



The Future of Work

I am inspired by the possibility of changing the world for the better. Part of that opportunity is to share what I have learned about the urgent topic of the future of work: the forces impacting our world, what experts predict is in store and what we can and must do to prepare ourselves, our employees and our children.

If you are reading this document, you or someone you know has seen me present some or most of the content below somewhere around the globe. As a talent leader, I am passionate about creating a workplace where employees can do meaningful, rewarding work. That can only happen – at SAP or anywhere else – with clear-eyed awareness and careful planning. I hope that the information below will help you and your colleagues to consider what's ahead and motivate you to take concrete steps to prepare for the future of work.

Jenny Dearborn, MEd, MBA

Executive Vice President, Human Resources
Global Lead: Talent, Leadership & Learning

Industrial Revolutions at a Glance

Pre-Industrial



- Handcrafted production
- Subsistence agriculture
- Power from domesticated animals

1st – 1784



- Mechanical production equipment, factory system
- Rise of textile industry
- First steam ships, locomotives
- Power from water and steam

2nd – 1870



- Standard parts, assembly lines enable mass production
- Mass slaughterhouses, then automobiles
- Invention of telegraph
- Power from electricity

3rd – 1969



- “Digital Revolution”
- Logic circuits, microprocessors
- Electronics, IT further automation
- First programmable logic controller

4th – Now ...



- “Industry 4.0”
- Cyber and physical networks joined
- Sensors and big data lead to new products, processes, integration
- Internet of Things (IoT)

Historical Context

Let's start with some historical context. We're in a time of unprecedented change, which renowned economist **Klaus Schwab**, founder and executive chairman of the World Economic Forum, calls the 4th Industrial Revolution, or Industry 4.0. The key to thriving – **thriving, not just surviving** – during each of these eras of change has been our ability as a human species to creatively adapt and turn challenges into opportunities.

To truly thrive, we must understand the nature of change to prepare ourselves, our families and our society not only to adapt but to **take advantage of these new opportunities**.



Forces Shaping the Future of Work: Big Data

Big data can be [explained simply](#) as “the ability to process a large amount of complex information to make better-informed decisions.” A related term often used these days is **data analytics**, also called data science or business analytics, which is a scientific process that turns raw data (big or otherwise) into useable data from which it is possible to gain insights about the past and sometimes the future.

Jeffrey Stanton, professor and senior associate dean in the School of Information Studies at Syracuse University, [refers to data analytics](#) as “an emerging area of work concerned with the collection, preparation, analysis, visualization, management, and preservation of large collections of information.”

Today, data sets are so **large and complex** that traditional data processing software can't deal with them. And this proliferation of data means it's possible to build analytical models that can – with varying degrees of accuracy – **predict the future** and **prescribe actions** to take in response (referred to as predictive analytics and prescriptive analytics).

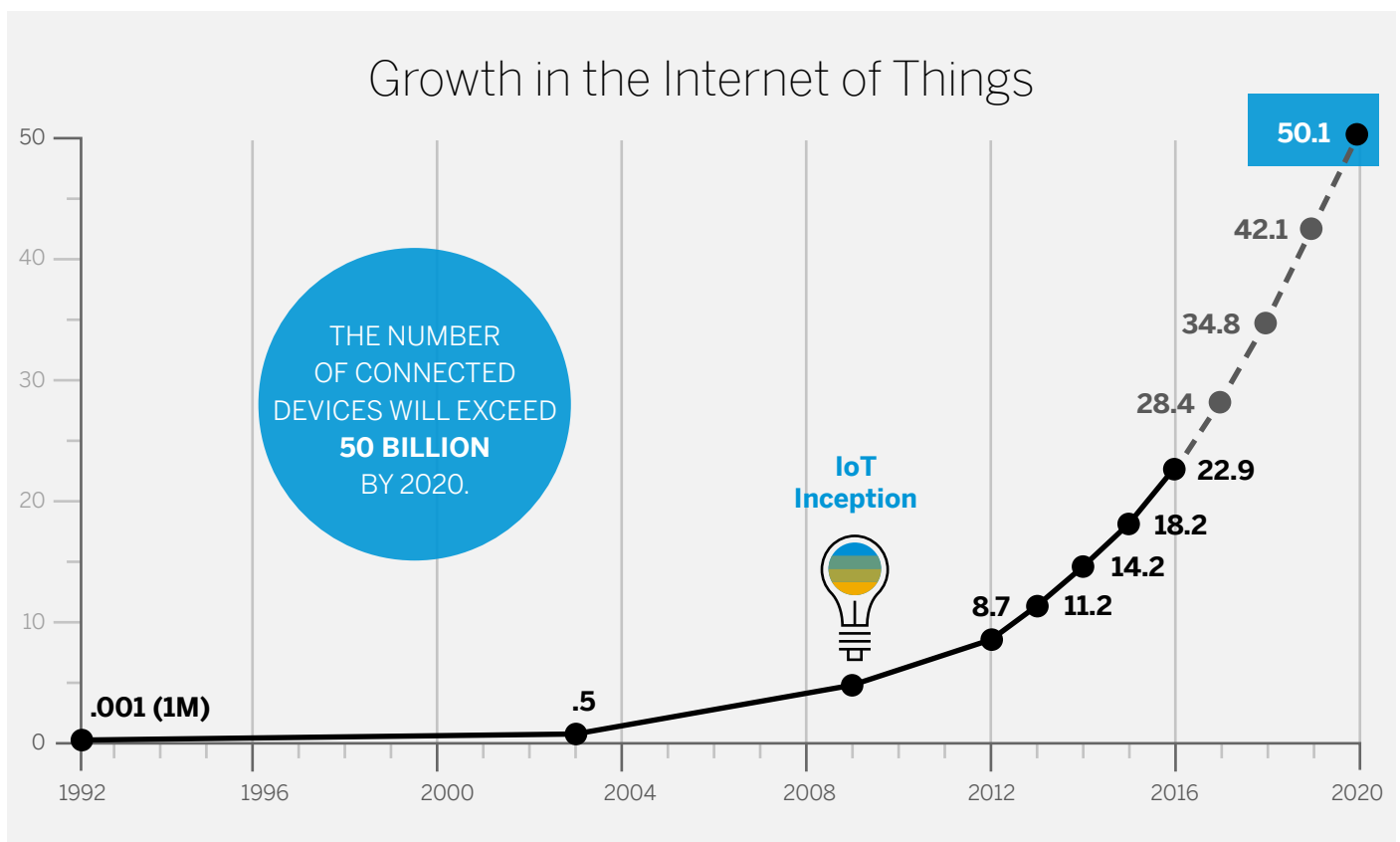
Organizational Data Sources:

- Employees
- Customers
- Partners
- Products
- Sales
- Services



Source: *The Fourth Industrial Revolution*, by Klaus Schwab

Big data has gotten even bigger thanks to the **Internet of Things (IoT)**, [defined by Gartner](#) as “the network of physical objects that contain embedded technology to communicate and **sense or interact with** their internal states or the external environment.” From smart phones and exercise monitors to home appliances and municipal resource management, more and more devices have sensors that collect and analyze data, generating **even more data**. All this will have a significant impact on jobs and needed workplace skills.



IoT is just one example of how technology—driven by data and artificial intelligence—is influencing our daily lives and **transforming what we do and how we do it**.

And while digital technology has become critical to the personal and economic wellbeing of everyone on the planet, decisions about how it is designed, operated and developed have **never been voted on** by anyone.



Forces Shaping the Future of Work: Technology

Big data is made possible, of course, through technology, which continues to advance and impact our lives in ways many of us could scarcely have imagined would happen in our lifetimes.

