

Workshop on Singapore's Human Capital Challenges and the Future Economy

Monday, 20 November 2017
Ballroom 2, Level 3
Orchard Hotel

Presentation Session
The Rise of the Contingent Workforce in the Digital Age

PRESENTATION BY

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Director

Management Consulting
KPMG Services Pte Ltd



The Rise of the Contingent Workforce in the Digital Age

27 November 2017



Overview

Trends and impacts

- Disruptive Workforce Trends
- What work is changing? Opportunities for Intelligent Automation

Impact to the workforce

- Demographic Changes
- Work Structure Changes

Rise of the Contingent Workforce

- Jobs of the Future
- Skills of the Future



The Future Is Imminent, and . . . Disruptive . . .

Degree to which automation will change **every job** category in the next years¹

25%

Percent of the U.S. workforce engaged in **“gig” economy** in 2020 (up 9% from today)²

43%

Net loss of U.S. jobs to robotics by 2027 is **equal to Great Depression losses**³

-7%

Percent of **skills considered critical today** that **will change** by 2020⁴

35%



¹ CNN Money, “Intuit: Gig economy is 34% of US workforce,” May 24, 2017
² CNN Money, “Intuit: Gig economy is 34% of US workforce,” May 24, 2017
³ World Economic Forum, The Future of Jobs, Jan. 19, 2016
⁴ World Economic Forum, The Future of Jobs, Jan. 19, 2016
⁵ KPMG 2017 CEO Outlook Survey

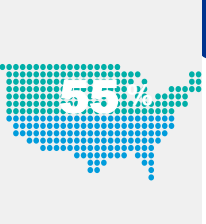
Digital Labour and Technology

Scale of disruption

\$152.7




The global market for robots and artificial intelligence is expected to reach **\$152.7 billion by 2020**. The adoption of these technologies could improve productivity by **30 percent**.
Bank of America Merrill Lynch



A recent study by HfS Research and KPMG LLP reports that **55 percent** of North American enterprises are looking at new opportunities available with RPA systems.


Recent research from London School of Economics suggests a return on investment in robotic technologies of between **600%** and **800%** for specific tasks.




600 %
and **800 %**
ROI



MarketsandMarkets estimates that the AI, or cognitive computing marketplace, will generate revenue of **\$12.5 billion by 2019**.



\$14.9 billion



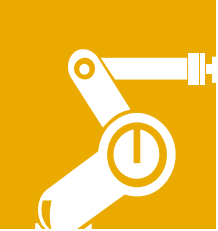
\$1.7 billion

According to Quid, from 2010 to 2014, private investment in AI has grown from **\$1.7 billion** to **\$14.9 billion**, and was on track to grow nearly 50 percent year-on-year in 2015 alone.

Top 5






Gartner predicts that by 2020, smart machines will be a top five investment priority for more than **30%** of CIOs.

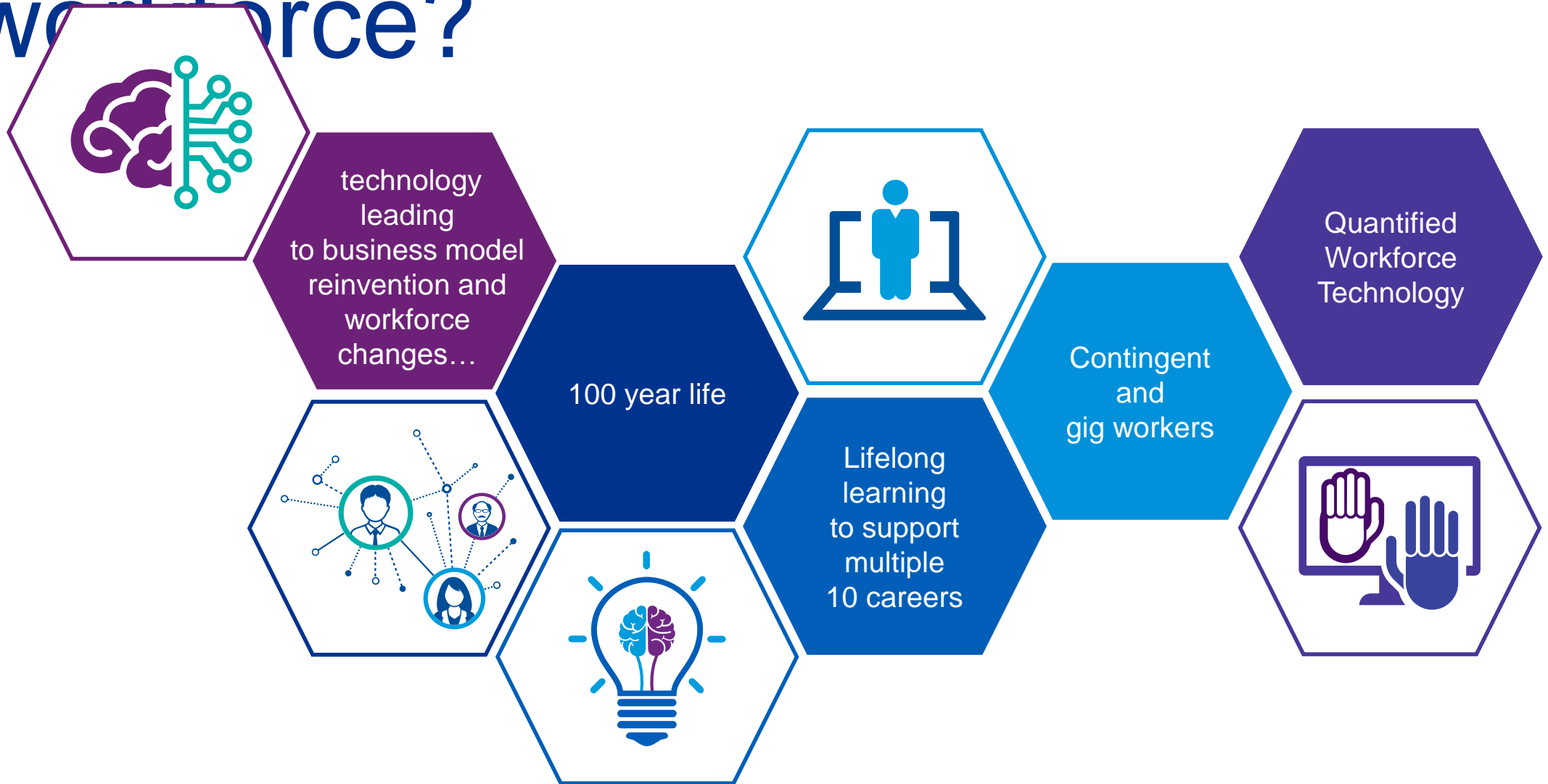


Multiple researchers suggests that smart robots will replace more than **100 million knowledge workers**—or one-third of the world's jobs—by 2025.

