ARTIFICIAL INTELLIGENCE AND THE REVOLUTION OF WORK

Quantifying AI and Capitalizing on an Automated Global Workforce
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Today, a mobile phone seems an obvious technological jump. However, in 1982, it was unimaginable because the associated task—making a phone call without a cord—was outside our realm of connected understanding. While we were capable of connecting the tasks of flying and driving to a flying car, trying to imagine disconnected functions, tools and systems is far more difficult. And this disconnect is not easily offset by a gain in knowledge.

The same disconnect that made mobile phones impossible to imagine 35 years ago is what challenges our basic thinking around Artificial Intelligence (AI) today. In our connected realm of understanding we can imagine a future in which AI takes on tasks we readily understand. We can imagine, for example, a future in which AI drives our cars. But where most people get fuzzy is trying to conceive of AI controlling and optimizing the traffic system for all of Los Angeles.

While difficult to imagine now, AI is going to be the single largest multiplier of human effort since the computer. And its potential is much greater.

The computer allows us to do tasks we were already doing and make them exponentially more efficient: 35 years ago we wrote a letter; computers allow us to instantaneously email a nearly infinite number of people.

AI, on the other hand, won’t just change how we do things. Instead it will allow us to do things we couldn’t do before, challenging our cultural and moral values as the definition of “work” is forever changed.

This is not a prediction for some Blade Runner future state. In 2016, the United States hit a manufacturing record, producing more goods than ever. This record high is matched with a record low in the number of people needed to produce those goods: The US now makes 85 percent more goods than it did in 1987, but with only two-thirds the number of workers. AI is happening now, is commercially viable, and is packaged to start transforming and replacing the global workforce fast.
Throughout this report are results from a North Highland-sponsored survey conducted in January 2017. Over 200 C-suite-level business leaders in the US and UK were asked about their level of knowledge and investments in AI within their organizations. The results—presented throughout this report—tell a story of underutilization and opportunity for organizations to transform and differentiate with AI.

**NORTH HIGHLAND INSIGHTS: How important is it for your organization to leverage AI in some form over the next five years?**

- Somewhat important: 37%
- Very important: 32%
- Extremely important: 31%
Automation vs. AI

Automation is nothing new. Almost all technology is some form of labor-saving device. Originally, automobiles were built by hand, and took roughly 600 man-hours to complete. In 1913 Ford introduced the assembly-line process and reduced the man-hours to build a Model T to less than 130 hours per car. The introduction of large, expensive and very specific automation took that number down to 45 hours in the 1970s. Today, Volkswagen Group can make that same car in six hours with robots.

This type of automation is different from AI in three ways. First, it is repetitive and singular, requiring the completion of the same task over and over again. Second, it is costly both in price and space, as it typically requires an entire factory. Finally, because of its financial and geographic costs, it is only economically viable when producing in high volumes.

AI goes beyond automation to incorporate past events to change actions in the future. We don’t readily call it AI, but popular consumer technologies like Siri, Alexa and Pandora all rely on AI to provide predictive experiences. These simple examples of AI learn from our likes and dislikes, and adapt future experiences in response. Applying these technologies beyond consumer toys to drive disruption and gain efficiencies is where business should be focused now.

Artificial Intelligence:
The ability for a system to incorporate past events to change its actions in the future.

Automation:
The ability for a system to replicate and perform a task repeatedly.

Artificial Intelligence and the Revolution of Work

North Highland
The day when AI makes real the tools and capabilities in our favorite sci-fi films—movies like *Her*, *Terminator* and *Prometheus*—could be five years away. Just as conceivably, that day could be 200 years from now. It took life 600 million years to generate the complexity of our current minds, and it took 1.9 million years from the previous version of *Homo Erectus* to reach *Homo Sapiens*. While AI’s evolution will undoubtedly be far faster, predicting when and how it will emerge is difficult.

The AI we have now hints at sci-fi potential, but its current capabilities are primarily task-based. While AI’s greatest capabilities are far from realized, its here-and-now potential to increase efficiencies and improve processes is very real.
Take the example of a Fortune 500 financial services client who turned to North Highland after simple human error had resulted in inadvertent money laundering and a $140 million fine. The court also ordered a $1 million/day fine until the processes could be fixed to reduce or stop laundering all together.

Even with six call centers and 800 people tasked with identifying and stopping money laundering, human error was inevitable. When presented with a money-transfer request, bank employees had to manually match the information presented—name, city, age and nationality—against federal no-transfer lists. However, the resulting data was often meaningless. Consider, for example, that there are 256,721 people with the last name Hernandez in California; 25,241 of them live in Los Angeles. A transfer request from a “Michael Hernandez from Los Angeles” would only narrow the list to the 3,658 “M. Hernandez”es living in Los Angeles.

The process was not only ineffective, it was inefficient too, with each transaction averaging 90-300 seconds.

