The Milken Institute is a nonprofit, nonpartisan enterprise working to increase global prosperity by advancing collaborative solutions that widen access to capital, create jobs, and improve health. We do this through independent, data-driven research, action-oriented meetings, and meaningful policy initiatives.
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Child and maternal mortality, hunger, rates of HIV/AIDS and malaria are all down substantially. Millions of people have greater access to primary education, healthcare (especially vaccines), electricity and safe drinking water. In most of the developed world, gains are also impressive. Inexpensive, reliable global communication has become routine; more students attend college; many infectious childhood diseases have been conquered; and cancer diagnoses are no longer the death sentences that used to terrify patients.

Phenomenal technology advances over the past 20 years mean that most of us carry a device in our pockets with greater capability than the most powerful computer on earth in the 1990s. A new digital information-technology infrastructure is driving major revolutions in human capital, business and finance. Unfortunately, however, millions of workers—as well as people who have lost hope of working—are suffering from the impact of job losses related to technologies like artificial intelligence and robotics.

Tragically, the death rate for middle-aged white Americans is rising, part of the reason the U.S. has fallen farther behind other advanced nations in life expectancy. Many segments of the population struggle to deal with problems of homelessness, disabilities, mental distress, pain and opioid addiction. The greatest impact is on families headed by a worker with no more than a high school education. The inflation-adjusted income of this group fell 19 percent between 1999 and 2014. They find little solace in the fact that technology historically creates more jobs and better jobs than it destroys. Without skills retraining, many will lose hope and may sink into isolation and despair.

Our challenge is to match workers at risk of being left behind with the abundant job opportunities driven by new technologies. That's the significance of this year's Global Conference theme: "Building Meaningful Lives." Everyone deserves a chance for a life of dignity and purpose. The future of the American dream and democracy as we know it depends on meeting this challenge successfully.

Two decades after the first Milken Institute Global Conference, far too many of the world's people still suffer from oppression, poverty, disease and terrorism. Yet stepping back and looking across 20-year trends, there are encouraging signs.

Developing nations have experienced broad progress: about 7.5 million people rise above extreme poverty every month.
Humans have a yearning to express our humanity by finding innovative and effective ways to give back. We crave meaning and purpose in life, and one way to find it is to connect to a cause larger than ourselves. The challenge at hand is to truly nurture a culture of altruism and empathy, seeking to imbue an instinct for social engagement. That is to say, it’s not you or me, but we.

That is already beginning to happen, and the progress in expanding empathy over the past 250 years is stunning. The first large social movement on behalf of others—rather than demanding more for oneself—was the British antislavery movement that began in the 1780s, and the first international relief effort in response to global poverty came during the Irish potato famine of the 1840s.

Today, almost any university bulletin board will have a poster appealing on behalf of some faraway group, but in historical terms that is a recent phenomenon.

Talk about helping others can easily sink into soggy sentimentality, even sanctimony. But the most important counterpoint is that reaching out to try to help, especially when we do it as a social activity, isn’t a Gandhi-style sacrifice. It’s a source of fulfillment, even joy. Over the past couple of decades, a growing stack of evidence has shown that social behavior—including helping others—improves our mental and physical health and extends life expectancy. One study on mortality following 7,000 people found that the risk of death among men and women with the fewest social ties was more than twice as high as the risk for adults with the most social ties, independent of physical health. Maybe this deep-rooted social element in all of us explains our yearning for a life of meaning. We wonder about our purpose; we care about our legacy.

So think of giving back not as a dreary means to a tax deduction but as a chance to inject meaning, wonder, and fun into life. Social
organizations have emerged to help others through hosting dinners (Dining for Women) or partying at a bar (Beers for Books). There are countless other initiatives, for elementary school children, grandmothers, and everyone in between. A generation ago, we didn’t have much more than hunches to guide us in trying to make a difference and build a life of greater meaning and satisfaction. “Giving back” was then what we did in December, hunched over a checkbook and relying on our guesswork. In recent years, advances in neuroscience and economics—and a flowering of carefully monitored experiments—have given us much greater insight into what works to create opportunity worldwide, and much greater prospects for personal satisfaction from giving. A path is now appearing to show us how to have a positive impact on the world around us. This is a path of hopefulness, but also a path of fulfillment: typically, we start off by trying to empower others and end up empowering ourselves, too.

“So think of giving back not as a dreary means to a tax deduction but as a chance to inject meaning, wonder, and fun into life.”
Some historians estimate more than 200 million people were killed in conflicts in the 20th century.

Today, there is no end in sight to this horrific violence. From Syria, we are seeing the greatest refugee crisis in a generation. Appalling terrorist attacks have created global, deep-seated fear. While it would be easy to feel hopelessness and despair, it is all the more necessary in this second decade of the 21st century to come together as a society to build a better, more meaningful future for our children.

There are many reasons for us to be hopeful. Recognition of universal human rights—including the right to self-determination—has expanded beyond anything imagined a century ago. There is a growing international consensus in support of gender equality. Particularly among the younger generation, there is a widespread rejection of war as a means of solving problems. Across the world, many are doing valuable work to prevent terrorism, recognizing the depths of misunderstanding and the divisive idea of “us” and “them” that is so dangerous. Significant reductions in the world’s nuclear weapons arsenal mean that further reductions and ultimately their elimination no longer seem a mere dream.

There are solutions to many of the problems we face; new mechanisms for dialogue need to be created, along with systems of education to inculcate moral values. These must be grounded in the perspective that we all belong to one human family and that together we can take action to address global challenges.

It is encouraging that we have seen many ordinary people across the world displaying great compassion toward the plight of refugees, from those who have rescued refugees from the sea, to those who have taken refugees in and provided friendship and support. As a refugee myself, I feel a strong empathy for those in need in times of crises. I can also understand the fears.
Over more than three decades, my discussions with scientists, educators and social workers from across the globe have revealed common concerns. As a result, we have developed a system that incorporates an education of the heart, one that is based on study of the workings of the mind and emotions through scholarship and scientific research rather than religious practice.

Since we need moral principles—compassion, respect for others, kindness, taking responsibility—in every field of human activity, we are working to help schools and colleges create opportunities for young people to develop greater self-awareness, learn how to manage destructive emotions and cultivate social skills. To support this initiative, I am developing a curriculum on secular ethics at Emory University that will be introduced in several schools in India, North America, and Europe.

It is our collective responsibility to ensure that the 21st century does not repeat the pain and bloodshed of the past. Because human nature is at its core compassionate, I believe that decades from now we will see an era of peace—but for that to happen, we must work together as global citizens of a shared planet.

The 14th Dalai Lama, Tenzin Gyatso, is the spiritual leader of Tibet. Since 1959, he has lived in exile in Dharamsala in northern India.
After years of relying on monetary policy to stabilize the U.S. economy, policymakers have redoubled their commitment to stronger pro-growth fiscal policies. As post-election Washington sets its sights on growth-oriented reforms, policymakers should remember that economic growth in any nation is determined by the four basic factors of production—land, labor, capital, and entrepreneurship.

These essential inputs to economic output are far from abstract concepts, but represent the basic, essential, and exclusive elements to growth. Every government policy decision affects them in one way or another, and success in maximizing economic output relies upon optimizing each input.

The first input to growth requires responsible use of our land and other natural resources. It is easy to understand how a nation rich in land, water, minerals, oil, gas, and timber can benefit from the responsible use of these resources.

The re-emergence of the United States as the world’s largest energy producer is reducing the cost of living for consumers and creating millions of new jobs in resource-related industries. Nonetheless, practical environmental regulation and sound policy decisions must include the sustainability of our natural resources and a safe and secure ecological balance. Our land and resources are precious and limited. We must ensure the growth pursued today does not damage the opportunities for development available to future generations.

Labor is the work that all employed people contribute to the production of goods and services. Essentially, a larger—more productive—workforce delivers greater output. One of the greatest challenges facing American labor is a sharp slowdown in its growth rate. Overall U.S. population growth has slowed, reflecting a combination of declining fertility rates and slower net immigration inflows. As a result, the domestic labor
Scott Minerd

The U.S. population is also aging. In 1960, 38.6 percent of the U.S. population was below the age of 20 and poised to drive future labor force growth, and 23.2 percent was 50 or older. By 2040, just 22.9 percent of the population will be younger than 20, and 38.8 percent will be over 50. In 1960, there were 5.1 workers for every Social Security beneficiary. Today, the worker/beneficiary ratio is down to 2.8, and is projected to be 2.1 by 2040.

To address these challenges, sound immigration policy should seek to attract young, foreign-born workers to the United States and incentivize them to stay. Deporting working-age immigrants who are making productive contributions to our country—or reducing the number of qualified immigrants allowed employment in our country—would hurt the already meager growth in our labor market, decrease total economic output, and reduce American and global living standards. An influx of young workers would help shore up our social welfare system to care for older Americans through incremental taxes and Social Security receipts while boosting total output of goods and services.

