How Skills & Tasks with AI is changing how work gets done

Presented by:
Bradford Yeager
IBM Watson Talent

Agenda

- Trends
- “The Future of Work: How New Technologies Are Transforming Tasks”
- Internal Mobility (Skills)
- Cyber
- Bringing it Together
- Final Thoughts

Jobs in transition

375 million

*Source : **Mckinsey Global Institute***
2017 - Jobs lost, jobs gained: Workforce transitions in a time of automation

The number of ***unfilled jobs***

7 million+

Source: Bureau of Labor Statistics - 2019

Know your *critical skills* of today and tomorrow

60%

of execs say they struggle to keep their workforce current. They recognize the skills of the future may be unknown or entirely new to the organization.

Source : **2018 IBV Study**
The rise of the digital learning ecosystem

Assess to evaluate *fit and predict success*

82%

of Fortune 500 executives don't believe their companies recruit highly talented people.

Source : ***Mckinsey Global Institute***
War for Talent 2000, refreshed in 2012

Skills are the new currency of competitive value

We believe organizations of the future are talent-centric and AI powered

“While all jobs will change…few jobs will actually disappear. What is fundamentally changing is the way work gets done”

—

Source: “The Future of Work: How New Technologies Are Transforming Tasks” MIT-IBM Watson AI Lab

“The Future of Work: How New Technologies Are Transforming Tasks”

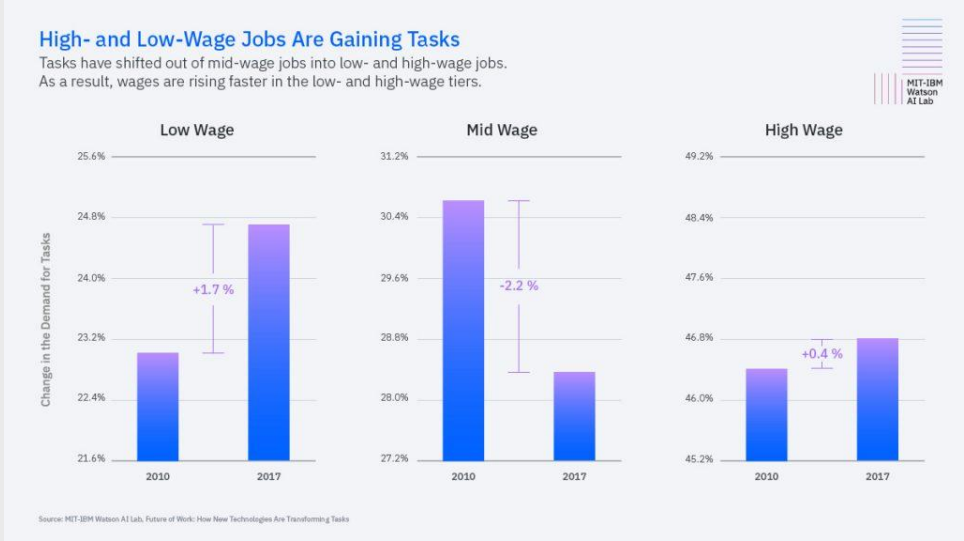
- First-of-a-kind research
- Empirical work from MIT-IBM Watson AI Lab
- Sheds new light on the reorganization of tasks within jobs
- The dataset and research is based 170 million online job postings in the US between 2010 and 2017
- The result: insights into how **AI is shaping the future of work**
- Article Links:
  - Research Blog
  - Full Article

A shift in tasks amongst low, mid and high wage occupations:

- The shift was 4-to-1
- Tasks impacted the most are those most ***Suitable for Machine Learning (SML)***
- **Wage Changes**

The tasks that lost the most among mid-wage occupations:

- Supervisors of retail workers
- Store management
- Staff management
- Sales



Value of ***creativity and design*** to increase as AI continues to scale

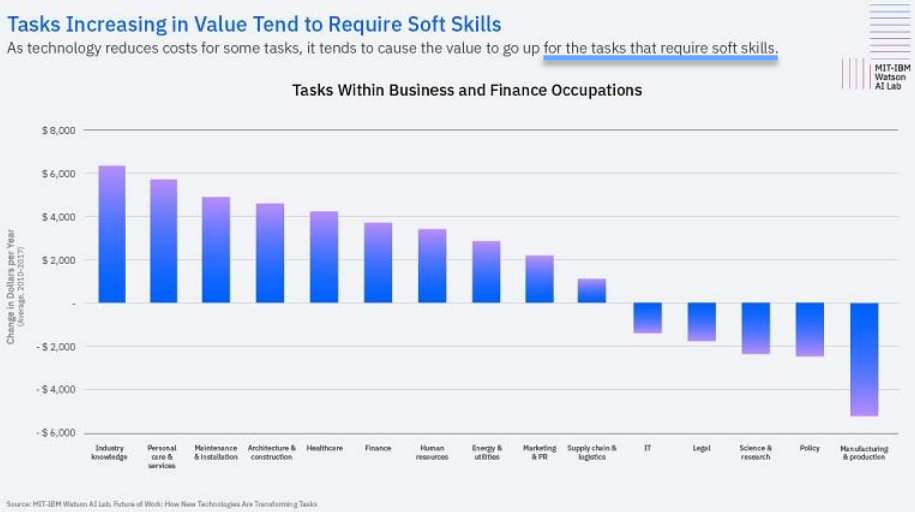
Across all three wage groups, the tasks that have been consistently more highly valued and less likely to be automated (SML):

- Administrative
- **Design**
- Industry knowledge
- Personal care and services

Industry knowledge tasks are on the rise in high-wage business and finance occupations.

High wage workers increased their focus on:

- **Design**
- IT
- Legal
- **Marketing**
- Media
- Writing



New technologies such as AI have just begun to transform work

The rate and pace of change is currently slow

It will accelerate as more AI solutions are adopted

As such, employees have time to adapt by learning or honing skills that require:

- Physical flexibility
- Common sense
- Judgment
- Intuition
- **Creativity**
- Spoken language

The report noted that all these tasks require a substantial grounding in intellectual skill and insight.

Soft skills are as important as hard skills

LinkedIn recently analyzed hundreds of thousands of job postings in order to determine *which skills companies need most* in 2019.

They found that employers are looking for workers with both *soft skills and hard technical skills.*

Soft Skills:

- Time Management
- Adaptability[2]
- Collaboration
- Persuasion
- Creativity[1, 2]

Hard Skills:

- UX Design
- People Management[2]
- Analytical Reasoning
- AI
- Cloud Computing[1]

Sources:
1 Most in-demand soft and hard skill
2 New additions from 2018, soft skills leading the way

Gig Economy

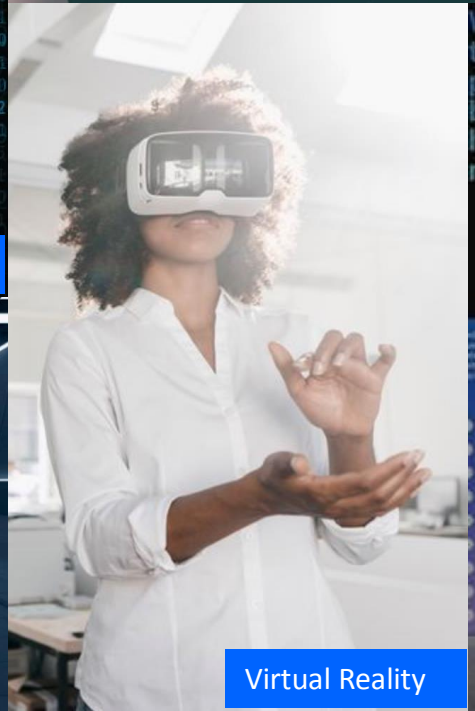
Video AI & Facial Recognition

Big Data

Artificial Intelligence

Blockchain Verification

Social Transparency



Virtual Reality

Consumer Employer Branding

The “job” market is ~~becoming~~ the “skills” market

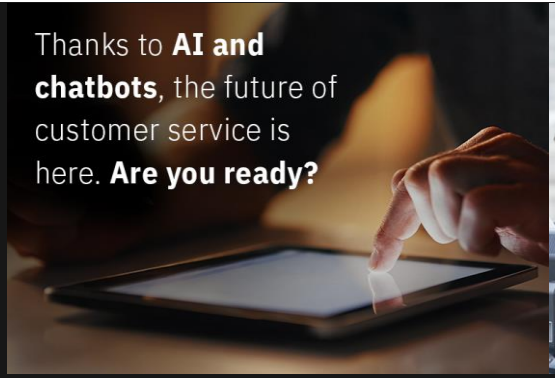
Examples of task re-definition and how AI and Humans blend

TSA:

- Long lines
- Dated Tech
- Lots of shouting
- Tired
- Official

Clear

- Engaging
- Biometrics & FR
- Lines are growing
- Cute uniforms
- Calm
- Fun



- "AI isn't eliminating customer service roles, it's simply changing them, evolving what machines handle, what humans handle & what **the blend of Human + AI** handles."
- "With ongoing job growth and customers' reigning preference for voice channels, the need is **highly-skilled, empathetic, articulate, and efficient agents"**
- "Automations are taking on the simple, the rote, and the repetitious – all with the intent of **freeing up Agents to perform the more complex and uniquely 'human' work**"

Future of Jobs Report 2018, World Economic Forum

Next 5 years

78 million
jobs displaced

133 million
jobs added

Source: Future of Jobs Report 2018

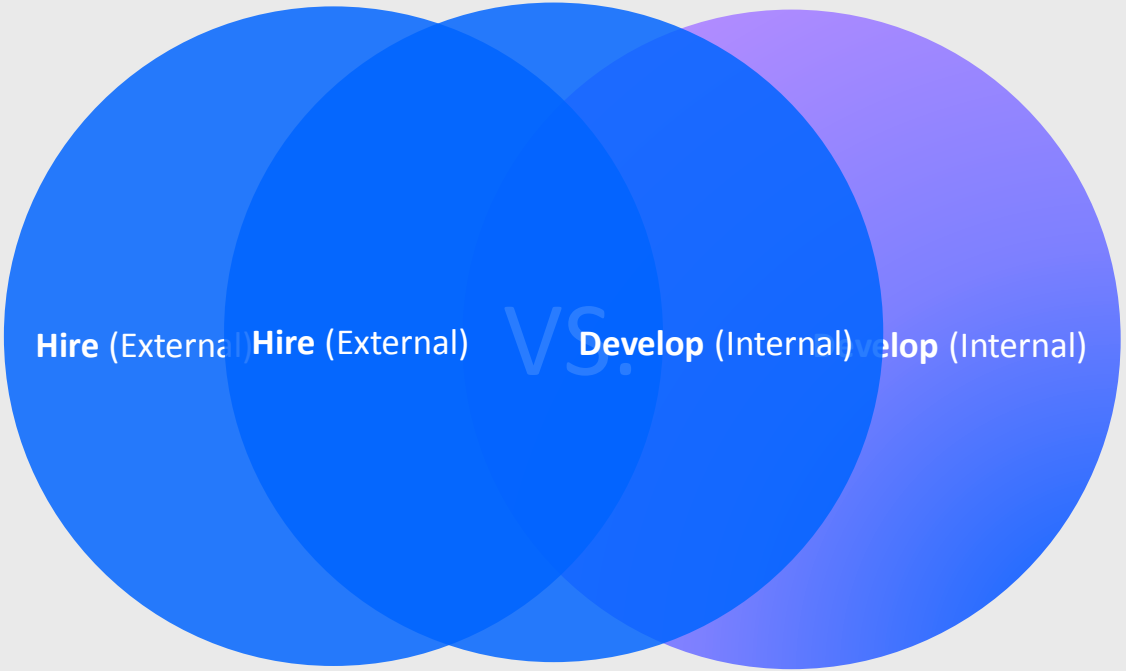
- Survey of CHROs representing 15 million employees
- Includes 300 companies, 12 industries, 29 countries
- Companies account for 70% of the world's GDP collectively

Minding the talent gap:

90% of S&P 100 companies recruited for the *same 37 roles*[1]

74% of high potential employees indicated they would join an organization for better career development opportunities[2]

Gartner analysis shows employee turnover due to **lack of future career opportunities** ***costs an average-sized organization $49 million per year***[3]



Developing *talent internally* is no longer an elective

Source 1, 3 : Gartner, 2 – IBM Smarter Workforce "Should I stay or should I go?"

What gets in the way of Internal Mobility?

Critical Skills

Personalized, Continuous Learning

Visibility to Opportunities

Finding the “Aspirational Job”

Increase in cyber attacks has created high demand for cyber professionals.

49%

of cyber professionals believe that qualified personnel is difficult to find.

Global Information Security Workforce Study (2017)

1.8 million

cyber positions will be unfulfilled by 2022.

Global Information Security Workforce Study (2017)

41%

of cyber professionals said that the skills shortage has increased time in high-priority issues which leads to increases workplace stress.