One of the most impactful developments for the future of work is **automation**:

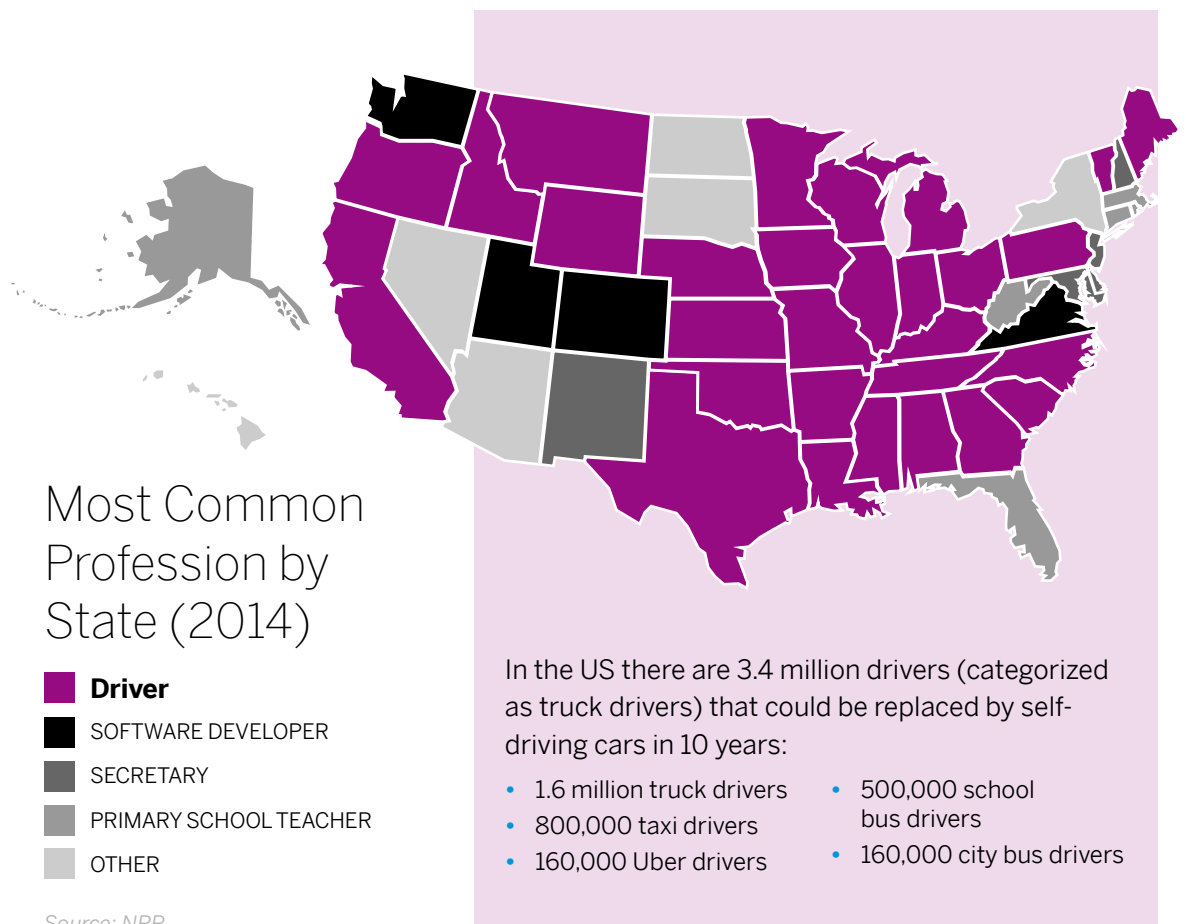
- In the US, estimates of jobs at risk of automation are as high as [47% by 2030](#).
- But the future will not be humans OR robots, it will be **humans AND robots** working side by side.
- In [China](#), robots are used in restaurants to cook and serve your food. In a given shift, the typical fast food restaurant employs 25 people.
- At [AmazonGo](#), an experimental retail shop, there are no checkout lines: through an app and sensors across the store, shoppers are checked out and charged automatically.

One of the best-known, and controversial, examples of automation is the self-driving car.

Google's Waymo and other models are incredibly exciting as an advance in technology. There's no doubt that self-driving cars and trucks, once mainstream and safe, will transform our society.



But that transformation, as with earlier industrial revolutions, will have a **tremendous impact on some jobs**, starting with drivers.





Let me tell you a story about my mother. No, she's not a truck driver. But many years ago she was a part-time bookkeeper at a travel agency. Are you old enough to remember those? Everyone in the small town where I grew up used that travel agency. These in-person businesses, which were once everywhere, largely went away.

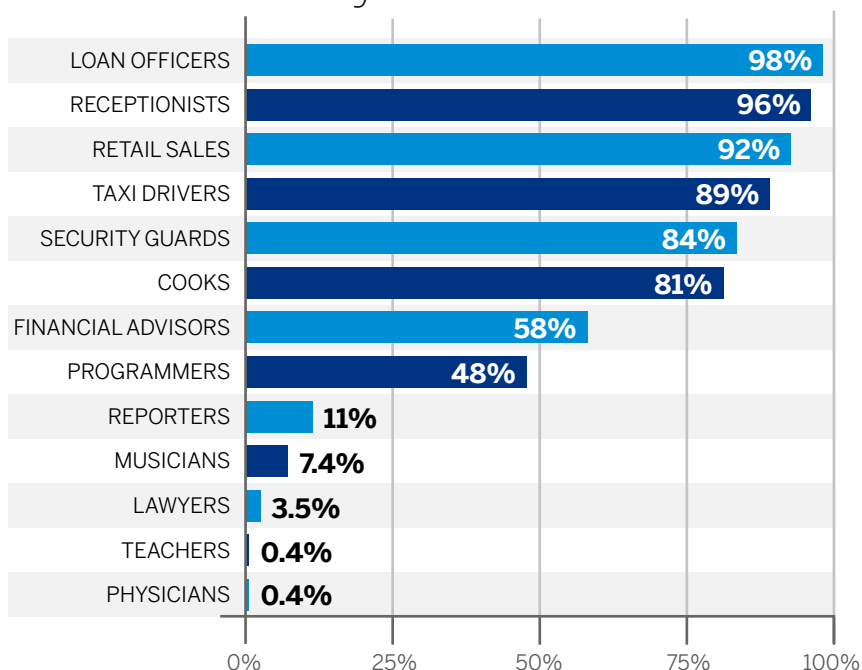
But the *travel business* didn't go away. Companies like Expedia, Travelocity, Priceline and others created *different* travel-related jobs in different locations. Some people lost jobs, and some people gained jobs. My mom was lucky. With some entrepreneurial spirit, she became a bookkeeper for independent business owners in town. She just took skills somewhere else. But the travel agents themselves struggled, because their skills didn't transfer to this new world of online travel. According to the Bureau of Labor Statistics, the number of full-time travel agents in the U.S. dropped from a [high of 124,000](#) in 2000 to [around 74,000](#) in 2014.



So if your only skill is driving, **where are your opportunities?** Our best hope is that all these professional drivers are going to be able to learn new skills that will help them stay employed, productive and rewarded by their work. But where will they learn these new skills, and who will teach them?

And they're not the only people who will be displaced by automation.

Probability of Automation



These statistics are from a [2013 Oxford University study](#) that has both been praised as visionary and criticized as alarmist. The truth likely lies somewhere in between. I think we can all agree that certain jobs are going away, while others – ones that use skills the study identifies as **uniquely human (manipulation, creativity and social perception)** – are here to stay.

Uniquely Human Skills

Manipulation	Creativity	Social Perception
FIRE FIGHTER: 17%	ART DIRECTOR: 2.3%	COACH/SCOUT: 1.3%
CHIROPRACTER: 2.7%	CURATOR: 0.7%	NURSE: 0.9%
MAKEUP ARTIST: 1%	CHOREOGRAPHER: 0.4%	CLERGY: 0.8%
ORAL SURGEON: 0.36%		MENTAL HEALTH WORKER: 0.4%

A [McKinsey study](#) estimates that as many as 54 million American workers, and as many as 375 million workers globally, will **need to learn new skills and change occupations by 2030**, due to advances in technology and automation. If they're not like my mom and don't have transferrable skills, what will they do?

Source: University of Oxford



Forces Shaping the Future of Work: The Socially Connected World

A third key impact on the future of work is how socially connected we have become. Like so many phenomena that began with consumers and then seeped into the workplace, these social connections lead to:

- Faster **speed** of communication
- Customer **expectations** harmonizing around the world
- Increased **democratization** of the workplace; reduction of hierarchy
- **Diffusion** of decision making



Questions to Consider about our Connected World

- How do expectations around connections transfer over from personal life to professional life?
- What impact will the "sharing economy" have on the world? If people aren't buying things, but just sharing them or renting them, does that change how we are connected?



Let's take one extreme example: **Thailand**. Thailand is the second largest Facebook using country in the world (#1 is US). Thai citizens own an average of two mobile devices, but less than 1% of them have a computer or TV at home.

