Welcome!
We will need data literacy to manage the flow of big data, and technological literacy to know how machines work, but human literacy — the humanities, communication, and design — to function as a human being.

Joseph E. Aoun, President
Northeastern University
We will need data literacy to manage the flow of big data, and technological literacy to know how machines work, but human literacy — the humanities, communication, and design — to function as a human being.

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President
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ARRIA

WHY?
You can think of an organization as a factory for producing decisions. The organization might produce other things, but it produces decisions at all levels.

2002 Nobel Memorial Prize in Economic Sciences

Thinking, Fast and Slow
Daniel Kahneman

Northeastern University
The New Grand Challenge:

- Digital technologies will continue to accelerate.
- Our skills, organizations, institutions and metrics are lagging.
- Business as usual won’t solve this problem.

Erik Brynjolfsson
We will need data literacy to manage the flow of big data, and technological literacy to know how machines work, but human literacy — the humanities, communication, and design — to function as a human being.

Joseph E. Aoun,
President
Northeastern University
Changing the AI narrative – a call to action.

“ Businesses owe it to their employees to make technology more accessible by instating dedicated reskilling initiatives that prepare their employees and future generations to work alongside AI…”

N.V. Tyagarajan, President and CEO, Genpact
Northeastern University
Agenda

• Plenary session – 9-9:50
• Concurrent panel discussions – 10-11:15
• Symposium takeaways – 11:30-12
• Resource forum – 12-1

#AIapplied
Current Stage of Artificial Intelligence (AI) Solutions Adoption

Knowledge gathering/investigating/developing strategy: 59%
Piloting: 25%
Implementing: 6%
Deployed/in use today: 6%

Base: n=83 Gartner Research Circle Members
Q: What is the current stage of Artificial Intelligence (AI) solutions adoption within your organization?
Our Speakers

Kate Lazaroff-Puck, Global Manager, Future of Work, McKinsey & Company

Michael A.M. Davies, Founder and Senior Partner, Endeavor Partners

Northeastern University
AI and the Future of Work

Kate Lazaroff-Puck, Future of Work, McKinsey
The promise of AI (& the challenges)
Business value is huge

Value potential, $ trillion

Marketing and sales
3.3–6.0

1.4–2.6

Supply-chain management and manufacturing
3.6–5.6

1.2–2.0

Risk
0.5–0.9

Finance and IT
0.2

0.1

HR
0.2

0.1

Service operations
0.6

0.2

Product development
0.3

0.1

Strategy and corporate finance
0.3

<0.1

Other operations
0.9–1.3

0.2–0.4

0.9–1.3

0.2–0.4

By all analytics
$9.5 trillion–15.4 trillion

By AI
$3.5 trillion–5.8 trillion

McKinsey & Company
AI can also build social good

UN Sustainable Development Goals

<table>
<thead>
<tr>
<th>UN goals</th>
<th>AI use case breakdown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life below water</td>
<td>1</td>
</tr>
<tr>
<td>Affordable and clean energy</td>
<td>2</td>
</tr>
<tr>
<td>Clean water and sanitation</td>
<td>2</td>
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<tr>
<td>Responsible consumption and production</td>
<td>3</td>
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<tr>
<td>Sustainable cities and communities</td>
<td>3</td>
</tr>
<tr>
<td>Gender equality</td>
<td>3</td>
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<tr>
<td>Partnerships for the goals</td>
<td>4</td>
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<tr>
<td>Zero hunger</td>
<td>4</td>
</tr>
<tr>
<td>Decent work and economic growth</td>
<td>5</td>
</tr>
<tr>
<td>Climate action</td>
<td>6</td>
</tr>
<tr>
<td>Reduced inequalities</td>
<td>7</td>
</tr>
<tr>
<td>Industry, innovation, and infrastructure</td>
<td>9</td>
</tr>
<tr>
<td>No poverty</td>
<td>10</td>
</tr>
<tr>
<td>Life on land</td>
<td>10</td>
</tr>
<tr>
<td>Quality education</td>
<td>13</td>
</tr>
<tr>
<td>Peace, justice, and strong institutions</td>
<td>24</td>
</tr>
<tr>
<td>Good health and well-being</td>
<td>29</td>
</tr>
</tbody>
</table>

AI use case breakdown:
- Security and justice
- Crisis response
- Public and social sector
- Economic empowerment
- Infrastructure
- Education
- Info verification and validation
- Environment
- Health and hunger
- Equality and inclusion

