

A DECLARATION OF INTERDEPENDENCE

Toward a New Social Contract for the Digital Economy

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January 2019





Realizing the new promise of the digital economy

In 1994, Don Tapscott coined the phrase, “the digital economy,” with his book of that title. It discussed how the Web and the Internet of information would bring important changes in business and society. Today the Internet of value creates profound new possibilities.

In 2017, Don and Alex Tapscott launched the Blockchain Research Institute to help realize the new promise of the digital economy. We research the strategic implications of blockchain technology and produce practical insights to contribute global blockchain knowledge and help our members navigate this revolution.

Our findings, conclusions, and recommendations are initially proprietary to our members and ultimately released to the public in support of our mission. To find out more, please visit www.blockchainresearchinstitute.org.



Blockchain Research Institute, 2019

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Don Tapscott, “A Declaration of Interdependence: Toward a New Social Contract for the Digital Economy,” Blockchain Research Institute, 29 Jan. 2018, rev. 21 Jan. 2019.

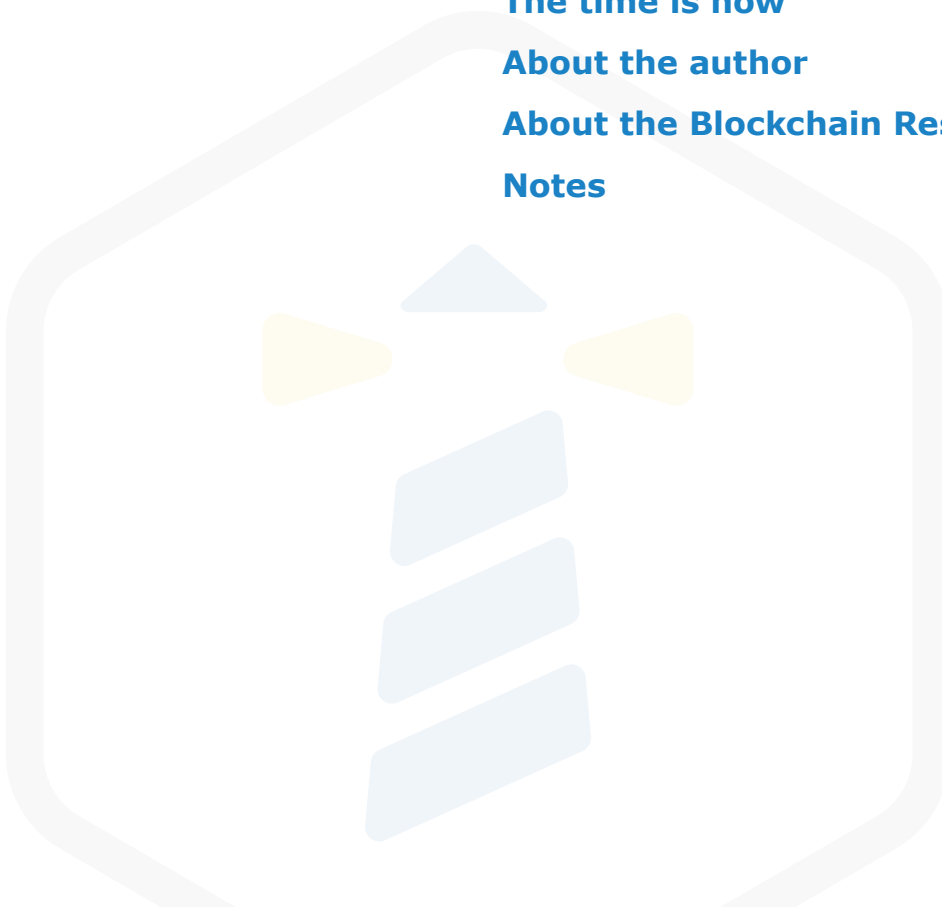
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Executive summary

The Brexit vote and the election of Donald Trump were a one-two punch, hitting the world in the face. People everywhere are “mad as hell and they’re not going to take it anymore.” As such, they have become vulnerable to populism, xenophobia, and scapegoating any minority—any group that represents a difference, be it ethnic, race, gender, or religion—for their circumstances or even the consequences of their own decisions.

Centrist parties are in rapid decline, and extremist, right-wing parties from the Czech Republic and Hungary to Poland and the Philippines are on the rise. *Les gilets jaunes* (the yellow vests) marched across France to protest the rising fuel prices, in a wave of anti-elite sentiment.¹ Vladimir Putin secured his fourth term in office as Russia’s president. Mexico’s Andres Manuel Lopez Obrador and Brazil’s Jair Bolsonaro came to power on promises of social justice and an end to systemic corruption. A *Bloomberg Businessweek* headline summed up the situation, “South America votes right while leaning left,” demanding protectionist measures.² In other countries, particularly in southern Europe where memories of fascism and dictatorship are still vivid, the left is ascendant.

As the digital revolution unfolds it is driving profound changes in the global economy, labor markets, old institutions, and society as a whole.

Perhaps as unthinkable as the success of Donald Trump was that of Bernie Sanders, an avowed socialist who almost won the democratic presidential nomination, and who some think could have beaten Trump in the general election. Equally improbable was the election of Alexandria Ocasio-Cortez, a democratic socialist, and now the youngest woman ever to serve in US Congress. She ran on a very progressive agenda, beating the Democrat’s incumbent Joe Crowley in the primaries without the endorsements of New York State’s two sitting senators, its governor, or the mayor of New York City.³ Both Sanders and Ocasio-Cortez spoke of requiring the billionaire class to pay their fair share. The unfolding story is one of growing discontent with the deepening economic crisis and the establishment that created it with impunity. Former *New York Times* columnist Anand Giridharadas observed, “One thing that unites those who voted for Trump and those who despaired at his being elected is a sense that the country requires transformational reform.”⁴

The world has seen this story before, in the run up to the Second World War, but the analogy is imperfect. Among other things, the rate of change differs. As the digital revolution unfolds, it is driving profound changes in the global economy, labor markets, old institutions, and society as a whole. It is enabling spectacular innovation and unprecedented wealth creation. At the same time, growing social inequality, the decline of the middle class, and pernicious unemployment and underemployment are fueling unrest. Networks enable outsourcing, offshoring, and the globalization of labor markets.

Government architectures and policies have not evolved, and there is a fiscal crisis and threats to the Industrial Age social safety net



To prevent massive destruction of life due to climate change, we must transform the global economy at an unprecedented speed and scale.

loom everywhere. Data as a new asset class has been captured by powerful forces—one result is the continual erosion of personal privacy and prosperity as a small handful of companies capture the largess of the Digital Age, asymmetrically. Climate change is threatening our biosphere, with huge displacement and other disruptions already being felt. Two landmark reports—one by the Intergovernmental Panel on Climate Change, a group of scientists convened by the United Nations, and the other by scientists at the US Global Change Research Program under Congressional mandate—were shocking in their assessment of the immediate consequences of climate change. Our situation is worsening much faster than scientists had previously expected. To avoid human tragedy at an unprecedented scale and scope, not to mention the extinction of other precious lifeforms, we must transform the global economy “at a speed and scale that has ‘no documented historic precedent.’”⁵

Now, within the Fourth Industrial Revolution, one centered on machine learning, robotics, the Internet of Things (IoT), blockchain, and even biotechnology, many core functions of knowledge work are in jeopardy.⁶ Meanwhile, Industrial Age institutions for solving global problems—those based on the Bretton Woods model of global institutions—have stalled. The upshot is that the *social contract*—the agreements, laws, and appropriate behaviors that people, companies, civil society, and their governments adhere to by consensus—no longer serve us well.

In *Blockchain Revolution*, we called for nothing less than a new social contract, which we called a “Declaration of Interdependence”—a phrase aptly coined during the Great Depression—because of the need for new multistakeholder approaches, whereby governments, the private sector, civil society, and individuals could forge and agree on new understandings and new action plans.⁷

After the book was published, we set out to research and write this declaration, which we see as a sort of manifesto for the Digital Age. The spectacular innovations provide civilization with a new set of opportunities to leap forward rather than decline or even collapse. We believe that the next era of the digital economy will bring epoch-making wealth, with new networked models of global problem solving to realize such a dream. We can even conceive of a new, achievable set of rights for individuals everywhere and future generations to claim:

- » *Climate stability*: a right to clean air, safe water, sustainable food sources, and ecologically sound homelands in perpetuity.
- » *Security of personhood*: the right to our own identities, privacy of our personal information, and our reputations.
- » *Education*: the right to access affordable digital infrastructures, student-centered education, media literacy at any level, and lifelong learning.
- » *Vocation*: the right to work, change jobs, create a business, monetize our own assets and the data we generate, contribute productively to society, and have that contribution valued economically.

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- » *Health*: the right to healthcare, including access to safe, affordable, and nutritious food, medicine, medical treatment, and ongoing care in the event of prolonged illness, disease, disability, or old age.
- » *Social safety net*: the right to a basic income that sustains ourselves and our families into retirement.
- » *Peace*: a right to live a life free of national, religious, or tribal conflict, terrorism, or other type of violence or oppression.
- » *Institutional accountability*: the right to transparency online and in increasingly automated processes, where elected representatives are answerable to all their constituents, corporate leaders are accountable to the communities in which they operate, and strong codes of ethics guide technological development in the interests of all humanity.

To recognize, realize, and enforce these rights, we need profound changes to our industrial institutions and infrastructures including education, healthcare, labor unions, food supply chains, transportation and energy systems and, above all, governments. Networks enable citizens to participate fully in their own governance, and we can now move to a second era of democracy based on a culture of public deliberation and active citizenship. Mandatory voting encourages active, engaged, and responsible citizens.

We have the unprecedented opportunity either to achieve universal prosperity—or to stoke our current economic inequality into class warfare.

In the name of global competitiveness and short-term shareholder value, we have let business off the hook for far too long. It's time for business leaders to come to the table as responsible and active participants in the new social contract—for both their own long-term interests as well as in the interest of a healthy society and healthy economy, overall. Even—or especially—in a time of exploding information online, we need scientists, researchers, and a professional Fourth Estate of journalists to search for truth, examine options, and inform the ongoing public discourse.

Are these expectations overly ambitious or even utopian? We think not, as we consider the alternative trajectory that humanity now faces. We have the unprecedented opportunity either to achieve universal prosperity—or to stoke our current economic inequality into class warfare. Our goal is not to provide a strategy for instituting and enforcing each of these rights but to catalyze investigation, debate, and action.

What is a social contract?

In the 1650s following the English Civil War, Thomas Hobbes is said to have originated the concept of a “social contract.” In contrast to the “natural order” of “war of all against all,” Hobbes posited that human beings contract with each other in a political community or civil society in exchange for security.⁸ In 1688, John Locke rewrote the language of the social contract to include property—



"Social contract theory, nearly as old as philosophy itself, is the view that persons' moral and/or political obligations are dependent upon a contract or agreement among them to form the society in which they live."



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Because of many factors, economic growth is no longer broadly shared and the gaps between rich and poor are widening.

the protection of life, liberty, and private property in exchange for sovereign governance and protection. This language, modified by Thomas Jefferson, made its way into the United States' Declaration of Independence as "life, liberty, and the pursuit of happiness."⁹ Jean-Jacques Rousseau, in the 1760s, also contributed to the concept of a social contract, among many others. In short, "social contract theory, nearly as old as philosophy itself, is the view that persons' moral and/or political obligations are dependent upon a contract or agreement among them to form the society in which they live."¹⁰ Like any contract, it retains its legitimacy only as much as the various participants continue to fulfil their part of the contract. Over time, our modern democracies have evolved as a way of linking governance and power to societal wishes.

The Industrial Revolution created wildly disproportionate wealth for a new class of elites and, at the same time, brutal conditions for the working classes. Nineteenth and early 20th century reforms in Britain, the United States, and other parts of the world included (nearly) universal suffrage, public education, a social safety net, income tax, antitrust and securities legislation, labor laws, environmental protections, and the designation of wildlife preservations among other elements and amenities.

In the 1930s, following the Great Depression and with 25 percent of the American workforce unemployed, President Franklin Delano Roosevelt authored the "New Deal," which invested heavily in public infrastructure, introduced social security and unemployment insurance, and introduced new legislation across banking, agriculture, labor relations, and home ownership. The relationship between the US government and the people of the United States fundamentally changed.

The US social contract changed again after World War II with legislation and programs designed to ensure that "everybody would share in the fruits of an expanding economy," wrote Robert Freeman. "That's what Kennedy's 'rising tide lifting all boats' metaphor was about. It worked brilliantly" until the 1980s.¹¹

Because of many factors—globalization, policy changes that began under Ronald Reagan (e.g., supply-side economics), technological change, and weakened institutions—economic growth is no longer broadly shared and the gaps between rich and poor are widening. As Freeman noted, "Median income adjusted for inflation is lower today than it was in 1974. A staggering 40 percent of all Americans now make less than the 1968 minimum wage, adjusted for inflation. Median middle-class wealth is plummeting. It is now 36 percent below what it was in 2000."¹²

Progress has not only stopped but reversed itself, at least in the United States. Ben Fountain wrote in *The Guardian*:

The New Deal goal of broadly shared prosperity has taken a beating the past 40 years, and the damage shows. By virtually every measure relative to other rich nations, the United States



has lost ground since the 1970s. We're shorter (height is an excellent indicator of social conditions), we don't live as long, more of our babies die before their first birthdays, wages and educational achievement have stagnated, and inequalities of wealth and opportunity are higher than at any time since the late 19th century. Mortality rates for middle-aged white Americans have actually risen the past 15 years, especially for non-college-educated whites. Maternal mortality rose 27 percent nationwide between 2000 and 2014. In Texas, the maternal mortality rate doubled between 2010 and 2014.¹³

We can observe the same trends, while not as extreme as in the United States, in other western democracies. Without a doubt, these trends are driving factors in the recent US election (Trump Republicans) and the UK referendum on the European Union (Brexit): large proportions of the population in both countries believe that they've been left out of the new economy—the old social contract has broken down without a new one to replace it. There's widespread belief that new rules, whatever they are, have been imposed without their consent.

While technological change is only one driver of our current revolution, digital technologies both contribute to the disruption and can help to rewrite and implement a new social contract, one that better meets the needs of modern societies.

This declaration outlines the articles of a long overdue new social contract for the Digital Economy. We are amid a global economic transformation as significant as the Industrial Revolution. Whereas the Industrial Era social contract formed over decades—and in its broadest sense, over centuries—today's is taking shape infinitely faster. More importantly, most "laws" of the Digital Age (e.g., Moore's) indicate that the rate of change is accelerating exponentially.

