

Digital Transformation & The Future of Job

How to stay relevant in jobs market

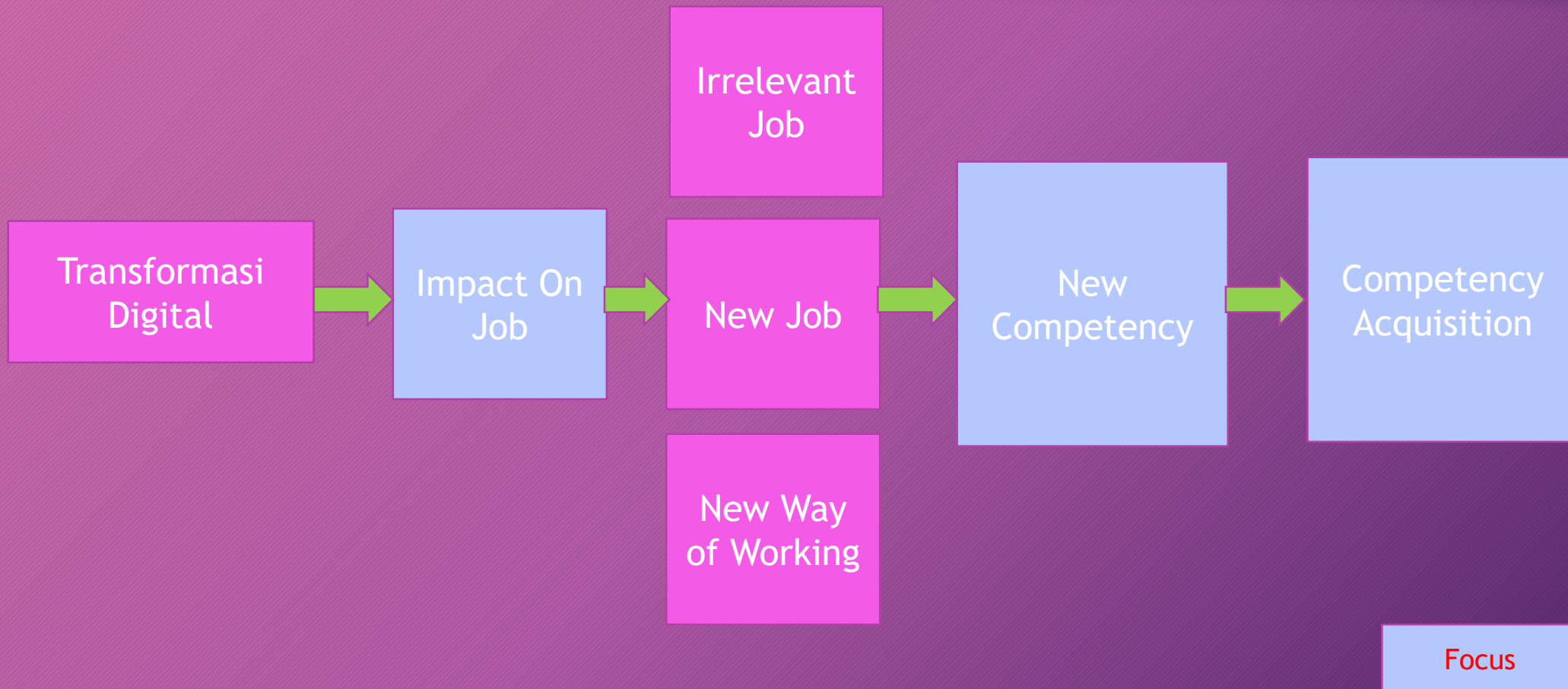
29 September 2020

Telkom Corporate
University

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onknowledge.wordpress.com

Agenda



At the heart of Industrial Revolution is digital
transformation

Society Evolution & Industrial Revolution

IR 1.0



Society 1.0

Hunting Society

The creation of human being

IR 2.0



Society 2.0

Agrarian Society

13.000 BC

IR 3.0



Society 3.0

Industrial Society

The end of the 18th Century

IR 4.0



Society 4.0

Information Society

Latter half of the 20th Century



Society 5.0

Super Smart Society

From the 21th Century

The Industrial Revolution - Key Phases



1st Revolution

Mechanisation,
Water Power,
Steam Power



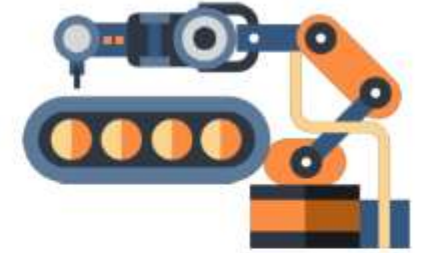
2nd Revolution

Mass Production,
Assembly Line,
Electricity



3rd Revolution

Computation and
Automation



4th Revolution

AI Revolution

JAN
2020

INDONESIA

THE ESSENTIAL HEADLINE DATA YOU NEED TO UNDERSTAND THE STATE OF MOBILE, INTERNET, AND SOCIAL MEDIA USE



INDONESIA

TOTAL
POPULATION



272.1
MILLION

URBANISATION:

55%

MOBILE PHONE
CONNECTIONS



338.2
MILLION

vs. POPULATION:

124%

INTERNET
USERS



175.4
MILLION

PENETRATION:

64%

ACTIVE SOCIAL
MEDIA USERS



160.0
MILLION

PENETRATION:

59%



we
are
social



we
are
social



Hootsuite®

THE BIGGEST GROWTH BIG DATA/AI IS IN ASIA

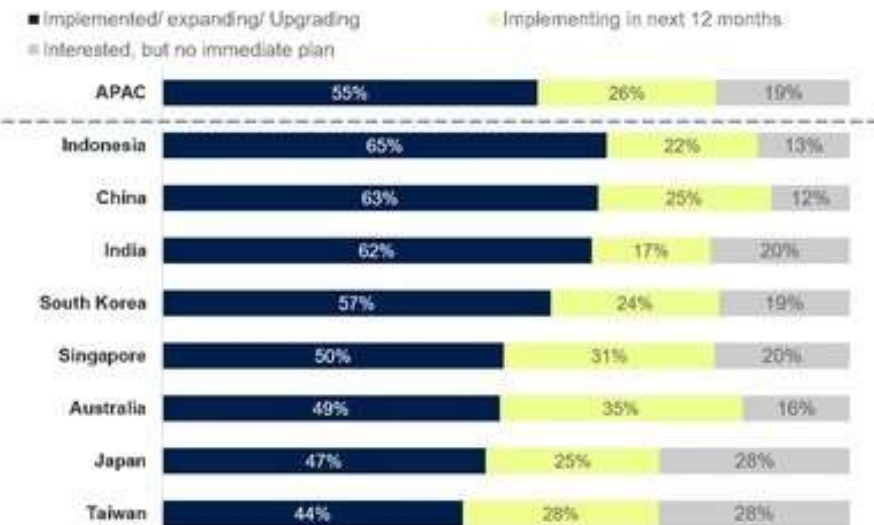
Hadoop Big Data Analytics Market, by Region, 2016-2021

The operational intelligence segment in North America is projected to grow at the lowest CAGR during the forecast period.



Source: MarketsandMarkets Analysis

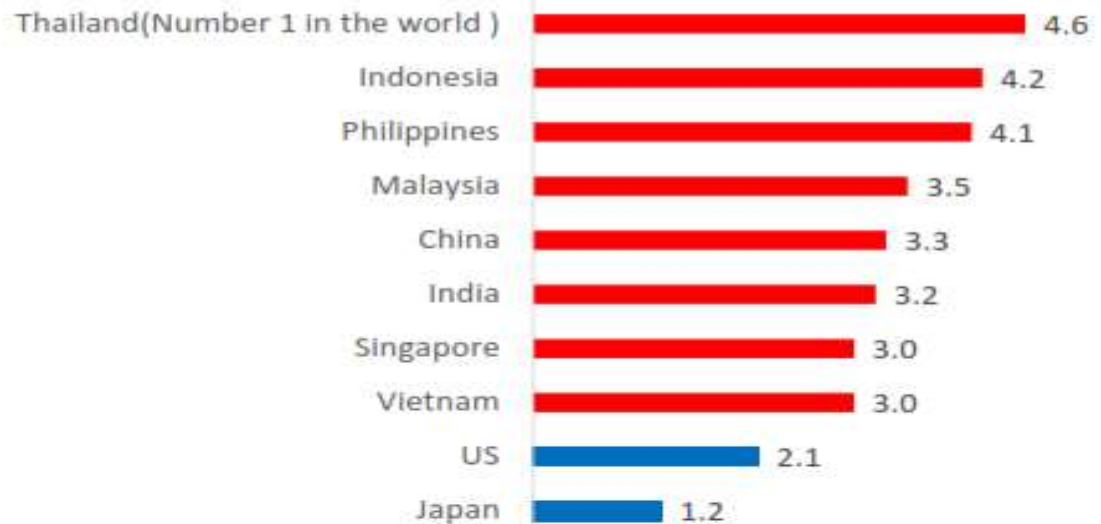
The stages of AI implementation in different markets