More Thai people get their news and entertainment from YouTube than any other media source.

Global Digital Snapshot

Here are some numbers to put these social connections in perspective:



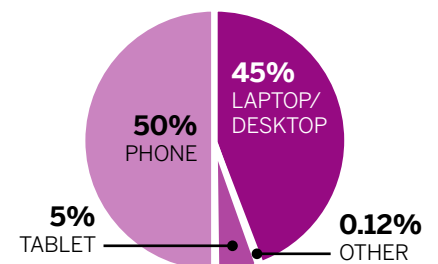
7.48 B
global population

54% urbanization



50%
Internet users

3.77 B users (+10% from 2016)



66% unique
mobile users

4.92 B users (+5% from 2016)



37% active
social media users

2.79 B users (+21% from 2016)

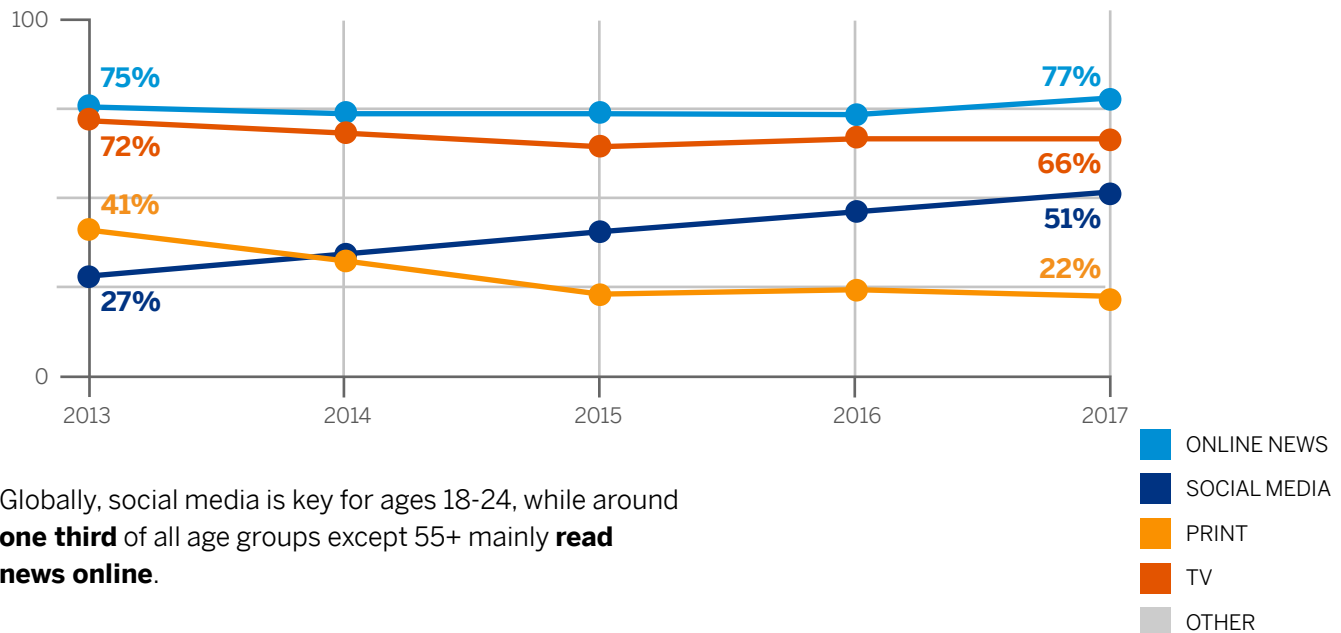


34% active
mobile social media users

2.55 B users (+30% from 2016)

But Thailand is just one example of a trend that is more widespread than you may think. Here's a snapshot of how Americans get their news, with **social media doubling and print reduced by half** over just four years:

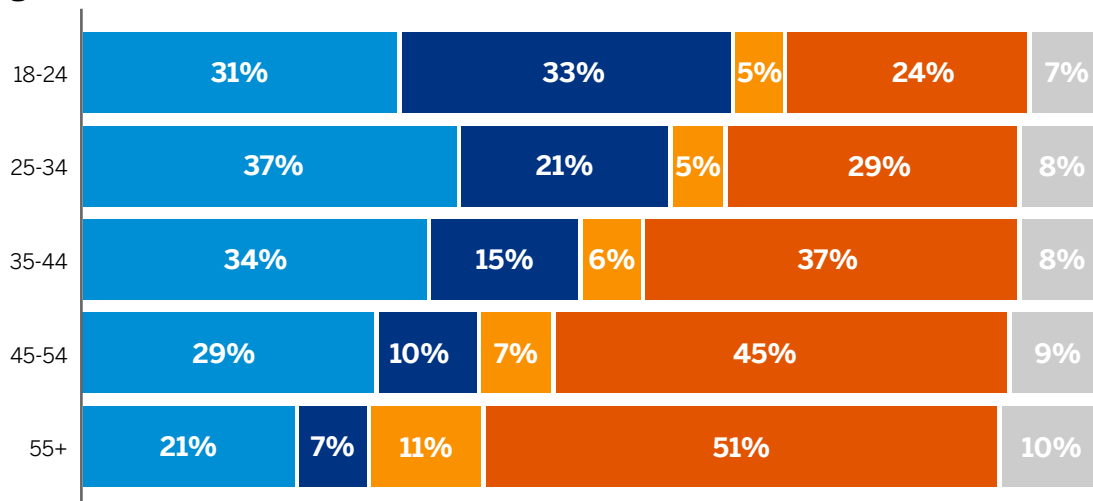
Shifts in News Sources 2013-2017 (USA)



Globally, social media is key for ages 18-24, while around **one third** of all age groups except 55+ mainly **read news online**.

Main Source of News by Age 2017 (Global)

Ages:



These **generational differences** bring us to the next major influence on the future of work...



Forces Shaping the Future of Work: Shifting Demographics

Just as successive industrial revolutions are the way of the world, so, too, are new generations shaking up norms and societal patterns. For global society today, implications include:

- **Millennials** taking over the world (50% of the global workforce by 2020; 75% by 2025)
- **Five generations** in the workplace
- **Diversity** gaining recognition as advantage: 85% of CEOs who cite it as a key strategy say it enhances their performance
- We're **living – and working – longer**

Increases in life expectancy will profoundly impact the future of work. Over the past 200 years, humanity has experienced a steady increase in life expectancy: about three months per year since 1840, helped first by a sharp decrease in infant mortality and later by addressing chronic adult diseases such as [smallpox and polio](#).

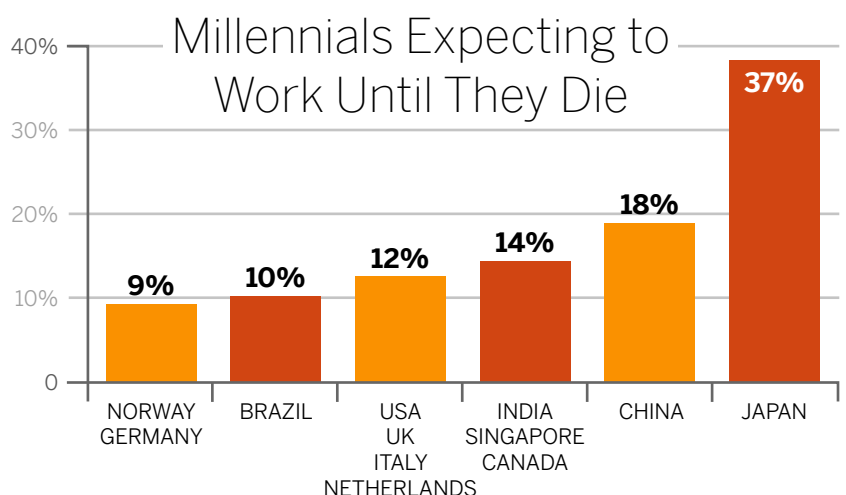
Increase in Life Expectancy

Age Today	Life Expectancy	Retirement Age	Career Duration
70	85-90	62	41
60	89-94	68	47
50	92-96	70	49
40	95-98	72	51
30	98-100	75	54
20	100+	78	57
10	102+	81	60
0	105+	85	65

Adapted from The 100 Year Life by Gratton & Scott



Let's look at Japan's fascinating custom of the government gifting citizens a silver saki dish upon reaching 100 years of age. The custom had to be discontinued in 2015, after the number of centogenarians had increased to more than 30,000, up from 150 in 1963. It's estimated that **50% of Japanese children born today will live to 110**. Perhaps it's not surprising, then, that more than a third of Japanese Millennials expect to work their entire lives.