McKinsey & Company
Three challenges for business leaders and policy makers

DEPLOYMENT CHALLENGE
Accelerating adoption globally

FUTURE OF WORK CHALLENGE
Ensuring growth is inclusive for all

RESPONSIBLE AI CHALLENGE
Protecting against misuse (e.g., privacy, security, bias)
A brighter Future of Work*

*Conditions apply
Spectrum of scenarios on how AI will affect the Future of Work

**Very Bad:**
Unemployment without safety nets, absolute inequality, social unrest

**Very Good:**
Plenty of jobs, right-skilled and engaged workforce, reduced inequality
Key conditions for the good scenarios

1. Firms take an “innovation” posture to AI

2. Skills shift is supported – primarily by employers

3. Labor mobility is encouraged – to new industries, new geographies

4. We redesign lower-wage jobs to be “Good Jobs”

---

Enough jobs…

…people with the right skills for those jobs…

…in the right place

… working with dignity
Companies that use AI to grow create jobs

Cluster (% of companies in total)

- Enthusiastic innovators (12%)
- Careful innovators (12%)
- Efficiency leaders (8%)
- Efficiency followers (18%)
- Al resistors (50%)

Revenue CAGR (compound annual growth rate)%
Employment CAGR %

McKinsey & Company
Our “Jobs Lost Jobs Gained” scenario modelling predicts sufficient jobs

Mid-point scenarios of jobs lost and jobs gained based on assessments of seven catalysts driving demand for work
Million, 2016–2030

### United States
- Jobs displaced by automation: 15
- Jobs created by 7 catalysts: 15
- Change in labor force: 30
- Total: 45

### Germany
- Jobs displaced by automation: 9
- Jobs created by 7 catalysts: 10
- Change in labor force: -3
- Total: 16

### India
- Jobs displaced by automation: 57
- Jobs created by 7 catalysts: 114
- Change in labor force: 138
- Total: 191

McKinsey & Company
Even if there are enough jobs, the skills shift will be significant

### Shifts in Skill Changes

**All sectors**

<table>
<thead>
<tr>
<th>Skill Category</th>
<th>Hours 2016</th>
<th>2016-2030 Change</th>
<th>Change 2016-2030, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical and manual skills</td>
<td>203</td>
<td>-14</td>
<td>-14</td>
</tr>
<tr>
<td>Basic cognitive skills</td>
<td>115</td>
<td>-15</td>
<td>-15</td>
</tr>
<tr>
<td>Higher cognitive skills</td>
<td>140</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Social and emotional skills</td>
<td>119</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Technological skills</td>
<td>73</td>
<td>55</td>
<td>55</td>
</tr>
</tbody>
</table>

**Total hours, billion**

650

*McKinsey & Company*
Major global companies are re-skilling at scale

1/3 of workforce to reskill

Individual learning journeys of 6-8 months

Cycles of full-time training followed by on-the-job practice

Half of workforce to retrain and redeploy

Partnerships with universities and educators to create range of online training options

Employees map their own career path and get the required credentials
Walmart is using VR to skill employees in empathy and communication (as well as retail skills)
German labor agency created a life-long occupational counseling effort to match citizens with jobs and skills.

Which vocational training matches my interests and strengths and is future-proof?

Powerful and innovative tool:
- Scientifically valid psychometric test
- User-friendly interface and mobile ready
- Integrated in offline one-on-one counseling process

Information
Exploring interests and strengths
Recommendations on professional development options
Make an appointment

Counseling and decision

300,000 users within the first 5 months
Summary: What should we do to ensure a bright Future of Work?

**BUSINESS**
- Take a growth mindset to AI
- Invest in workforce lifelong learning
- Tap virtuous circles of “Good Jobs”

**POLICY MAKERS**
- Encourage job growth (e.g., infrastructure spending)
- Invest in lifelong education (starting w/ K-12)
- Encourage labor market dynamism
- Protect workers in transition (and those who won’t)

**INDIVIDUALS**
- Improve “adaptability quotient”, including wellness
- Expect and embrace movement into new roles and industries, and potentially geographies
Thank you
The future of work

Michael A M Davies
Five complementary digital technologies comprise a platform, having unprecedented economic, social and political impact—in particular AI (machine learning)