To stop the $1 million/day bleed, North Highland used IBM’s Watson, made famous in 2011 when it beat former Jeopardy winner Ken Jennings at his own game. In this case Watson was tailored to review every previous transaction to identify markers of money laundering, everything from the time of transactions, locations sent to/from and transaction amounts. That information was mapped in the system against watch lists, and set to flag any transaction that, according to Watson’s calculations, had a 95 percent or greater chance of being fraudulent.

Not only did the system more accurately identify and stop money laundering instantaneously (no more 90- to 300-second processing time), it cut an 800-person team down to four.
Cases like this illustrate how primed the financial services industry is for automation. In fact, Citi estimates suggest that US and European banks could shed nearly 2 million jobs in the next decade as AI transforms the industry. However, the major players in AI are working largely in secret. Last year alone, there were more than 65 AI acquisitions worth $500 million or more each. And it’s not just Apple and Google buying up these capabilities, but Salesforce, GE, IBM and Microsoft, all players that offer business solutions as a service and stand to make huge gains through AI.

**NORTH HIGHLAND INSIGHTS:** What percent of your organization’s budget is comprised of labor costs (the sum of all wages paid to employees, as well as the cost of employee benefits and payroll taxes)?

- Not sure: 13%
- 50% or more: 18%
- Around 40%: 13%
- Around 30%: 19%
- Around 20%: 13%
- Around 15%: 12%
- Around 10%: 6%
- Around 5%: 4%
- Less than 5%: 1%
Today, trucking is a $700-billion industry, in which a third of costs go to compensating the nation’s 1.7 million truck drivers. The industry, which pays its drivers $42,500 per year on average, is strictly regulated by labor and federal laws that require drivers to take an eight-hour break for every 11 hours on the road. That equates to a 58.9 percent productivity rate.

Conversely, self-driving vehicles operate close to 24 hours a day, essentially doubling the productivity rate and miles covered by a human driver. Furthermore, self-driving vehicles save money through fewer accidents and increased fuel efficiency.

In total, automated trucking could save the freight transportation industry an estimated $168 billion annually. The savings are expected to come from labor ($70 billion), fuel efficiency ($35 billion), productivity ($27 billion) and reduced accidents ($36 billion). The implications for drivers—and the additional 5.2 million workers who support them—could mean a significant disruption of labor across the nation. This is in stark contrast to how many of the survey respondents believe AI will affect their work, with most thinking it will have incremental—not such exponential—ability to reduce costs and bump productivity.

NORTH HIGHLAND INSIGHTS: What do you think the return on investment (ROI) would be for an automation solution?

- Not sure: 18%
- 200%+: 3%
- 100–199%: 7%
- 75–99%: 5%
- 50–74%: 9%
- 25–49%: 19%
- 10–24%: 26%
- 1–9%: 13%
- 0%: 0%
Amazon, which patented predictive stocking in 2014, is working towards a near future where consumers don’t shop for 80 percent of the goods they regularly purchase. Instead, a history of consumer behavior and purchases allow such accurate predictions that goods arrive as-needed on consumer doorsteps every couple of days.

**Energy and Utilities:** AI would allow organizations to automatically anticipate energy needs and problems, issue work orders, order parts, and inform customers with human insight, though perhaps not human intervention. Google currently uses its AI “Deep Mind” to optimize its data center energy use to near perfection, saving hundreds of millions on electricity costs. That same refinement to an entire power grid could result in the reduction of billions of wasted dollars of power from the system.

**Financial Services:** “But I don’t trust a computer with my money.” Fifty years ago people said something similar about elevators: “They can’t possibly be safe without a human operator!” In banking, the tides are turning. Roughly 30 percent of Millennial US banking customers already rely on robo-advice, drawn by independent advice not biased by commissions. Consumer sentiment, coupled with that fact that big-bank employees account for a significant percentage of banking costs, makes finance particularly primed for AI.

Consider, for example, the processing of home mortgages with AI. The process would be less risky for banks, and faster and cheaper for consumers. Non-AI competitors wouldn’t just make less money; they would lose significant amounts of money trying to provide a manual product at AI prices.

Here’s what other industries stand to gain from deeper AI adoption:

**Health Care and Life Sciences:** AI promises to do more than cut costs. When done right, it promises a level of care that is vastly superior, and more globally and economically democratized, than human doctors can provide. Imagine a pharmacist that can instantly cross reference every drug a patient takes, against every possible other drug, against every journal article ever written—then learn from the clinical outcomes to find new interactions and results from the data. No human doctor could ever provide that level of accuracy. The industry’s vast opportunity in AI is only limited by its ability to tap into its greatest resource: data. One study published by the Public Library of Science forecasted that data generated by genomics alone will be on par with that generated by astronomical science, YouTube and Twitter by 2025.