Source:
Manpower Group

I personally believe that living longer will mean **more opportunities** for second and even third chances and greater ease returning to work after changes and breaks. How we are assessed professionally will be more about the choices we make and less about where we started. The way of life in the future will be about adaptability, flexibility and change. It's up to us to **adopt the right mindset and plan** for a long future ahead.



Questions to Consider about Longer Life Expectencies

And as we live longer, we will not only **need** to work more but we will **want** to make use of our able bodies and minds.

- How do we **plan** for a 60-70 year career?
- What skills do we most need to **adapt and thrive**?
- How should our approach to **education and learning** be different to prepare us for careers of this duration?
- How will **workplaces** need to change to prepare and accommodate people living longer?



Forces Shaping the Future of Work: Complexity

Geopolitical, economic and organizational complexity are also influencing the future of work. Companies face **increasingly thorny questions**, such as:

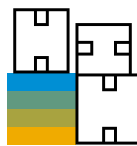
- How should we **organize**:



By geographies?



By functions?



By business units/products?



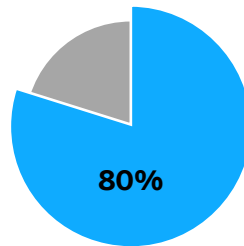
By customer segments?

- What are the best ways to **optimize** contingent labor, the “gig economy” and the “sharing economy”?

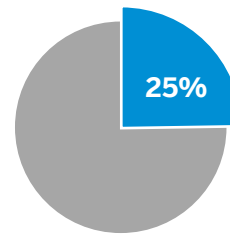
When presenting on the future of work, I often ask for a show of hands to gauge organizational complexity. Fairly consistently, I find that about 75% of people are working in a matrixed organization, and 50% have more than one manager – a solid line manager and a dotted line manager.

Indeed, 80% of companies rate their business as “highly complex” or “complex” for employees, and average US workers now spend **one fourth of every day** reading and answering emails, yet fewer than 16% of companies have a program to “simplify work” or help employees deal with stress.

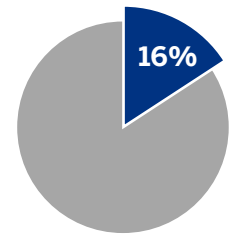
(Deloitte Human Capital Trends 2014 and 2015)



COMPANIES RATED AS “COMPLEX” FOR EMPLOYEES

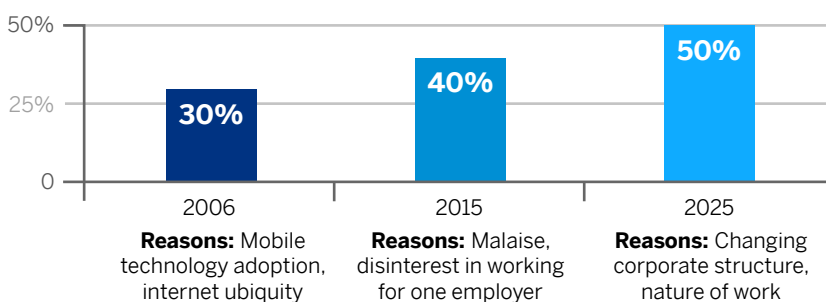


WORK DAY SPENT IN EMAIL BY US WORKERS



COMPANIES WITH PROGRAM TO SIMPLIFY OR HELP WITH STRESS

Increases in Contingent, Freelance, Contract, Self-Employed Labor



Source: Manpower Group

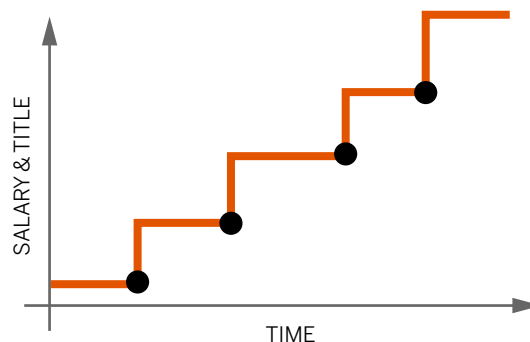
Fundamental changes in how people connect with work are also impacting our future. Contingent, freelance, contract and self-employed labor may be as high as 50% of the workforce by 2025, and **92% of CEOs** say that non-traditional labor is the key to organizational success.

Yet this is not a life most workers want. People said they preferred “stable and secure” income to “making more money” in a [recent report](#) from the Shift Commission, which studies the future of work.

My experience tells me that we are steadily moving away from a world in which we aspire to ascend through a career and salary progression, and toward a life of work characterized by **moving from project to project**. This movement won't always be up, however – lateral-type switches and even some salary decreases will be expected as a norm.

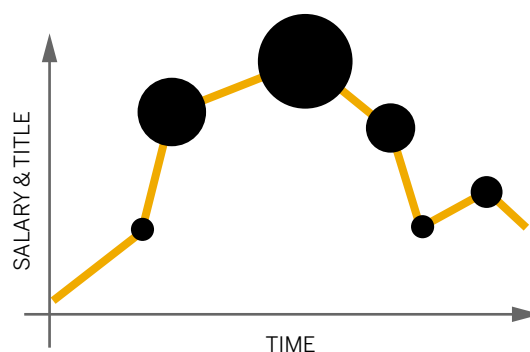
This will mean **seismic shifts** in how workplace leaders think about attracting, developing, utilizing and advancing their people. Talent and career management will morph into new models. The most **forward-looking companies** are already planning for this transformation.

Traditional Expectations About Career Progression



“I will be promoted to larger roles and salaries throughout my career.”

Employee Experience in the Digital Workforce



“I will move from gig to gig, gaining new skills/knowledge, and although my pay will vary, I'm motivated to stay relevant and engaged.”

Source: Jenny Dearborn, 2017



Forces Shaping the Future of Work: Rapidly Shifting Market Forces

The **pace of change**, on a global scale, is dizzying. For example:

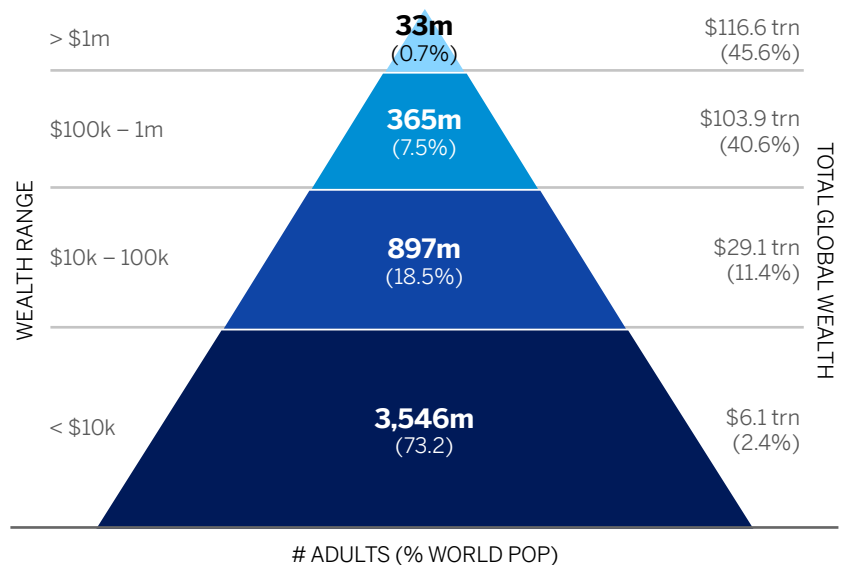
- The **iPhone**—the original “smart phone”—launched on June 29, 2007. Just a decade later, there were 3 billion smart phones worldwide.
- **Uber**, which only launched in July 2010, has completely disrupted the global taxi market.
- In 1965, the average tenure on the **Fortune 500** was 75 years. Today, it's 15 years. Just over half of the companies on the Fortune 500 in the year 2000 have disappeared.