The third essential input to growing economies is capital. Capital investment turns money into economically productive assets like bridges, airports, roads, machinery, and equipment that serve to increase output. In the U.S., infrastructure spending programs have the potential to fuel growth through direct construction spending and future efficiencies. Imagine the productivity gains associated with improved mass transit or a 15 percent reduction in commuting time.

Such ambitions, however, are not likely to be realized in any meaningful way without partnership with the private sector. In our ongoing climate of fiscal constraints, the government cannot foot the bill for meaningful infrastructure investment on its own. Hundreds of billions of dollars in private capital are already interested in investing in real assets, with trillions more sitting on the sidelines.

Governments at all levels should incentivize private sector investment by reducing regulatory hurdles, developing new financing mechanisms, and offering attractive investment projects that meet the market rate of return expectations of private investors like pension funds and insurance companies.

The final factor of production, entrepreneurship, pulls the other factors together into a business enterprise that generates profits. Immigration policies can dramatically impact the quality of entrepreneurship in the U.S. economy. Immigrants account for a disproportionately high share of new business startups. Despite making up just 15 percent of the U.S. workforce, more than 35 percent of new businesses have at least one immigrant entrepreneur at the helm. The dynamic and creative entrepreneurs seeking to make their dreams come true in America provide economic benefits to all of society, and it is imperative that sound policies for work, education, and investment visas are developed with entrepreneurship in mind.

Policymakers would be wise to dust off their textbooks and review the basic inputs that support economic growth, the four factors of production—land, labor, capital, and entrepreneurship. Sound policies for sustainable development, immigration, and public/private infrastructure investment will have the greatest impact on economic growth for the world’s largest economy, both today and for future generations.

The pool is projected to increase by an anemic 0.5 percent per year over the next 20 years, compared to growth rates of over 2.5 percent in the 1970s.
Most people hear “agriculture” and think “picking fruit.” But today’s Ag has gone high tech. Yes, technology has replaced many workers in Ag. But it has also created a vast number of amazing, highly skilled, year-round jobs that pay well…and require a college degree.

California’s Central Valley produces 50 percent of our nation’s fruits and vegetables—so just like in Silicon Valley, continuous innovation is essential. Today’s crops are processed using technologies that help us conserve water, minimize pesticides, automate farm operations, and ensure the best quality, freshest produce reaches all 50 states as quickly as possible. Every single day.

Picture a processing plant the size of 17 football fields where citrus fruits zoom along miles of conveyor belts like a scene from Willy Wonka’s chocolate factory. This massive operation requires thousands of skilled workers. That’s exciting! And a huge problem.

U.S. News & World Report estimated that 50,000 high-skilled, STEM-based Ag jobs will open by 2020, with fewer than 36,000 qualified graduates to fill them. That’s a significant skills gap.

Good news: Tons of jobs. Bad news: Few qualified candidates and a staggering 37 percent youth unemployment rate in the Central Valley.

My husband Stewart and I own The Wonderful Company, one of California’s largest Ag businesses. As a fully integrated operation, we grow, harvest, process, and market our pistachios, almonds, pomegranates, and countless varieties of citrus. But with the existing public systems, particularly education, unable to produce the employees our future needed to get the job done, it was clear that we needed to change our future.

To do so, we had to go where the employees of the future already were…in high school! So we created Wonderful Agriculture Career Prep, or Ag Prep for short.

“Ag Prep... aligns high schools, colleges, and industry to create real-world learning experiences...”
This innovative high school career pathways program helps students select their field of choice, become dream employees, and work in their dream jobs. Ag Prep achieves this by aligning high schools, colleges, and industry to create real-world learning experiences that prepare students for high tech Ag jobs. Introduced three years ago, the program’s mission is to increase college grads, reduce unemployment, and generate local economic growth. All we had to do was re-invent high school in a region where less than 30 percent of students traditionally met state university admission requirements.

In addition to their core curriculum, our high schoolers take courses conducted by college professors, earning college credit, so they’re actually going to high school and college at the same time.

Our program offers three core career pathways: Plant Science, Ag Business Management and Ag Mechanics. Our students are exposed to brilliant mentors, job shadowing, and industry conferences, and seniors are guaranteed a paid internship, providing invaluable real world experience in their chosen pathway. Imagine a high school that doesn’t just teach history, it teaches the future…your future!

At graduation, students earn their high school diploma and an associate of science degree. Grads can enter The Wonderful Company’s skilled workforce with a guaranteed $35-50,000/year job, or attend a four-year college, starting as a junior and finishing in half the time at half the cost.

Next year, we expect 130 students in our first graduating class with 91 heading on to a four-year college as juniors and 39 ready for hire. By 2020, we will serve 2,000 middle school and 1,300 high school students annually across our region of the state.

Ag Prep has the potential to give The Wonderful Company a substantial competitive edge, but it’s not a trade secret. We want to share our program with others. We are working with corporations and nonprofits to help them replicate our model.

Most importantly, we are making a real difference in the lives of Central Valley youth. Eighty-one percent of our 11th graders have already passed at least five college courses, and we’re already expanding our program into middle schools. And it’s all tuition-free, subsidized through a partnership between The Wonderful Company, generous state grants and the commitment of local school districts.

Technology is transforming our industry and the world. But when government and public services can’t or won’t drive the changes necessary to keep up, private industry and private individuals have an obligation to step up and create real solutions. Along the way, we discovered that our model has the power to change the future and to change lives.

All we had to do was go back to high school.
One of the most effective, most tangible and measurable ways to enhance people’s lives is to fuel and empower the world’s entrepreneurs—the individuals with imagination and power who create the next disruption in finance, technology, medicine, transportation, agriculture, and every industry that affects the lives of millions of individuals in societies around the world.

At Credit Suisse, supporting entrepreneurs underpins so much of what we do. It is part of our heritage. More than 160 years ago, Alfred Escher founded the predecessor bank of Credit Suisse, which played a key part in financing the construction of the Swiss national railway, connecting the country for the first time.

As Mike Milken himself has evangelized for years, access to capital fuels entrepreneurship and turns dreams and visions into products and services that are societal game-changers. Facebook and eBay turned the world upside down with ground-breaking technological disruptions; today each company employs thousands of individuals, allows millions of users across the economic landscape to buy, sell, and share, and has created millions of jobs around the world.

Traditionally, credit provided by banks was the principal source of capital for most of the world’s small businesses and fledgling companies, and the process by which those businesses got those loans was unchanged for more than 100 years. Yet, in the past two decades, disruptions in everything from microfinance initiatives to alternative/online lending to financial technology (or “fintech”) and the growth of private equity have fundamentally altered how entrepreneurs and established companies access capital markets.

Global financial services firms like ours have an important role in bringing next-generation business leaders together with established company mentors to share ideas on business development and
marginalized from those around them. That said, I believe technology over the long run has mostly been a force for good, and we don’t want to stop innovating and developing technologies that will ensure the wellbeing and prosperity of our children and grandchildren. While society needs fair and balanced rules, improving access to opportunity will not be solved by taking a step backward and trying to stop or slow down technological progress.

As a firm that has both private and investment banking at its core, we are acutely aware of the importance of contact and connectivity. In the “high-touch” world of banking, no individual, company, or sovereign nation entrusts any firm with their wealth without a relationship that has been built steadily and gradually over years, and sometimes decades, of personal, face-to-face collaboration.

We cannot lose sight of the fact that people build technology—not the other way around—and for the vast majority of the world’s citizens, technology is there to help them raise their children, protect their health, grow their assets, and develop their communities. And that is what constitutes a meaningful life for most of the people in this world.
Modern slavery is a violent crime of economic opportunity. It impacts millions of victims worldwide, erodes economies and communities, and permeates global supply chains.

While data and methodologies are still developing to understand the scale, scope, and nature of modern day slavery, current estimates range from 21 to 46 million people enslaved globally. While these numbers are dramatic, they undoubtedly underestimate the extent of this hidden crime. They also fail to describe the true nature of slavery, extending across forced labor, trafficking, bonded labor, and sexual exploitation.

What we do know, however, is that slavery exists in virtually every country in the world despite the fact that legislation prohibiting slavery exists in those same countries. Slavery also permeates local, regional, and global supply chains. In local markets, we find horrific examples of slavery (e.g., brick kilns). At the regional level, we see egregious sector-wide slavery (e.g., fishing). And, at the global level we find slavery buried in deep and opaque supply chains of multi-national corporations.