The upshot is that our regulatory and policy infrastructures are woefully inadequate and unable to adapt apace or at all to our new requirements. Our democratic institutions and instruments originated during the transformation from agrarian feudalism into industrial capitalism. While technological change is only one driver of our current revolution, digital technologies both contribute to the disruption and can help to rewrite and implement a new social contract, one that better meets the needs of modern societies.

After 2016, many are feeling pessimistic. Is the dream of a renewed social contract even possible? Yes—if we act now. *The Economist* summed up the challenge:

Two thousand sixteen ... represented a demand for change. Never forget liberals' capacity for reinvention. Do not underestimate the scope for people, including even a Trump administration and post-Brexit Britain, to think and innovate their way out of trouble. The task is to harness that restless urge, while defending the tolerance and open-mindedness that are the foundation stones of a decent, liberal world.¹⁴



Drivers of change

The combination of technological change, globalization, demographic change, and climate change is significantly altering the entire context within which we organize ourselves and causing pressure on the social contract that worked reasonably well toward the betterment of all society in the post-World War II period. We will introduce these drivers in this section and address their implications in greater depth in the next section.

The Fourth Industrial Revolution

Professor Klaus Schwab, founder and executive chairman of the World Economic Forum, labeled this disruption the “Fourth Industrial Revolution,” because of the exponential rate of change and its reach to all industrial sectors, which will be transformative across entire systems:

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The First Industrial Revolution used steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution is building on the Third. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.¹⁵

McKinsey Group used the phrase, “combinatorial technology explosion,” to describe the significant technological advances resulting from the combination of seemingly disparate inventions and disciplines. “Combinatorial effects are compounding the impact of Moore’s law, creating more scope to innovate and to conceive new businesses.”¹⁶ In a recent McKinsey article, W. Brian Arthur concluded that we’ve entered a different economic era:

The economy has arrived at a point where it produces enough in principle for everyone, but where the means of access to these services and products, jobs, is steadily tightening. So this new period we are entering is not so much about production anymore—how much is produced; it is about distribution—how people get a share in what is produced.¹⁷

Combine technological advances in robotics, artificial intelligence (AI), nanotechnology, blockchain and cryptocurrencies, quantum computing, and biotechnology with billions of people and trillions of connected things with unprecedented access to information, autonomy to sense and respond, big data analytics, and cloud storage and processing power, and we’ve barely begun to imagine the implications of this revolution.

The upshot is that technology has shattered more than our old social contract; it has challenged what it means to be a human being in society. More than any other factor, it contributes to structural



Innovation is a driver for both the destruction and the regeneration of our biosphere.

Virtually any discussion on the three drivers must necessarily include their impact on global warming, to ensure we design solutions that preserve our environment for future generations.

unemployment, social inequality, and a bifurcation of power in many countries. It is at the heart of the failure of many institutions, the fragmentation of public discourse, the decimation of our privacy, and the decline of individual and family security. Innovation is a driver for both the destruction and the regeneration of our biosphere.

Globalization

The second big driver of change is globalization, including freer movement of capital, production, goods, services, and talent across national boundaries. Globalization enabled by technology, international agreements, and global institutions has yielded many macro- and micro-level benefits. It has also disrupted local economies and individual workers in every sector. The resulting inequality gap is increasing pressure on governments and international institutions to mitigate the negative impact of globalization on their constituencies.

Demographic upheaval

The United States, Canada, Europe, Japan, and China have aging populations with potential for senior poverty, rising health costs, and, in some cases, shortage of skilled labor. At the same time, other parts of Asia, Africa, and the Middle East have very young populations and face significant youth unemployment. Poor economic conditions, climate change, and/or war in some parts of the world lead to large numbers of economic migrants and a growing number of refugees in search of opportunity and safe-haven. In Europe and the United States, some have raised concerns about their country's capability to absorb these migrants and refugees, both economically and culturally.

Climate change

Global warming, brought about largely by human activity, contributes directly to climate change, and we're already experiencing the consequences. Among the indicators of climate change are the frequency of extreme weather events and changing patterns of temperature and precipitation. These, in turn, influence human habitation, crops, and growing seasons, with significant implications for human health and well-being. As severe drought continues in east Africa, South Africa braces itself for drought. South Sudan and Yemen are already in states of emergency.¹⁸ Millions of people in the region face starvation. Soon, we can expect over a billion people to lose their water supply, be flooded, or otherwise be forced to migrate, resulting in a new refugee crisis and regional conflict in many parts of the world. Virtually any discussion on the three drivers—the Fourth Industrial Revolution, globalization, and demographic upheaval—must necessarily include their impact on global warming, to ensure we design solutions that preserve our environment for future generations.



Nine disruptions: The current contract is breaking

The four drivers of change are fracturing western societies. We have growing structural unemployment; inequality in income, power, wealth, education, and opportunity; fragmentation of public discourse; severe pressure on governments and other institutions and a growing crisis in democratic institutions; ongoing threats to privacy and security that challenge our autonomy as individuals; and threats to our biosphere. Our current path is simply unsustainable.

Structural unemployment

Digital technologies and other trends have broken the old social contract by contributing to structural unemployment and a growing number of part-timers, freelancers, temporary workers, and short-term contractors who work without the benefits tied to full-time job. We expect these trends, while already significant, to accelerate with the growing “sharing” or “gig” economy and the rapid introduction of AI and robotics.

Since the beginning of the digital economy, there has been a shift toward information-based and “knowledge worker” jobs in the United States, Canada, and other countries. Digitization and automation enabled increased productivity and the outsourcing of manufacturing and other work to people and organizations, often in other jurisdictions, to reduce costs and increase productivity.

A study by the Center for Business and Economic Research at Ball State University found that 85 percent of manufacturing jobs lost in the United States between the year 2000 and 2010 were due to technology, even as productivity and output increased.¹⁹ “Automation has transformed the American factory, rendering millions of low-skilled jobs redundant. Fast-spreading technologies like robotics and 3D printing will exacerbate this trend,” noted Mireya Solís, a senior fellow at Brookings Institution.²⁰ Many white-collar jobs have also been made redundant or outsourced. Jobs for life are increasingly rare with technology-driven change requiring frequent retraining.

Positive employment trends include an increase in new jobs in the information and information technology sectors and numerous innovators and entrepreneurs developing new products and services—even entire industries—based on new technologies.²¹ While many individuals enjoy the relative freedom of part-time, contract, or freelance work anywhere at any time for many clients and with many collaborators, they do not receive healthcare, insurance, vacation, sick days, parental leave, tuition reimbursement, pensions, or other benefits of employment. They lack the long-term income security to buy a home, start a family, or otherwise plan for and invest in their future. Researchers at Princeton University calculated that, in just one decade, 2005 to 2015, the incidence of alternative work

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arrangements in the US economy had increased from 10.7 percent to 15.8 percent.²² That accounts for much of the job growth during this period.

In the last several years, new business models in “the sharing economy” have emerged, although there is little actual sharing. Companies such as Uber, Airbnb, Lyft, and VRBO have developed “market-matching” digital platforms to link buyers (e.g., travelers) to sellers (e.g., drivers and vehicles, vacation housing) and to allow them to complete a secure transaction (e.g., reservation and payment) among other functions.²³ While this model has enabled many individuals to earn revenue from their underutilized assets, it has also disrupted existing industries. It is taking place outside the traditional employer/employee relationship, leaving many workers and clients unprotected, taking clients away from traditional providers, and putting downward pressure on prices and wages. Steven Hill estimated in 2015 that, “within a decade, nearly half of the 145 million employed Americans are expected to be impacted.”²⁴

These trends are only going to accelerate with the growing use of AI and robotics, or what W. Brian Arthur refers to as the *externalization of intelligence*.²⁵ A 2017 McKinsey Global Institute (MGI) research study calculated that 45 percent of activities could be automated by 2055 (plus or minus 20 years), with virtually every job, from CEO to clerk, containing some elements that could be automated.²⁶ This is a remarkably similar number to a 2013 study by Oxford researchers Carl Frey and Michael Osborne who predicted, with high probability, the displacement of 47 percent of US employment over the next 10 to 20 years.²⁷

In the United States, autonomous cars and trucks may displace many of those 300,000 drivers, as well as the 900,000 delivery truck drivers and the 1.7 million long haul truck drivers, unless they own the autonomous vehicles.²⁸ Results of a recent RAND study suggest that we’ll save more of those 1.3 million lives lost in traffic accidents each year by deploying highly automated vehicles (HAVs) sooner, even when they’re only 10 percent better drivers than human beings: “the opportunity cost, in terms of lives saved, for waiting for better HAV performance may indeed be large.”²⁹

While some have taken such calculations and predicted that up to 50 percent of jobs will be eliminated by automation in the near future, others are optimistic that just as the luddites of the 19th century were proven wrong, new jobs and opportunities will emerge to replace those currently being lost.³⁰ The 2017 MGI study calculated that fewer than five percent of jobs can be fully automated as they retain some elements requiring human intervention, including creativity or human emotion and sensing.

[T]he scale of shifts in the labor force over many decades that automation technologies can unleash is not without precedent. It is of a similar order of magnitude to the long-term technology-enabled shifts away from agriculture in developed countries’ workforces in the 20th century. Those shifts did not

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result in long-term mass unemployment, because they were accompanied by the creation of new types of work. We cannot definitively say whether things will be different this time. But our analysis shows that humans will still be needed in the workforce: the total productivity gains we estimate will only come about if people work alongside machines.³¹

"Many displaced people become unemployed; others are forced into low-paying or part-time jobs, or into work in the gig economy. Technological unemployment has many forms."



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According to Ellice Perez, head of operations of Google's autonomous driving car technologies subsidiary, Waymo, her engineering team will still need fleet technicians, fleet dispatchers, fleet response, and rider support.³² James Bessen, an economist at Boston University School of Law, reminded us that automated teller machines "did not eliminate tellers. Instead, because banks could operate branch offices with fewer tellers, they opened more offices and the total number of tellers grew."³³ W. Brian Arthur is not convinced:

The current transfer of jobs from the physical to the virtual economy is a different sort of offshoring, not to a foreign country but to a virtual one. If we follow recent history we can't assume these jobs will be replaced either. In actual fact, many displaced people become unemployed; others are forced into low-paying or part-time jobs, or into work in the gig economy. Technological unemployment has many forms.³⁴

The challenge, then, is how to respond to and prepare for these dramatic changes in two respects: creating new opportunities for employment, and adapting to new forms of "employment" that no longer include safety nets. Do we have the ingenuity to share widely the opportunity for, and benefits of, technology-enabled productivity and renewed growth with displaced workers?

There is a tight linkage between the concepts of employment and economic security. For that reason, some argue that we have incentive to protect employment and its central role in our society, whether doing so makes sense from a broad economic and social perspective. In the next section, we will examine that linkage and whether we need to loosen it in the new economy.

Unlike earlier generations, young people today can no longer count on surpassing their parents. The inequality and changed employment models have put severe pressure on many social programs.

Growing inequality

We believed that the Internet would have an overall levelling effect on society by opening access and opportunity to many excluded from the economy. To a certain extent, it did. Overall, however, digital technologies have contributed to increased economic inequality within and across societies. Access has not translated into equal economic opportunity; rather, it has combined with structural unemployment to widen the gap between rich and poor.

Unlike earlier generations, young people today can no longer count on surpassing their parents' generation. They have mounting personal debt, a sense of frustration, and lack of hope for the future. Among other implications, the inequality and changed employment models—combined with demographic change—have put severe pressure on many social programs.



Even as the US economy has grown, those in the bottom half of the economy have experienced no growth in income since the 1970s, according to a recent study by Thomas Piketty, Emmanuel Saez, and Gabriel Zucman:

Stagnant wages have sliced the share of income collected by the bottom half of the population to 12.5 percent in 2014, from 20 percent of the total in 1980. Where did that money go? Essentially, to the top one percent, whose share of the nation's income nearly doubled to more than 20 percent during that same 34-year period.³⁵

In 1980, the average US income in the top one percent was approximately 27 times the average income of the bottom half; by 2014, that had soared to 81 times, even with taxes and public programs included in the calculations.

Lawrence Katz, a Harvard economist, noted that technological change is one of the underpinning factors leading to inequality through downward pressure on wages of low-skilled workers.³⁶ He also noted that Piketty's research demonstrates the minor impact of government programs on existing inequality, compared to preventive policies and initiatives to increase educational levels and to retain or strengthen bargaining power. While these data apply to the United States, the situation in the United Kingdom and other countries is not much better.

The dream of a United States in which life is better, richer, and fuller for everyone, is remaining just that—an American dream, not America's reality.

Achieving the "American Dream"—defined in 1931 by James Truslow Adams during the Great Depression as "that dream of a land in which life should be better and richer and fuller for everyone"—is no longer a reality in many people's lives. Whereas in 1940 over 90 percent of babies born that year could expect to earn more than their parents, by 1980 that number had dropped to 50 percent.³⁷ The Equality of Opportunity Project attributes that to two factors: overall slower rates of economic growth and inequality of distribution of economic growth—especially the latter. As David Leonhardt noted in the *New York Times*, "In the 1980s, economic inequality began to rise, a result of globalization, technological change, government policies favoring the well-off and a slowdown in educational attainment and the work force's skill level."³⁸

Guy Standing of the University of London has written extensively about the *precariat*, the large and growing number of people in precarious economic circumstances who live with economic insecurity.³⁹ His analysis concludes that incomes have stagnated for the bottom half of the population across Organization for Economic Cooperation and Development (OECD) for the past 30 years. The wealthiest, whom he labels the *rentiers*, gain wealth through their assets, be they land, money, or intellectual property.⁴⁰ Standing noted that the income distribution system has broken down in three ways:

First, it used to be the case that when productivity grew, wages grew in parallel; now, in the United States and elsewhere, wages do not budge. Second, it used to be that when profits rose, wages rose; now, wages do not budge.



