



**BML MUNJAL  
UNIVERSITY™**

A **HERO GROUP** INITIATIVE

**AIQRATE**

A Bespoke AI Advisory & Consulting Firm



# **REIMAGINE THE FUTURE**

## **OF WORK WITH NEW AGE OPPORTUNITIES**

**EMERGENCE OF EXPONENTIAL TECHNOLOGIES  
AND ROLE OPPORTUNITIES FOR THE INDIAN  
TECHNOLOGY WORKFORCE**



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Indian Technology Industry : Disruptions in the Landscape

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About AIQRATE advisory and consulting

# PREFACE

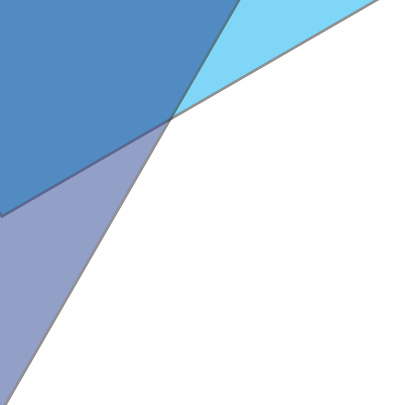
*“There are two kinds of stones, as everyone knows, one of which rolls. “ - Amelia Earhart*

*The management of talent has always been and continues to be a major challenge for most industries. This is particularly true for knowledge based industries like information technology. The dramatically changing dynamics of the Indian Technology industry compound the challenges and opportunities faced by the industry.*

*Never since the advent of mass production has an industry seen such dramatic volatility in such short period of time. The revolution before primarily added to the productivity of the labor and moved across the globe. The current revolution is not merely transcending national borders - it is redefining jobs, eliminating others and creating new opportunities.*

*Today, we are witnessing a sea of change in exponential technologies and ways of working within the Indian Technology industry. Legacy skills , tools & technologies have become obsolete. New age digital and AI professionals are being called upon to enter the global talent workforce - with a new set of skills. One of the core competencies of the Indian technology workforce has been its ability to on-board new talent at a pace that most MNC's still think improbable. Now ,even these organizations will be deeply tested as they attempt to respond to changing landscape over the next decade.*

*The fresher talent supply chain desperately needs to be revamped - academic institutions will have to up their game, and enterprises, while engaging in meaningful collaborations with academia and the students, also need to develop a culture of continuous self-learning. We are well aware that Indian education system needs a major overhaul. Despite, being the third largest education system in the world, less than 15 institutes are listed in the top 100 colleges, institutes and universities in the world. Our curriculum needs a major revamp, there is a strong emphasis on role based learning and meaningful industry - academic partnerships for the learnings to be relevant with the present day job market. As a result, we see that the Indian technology industry spends USD 2 Bn on freshers training every year - a spending which should be focused on upskilling and reskilling the existing employees.*



The good news is - talent acquisition models are changing and enterprises are moving away from traditional “hire-train-deploy” model to “train-hire-deploy” model. The onus is largely on the young learner and the education to deliver high quality talent. Enterprises are also rethinking the career lattices of the Indian technology workforce. There will be changes in the traditional career ladders with many professionals growing as “techies for life” and a relative de-emphasis on roles which involve only people management. Domain expertise becomes more critical and it appears that individual contributors with deep expertise in these domains and cross technology on exponential technologies and design expertise will make far more significant impact than ever before.

The report highlights multiple opportunities that this future of work with new age opportunities will unfold. The Indian technology industry will see a net increase in headcount and there will be demand for new talent with expertise on exponential technologies skills. With these synergistic efforts of enterprises and academic institutions, this is the right time to covert India’s demographic structure into a true dividend for the nation. It will not be an exaggeration to call the present scenario the largest talent challenger ever, and its knocking hard at the gates of the Indian technology industry and academic institutions. The requirement of skilling more than 2 million new and existing talent workforce in the next 3 years will be a daunting task.