It is also increasingly clear that modern slavery is at the intersection of organized crime, illegal migration, national security, and economic disparity. And, if we tackle this crime head on we will have a reverberating impact: When supply chains are slavery-free it equalizes the market. When children are not forced to work, they remain in school, increasing community capacity and contributing to the formal economy. When people are not exploited as commodities without rights, organized crime is weakened and security is strengthened. There is a clear case for action on both humanitarian and economic grounds.

And make no mistake. The victims are real. It’s easy to be overwhelmed by the blur of statistics and move on with our day-to-day lives. But few of us could look into
Limited use of technology, digital tools, and analytics has made it difficult to stay ahead of traffickers. Systems mapping, big data analytics, geospatial mapping, and online search tools are examples of tools that may allow us to better understand, interdict, and crush slavery.

Limited private-sector leadership misses opportunities to sustainably eliminate forced labor from supply chains. There is a need to create market-based solutions, risk assessment tools, and mitigation processes in partnership with businesses. Mobilizing $70+ trillion of purchasing power globally could level the playing field and be key to taking this fight right to the traffickers.

Despite the challenges, this problem is not hopeless! We can forge a path forward through a bold public-private partnership (P3) that secures unprecedented contributions from governments, individuals, and corporations; fosters collaboration by knitting together partners and initiatives across borders and regions; ensures clear accountabilities and action through development of country co-funded and co-owned Anti-Slavery National Plans; and robustly determines what programs are effective, scaling those with the highest ROIs.

Key to success will be a systematic, transformational approach that tackles the issue from all sides:

- **Effective Law Enforcement**: ending impunity through effective criminalization;
- **Business Engagement**: eliminating modern day slavery from supply chains; and
- **Sustaining Freedom**: ensuring survivor reintegration and economic opportunity.

Pulling all these efforts together into a coherent global strategy will be the differentiator.

Modern slavery exploits and degrades—it robs children, teenagers, mothers, and fathers—of dreams and hope, joy and laughter, and the basics of everyday survival. Modern slavery diminishes humanity. It steals lives. We must end modern slavery, not because we need a life of purpose and this cause gives us a noble objective. Rather, we must end modern slavery because everyone should have the opportunity to experience a life of meaning.

Jean Baderschneider

the eyes of a five-year-old boy sold into forced labor in a factory in Bangladesh, a 13-year-old girl sold into sexual slavery in Oklahoma, a fisherman trapped at sea for years without hope of seeing his family again, and not be compelled to act. So what's stopping us? There are no easy answers and the hurdles are significant.

Limited resources seriously constrain efforts to end slavery. It has not been a fair fight, not even close. Consider that trafficking generates an estimated $150 billion in exploiter profits compared to approximately $125 million in overseas aid spent by governments to combat it. Lack of global coordination makes it easier for traffickers to pivot to new vulnerable populations whenever we address slavery in a specific location, resulting in displacement.

Poor data and limited data sharing exacerbate the problem of collaborating across borders and sectors. It also hinders the ability to assess impact through robust monitoring and evaluation systems.
This year’s Milken Institute Global Conference theme—Building Meaningful Lives—has never been more relevant, and more possible. In today’s environment of increasing technological disruption, policymakers and business leaders have a unique opportunity to come together and address the country’s issues that were so clearly highlighted during this past election.

As every American aims to realize a meaningful life, policymakers might agree on two principles: develop policy prescriptions that are sustainable by practicing long-term thinking focused on adaptability; and increase the quality of everyday life through innovation.

Collectively, these two principles make up the major components of the formula to deliver an inclusive, growing economy. And central to that conversation is investment in America’s infrastructure.

How then can we put these principles into practice in revitalizing and developing America’s infrastructure?

Partnering with the private sector brings an effective approach on both counts. There are numerous benefits of partnering with the private sector, including sharing risks and lowering taxpayer costs.

Long-term public-private partnerships (P3s) help ensure that incentives are aligned with better design and materials, and lower life-cycle costs. Through these partnerships, assets are maintained and the taxpayer no longer carries mounting long-term liabilities of unfunded maintenance or the full risk of repairs. The results are more sustainable, higher quality, and less expensive infrastructure—Long Beach Court House, the Detroit Metro Region Freeway Lighting project and the Port Miami Tunnel—all financed in part through private capital and all projected to achieve greater value at a lesser cost to the taxpayer than the traditional approach.

Engaging the private sector also allows for sharing the risks that can come when technological disruption changes community needs.
or the way infrastructure is used—for instance, around autonomous vehicles, digitally enabled transportation, or even drone delivery.

The private sector is experienced in adopting new technology and applying it in ways to improve our everyday lives and meet consumer demands. These partnerships will be the essential actor to truly ensure our infrastructure will keep pace as technology continues to modernize our lives at an accelerated pace.

It is therefore critical that government continues to involve and incentivize private partners to tap new technologies for infrastructure like E-Z Pass, variable rate tolling, advanced materials and manufacturing, smart energy grids and water metering, or still others on the horizon.

Importantly, private-sector innovation goes beyond the latest technology to make significant contributions in project design. This can mean identifying new sources of revenue as we have seen with airports cum shopping malls, neighboring property development, advertising placement, and other methods of capturing an asset’s full economic value. Or, it can mean extending current revenue further by way of reducing costs as we have seen with various achievements in energy and water efficient designs.

S&P Global has outlined an exciting innovation to infrastructure delivery in a recent report on the “bundling” of smaller infrastructure projects. Bundling is not a new concept. However, a lot of new benefits are being realized with bundling in P3s across several asset classes.

The Pennsylvania Rapid Bridge Replacement Project is a great example—a P3 that will replace 558 structurally deficient bridges across the state for 20 percent less and in three years instead of 12. The efficiencies of scale and of the private sector are accomplishing more at less cost, while addressing a significant safety concern, and limiting the disruption to people’s lives.

Significantly, the bundling of these bridge projects allowed for the practical needs of a diverse group of stakeholders in large and small communities across Pennsylvania. Drivers, businesses, taxpayers, state and local government officials, and construction workers are able to partner with contractors, equipment and materials suppliers, and the institutional (equity and debt) investors that are increasingly interested in these types of investments. Periodic payments conditioned on the private sector meeting its responsibility to maintain these assets over 25 years ensures incentives remain aligned, and that this partnership is built for the long term.

Whether through focusing attention on the costs and benefits of thinking long-term, or through injecting innovations into technology and the approach, partnering with the private sector can lead to more sustainable and modern infrastructure and a meaningful impact on all of our communities.

Douglas L. Peterson

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It is therefore critical that government continues to involve and incentivize private partners to tap new technologies for infrastructure like E-Z Pass, variable rate tolling, advanced materials and manufacturing, smart energy grids and water metering, or still others on the horizon.

Importantly, private-sector innovation goes beyond the latest technology to make significant contributions in project design. This can mean identifying new sources of revenue as we have seen with airports cum shopping malls, neighboring property development, advertising placement, and other methods of capturing an asset’s full economic value. Or, it can mean extending current revenue further by way of reducing costs as we have seen with various achievements in energy and water efficient designs.

S&P Global has outlined an exciting innovation to infrastructure delivery in a recent report on the “bundling” of smaller infrastructure projects. Bundling is not a new concept. However, a lot of new benefits are being realized with bundling in P3s across several asset classes.

The Pennsylvania Rapid Bridge Replacement Project is a great example—a P3 that will replace 558 structurally deficient bridges across the state for 20 percent less and in three years instead of 12. The efficiencies of scale and of the private sector are accomplishing more at less cost, while addressing a significant safety concern, and limiting the disruption to people’s lives.

Significantly, the bundling of these bridge projects allowed for the practical needs of a diverse group of stakeholders in large and small communities across Pennsylvania. Drivers, businesses, taxpayers, state and local government officials, and construction workers are able to partner with contractors, equipment and materials suppliers, and the institutional (equity and debt) investors that are increasingly interested in these types of investments. Periodic payments conditioned on the private sector meeting its responsibility to maintain these assets over 25 years ensures incentives remain aligned, and that this partnership is built for the long term.

Whether through focusing attention on the costs and benefits of thinking long-term, or through injecting innovations into technology and the approach, partnering with the private sector can lead to more sustainable and modern infrastructure and a meaningful impact on all of our communities.

Douglas L. Peterson
Technology has made it possible for us to live better, longer, and more meaningful lives. And that’s cause for great optimism and positivity. At the same time, though, technology has had a subtle pernicious effect on long-term savers. In the coming years, everyone from institutional investors and insurance companies to individual retirement savers and retail investors will need to grapple with those effects. But, at its heart, this is a story about opportunity.