Technologies and capabilities

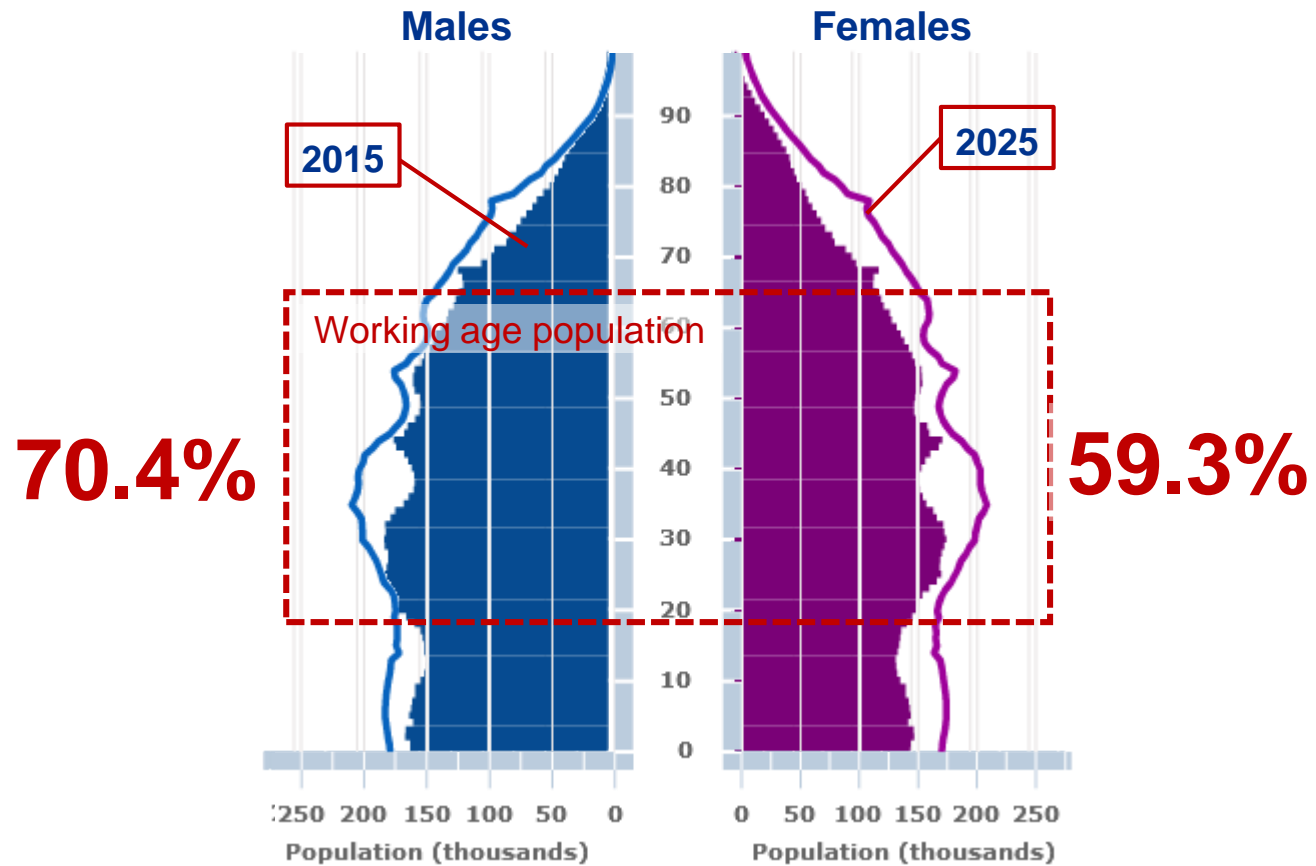
<p>01</p>  <p>Rules based automation</p> <ul style="list-style-type: none">• Rules based activities• High volume• Repeatable and standardised• Structured data• Transactional	<p>02</p>  <p>Machine Learning</p> <ul style="list-style-type: none">• Chat box activities• Automated assistance activities• Basic natural language processing activities• Learning capability to improve service	<p>03</p>  <p>Cognitive augmentation</p> <ul style="list-style-type: none">• Enhanced natural language processing activities• Deep learning• Recommendations based upon synthesis• Unstructured / structured data
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What is happening to the workforce?





An aging population ...