However, this challenge is not one that is India’s alone. In an era of rapid exponential technologies , this need is being felt across the world. The report will unravel various inferences and insights on the new age skills in the future of work scenario and will also attempt to conjure possible course of action with suggested view points and recommendations.

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BML Munjal University

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AIQRATE advisory & consulting

# AN OVERVIEW

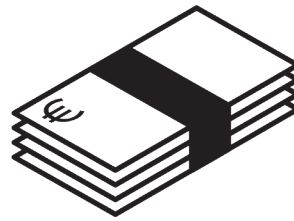
Technology Industry is massive and will employ 4.4 million professionals by 2021: NASSCOM

*Over 5 years*

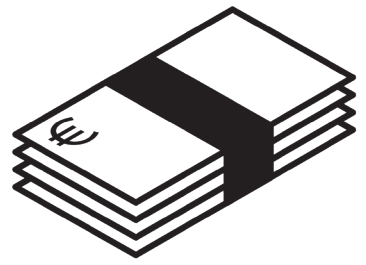
*2016*

*2021*

*Total Revenues  
(2021 Projected)*



\$129 bn



\$192 bn

*Head-Count of  
employment generated*



3.4 mn



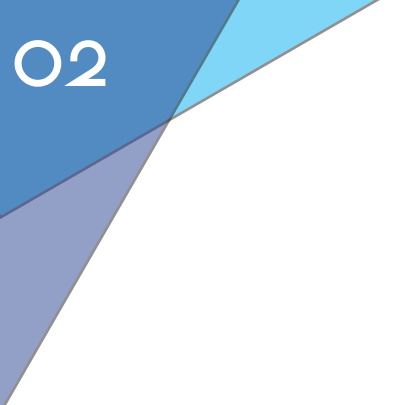
4.4 mn

*Domestic Revenue  
generated by Technology*



\$22 bn

\$25 bn

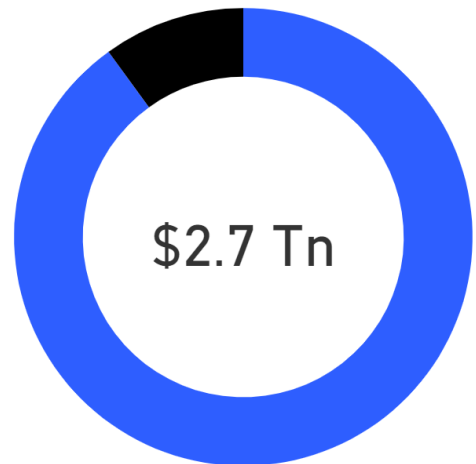


# THE DISRUPTION

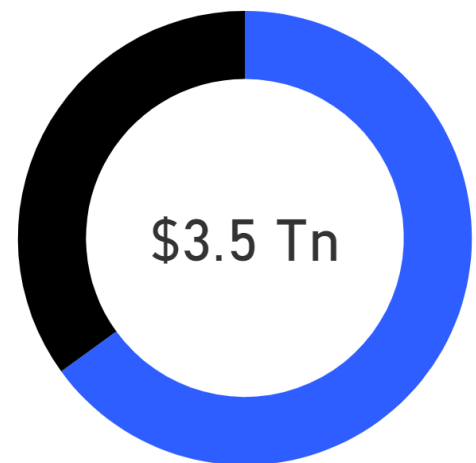
Exponential Technologies are disrupting the  
Technology industry revenue mix: Gartner

*Total Size*  
[Global Spending]

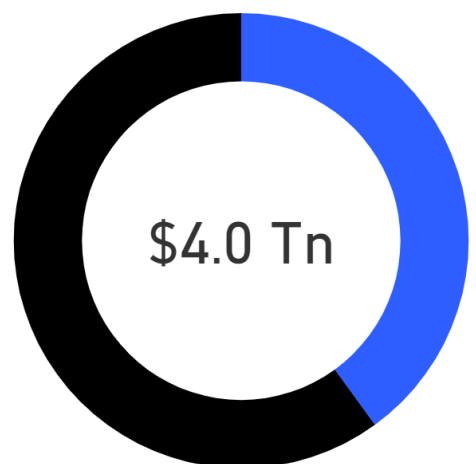
*By 2014 - 10% of  
digital technologies*