Technology is an unquestionable benefit to humanity. The average human being expects to live nearly two decades longer now than in 1960, primarily because of advances in medicine, biotechnology, and agriculture. Economic productivity has seen tremendous progress, led by technology. Processes that used to rely on manual labor are now accomplished in a fraction of the time, at a fraction of the cost, with only a fraction of the human input. This frees up labor and capital to find more productive uses in the economy. That revolution, in every area from agriculture to manufacturing, has brought down the costs of goods and services. It has put a middle class lifestyle within reach of more people than at any time in history.

Yet, those exact same factors have also led the global economy to a period of low interest rates. With technology acting essentially as an ever-present deflationary force, both price inflation and interest rates have been pushed to historic lows. We’ve seen that play out over the last several years: the end of the commodity supercycle; a flood of cheap, high-quality manufactured goods; and a long period of ultra-low interest rates.

Next, consider that the global demographic trend of an aging population combines with the advances in longevity to allow people to live for longer in their retirement years. With a generation of baby boomers currently transitioning into retirement, we’re seeing a
global shift in investment priorities. Accumulating a “nest egg” becomes living off that nest egg. This means an excess amount of savings will be looking for fixed income and other yield assets. I believe this creates a structural overhang for capital markets, where increasing amounts of capital are chasing the same assets. This overhang translates into yields on bonds, real estate, and other yield-producing assets that are likely to be structurally lower than they otherwise would have been.

A “lower for longer” world makes it more challenging to save for retirement or any other long-term financial goal. Without higher yields to bolster savings and facilitate payout, more time is needed to get to the same place.

Technology has created a truly global economy. It has shaped vast, connected capital markets where mom-and-pop investors in Nebraska can easily and cheaply invest money with small manufacturers in places like Bangkok. Technology has also allowed investors to consider cheap, efficient passive tools to supplement their savings. Yet, technology has also opened up opportunities for a renaissance in active management.

The opportunity to succeed financially hasn’t gone away; it’s just shifted.

Significantly, I see a shift where equity management becomes a stockpicker’s market. Investors will value growth even more in the absence of high interest rates. Technological change and deflationary pressures will choke off weak business models quite rapidly, and active managers will be able to protect their investors by finding the success stories. This suggests that identifying and weeding out companies and business models that are susceptible to industry disruption and deflationary obsolescence will become a key skill.

Similarly, there are areas of the capital markets where passive management has not or cannot penetrate. Those are areas of opportunity with inefficiencies that active managers can exploit. Rather than a tragic story of missed chances and lost opportunities, I see this as the beginning of an era where investors will have the choice and power to find the right mix of effective passive strategies and efficient, powerful active solutions to meet their financial goals.
Had Napoleon won the Battle of Waterloo in June of 1815, a London stockbroker named David Ricardo might have lost the big bet he placed on British securities that netted him a king’s ransom worth $100 million in today’s dollars. If he hadn’t been able to retire at 43 to his country estate to noodle on ideas in the nascent field of economics, he might not have discovered nor laid the theoretical foundations of free trade.

Ricardo figured if Portugal could produce wine at a lower cost than England, and England could produce cloth at a lower cost than Portugal, and the two nations traded wine for cloth, both nations’ economies would grow at a much higher rate than if they had competed to produce both commodities separately. Ricardo’s Theory of Comparative Advantage is widely credited with providing the rationale for why trade should be free, thus spurring the exponential growth in world trade that has transformed our world and lifted untold millions out of lives of drudgery and poverty.

Two centuries later, however, while the generalized benefits of world trade are well-documented, once-tiny fissures have turned into great chasms in the long-held consensus that trade—and its near-synonym globalization—have been of unalloyed benefit to all. In 2017, trade is popularly associated with a painful series of economic disruptions and dislocations, ranging from the decline of manufacturing and well-paying middle-class jobs to the wholesale collapse of deeply engrained customs and communities that supported families for generations.

That said, the increased attention from economists and policymakers to the intense and often localized economic and social consequences of trade liberalization is a welcome development. At Citi, we’ve been on the forefront of trade finance for over two centuries. And as a world leader in financing the flows of critical commodities, goods and services from auto parts to computer chips...
to soy beans and sunflower seeds, we operate from a firm conviction that while trade policy and agreements may take different forms and reflect different priorities, trade isn’t going away.

Instead, to preserve the mutual prosperity that trade has brought to the world, we need to get trade reform right. We need to make trade not just freer but fairer than it is now.

How?

First, in an era of rising risks to the free flow of not just things but people and ideas across borders and around the world, we need to make our free-trade/market-oriented rules work as intended. That means we need to practically—and not just rhetorically—address the unfortunate fact that our global society has fallen short in providing the necessary tools and support to people and businesses adversely affected by technological change and globalization.

This policy shortcoming has made trade the scapegoat for economic dislocations that are actually attributable to a far wider range of causes. We need to recognize that fact as we design policies and programs to help people, businesses and communities adapt to the competitive challenges and opportunities of free trade and an open-market system.

Second, understanding this evolutionary achievement, we need to be far more effective at driving a sustainable and equitable trade agenda that strikes a better balance between the benefits consumers get from being able to purchase a five-dollar flip-flop or memory stick online or at their local mall and the pain induced by the closure of a factory that once might have made that same product at a higher cost, closer to home.

While the outcome of this debate remains uncertain, I haven’t the slightest doubt that the debate itself is a positive development. Just as it would be a grave error to discount the incalculable benefits that trade has bestowed on so many, it would be equally foolish to deny the depths of its downsides. As a business leader, parent, and citizen, I ask those in both the public and private sectors to seize the initiative to improve a system and a principle that has fueled economic growth and opportunity of historical proportions.

Let’s think in terms of evolution, freedom of enterprise, and true competition as we make trade fairer by distributing its benefits even more broadly, to provide greater opportunity for all.
Adena Friedman
President and CEO, Nasdaq

Evolving the Capital Markets Ecosystem

I chose a career in financial services, and in particular the exchange sector, because I was excited by the notion of making capital accessible to entrepreneurial companies, and of letting capital serve as an engine for economic growth and social change. As a global exchange and technology provider to nearly 100 other exchanges worldwide, we at Nasdaq see firsthand the benefits we can bring to economies when markets operate efficiently, transparently, and in a well-regulated environment.

At Nasdaq, our focus has always centered on the creation of an ecosystem whereby entrepreneurs and up-and-coming companies can access capital efficiently from investors worldwide. Our public markets are second to none in providing continuous access to capital and to deep liquidity. Additionally, the Nasdaq Private Market offers companies the choice of periodic access to capital as they grow and mature. The promise of raising money through the capital markets plays a vital role in our economy and has helped transform many nascent ideas into some of the most iconic brands of our time—companies like: Apple, Alphabet, Amazon, Microsoft, and Tesla. Without the framework that the capital markets provide—which links investors and companies to opportunity—many of these organizations might have never seen their businesses or ideas come to fruition.

Yet, we see today that public markets are shrinking, with approximately 5,100 U.S. public companies today as compared to 6,300 in 2005. There are a number of factors at play here, including significant regulatory hurdles that companies must face when they enter the public markets. That said, we know from experience that constructive interactions with the capital markets ultimately create jobs and lead to economic prosperity. This is why we at Nasdaq are so passionate about the role we play at the intersection of the capital markets and the economy. We continue to engage in public policy debate.

“As we work to improve both public and private markets, companies of all sizes will have a clearer path to grow and innovate.”
Adena Friedman

and work closely with government, regulators, and industry officials to ensure that the principles of sound capital formation, market structure, and those issues most prevalent for growth companies are being heard.

As stewards of this dynamic ecosystem, Nasdaq is focused on a number of key areas to build on the efficiency of our capital markets and help fuel the U.S. economy. These are among the many ideas and innovations we are fostering and discussing with various stakeholders:

**Increasing transparency**
America’s equity markets are the most transparent in the world, and international investors flock to U.S. markets because of the confidence this inspires. One of the ways we excel is through the application and development of new technologies, including machine intelligence, to create better outcomes for investors. We are constantly innovating in our world-leading market/trade surveillance suite that we apply to our own market operations, as well as offer to other market operators and broker-dealer clients to surveil activity across the capital markets ecosystem. We are also using machine intelligence to create predictive intelligence products to enable investors to have more sophisticated and successful interactions with the U.S. equities markets.

**Driving long termism**
Healthy markets require investors with a broad diversity of strategies. Short-term traders inject much-needed liquidity and price discovery into markets. But we also must ensure that long-term investors—those who believe in the inherent value of a company and seek to become part-owners—are able to participate on a level playing field with those who focus on speed and market timing. Additionally, public companies have the right to information that informs them of the different strategies that investors are undertaking as they trade public shares, including periodic disclosure of short positions, as well as better ownership intelligence.