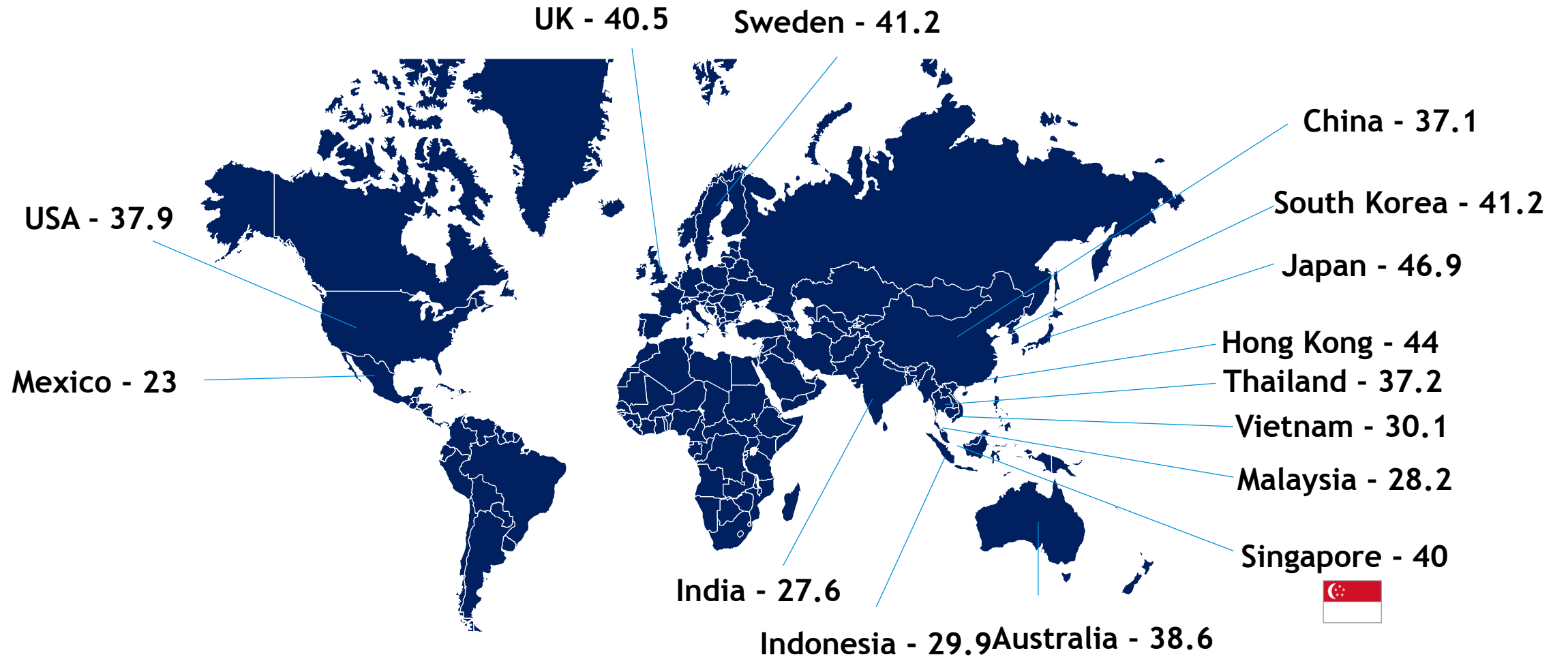
www.abs.gov.au

https://www.wgea.gov.au/sites/default/files/Stats_at_a_Glance.pdf

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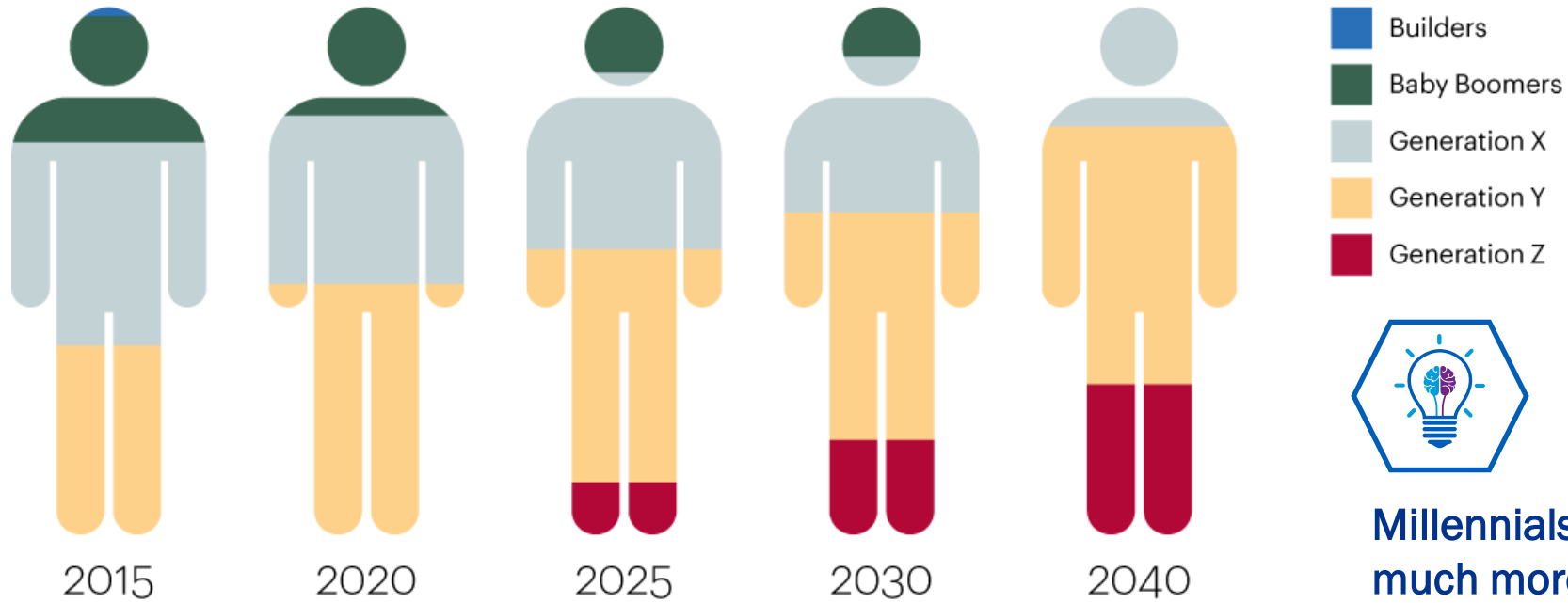