*By 2020 - 35% of  
digital technologies*



*By 2025 - 60% of  
digital technologies*



# DIGITAL TECHNOLOGY

## Components of Digital Technology: Literature Review



*By 2020 end, the total data market will double from 2015 levels*

*By 2020 end, 6.1 billion smartphone users in the world*



*20 billion IoT devices by 2020*

*Security testing continues to be area of high growth*



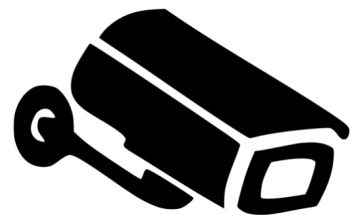
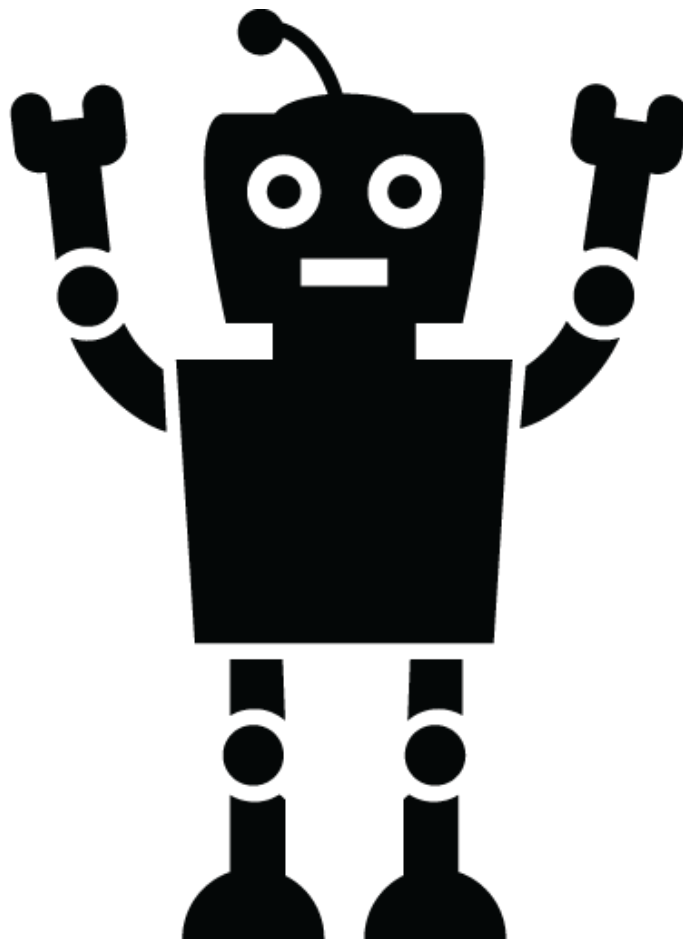
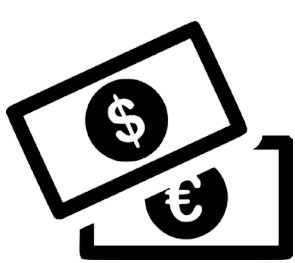
*More than 2.2 billion social media users globally*



# ADVENT OF AUTOMATION

Clear shift towards high skilled resources

*RPA can yield cost reduction of 35%-65% for on-shore operations and 10%-20% for off-shore delivery*