**Creating the right conditions for smaller growth companies**
Smaller growth companies are a vital component of our economy, and yet today, underserved by capital markets. Nasdaq is focused on finding ways to aggregate liquidity in smaller company stocks and to find new ways for supply and demand to come together at the right price. That includes regulatory and legislative changes to create the potential for a single exchange to have exclusive rights to trade certain companies, to create “intelligent tick sizes” to aggregate liquidity at specific price points, and to be able to innovate with intraday auctions or other means to bring natural buyers and sellers together. We are also focused on moderating disclosure requirements for smaller companies to create a more inviting and less expensive means to tap public markets. We want to create an open and available market for all companies throughout their corporate lives, and one that meets specific needs of companies at different points in their development.

America’s equity markets are truly the best in the world—they attract the deepest and most diverse community of investors and market participants and drive our economy—but there is more that must be done to ensure they continue to evolve and flourish. As the CEO of Nasdaq, I am focused on acting on behalf of our clients, market participants, and investors, to fulfill our mission to provide the most robust markets in the world. This is a mission that I am deeply passionate about and one with enormous implications for businesses and economies all over the world.
Leading—and Winning—by Example: Keeping Africa’s Workforce Healthy

In the 25 years since I founded the Elton John AIDS Foundation, global development has become massively more diverse and multidimensional. Traditional paradigms like North/South are both outdated and misleading: very rich and very poor people live everywhere.

Two things stand out: development is neither incremental, nor necessarily sequential. For example, when smartphones came to market, Africa adopted digital communication virtually overnight, bypassing telecommunications, skipping the need for analogue landlines altogether. As a direct (or indirect) result, in at least nine African countries, more people use mobile money than those who have traditional bank accounts (Harvard Business Review) and Africa’s volume of mobile financial transactions exceeds those in Europe and North America combined (Gartner).

In the same way that smartphones can extend education to towns without schools, the use of mobile video telephony and built-in sensors can bring medical consultations with specialists to those who live in areas far from hospitals. Since the diagnostics can be transmitted real-time through mobile networks, physicians, not enough of whom exist in Africa, can focus on where they add most value. Simpler tasks are shifted to trained nurses or administrators, or even automated. This is a reality. My foundation is working with technical partners who are already scaling nationwide remote healthcare in Africa in this way.

The implications of this are immense. Africa’s population, which grows by over 30 million people each year, is expected to reach 2.8 billion by 2060 (World Bank). This is paired with significant economic growth, with countries like Kenya, Uganda, and Rwanda growing by more than five percent in 2015. The obstacle...
Sir Elton John

is that too many Africans still die because access to reliable, quality healthcare is beyond their reach. Almost all Sub-Saharan African countries have less than one physician per 2,000 people and less than one hospital bed per 5,000 (World Health Organization). National insurance is in its infancy in most African countries. This is where the private sector can play a central role.

Multinational companies with large workforces or supply chains in Africa can leapfrog slow improvements in national healthcare by providing a mobile health service for employees at a reasonable premium. This cost is dwarfed by related savings in absenteeism because of ill health. Improved health provides for a stable workforce that can expand and increase in skill level, thereby boosting economic growth. Investment in employees’ health, a truly fragile commodity in much of Africa, makes companies more attractive to workers and customers, and opens channels for ‘commercial diplomacy’ where multinationals need open lines of communication with host governments on a range of issues.

Why do I care about this so much? Because HIV/AIDS was still the number one cause of death in Sub-Saharan Africa in 2015. This holds true even though new medicines are affordable, costing less than $90 per annum, and very effective at protecting health and reducing onward HIV transmission. Young men who are undiagnosed with HIV pose perhaps the greatest threat to the spread of the epidemic. This is partly because too few get tested and therefore unknowingly infect wives, girlfriends, and partners. A mobile app solution, for example, that is designed to keep employees healthy—rather than single them out as an HIV risk—not only removes the stigma of HIV testing, it has the potential to stop the epidemic from spreading. With healthcare (including an HIV test) framed as an employee perk, what was once considered an uncomfortable inconvenience is now transformed into a valuable reward.

To protect the workforce of the next century, we need to end AIDS. And to end AIDS, we need to reach young people, particularly those who are undiagnosed. Until governments can provide universal health coverage, companies have a unique opportunity to demonstrate vision and care for employees. Businesses can demonstrate their leadership not only by keeping workforce and workforce dependents HIV-free, but by expanding 21st century technologies in a continent that is expanding both in terms of population and economy. Businesses and their leadership play a vital role as we work—together—to eradicate the deadliest infectious disease of our age.
For the first time in recorded history, the old outnumber the young.

Many global population experts see aging as a challenge. At PGIM, we know it’s also an opportunity. Breakthroughs in biomedical advances, such as gene-targeted therapies, changes in real estate usage and needs, and “Silvertech”—networked devices and technology aimed at elders—will open up new sectors for investment.

Over the next 25 years, the twin forces of global aging and increasing life spans will profoundly reshape the world’s economy. This will be driven by new and different demand patterns in age-sensitive sectors as businesses and governments strive to meet the needs of an older population. And as new cultural attitudes and perceptions towards aging itself evolve, people will be enabled to lead longer, and more meaningful, lives. Alongside policymakers and businesses, the investment community has a large role to play in this transformation, supporting the development of new goods, services, technologies, and markets.

Contrary to popular thinking, aging is and will continue to be a global megatrend, not just limited to countries in the developed world. Today, two-thirds of the world’s seniors live in emerging markets. By 2050, it is estimated that figure will rise to almost 80 percent. By then, the UN predicts there will be 355 million people over the age of 65 in China, a number greater than the entire U.S. population today.

In 2016, we gathered together some of the best thinkers in aging and longevity research for a lively debate. Our report, “A Silver Lining: The Investment Implications of an Aging World,” identified many opportunities, including real estate and healthcare technology, two areas, we believe, that will see significant shifts in the long-term.

As the notion of retirement itself is re-examined, new opportunities are
Commercial real estate will also see new opportunities due to the tremendous amount of medical innovation aimed at solving age-related diseases. Biotech clusters, including start-ups, research labs, and large medical companies, are emerging around major educational institutions in places such as San Francisco and Seattle. Again, this is a global trend, seen throughout the UK (Oxford and Cambridge), Germany (Munich) and China (Beijing and Shanghai). In its latest Five-Year Plan, China assigned biotech as one of its seven pillar industries, while Russia’s BIO 2020 strategy aims to increase biotech as a share of GDP to three percent by 2030.

In our research we highlight a new wave of start-ups in the technology industry, aimed at improving the quality of life for seniors. We have grouped these under the umbrella term: “Silvertech,” which we believe represents a suite of opportunities investors will want to monitor. Examples of Silvertech medical devices and technologies include mHealth (mobile medical connectivity), enabling people to remain at home while under remotely monitored health care supervision, usually through a “wearable” that tracks activity and vital signs. Some technologies in this market are more evolved than others. But in the coming decade, expect exoskeletons to provide mobility and support instead of wheelchairs, chronic pain management tools delivered through mobile, or head-mounted virtual reality (VR) devices, brain-machine interfaces for lifelong learning to prevent memory loss, and A.I.-inside digital assistants to give prompts on medication and doctor’s appointments.

In fact, Silvertech will nicely dovetail with the real estate trends mentioned above, as IoT (Internet of Things) voice-activated home-based devices and services lead to even more responsive dwellings, providing always-on assistance for the fragile and infirm.

It’s our view at PGIM that the megatrends of aging and longevity will provide real, long-term opportunities for investments in areas such as Silvertech innovations and the evolving senior housing market. The future of aging is going to look very different, and the investment community can be at the forefront of transforming the experience for good.

emerging in real estate. Baby Boomers want to continue enjoying active, purposeful lives, downsizing from family homes, shifting to urban centers, often buying condominiums in communities that cater to their specific requirements, and providing special support and services as they age. We’ve seen growth in places such as Atlanta, Austin, Nashville, and Raleigh that take the best of a Manhattan-style “live, work, play” mixed-use residential/commercial development into more affordable locales. And as people are living longer, healthier lives, the concept of senior housing and assisted-living communities is changing quite radically from more short-term oriented solutions to something entirely new. We expect residential care real estate to also see exponential growth. By 2070, we estimate that real annual spending on nursing homes will increase by $325 billion. But, as many seniors elect to retain their independence for as long as possible, the home health market will balloon too, by almost $90 billion annually.
With heightened public focus and increased political discourse on issues surrounding inequalities in modern society, it is imperative that industry leaders and policymakers are mindful of the potential divisive effects of advances in technology. Feeling left behind economically has become all too common, and there is a risk that, if left unchecked, a similar sentiment could befall technological change.

Most of us now have first-hand experience confronting a disruptive technology, something transformative that moves from the esoteric to the everyday incredibly quickly. Early adopters embrace it, while those with slightly more sober views of technology keep an initial distance before eventually succumbing to its allure. But for many people, life goes on unchanged. Technology—whether it is disruptive, adaptive or additive—largely passes them by. This is fine for gadgetry, but gadgets are not where technology ends, nor are they technology’s most important societal contribution.