Third, it used to be that when employment rose, average wages did so too; now, average wages can even fall, because the new jobs pay less.⁴¹

Standing makes a strong point: current trends are unsustainable. More people are experiencing falling real wages, persistent economic insecurity, and increasing frustration that plays out on the streets and the political stage. Further, these are systemic issues caused by such factors as technological change, globalization, demographic change, and past and current public policy choices. Individuals cannot fix their situation simply by working harder. As “Buy Me a Boat,” a popular country and western song performed at Trump rallies, lamented, “Workin’ like a dog all day ain’t working for me.”⁴²

The widening inequality has far reaching consequences. In his book, *The Crisis of the Middle-Class Constitution*, Ganesh Sitaraman of Vanderbilt University argued that political and economic power are closely tied; the very foundation of the American Constitution was based on approximate equality and a large middle class.⁴³ In *The Atlantic Monthly*, Sitaraman noted that the wealthy have different interests:

Individuals cannot fix their situation simply by working harder. As “Buy Me a Boat,” a popular country and western song performed at Trump rallies, lamented, “Workin’ like a dog all day ain’t working for me.”

The things that are good for them aren’t actually in the common good, so when they do govern, they start pursuing policies that improve their well-being and wealth at the expense of everyone else. This creates a vicious cycle, because you now have the wealthy creating a system that allows them to keep more wealth and earn more wealth, and that wealth in turn allows them to continue to take over the political system, and the cycle perpetuates. ... The problem with the vicious cycle that leads to oligarchy is that people are smart, and they see it happening, and they know, and they feel that the system is rigged against them. And in that context, people revolt against the system.⁴⁴

In his new book, *Winners Take All*, Anand Giridharadas points out that the wealthy often “start initiatives of their own, taking on social change as though it were just another stock in their portfolio or corporation to restructure.” The problem is the “initiatives mostly aren’t democratic, nor do they reflect collective problem-solving or universal solutions. Rather, they favor the use of the private sector and its charitable spoils, the market way of looking at things, and the bypassing of government.”⁴⁵

Asymmetrical power

In the developed world, digital technologies have exacerbated rather than equalized the power imbalance. From the early days of the Internet as a transformational force, the dominant view was optimistic: the Internet would disrupt industrial hierarchies that were hard to climb, even harder to break down, and near impossible to wrest power from the few who held it. The Internet would bring about low-cost and massive peer-to-peer communication, which would undermine traditional hierarchies.



Business has used technological change and globalization as a rationale to reduce restrictions and to lower labor, taxation, and other costs to remain competitive.

Instead, business has used technological change and globalization as a rationale to reduce restrictions and to lower labor, taxation, and other costs to remain competitive. Concomitantly, as the numbers of laborers shrink in many industries, the voice of organized labor fades and the rules protecting workers (e.g., minimum wage) expire.

International agreements tie government's hands further. As Guy Standing has written, "The transformation started in the 1980s, with a vision of open liberalized markets. Less noticeable was the strategy of dismantling institutions of social solidarity; they stood against the market. That weakened labor's bargaining power."⁴⁶

In this context, and in the context of the Citizens United decision in 2010 by the US Supreme Court, the voice of business leaders has become more dominant as they contribute significantly to political fundraising, sponsor research, lobbying governments, and as they seek greater certainty and return for their investment in a highly competitive world. Citizens United, in which the court ruled that political spending is protected under the First Amendment, has resulted in corporations and unions' spending unlimited amounts of money on political activities in the United States independently of a party or candidate (e.g., through political action committees or PACs). As Gabrielle Levy explains in a 2015 article in *US News & World Report*,

As a result, a small group of wealthy donors has gained even more influence on elections, and are able to maintain that influence once candidates take office. Of the \$1 billion spent in federal elections by super PACs since 2010 [until 2014], nearly 60 percent of the money came from just 195 individuals and their spouses, according to the Brennan Center report.⁴⁷

Increasing shareholder value has become the be-all and end-all of most business leaders, and even that is defined narrowly.

It is not only the comparatively louder voice of business today that's a problem: it's also the narrow focus and tendency toward very short-term thinking that's problematic. The narrowing of business interests began in the 1970s when economist Milton Friedman famously wrote "the business of business is business." In his 1970 article for the *New York Times* and in his book *Capitalism and Freedom*, Friedman wrote, "There is one and only one social responsibility of business—to use its resources and engage in activities designed to increase its profits."⁴⁸ Increasing shareholder value has become the be-all and end-all of most business leaders, and even that is defined narrowly.

"Too many CEOs play the quarterly game and manage their businesses accordingly," Paul Polman, the CEO of the British-Dutch conglomerate Unilever, noted in a recent interview. "But many of the world's challenges cannot be addressed with a quarterly mindset."⁴⁹ By not investing in retraining for workers or research and development, business leaders looking only at short-term returns to shareholders are creating longer term problems for their own competitiveness and the economy.



The Internet has acted as an accelerant to spiky power accumulation rather than a leveler—a distinctly pessimistic, rather than optimistic, outcome—and it does not appear to be slowing down.

While we have some success stories of labor, consumers, communities, and interest groups harnessing digital technologies to effect change in their interests, the effectiveness of this participation has been spotty overall.

The original democratic architecture of the Internet has been bent to the will of economies and societies in which power is anything but evenly distributed. If anything, the world has gotten spikier, more power dominated, and more entrenched. Rather than information and knowledge being more widely and democratically distributed, they are being controlled, owned, and exploited by fewer entities. The UNCTAD Information Economy Report 2017 noted that the world's top four companies by market capitalization are all digital-economy related; that is, Apple, Alphabet (Google), Microsoft, Amazon.com, and Facebook dominate advertising on the Internet.⁵⁰

A small number of companies use their dominant positions to control and accumulate more power. Additionally, those who accumulate knowledge ownership and the power that comes with it are more privileged; and with that privilege comes the education that produces proprietary knowledge. This privilege trumps merits, regardless of their origin. The Internet has acted as an accelerant to spiky power accumulation rather than a leveler, a distinctly pessimistic, rather than optimistic, outcome—and it does not appear to be slowing down.

In *Winners Take All*, Giridharadas summarized the challenge of asymmetrical power:

We must decide whether, in the name of ascendant values such as efficiency and scale, we are willing to allow democratic purpose to be usurped by private actors who often genuinely aspire to improve things but, first things first, seek to protect themselves.⁵¹

Do we want a true democracy, or the former investment banker Steve Bannon's version of it? The next three disruptions relate to our state institutions, including our democratic processes, governments, and public institutions.

While participants in the processes have rushed to apply new technologies and to experiment with new processes, the results have been uneven.

Crisis of democracy

Digital technologies have contributed to the current crisis of democracy by significantly increasing the "quantity" of participation in many respects (more information, more opinions, more channels, more money, endless election cycles) while doing little to nothing—perhaps even having a negative impact—on the "quality" of democratic processes, such that people are comfortable that their elected governments represent them and that their processes and policies are enacted fairly and in the public interest.

While participants in the processes (political parties, candidates, elected leaders, voters, interest groups, the media) have rushed to apply new technologies and to experiment with new processes, the



results have been uneven. We've seen an explosion of networking activity online to bring about social change by putting forward alternative views, enlisting financial and other support, coordinating protests, and advancing social movements at the local, national, and international level, but there is little evidence to date on the effectiveness of this activity. This contributes to a "crisis of legitimacy" for our democratic institutions. As we wrote in our earlier work, "Declaration of Interdependence: New Social Contract,"

Though inspired and sometimes impactful, such networks are no substitute for structured political change. Direct democracy can't replace effective, structured, and accountable leadership. As the Arab Spring demonstrates, it's one thing to bring down a government through a "wiki revolution." It's another to consolidate power and sustain it—a challenge that requires skilled and respected leadership, formal organization, political parties, and mechanisms for sustaining support at all levels of society.⁵²

Nevertheless, enabled by technology, the rebellious activity continues to increase. As noted by the Initiative for Policy Dialogue in 2013, "There have been periods in history when large numbers of people rebelled about the way things were, demanding change, such as in 1848, 1917 or 1968; today we are experiencing another period of rising outrage and discontent, and some of the largest protests in world history."⁵³ We wrote in our earlier work,

To date, there is little evidence of the effectiveness of online networking activity to bring about social change.

Extreme populist movements of right, left, and various religious persuasions are increasingly gaining popular support and political power. Radicalization is the result of great disparities between expectations and reality. We may be at the start of a new era of global social upheaval that could make the Vietnam era look like child's play.

We argue that to restore legitimacy, government leaders need a new agenda for the digital revolution. Today the main digital focus of politicians is a cynical one—targeting voters to get elected.⁵⁴

That, of course, only contributes to cynicism among voters and a further lack of trust which is borne out by statistics showing the long-term decline of trust in government, voter turnout, and the annual democracy index on the number and strength of democracies around the world.⁵⁵

As Alex Tapscott reported in a *New York Times* OpEd, messing with polling stations is one of the most common voter suppression tactics:

Across the United States, politicians have closed polling stations in minority neighborhoods, changed their locations from election to election, and kept them understaffed, inaccessible, or ill-equipped, so that those who want to vote must stand in line for hours. These tactics continue to work in lower turnout and undermining confidence in the electoral



*process. In the 2016 election, only 55.4 percent of eligible voters turned out to vote, and only two-thirds of Americans were very confident that their own ballot would be counted as intended—and with good reason. According to the Brennan Center for Justice, 41 states are using old voting systems, and 33 states lack the funds to replace these machines by 2020. Our democracy depends on addressing these vulnerabilities.*⁵⁶

In her book, *Dark Money*, Jane Mayer wrote about the widespread and growing political influence of a relatively small number of powerful individuals from the “radical Right.”⁵⁷ Using a model Mayer identifies as “weaponized philanthropy,” she describes how several billionaires have been very active—often operating secretly—since at least the 1970s in funding private foundations, sponsoring academic and other research, marketing their ideas, lobbying governments, and supporting candidates sympathetic to their views while opposing others—all to influence policy and elect politicians at all levels:

*Lowering taxes and rolling back regulations, slashing the welfare state, and obliterating the limits on campaign spending might or might not have helped others, but they most certainly strengthened the hand of extreme donors with extreme wealth.*⁵⁸

These techniques have included the skillful and widespread application of digital technologies. In the 2008 presidential election, candidates successfully used social media to reach and engage potential voters. In the 2016 election, political parties used big data to widen, not narrow, divides. Special interests can manipulate democratic processes to deepen the crisis of confidence.⁵⁹ Building upon her earlier book, Mayer wrote an article on how big money combined with big data influenced voting behavior in the 2016 US presidential election.⁶⁰

Among other actions, a single major donor contributed \$10 million to Breitbart news, which analyzed clicks on its website to identify the most effective language to use against Hillary Clinton. According to Mayer, the same donor provided an additional \$5 million to a data analytics company, Cambridge Analytica:

*[This company] uses secret psychological methods to pinpoint which messages are the most persuasive to individual online viewers. ... [T]he CEO of the firm says it has created “profiles”—consisting of several thousand data points—for two hundred and twenty million Americans. In promotional materials, [the company] claims to know how to use such data to wage both psychological and political warfare.*⁶¹

Of course, those opposed to the priorities of the current administration in Washington are also turning to technology to identify and engage voters.⁶²

The problem is not with the Internet itself. Many voters have stopped seeing government as a tool for the production of the common good, and have instead turned to politicians who at least make them feel good.



A recent opinion piece in the *New York Times* summarized all these changes.⁶³ The problem is not with the Internet itself. According to Sam Greene of King's College London,

*For reasons that are both complex and debatable, very many voters have stopped seeing government as a tool for the production of the common good, and have instead turned to politicians (and others) who at least make them feel good. Thus, the news we consume has become as much about emotion and identity as about facts. That's where the vulnerability comes in, and its roots are in our politics—not in the Internet.*⁶⁴

Ineffective government

While results vary across policy and program areas, there is growing concern over the general ineffectiveness of government, especially in complex policy areas. While we have seen improvements in simple information and service delivery functions because of digitization and online services, the broader use of digital technologies has lagged in government such that we have not fully realized benefits of efficiency, effectiveness, and service.

Governments have barely transformed themselves by making more effective use of information and digital technologies as well as emerging ones such as blockchain.

Barely touched is the possibility to transform government significantly, enabled by more effective use of information and digital technologies as well as emerging technologies such as blockchain. Government decision-making is complex and opaque. Multiple levels of government—and silos within those levels—are often a barrier to change. Meanwhile, taxes and/or deficits continue to increase and levels of trust in governments continue to fall.

Pew Research found that overall trust in the US federal government to do the right thing most or all the time remains near historic lows at 19 percent in 2015, compared to levels approaching 80 percent in 1958.⁶⁵ The gap between expectations and reality of government programs and services is undoubtedly a factor. For example, 97 percent of Americans support background checks for all gun buyers. But gerrymandering of Congressional districts continues to prevent the US House of Representatives from truly reflecting the will of the people and moving such legislation forward.⁶⁶ Yet citizens continue to have high expectations. According to Pew Research, "Majorities want the federal government to have a major role in addressing issues ranging from terrorism and disaster response to education and the environment."⁶⁷

Some of this lack of trust in government is due to the sustained campaign of the types of activities undertaken by the "radical Right." These libertarians believe in a very limited role for government and have undertaken a systematic campaign over many decades to promote that ideology. As Ronald Reagan said in his 1981 inaugural address, "Government is not the solution to our problem; government is the problem."⁶⁸



Outdated structures, siloed thinking, and budget constraints limit the ability of governments to attract and retain highly skilled staff.

Outdated structures, siloed thinking, and budget constraints limit the ability of governments to attract and retain highly skilled staff. Reducing taxes has become the mantra of politicians of almost all stripes, as has the corresponding mantra within government of “doing more with less”—which has an inevitable, negative impact on government’s capability to fulfill its mandate effectively.

Jeffrey Sachs’ analysis on why governments fail remains relevant today. Focusing on implementation of already settled policies, he concluded:

In short, we have arrived at a point where the challenges of sustainable development—including public health, infrastructure, energy, and national security—require changes not only to policy but also to basic public management systems. In many crucial areas, tinkering will no longer suffice: we need an overhaul to regain government control over regulatory processes, reduce lobbying, restore public planning and ensure the adequate financing of skilled public managers, and align public management systems with holistic strategies.⁶⁹

Failing institutions

Healthcare, education, science, and research are all critical components of any social contract because they are essential to a healthy society and a strong economy, now and in the future. Yet, these institutions struggle constantly for resources and have outcomes that often fail to keep up with the requirements of a modern digital society. To be sure, there are important developments in each of these areas. However, they are eclipsed by warnings of decline.

Effective implementation of digital technologies could lead to better results but are expensive and required system-wide for the greatest benefit, and therefore are often considered unaffordable.