Key Market Forces

- Rate of innovation
- Compression of wealth
- Shift in jobs

Wealth inequality plays a key role in global markets, too. Today, half of the global population owns 1% of global wealth, while just 1% of the global population owns half of the global wealth. And **inequality is rising in all countries**, even those who have experienced rapid growth and a drop in the percentage of people living in poverty.

Who Controls Wealth



Outcomes of High Wealth Inequality

- More violence
- Higher % of people in prison
- More obesity
- Increased mental illness
- Greater drug use
- Higher infant mortality
- Increased segregation
- Lower life expectancy
- Decreased educational output
- Lower trust in institutions



Wealth inequality has real ramifications.

Data shows that societies where there is the greater wealth disparity are far worse off on a wide range of societal issues – including more violence and lower life expectancies.

Source: *The Spirit Level: Why Greater Equality Makes Society Stronger*

And to be honest, we're headed down a road that doesn't look very pretty. **Wealth** is being created – and its benefits are being enjoyed - by **fewer and fewer people**.

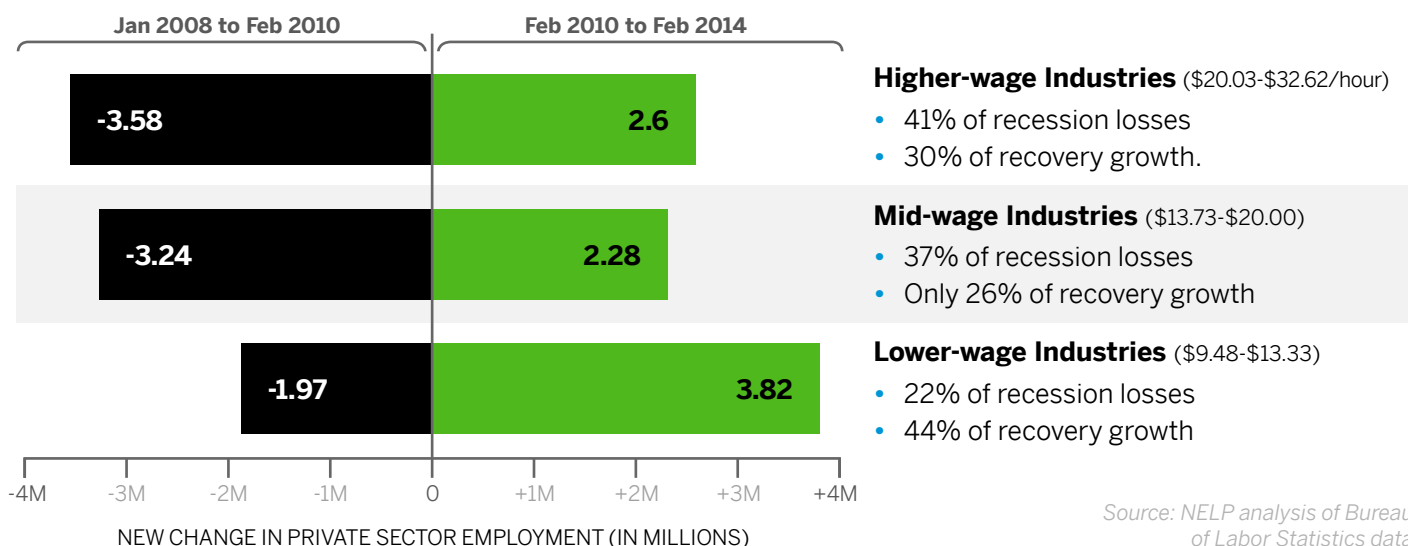
Compared to America's leading car manufacturers in 1990, the three top companies in Silicon Valley are creating 30 times more market value with about a tenth of the employees. This is fantastic for shareholders. But what about our country, or the world?

1990	2015
3 biggest companies in Detroit	3 biggest companies in Silicon Valley
	
36 Billion Market Cap	1.09 Trillion Market Cap
\$250 Billion Revenue	\$247 Billion Revenue
1.2 Million employees	137,000 employees

Source: World Economic Forum

Here's one way this wealth disparity is playing out globally. The "great recession," which started in 2008, saw huge job losses in the United States. We started to see a rebound in 2010, and were back on solid footing by 2014. Yet looking at job losses and gains by wage earning category reveal a grim reality. During recovery, employment gains concentrated in **lower-wage industries**.

How Jobs Are Redistributing Before and After "The Great Recession"



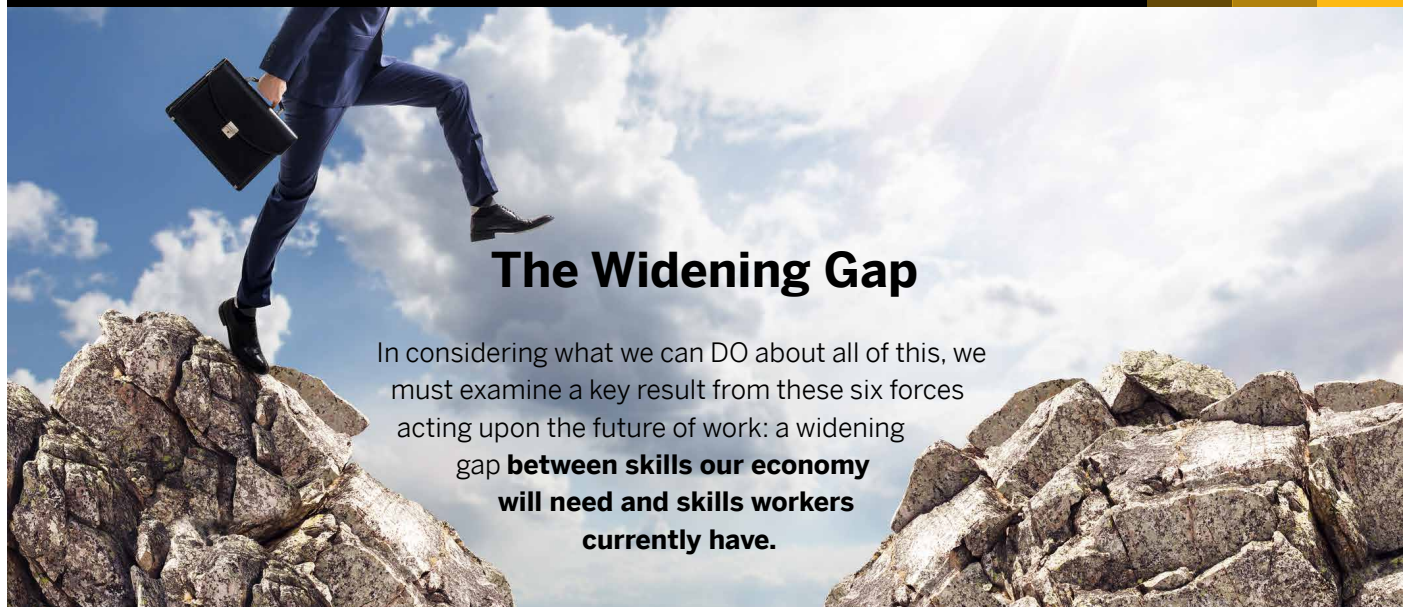
So, between 2008 and 2014, US workers lost nearly a million high-wage jobs and nearly a million mid-wage jobs. Post-recession, most are back to work but many are **under-employed** and not better off at all.

The World Economic Forum has tracked these shifts in employment by job category.

Growth and Decline by Job Category

Growth	Neutral	Decline
Job Families: Architecture, Engineering, Computer, Mathematical	Job Families: Sales, Construction, Education, Training, Media, Sports, Entertainment, Arts, Design	Job Families: Office/Administration, Manufacturing, Production, Business, Finance Operations
Roles: Smaller, generally high-skilled job families, data science, data analysts, data visualization, software and application developers		Roles: Administrative and routine white-collar office functions, customer service
Work Style: Tele-commuting		Work Style: Long commutes to office buildings

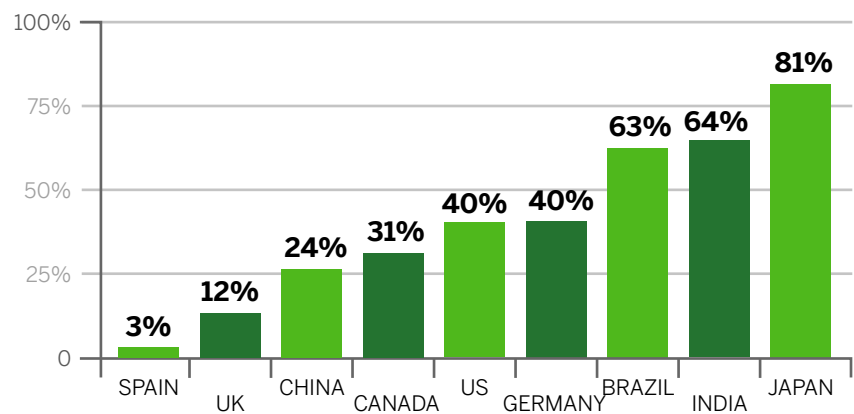
Source: World Economic Forum. The Future of Jobs, January 2016



This **alarming global challenge** has the potential to soon become a crisis. Across the developed world, to varying degrees, countries face skills shortages.