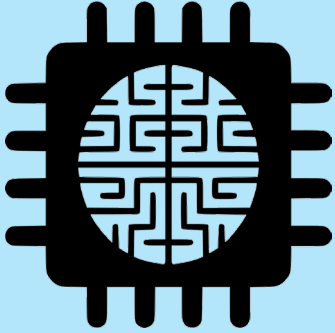
*RPA improves service levels with enhanced process quality, speed, governance, security & continuity*



# EXPONENTIAL TECHNOLOGIES

Exponential Technologies that will impact business within the next 3 years

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*AI and Machine Learning - 63%*

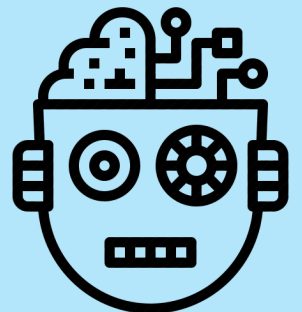
*Cloud Computing Technologies - 55%*



*Internet of Things - 48%*



*Robotic Process Automation - 37%*



*Cyber Security - 29%*

## Receding Roles



*Manual Testers*



*System Administrators*



*Database Administrators*



*Production Support*

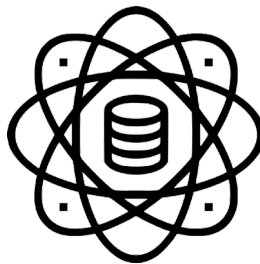


*Network Engineers*

## Growing Roles



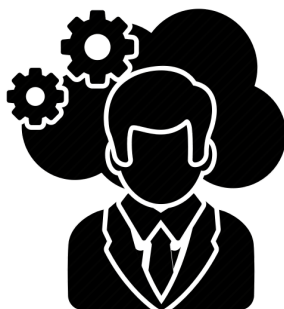
*Machine Learning Experts*



*Data Scientists*



*Digital Marketers*



*Cloud Engineers*



*Mobile Product Developers*

# ROLES IN TECHNOLOGY

Roles in Technology space are evolving rapidly

*Today*

*Tomorrow*

*App page  
Development*



*S/W developer*



*DevOps*

*App  
Deployment*

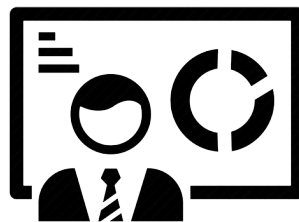


*Deployment  
Engineer*



*Deployment with  
Production  
Support*

*Data  
Analytics*

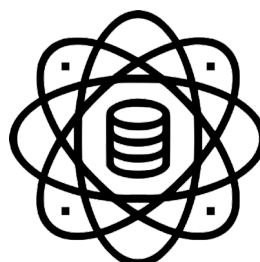


*Data  
Analyst*



*Data  
Engineer*


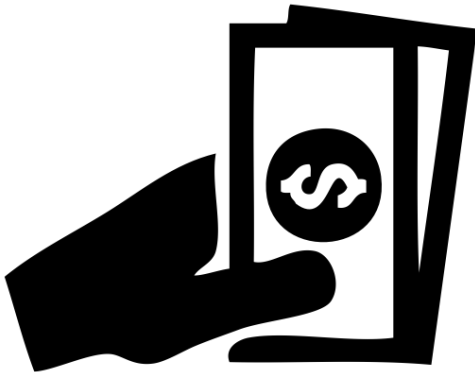
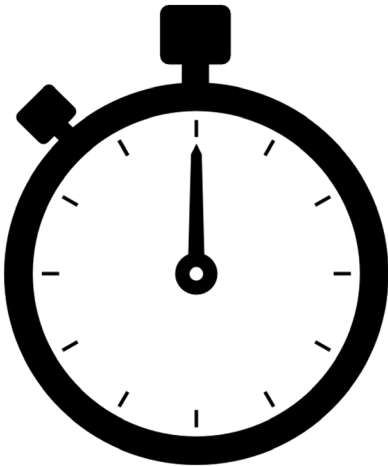
*Data  
Analytics*



*Data  
Scientist*



*Data  
Scientist*

Traditional		Gig
Low Level of Autonomy		High Level of Autonomy
Employment Contract		Payment by Task
Permanent / Part time jobs		Short term contracts/ Retainers

In India, the growth of internet and mobile has created a boom for gig workers using digital platforms. With 15 million gig workers, India is second only to the US (60 million) in terms of count.