Median Age of Population, 2016





... with more younger workers



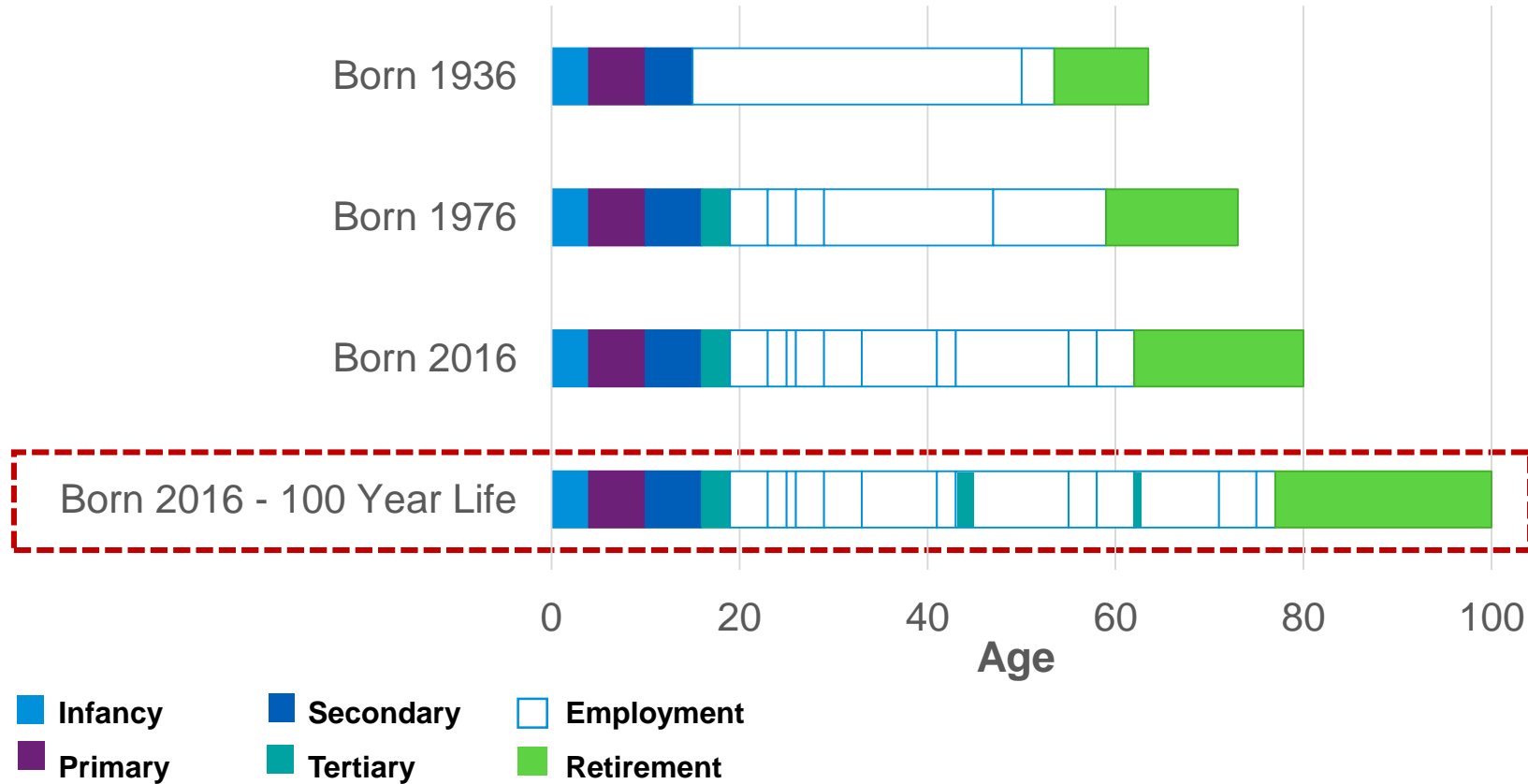
Source: U.S. Census Bureau



Millennials change jobs much more frequently, including entire occupations, and are on track for 25 job changes over a 40 year career



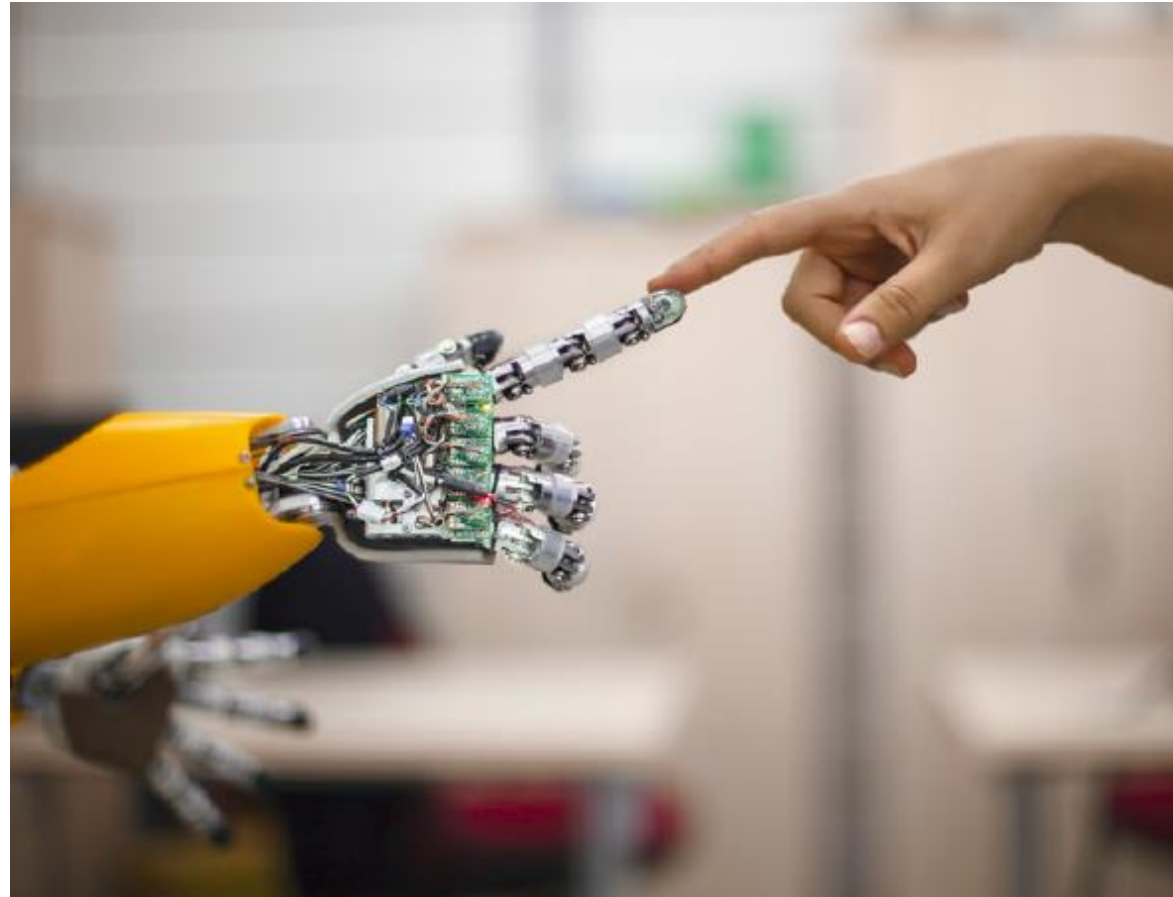
... and more older workers?



50% of children growing up today will likely live to 100, which means that people will be economically active for 60-70 years – far longer than they are today