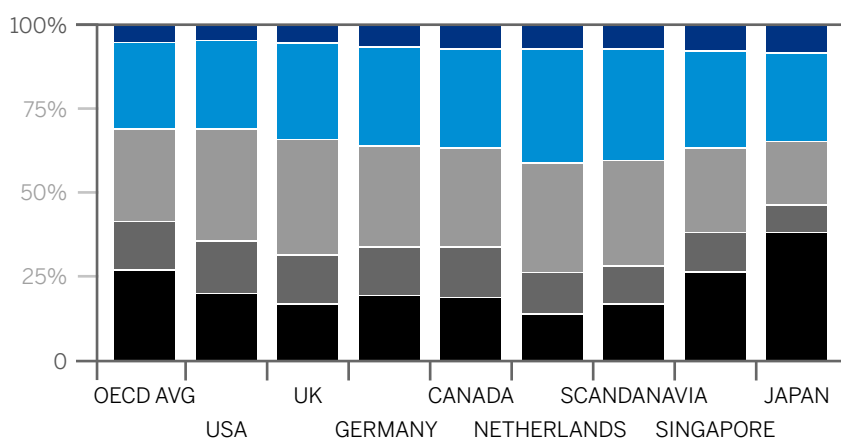
In some cases, “skills mismatch” is a more appropriate term. Japan, for example, has only 2.8% unemployment yet 81% of companies report a skills shortage.

Skill shortage as a % of firms (with 10 or more employees)



Source: Manpower Talent Shortage Survey via OECD

Computer Skills Gaps - OECD Countries (Individuals Age 16-65)



Source: Nielsen Norman Group

The proliferation of data and technology mean that computer science skills are more critical than ever. Yet here are some more statistics that should REALLY worry us.

Worldwide, **countries are simply unprepared to fill the jobs of the future**, as reported by the 34-market Organization for Economic Cooperation and Development ([OECD](#)).

- STRONG
- MEDIUM
- POOR
- TERRIBLE
- CAN'T USE COMPUTER

And it's a **huge problem in the US**. Our economy – across a whole host of industries – is badly in need of workers skilled in computer science. There are *half a million jobs* going unfilled, and in just a few years it's estimated that nearly a third of all computer science-related jobs will be left unfilled.

Last year, less than 43,000 computer science students graduated into the workforce. So who exactly is going to design the Waymo equivalents across our economy? And one tenth of all new jobs are ones that haven't yet been created. **How do you train people for jobs that don't yet exist?**



30%
of **available computer science jobs**
to be filled by qualified candidates,
by 2020



10%
of new jobs that will be in **occupations**
that have not existed before

Source: US Bureau of Labor Statistics,
McKinsey Global Institute analysis

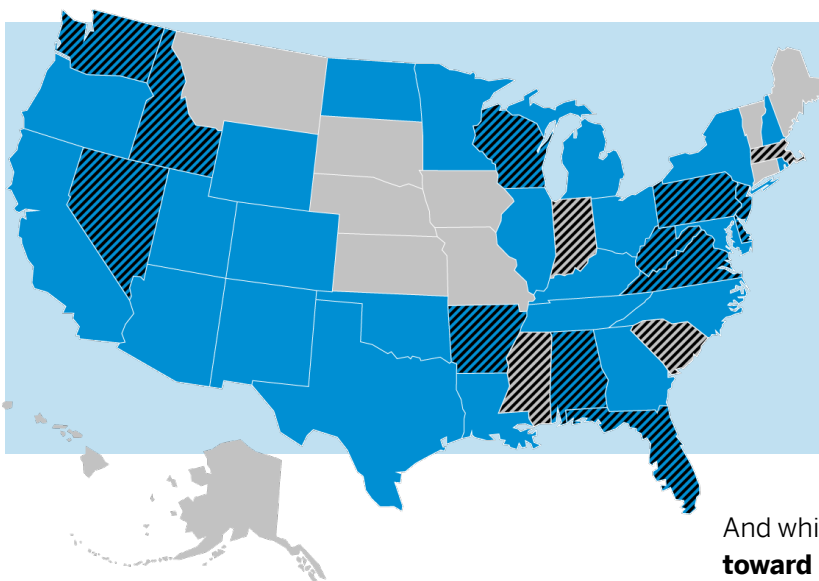
500,000 US jobs unfilled right now that require computer skills



Given what we know about the future of technology, and **how essential computer skills are to our economy**, it seems pretty logical that understanding algorithms, applications and the Internet are fundamental to our children's future: not just using them as consumers, but also understanding the code behind how the technology works.

For the future of work, these concepts are as foundational as learning about photosynthesis, the digestive system or electricity.

You would think, then, that there would be computer science standards at the national level and significant investment in training the kids who will fill those 22 million jobs. But unfortunately – perhaps even catastrophically – you'd be wrong.

As of May 2018, **only 16 states have K-12 computer science education standards** – and California, home of Silicon Valley, isn't one of them. But in 2017, states with K-12 CS standards were **9% more likely** than states without standards to see unemployment fall.



 K-12 CS STANDARDS
 CS CLASSES COUNT TOWARD GRADUATION (2017)

Source: Combined data from code.org, US Congress Joint Economic Committee's State Economic Snapshots Report, October 26, 2017

What do high school computer science standards entail?

As of May 2018, there are no federal CS standards. Non-profits have stepped in to fill this worrisome gap:

- Computer Science Teachers Association (CSTA) [standards](#)
- International Society for Technology in Education (ISTE) standards: for [students](#), for [educators](#), for [administrators](#)

And while **only 34 states allowed CS classes to count toward graduation** in 2017, those states were nearly 10% more likely to see a drop in unemployment that year.

