g., relocation, access to data, restart of operations etc.)
  - **Construct BC plan:** People, processes and technology
  - **Test,** Train & Practice, and keep plans updated

Suggested Roadmap for 2020

» A good, viable DR and BCP is a MUST for every organization
» Identify roles and responsibilities for clear accountability – and ensure management support (including funding)
» Prepare a plan for key business processes or outcomes if not the whole
» "Load balance" across multiple sites if possible (naturally addresses many types of DR situations)
» Consider People, Process and Technology in your DR/BC plans
» Ensure Standard Operating procedure(s) "SOP" (or Red-book) is available and kept up-to-date
» Test, Test, Test (against all possible situations) - an untested is ONLY a strategy !!

Recent outages & their costs

Business Entity	Outage Reason	Time	Impact on Operations	Estimated Loss
British Airways, UK	Power reconnection to data center after an accidental disconection	May 2017	Cancellation of 800 flights	GBP 150 million
Delta Airlines, US	Small fire in a data center	August 2016	Cancelled 2100 flights	USD 150 million
SouthWest Airlines	System failure	July 2016	Canceled 2300 flights	USD 54-82 million
National Stock Exchange, India	Software glitch; system failed to boot	July 2017	Trading stopped for more than three hours	NA

Business continuity preparation is like an insurance……
plan for the worst, and hope for the best

Cybersecurity

Cybersecurity – The road ahead

*a*ccording to ISACA's State of Cyber Security 2017, 37% of respondents say fewer than 1 in 4 candidates have the qualifications employers need to keep companies secure. The survey also reveals that almost 27% of respondents state that they are unable to fill open cyber security positions in their enterprises—with another 14% of respondents unaware as to whether their enterprises could fill these positions or not.

This leaves a quarter of cyber security positions unfilled, the survey reports. In the wake of mounting security incidents – over 27,482 reported in 2017— the government is taking some concrete steps to appraise the role of the Chief Information Security Officer (CISO).

But the basics won't be enough.

With the business and threat landscape changing rapidly, CISOs will have to upgrade their skills and ensure that any cyber security strategy contributes to financial stability and growth, and embeds security in all of the organization's plans. This means that organizations need to appoint someone on the board who's not only dedicated to cyber security but also understands regulatory requirements and overall business strategy.

The panel of CIOs lay out the challenges that companies will need to overcome in order to build a robust infrastructure for handling cybersecurity in the organization.

The Panel

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ED & Group Head IT & IS

Lanco Infratech

Ramakrishnan Sudarshanam

Divisional VP-IT

United Breweries

Anil Chinnabhandar

SVP

Landmark Group - Max Retail Division

Sunil Mehta

SVP & Area Systems Director

J Walter Thompson South Asia

Interpretation of the technology

» Brake is as important as accelerator
» Cybersecurity is as business enabler as IT

Questions that you will seek answer to?

» Does the security control restrict business pace?
» What are the implications of security and privacy in the era of hyper-connectivity and IoT?
» Are processes implementable that can remove intermingling of personal and business technologies?