As a sweeping oversimplification, consider there to be two broad types of technologies as they relate to personal interaction—those that push us toward isolation, and those that bring us closer together. Experiences with isolating technologies might involve a visit to the automated teller machine, or, in the not-too-distant future, to a coffee shop with robot baristas. These were previously person-to-person exchanges. At the opposite end of this spectrum are technologies that revolve entirely around shared experiences, such as most social media and applications that alert us to less congested driving routes based on readings of current traffic conditions faced by the collection of application users.

People can easily opt out of shared-experience technologies, and those with a greater degree of apprehension may also be put off by isolating
The most constructive way policymakers and industry leaders can contribute to the avoidance of potentially divisive and costly technological anxieties is to work toward an equitable technology distribution. Examples include ensuring high-speed broadband is available everywhere, not just in urban centers, and that modern technology-oriented innovations in the delivery of basic public services like health and—critically—education are equally widespread. The benefits of technology, and access to them, must be as inclusive and diffuse as possible.

By definition, disruptive technologies are game-changers that reorient a product, service, or industry quickly. They result in “winners” ushering in the new, and “losers” swept away with the old. Realistically, it is impossible to fully compensate all of those displaced. A more achievable objective is to have in place an advanced technology infrastructure to mitigate the view that the costs of change outweigh the benefits. This would also help avoid new technologies such as cryptocurrencies, virtual experiences, or access to artificial intelligence being seen as the exclusive domain of insiders.

It is inevitable that technological change will accelerate in the years ahead, and likely in ways that are not easily envisaged. A future that benefits us most and allows technologies to reach their full potential will require careful consideration be given to their distributional impacts, and that policies are enacted and practices followed to minimize and address the needs of those left behind.

"For those feeling left behind, less trade and less migration can seem appealing options if they are presented as ways of leveling the playing field.”

One of the biggest risks of bespoke technology touchpoints is that part of an individual’s relative incorporation—and ability to enjoy the ensuing benefits—is not, in fact, voluntary. People may feel that various technologies are either imposed upon them or inaccessible to them. Instructive parallels may be found in current global debates on the merits of international economic integration that are increasingly shaping policies on trade and migration. For those feeling left behind, less trade and less migration can seem appealing options if they are presented as ways of leveling the playing field.

Will technology suffer a similar fate? Will advances be resisted by groups aggrieved by inequities, perceived or real, such that rollbacks occur and the overall benefits to society are diminished?

James McCormack

technologies, hanging on to personal exchanges as long as possible. The upshot is a society with voluntarily calibrated tiers of technological integration.

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“For those feeling left behind, less trade and less migration can seem appealing options if they are presented as ways of leveling the playing field.”
In an age of robots and artificial intelligence, companies will depend more—not less—on human skills, including judgment, creativity, and collaboration. There’s no contradiction in this statement. It’s the story of innovation. New technologies have the potential to improve the value of work and the quality of working lives. But the pace of today’s digital revolution means that the future workforce cannot be guaranteed positive outcomes.

It is the responsibility of CEOs to ensure that people—not technology—remain companies’ greatest source of competitive advantage. In recent research, we have identified three ways to achieve just that.

Re-skill at speed and scale. If the U.S. industry doubles the speed at which people learn new skills, our analysis shows that the share of U.S. jobs at risk of total automation by 2025 will fall from 10 percent to just 4 percent. The good news is that 85 percent of 10,000 people we surveyed said they would be willing to invest their free time to learn new skills.

The challenge is not re-skilling, but re-skilling at speed and scale. The best way to achieve that is by learning on the job. Wearable technologies will help. For example, smart glasses that feed data and instructions to employees, teaching them new techniques as they carry out their daily tasks. Real-time learning will be supplemented by personalized online courses that people can pursue to suit their needs. These advances reflect the changing life script of our workforces. Instead of the linear path from school to college to pursuing one field for life, careers are becoming less predictable. In response, continuous learning will become the norm.

Re-design work for a changing workforce. This new life script is evolving as the profile of the workforce changes. Within a decade, millennials will account for 75 percent of working people and Gen Z is just about to
Collectively build talent supply chain. The short- and medium-term imperative is for employers to re-skill their own workforce, given that new skills are not available in today’s market. But the long-term supply of talent can only be strengthened collectively by business leaders who will work with competitors and peers to forge new relationships with government and academic institutions to align the education of young people to the needs of industry. For example, the Global Apprenticeship Network effectively brings together companies, associations and other organizations to promote quality apprenticeships for young people in a range of skills. The focus should go beyond STEM to areas of design, creativity, and complex problem-solving skills that will be among the most sought after.

Additionally, CEOs need to recognize that technology is about elevating—not eliminating—people. Humans—not robots—break into new markets, imagine new products, and craft compelling experiences.

More than eight out of 10 people are optimistic about the impact of technology on their working lives. And they want the skills that will help them work with intelligent machines and create more meaningful careers. Their embrace of technologies should put the wind in the sails of business leaders, who to date may have been understandably hesitant to radically change the working environment or commit to extensive re-skilling. CEOs now have a rare chance to seize that optimism and create the future workforce that sustains their competitive advantage.

Ellyn Shook

enter the labor market. The diversity of the workforce is more important than its youth—for the first time, we now have five generations working at the same time. All generations are demanding changes to the way they work. Sixty-seven percent of people want to pursue self-employment or freelance opportunities. More than half expect to stay with their employer for no more than five years.

This requires leaders to re-think how work is done. In turn, they will have to implement more flexible workforce models. Companies must replace function-based roles with dynamic, short-term project work. They must create ecosystems of skilled people that allow them to tap into talent inside and outside the company. Companies will need to provide a range of personalized benefits, learning opportunities, and a gig-like internal market. These approaches will create the vibrant community in which full-timers and freelancers are motivated to stay connected to an organization.
I am concerned that my childhood dreams are turning into a nightmare.

Stanley Kubrick’s “2001: A Space Odyssey,” which I first saw in 1968 when I was seven years old, sparked my fascination with computers and Artificial Intelligence (AI); areas that became the focus of my academic and career pursuits. Today, I still believe that AI and automation can deliver great things to the world, but the effects on Americans trained at moderate skill levels—or the middle-skill workforce—worries me.

Some have suggested that the significant, long-term decline in U.S. manufacturing jobs are a result of bad trade deals and corporate greed. The decline is more likely a result of efficiency gains made possible by computers, including significant advances in AI, which have allowed us to optimize our economy as never before. In the next decade, AI will take on a broader array of tasks, including new industries, which will affect even more workers. And it’s not only about jobs being lost or saved; there is a distinction between a job and a career: the kind of work that provides skill development, meaningful wage-growth prospects, and a reasonable likelihood that one’s work won’t be automated away. The types of careers, in other words, that have traditionally formed the foundation of healthy communities.

One of capitalism’s bedrock promises—one that dates back to Adam Smith—is that competition in the free market benefits society. Somewhere along the line, however, intoxication with efficiency caused us to lose sight of that principle at the expense of workers. Getting back to that promise will require policy changes and a renewal of forgotten values.

The raw, widespread anger we saw during the recent U.S. election reflects, in part, the intense despair that many workers feel...
companies today increasingly prefer to avoid employing humans, if possible.

Most of the commonly proposed solutions are unlikely to resolve the issue. For example, an increasing focus on education, while necessary, is not sufficient; what good is a college degree if there are no opportunities to use it? The same applies to worker retraining programs.

Some promote the promise of the so-called gig or sharing economy, but I don’t buy it. Working as an Uber driver might help make ends meet in the short-term, but the experience actually causes skills atrophy over time, as there is no emphasis on development or career progression.

Doesn’t history teach us not to worry? The Industrial Revolution was disruptive, but it created jobs eventually, didn’t it? Sure, but nobody knows whether the Information Revolution will do the same. Not all destruction, unfortunately, is creative in the Schumpeterian sense.

Mr. Christensen and Mr. van Bever suggest rebooting the capitalist system through a series of policy incentives aimed at making investment capital more “patient,” evolving the curriculums at business schools, realigning corporate strategy and resource allocation, and freeing managers to focus on long-term value creation.

These ideas are worthy of support. I would go further and recommend aligning corporate tax policy with the goal of creating and fostering careers by skewing tax rates to favor businesses that create career opportunities.

The hollowing out of the middle-skill workforce is a classic tragedy of the commons, and few in leadership positions today feel a personal responsibility to help address it. But business leaders must wake up to the scope and difficulty of the challenges we face. A narrow emphasis on efficiency puts our entire system at risk. Moving forward, creating careers (rather than dead-end jobs) must be an equally valid goal. We cannot and should not try to stop the march of technological progress. However, we must redefine what progress truly means.