Enterprise Strategy Group and the Information Systems Security Association (2018)

Cybersecurity Requires ‘Insatiable’ **Problem-Solving Skills**…

Technical Skills Can Be Taught

- Employers on the hunt for excellent cybersecurity analysts don’t necessarily need to look for candidates with technical skills
- More important are the **problem-solving skills** that you can’t learn in a classroom

Excerpts from WSJ’s Cybersecurity Executive Forum

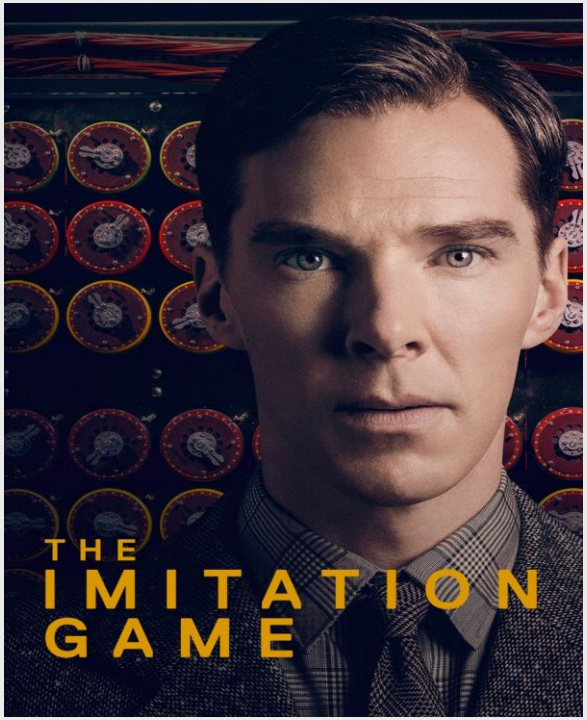
- **Payton:** “there’s a lot of people graduating from fine cybersecurity programs but they’re missing that core skill set of problem solving, (having) no fear.”
- **Rajavel:** “one of her best cybersecurity hires didn’t have technical skills but knew how to ask the right questions and solve difficult problems.”
- **Strickland:** “hiring cybersecurity talent is about finding people with the right attitude, not mere aptitude.”

https://blogs.wsj.com/cio/2018/05/24/cybersecurity-requires-insatiable-problem-solving-skills-technical-skills-can-be-taught/

From left to right: Mara Lemos Stein, WSJs Risk & Compliance Journal; Theresa Payton, president/CEO of Fortalice Solutions & former CIO for the White House; Meerah Rajavel, CIO at Forcepoint; James Stickland, CEO at Veridium. (London 25, May 2018)

Using Latent Skills to Solve New Challenges

- In 1940/1941 The UK Military needed to crack the Enigma Code: The code the Germans were using to make all of their communications secret
- To recruit the right staff, a timed cryptic crossword puzzle was used, and the shortlisted candidates were put through a range of **problem solving puzzles**
- They hired based on **aptitude and the identification of the correct latent skills** that would be required
- Enigma was solved



BRINGING IT ALL TOGETHER

Services that Support Skill Needs

Skills Library

- Ready-to-use (OTS) library of more than 1,200 Behavioral & Skill assessments
- Covers 12 industries
- Mobile-enabled
- Content relevant and validated
- **A set of targeted soft-skill tests that are quick and simple to use**

Talent Frameworks

- Provides industry benchmarks across 3000+ job profiles and 2000+ skills
- Curated & updated for over 30 years.
- Ready-to-use job taxonomy and skills library
- A **blueprint for your workforce** with clear identification of specific functional and technical skills needed for jobs in your industry and **at your company**

Cyber Aptitude

- A ready-to-use behavioral assessment for Cyber
- The CCAT assessment is a multi-trait assessment measuring:
  - Personality
  - Cognitive
  - Specific abilities
- Designed to uncover those **individuals who have the traits most relevant for a cyber role**

Performance Indicator (PI)Suite

- Combination of personality and experience-based questions
- Around 15-30 questions on each performance indicator

Engagement

Self-esteem, Self-efficacy, Locus of control, Emotional stability, Optimism

Sales

Achievement orientation, Conscientiousness, Initiative,

Teamwork

Adaptability, Integrity, Stress Tolerance, Trust

Customer/Patient Satisfaction

Influence, Optimism, Complexity, Social Sophistication

Retention

Embeddedness, Network connectivity

Safety

Locus of control, Risk taking/thrill seeking, Safety motivation, Safety experience