- **Internet of (many) Things**: Bridging the physical and digital worlds
- **Smartphones**: Empower with connection and knowledge
- **AI (In particular ML)**: Automate routines and start understanding people
- **(Modular) Cloud**: Flexible, scalable, combinable
- **Robotics**: Autonomous, collaborative, and everywhere

- **3.8B smartphone owners worldwide**
- **>85% of computing now done in the cloud**
A new -- born-digital – way of working now delivers significant gains in productivity, job satisfaction, and innovation over current conventional approaches

Modern (born-digital) workplaces are very different to traditional ways of working

1) Relentless and ruthless automation of routine tasks
2) Purpose, creativity, collaboration, and agility in their work
3) Flexible working arrangements
4) Support for all employees to pursue lifelong learning

...improving productivity and job satisfaction, and accelerating innovation

- Traditional workplaces are less innovative and productive
- This will be compounded as they lose the war for talent
- Good people go to the places that suit their working desires
This new approach also connects people with available work in novel ways, changing when and where tasks are accomplished.

“Free agents reported higher levels of satisfaction in multiple dimensions of their work lives than those holding traditional jobs by choice.”*  

- 54% of gig economy employees participate because it meets their current needs/goals
- 73% of Uber drivers surveyed preferred flexibility to a traditional 9 to 5 job
- 70% of independent workers report freelance work as their preferred means of income

Source: 2016 McKinsey report, Adecco Group
This GPT is driving extremely rapid shifts in consumer behavior and choices, the way that work gets done, and how businesses operate and innovate.

<table>
<thead>
<tr>
<th></th>
<th>The future of work</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Empowered citizens</td>
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<tr>
<td></td>
<td>Enabling people to make well-informed decisions through connection and access to a wealth of information</td>
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<td>2</td>
<td>Unleashed creativity</td>
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<td></td>
<td>Automating all tasks that are routine in nature and narrow in scope, so that people can focus on creative, collaborative work</td>
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<tr>
<td>3</td>
<td>New business models</td>
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<td></td>
<td>Increasing people’s ability to connect; enabling collaboration and cooperation amongst people and with ‘bots</td>
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<tr>
<td>4</td>
<td>Accelerated innovation</td>
</tr>
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<td></td>
<td>Rapid trials and changes, faster learning; agility overcoming economies of scale</td>
</tr>
</tbody>
</table>

**Digital dependence**

Exposure to digital technologies, through any of the above forces, amplifies and accelerates the need to ‘go digital’ for both businesses and consumers.
Born-digital insurgent businesses thrive in this environment, overcoming incumbents’ economies of scale and scope.

This digital platform gives entrepreneurs throughout the economy:

- Direct access to consumers via smartphone, bypassing cumbersome channels
- Cloud access for modular services that support all business processes, and scale easily
- Widespread use of AI + ML to automate all routine and narrow tasks
- Rapid prototyping and product development techniques for a quick-to-market approach

With these resources, born-digital ventures can:

- Start easy, fast and cheap
- Evolve quickly
- Scale up very rapidly

The future of work
Unfortunately, the positive payoffs from progress come with some concomitant costs, sparking legitimate fears.

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<table>
<thead>
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<tbody>
<tr>
<td>1</td>
<td><strong>Digital dependency</strong></td>
</tr>
<tr>
<td>2</td>
<td><strong>Negative externalities</strong></td>
</tr>
<tr>
<td>3</td>
<td><strong>Tech titan’s power, lack of empathy and ethics</strong></td>
</tr>
<tr>
<td>4</td>
<td><strong>A perfect storm of creative destruction</strong></td>
</tr>
<tr>
<td>5</td>
<td><strong>Technological unemployment</strong></td>
</tr>
</tbody>
</table>
Today most incumbents remain vulnerable: very few are yet effectively exploring digital opportunities to create new value.
Success in this new world requires building a new set of ‘digital leadership’ behaviors – starting with top management and extending **throughout** the business.

Key behaviors for digital leadership

- **Dynamic capabilities**
  - **Acuity**
    - Embrace + flex
  - **Audacity**
    - Create + collaborate
  - **Agility**
    - Accelerate learning

- **Organization**
  - **Purpose**
  - **Humility**
  - **Ambidexterity**

- **Individual**

---

The future of work
**Ambidexterity**: simultaneously evolve existing core business, while also exploring new opportunities

**Ambidexterity**: efficient today, adaptable to cope with tomorrow's changing demands

Source: Michael Tushman and Charles O'Reilly, *Ambidexterity as a Dynamic Capability: Resolving the Innovator's Dilemma*
**Acuity**: Looking outside for *insight* about what is happening, and *foresight* about what will happen next.