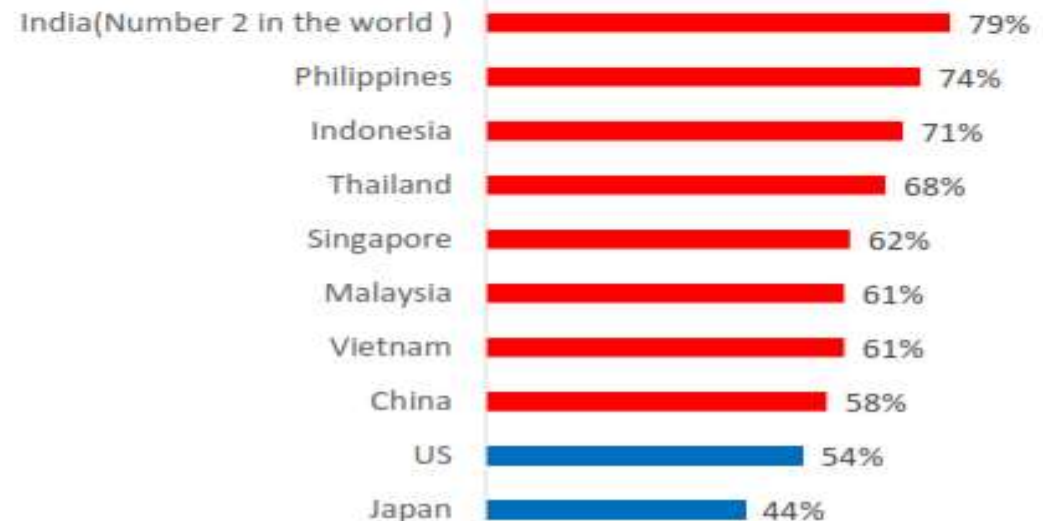
The Future is Asian?

“Mobile first” and “technology first” have enabled emerging countries in Asia to go beyond some developed countries

Average time spent on the internet through mobile phones (/day)



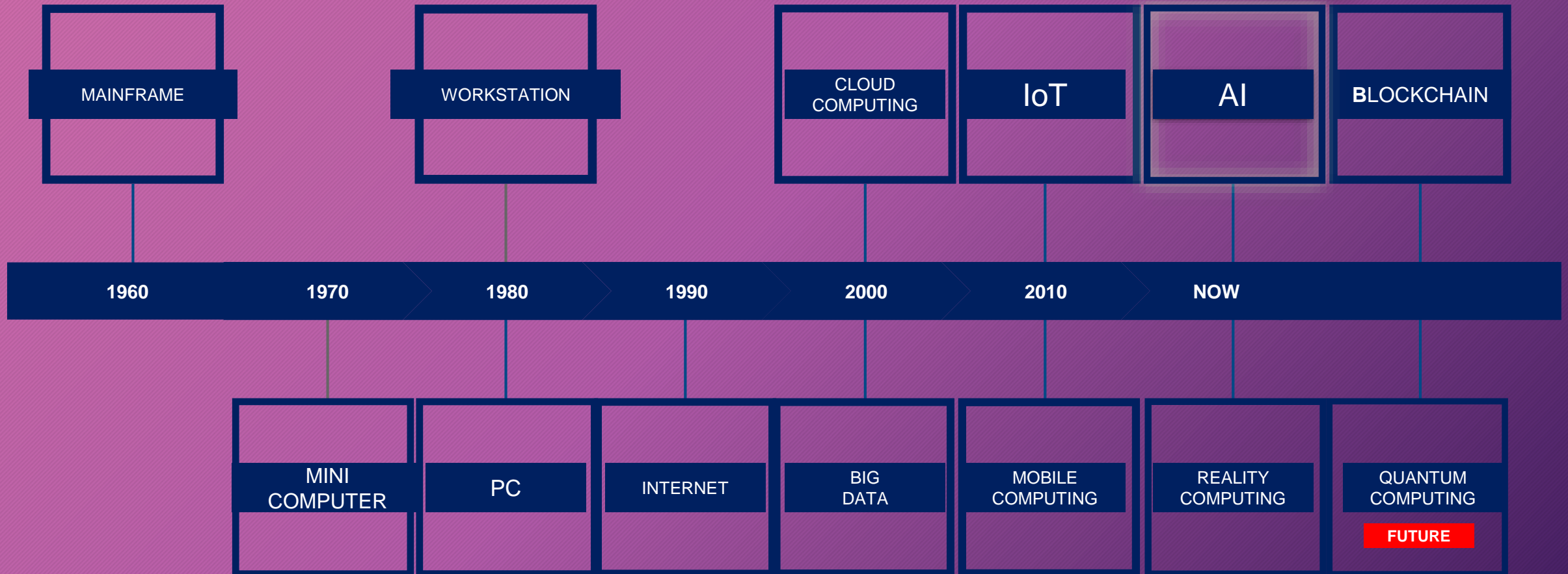
Optimistic view towards technologies *



(Ref.) Hoot Suite

*Percentage of people who perceive technologies as opportunities rather than risks 15