# EMPLOYABILITY

Employability with technology continues to be a challenge

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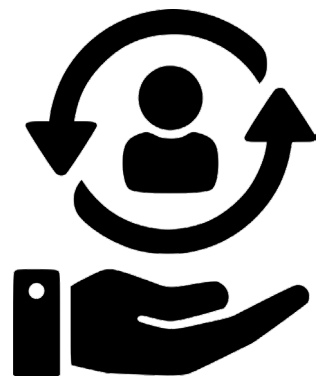
*There is an expected supply of 7 million people for Indian technology industry that consists of graduates, PG's, diploma holders and PHD's, overall employability is 18% only.*

*This large pool needs urgent attention in terms of relevant skilling in the wide spread technological areas in order to become employable in Technology Industry.*



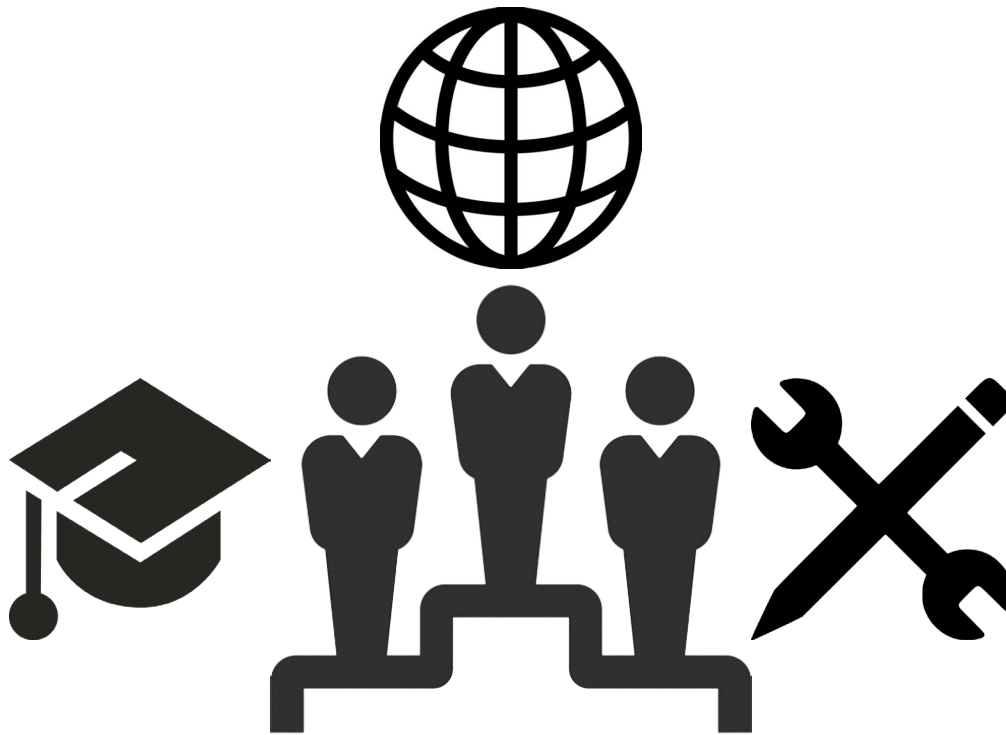
*Job positions for data engineers, AI/ML architects, design thinking, etc are the most difficult to fill in.*

*Nearly 1.5 - 2 million of the existing tech workers and professionals need to go through reskilling process*



# THE STORY SO FAR

The scale of change requirement is unprecedented in  
\_\_\_\_\_ Indian Technology Industry