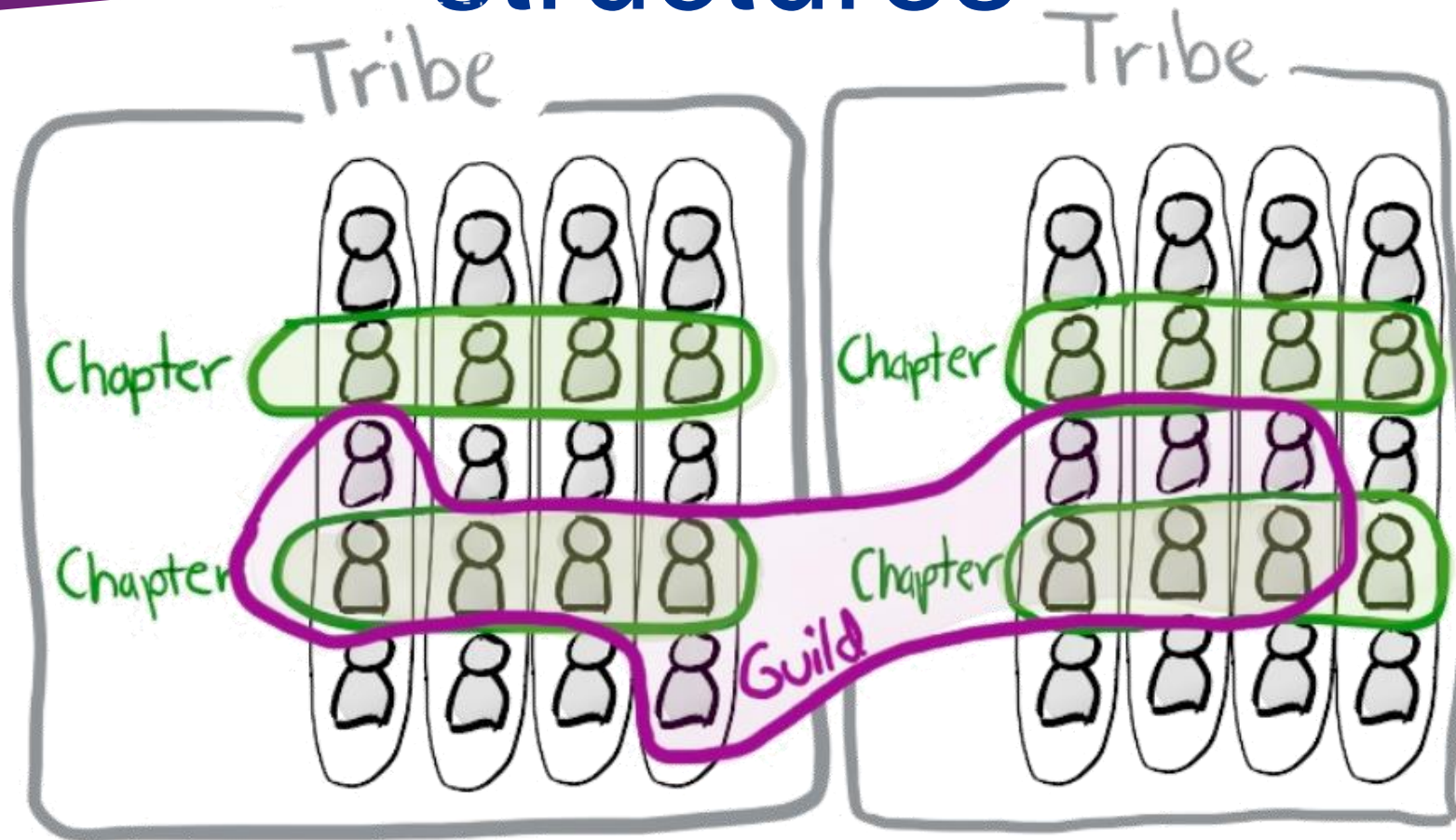


Hybrid workforce





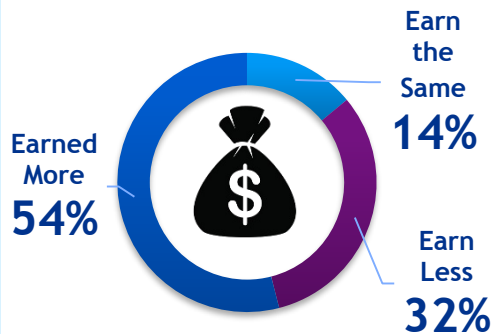
New work structures



Workforce of the Future – **Work Structure** **igent**

Employees on term contracts refer to those on fixed-term contract of employment that will terminate on the expiry of a specific term unless it is renewed, as well as those on casual/on-call employment (i.e. where persons are employed on ad hoc basis, as and when the company requires additional manpower)

United States of America (USA)
Freelances now make up **35%**
(55 million) of the workforce in
USA



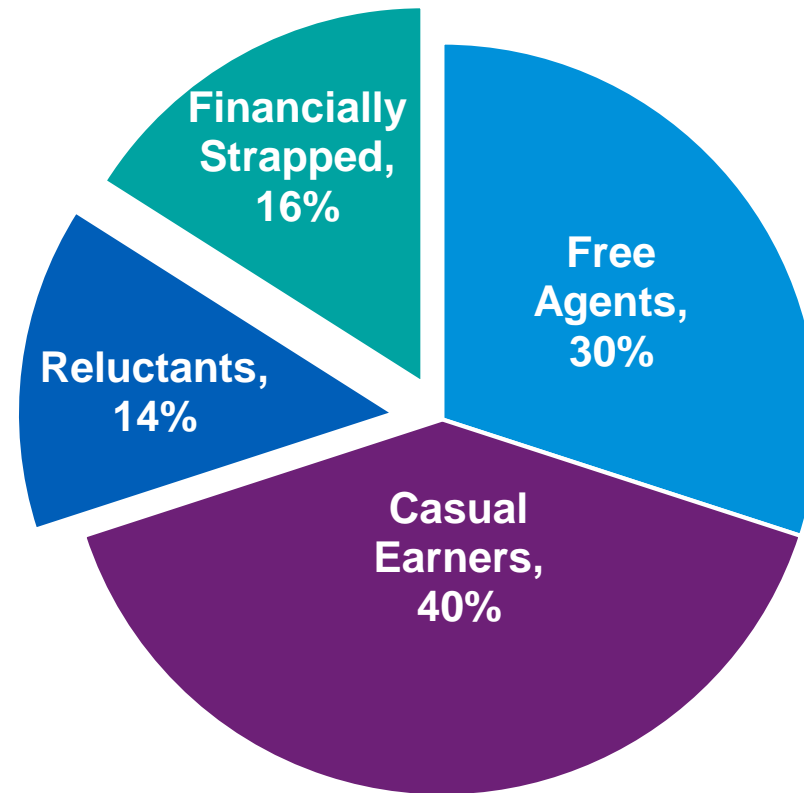
Europe
Self-employment in the EU constitutes
16.4% of the labour market in 2015.

China
In a 2015 LinkedIn Survey, it was reported
that **70%** of freelancers in China were
under the age of 30
In a 2016 poll, **48%** of 13,000 college
students in China reported they did not want
to enter the traditional labour market



Work
Structure

Workers Paradise?



<http://www.mckinsey.com/global-themes/employment-and-growth/independent-work-choice-necessity-and-the-gig-economy>

Global Migration Levels and Trends

Work
Structure



Table 1. International migrant stock (millions)

	1990	2000	2010	2013
World	154.2	174.5	220.7	231.5
Developed regions	82.3	103.4	129.7	135.6
Developing regions	71.9	71.1	91	95.9
Africa	15.6	15.6	17.1	18.6
Asia	49.9	50.4	67.8	70.8
Europe	49	56.2	69.2	72.4
Latin America and the Caribbean	7.1	6.5	8.1	8.5
Northern America	27.8	40.4	51.2	53.1
Oceania	4.7	5.4	7.3	7.9

Source: United Nations (2013), *Trends in International Migrant Stock: The 2013 Revision*.