Trade and immigration have become boogeymen, but it is the technological advances and the associated huge efficiency gains that truly underpin the “hollowing out” of the middle class behind the scenes.

Exponential increases in computing power, along with innovations in software, analytical techniques and the rise of Big Data, mean that even many repetitive white-collar tasks are due for disruption, too. According to a 2013 study by two Oxford University professors, almost half of all jobs in the U.S. are susceptible to “computerization” over the coming decade or two.

No one seems to know how to address this. As Harvard’s Clayton Christensen and Derek van Bever argue in “The Capitalist’s Dilemma,” orthodox finance dictates that investment by corporations to create jobs tends to be the third-best option behind substitutive innovation (which tends not to create new jobs) and efficiency innovation (which almost always results in job losses). As we have seen,
Cybersecurity is no longer just the esoteric concern of very technical people; it is an important concern for us all. We read about major new breaches and compromised data at least once a week. And those are the ones that come to light. How many of us have gotten personal messages telling us to change our passwords or offers of free credit monitoring because our personal information is out there? You have to wonder what—if anything—is being done about this.

In fact, there are now more than 1,400 vendors focused on producing cybersecurity products. In 2016 alone, organizations spent $100 billion on information security. But the negative numbers are staggering. Billions of records have been compromised. Losses from cybersecurity attacks are on a trajectory to reach $2 trillion in 2018. And a major attack on our vulnerable utility grid—for example—would send even those figures skywards. Clearly, we need to do something different.

To date, cybersecurity focused on detecting the bad guys and how to keep them out. Yet the bad guys are still getting into the best companies with the best defenses, the best technology, and the best engineers.

The solution to this can be seen all around us—resilience. Organisms that can adapt and bend with issues, then snap quickly back, survive. The brittle ones break. This analogy works for organizations and networks too. We need to accept the reality that all our precautions and defenses can’t stop every bad thing. It is no longer enough to ask “How can we prevent an attack?” Instead, we need to ask “What should we do when we’re hacked to minimize damage and disruption?” We need digital resilience strategies.

Digital resilience does not assert that security can stop all attacks and breaches. Resilience is about surviving inevitable attacks and penetrations, about continuing to do business...
even when under attack; it is about discovering breaches and containing them, and about ultimately prevailing in spite of them.

It is more than just a technology issue; it is an organizational issue. Achieving and maintaining resilience must involve the whole organization, not just a security team. It begins with cyber teams working with executives and managers across the organization to prioritize all important data assets and know where they are. The objective is to analyze the value of data items as well as their accessibility to attack. Organizations can create a truly resilient strategy that provides differentiated protection for their most important data only when these insights are in hand. Critically important assets call for close control of access as well as high levels of encryption. Less sensitive data assets can be made more widely and readily accessible.

Resilience strategies need to be comprehensive, addressing all organizational processes, from product development, to marketing and sales, to human resources, and the supply chain. We know that building a firewall around the perimeter of a network, while important, will not make a network resilient. Threats can still come from the outside—often through connections you make—as well as from the inside, for example, from unwitting employees clicking on dangerous links. The fact is that your network is no more secure than the networks with which it connects.

Once you have a strategy set in place, you still cannot rest—you must remain aware and agile. Networks are always changing, and we need to understand the risks each change brings, and adapt. The safest automobiles, for example, are sophisticated, agile systems. In a collision, they crumple strategically, absorbing energy that would otherwise be transferred to driver and passengers. A digital resilience strategy gives you the agility to adjust to the attack, contain it, and operate despite it. It enables organizations to adapt to sudden impact.

Resilience is not a product. It is not a department. It is not the responsibility of one person. Resilience is a way of thinking, and—once committed to—it quickly becomes an essential part of how effective organizations operate, delivering confidence to customers and partners. Resilience begins with knowing your networks in real-time, all the time.

“Achieving and maintaining resilience must involve the whole organization, not just a security team.”
As I reflect upon this year’s theme and what it means to build a meaningful life, I think about helping others build their own lives, as helping others has tremendously enriched my life.

Growing up in Australia, my grandmother instilled in me a natural obligation to give back—to family, to community, to the church, and beyond—as this forms the basis of civil society.

It has been said that ‘those to whom much has been given, much is expected.’ Believing this to be true, I have dedicated time and resources throughout my life to causes that reflect a set of personal values: protection for the most fragile in society; fostering aspiration; and respect for institutions. Many charities reflect these principles and inspire me, and I have chosen to support a broad array of groups and people, all of whom I find inspirational.

I believe society and individuals have an obligation to provide a safety net for those unable to take care of themselves. We need to provide a framework to enable people to meet their potential to contribute to society and to foster a sense of self-worth. Just as importantly, we need to honor and respect the institutions that form our social fabric, including the judiciary, police, military, and religion. I have aspired to reflect these values in both my philanthropy and my business. For me, being a conduit to help unlock potential is vital. It is exciting and deeply rewarding to help others succeed.

I believe education is critically important, as it is education that enabled me to succeed. The University of Sydney and the Harvard Business School opened my eyes to the world, and inspired me to achieve. That is why I have given back to them, as well as to a number of less-well-known schools and youth organizations, among them those that have had a positive impact on my family and me.

In the area of health, I have supported the Evelina Trust—a London children’s
hospital, and the Trinity Hospice, which is located in our community, to provide a dignified environment for those nearing the end of their lives.

I also believe the arts are an essential part of our cultural heritage and offer an important context for future generations. In the UK, I support the Natural History Museum, Victoria & Albert Museum, National Gallery and British Museum, helping to preserve educational and cultural institutions for future generations. My funding of the Old Vic Theatre in London was due to Kevin Spacey’s example and inspiration. Spacey dedicated himself to reviving the Old Vic, at a substantial opportunity cost in terms of his potential earnings in the movie business. We enabled him and his team to introduce an innovative artistic program as well as an outreach program that continues today, in what was then an unfashionable part of London.

To honor institutions, I support the Royal Navy and Royal Marines Charity which look after sailors, marines and their families. And with the Duke of Westminster, I am supporting the construction of one of the world’s most advanced clinical centers for the rehabilitation of injured military personnel.

I believe religion can provide a moral compass that allows society to survive and flourish. To that end, I also have given to a number of religious charities, which can provide important spiritual and educational foundations for their communities.

Because society cannot rely solely on the public purse, private giving is critical. The ability of any charitable organization or business to endure is dependent on its ability to be economically self-sustainable. I believe private philanthropy is better placed to enable, motivate, guide, and partner with charities. We must take individual responsibility to look after others; it is our obligation to give back. Philanthropy is a very personal journey for me. I give to those who have given much to my family and me; I give to those institutions that reflect my principles and values, and to those who inspire me.

The Hintze Family Charitable Foundation has worked with a diverse group of more than 200 charities, and our giving has been driven by my values and personal approach to philanthropy. Candidly, I know no greater pleasure than to give and make a difference in the lives of others.

“"We need to provide a framework to enable people to meet their potential to contribute to society and to foster a sense of self-worth."
This year alone at least one billion people will be touched in some way by Artificial Intelligence (AI).

AI is transforming everything from financial services to transportation, energy, education, and retail. In healthcare alone, IBM Watson is engaged in significant efforts to help radiologists identify markers of disease; to help oncologists identify personalized treatments for cancer patients; and to help neuroscientists identify genetic links to diseases like ALS—paving the way for advanced drug discovery.

AI systems are undeniably powerful tools. And like all powerful tools, great care must be taken in their development and deployment. The first step in this process is to build systems that can be trusted. This will require a framework of best practices that incorporates appropriate values and ensures ethical behavior, including alignment with social norms and contracts, algorithmic responsibility, explanation capabilities, compliance with existing legislation and policy, assurance of the integrity of the data, algorithms and systems, and protection of privacy and personal information.

To this end, IBM has made great strides, both internally and in collaboration with other AI stakeholders.

In 2016, IBM published one of the first corporate white papers on the ethics of AI: Learning to trust artificial intelligence systems—Accountability, compliance and ethics in the age of smart machines.

Additionally, IBM has developed the Principles for Transparency and Trust in the Cognitive Era, a document that is useful for any business or organization involved in the development of AI systems and applications. The core of these principles include:

- We believe AI’s purpose is to augment human intelligence.
- We will be transparent about when and where AI is being applied, and about the data and...
Francesca Rossi

“AI systems are undeniably powerful tools. And like all powerful tools, great care must be taken in their development and deployment.”

training that went into its recommendations.
• We believe our clients’ data and insights are theirs.
• We are committed to helping students, workers, and citizens acquire the skills to engage safely, securely, and effectively with cognitive systems, and to do the new kinds of work that will emerge in a cognitive economy.