*Growing demand for the exponential tech professionals are putting extreme pressure on Indian Technology industry to remain competitive at global level.*

*Tenured technology organizations are sitting at a large problematic bulge in the middle.*

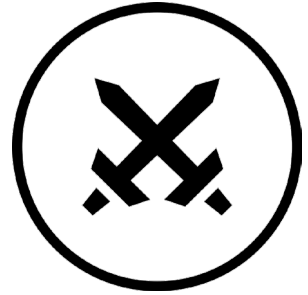
*The overall skilling requirement is the highest any Indian industry has witnessed, with more than 2 mn people to be trained.*

*India is also facing the challenge of having a large number of higher academic institutions but a very low employability of students.*

# THE ENTRY LEVEL

Challenges faced by entrants like students are being tackled by the new changes \_\_\_\_\_

## The Challenges

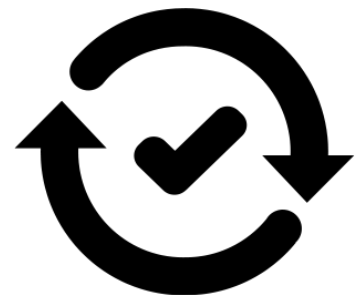


*The Indian education system needs contemporary programs and curriculums.*

*Meaningful industry-academic partnerships are almost non-existent.*

*Only 12% of the students clear the corporate process for recruitment assessment.*

## The Changes



*The recruitment model is shifting from hire, train, deploy to train, hire and deploy.*

*Corporates are also forming direct tie-ups with the academic institutions for recruitment.*

*Consequently, the fresher supply sources - academic institutions will see a massive uplift.*



# THE SUPPLY CHAIN

Strategies for improvements in the fresher Supply Chain

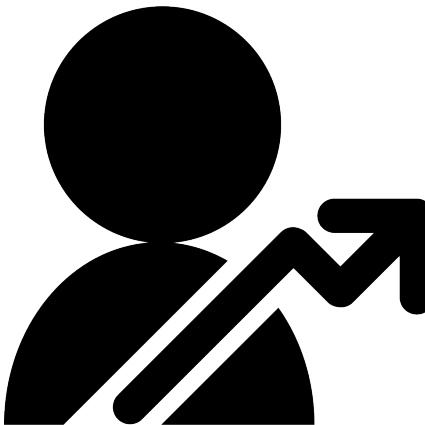
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*Dynamic, fungible and flexible course curriculum to be incorporated for exponential technology programs.*



*Personalized learning techniques need to be incorporated to make faster deployment.*

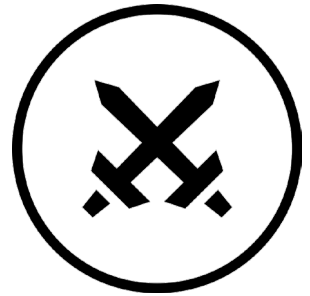


*Indian technology industry needs to have benchmarking of standardization and best practices of exponential technology projects and engagements.*

# THE MIDDLE LEVEL

Middle level technology professionals are battling with challenges and awaiting changes

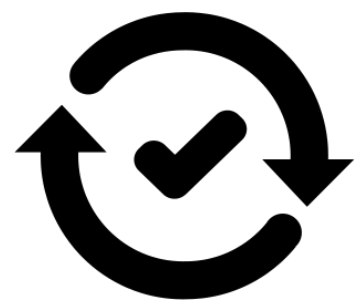
## The Challenges



*The skills at the middle level continue to be outdated with emergence of exponential technologies.*

*New roles, cost pressures by the Indian technology companies are compelling the middle level technology professionals to struggle for growth.*

## The Changes



*New career lattice and roles to be identified, the move from people management to skill-based expertise being established.*