In many fields, jobs go unfilled because students graduate without sufficient education or skills. Post-secondary institutions and researchers are required to pursue market-driven models that are often short-sighted. Aging populations and new technology drive up healthcare costs to unsustainable levels in many countries with huge public policy debates on how best to address—and pay for—healthcare in the future. Effective implementation of digital technologies could lead to better results but are expensive and required system-wide for the greatest benefit, and therefore are often considered unaffordable.

Education

Education at all levels—from prekindergarten to post-secondary, skills training, and lifelong learning—are important to a successful digital economy and the individual’s likelihood of success therein. The role of government in this sector varies around the world, but free (publicly funded) access to at least kindergarten through twelfth grade (K-12) is a policy across most western democracies, a basic element of the social contract. However, in many countries such education does not



Are children learning the necessary soft skills in judgment, critical thinking, innovation and creativity, entrepreneurial thinking, human interaction, and capability for lifelong learning that will be so necessary in a world where many routine jobs are automated?

reach all children equally, as schools in underprivileged areas often lack the same resources as those in wealthier neighborhoods.

Some jurisdictions have included free prekindergarten (pre-K) for all children, which is important for two reasons: (1) research indicates how important pre-K is for the child's development and (2) parent may be burdened by expensive childcare or unable to seek employment outside the home because of childcare responsibilities.

Today, nearly three-fourths of mothers with children under 18 now work outside the home. ... Unlike other nations, the United States has done little to ensure that, while America's parents are at work, their children receive the care they need. Today, it is up to the individual parent to provide whatever resources are necessary. But most workers cannot afford the quality child care and early education needed by their children. This sets up a two-tiered system in which the children of the wealthy get the care and education they need, while the children of most Americans do not.⁷⁰

Questions have also been raised whether current school curricula meet the needs for the future workforce. While progress has been made in expanding the curricula related to science, technology, engineering, and math (STEM) subjects, has it gone far enough in this direction, and are enough girls involved? Also, are children learning the necessary soft skills in judgment, critical thinking, innovation and creativity, entrepreneurial thinking, human interaction, and capability for lifelong learning that will be so necessary in a world where many routine jobs are automated and where individuals may change jobs frequently during their lifetime?

How to strike the right balance between what's publicly funded and what should be a private responsibility is constantly under discussion, but a good argument can be mounted that a high school education does not well equip today's youth for a successful future. Some jurisdictions, especially in Europe, include post-secondary education as part of their publicly funded education programs—that is, their social contract. In other jurisdictions, the high and growing costs of post-secondary education are a deterrent to attendance in the first place or result in students graduating from college or university with huge debt. The students who can't afford post-secondary education are severely disadvantaged in the future.

Many jurisdictions have expanded their college systems or funded other initiatives to provide students with practical skills for workplace readiness. While specific job-related training is considered to be the role of the employer, public and private colleges have played an increasing role in most jurisdictions in both training and retraining. Many students attend both college and university to gain different, but important, knowledge and skills in each environment.

Germany has long been known for the success of its apprenticeship programs and the close ties between industry and the education system in identifying and addressing future needs. Other jurisdictions



could do more to tighten these linkages in both directions and to design and develop new programs for lifelong learners.

Public science and research

Publicly funded research, especially funding of basic science, is always under pressure. Government-funded research has been severely reduced in many jurisdictions with emphasis shifting toward development in partnership with business, while universities also have been encouraged to partner with industry to ensure the relevance of their research programs and to share costs.

While partnerships have brought additional revenue to universities, it tends to encourage applied research and development that's relevant and useful in the short-term, often at the expense of basic research and a longer-term perspective, with potentially negative, but unmeasurable, impacts on future innovation. The Internet itself originated from publicly funded research, as did advances in alternative energy, agriculture, medicine, and other sectors.⁷¹ As Orla O'Sullivan wrote in an article in *Asia Times*,

We must find ways to fund basic scientific research within independent institutions focused on everyone's future and useful to humanity in the long term.

*While the United States has never spent more on research and development, the government's share has never been less. That's a risky strategy. Why rely on the scattered efforts of private firms that are beholden to quarterly profit expectations to develop the next big idea?*⁷²

In the past in the United States, many important research advances have come out of the military and aerospace. Under the current US administration, military expenditure is expected to increase, and so research may increase. How that research can be made available, by collaborating with industry and academia in a pre-competitive environment, may help propel the US economy in the Fourth Industrial Revolution.

While most other countries do not have the leverage of this very large military expenditure, they, too, need to consider where their next economic advances will originate, and continue to support both research and development. While many jurisdictions have established new development models by aggregating participants from multiple sectors, academia, and other institutions for innovation, expenditure for basic research remains a low priority.

Healthcare

A healthy society is generally considered essential part of the social contract, although models vary as to how best to meet that commitment. While most developed countries have some form of publicly funded universal healthcare, the United States has adopted a largely employer-funded model. As noted in an earlier section, that model has left many without employment-based insurance, so other mechanisms have been put in place, including Medicaid and the Affordable Care Act to expand coverage to more people. Discussions



Access to affordable healthcare remains a top priority in all countries. Like education, healthcare touches everyone and outcomes often fall short of expectations.

are ongoing in the United States about future reform and the appropriate role for government in healthcare.

Access to affordable healthcare remains a top priority in all countries because of its central importance to people's lives and rising costs that many believe are unsustainable. Like education, healthcare touches everyone and outcomes often fall short of expectations. "For the first time in decades, US life expectancy dropped in 2015, with preventable chronic diseases remaining a leading cause of death."⁷³ Despite having the highest per capita healthcare costs among all developed countries, the United States ranks 26th (men) and 29th (women) in life expectancy of 35 OECD countries.⁷⁴ According to the National Center for Health Statistics,

*The rankings report also found that the [United States] ranks 29th in infant mortality when compared against the other 35 nations. The infant mortality rate in 14 other countries, such as Japan and Slovenia, was half the US rate. The report's authors noted that infant mortality and life expectancy rankings "continue to be disappointingly low in the United States, especially considering how much money is spent on health."*⁷⁵

Another comparative study showed that US residents face significant cost barriers to healthcare compared to other developed countries. Commonwealth Fund President Dr. David Blumenthal noted that "the United States spends more on healthcare than any other country, but what we get for these significant resources falls short in terms of access to care, affordability, and coordination."⁷⁶ A Commonwealth Fund study reported in *Health Affairs* found that

*About 33 percent of US adults went without recommended care or could not fill a prescription due to cost. In comparison, about seven percent of respondents in the United Kingdom and Germany and eight percent in the Netherlands and Sweden reported cost-related health barriers.*⁷⁷

The challenge is how to meet the healthcare needs for an entire population.

There have been many attempts to introduce universal healthcare in the United States, including by Franklin D. Roosevelt in 1933 as part of the New Deal and by Harry Truman in 1949 as part of the Fair Deal, but these failed because of employment-based insurance programs already in place and opposition (led by the American Medical Association) to "socialized" healthcare. In recent years, the Affordable Care Act improved access to healthcare but strong ideological differences on the role of US government in healthcare are stalling and rolling back progress.

The challenge is how to meet the healthcare needs for an entire population, including the large number of baby boomers reaching old age with associated health costs. While technology is certainly a high cost in healthcare, is there a role for digital technologies to reduce overall costs and improve outcomes? The last three disruptions of our previous social contract relate to the autonomy of the individual, the sustainability of the environment, and the science and information that support these.



Fragmentation of public discourse

The Digital Age is breaking the social contract regarding the Fourth Estate and the obligation to inform citizens. In the Industrial Age, there were limited media channels providing news and information and they did a pretty good and balanced job overall. Journalists cultivated leads, curated stories, and disseminated news and opinions in print, radio, or television to mass audiences.

While social media has allowed a more diverse range of voices and opinions to become part of the discussion, it has not resulted in a shared understanding of complex problems nor increased consensus on how to address them.

In the United States, for example, many watched the “most trusted man in America,” evening news anchor, Walter Cronkite. *The New York Times* and *Wall Street Journal* were well edited, balanced (from slightly different editorial perspectives), and informed the country well, as did *Time* and *Newsweek* magazines. Local radio, television, and newspapers presented local news to a local audience and National Public Radio was considered an informed and balanced source. There was a clear contract in place to serve the public. These outlets received a license to operate. It was a consensual relationship among regulators, business, civil society, and consumers.

With cable TV and then digital technologies, a huge number of channels and platforms began to segment huge numbers of participants into digital echo chambers, thus fragmenting public discourse. There is no single platform widely trusted for telling the truth and sustaining a conversation at a societal level. Trust in the media is at an all-time low, with less than half the population trusting the media in most countries, including the United States, United Kingdom, and Canada among the many countries studied.⁷⁸

While social media has allowed a more diverse range of voices and opinions to become part of the discussion, with some exciting examples of social activism and citizen journalism, it has not resulted in a shared understanding of complex problems nor increased consensus on how to address them. As Nathaniel Persily wrote in *Journal of Democracy*,

[The 2016 United States Presidential election] represents the latest chapter in the disintegration of the legacy institutions that had set bounds for US politics in the post-war era. ... If the 2008 and 2012 US presidential campaigns had seemed to confirm Internet utopians’ belief that digital tools enhance democracy by expanding citizen empowerment and engagement, the 2016 campaign highlighted the challenges that the Internet poses for American democracy, and perhaps democracy in general.⁷⁹

Although each of us has access to more information and opinion than ever before, that does not translate necessarily into knowledge or consensus.

Although each of us has access to more information and opinion than ever before, that does not translate necessarily into knowledge or consensus. While everyone can now express his or her opinion, sign a petition, or respond to a survey online, that does not mean that opinion reaches or persuades others who don’t already hold such views. The volume- or click-based, advertising model for online content and acceptance of anonymous commentary likewise encourage attention-seeking content, including provocative and extreme content.



The voices of researchers, scientists, and academics are fading amid the sheer volume of information; anybody can self-publish, and every opinion seemingly receives equal weight on such issues as climate change and vaccinations.

"Citizen journalism" is no substitute for professional investigative journalists trained to seek out the truth. Previously, broadcast and print media had both the capability and the interest to reach the widest audience and therefore had some opportunity to build public consensus, or at least a foundation of shared information. Some of the larger traditional media outlets (e.g., *Guardian*, *New York Times*) have learned how to blend traditional tools with social media and other digital technologies and are growing their audiences, although not necessarily their bottom lines.

As the number of individual participants on social media increases, the concentration of ownership of few dominant platforms intensifies. The very success of Facebook and Google encourages more content on these platforms.⁸⁰ Facebook and Google are building massive databases on every aspect of our online behavior that will enable them to influence us directly or through clients who buy their analytics services.

In addition, the voices of researchers, scientists, and academics are fading amid the sheer volume of information; anybody can self-publish, and every opinion seemingly receives equal weight on such issues as climate change and vaccinations. In other generations, the recommendations of expert scientists counted, and trusted policymakers led respectful public debates.

Finally, there is growing evidence that, to support their own goals, various special interests have deliberately accentuated the current divisiveness of public opinion. People have learned how to get their message to the top of search engine results; how to influence online behavior; how to find and promote negative news and opinion about others; how to plant false news stories to influence opinion, change the topic, or muddle the debate; and how to use software robots—bots, for short—to automate messages and replies. Nathaniel Persily of Stanford University noted,

During the 2016 campaign the prevalence of bots in spreading propaganda and fake news appears to have reached new heights. One study found that between 16 September and 21 October 2016, bots produced about a fifth of all tweets related to the upcoming election. Across all three presidential debates, pro-Trump twitter bots generated about four times as many tweets as pro-Clinton bots. During the final debate, that figure rose to seven times as many.⁸¹

These tactics appear to work. According to Michael Scherer,

Trump has discovered something about epistemology in the 21st century. The truth may be real, but falsehood often works better ... In the radical democracy of social media, even the retweets of outraged truth squadders has the effect of rebroadcasting false messages. Controversy elevates message. ...



Time reviewed the 298 tweets Trump has sent since being elected President as of March 21. Fifteen included clear falsehoods. ... The false messages were retweeted an average of 28,550 times. Those that were not clearly false were retweeted on average 23,945 times. The viral effect of falsehood being repeated on the news was many times more pronounced. According to a search through the Internet Archive, a nonprofit library database, the false tweets were quoted on television an average of 31 times, more than twice as often as other tweets.⁸²

Trump continues to prove himself among the least trustworthy public figures on the world stage, earning FactCheck.org's 2018 "most egregious teller-of-falsehoods" title for the fourth year in a row.⁸³ According to PolitiFact, what Trump says is totally true only four percent of the time, whereas 48 percent of his statements are false or pants-on-fire false.⁸⁴ These tactics are not limited to Trump and the Republican party.

A Pew Research study makes some interesting observations on the growing sophistication and use of algorithms analyzing the vast and growing amounts of digital data. It surveyed more than 1,300 experts in the field of data analytics and found two related ideas about the divisions in society:

First, they predicted that an algorithm-assisted future will widen the gap between the digitally savvy (predominantly the most well-off, who are the most desired demographic in the new information ecosystem) and those who are not nearly as connected or able to participate. Second, they said social and political divisions will be abetted by algorithms, as algorithm-driven categorizations and classifications steer people into echo chambers of repeated and reinforced media and political content.⁸⁵

"Political campaigns are about to get hyper-personalized, thanks to advances in a few exponential technologies."

 DR. PETER DIAMANDIS
Executive Founder
Singularity University

"Political campaigns are about to get hyper-personalized, thanks to advances in a few exponential technologies," according to Dr. Peter Diamandis, executive founder of Singularity University. He predicted that the following would improve significantly and be widely deployed by 2020: (1) AI and machine learning able to profile us, (2) the Internet of Things, artificial reality, biometric sensors, and cameras able to recognize and track us anywhere we go, (3) photorealistic avatars and algorithmic audio dubbing, for the creation of fake videos of candidates, and (4) micropayments and blockchain applications, for impulse donations.⁸⁶

While the authors of the Pew study saw several positive trends in the growing sophistication and use of algorithms and data analytics (e.g., data-driven approaches to problem solving), they also identified such concerns as the potential for inbuilt biases and deepening divides. They called for increased "algorithmic literacy, transparency, and oversight."⁸⁷



People know the fragmentation of public discourse is happening and, even if they wanted to, have little confidence to counteract it.