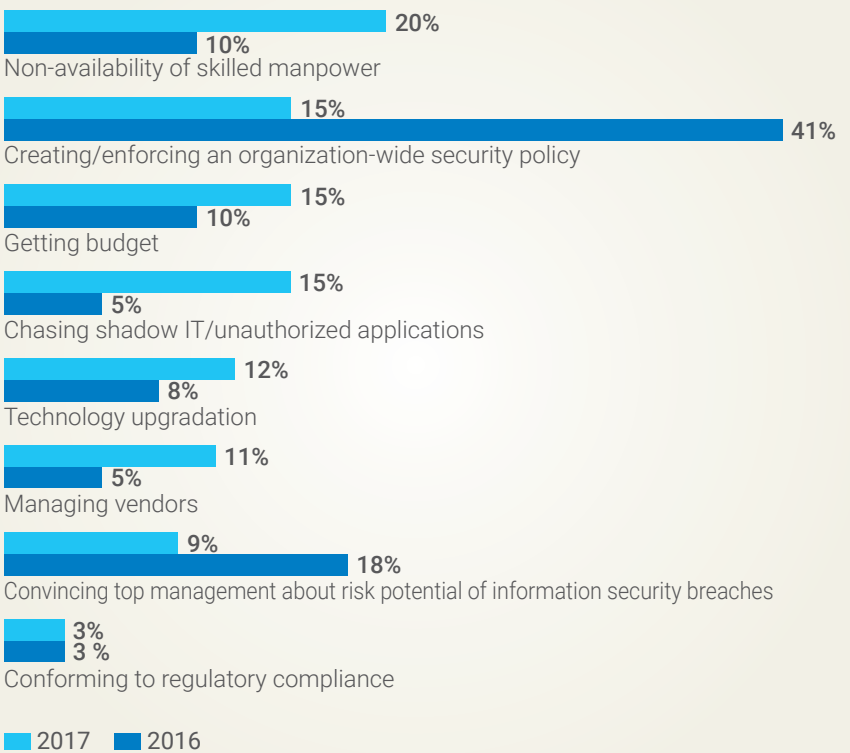
Importance in 2020

» 20 Billion connected devices are going to increase surface of attack
» Different types of devices, protocols, solution providers

Impact on business

» Increased Threat Landscape
» Complex technical solutions
» Lack of talent and process maturity
» Complacency (False belief of having best solution)

Most Critical Challlenges*: 2017 vs 2016



IT NEXT's State of Information Security Survey 2017

Does it impact any industry (ies) significantly more?

» Every industry and every business, even individual human being

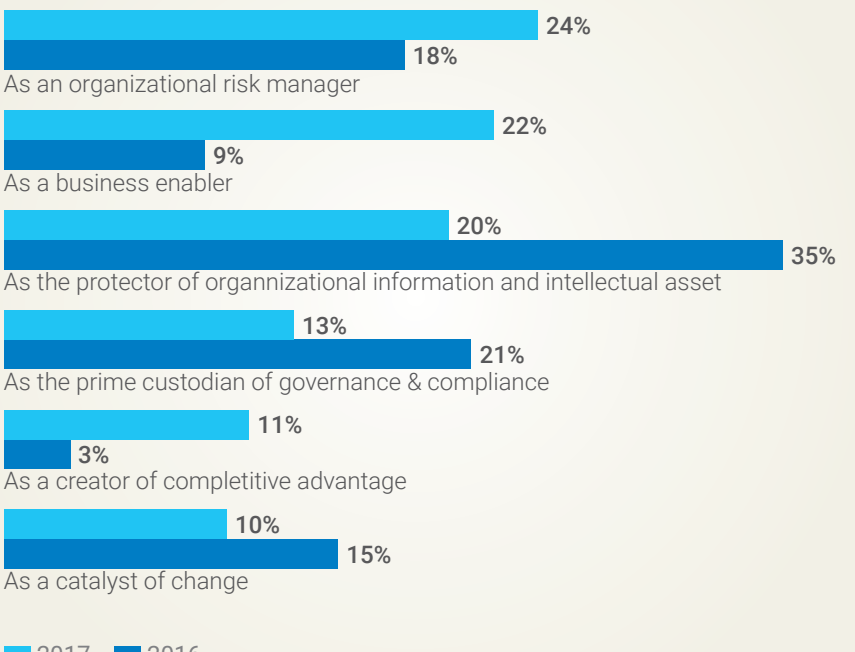
State of cybersecurity today

» Isolated solutions
» Skill unavailability
» Unknown surface area is larger than known
» How it will evolve by 2020
» Reduction of surface of attack by ML and Integrity Check
» Intelligent and integrated solution framework to automatically thwart attacks from sophisticated threat surface
» Increased awareness amongst all stakeholders including cyber criminals. Tug of war will continue.

Suggested roadmap for 2020

» Consider entire surface area of attack holistically and focus on reducing it
» Look for self-learning, autonomic and integrated solution for adoption of virtual reality, cognitive and sensor technology
» Security as DNA of business.
» Serious awareness program both at business and personal levels

Perceived CISO Responsibilities in the next 3 years



IT NEXT's State of Information Security Survey 2017

IT NEXT's State of Information Security Survey 2017

Cybersecurity impacts every industry and every business, even human beings

Securing Critical Infrastructure (SCI)

The security of OT and IT

Industry 4.0 is becoming a reality, and operational infrastructure that till now was disconnected from the rest of organizational IT, are now coming together. This combination of hardware and software technologies is resulting in smarter econsystems, called the cyber-physical systems.