Performance Indicators (PI) Suite

Stand-alone PI's

- Engagement
- Service
- Teamwork
- Sales
- Retention
- Safety

Combo PI's or Testlets

- Service, Engagement, Retention
- Service, Retention, Sales
- Service & Teamwork
- Service, Engagement, Sales, Teamwork
- Service Engagement, Teamwork
- Engagement, Safety, Teamwork
- Engagement, Sales, Teamwork
- Engagement and Teamwork

- Short and behaviorally based
- Designed to predict a specific outcome(s)
- Developed by studying traits needed to predict each outcome across a variety of jobs and companies
- No additional research is needed
- The assessment may be applied to multiple jobs within a company

Talent Frameworks: 20 Libraries

Industry Specific Talent Frameworks

- Banking & Financial Services
- Construction
- Consulting Services
- Education
- Energy (Oil & Gas / Fossil / Nuclear)
- Healthcare
- Hospitality
- OEM Hardware Manufacturing
- OEM Software
- Insurance
- Manufacturing
- Media & Publishing
- Pharmaceutical
- Real Estate
- Retail
- Telecommunications

General Talent Frameworks

- General Corporate Function Jobs
  - (HR, Finance, Legal, Sales)
- General Government Function Jobs
- Information Technology (IT) Jobs
- Call Center / Customer Relationship Mgmt.

Jobs Profiles (3,100+)

- Job descriptions
- Job profiles
- Job responsibilities
- Job focus

Job Families (193+)

- Functional area with in each industry or expertise
- 6 Job Bands for employees, management and executive matrices

Competencies (2,200+)

Soft Skills	–	87
Management	–	22
Leadership	–	41
Functional/Technical	–	2,060+

<u>4 Levels of Proficiency</u>

- 21 unique behavioral descriptors for action oriented skill observation, evaluation and communication.
- Each competency has a suggested level of proficiency used for each role.

Skill Application Accelerators

- Learning References
  - (Activities, Books, OJT, Web, References, professional groups, etc.)
- SMART Development Goals
- Coaching Tips
- Interview Questions

Designed to engage and optimize use

Extends the application of the competency model to support models such as the 70/20/10

Data Scientist job profile

Job profile name:
Data Scientist

Job description: performs analytical tasks and initiatives on huge amount of data to support data-driven business decision and development.

Job family: digital transformation

Job band: first line management; senior professional

Primary job focus: technical

Job responsibilities:

Directing the data gathering, data mining, and data processing processes in huge volume; creating appropriate data models.

Conducting research on data model optimization and algorithms to improve effectiveness and accuracy on data analyses.

Exploring, promoting, and implementing semantic data capabilities through natural language processing, text analysis and machine learning techniques.

Leading to define requirements and scope of data analyses; presenting and reporting possible business insights to management using data visualization technologies.

Soft skills are most important for cyber security roles

Resilience

- Demonstrates an ability to adjust to continuous change in work demands.
- Maintains focus when facing unexpected challenges and work obstacles.

Adaptability

- Adjusts to new or changing assignments, processes, and people.
- Identifies and considers alternative approaches to situations or problems.

Attention to Detail

- Utilizes a systematic approach for checking and cross-checking outputs.
- Accurately gauges the impact and cost of errors, omissions, and oversights.

Problem Solving

- Uses fact-finding techniques and diagnostic tools to identify problems.
- Analyze risks and benefits of alternative approaches and obtain decision on resolution.

Elements of a cybersecure organization:

Technology

Process

and ***People***

Hiring beyond technical skills

- Technical skills are critical, but not sufficient on their own
- Soft skills are the differentiators
- Identify those with **latent ability** - assess the *skills/traits* needed for success, many of which are transferrable

Attributes needed for cybersecurity success

- Adaptability
- Compliance
- Dependability
- Energy
- Learning orientation
- Organized
- Resilience

Commercial Cyber Aptitude Test (CCAT)

Based on these Job Roles:

- SIEM Security Analyst
- Threat Monitoring Analyst
- Threat Intelligence
- IRIS (Incident, Response, & Intelligence Services)

Scale	Objective	Category
Personality	Measures work styles and/or personality characteristics	Behavioral
Error Detection	Measures logical reasoning via pseudo-coding logic exercise	Ability
Pattern Matching	Measures ability to accurately and quickly locate mismatches in highly detailed data information sets presented graphically	Ability

Thank You