People know the fragmentation of public discourse is happening and, even if they wanted to, have little confidence to counteract it. The 2015 Pew Research study on trust in government also asked respondents whether they had confidence in their own collective political wisdom. This response came from across political lines:

Just 34 percent say they have a very great deal or good deal of confidence in the wisdom of the American people when it comes to making political decisions, while 63 percent have little or no confidence. In January 2007, these opinions were the reverse—57 percent had at least a good deal of confidence in the political wisdom of the people, while 41 percent did not.⁸⁸

There are signs that citizens are supporting journalists and their institutions again. In its *2018 Global State of the Media Report*, Cision reported more positive news:

The New York Times reported more than 10 percent year-to-year revenue growth for the fourth quarter of 2017 and 7.7 percent for the full year—a boon for an industry that had largely been in decline. According to Poynter, The Times now has more than 2.6 million digital-only subscribers, 3.6 million including print and the verticals. According to AdWeek, cable news ad revenue grew a whopping 25 percent year over year.⁸⁹

People are seeing the value of professional journalism, its reporting on many critical stories, and influencing how they think about politics, the economy, and their place in the world.

Fake news and trust in media are still concerns, but the dial is moving in a positive direction. It could be a recognition of the personal risk journalists take on, when they speak truth to power and hold leaders accountable for their actions, including looking the other way when their peers in other countries or companies violate human rights. The October dismemberment of journalist and *Washington Post* contributor Jamal Khashoggi inside the Saudi consulate in Istanbul made global headlines, as did Donald Trump's desire not to offend Crown Prince Mohammad bin Salman.⁹⁰ Cision's key takeaway: people are seeing for themselves the value of professional journalism, its reporting on many critical stories and influencing how people think about politics, the economy, and their place in the world.

Privacy and security challenges to the autonomy of the individual

Big Brother is a reality. Digital technologies, including big data, have led to an unprecedented loss of personal privacy, loss of control of personal information, and new threats to our personal autonomy and security. As daily living increasingly occurs online, large companies harvest our digital footprints, store the information in huge data warehouses, analyze the data from many perspectives and/or sell it to others who sell us a product or service, offer us personalized content, persuade us to vote in a certain way, or influence our actions.



While privacy laws exist in most jurisdictions, legislators struggle to find the right balance, and enforcement is increasingly impossible.

The data harvesters do not limit themselves to our online shopping, our use of credit, debit, or loyalty cards, our clicking on “like” or “dislike,” and our browsing histories. They also dig into health information through monitoring devices, our DNA when we research our genealogy, who lives under the same roof, when we leave and return home, where we go and whether we drive there, and the temperature of our homes. It includes linking databases developed for separate purposes, bringing together many data points on a single individual. Separately, these data may have had little meaning beyond their original purpose but, when combined, paint a comprehensive picture. Digital cameras watch our city streets, transit systems, highways, and buildings; and facial recognition software identifies us whenever we pass through a field of view.

While privacy laws exist in most jurisdictions, legislators struggle to find the right balance, and enforcement is increasingly impossible. European authorities are regulating online companies operating in Europe and protecting personal privacy: the EU General Data Protection Regulation (GDPR) went into effect in May 2018, fundamentally altering how companies may handle individual data across every sector, from healthcare and education to banking and retail.⁹¹ In contrast, the United States has relaxed rules around data tracking and sharing by Internet service providers (ISPs). It may be a lack of understanding about what these companies do. In joint hearing before the US Senate Judiciary and Commerce, Science, and Transportation committees—which was scheduled in the wake of revelations about Cambridge Analytica and Russia’s use of social media to influence the 2016 elections—Senator Orrin Hatch (R-UT) asked Facebook CEO Mark Zuckerberg, “How do you sustain a business model in which users don’t pay for your service?” Zuckerberg was taken aback. His reply: “Senator, we run ads.”⁹²

Even when offered the choice, many people do not opt out of data collection and, for convenience, will click their consent in exchange for what they see as a benefit; they’re likely unaware of how the service providers are using, sharing, or selling their information to data brokers and governments.

While there are laws in place limiting state surveillance of citizens and visitors, there are few rules (if any) preventing government agencies from buying third-party data for profiling people.

While there are laws in place about government surveillance over its own population, there are few if any rules about the purchase of data held in public databases by government agencies such as police departments that need data for population profiling. The 2002 film, *Minority Report*, got the timing wrong: the movie’s depiction of the pre-crime unit in 2054 appears to be manifesting more quickly. China is developing Sesame Credit, a social credit scoring system that tracks how obediently citizens tow the party line.⁹³ It leverages the advantages of blockchain technology and big data.⁹⁴ Ant Financial, an Alibaba company, has been developing it to calculate credit scores based on online shopping habits, business dealings, and how people interact socially online.⁹⁵ High scorers will get preferential treatment such as better access to loans, whereas low scorers could be penalized for their mistakes, losing welfare and social security. The Chinese government aims to implement the system by 2020.⁹⁶ Its goal is to enhance market economy regulation and good behavior.



The digital economy has also opened new threats to personal security. Every day we hear of major cybercrimes, online scams, and other fraudulent behaviors, including identity theft based on digital footprints left online. Criminals and terrorists use data encryption and other digital technologies as they coordinate their activities online. Hackers have released highly personal and private information stored on people's mobile devices, while others have virtually seized computers in search of ransom. Social media provide bullies with ready-made platforms to harass incessantly, anonymously, and ubiquitously, which seem to embolden them and dishearten their victims, with consequences as serious as suicide.

Beyond the loss of privacy and threats to security, these trends should concern us because data analysis using unknown algorithms that can be highly misleading and lead to surprising, even harmful, results, as well as others profiting from information that is rightfully ours. Two companies in particular—Facebook and Google—with their millions of daily visitors leaving breadcrumbs all over the WWW make billions of dollars from these data by selling targeted advertising.

According to an article in the *Washington Post*, quoted in the *New York Review of Books*, Facebook maintains 98 data points on each of its members based on members' own activities on Facebook (including photos or information about us posted by others) as well as information it purchases from some 5,000 data brokers with some 10 million public data sets. "These ad choices are the coin of the Facebook realm."⁹⁷ In 2016, Facebook made almost \$27 billion from advertising, up by 57 percent from the previous year.⁹⁸

We have entered an era of "surveillance capitalism" with many companies making large amounts of money based on data we've knowingly and unknowingly provided.

We have entered an era of "surveillance capitalism," with many companies making large amounts of money based on data we've knowingly and unknowingly provided.⁹⁹ While questions are increasingly being raised about the "return" on this advertising expenditure and also the risks to the advertiser of being placed beside highly questionable content, the overall trend toward greater use of our personal data by others is clear.

Some say, "Forget about privacy, it's impossible in the digital era, and I don't have anything to hide anyway." In his well-known TED talk in October 2010, Glenn Greenwald reminded us of just how much we do value our privacy and why it matters. He noted the danger of assuming that people who care about privacy must have something to hide and gave examples of how even the executives of Google and Facebook care very much about their own privacy. He also noted privacy is essential for democracy to flourish, with significance far beyond the secret ballot:

[A] society in which people can be monitored at all times is a society that breeds conformity and obedience and submission, which is why every tyrant, the most overt to the most subtle, craves that system. Conversely, even more importantly, it is a realm of privacy, the ability to go somewhere where we can think and reason and interact and speak without



the judgmental eyes of others being cast upon us, in which creativity and exploration and dissent exclusively reside, and that is the reason why, when we allow a society to exist in which we're subject to constant monitoring, we allow the essence of human freedom to be severely crippled.¹⁰⁰

Challenges to our biosphere

Digital technologies—including the management and use of vast and growing amounts of information—have been part of the problem.

Digital technologies contribute to both environmental problems and solutions. Previous social contracts have overlooked our planet, but a meaningful social contract for the digital economy must include environmental sustainability. We can no longer take the natural environment for granted; ignoring the environmental impact of our actions has had severe negative consequences.

In fact, on its 70th anniversary in 2015, the United Nations adopted a major plan to protect the planet, end poverty, and ensure prosperity for all entirely under the umbrella theme of sustainability, “Transforming our world: the 2030 Agenda for Sustainable Development.”¹⁰¹ This plan includes 17 sustainable development goals and 169 targets that cut across all aspects of life on Earth, including affordable and clean energy, sustainable cities and communities, responsible production and consumption, and climate initiatives to be implemented by member countries over the next 15 years:

Natural resource depletion and adverse impacts of environmental degradation, including desertification, drought, land degradation, freshwater scarcity, and loss of biodiversity add to and exacerbate the list of challenges [that] humanity faces. Climate change is one of the greatest challenges of our time and its adverse impacts undermine the ability of all countries to achieve sustainable development. Increases in global temperature, sea level rise, ocean acidification and other climate change impacts are seriously affecting coastal areas and low-lying coastal countries, including many least developed countries and small island developing States. The survival of many societies, and of the biological support systems of the planet, is at risk.¹⁰²

By 2025, information technology could consume up to 20 percent of the world's electricity.

Digital technologies—including the management and use of vast and growing amounts of information—have been part of the problem. Data storage, processing, and transmission, the need for each increasing as digital technologies become more pervasive across all sectors, consume large amounts of energy, and rapid technological change combined with consumerism has led to frequent product updates and massive amount of electronic waste (e-waste). By 2025, information technology could consume up to 20 percent of the world's electricity.¹⁰³ Bryan Walsh wrote for *Time* magazine,

In his report, [Digital Power Group CEO Mark] Mills estimates that the ICT system now uses 1,500 terawatt-hours of power per year. That's about 10 percent of the world's total electricity generation or roughly the combined power production of Germany and Japan. It's the same amount of



electricity that was used to light the entire planet in 1985. We already use 50 percent more energy to move bytes than we do to move planes in global aviation.¹⁰⁴

More broadly, digital technologies enable mass production and the formation of a global economy, with both positive and negative consequences. With respect to the environment and the use of carbon fuels in both production and transport, some have used globalization as an argument against environmental protection as well as a driver for investment in sustainable technologies.

Given all the above, both positive and negative, we must include the environment and our impact on the biosphere in the new social contract for the digital economy. We have put this topic under the theme of society, because environmental degradation harms livelihoods and disrupts communities.¹⁰⁵ Therefore, its sustainability is a societal issue, and digital technologies can contribute to the better understanding, management, and use of information across all of sectors of society to create a more resilient biosphere.

Toward a new social contract

It is clear that the post-World War II social contract is no longer working. What do we replace it with and how do we implement it—quickly? How can we avoid massive social disruption or worse? Are our western democracies destined to become ever more fragmented with no unifying concepts or principles regarding how we choose to live, work, and play together while sharing the same spaces and protecting our natural environment for future generations? How do we handle the fact that even the very concept of democracy as the best means of organization is increasingly under question by younger generations?

“Across numerous countries, including Australia, Britain, the Netherlands, New Zealand, Sweden, and the United States, the percentage of people who say it is ‘essential’ to live in a democracy has plummeted, and it is especially low among younger generations.”¹⁰⁶ While 72 percent of Americans born in the 1930s believe that democracy is essential, only 30 percent of those born since 1980 in the United States share that belief.¹⁰⁷

In December 2016, *The Economist* wrote of the need for vision and leadership today as they were needed in the late 19th century with the technological, economic, social, and political turmoil faced at that time.¹⁰⁸ While some saw authority, protectionism, and the slowing down of change as the best way to go, the liberal viewpoint that power should be dispersed and individuals enabled to choose what is best for themselves under the rule of law and in competitive markets carried the day.

The liberal viewpoint that power should be dispersed and individuals enabled to choose what is best for themselves under the rule of law and in competitive markets carried the day.



All segments of society have a role to play in addressing our current challenges and restoring confidence.

But this direction was based on a fundamental belief in progress, that overall the world and people's lives are changing for the better. Many people in many western countries, including the United States, no longer share that belief. Many have not seen income growth in many years, technology has permanently eliminated many jobs, they are frustrated with their political leaders' inability to address their needs fairly, and they are no longer optimistic for a better future. According to *The Economist*,

If it is to thrive, liberalism must have an answer for the pessimists, too. Yet, during those decades in power, liberals' solutions have been underwhelming. In the 19th century liberal reformers met change with universal education, a vast program of public works and the first employment rights. Later, citizens got the vote, healthcare, and a safety net. After the second world war, America built a global liberal order, using bodies such as the UN and the IMF to give form to its vision. Nothing half so ambitious is coming from the West today. That must change.¹⁰⁹

That is the big challenge: what is the new social contract that should guide the digital era? What do we need to change going forward so we continue to progress in a way that is more inclusive and more sustainable in terms of the economy, society, and our environment?

In this section, we introduce what we believe are the key directions for a new social contract—a contract based on recognition of our mutual interdependence—for discussion and debate about what needs to change and how we should change it. Then we present specific solutions that could begin to make that new social contract into reality. All segments of society—government, business, civil society, and we as individuals wearing all our hats—have a role to play in addressing our current challenges and restoring confidence. Professors Jody Hoffer Gittel and Thomas Kochan wrote,

The social contract framework—the notion that different components of society compromise to realize a greater mutual benefit—has much to offer. It reminds us that we have the opportunity—and perhaps the obligation—to construct a society that works for ourselves, our fellow citizens, and the next generation.¹¹⁰

Citizens of the world, unite, for only by breaking out of our silos and engaging each other in honest dialogue can we hope to build a more equitable, productive, and inclusive economy.

While selfishness and “looking out for Number One” may work for the short term, neither individuals nor business can succeed in the long term in a world that's failing.

We're calling for a “Declaration of Interdependence.” Although we're not the first to use this phrase, it is appropriate in this context.¹¹¹ Citizens of the world, unite—seriously—for only by breaking out of our silos and engaging each other in honest dialogue can we hope to build a more equitable, productive, and inclusive economy. Only by collaborating through local, national, and global solution networks can we build a strong society where every individual has the potential as well as the opportunity to lead a happy, healthy, and productive life!



Business needs to be a responsible participant in the communities in which it operates at the local, national, and international level.

Four pillars of society

So, what's different? If it were obvious that we depended upon each other, no matter where we lived in the world, then business leaders wouldn't have started taking less social responsibility in the 1980s.¹¹² During the same period, elected officials wouldn't have weakened the government's ability to perform core functions. While individuals and civil society have been active, enabled in part by digital technologies, their voices have significantly weakened.

This section proposes a new purpose for each of these four pillars in a new social contract. It's not radically different from "what once was" but emphasizes a few changes from today, especially that the private sector *does* have a "public" responsibility, the state *does* have a legitimate and important role, and the civil society *does* have a significant and legitimate role and is not an afterthought. These can be linked together by multistakeholder networks.