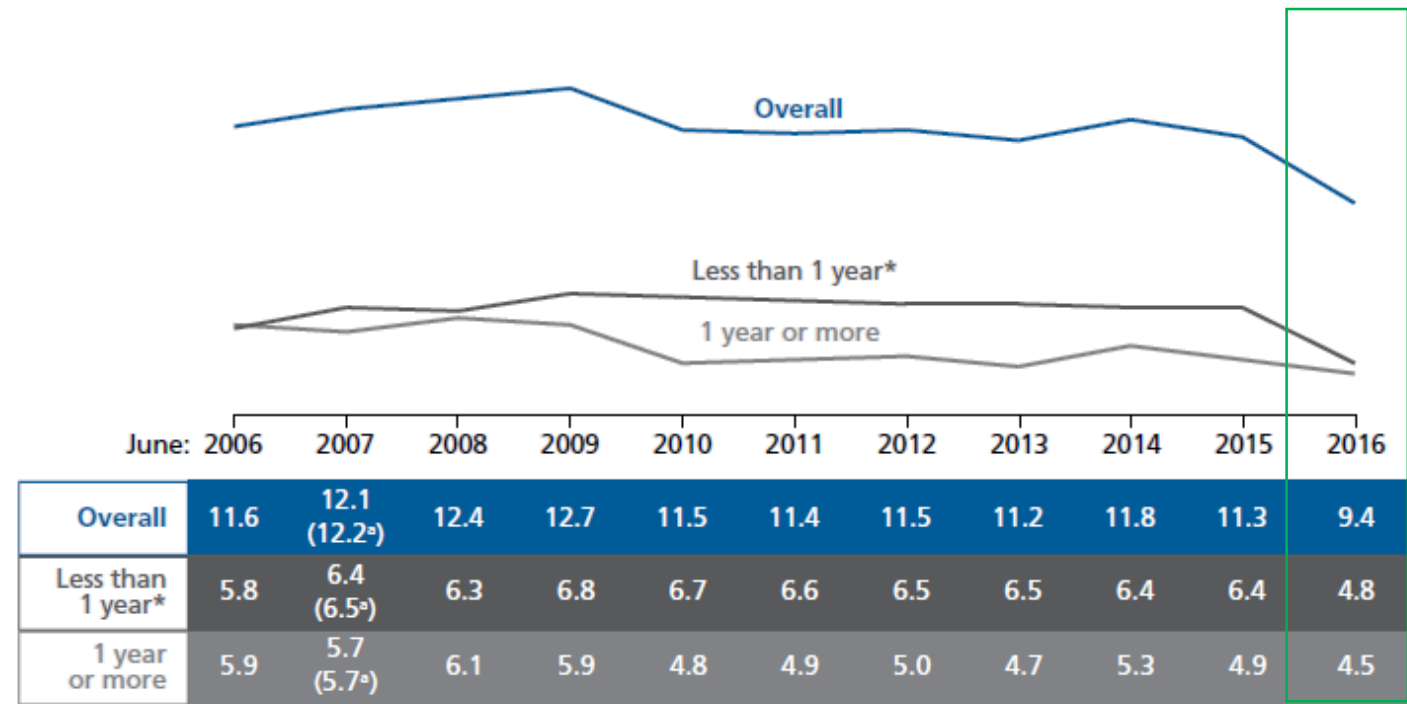
- About **30% of all migrants in the OECD area were highly educated** and one-fifth of them were originating from India, China or the Philippines.
- The number of **tertiary educated immigrants** in the OECD increased by **70% in the past decade** to reach 27 million in 2010/2011

Singapore Contingent Workforce



Incidence of resident employees on term contract

Per Cent



Singapore Contingent Work



Singapore Contingent Workforce

% of Term Contract Employees

9.4% of Singapore's working residents are Term Contract Employees

%* of Term Contract Employees Education

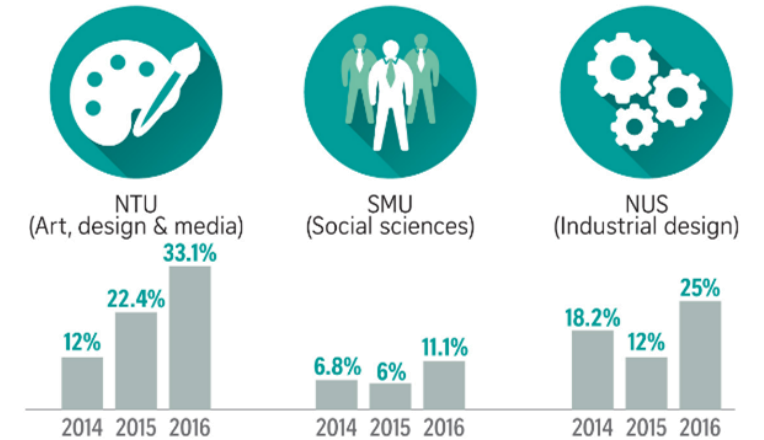
27% of Term Contract Employees are degree holders

%* Breakdown of Term Contract Employees' Age

- **23%** are aged between 15 - 24
- **9%** are aged between 25 - 29
- **15%** are aged between 30 - 39
- **14%** are aged between 40 - 49
- **16%** are aged between 50 - 59
- **23%** are aged 60 and over

% of Graduates taking on Part-time, Temporary and Freelance Jobs

Employment rate



Source: NUS, NTU, SMU SUNDAY TIMES GRAPHICS

*This percentage is based on the total of Permanent and Term Contract Employees in Singapore, a total of 1,807,000.

Potential Disruption to Occupations

Roles:

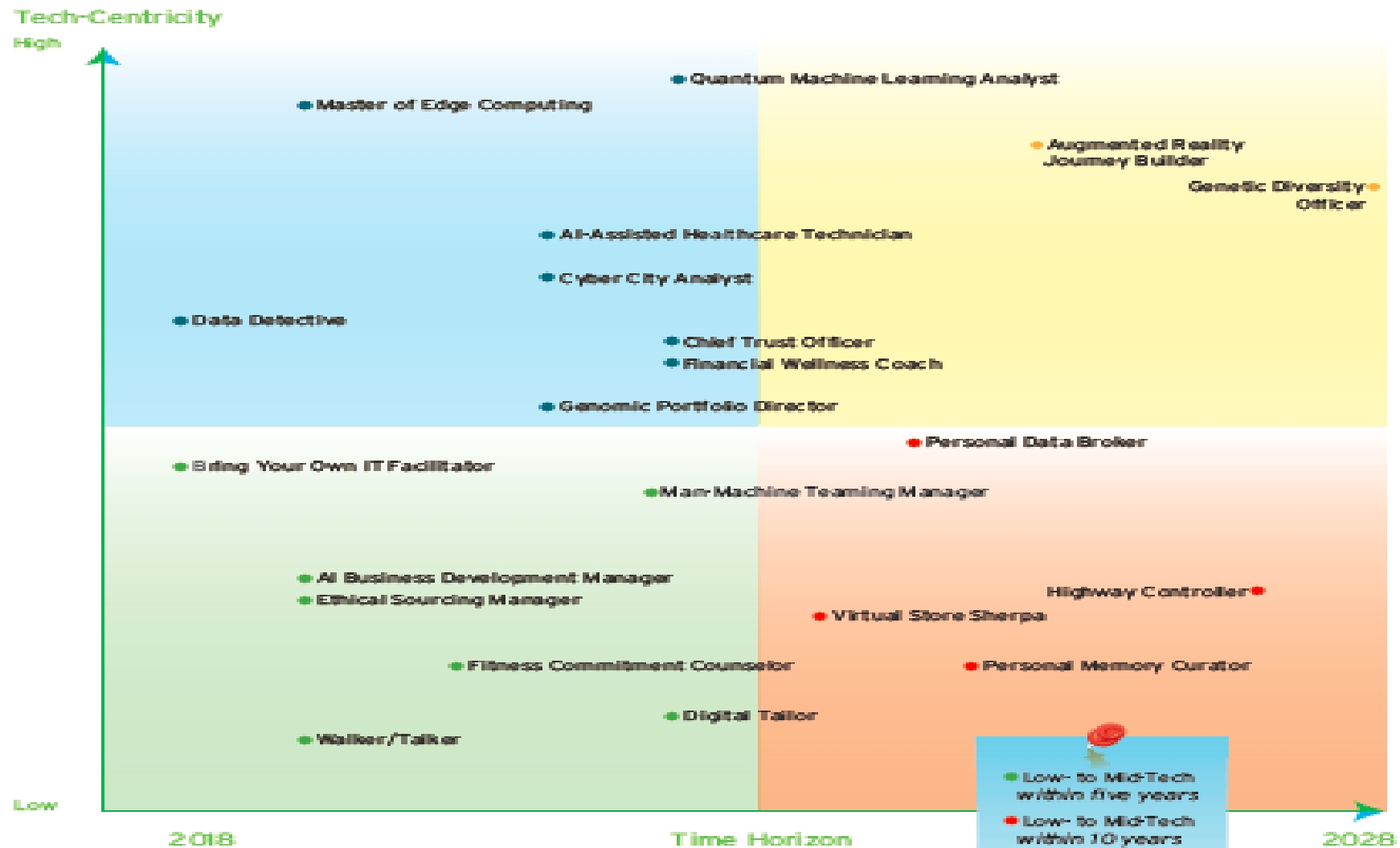
- Accountants and Auditors
- Recreational Therapists
- Personal Financial Advisors
- Tax Preparers
- Human Resource Manager