Fast-paced Computer Industry



Dimensions of Digital Transformation

Changes in Strategic Assumptions

Analog Age



VS



Digital Age

Mass market
Firm is the key influencer

Customer

Dynamic Network
Customers are the key influencer

Within defined industries
Clear: partners or rivals

Competitions

Across fluid industries
blurred distinction: rivals or partners

is expensive to generate
challenges: storing and managing

Data

is generated every where
challenges: converting into knowledge

Focus on finished product
Testing ideas: expensive, slow & difficult

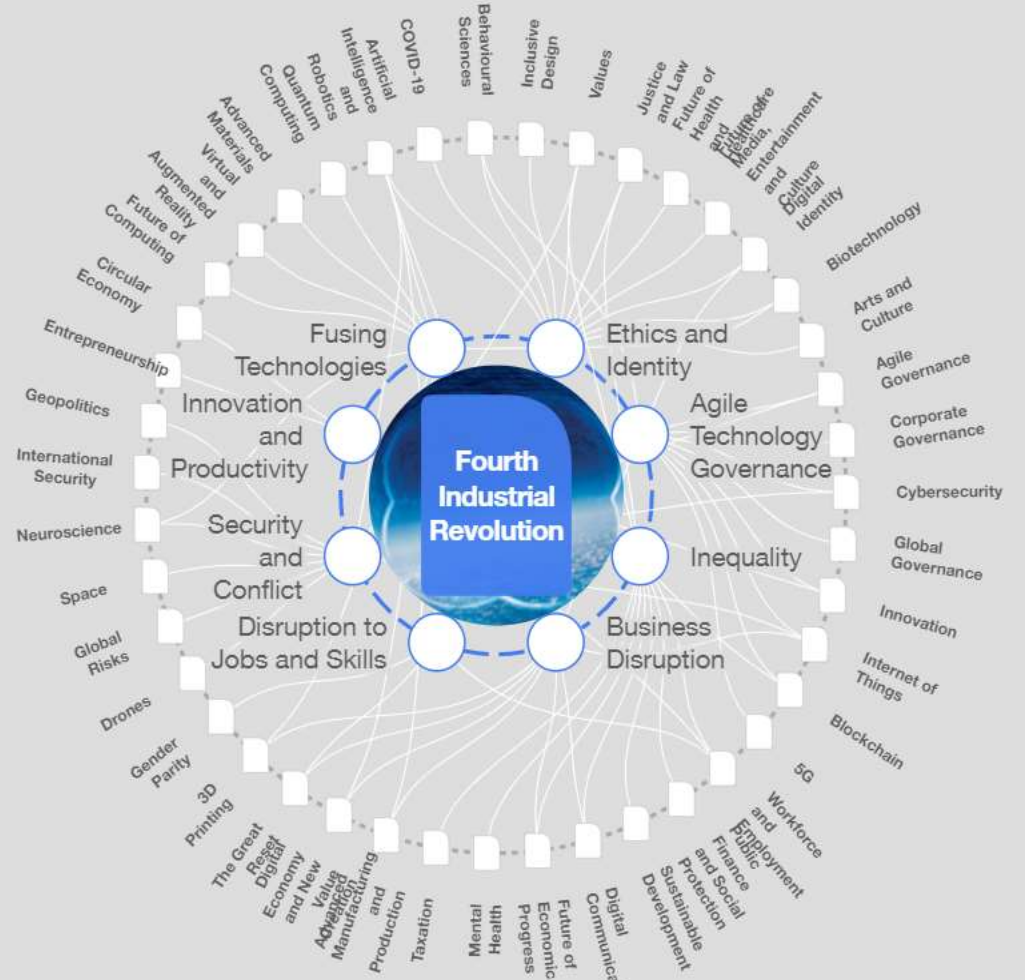
Innovation

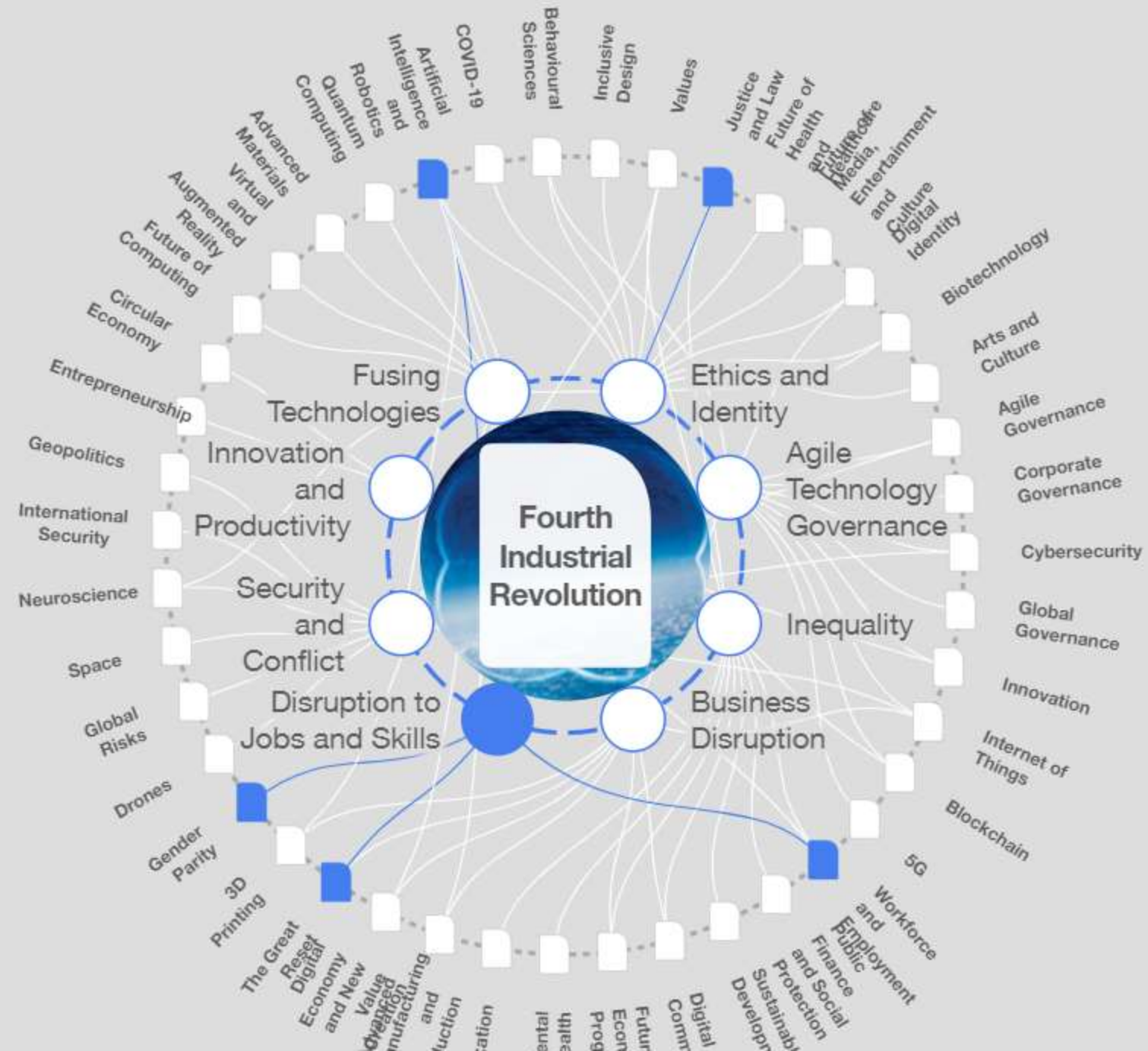
Focus on MVP, iterative after launch
Testing ideas: cheap, fast and easy

Value proposition is defined by industry
Optimize your business model as long as possible

Value

Value is defined by changing customer needs
Evolve before you must, to stay ahead of the curve





THE BIGGEST IMPLEMENTOR ARE STILL **TELCO, FSI AND RETAIL**

To achieve customer obsession, which of the following business outcomes are your firm planning to prioritize using artificial intelligence technologies?

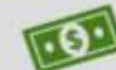
Top priority by industry and company revenue size:

IT/TELECOMS



Better anticipate and respond to market changes (55%)

FSI



Improve accuracy of customer behavior predictions (54%)

RETAIL



Develop new products and services (55%)

USD 50 - 99.9M



Better anticipate and respond to market changes (51%)

USD 100 - 249.99M



Develop new products and services (56%)

MORE THAN USD 250M



Improve existing products and services (60%)

Base: 260 business and IT leaders involved in technology-buying decision making process, including artificial intelligence technology
Source: A commissioned study conducted by Forrester Consulting on behalf of Appier, June 2018

APPIER SURVEY CONDUCTED BY FORRESTER JULY 2018

BIG DATA/AI BENEFITS SO FAR



IMPROVE **BUSINESS PROCESS** AND
ENHANCED **CONSUMER EXPERIENCE**

Which of the following [could be/are] benefits of your organization using artificial intelligence?

■ Factors affecting digital CX ■ Factors affecting digital operational excellence



Base: 260 business and IT leaders involved in technology-buying decision making process, including artificial intelligence technology
Source: A commissioned study conducted by Forrester Consulting on behalf of Apptier, June 2018

THE BIGGEST CHALLENGE IN BIG DATA/AI IMPLEMENTATION IS STILL DATA INTEGRATION

silos data
difficult to link
no accountability

What [could be/are] the biggest challenges for your firm in using big data-driven AI technologies?

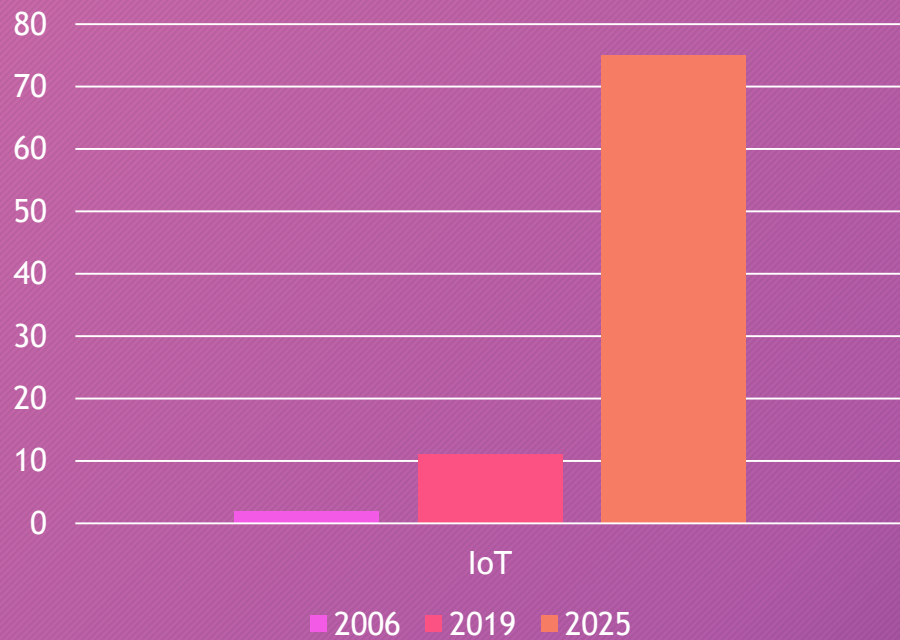
	High	Low	Total	IT/ telecoms	FSI	Retail
Gathering and integrating massive data effectively as it grows	53%	51%	53%	51%	52%	58%
Assembling the right data management and predictive analytics platform	52%	56%	52%	56%	52%	48%
Building cross functional teams	51%	49%	51%	49%	49%	54%
Sourcing data from diversified channels	49%	49%	49%	49%	46%	52%
Governing analytics	49%	52%	49%	52%	49%	45%
Generating predictive customer insights	48%	49%	48%	49%	52%	42%
Identifying and selecting a technology or professional services partner	43%	40%	43%	40%	48%	40%
Enriching the data and extracting holistic view on customers	42%	46%	42%	46%	34%	45%
Designing and prioritizing use cases	39%	40%	39%	40%	40%	37%

Base: 260 business and IT leaders involved in technology-buying decision making process, including AI technology
Source: A commissioned study conducted by Forrester Consulting on behalf of Apptio, June 2018