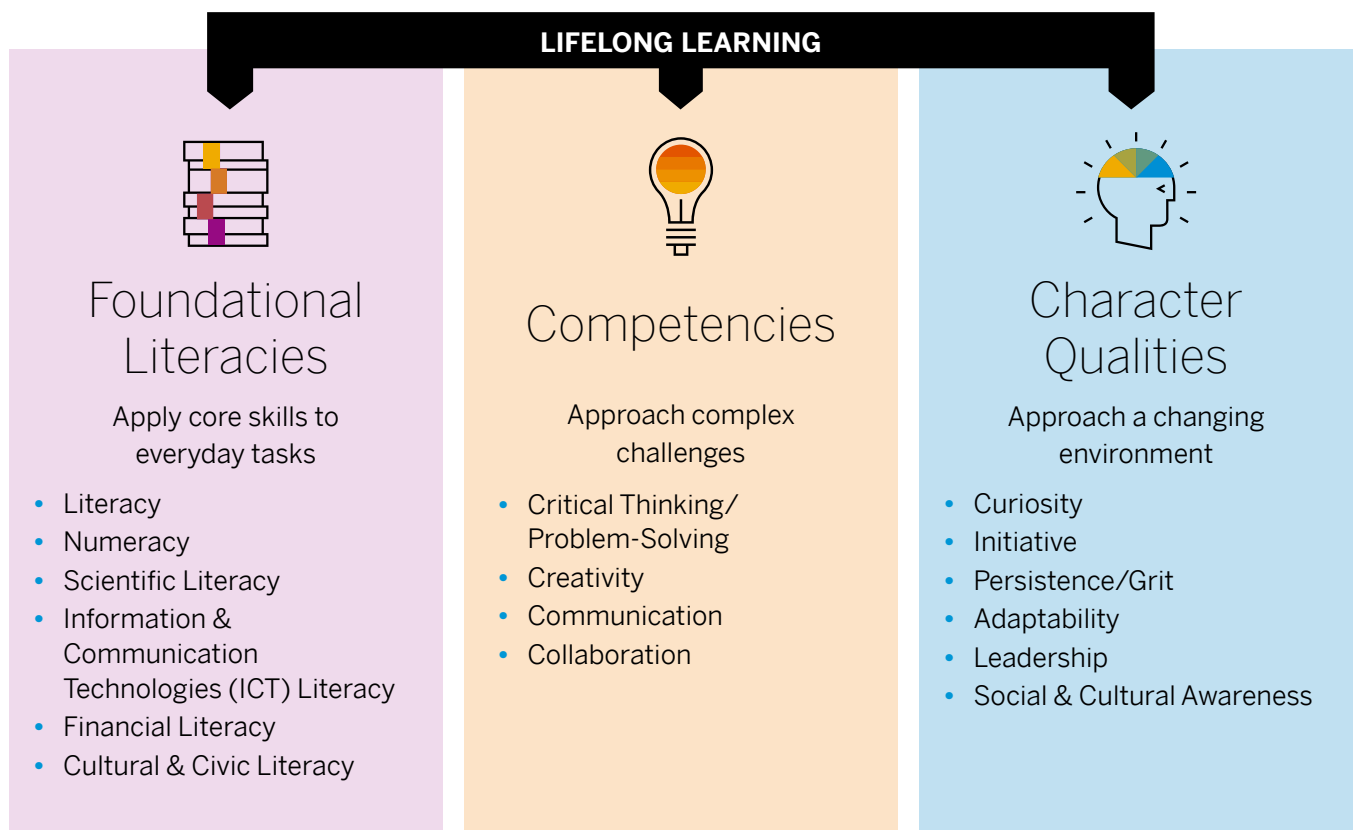
Compare this to China, which seems to have figured out that future skills won't just appear out of nowhere. China is investing **\$250 billion each year** to educate tens of millions of young adults, in part to advance national priorities such as alternative energy, biotechnology and hybrid and electric cars.

But we'll need more than just computer science skills to thrive in the future of work.

The World Economic Forum identified three types of skills needed in the 21st century:

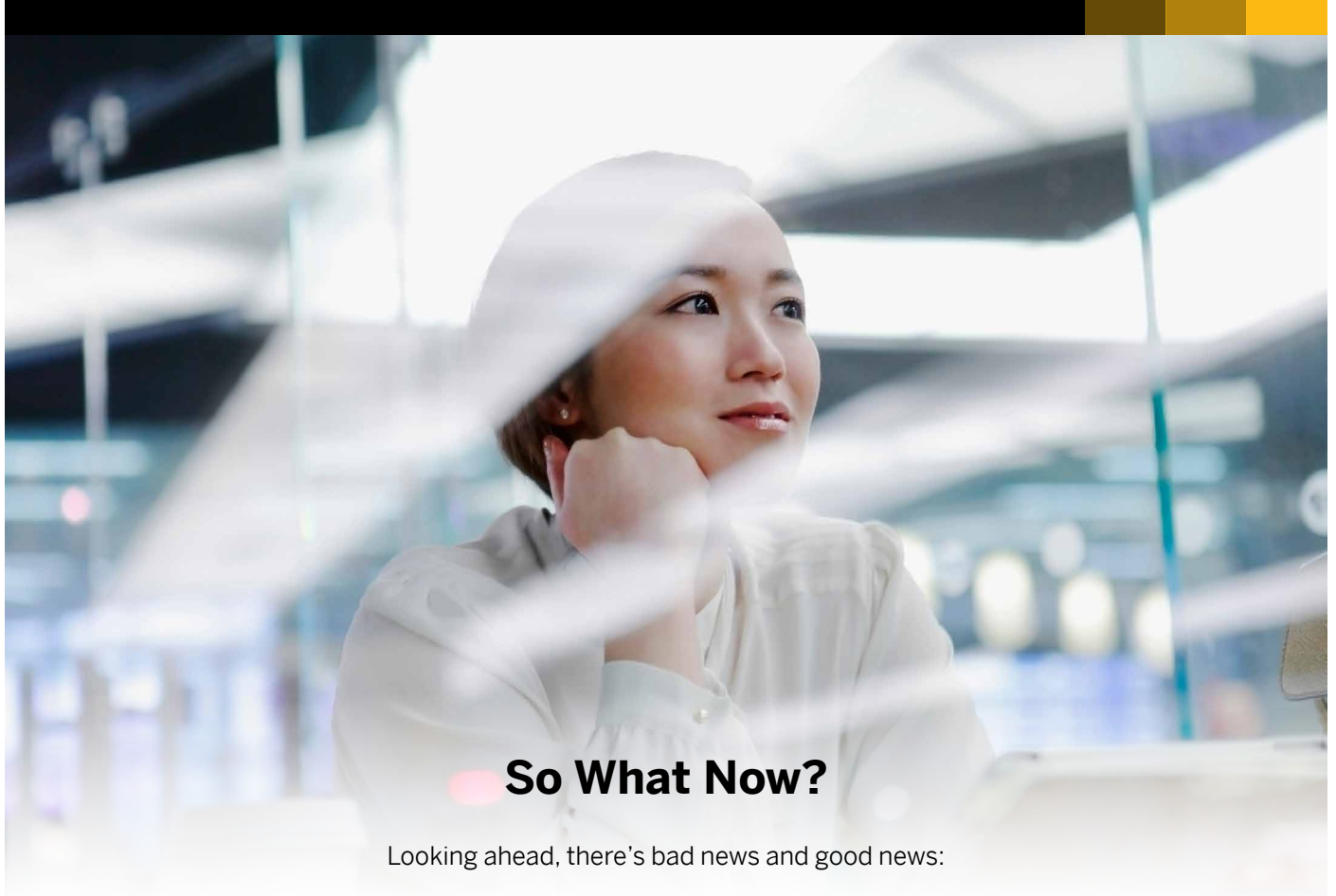
foundational literacies, which now include subjects like tech and finance;

competencies like problem-solving and collaboration; and **character qualities** such as adaptability and social awareness. This is over a lifetime of learning.



Source: World Economic Forum, "New Vision for Education - Unlocking the Potential of Technology"

With Artificial Intelligence (AI) and the algorithms that power them taking over routine tasks in the workplace, we need additional emphasis on the qualities that differentiate human workers from AI. In the future of work, humans will need to marry an **understanding of computer science** with fundamentally human characteristics like **creativity, resilience and interpersonal skills**.



So What Now?

Looking ahead, there's bad news and good news:

The Bad News

- **Unskilled jobs are vanishing:** Unskilled job openings declined by a relative 55% from 2007-2015, and the American economy eliminated 7 million routine office jobs from 1996-2015.
- **A degree is no longer enough:** Just [16% of Americans](#) believe a four-year college degree prepares students very well for high-paying jobs in the modern economy.
- **Employers have been slow to respond:** The share of workers receiving on-the-job training is falling; in Britain, the [average amount of training received](#) almost halved between 1997 and 2009.

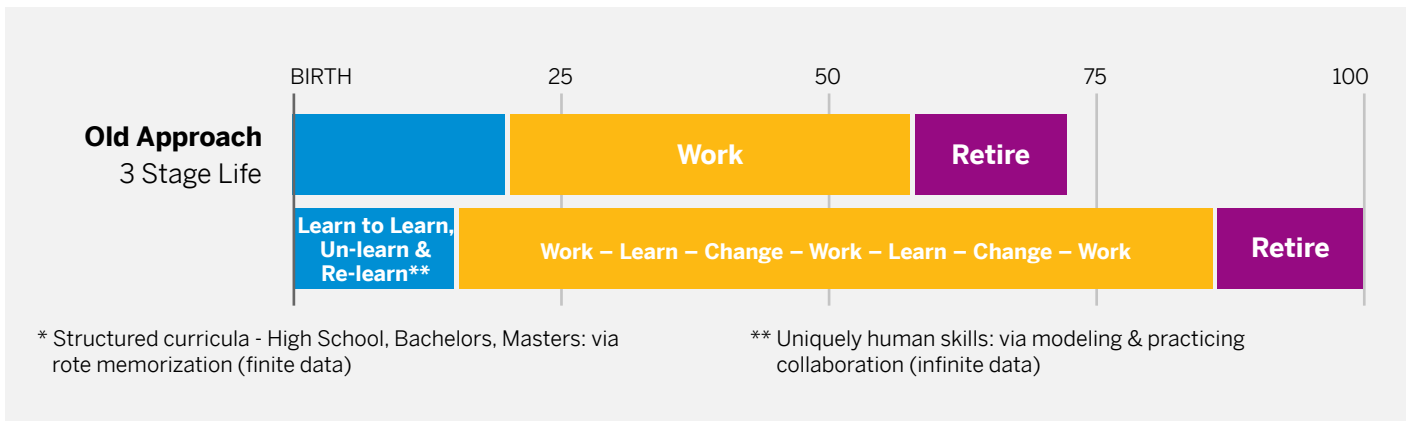
The Good News

- **New opportunities are emerging:** Between 2012 and 2017, the demand for data analysts grew by 372%, and the demand for data visualization skills shot up more than 2000%.
- **Employees are motivated:** [54% of American workers](#) acknowledge the need to build new skills throughout their careers; [93% of millennials](#) are willing to spend their own money on job training.
- **Resources are ramping up:** Online course and bootcamp providers are developing innovative training solutions, and universities are beginning to embrace online and modular learning.