**Public Sector:** In a report delivered to the White House in January 2017, the Technology CEO Council [TCC] proposed the implementation of cognitive computing, machine learning and AI, which they claim could save the federal government $205 billion over the next decade.

**Transportation, Travel and Leisure:** AI-based predictive tools will be adopted by half of airlines and airports over the next decade, saving them up to $25 billion by reducing flight disruptions.

**Retail and Consumer Products:** Retail giants have been using machine-learning algorithms to forecast demand and set prices for years.
It would be negligent to talk about AI without considering its moral implications and impact on cultural norms. Yet as business dives head first into AI’s opportunities it is by and large doing just that. Two-thirds of senior executives have not fully considered ethical issues related to AI. Meanwhile, 90 percent of those same executives report that their employees face challenges or have concerns about AI adoption, as do nearly the same number of their vendors and customers.

The topic of AI’s cultural and moral implications is vast, which may in part explain why business leaders are avoiding it. However, prudent leaders should focus on tackling small, palatable aspects that stand to have the greatest impact on their operations.

One such aspect is work ethic, and specifically, how it is identified and acknowledged within your organization’s culture. AI stands to flip the time-old concept of “hard work” on its head. As AI takes hold, the vast majority of workers who are not permanently displaced will move from being the tool to being the builder, the architect and the designer. And as we move to a state where the majority of current abilities are surplus to requirements, leaders must laser in on what those requirements will be to foster and grow those talents in the workforce.

At a macro level, AI threatens the workforce in an unprecedented way. When computers were introduced it made us more efficient. Typing pools of 20 workers were reduced to one. AI, however, goes beyond efficiency gains to render many workers completely redundant. It will be a global, industry-wide equivalent of horses being replaced by cars. When the Model-T was introduced it did not make fewer horses required: It so vastly outperformed them that it made horses unnecessary all together.

A workforce crisis is imminent, but economists and futurists are mixed on if and how it will impact the economy as a whole.

The bleaker picture is painted by comparing recent workforce crises to potential job losses due to AI. Between 2007 and 2010 in the US, a period tagged the Great Recession, 8.5 million jobs were lost. By most measures it was the worst economic recession since the Great Depression. In contrast, the transportation industry alone—an industry particularly ripe for AI job replacement—employs 4.6 million workers, representing in one industry more than half the jobs lost in the Great Recession.

Yet others paint a more optimistic alternative. Take for example the advent of automated teller machines (ATMs) in the 1970s. By 2010, there were approximately 400,000 ATMs in the US, and while their functions seemed to have made bank tellers obsolete, the number of bank teller employees actually rose modestly from 500,000 in 1980 to 550,000 in 2010. Replacing some bank employees with ATMs made it cheaper to open new branches, and enabled bank tellers to move onto higher-level tasks, like sales and customer experience.
Actions for Leaders

Organizations that embrace AI’s cultural implications now stand better prepared to not just weather imminent workforce disruptions, but to take full advantage of the upsides. Here are a few recommended actions for leaders today:

- Take the time to acknowledge the cultural and moral impact of AI for your organization. The sooner leaders truly acknowledge and embrace this reality, the more equipped they will be to capitalize on them in the future.

- Designate the responsibility of AI prioritization and utilization, and allow that person or team the freedom and autonomy to develop and test hypotheses.

- Get smart on what in your workforce can be automated easily and what will be harder to do. The results will surprise you. There is great work being done to give a score to job functions.

- Ask yourself what kind of company you will be if you are radically changed by AI. If you go from 300,000 employees to 50,000, what adjustments will be required?

- Lastly, come up with a strategy of what happens if your competitors beat you to it, and automate the work you do. How will you survive?

- Understand what it will take for your workforce to adopt this new technology. This means collecting insights from your workforce on their fears and misconceptions about this technology as well as understanding the value proposition AI provides employees for improved ways of working. Understanding these core beliefs across your workforce allows you to empathize and effectively address what’s needed to enable the adoption and motivate your teams to action.
It is worth noting that this author is well aware of humanity’s limited ability to provide accurate predictions, myself included. Much like Blade Runner visionary director Ridley Scott, who did not picture a world where phones are without cords, I would wager that AI’s most transformative implications are ones that we cannot even imagine. However, the gathering storm threatening to completely transform how we work is quite imaginable, and on the horizon. AI and automation are not tools that make workers more efficient: they will replace the need for human labor completely.

The Revolution is Here

ABOUT TECHNOLOGY & DIGITAL SERVICES

At North Highland, we help organizations realize market gains by leading technology and digital initiatives that are aligned with strategy and culture. We do this by building teams, tools, and processes that drive informed decision-making, enabling internal collaboration and creating platforms for meaningful customer engagement.

Our multidisciplinary teams include experts in technology strategy, consulting, and development as well as in digital design and user experience.

Our services include:

• Digital transformation
• Technology governance
• Digital applications
• System selection and benefits realization

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ABOUT NORTH HIGHLAND

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