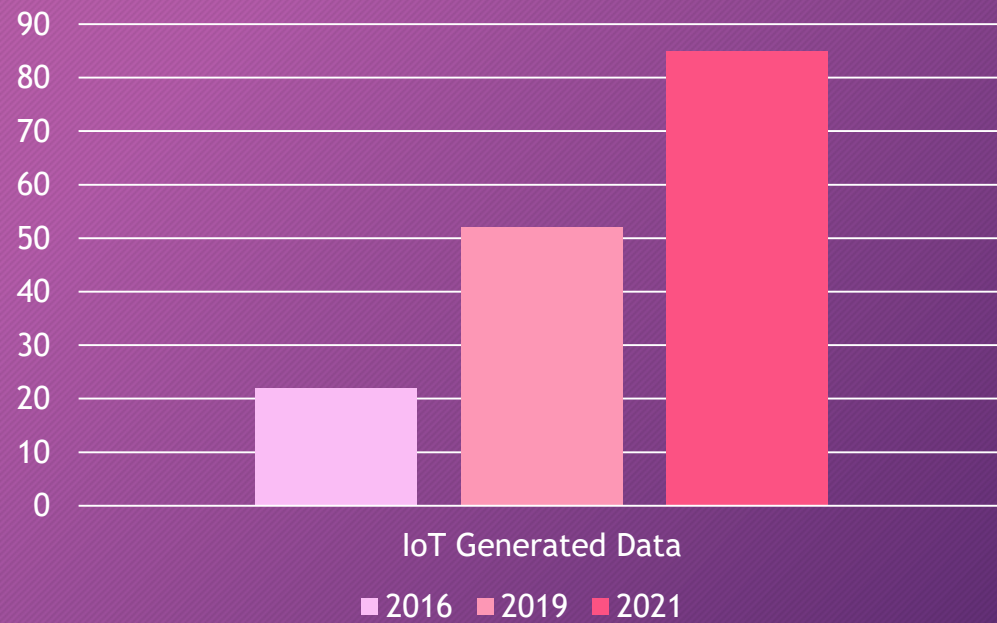
APPIER SURVEY CONDUCTED BY FORRESTER JULY 2018

IoT: Projection

IoT-Connected Devices (Billion)



IoT-Generated Data (Zettabyte)

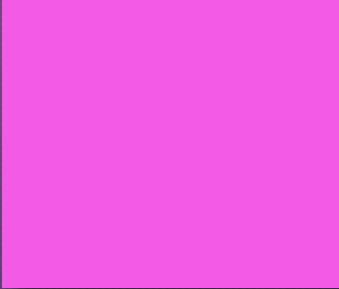


1 zettabyte= 1trillion gigabytes

Drivers of change

- Ubiquitous high-speed mobile internet;
- Artificial intelligence;
- Widespread adoption of big data analytics; and
- Cloud technology

Digital Transformation & Its Disruptive Impact on Job





“Robots will be able to do everything better than us...I am not sure exactly what to do about this. This is really the scariest problem to me.”

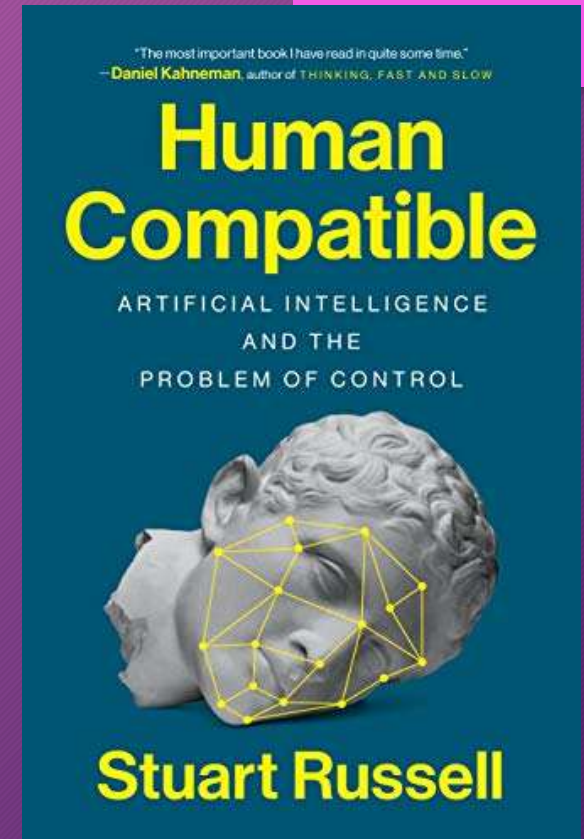
It might actually happen, AI could set off the third World War, one that will see human on one side, and robots on the other

“ humans will win this battle, as machines don't really possess the wisdom and experience reflected by a human”





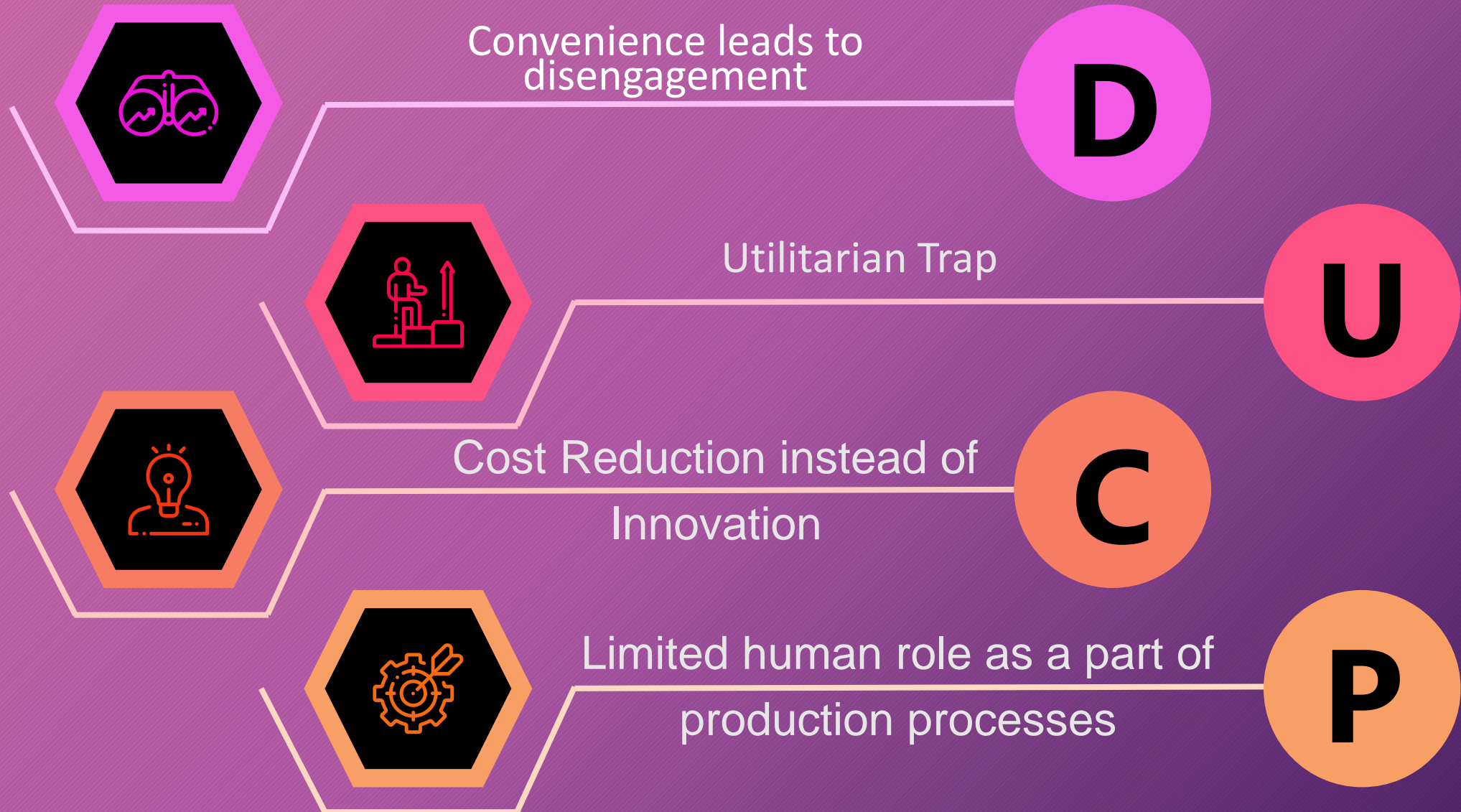
We have to face the fact that we are planning to make **entities** that are far more powerful than humans. How do we ensure that they never, ever have power over us?