While I don't pretend to have the answers to the challenges I've laid out, I do feel that there are certain steps that can be taken to move all of us in the right direction.

Lifelong learning is the name of the game.

The most in-demand occupations and specialties of today **did not exist 10 years ago**, and the pace of change is set to accelerate. According to the World Economic Forum, an estimated 65% of children entering primary school today will ultimately end up working in completely new jobs types that don't yet exist.



Source: Jenny Dearborn, May 2017

What's more, half of subject knowledge acquired during the first year of a four-year technical degree will be [outdated by the time students graduate](#).

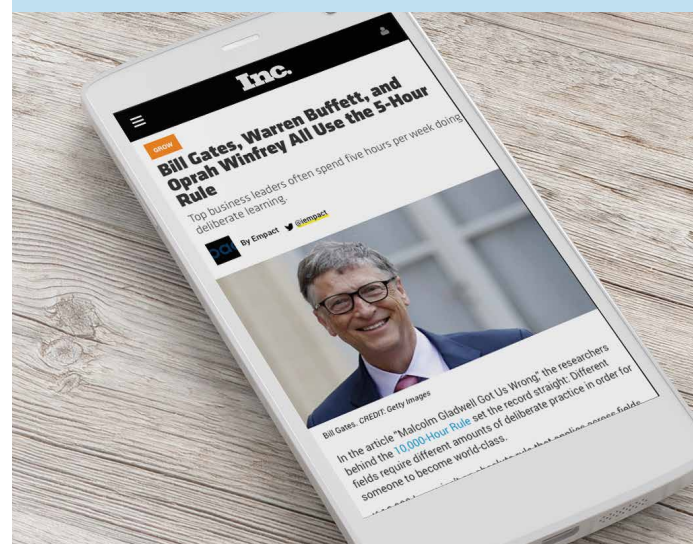
Given that, and given shifting trends of the gig economy and lengthening life expectancies, we need to redesign how we approach our work and careers. **We will need to learn, un-learn and re-learn over and over again** throughout our lives, and be prepared to change what we do to earn for ourselves and our families. I view this as an evolution away from the three-phase life and toward a multi-phase life.

The responsibility to accommodate this shift is significant – and should be shared among the interested parties: **workplace** talent leaders, yes, but also **governments, companies** and **individuals**.

We'll have to focus even more on learning than ever before. This means prioritizing learning every week, something [top business leaders commit to](#).

Starting with Us: Like Top Business Leaders, Prioritize Learning Every Week

"Many [widely admired] business leaders ... have set aside at least an hour a day (or five hours a week) ... for ... learning."



"Bill Gates, Warren Buffett, and Oprah Winfrey All use the 5-Hour Rule," Inc., July 2016



What HR and L&D leaders can do

Immediate Focus

- **Educate** yourself:
 - Study** market data relevant to your industry and region to understand coming impact of AI and automation
 - Research** future skills for your industry
- **Evaluate** your own team's purpose and relevance. Update charter and roles as needed
- **Facilitate** an honest conversation with company leaders and industry peers

Longer Term Focus

- **Ensure** lifelong learning is core to company culture
- **Align** L&D with current and future needs in STEM and computer science
- **Expand** strategic talent planning
- **Explore** apprenticeship programs
- **Develop** cross-industry and public-private collaboration to build a long-term talent pipeline

What elected leaders and corporate America can do



Government: local, state and federal

- **Collaborate** with industry and educators to make large-scale changes:
 - Policy
 - Curricula
 - Funding
- **Commit** to preparing Americans for work today and tomorrow
- **Expand funding** for apprenticeships and other models successful overseas



Business: existing channels

- **Invest** in schools and training programs through funding and/or in-kind services
- **Join** – or initiate – public-private partnerships
- **Sponsor** hackathons and coding events, especially for disadvantaged kids and groups under-represented in tech
- **Support** non-profits that promote computer science education



Business: newer ideas

- **Integrate** volunteering in schools (or job retraining) into corporate social responsibility (CSR) pillars
- **Adopt** a local school and underwrite their computer science teacher(s)
- **Enable** teams of five to work four 10s and job-share teaching computer science
- **Reward** (and develop) high-performers with three-month volunteer teaching sabbatical



What INDIVIDUALS can do ...

#1: DON'T WAIT
FOR OTHERS TO
DO IT FOR YOU!

... to look after career interests:

Immediate Focus

- **Educate** yourself
 - Study** your industry and region to understand AI and automation impact
 - Research** future skills for your industry
- **Evaluate** your own job's purpose and relevance.
- **Facilitate** an honest conversation with your manager and peers about the future

Longer Term Focus

- **Challenge your employer** to make lifelong learning core to company culture (or even stronger, if it's already core)
- **Expand** your strategic career planning
 - If relevant, **ask HR/L&D** to reskill you and/or guide you toward future-proof roles
- **Learn, un-learn, re-learn, repeat**

... to help close tech skills gaps:

Lobby for K-12 computer science education:

- **Petition** your local school and/or state officials (find out your [state's status](#))
- **Use your voice** ([sample letters](#))
- **Sign** a [petition](#) to support CS education
- **Join the PTA**
- **Run** for school board

Got tech skills to share?

Opportunities to help include:

- **Teach kids and/or help a teacher** through [code.org](#)
- **Partner with an educator** to team-teach computer science through Technology Education and Literacy in Schools (TEALS)
- **Volunteer at, or start, a CoderDojo club** for kids
- **Volunteer 90 minutes/week** through Citizen Schools

Give kids skills, dreams and careers with resources like:

- **National Science Teachers Association** (NSTA) list of [Best STEM Books K-12](#)
- **Free activities** from [Hour of Code](#), MIT's [Scratch](#) and others
- **Resources** such as the National Action Council for Minorities in Engineering ([NACME](#)) and those listed on [She's Coding](#).

Conclusion

While the future of work is full of uncharted territory, in a sense we are not facing anything new: throughout history, humans have adapted to what seem to be earth-shattering shifts in how we communicate, collaborate, earn our livelihood and more. The key has always been to **open our eyes wide to shifting realities** and to PREPARE to meet these different challenges head-on.

I hope the information in this document helps you to do just that, and to **take bold, informed steps** forward toward a new chapter of success for you, your company, your family and the world.

- Jenny



Jenny Dearborn is recognized as one of the 50 Most Powerful Women in Technology and is an industry thought leader and authority on workforce development and human capital transformation. At SAP, the world's largest business software company, she is responsible for learning, development, talent management, leadership, succession management and organizational development for the approximately 90,000 SAP employees worldwide. She is the author of *The Data Driven Leader: A Powerful Approach to Delivering Measurable Business Impact Through People I Analytics* (Wiley, 2017) and the 2015 business best-seller *Data Driven: How Performance Analytics Delivers Extraordinary Sales Results* (Wiley).

Dearborn is a frequent contributor to the mainstream business press and is an internationally sought-after keynote speaker. She is a graduate of American River College, the University of California, Berkeley, Stanford University and San Jose State University, and sits on several boards of directors.

She lives with her family in Palo Alto, California and in Montecito, California.

[@DearbornJenny](#)

<https://www.linkedin.com/in/jdearborn/>