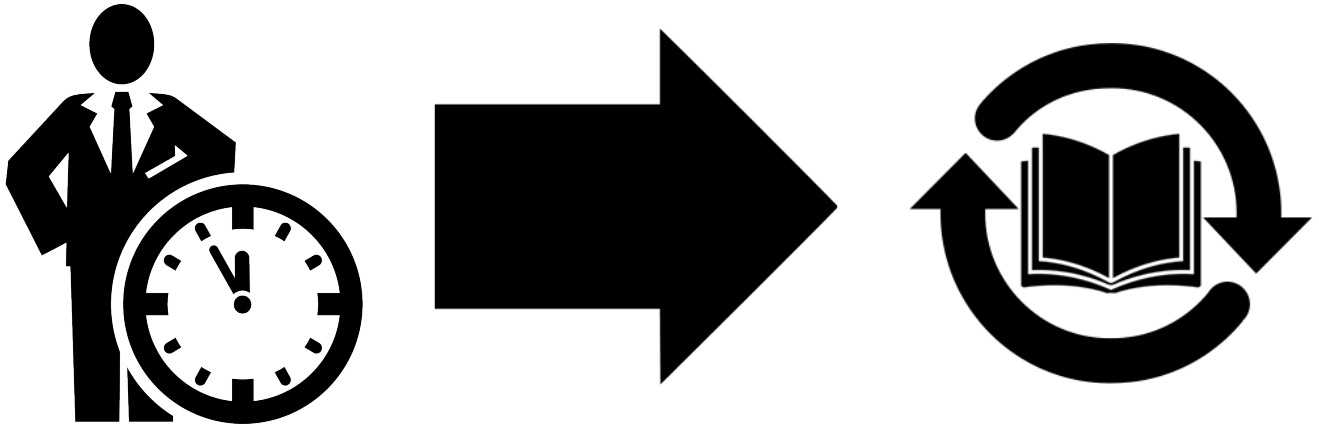
*Performance management systems need overhauling.*

*Innovation around training methodologies to be developed.*

# TIME TO LEARN

There is now a global move towards continuous learning and reskilling

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*Routine office jobs declined from 26% to 21% between 1999 to 2019, leading to a loss of 7 million jobs.*

*Post the financial crisis, things have worsened for unskilled jobs, which reduced by 55%.*

*The composition of high-end jobs is changing; 49% of the top quartile skills require new age technology skills.*

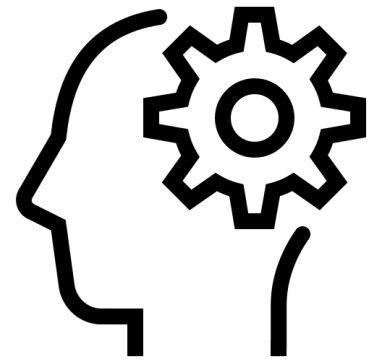
*AI/ML opportunities are up by 20x and other allied exponential technologies by 12x.*

# THE INTERVENTION

Emerging scenarios and current interventions in reskilling

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*Innovation around learning and development methodologies.*



*Moving from annual performance reviews to continuous assessments.*



*Senior leadership training for change management.*



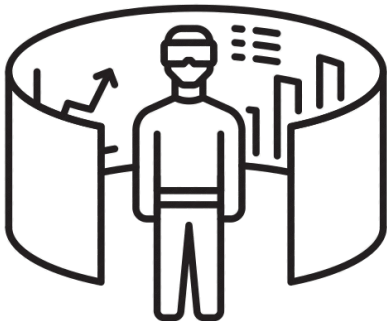
# NOVEL MECHANISMS

Digital Learning mechanisms for training and reskilling

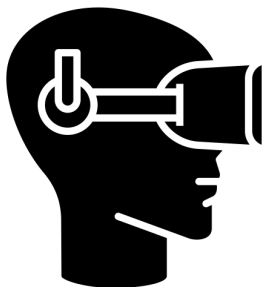
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*Experiential learning:  
Microlearning, Interactive &  
Immersive personalized learning*