The increase in connectivity and interdependencies between the critical infrastructure components has exposed IT leaders to risks and new threats. There's an urgent need to secure this infrastructure and withstand cyber attacks. The 2015 Ukrainian power outage is still fresh in our memories where citizens and customers experienced unscheduled power outages. There were also reports of malware found in Ukrainian companies in a variety of critical infrastructure.

To properly secure critical infrastructure and withstand cyber-attacks, not only the infrastructure providers need to measure the systems and their standard controls, CIOs and their teams need to assess their IT systems detect vulnerabilities in order to reduce these risks and modernize their infrastructure services.

All this is not going to be easy.

First of all, a lot of operational technologies are archaic and there are real challenges faced by IT leaders who want to solve the threats without involving the OEM vendors. The second challenge is the lack of security talent. Every year, new cybersecurity threats evolve and make it even more difficult for organizations, their CIOs, and security vendors to keep up.

And all this is going to need your businesses' support: to modernize your systems, to integrate IT and OT. Our panel suggests making sure that your systems are secure and protected against today's most pervasive threats.

The Panel

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Vijay Mishra

Assoc. Director

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How do you interpret critical infrastructure?

» Every industry would have its own interpretation
» A combination of information technology (IT) systems and operational technology (OT) systems
» Cyber physical systems or digital infrastructure that directly impacts business

State of security

» In the past, we have invested in lot of technologies in a fragmented manner without addressing all aspects of the security lifecycle: Protect – detect – respond – recover

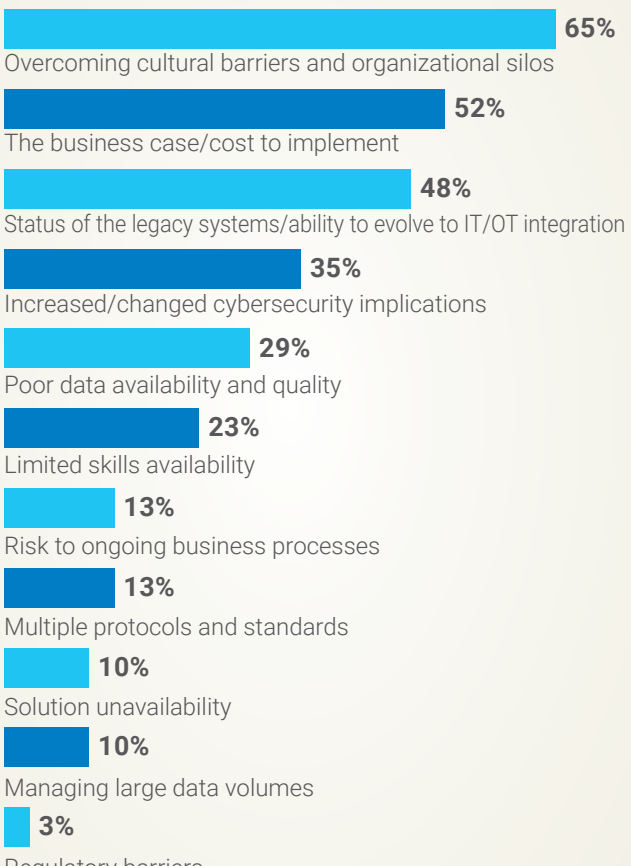
What are the challenges of securing critical infrastructure?

» Increased frequency of targeted cyberattacks
» Keeping pace with technology changes including playing catch up with the Dark Web
» Security is not an IT issue but a business issue
» External perimeter vulnerability, trusted worker compromise

Steps to improve security

» Empower and work with your CISO to understand your company's security posture
» Reach out for expert support — internally and externally
» Define your cyber-risk tolerance consistently with your business strategy and risk appetite
» Support cybersecurity investments that maximize business impact
» Ensure cybersecurity collaboration and information-sharing with third parties, customers, business partners and competitors

What are/have been the most challenging aspects of IT/OT integration in your business?