Private sector

Underpinning the proposed new social contract for the digital economy is the renewed recognition and acceptance of the private sector as a major pillar of the social contract. The private sector is the primary driver of economic growth and a major contributor to wealth distribution, a functioning democracy, and a healthy environment. In the past, the private sector has been—in its own interests and in the interests of society overall—a major participant in a functioning social contract and it must return to that role. Business needs to be a responsible participant in the communities in which it operates at the local, national, and international level.

The shareholder perspective, so strong since the 1980s, needs to be balanced with the perspective of other stakeholders, especially labor, with an emphasis on value creation both now and in the long term. Professors Gittel and Kochan observed:

While political philosophies on the appropriate role of the state are debated constantly, there is broad consensus that there is a necessary and important role for the state in any organized society.

A key lesson we have learned in our research is that business has an especially powerful role to play in showing how to get concrete results by working together. In addition to producing high quality, innovative solutions to meet their customers' needs and desires, businesses can also support—or subtly destroy—the middle class and democracy that are at the heart of our culture, and at the heart of their own sustained success.¹¹³

State

Government, or the state, is also a pillar of the new social contract, drawing its legitimacy from the people and acting to meet the overall public interest. While political philosophies on the appropriate role of the state are debated constantly, and do vary, there is broad consensus that there is a necessary and important role for the state in any organized society. In exchange for provision of basic



infrastructure and services to support inclusion in a strong economy and society, safety, security, and ongoing conflict resolution, we support and subject ourselves to the rule of law as defined by our elected representatives and fairly applied by the public service. *New York Times* columnist David Brooks wrote,

*The core of the new era is this: If you want to preserve the market, you have to have a strong state that enables people to thrive in it. If you are pro-market, you must be pro-state. You can come up with innovative ways to deliver state services, like affordable healthcare, but you can't just leave people on their own. The social fabric, the safety net and the human capital sources just aren't strong enough.*¹¹⁴

Civil society

The third pillar is an important means through which people self-organize in various ways to give expression to their beliefs (e.g., religious institutions), to share common interests (e.g., social and recreational organizations), or to address identified issues and priorities (e.g., charities that address social issues at the local, national, or international level). Civil society, as the name suggests, strengthens, and builds social cohesion through public discourse, shared experiences, and problem solving. It has and will continue to have an important role. Both the state and the private sector have at various times in various jurisdictions acted to strengthen or weaken civil society and its institutions (e.g., through tax policies, partnerships, or offloading without commensurate resources).

Whether our values tend toward the highly individualistic or toward the strongly communal, we need not be simply passive participants in society.

Individuals

The fourth pillar of the social contract is individuals themselves who also have a voice and a role to play. That often takes the form of active participation through the first three pillars as entrepreneurs, managers, and workers; taxpayers, voters, and elected representatives; donors and participants in community groups. It also includes our roles as parents, leaders, and participants within society and the values we have and demonstrate to others through our words and actions. Whether our values tend toward the highly individualistic or toward the strongly communal, we need not be simply passive participants in society: we can choose to help shape and continuously improve the policies and framework within which we live and work together.

A new social contract for the digital economy: New directions

In this manifesto, we have talked about the breakdown of our post-WWII social contract as evidenced by numerous serious challenges



Just as digital technologies have contributed to the challenges we face today, digital technologies will have an important role to play in successfully implementing a new social contract.

and why we must initiate the dialogue on a new social contract. We have also proposed that the new contract recognize and affirm the mutual interdependence of all pillars of society, each of which has an important role to play.

In this section, we suggest directions for a new social contract, summarized in Table 1: the first column surfaces the premise on which industrial society based its social contract; the second column describes the disruption; and the third column points to the new direction. We will explore these suggestions in the next section.

To further clarify a very complex subject, we've loosely grouped the nine major assumptions, disruptions, and directions into three broad themes: the economy, the state, and society. Just as digital technologies have contributed to the challenges we face today and the breakdown of the old social contract, digital technologies will have an important role to play in successfully implementing a new social contract.

Table 1: A social contract for the digital economy

<i>Old social contract</i>	<i>Disruption/challenge</i>	<i>New social contract</i>
THE ECONOMY		
	Structural unemployment	1. Rethinking work
Reliance on full time jobs and full employment as the primary vehicle to distribute wealth and other benefits such as healthcare and long-term income security.	Increasing number of “precarious” workers and pervasive structural unemployment putting more people at economic risk as well as undermining their identity and confidence; sub-optimal decision-making due to importance of benefits tied to “job.” Robotics and AI advance at such a pace that large numbers of jobs are being permanently displaced. Learning machines will soon surpass human capabilities creating new risks.	Encouraging new jobs in the fourth industrial revolution. Greater emphasis on supporting job mobility and ongoing economic security through universal basic income and a portable safety net. A code of ethics is required to guide development of AI.
	Growing inequality	2. Pre-distribution of wealth
Governments, through policy and taxpayer dollars, provide social safety nets to protect people left out of the economy, including the unemployed, poor, sick, disabled, and elderly.	Growing income inequality puts many more people at risk. Large and complicated programs are expensive, confusing, uncoordinated, and often ineffective. They're also frequent targets of competing political philosophies, with abrupt changes in criteria and funding.	New means of wealth creation and inclusion in the formal economy through technology.



<i>Old social contract</i>	<i>Disruption/challenge</i>	<i>New social contract</i>
	<i>Asymmetrical power</i>	<i>3. Distributed power</i>
<p>Business and labor viewed as important pillars of social contract; businesses provide jobs, income, and other benefits to workers who are active stakeholders in the workplace as well as consumers and part of a growing middle class. Organized labor also viewed as important component of social contract ensuring voice of labor in key decision-making.</p> <p>Sovereign governments set policies within their jurisdictions in the public interest with a reasonable expectation of their effect.</p>	<p>Since 1980s, significant rise in the power of the shareholder and decline in the power of labor with greater emphasis on short term value to investors than other economic measures. Industrial technology controlled by powerful forces. Globalization of trade, mobility of investment (more than labor); trade agreements that give rights to international businesses that may supersede local laws; global competitiveness putting pressure on wages and organized labor.</p>	<p>Through policy and tangible steps, reaffirm business as an active participant in the social contract to reflect that businesses benefit from, and are responsible to, a healthy local, regional, and national workforce, economy, and society, now and for the future. Strengthen voice of labor, community, and other stakeholders in policy and business decision-making.</p>
<i>THE STATE</i>		
	<i>Crisis of democracy</i>	<i>4. Participatory democracy</i>
<p>People trust their elected governments to represent them and act in the public interest. Government processes are fair, open, transparent, and accountable.</p>	<p>Democratic institutions increasingly accountable to funders not citizens, processes opaque and citizens passive. Government leaders react to polling; perceived lack of leadership. Loss of trust in politicians at the same time as there is a rise in grassroots movements and a perceived rise in populism.</p>	<p>Reaffirm principle of strong democratic institutions as an essential pillar; introduce mandatory voting (where it doesn't already exist); Implement principles of openness, transparency, and accountability. Implement strong election finance reform to free democracy from big money.</p>
	<i>Ineffective government</i>	<i>5. High-performance government</i>
<p>Citizens consent to let governments enforce laws, establish programs, and provide infrastructure and services in the public interest paid for through taxation.</p>	<p>Growing gap between public expectations and delivery leading to loss of trust in governments to spend taxes wisely and cost-effectively in the public interest.</p>	<p>Strengthen government's capability to plan, manage, and implement effective programs and services in the public interest. In so doing, reaffirm the legitimate role of government as a key pillar.</p>



<i>Old social contract</i>	<i>Disruption/challenge</i>	<i>New social contract</i>
	<i>Failing Institutions</i>	<i>6. Collaborative institutions</i>
Strong public-private institutions including education, healthcare, and science and research contribute to a healthy society and economic growth. Free access to basic education for all (usually understood as K-12). Quality healthcare accessible to everyone at affordable cost.	Increasingly unsustainable health costs are rising faster than improvements in health outcomes. Education fragmented with uneven results. Widening gaps in access to quality education at all levels. High school education is no longer sufficient to participate in rapidly changing digital era economy. Industrial era pedagogical models no longer appropriate. Public funding for research and science being squeezed as governments have encouraged market-driven approaches.	Publicly funded K-12 and post-secondary education and increased support for lifelong learning as a foundation of a healthy economy; collaborative science and research; affordable healthcare for all. Strengthen collaboration within and across institutions for better outcomes.
<i>SOCIETY</i>		
	<i>Fragmentation of public discourse</i>	<i>7. An informed society</i>
Active and diverse free press across multiple channels providing information and laying the groundwork for a shared understanding of complex issues. Value placed on evidence-based decision-making.	With rise of digital society, lots of information from a wide variety of sources with many beneficial results. Multiple competing sources of information online often with little critical analysis; intentionally false information; narrowcasting in echo chambers to affirm opinions; cyber bullying, among other trends. “Free” information online is breaking down business model for traditional media; breakdown in social discourse exacerbated by social media.	Increase access and participation on the WWW; increase transparency and accountability for information and processes online; improve capacity for critical analysis; reaffirm public support and respect for science and research and a strong “Fourth Estate” in support of evidence-based decision making.
	<i>Personal autonomy threatened</i>	<i>8. Digital age identity</i>
Individual Freedom: right to personal privacy, security and autonomy.	Loss of control of personal information and identity in a digital era. In addition to growing cybercrimes, including fraud and identity theft, large-scale commercialization of personal data often without knowledge of the individual.	Personal control over personal information and identity through a personal avatar and ongoing security of the person and their information.



<i>Old social contract</i>	<i>Disruption/challenge</i>	<i>New social contract</i>
	<i>Challenges to our biosphere</i>	<i>9. Resilient biosphere</i>
In period of perceived abundance and unlimited resources, little to no reference to environment in previous social contract.	Climate change and pressure on the natural environment (air, water, habitats, species at risk) from human activity.	Better understanding, management, and use of information across all sectors of society, especially power, buildings, transportation, and the technology sector itself will support increased sustainability of our environment at the micro and macro level.

A new social contract: Economic

Based on the core concept of interdependence and the new directions in the above table, this section proposes how a new social contract could be put into practice, aided, in part, by digital technologies. This section illustrates how we can move from widening economic inequality to narrowing these gaps, from failing state institutions to strengthened institutions, and from a society in information crisis to an information-based world. While digital technologies have undoubtedly contributed to many of the challenges, they will also be a significant part of the solutions. Just as the new directions are interrelated, several of the proposed solutions overlap or serve more than one goal. This only makes sense in our complex and interdependent world.

Rethinking work

The overarching theme here, under the direction of a more democratic economy, is finding the new opportunities for human employment in the Fourth Industrial Revolution. How can we encourage those jobs, and how can we manage the shift? Is our economy only about delivering goods, services, and innovation? Or is it also about creating employment? Where can we apply our human ingenuity, creativity, and emotions, and how can we manage the labor force disruption?

The overarching theme here is finding the new opportunities for human employment in the Fourth Industrial Revolution. How will we manage labor force disruption?

We want to up the ante. Many people get satisfaction from their actual work, moving the ball forward, making a contribution. We want leaders in both public and private sectors to unite and say, "Yes, we can do this. We can guarantee you work." It won't be a job like our parents had. It won't necessarily come from companies. But there's a lot of work to be done, and we need other ways to fund those who do it. Perhaps funding will come from civil society, through philanthropy. Perhaps the concept of "the commons" will grow, like neighborhood gardens. Those who call that socialism need to come up with a better plan, not a tired pejorative; and the plan needs to embrace more people and engage more minds. We need more ideas, and we need open and inclusive debates.



We propose that the new social contract guarantee work, support job mobility, and provide social security through a universal basic income and a portable safety net.

"I don't think we're going to have a choice. I think [UBI is] going to be necessary. There will be fewer and fewer jobs that a robot cannot do better."

 **ELON MUSK**
Founder
Tesla and SpaceX

The businesses, governments, researchers, and academia all have roles to play in identifying these opportunities, encouraging investment, and preparing a workforce for these jobs. Governments especially need to get much smarter in understanding where the economy is going, designing new measures, and cutting old ones, as appropriate for the digital economy.¹¹⁵

Most people will need to change jobs often throughout their careers and undertake periodic or even ongoing learning and retraining. There is a large and growing precarious workforce, structural unemployment, and worker displacement through automation, AI, and robots.

There have always been optimists and pessimists, and we've always leaned toward optimism. For economic and social reasons, we should continue to strive for full employment, whether employment comes through market forces or by performing many essential functions in the public domain. Many will be piecing together a living from multiple sources—including new means of wealth creation beyond a "job." With few "jobs for life" and frequent "gaps" between opportunities, workers will need job mobility in the digital economy. Others will fall through the cracks on a more permanent basis.

Therefore, we propose that the new social contract not only guarantee work, but also support job mobility and provide a social security through two separate but related measures: a *universal basic income* (UBI) and a *portable safety net*. In short, in the digital economy, a full-time job should no longer be the predominant means of achieving economic security.

The proposal for a UBI comes under various labels—guaranteed annual income, guaranteed minimum income, basic income guarantee, unconditional basic income, or negative income tax—but the basic idea is the same: ensure that everybody has a level of income security regardless of their status. "I don't think we're going to have a choice," said Elon Musk. "I think it's going to be necessary. There will be fewer and fewer jobs that a robot cannot do better."¹¹⁶ While the proposals vary in implementation, the UBI is usually proposed as unconditional funding to replace many, if not all, of the siloed and application-based programs that governments have launched over the years to address specific needs (e.g., childcare, housing, food, medicine, etc.).

Thought leaders have argued this idea in the literature for years and even piloted it in some jurisdictions, perhaps the earliest in Dauphin, Canada, in the 1970s. The call for a UBI from thinkers on both the left and right is growing louder because of the increasing number of precarious workers, the expected structural unemployment, an aging population, and issues related to impoverished seniors. While we believe in economic policies aimed to achieve full employment, we also believe that UBI is an idea whose time has come. We can learn from UBI pilots in Finland, Ontario, and other jurisdictions.¹¹⁷

Many arguments have been put forward both for and against UBI. Supporters of a UBI propose that it is the best model to provide income security from a macro and a micro economic perspective, that it would restore dignity to the individual by putting choice of how to spend their funds back into the hands of people, and it would reduce administrative complexity and costs. Others argue that a UBI is too expensive to be sustained, would increase dependency, be a disincentive for people to work, undermine organized labor and the hard work already invested to achieve worker benefits, and be a barrier to necessary economic transformation in the Fourth Industrial Revolution.