*Job skilling:  
Continuous learning, Job  
simulations, Learning on demand*



*Distributed learning:  
Mobile delivery, Gamification,  
Extended and Mixed reality*

# GOVERNMENT SUPPORT

Support from the government will go a long way in building the future skills - a suggested approach

## SKILLS*future*

### *The Singapore Skilling Model*

*SkillsFuture was launched in Singapore in 2016, where every Singapore citizen aged 25 and above would get \$500 annually to pay for a large variety of courses and learning programs*



#### For Students

*Education and career guidance; enhanced industry internships; a one-step education, training and career guidance portal*



#### For Early-career employees

*Help SME's to better recruit, train and manage people; offer bite-sized and targetted learning options*



#### For Mid-career professionals

*Incentivize experts in certain skills to hone their mastery; eligible professionals above 40 years can get subsidy on course fees for identified programs*

# RECOMMENDATIONS

Industry recommendations for creation of new age opportunities

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*Multi-stakeholder exponential technologies academy initiative.*

*Industry and academia led toolkit and playbook for upskilling the workforce in exponential technologies.*

*Promoting and supporting deep tech startup ecosystem for new opportunities gain.*



# SUMMARY

A section summary of changes in job landscape and reskilling needs

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*Several jobs at the mid-level of Indian Technology companies are becoming redundant or changing dynamically. Massive reskilling in exponential technologies required swiftly.*

*Successful change will require buy-in and active participation of senior leadership - most critical, redesign of internal academies and L&D departments.*

*A possible solution is to actively rethink the career lattice of Indian technology professionals, traditional career progression vs new age continuous learning paths.*

*Government needs to consider stepping in to support the sector that employs 4 million professionals and is a standard bearer for the new India.*

# A FINAL THOUGHT

It will not be an exaggeration to call the present scenario as the largest ever HR challenge for Indian technology professionals and is knocking hard at the gates of the Indian technology industry.

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*The recruitment and skilling of more than 2 million new and existing professionals through academic institutions, learning academies, and training departments is a daunting task. The ever increasing competition has not left the organizations with much of an alternative, they have to either embrace the challenge or perish.*

*If we look beyond these challenges, the silver lining of new age opportunities with proliferation of exponential technologies - AI, IoT, cybersecurity and RPA is hard to ignore, and academic institutions can fast change themselves to create new age programs and interventions for entry level professionals to be job ready. This aspect of rebuilding the new talent supply chain will augment well for both education sector and Indian technology industry.*

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## Looking ahead

*Addressing the challenges of reskilling the aspiring and existing technology workforce will therefore require change and initiatives from all stakeholders. At an individual level, there will be a need to reinvest in building exponential technologies skills and and to think of learning as lifelong requirement. Enterprises will need to support and encourage such behavior and dramatically increase investments in training. Academic institutions will need to align tightly with industry to bring topical and dynamic conceptual and contextual learning with industry ready caselets and simulations. Government will need to provide the framework to support individuals and companies through the period of change.*

*“It always seems impossible until its done.” - Nelson Mandela*



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*Here we work closely with boards, CXOs and senior leaders on their journey of understanding what's the art of possible with AI , embedding it within their business strategy & business functions and looking at augmenting the decision-making process. We have a proven AI advisory services to enable CXO's and senior leaders to curate & design building blocks of AI strategy, embed AI@scale interventions and create AI powered organizations.*

*Our path breaking bespoke AI consulting frameworks, assessments, primers and playbooks help Indian & global enterprises, GCCs, startups, SMBs, VC/PE firms, and academic institutions enhance business performance and accelerate decision making. We design top of the line AI tools, frameworks & methodologies wrapped in the form of deployable artifacts which are hand-crafted for a client's specific requirements. We also invest in building a global AI ecosystem: AI startups & niche firms, AI strategy advisors , data & third party players, VC/PE firms, academic institution partners to provide holistic AI advisory and consulting services to our clients in totality.*