CSIS Global Dialog-2019

- Institute for the Future (IFTF) and Dell Technologies states that 65% of the students nowadays will work in jobs that do not exist yet.
- These jobs are created through the new wave of the industrial revolution (AI, machine learning and robots which will come through an unprecedented scale and pervasiveness).
- Moreover, the fear of jobs destruction by these technologies is still in the main narrative creating uncertainty about the future of jobs.

It is human tendency to replace people role: work meaning is in a question





People and Machines: Partners in Innovation

The greatest impact of intelligent technologies won't be from eliminating jobs but from changing what people do and driving innovation deeper into the business.

BY SENÉN BARRO AND THOMAS H. DAVENPORT

**Intelligence will migrate to
optimal environment**

Robotic Process Automation

VS

Artificial Intelligence

*Taking the robot out of
the human*



*Putting the human into
the robot*

Of course, an important part of realizing AI's potential is managing its risks. As Julian Friedland points out, AI applications are allowing us to outsource more and more of our cognitive and emotional labor. As a consequence, he argues, our capacity for moral self-awareness and critical reflection is suffering. So he urges creators of these tools to restore some of the friction they've removed from our lives. It serves an essential purpose.

New Job Portfolio

Creative & Innovative Job: always relevant



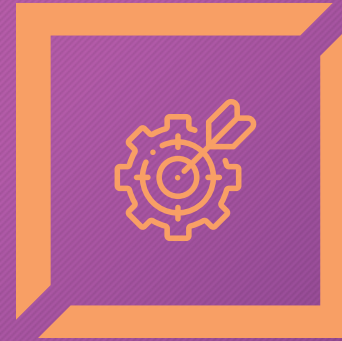
Omniscience

Tomorrow's talent must aspire to understand everything – or at least much more than they currently do about their business



Entrepreneurial Mindset

Teams will need to become more enterprising to succeed. They must become boundary pushers (products & processes)



Bottom-Line Focus

Employees need to be just as skilled at thinking about business models as they are at designing and implementing systems.



Ethical Intelligence

Though machines are innately logical, they lack empathy, that will have consequences for companies, consumers and society.

Some facts about the New of Jobs

- Programmer, data scientist and software developer are predicted in shortage in the future.
- Statistical programming (R, Python), machine learning (neural networks, natural language processing) and data management (SQL, Hadoop) will be on-demand.
- Repetitive and programmable are more prone to automation.
- Social skills are still difficult to automate and replicate.
- Several companies are not requiring a university degree for their job vacancy. They are more interested in the skill and experience of the candidates.
- Analytics, (digital) literacy, numeracy, creativity and teamwork are critical for future jobs



1

Kecerdasan Teknologi

Kemampuan untuk memahami dan memanfaatkan kekuatan teknologi.

2

Kecerdasan Sosial & Emosional

Kemampuan untuk berempati, berinteraksi dan mempengaruhi orang lain.

3

Kecerdasan Kontekstual

Kemampuan untuk mengidentifikasi dan membuat alternative dan mengeksekusinya dengan tepat

7 KECERDASAN BARU

4

Kecerdasan Moral

Kemampuan untuk mencapai tujuan sesuai nilai moral yang ada.

5

Kecerdasan Generatif

Kemampuan untuk melahirkan ide-ide baru.

6

Kecerdasan Eksploratif & Transformasional

Kemampuan untuk menciptakan masa depan baru yang diinginkan (Keluar dari perangkap masa lalu & merangkul masa depan)

7

Kecerdasan Ekosistem

Kerja sama bersinergi

Job Disrupted, New Opportunities, Jobs, and Skills



14% of global workforce, as many as 375 million people may need to switch occupational categories



1/3 and more of the desired skill sets of most jobs will be comprised of skills not yet considered crucial today, by 2020



Shelf-life of skills in the future of work will decrease to 5 years



Individuals on a 30 year career have to refresh their skills throughout their careers 6 times




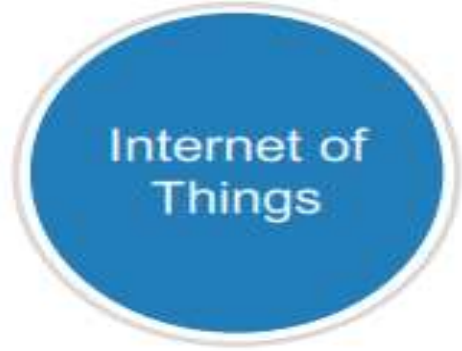
Learning and unlearning is a new oxygen

Comparing Skills Demand: 2018 vs. 2022, Top Ten

Today, 2018	Trending, 2022	Declining, 2022
Analytical thinking and innovation	Analytical thinking and innovation	Manual dexterity, endurance and precision
Complex problem-solving	Active learning and learning strategies	Memory, verbal, auditory and spatial abilities
Critical thinking and analysis	Creativity, originality and initiative	Management of financial, material resources
Active learning and learning strategies	Technology design and programming	Technology installation and maintenance
Creativity, originality and initiative	Critical thinking and analysis	Reading, writing, math and active listening
Attention to detail, trustworthiness	Complex problem-solving	Management of personnel
Emotional intelligence	Leadership and social influence	Quality control and safety awareness
Reasoning, problem-solving and ideation	Emotional intelligence	Coordination and time management
Leadership and social influence	Reasoning, problem-solving and ideation	Visual, auditory and speech abilities
Coordination and time management	Systems analysis and evaluation	Technology use, monitoring and control

Source: Future of Jobs Survey 2018, World Economic Forum.

Skills Framework for emerging skills

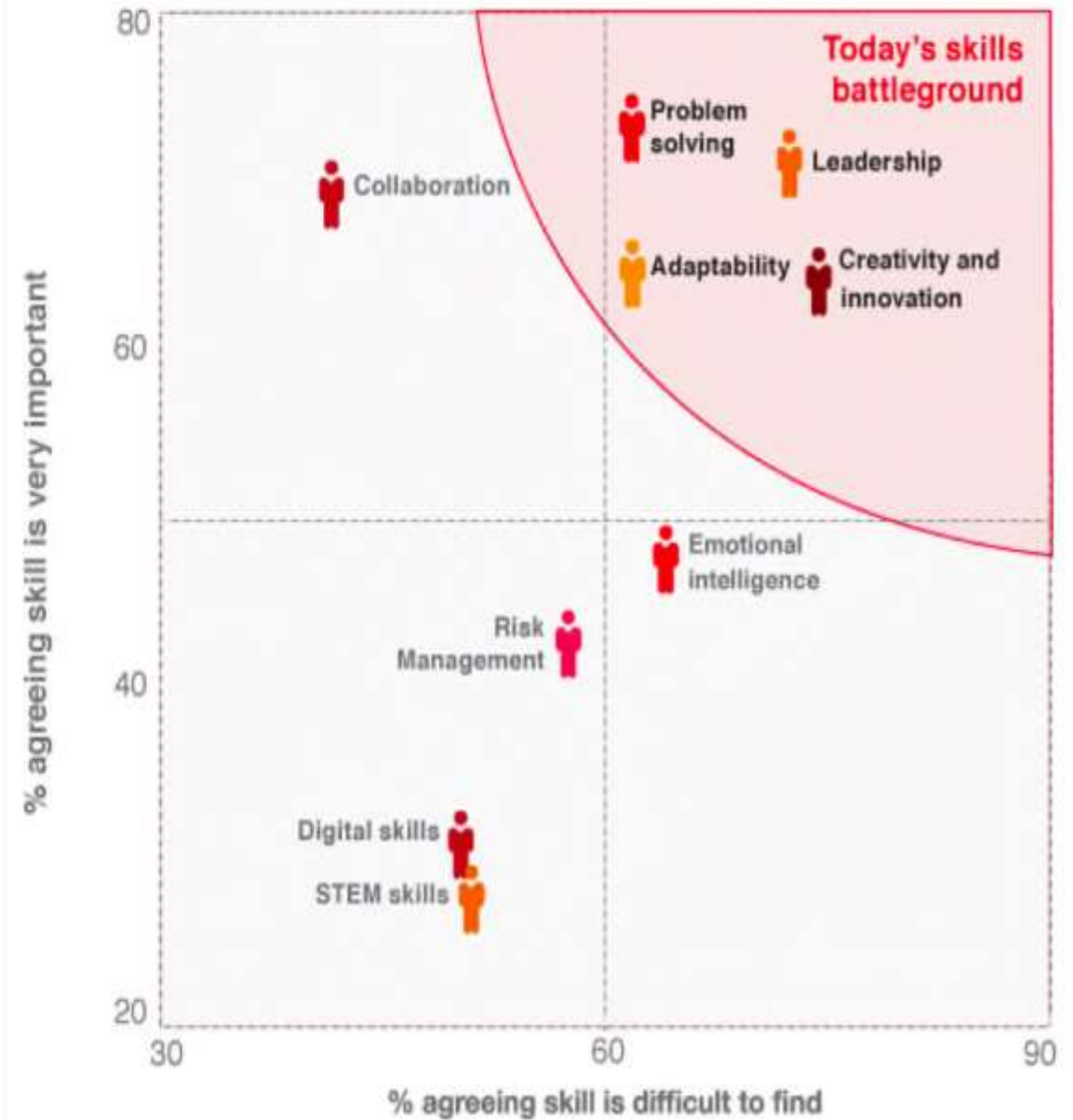
Emerging Areas	Emerging TSCs	Supporting GSCs	
 <p>Artificial Intelligence</p>	<ul style="list-style-type: none">• Analytics and Computational Modelling• Business Innovation• Business Needs Analysis• Business Process Re-engineering• Cyber Forensics	<ul style="list-style-type: none">• Data Strategy• Data Governance• Data Design• Data Engineering• Data Visualisation	<ul style="list-style-type: none">• Sense Making• Computational Thinking
 <p>Internet of Things</p>	<ul style="list-style-type: none">• Analytics and Computational Modelling• Data Strategy• Data Engineering• Embedded Systems and Sensor Network Design	<ul style="list-style-type: none">• Embedded Systems Interface Design• Embedded Systems Programming• Security Architecture Design• Security Administration	<ul style="list-style-type: none">• Creative Thinking• Problem Solving• Transdisciplinary Thinking