Some are strongly opposed to the idea for political as well as practical reasons. Anke Hassel of the Hertie School of Governance suggests that the concept of UBI is a “dead end” because of its high cost and incentives that would not be optimal for the long term: “It’s a seductive poison that benefits the margins of society at the expense of the middle class.”¹¹⁸ She argues that the concept would cause further social divides, block social mobility, and would not be supported by the public in any case as it lacks social legitimacy. She references a recent Swiss referendum that roundly rejected the idea.

Opponents to the UBI argue that it would increase dependency, dissuade people from working, undermine organized labor, deter real economic transformation, and be too expensive to sustain in perpetuity.

Laura Pennacchi, a former politician in Italy and now coordinator of the National Economy Forum of CGIL, the largest trade union in Europe, wrote in a recent article:

The justification for “universal income” often takes the form of “well, there are no jobs anyway, and there won’t be any in the future either, or what there is will just be menial.” However, this justification makes the “citizen’s income” a kind of resigned acceptance of reality as it is, paradoxically sanctioning and legitimizing the status quo. As a result, no one need feel the need to demand deeper changes, and there is a ready-made justification for the public sector to throw off more and more of its responsibilities, as any administrator finds it easier to make a monetary transfer than grapple with the problems of maintaining, rebuilding and strengthening a social fabric that is vast, complex and structured. Western societies would be destined to become “jobless societies.” ... There is almost no attempt in this perspective to combine an analysis of the changes with an observation of the structural elements of how accumulation and production function in the destructive neoliberal version of the capitalist system.”¹¹⁹

On the other hand, Guy Standing of the University of London, in a recent paper for the World Economic Forum and in an article for *The Guardian* newspaper, makes the case for why a UBI is not only necessary, but also urgent, given that “the 20th century income distribution system has broken down irretrievably.”¹²⁰ Considerable effort was devoted to the topic at the 2017 WEF forum in Davos, with many calling for a UBI as referenced in the closing summary.¹²¹ Addressing specific concerns raised by some representatives of organized labor, Daniel Raventós and Julie Wark in *Counterpunch* have systematically countered these arguments to conclude that a



A portable safety net is not a new idea—it's just a matter of mustering the political will to get it done.

UBI is the best way forward at this time.¹²² Calls for a UBI come not solely from academia and think tanks, as we've already seen from the government commitments in Finland, Ontario, and elsewhere. At a recent forum in Dubai, Elon Musk commented, "The much harder challenge is: How will people then have meaning?"¹²³

On balance, we believe that the arguments for a UBI outweigh the disadvantages and propose that it be implemented with other measures that support increased income security through employment, including a portable safety net. We can learn much through pilots already underway and apply the lessons to future UBI implementation on a wider scale.

Our second major proposal is for a portable safety net to restore social security to those who are working but may not receive benefits from their employer. It will restore benefits to those who work in multiple jobs and who change jobs often, such as contractors, freelancers, and part-time workers. Such a measure will help to stabilize the economy by restoring the responsibility of all employers to support their workers with reasonable wages and benefits by eliminating loopholes that encourage some employers, especially those in the so-called "sharing economy," to hire part-time workers and reduce or cut benefits entirely. It will also end the "golden handcuffs" incentive, which encourages people to stay in jobs too long when they could be pursuing other opportunities or be more productive elsewhere. Most importantly, it reestablishes the economic security that was part of the New Deal.

A portable safety net is not a new idea, and there are various models out there regarding what's included and how it would work; it's just a matter of mustering the political will to get it done. One model, developed by Steven Hill, is based on extant multiemployer benefits plans in many industries. It would establish *individual security accounts*, into which all employers would pay, depending on the number of hours worked.¹²⁴ Such a program, along with commensurate policy changes to end arbitrary rule differences between different types of workers, would bring significant benefits to workers and the economy overall. Of course, such a scheme would not be possible to implement without modern information management and technology to support the accounting that goes along with each individual security account.

Our digital era social contract should also address another aspect of the growing use of robotics and advances in AI and blockchain: a code of ethics.

Our digital era social contract should also address another aspect of the growing use of robotics and advances in AI and blockchain: a code of ethics. As machines increasingly take on functions formerly performed by humans, including what were once considered complex tasks requiring human judgment (e.g., assessing applicants for employment or diagnosing disease), we should understand the formulae or algorithms that drive these processes to ensure transparency of assumptions, how the algorithm works, fairness, and incorruptibility among other factors.¹²⁵

Also, as machines are increasingly able to "think and learn" at much faster rates than humans, many reputable scientists and other



thinkers have begun to raise ethical questions that were previously only the subject of science fiction, that is, “Who’s minding the machines?” and “What protections are there that intelligent machines won’t harm humans?”¹²⁶ As technologies fuse across the physical, digital, and biological spheres in the Fourth Industrial Revolution, what ethical guidelines need to be applied to biotechnologies, and where?

We can change how wealth is created in the first place and captured a priori (predistributed) rather than an a posteriori rejigging.

While robots, AI, and biotechnology have already brought us tremendous benefits across all sectors, with more to be developed, it is time to think about a code of ethics for research and development in robotics and AI to help avoid, or at least minimize, unintended negative consequences. Given the large body of specialized work underway on this topic, we do not propose such a code in this paper. Rather, we simply flag the issue and endorse the development of such a code through broad consultation and the inclusion of robotics AI and biotechnology as a new element of a modern social contract.

The pre-distribution of wealth

Today, the main proposal to address growing economic inequality is to redistribute wealth—to tax the rich and distribute money to the rest. Setting aside the merits and disadvantages of this idea, the Digital Age has introduced a new concept. Rather than rebalancing, we can change how wealth is created in the first place and captured *a priori* (predistributed) rather than an *a posteriori* rejigging.

As a necessary precondition to new means of wealth creation and the pre-distribution of wealth, and to increase participation in the digital economy more generally, which remains our primary goal, we first need to ensure universal access to high-speed broadband so everyone has the capability to participate. This idea is not new, with many countries having broadband policies, including funding, but implementation of these plans is far from complete.¹²⁷

We're not talking only about individuals developing new products and selling them from a small rural town. We're asking, why move jobs offshore when they could be done down the street?

Often, policymakers and funders, assuming the task is complete or will be complete soon as the result of market forces, have moved on to other priorities. Usually it is rural areas and small towns where high-speed service is not available and/or very expensive, areas, of course, which also experience high unemployment—but gaps continue to exist even in the largest cities.

Rather than repeat the excellent work on this topic, we should address this gap as more jobs are becoming fully digitized and could be done from anywhere high-speed broadband is available. It’s not (only) about individuals developing new products and services and selling them from a small town or their kitchens: why move jobs offshore when they could be done down the street?

The second proposal to address income inequality is to enable people to monetize their information and other assets rather than having businesses use them primarily for their own commercial gain. This is now possible through blockchain technologies, as Alex Tapscott and I wrote in our recent book *Blockchain Revolution* and as I spoke



Could we change the way that wealth gets created in the first place by democratizing wealth creation, engaging more people in the economy, and then ensuring that they get fair compensation?

The considerable shift in economic power has contributed directly to greater inequality, as economic growth over the last quarter century has accrued almost entirely to those who already have power and wealth.

about in a recent TED Talk.¹²⁸ In that talk, I addressed the problem of inequality and how our only approach today is to redistribute wealth after the fact through taxation and various benefits programs. “Could we pre-distribute wealth? Could we change the way that wealth gets created in the first place by democratizing wealth creation, engaging more people in the economy, and then ensuring that they get fair compensation?”¹²⁹ There are many ways to do this:

- » Putting land titles on blockchain to ensure that the rightful owners of land can utilize and be fairly compensated for this asset. This is especially important in the developing world, but also beneficial in developed countries;
- » Eliminating the middleman to create a true “sharing economy” and enabling direct peer-to-peer transactions on assets ranging from available rooms, transportation, or underutilized equipment;
- » Eliminating the middleman in personal financial transactions such as remittances;
- » Enabling creation and protection of our digital identities in our own “digital black box” which allows everyone to decide what information they wish to share, with whom, and for what compensation, if any;
- » Fixing the broken intellectual property model by using blockchain to ensure that creators (of art, music, books, etc.) are properly compensated for their work, and;
- » Creating a new halcyon age of entrepreneurship where large numbers of the population create and share wealth. Because of networks, especially blockchain, small companies increasingly have many of the advantages of large companies.

Disruptive? Yes. Fairer? Yes. These are just a few of the ways that we can use blockchain to reduce inequality by giving control over assets to their rightful owners and by enabling these owners to monetize those assets.

Distributed power

The third topic to address in a new social contract under the broad economic theme is establishing a better power balance among owners and shareholders, workers, communities, and other stakeholders, which we’ve labelled *democratic ownership*. The considerable shift in economic power has contributed directly to greater inequality, as economic growth over the last quarter century has accrued almost entirely to those who already have power and wealth—not only at the enterprise level, but also at the institutional and political level, as the voices of capital, the financial sector, and multinational firms have influenced policy more than small business, labor, or communities that face the loss of jobs and opportunity. This imbalance also harms entrepreneurs and start-ups trying to compete in markets where large incumbents have concentrated data and power.



We will get there only through open discussion and debate on a new social contract with the digital era and by strengthening our democratic institutions.

Based on the concept of mutual interdependence, we propose a return to a social contract that recognizes business as an important pillar in a strong economy and a healthy society with responsibilities beyond the bottom line—and supports this pillar through practical measures such as strengthening long-standing provisions in the areas of anti-competitive behavior, labor rights, taxation, and consumer protection. In global trade, we need to enshrine these principles in international agreements, in support of the 1948 UN Declaration of Human Rights in a globalized economy.

We will get there only through open discussion and debate on a new social contract with the digital era and by strengthening our democratic institutions, which have given big business an inordinate say in policy decisions. We will get there only through practical measures such as the establishment of countervailing power structures, strengthened institutions, and good governance.

Rather than a race to the bottom or to the top, we need to think of a race to the middle—where most people live. If we value and strengthen this middle with more than lip service, we can attain a stronger and more stable economy that benefits far more people. While these proposed measures aren't digital per se, we can monitor business transparency and accountability online.

We are not alone in calling for greater business involvement, first in defining a new social contract as well as proposing solutions. Professors Gittel and Kochan emphasized the importance of breaking down siloes. We need to strive "to unite stakeholders around a common purpose rather than seeing each individual as one of many competing and mutually exclusive interests."¹³⁰

The American Prosperity Project, an initiative of the Aspen Institute, has brought together leaders from both industry and organized labor to develop a framework to encourage business to engage in more long-term thinking, including investments in infrastructure, research, education, and training, and recommended changes in tax code and laws around corporate governance in a proposed policy framework.¹³¹

In an article in *The Atlantic* about the framework, Paul Polman, CEO of Unilever, supported the need for looking beyond the quarterly report, "The strategy ends up being focused on the shareholders versus other stakeholders. ... If ultimately the purpose of a company is maximizing shareholder return, we risk ending up with many decisions that are not in the interest of society."¹³² Polman called out CEOs who play the quarterly game and manage their businesses with a short-term view. "Many of the world's challenges can not be addressed with a quarterly mindset," he told *The Atlantic*.



A new social contract: The state

Participatory democracy

When combined with a renewed emphasis on public consultation, an active public media, and strengthened public discourse, increased openness can increase public engagement, government accountability, and trust.

The next three new directions relate to strengthening our state institutions. Declining electoral turn-outs signal the lack of trust in democratically elected governments to act in the public interest. Highly divisive political debates, grassroots movements against institutionalized racism and misogyny, and protests over the decisions of representatives and the outcomes of court cases illustrate the gap between the elected and the electorate. Citizens have taken matters into their own hands and are tackling problems on their own. In this section, we propose two main streams of activity to support a more participatory democracy.

First is the easy to say, but much harder to commit implementation of openness, transparency, and accountability of elected leaders and public service (non-personal government records and processes). With the aid of digital records and processes, some governments have made huge strides but could do more to increase transparency. While leaders have learned to be opaque for obvious reasons—especially the challenge of facing intense scrutiny from other politicians and the media—greater transparency can also educate the public on the complexity of government decision-making. When combined with a renewed emphasis on public consultation, an active public media, and strengthened public discourse, increased openness can increase public engagement, government accountability, and trust.

In addition to more transparency as a means of increasing accountability in and of itself, we propose that smart contracts, enabled by blockchain, will also be useful. In *Blockchain Revolution*, we proposed peer-to-peer networks to track an elected representative's commitments.¹³³ Public websites, watchdog groups, and the professional media do track these promises but we could formalize and automate them through a smart contract model, that is, self-executing agreements that nobody controls and, therefore, everyone can trust.

While we probably shouldn't apply smart contracts to everything an elected leader does, we could use them to track such basic matters as attendance and voting on bills as well as campaign contributions relative to specific campaign promises. Over time we will build more sophisticated models and measures that will increase understanding, transparency, accountability, and trust. A mayoral candidate in London has already called for the use of blockchain to hold elected officials accountable.¹³⁴

We include openness and transparency on our list of proposed measures because publishing government information in useable form could benefit research, solve public problems, or create economic opportunity. Both the US and UK governments have taken significant steps with their open data initiatives over the past few



The second stream of activities we propose as part of renewing trust, commitment, and strength of our representative democracies is to change our electoral processes.

years. In short, governments should have a bias toward publishing information unless they have a compelling reason not to, and we can build this bias directly into modern systems so that they can publish readily at little incremental cost.

The second stream of activities we propose as part of renewing trust, commitment, and strength of our representative democracies is to change our electoral processes in multiple respects: campaign finance reform, moving away from the “first past the post” (winner take all) model, and by introducing online and mandatory voting.

There are different models of political financing in use across the world, all with various advantages and disadvantages. Our main concern is with the unlimited funding by corporations and unions—and the opaqueness of that funding—made possible in the United States through the 2010 Citizens United decision of the Supreme Court. While it is an uphill battle to change the rules around election financing in the United States (see some of the arguments in this analysis from the Atlantic Monthly), we strongly support measures to increase transparency of political (including PAC) fund raising, including online disclosure and inclusion as part of the smart contracts referred to previously.¹³⁵

To balance out the influence of the large and wealthy donors, we support measures to encourage donations from all citizens including public matching-type programs and note such programs can be readily facilitated through technology. In recent years, several candidates have proven the potential of raising significant funds through small donations from many donors (“the long tail”).

Many argue that the first-past-the-post or winner-take-all system used in many western democracies including Canada doesn’t represent the range of the electorate wishes and, therefore, contributes to apathy and mistrust. In multiparty elections, less than 50 percent of the electorate determines the outcome. Other models include variants of proportional representation or a preferential (ranked) ballot. We support changing the first-past-the-post system so that winners must consider all voters’ wishes.