Disruption Potential:

- 1 Tax Preparers 99%
- 2 Accountants and Auditors 94%
- 3 Personal Financial Advisors 58%
- 4 Human Resource Manager 32%
- 5 Recreational Therapists 0.3%

<http://www.bbc.com/news/technology-34066941>

Jobs of the Future



Jobs of the Future - Singapore

Information Technology



- Smart car interior designer
- Smart road engineer

Healthcare: Med-Tech



- Bio-botic physicians
- Mobile biomass therapists

Creative



- Wiki-writer

Finance: FinTech



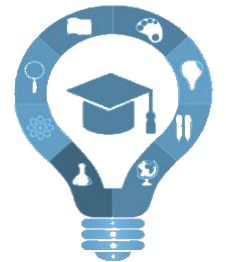
- Alternative Currency Banker

Retail



- Augmented Reality Architects

Education



- Astro-teacher

Workforce of the Future

New Jobs

Rise of Technology and Automation leads to **SMART jobs**

Green Movement

Space Commercialisation

Green Career Coach

Augmented reality architect

Smart Road Designer

Space Junk Recyclers

New Ways of Working

Co-working Hubs

Remote Working

5 in 10 private Sector employers in Singapore offer a formal or informal flexi-work arrangement

Digital Learning Styles and Delivery Methods

New ways of Managing

Globalisation has led to **Multi-racial & Multi-cultural** workforce

Managing a **Hybrid** workforce

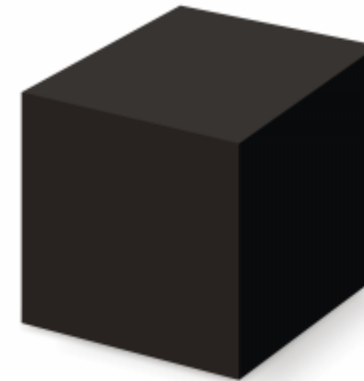
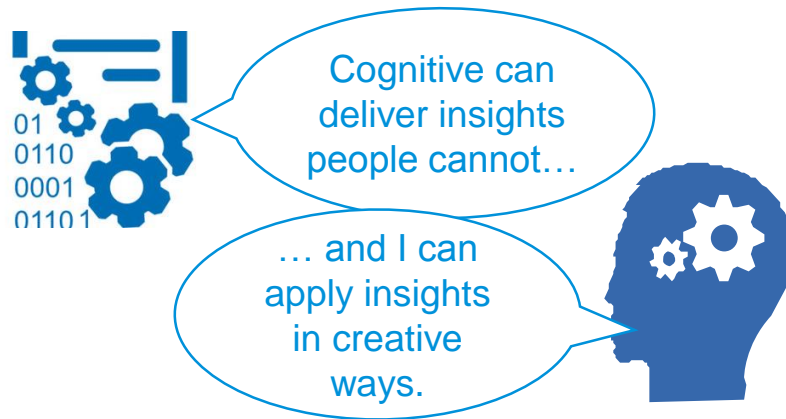
Millennials, make up the largest generation in the Singapore workforce today

Skills & Capabilities

Working with Bots



Career path and develop opportunities





The 'soft' stuff

Skills like **persuasion, social understanding, and empathy** are going to become **differentiators** as artificial intelligence and machine learning take over our other tasks.”

Harvard Business Review (2017)



Skills of 2020

1. **Complex Problem Solving**
2. Critical Thinking
3. **Creativity**
4. **People Management**
5. **Coordinating with Others**
6. **Emotional Intelligence**
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility

<https://hbr.org/2017/02/the-rise-of-ai-makes-emotional-intelligence-more-important>

<https://www.weforum.org/reports/the-future-of-jobs>

Gig Economy is here to stay!

Moonlighting Takes The Gig Economy To The Next Freelancing Level

Feb 21, 2017 @ 10:47 AM 1,443 views

Monty Marford, **COMMENTATOR**
 7 views about technology startups, design and digital. **REPLY** **REPOST**
 (Openness posted by Monty Marford on Feb 21, 2017)

Americans of a certain age will remember the 1980s TV series *Moonlighting*, starring Bruce Willis and Cybil Shepherd as private detectives for the Blue Moon Detective Agency. It was hugely influential in its time and ran for more than 60 episodes, making Willis a star and relaunching Shepherd's career.

Three decades later and *Moonlighting* means a completely different thing to more than 350,000 Americans, the number of people who have signed up to the eponymous on-demand marketplace *Moonlighting*, an app representing the evolving face of the Gig Economy.

Working life is changing, not least because of the 2008 financial crash. That's when the notion of employment, or what a job was defined as, changed forever. That's when the so-called Gig Economy was born, the birthplace of Uber and everything that followed.

Uber, of course, was the trendsetter. By taking one vertical into one city and then gradually expanding across the US, it became the model by which its many emulators lived. To do it anywhere, it had to be done there before it had a chance.

The changes in those nine years have been profound. The notion of the freelancer as an outsider, as somebody who is not trusted enough or somehow too flaky to be employed full-time, is now the Average Joe, leveraging his or her time by mixing and matching any number of gigs to bring in dollars and a living income.