We're witnessing today radical Transformation of Skills

Problem Solving,
Leadership, Adaptability,
Creativity and Innovation
are the New Game Changers

A graph to understand Today's skills Battleground.



Source: PwC's 20th CEO survey, January 2017 (1,379 CEOs)

Source: belong.co

Indonesia: Emerging Skills

Creativity, originality and initiative

Analytical thinking and innovation

Active learning and learning strategies

Technology design and programming

Complex problem-solving

Leadership and social influence

Emotional intelligence

Critical thinking and analysis

Reasoning, problem-solving and ideation

Systems analysis and evaluation

Indonesia 4.0

Aims to create:

- 1000 techno-preneurs by 2020 (Jakpost)
- 10 millions jobs by 2030 (Kemenperin)
- 5 more unicorns by 2025 (Kominfo)

Yet currently:

- 3 of its unicorns have tech centers in India
- Produces only 1/15 of total tech talents that India produced annually (Workship)
- 28% of its IT graduates don't work, 63% of them are vocational graduates

Teknologi Semakin Berkembang,
Indonesia Sepi Talenta Teknologi

Ikhsan Digdo | Jun 21 2019, 15:03

Indian talent is building Unicorns in
Indonesia

Shiva Singh Sangwan [Follow](#)
Aug 31, 2018 - 3 min read

Indonesia is one of Asia's most populous nations, with millions of internet

Indonesia can expect the largest deficit of in workers, totalling 18 million by 2030... as the country struggles with a mismatch between young people's skills and industry needs"

(Korn Ferry)



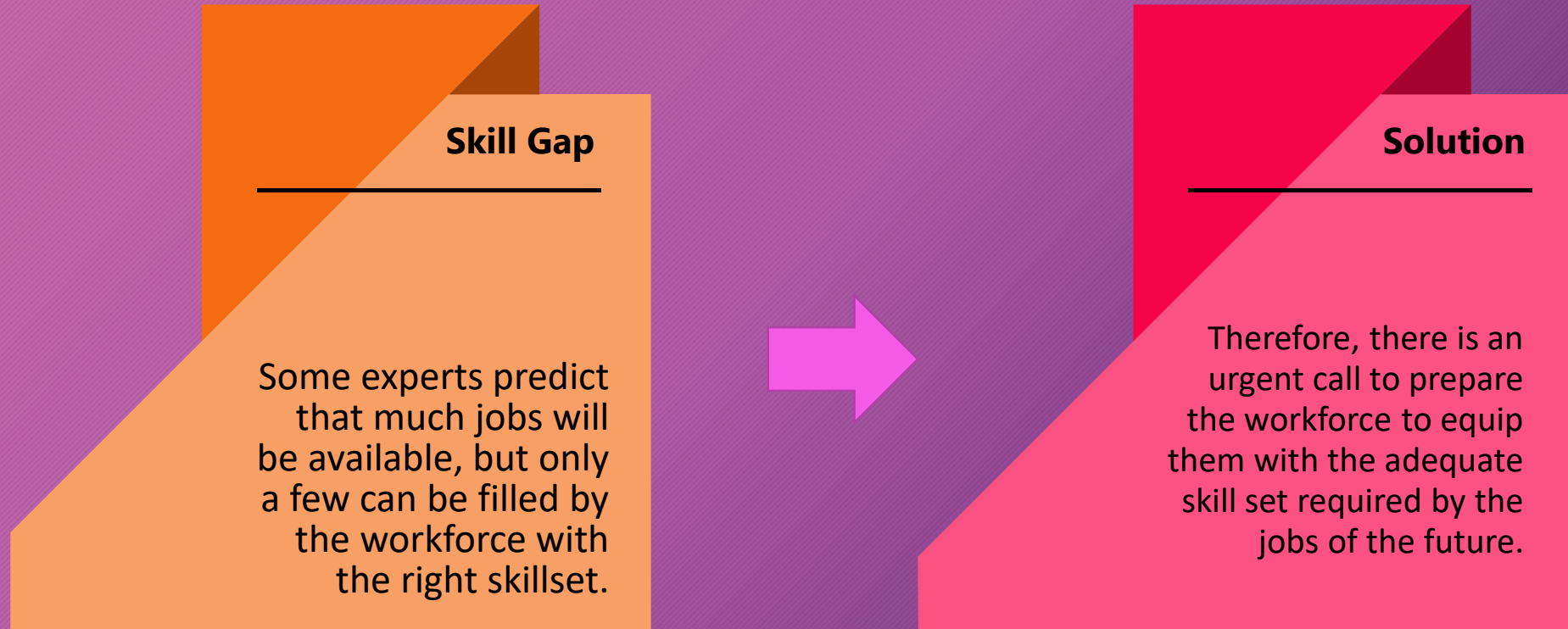
Re/Up-skilling initiatives: How to stay relevant in jobs market

Even as people recognize their need to gain new skills, they seldom adapt rapidly

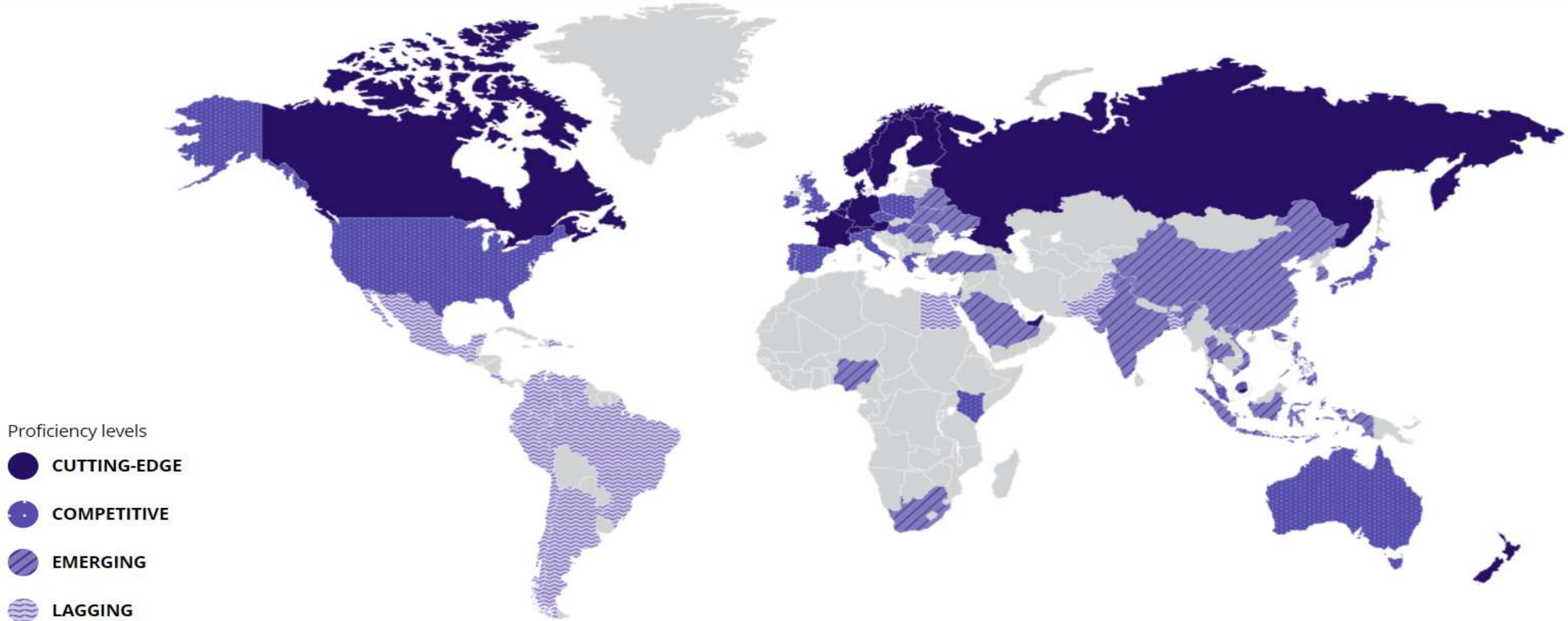
Work evolution is something that cannot be avoided