In addition to this work, IBM is a founding member of the Partnership on AI, a collaboration between Amazon, Apple, Facebook, Google, Microsoft, and many scientific and nonprofit organizations. The organization’s main goal is to share best practices that encourage AI’s ethical development, and to create a forum to discuss and resolve ethical and societal issues raised by the pervasive use of AI in our personal and professional lives. Together, we hope to guide the development of AI to the benefit of society as a whole.

It is no exaggeration to say that in the years ahead, most aspects of work and life as we currently know it will be influenced by AI technologies. This technology will help us make more informed decisions. It may even help us avoid our natural cognitive biases and inconsistencies, potentially guiding us toward fairer, more ethical behavior.

This is why developing AI makes us more than computer scientists or business professionals. It makes us all architects of social change. This is a profound and daunting responsibility, but I’m confident that when we move forward together, and AI is thoughtfully created, we will greatly improve the many systems that facilitate life on this planet.
Autoimmune diseases like type 1 diabetes are on the rise—and David Panzirer has dedicated his life to finding out why. Panzirer, a trustee at the Helmsley Charitable Trust, the largest private funder of type 1 diabetes-related research, talks about his philanthropic journey.

Q: How did you become involved with diabetes research?

A: My oldest daughter, Morgan, was diagnosed with type 1 diabetes in 2007. Five months later, my grandmother, Leona Helmsley, died, leaving me as one of the trustees of the Helmsley Charitable Trust. These two events happening in such close succession sent a less than subtle message about what I should be doing with my life.

Q: How did you learn to navigate the philanthropic world?

A: Early on, a friend suggested contacting Lee Iacocca. Lee’s wife, Mary, had died of type 1 diabetes in 1983. A year later, he founded The Iacocca Family Foundation, which funds diabetes research. I wrote to Lee and the letter landed on the desk of Dana Ball, who was then the executive director of the foundation. Dana and I spent a week running around California, where I got my feet wet learning how to have an effect on a disease through targeted, laser-focused philanthropy. We spent a lot of time with experts at the Cystic Fibrosis Foundation and the Michael J. Fox Foundation, two charitable organizations that have had a significant impact on their respective diseases (cystic fibrosis and Parkinson’s disease). And it’s a journey that has not stopped in the nine years since.

Q: How did you settle upon the focus of your philanthropy?

A: At Helmsley, our type 1 diabetes grant making focuses on two pillars: 1) improving outcomes for those living with the disease today; and 2) primary prevention—to stop the disease before it starts. I realized we’re not curing this disease any time soon.

“If we are not failing 90 percent of the time, we are not taking enough risk. If curing disease was easy, it would be done.”
David Panzirer

HbA1C level for people with type 1 diabetes was 8.4, placing them at a significantly higher risk for all of diabetes’ complications—ranging from heart disease to blindness and nerve damage. And in any given year, about 10 percent of these patients had a severe hypoglycemic event requiring third party assistance or treatment at the emergency room. An ER visit averages between $20,000 and $25,000 and costs can go much higher if a patient is admitted to the hospital. These findings showed that type 1 diabetes is not the relatively safe and well-managed disease that many assume, and that better management is crucial for preventing dangerous complications and saving money. So, when the state of Washington wanted to reduce the number of test strips they were willing to cover, for example, we were able to show them data demonstrating a clear correlation between better control of glucose and more frequent testing.

Q: What have you learned?
A: If you want your philanthropy to make an impact, figure out what you’re trying to achieve and work your way backwards from there to figure out how to reach that goal. If you want to get a drug or device or a therapy to market, you have to think about it like a business and look for the gaps in the field. Consequently, we created the T1D Exchange (T1DX), which consists of a registry, a biobank, and a patient community. T1DX collected data on 27,000 patients across 67 diabetes clinics within the U.S. The exchange gives us baseline information on type 1 diabetes patients and provides an infrastructure from which companies can conduct clinical trials.

Our findings have already proved helpful. A normal HbA1C glucose measure is below 6. But the registry showed us that the average HbA1C level for people with type 1 diabetes was 8.4, placing them at a significantly higher risk for all of diabetes’ complications—ranging from heart disease to blindness and nerve damage.

Q: Any advice?
A: Philanthropists must do their due diligence. Simply writing a big check to someone in a white coat is unlikely to net desired results. Ultimately, if philanthropists could learn to give money away with the same level of rigor and diligence that they apply to making money, we might see real progress accelerating advances for type 1 diabetes and other diseases.

Q: How do you think ‘building meaningful lives’ relates to your philanthropic efforts?
A: As a society, we set ourselves up to be disappointed in failure, and this frustrates me. Instead, we should recognize that failure not only is an option, but that it should be embraced, not feared. If we are not failing 90 percent of the time, we are not taking enough risk. If curing disease was easy, it would be done. For me, ‘building meaningful lives’ means trying different models. We have to challenge and push with new approaches and be bolder. Technology is one of the ways to ease the burden of managing disease. Through technology, we have made early advances toward automating insulin delivery, for example, and some of those systems are already working their way through the regulatory process.

Q: How is Morgan doing?
A: Great. She is now 16 and just started driving. I’m a strong type A personality and my child is my clone, which has served her well for managing her diabetes. I recently got back from Rwanda, where in some parts diabetes is almost a death sentence. The things we worry about can be trivial compared to the plight of those in severely under-resourced communities.

I’m grateful I learned that lesson early on in our mission to improve the lives of all people afflicted by this disease.
As globalization marches on, a couple of phenomena have widely been observed. First, that the rapid rate of technological innovation—exemplified theoretically by the notion that computing power doubles every 18 months—is reshaping our economy one disruption at a time. Second, that while trade has brought entire economies and nations together, global inequities among individuals have driven us farther apart than ever.

Many firmly suspect it is these two forces that are behind the seemingly unpredictable characteristics of our times: from the heady optimism we feel about the future of the sharing economy and the green economy, to the confusing and oftentimes alarming rise of populism, protectionism, and reactionary nationalism.

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The nexus of the rapid rate of technological innovation and global inequity is where our world will face its most problematic question yet.

Already, technology has disrupted millions of manufacturing and service sector jobs, with 47 percent of jobs in the United States and 77 percent in China at risk of automation, against a 57 percent average across OECD countries. The World Economic Forum has projected that as many as five million jobs could be displaced by automation by as early as 2020.

Luminaries like Stephen Hawking have warned of the various perils associated with Artificial Intelligence (AI)—not least AI’s contribution to job elimination and its potential to wreak havoc on the global economy. Foxconn, the world’s maker of iPhones, recently began replacing 60,000 workers with robots, according to CLSA. China leads the world in adoption of industrial robots, purchasing 160,000 in 2016, compared to 57,000 in 2014, a 180 percent jump. And with the advent of driverless cars, we can expect more casualties—at least 3.5 million professional truck drivers in the U.S. alone are at risk of losing their jobs.
its processes. Unlike previous economic and political change, the coming technological revolution is not aimed at the heads of the ruling elite but, if left unchecked, may exist solely in the service of wealth accumulation by the global one percent in a dystopian, near future.

Automation and AI creates cost efficiencies in the service of profit, but only at the expense of human labor. This phenomenon is not isolated in manufacturing and industry alone, but is also true in the service sectors as well. Indeed, while rideshare apps are hailed as the answer to congestion and pollution, they also raise serious questions about decent wages, as drivers are forced to earn less than minimum wage under the vagaries of an algorithm. We city commuters may find these apps to be a godsend, but laborers with less access to privilege may have taken an unfair bargain, driving us around town for our convenience because they felt like they had no choice.

The future is not so bleak. We need to drive public policy innovations to keep up with technology. A tax on automation has been proposed by some members of the EU, supported by the foremost of tech pioneers, Bill Gates. While the policy and its considerations is complex, the core question is fairly straightforward: if labor is taxed on human workers, then why not tax automated labor just the same?

The proposal makes sense: funds freed up from cost efficiencies can be devoted to expanding public fiscal space to help at-risk workers with retraining, upskilling, and re-entry into more meaningful jobs, perhaps in the form of conditional basic income (an experiment Ontario is currently conducting). Redirecting these savings towards reinvestments in people may address wealth inequality in its most rapid and worst forms. Taxation, as dreaded a word as it is, can perhaps help us let technological innovation continue while staving off the most harmful of its effects.

I fear a world where the global wealth gap is exacerbated by the very technological advances we have longed for. For many, these advances are considered as saviors. I fear a world where enormous wealth can be created with less and less labor.

We need bold and innovative public policy to address these ethical, economic, and political questions on labor and equality. If we do not act, our greatest fears could be realized; and many will not experience the virtual hand of prosperity, but instead a robotic grip of inequality—bringing economic desolation and social unrest along with it.