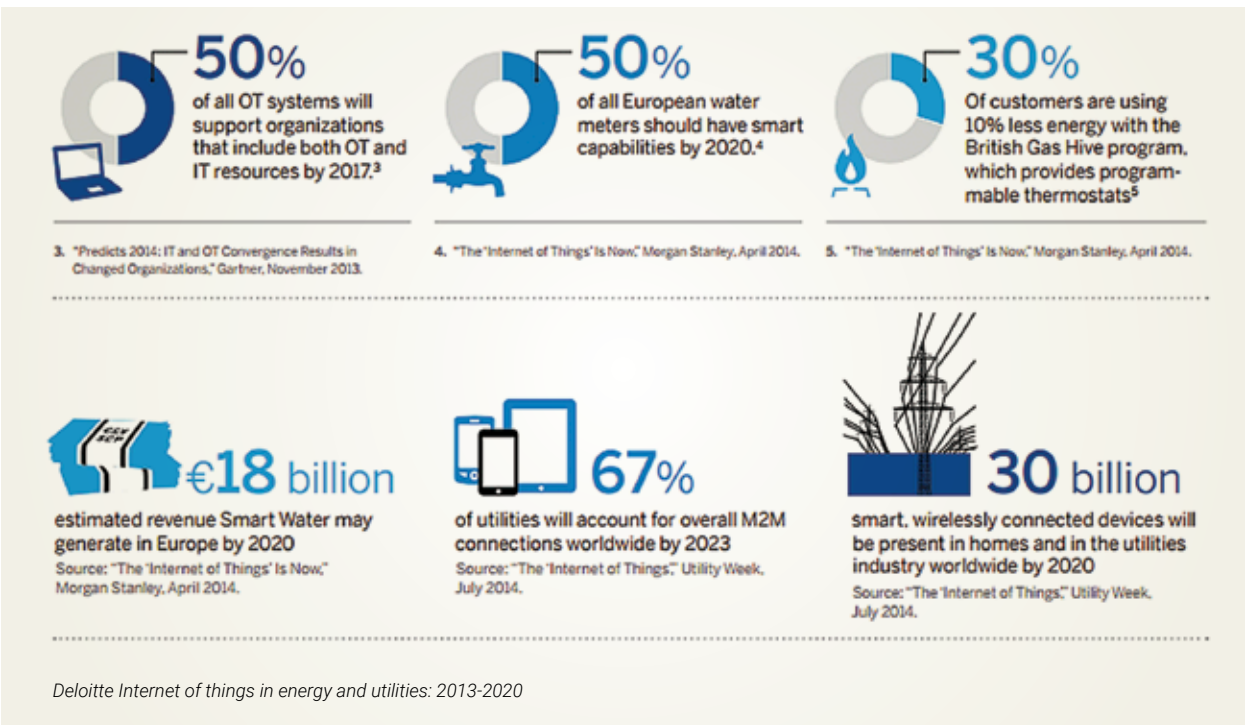
Source: Accenture's Digitally Enabled Grid program, 2016 IT/OT survey.

Potential drivers in India

- Technological – IT infrastructure as of 2017
- Business changes – gradual sensitization of operating business and in some cases, the company board
- Customers are also becoming aware and seeking cybersecurity as a differentiator
- Impact – Social, Regulatory, Reputation, Economic
- New and unknown dimensions of threat

Strategic Roadmap for 2020

- Gartner predicts that by 2020, 50 percent of OT service providers will create key partnerships with IT-centric providers for IoT offerings
- Development of cybersecurity framework and governance model – to be reviewed time-to-time
- Identification & classification of critical assets – based on external & internal vulnerabilities
- Continuous education & awareness program
- Selection of appropriate process & tools
- Deployment of cybersecurity solution
- Regular assessment of framework, processes & tools and timely corrective action
- Benchmark & security certification



Deloitte Internet of things in energy and utilities: 2013-2020

Holistic protection of connected and extended environment from both physical and logical vulnerabilities


AGENDA 2020

Thank You

We thank all our partners who helped us execute the Agenda 2020 program.