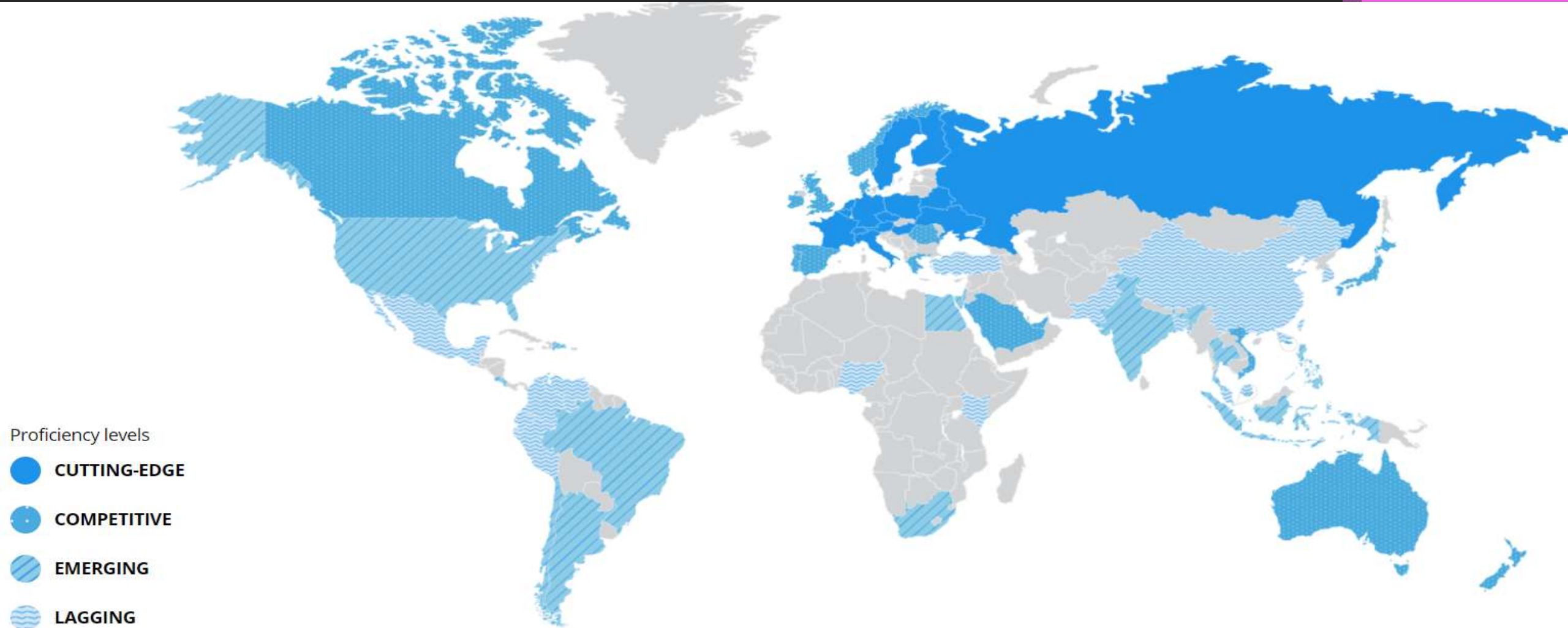
Skill Gap & Solution



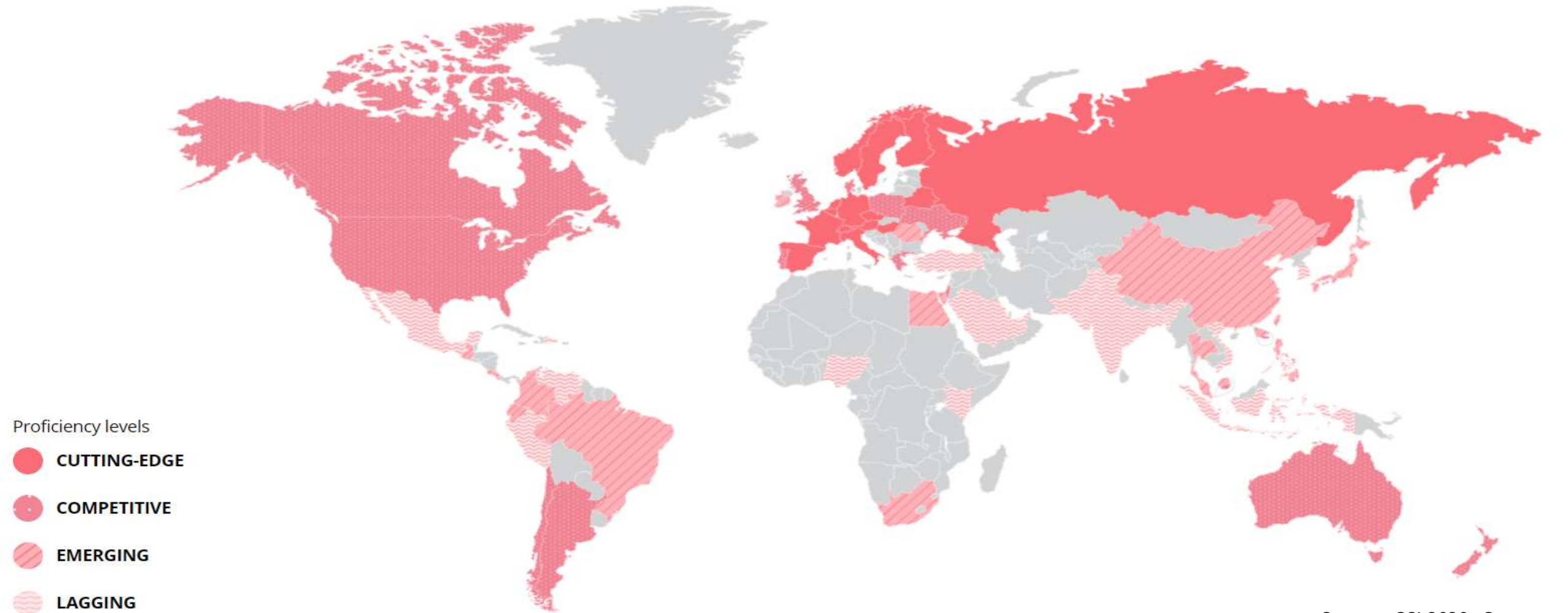
Indonesia Readiness: Business Skills



Indonesia Readiness: Technology Skills



Indonesia Readiness: Data Science



New ways of working

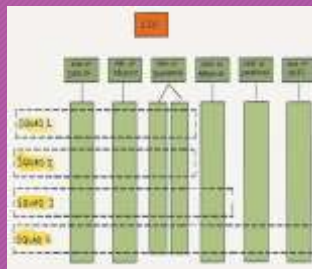


Intelligent will be more mobile.