- **Dynamic capabilities**
- **Organization**
- **Individual**

**Acuity**: sharpness or keenness of thought, vision, or hearing

**Digital leadership**

- Externally focused, talking to and understanding people outside of the normal routine
- Get outside the building
- Get outside the town
- Get outside the country

---

The future of work
**Audacity**: Recognize that innovation to create new value involves uncertainty and risk, and requires courage

- Set ambitious long-term objectives – ‘BHAGs’
- Focus on opportunity, accept risk and uncertainty
- Build a portfolio of real options
- Brutally disciplined process to manage execution

**Innovation involves risk**

- Risk-averse
- Conservative
- ‘Lip sync’ + ‘lip service’
- Accept risk
- Focus on opportunity

**Digital leadership**

- Dynamic capabilities
- Organization
- Individual

**Audacity: a willingness to take bold risks**
**Agility**: flat organizations with small, agile, modular teams that can move quickly, and easily

---

**Small, agile, modular teams**

- Devolve, resolve, evolve
- Empower small, autonomous teams/tribes
- Enable rapid innovation

**Old model**
- Hierarchical
- Slow
- Bureaucratic

**New model**
- Autonomous
- Adaptable
- Rapid

---

*Source: Eric Ries, The Lean Startup*
The second major challenge is management, progressively adopting new ways of working throughout the organization.
The third major challenge is talent, identifying the key specialist skills the business needs, then recruiting or retraining people, and then retaining these scarce people.

High skill demand and shifting norms necessitate change:
- Meaningful and fulfilling work
- Agility in the workplace, both in structure and careers
- Flexibility to suit employee and organizational needs

Specialist skills critical to new ways of working:
- Mobile/UX
- Cloud
- AI and ML
- IoT
- Robotics
- Agile

The future of work
The fourth major challenge is learning – developing the capability for continuous learning, lifelong learning, throughout the organization.

*Time, mentoring, and resources* spent on lifelong learning throughout the organization drive organic talent growth, and are going to be critical to supporting new ways of working.

Source: The Economist
If business leaders, particularly those in established enterprises, and their communities, don’t respond effectively to these challenges then our future is bleak.

- **Large organizations**: Overshadowed by tech giants, hobbled by regulation. Economy inhibited by dominance of tech titans, automation stifles creation of new work.
- **Startups and small businesses**: Defensive strategies of incumbents stymie innovation and entrepreneurship, work creation stalls, little new work.
- **Technology businesses**: Established enterprises respond slowly and ineffectively, many swept away by creative destruction, not much new work, massive loss of existing work.
- **Traditional businesses**:
As I’ve worked on this over the last few years, however I’ve become increasingly optimistic that the future is bright, *if* we act effectively now.
If we start now, we can navigate our way to prosperity

VS

Failure to recognize and respond to the challenge, perpetuating old ways of doing business and working, swept away in a perfect storm of creative destruction

Recognizing and responding to the challenge, seizing the opportunities, creating new value, creating lots of new, different and better work
Panel Discussions

- AI applied to decision-making – Room 136
- AI applied to deeper customer insight – Room 138
- AI applied to employee productivity – Room 140
- AI applied to new business opportunities – Room 142
Symposium on the Intersection of AI & Talent Strategy

February 12, 2019

Unleash your Human Intelligence!
Panel Discussion
Takeaways
Your Talent Strategy Blueprint

Two approaches to workforce retraining – SAP and AT&T

SAP

1/3 of workforce to reskill

AT&T

Half of workforce to retrain and redeploy

Source: McKinsey & Company
Critical Skills and Attributes

- Communication
- Curiosity
- Business Acumen
- Team Orientation
- Project Management
Northeastern Resource Forum

- College of Professional Studies
  - MPS in Enterprise Intelligence
  - MS in Human Resources Management (new)
- D’Amore-McKim School of Business
- Corporate Learning
- College of Engineering
- LEVEL Data Analytics Training
- Employer Engagement & Career Design
- Northeastern Experiential Network (XN)
- Office of Alumni Relations
Symposium on the Intersection of AI & Talent Strategy

February 12, 2019

Let’s meet again!

Northeastern University