Freelancing is one of the biggest growing sectors of industry and where an industry prospers, so does a marketplace form, especially if a platform can mix and match people and opportunities, as important as anybody's time.

Moonlighting purports to be that platform. Set up by Jeff Tenery and Roy Slater in the fall of 2014, *Moonlighting* describes itself as 'a mobile, on-demand app that allows people to earn extra money and get tasks done instantly by creating a virtual marketplace for individuals and small businesses'.

In effect, the platform brings together those who need a service and those who are willing to provide it. The company has grown slowly, raising \$4 million in seed and VC money after an initial raise of \$500,000.

Improve, Don't Destroy, The Gig Economy

Feb 21, 2017 @ 10:18 AM 2161 views

Ian Brannen, **COMMENTATOR**
 7 views about labor and regulatory policy in Washington D.C. **REPLY** **REPOST**
 (Openness posted by Ian Brannen on Feb 21, 2017)

The media often portrays a contract worker--someone who takes a short-term assignment with task, without becoming an actual employee--as being in an inherently exploitive arrangement. The Obama Administration seemed to share; during its waning days its Department of Labor in fact sought people to avoid being classified as employees.

However, it's facile to suggest that reducing contract workers and boosting the number of empl be an altogether good thing. Many--if not most--contract workers have chosen to have that arrangement for reasons, and the last thing these people want is the rigidity that comes with formal employment. Most Uber drivers--often the poster child for the exploited contractor of today--have other jobs, provide benefits. Mandating that these workers receive fringe benefits may help a few of them, would receive duplicative benefits.

That's problematic because fringe benefits aren't "free" to workers--they effectively pay for them. Imposing an employment arrangement on these workers doesn't benefit those with second jobs from a spouse or via a parent.

It is also worth noting that there are plenty of wealthy contractors as well--lawyers, investment for instance--who stand to be affected by this regulation. The wealthy are different than you are in the context of labor markets, F. Scott Fitzgerald's aphorism translates into the fact that most remunerative professions are perfectly content to remain in that status and eschew formal employment. They generally don't put much value in the benefits, employment protections, and pensions that other jobs, and can easily acquire these things themselves if they need to. In fact, most people would make their own decisions on how much health insurance to have or how much to save for retirement; the dictates of an employer that might have something other than their own best interests in mind decisions. We should keep in mind that the main reason that a portion of our compensation cost benefits owes to an accident of the tax code.

There is no particular reason to think that the economy would gain all that much from changing these workers, even though the new regulations target the highest-paid contractors: lots of busi having the flexibility to hire such workers for brief engagements before moving on. In fact, it's making the retention of contractors more difficult for U.S. employers might encourage more of services; after all, entering into a relationship with an Indian firm to do certain tasks would visit the workers doing the assigned tasks would be considered contractors.

The Nobel-Prize winning economist Ronald Coase rose to prominence observing how complicated to discern whether to do an activity themselves or else engage the market to complete it. Steve Jobs that his goal at Apple was to have sand enter their factory and a completed computer to leave it realize that was not a cost-efficient way to operate, and his company eventually morphed to focus software, leaving the production to the market--most of which are in China these days.

Skilled contract workers represents a middle ground for a company torn between these two extremes represent the best of both worlds. The uncertainty that the Department of Labor regulations in these contractors created problems both for contract workers and the companies to which they However, there may be an easy way to fix it.

comment & analysis **TODAY - WEDNESDAY 15 FEBRUARY 2017**

MOVING AWAY FROM THE IDEA OF JOBS FOR LIFE

Time for Singapore to embrace a freelance, contract workforce

MIRANDA LEE



Contingent labour is on the rise. According to the Manpower Ministry's 2016 Labour Force Report, there were 202,400 contract employees in Singapore, forming 11.2 per cent of the resident workforce. The rising numbers of contract workers and self-employed workers are forcing employers and regulators to re-evaluate their efforts on worker representation.

In 2016, a total of 39,000 people were rehired or had their contracts terminated, up from 11,000 the year before.

Last week, Manpower Minister Lam Shew Lay announced that annual job growth had stabilised, and is expected to range between 20,000 and 40,000, down from 200,000 to 203,000 in times of robust economic growth.

Contingent labour is more than just freelancing employees or part-time workers. It is a move away from the idea of jobs for life. In the trade-off between job security and job flexibility, the rise of the "gig economy" where people are hired for a defined period of time, or sometimes referred to as the "uberisation" of the workforce.

With professionals, managers, executives and technicians (PMETs) leaving the brunt of the retrenchments, and with a squeeze in the number of job vacancies, many workers have been turning to short-term, contract jobs. Traditional sectors such as transport and services, where online apps and the sharing economy have transformed how services are delivered, have attracted degree holders and skilled workers. The ranks of Uber drivers and Airbnb proprietors are interspersed with skilled talent who are arguably underemployed.

In many areas that is well established. We are all familiar with the independent plumber we call on when we have a leaky tap, and creative industries use freelance writers and ad-hoc designers. What is new is the sheer breadth of industries covered. Is there a better way to re-integrate these workers into the economy?

BENEFITS TO EMPLOYERS

In KPMG's pre-budget poll of 120 companies, manpower remains a critical concern for many firms. This was especially acute in highly skilled sectors such as IT. Firms interviewed explained that even if they were willing to pay good wages, they were unable to find locals with the right skills. This has resulted in firms losing business opportunities as they are unable to complete projects.

More can be done to protect the fast-growing group of contract talent in the marketplace, such as by relaxing the set of guidelines laid out by the Tripartite Alliance. The existing Wage Credit Scheme can also be transformed into a Supplementary Credit Scheme to allow provisions for voluntary CPF contributions for workers who are contractors. This would help build their retirement and/or healthcare savings.

With more safety nets in place, this would help boost leadership and entrepreneurship skills, and encourage workers to take risks such as temporary assignments abroad. Companies who see Singapore as a hub, and pull together outside expertise to work on specific temporary projects in another country, would benefit from this move.

There are real advantages to both employers and employees of adopting new ways of working.

STAYING AHEAD OF THE CURVE

In many ways, contingent labour can provide for more diversity.

• Miranda Lee is Director, Government Advisory at KPMG in Singapore.

SCHOOL OF CONTINUING AND LIFELONG EDUCATION

BACKGROUND OF TECHNOLOGY PROGRAMME
 This is a 12-month programme which addresses the skills gap in the industry. It is a 12-month programme which addresses the skills gap in the industry. It is a 12-month programme which addresses the skills gap in the industry.

ADDITIONAL OFFERINGS
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 11 March 2017 (Saturday)
 9am - 5pm
 NUS University Centre
 1 Education Resource Centre, Level 10
 4 College Ave West
 Singapore 119074

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Work

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Thank You

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Workshop
on
Singapore's Human Capital Challenges
and the Future Economy

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Ballroom 2, Level 3
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