Salary gap between developed and developing countries
Telemigration

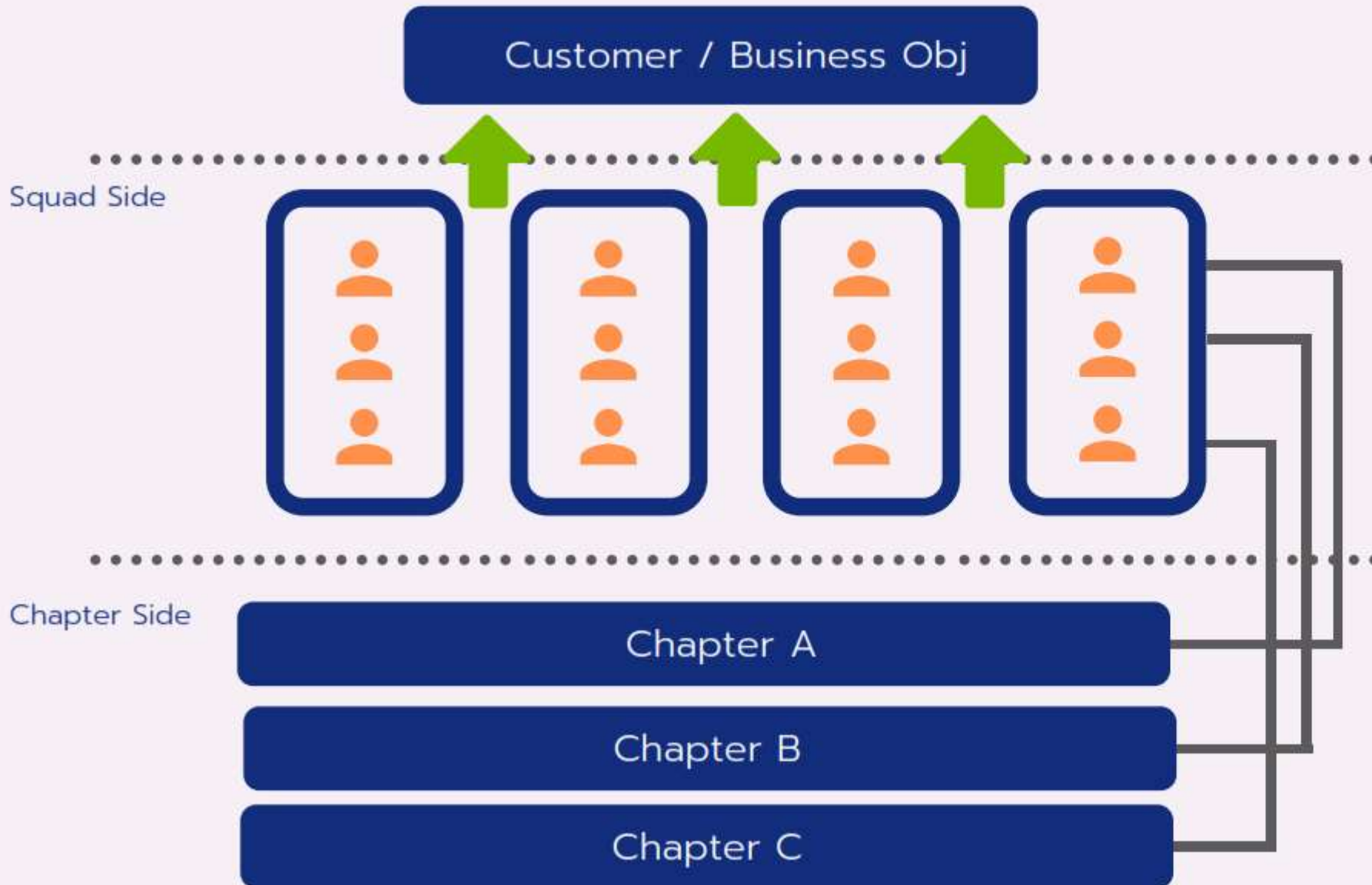
(thanks to AR, VR, Translator, Connectivity, Conference technology)



New way of organizing



A new organizational design



Squad:

- Cross-functional team
- Specific objective
- Evaluated based Goal
- Members / roles come from any Chapter

Chapter:

Community of people who specialise in common skills

Let's move to the third category: sustainers.

DAUGHERTY: Sustainers make sure that AI not only behaves properly at the outset of a new process but continues to produce the desired outcomes over time. Technology changes, data changes, business needs change. Sustainers are the people who understand the results expected of an AI system and make sure that they are maintained across new circumstances.

WILSON: Sustainers also spend a good deal of their day thinking about unintended consequences and how they may affect the public. For instance, is surge pricing going to be viable over time? This is an issue that Uber and Lyft have had to deal with. How do you come up with a pricing model that's algorithm driven but also workable in terms of public acceptance?

The risks of bias in algorithms, discriminatory facial recognition systems — these are things that the first wave of trainers didn't necessarily give enough consideration to. Sustainers address the question of whether these unanticipated and unintended consequences can be managed and how. They might even recommend that an



“Every organization needs to look at learning as a core competency. You can't simply go out and hire people for some of these roles. You need to build people to do them.”

— PAUL R. DAUGHERTY

discovery in a single year through AI augmentation.

One challenge organizations face is that many of the jobs created by AI have no established path for training and development because they're brand-new. How do they solve for that?

DAUGHERTY: Organizations and leaders need to focus on three things. The first is experiential, hands-on learning injected at different points in the process. In our client consulting work, we've taken an interesting training approach with a large aircraft manufacturer: We used AI and mixed-reality technology to equip workers with headsets that help them do higher-skilled jobs faster by providing them with guidance along the way. With augmented reality, the workers can see the physical assemblies they are working on and also receive advice and instruction tailored to their skill level and task. All of this is at the point of need, seamlessly integrating the learning and working activities.

Second and closely related, every organization needs to look at learning as a

Why (continuous) re-skilling

- Even AI eliminates some jobs in the coming decade, it may create as many positions as it kills and open up vast new opportunities for collaborations between humans and machines.
- Shelf-life of skills in the future of work will decrease to 5 years
- Smart organizations will take steps not just to adopt intelligent technologies but also to recruit and retrain people for skilled roles, redesign tasks and jobs, and use AI as an enabler of innovation in products, processes, and business models.
- Shifting expectations/paradigm from job **loss** to job **change**, so organizations need to understand the new skills required and how to acquire the new skills.

Indonesia's responses to shifting skill needs



Acquisition Principles

- Just In Time Learning
- Continue to learn and unlearn
- Merdeka Belajar (Human Centered Learning):
 - We have to know what we need to know
 - Individual Learning Vision
 - Individual based Competency Portofolio
- Corpu Function:
 - Learning Facilitator
 - Broader Access to External Sources
 - Provide: Learning Menu
 - Synergy with Industry Course Provider (certification)
 - Implement Mixed Methods of Learning (internship, certification, e-learning, mentoring, coaching, learning in workplace etc)

The Rise of Personal Learning Cloud (PLC)

50 MANAGING YOURSELF

Learn from People, Not Classes

Whom do you know, and what can they teach you?
Reid Hoffman, Chris Yeh, and Ben Casnocha

52 MANAGING PEOPLE

“We’re Giving Ownership of Development to Individuals”

A roundtable with chief learning officers

Contextualized

The PLC enables people to learn in a workplace setting and helping ensure that they actually apply the knowledge and skills they pick up.



Socialized

learning happens best when learners colla-borate and help one another. Knowledge both know-what and know-how is social in nature.



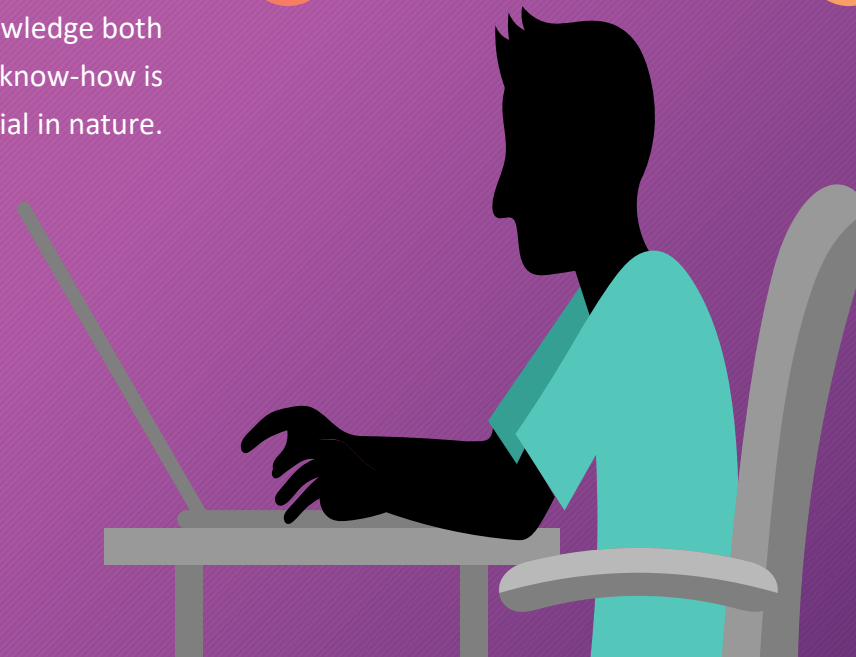
Personalized

Learning at individuals own pace, using media that are optimally suited to their particular learning style and work environment.



Learning outcomes can be transparently tracked and authenticated

PLC drives a new era of skills- and capabilities-based certification that stands to completely unbundle the professional degree



Things to think

- Create optimistic narration about technology: job change instead of job loss.
- There is a high degree of certainty in competency shift in the near future.
- Develop HC & learning strategy that make a strategic fit between technology adoption and people.
- Avoid immediate human replacement
- Improved Learning/Unlearning Skill
- Provide sufficient time for learning
- Finding the strategic fit between human supremacy/interests and economical interests
- For Individuals: manage and update your competency portofolio continuously

Knowledge sharing multiplies power

Terima kasih धन्यवाद شكرا

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onknowledge.wordpress.com