We do think blockchain can help to engage people more collaboratively, come up with better solutions, and build trust in democratic processes.

While we are not fans of direct democracy, we do think blockchain can help to engage people more collaboratively, come up with better solutions, and build trust in democratic processes. As a first step, we propose that voting be mandatory with blockchain-enabled voting, which is tamperproof, private, and secure with instantaneous results. In *Blockchain Revolution*, we wrote, “With time and development, blockchain technology might be the impetus that allows e-voting to transform democratic elections and institutions by effectively and reliably bringing them into the voters’ hands.”¹³⁶

Consider what West Virginia did for the 2018 midterm elections. The state built a blockchain-based mobile voting app for absentee voters in the midterm elections. West Virginians serving in the military and their families cast their ballots through this app on their phone.¹³⁷ This made voting much easier, increased voter trust in the process,



Mandatory voting puts real pressure on each jurisdiction to make voting easy, reduce voter eligibility restrictions, and reinforce voting rights and responsibilities as citizens.

and reduced the number of rejected ballots. Afterward, West Virginia Secretary of State Andrew Warner celebrated the 48 percent voter turnout: “A total of 183,205 West Virginians voted early or turned in an absentee ballot during the early voting period that ran October 24 to November 3. Early voting was historic and turnout was robust—at least 10 percent higher than the 2014 midterms.”¹³⁸

Almost 30 countries have some form of mandatory voting in place, including Australia and many Latin American nations. Mandatory voting puts real pressure on each jurisdiction to make voting easy, reduce restrictive measures regarding voter eligibility or registration, and reinforce the act of voting as more of a responsibility than a right of citizens to maintain the strength of democracy. It should also increase participation from traditionally disadvantaged groups.¹³⁹

While we recognize that mandatory voting is a major decision for citizens whose jurisdictions don’t already have it, it would not only prompt politicians to think about and speak to the interests and priorities of all voters during the electoral process but also encourage eligible voters to think about which candidate best reflects their interests. In our view, mandatory voting would contribute to a more informed and active citizenry and a more trustworthy government responsive to that wider base.

High-performance government

Governments—the non-political bureaucracy at all levels—are caught in a vicious cycle: a decline of trust in government to plan, manage, and deliver effective policies and programs leads to pressure on staff and budgets, which undermines government’s ability to be effective, which further undermines trust. Several factors fuel this cycle:

- » Negative spillover from increasingly divisive and ongoing political polarization
- » Bureaucratic inertia and resistance to change
- » Increased complexity of problems across organizational silos
- » Pressure from business to privatize and open economic opportunities
- » Competition for government attention and resources
- » Pressure from all sides to reduce costs and minimize taxes
- » The inability to attract and retain talented staff and leadership

To some, “the less government, the better”: these factors are contributing to a perfect storm that will shrink bureaucracy.

We propose that we need to foster government operating effectively in the public interest as a legitimate element of the new social contract and to strengthen government’s capability to plan, manage, and implement effective policies and programs (and, therefore,

We need to foster government’s operating effectively in the public interest as a legitimate element of the new social contract.



Once they've set policies, they must implement and enforce them fairly and objectively in each jurisdiction.

reinforce its legitimacy). While some may view this as an impossible, if not naïve, task, we believe that the public servants (i.e., the bureaucracy) ought to be seen as operating in the public interest, seeking public and expert consultation, supporting research, and pursuing evidence-based recommendations. Elected policymakers have a wide scope to debate and determine the overall size and shape of public services and to establish their priorities through legislation, regulation, and funding. But once they've set policies, they must implement and enforce them fairly and objectively in each jurisdiction.

We have a significant opportunity to strengthen the capability and effectiveness of government through information management and digital technologies. These also enable much greater transparency of government (non-personal) information, operations, and processes, and through that transparency, greater accountability. The process to date has been challenging and slow, but governments around the world have made significant progress on, for example, streamlining services, online and mobile delivery, and proactive renewals of permits and licenses. This progress has laid the foundation for more significant improvements, partly because of such technological advances as blockchain and the Internet of Things. These innovations enable the following:

- » Better planning, management, and measurement of policy and program effectiveness
- » More proactive services
- » Greater integration of government programs and services across silos and levels of government
- » True citizen self-service
- » Better management and security of infrastructure and other improvements.¹⁴⁰

We can apply blockchain to new regulatory and enforcement models that simultaneously reduce red tape and increase transparency and compliance.

Blockchain protects from tampering from both internal or external sources and therefore keeps "honest people honest."

For example, regulators could track the commitments made by regulated industries in real time to assess whether they're keeping their promises, such as investments made in renewable energy or improved customer service. That improved accountability can be applied to government itself through "smart" social contracts between governments and suppliers or elected officials and citizens (commitments made/commitments met as measured on blockchain-enabled peer-to-peer networks). We could also use blockchain to ensure the integrity of government transactions and processes such as e-mail records, supply chain management, databases, and decision logs. Blockchain protects from tampering from both internal or external sources and therefore keeps "honest people honest."¹⁴¹

While research shows a significant decline in overall trust in government, when asked about particular functions or services, people express higher trust levels, especially those who have used



those services. As Pew Research found in its 2015 survey of trust in government, most Americans have a very low opinion of government overall.

Just 20 percent say the federal government runs its programs well, and 59 percent say it is in need of "very major reform.... These assessments stand in contrast with the public's more mixed views of government performance at a specific level. In 10 of 13 areas included in the survey, the balance of opinion about government performance is more positive than negative."¹⁴²

The lowest ratings in the 2015 survey were in two of the most complex and divisive policy areas: immigration and lifting people out of poverty. At the same time, the survey showed that most people still expect the government to play a major role in these and other matters.

In Canada, surveys of public satisfaction of government services over several years have consistently shown that people have a higher opinion of government services when they've recently used that service.¹⁴³ These surveys have also shown that getting the desired result/service was the key factor in driving satisfaction levels. Although several factors contribute to trust in government, taking care of the basics—ability to deliver services—through technology is certainly an important priority to help restore people's trust in government.

We support a strong and increased role for government in funding education, health, and research and development.

Collaborative institutions

Today, many of our state and quasi-state institutions and their infrastructures—everything from education, healthcare, and science, to electrical power and regulation—are based on the industrial model. The Industrial Age was an age of scale and standardization where powerful forces pushed out products and services to passive recipients. Mass production, mass marketing, mass education, mass media, and mass democracy pushed out advertisements, television shows, newspapers, products, lectures, medicines, radio broadcasts, and electrical power to people who were relatively inert.

Now with the second era of the Internet it is possible to imagine a new set of institutions where this one-way, one-size-fits-all, top down model of institutions is turned on its head. Teachers, journalists, producers, markets, politicians, doctors, and professors can collaborate with users to co-create value.¹⁴⁴

We support a strong and increased role for government in funding education, health, and research and development as part of a new social contract. We argue that these functions are essential "infrastructure" for a modern economy and strong and healthy democratic society and, therefore, there is an important role for the public, as represented by its government, to ensure that infrastructure is in place.



For health, we support universal healthcare under a single payer model as the only effective way to manage the growing costs and risks of an aging population.

In addition to public funding and compulsory attendance for all students up to the end of high school, we support increased public funding of post-secondary education such that no school could deny an education to students because of their lack of funding nor leave graduates with significant debt. Public funding for post-secondary education as well as increased public support for lifelong learning are essential to prepare students to be active participants in the modern digital economy where ongoing learning and retraining will be the norm. For health, we support universal healthcare under a single payer model as the only way to effectively manage the growing costs and risks of an aging population. For research, we support continued public funding of basic research as necessary to support innovation and future economic growth.

For each of these sectors, there are numerous models by which the infrastructure and specific services may be designed and delivered and where and how public funding should best be directed, but government does have a role in setting the direction and policy, defining the “architecture,” and ensuring its effective implementation. It also means that this infrastructure needs to be designed to meet the needs of the digital economy. There are already excellent models to learn from. In education, for example, Finland and Germany provide post-secondary education free to students from the European Union with both countries enjoying excellent reputations for their educational outcomes. In health, virtually all OECD countries except the United States have publicly funded healthcare, and others can look to learn from them.

Digital technologies also have a role in strengthening education, health, and R&D both within each sector and through collaboration across sectors. Digital technologies are already transforming how education and health are planned, managed, and delivered, and how R&D is conducted. They’re giving new tools to educators and students, care givers and patients, and researchers and developers across sectors and geographies.

For education, we support creative models, such as augmented and virtual reality training and the “flipped classroom,” where students collaborate online and participate in active learning and conceptual thinking under the guidance of an educator.

This paper is too short to provide many examples, but a trend and possibility enabled by digital technologies that we find particularly exciting is the “flipped classroom” model, wherein students review course content online, collaborate with others online and in the classroom, and participate in active learning and conceptual thinking under the guidance of a teacher/mentor in the classroom or via other means in real time. Virtual reality will provide opportunities for training in many fields in highly realistic settings. Of course, technology is already used for distance education and online learning from anywhere, at any time.

Remote medicine, or telehealth, is now widespread, including remote diagnoses and monitoring. The long-awaited electronic health record, with proper privacy protection, will bring both systemic benefits (e.g., through better information management and analytics to guide planning and resource allocation) and benefits to the individual patient (e.g., enhanced case management and reduction in duplicate testing). In addition, new technologies are now used for chronic



Digital technologies can enable individuals to take a more active role in their own educational and health needs.

disease monitoring and management and “aging in place.” In general, digital technologies can enable individuals to take a much more active role in, or even control, their own educational and health needs.

Researchers were the first to use the Internet for collaborating with others across institutions and geographies; they’ve contributed to, and benefitted from, each advance in digital technologies. In the Fourth Industrial Revolution, Brian David Johnson, a futurist at Frost & Sullivan Research, suggested, “Our thinking is limited, innovation isn’t ... to go from digital technology to biology and back. It’s so new we can’t even imagine what we could do.”¹⁴⁵

Finally, as we’ve written about extensively, we believe that multistakeholder global solution networks have a significant role in uniting people from across multiple fields, sectors, and geographies to tackle the complex challenges of our day. In an article in the *Toronto Star*, we explained:

A global solution network (GSN) is a group of independent parties who have been brought together by a world problem they all perceive to be important, and which no single group can handle on its own. They become a network when they begin communicating about and coordinating their activities to make progress, rather than working independently and competitively (as an “industry” in a market economy).¹⁴⁶

Several such networks already exist for purposes of knowledge sharing (e.g., Wikipedia), advocacy (e.g., Avaaz.org), performing a watchdog role (e.g., Human Rights Watch), developing policies or standards (e.g., International Competition Network, Internet Society), governance (e.g., Internet Corporation for Assigned Names and Numbers (ICANN)), operational (e.g., Crisis Commons), providing a platform (e.g., Ushahidi), or several of these roles (e.g., World Economic Forum).¹⁴⁷

“Our thinking is limited, innovation isn’t.”

 BRIAN DAVID JOHNSON
Futurist
Frost & Sullivan Research

Enabled by digital technologies, GSNs cut across traditional institutional lines and bring together the knowledge, experience, and ideas of many individuals and organizations at the community, regional, national, and international levels to collaborate on options and solutions.

Businesses are often involved as important contributors of both ideas and solutions and governments also bring information, ideas, and often play an important implementation role. These networks also engage and strengthen civil society at both the institutional and individual participant level; that is, GSNs engage all four pillars in the new social contract, all of whom are stakeholders in a successful collaboration and outcome.



A new social contract: Society

The informed society

There are still many who are not part of the digital world. That needs to change.

The final three “new directions” for the new social contract relate to building a stronger society in large measure due to the better management and use of information. First, we look at three broad and related approaches to contribute to a more informed society on both the “supply” and “demand” side of the equation: measures designed to continue to increase access and participation on the WWW; measures designed to improve the transparency of information, ideas, and tools that are part of informing our public policy discourse; and measures designed to improve the capability of the population overall for critical thinking. While there will continue to be a massive amount of digitized information available through multiple channels from multiple sources, there are still many who are not part of the digital world. As we said in an earlier section, that needs to change.

We also need to have greater transparency and accountability regarding the source and reliability of information on the WWW as well the tools, including algorithms, used to manage that information and influence opinions and behavior. We need to resource and maintain a strong presence for the Fourth Estate as well as for researchers and scientists to help inform the public discussion. We’ve identified the importance of education to employment, economic growth, and social cohesion. Now we focus on an aspect of that education: stronger foundations in civics and critical analysis.

The World Wide Web Foundation, established by Sir Tim Berners-Lee, the inventor of the WWW, has a five-year strategy initiative aimed at “delivering digital equality” because of its belief that the web is heading down a path toward greater inequality:

We must act now to close the divide between digital haves and have-nots or we risk losing the web’s potential to serve humanity forever. To do this, we must work harder to ensure that everyone has the access, skills, and freedoms to appropriate and control new technologies for their own benefit. We must also make sure that control of the web is not held by a few governments or companies.¹⁴⁸

To this end, the Foundation has identified initiatives in three related areas which we support, namely, ensuring that people’s voices can be heard equally (“power”), holding governments and corporations to account (“accountability”), and closing gaps in access and affordability to the economic and social opportunities of the digital world especially for women and other excluded groups (“opportunity”).

Numerous important priorities are identified, including affordable broadband, strong protections around net neutrality, encouraging diversity of voices online, and rules against online harassment and



intimidation. There are two topics included in the Foundation's plans we want to focus on here, namely, rules against online surveillance and much greater transparency and accountability regarding digital information online as well as how it's managed and used (e.g., search engines, algorithms).

"The Internet is among the few things that humans have built that they don't understand."

 JOHN NAUGHTON
Senior Research Fellow
Cambridge University

[According to John Naughton, senior research fellow at Cambridge University,] "The Internet is among the few things that humans have built that they don't understand." It is "the largest experiment involving anarchy in history. Hundreds of millions of people are, each minute, creating and consuming an untold amount of digital content in an online world that is not truly bound by terrestrial laws." The Internet as a lawless anarchic state? A massive human experiment with no checks and balances and untold potential consequences? What kind of digital doom-monger would say such a thing? Step forward, Eric Schmidt—Google's chairman. They are the first lines of the book, The New Digital Age, that he wrote with Jared Cohen.¹⁴⁹

Far from calling for a reduction of information available online, we first call for even more information—from traditionally excluded groups, from researchers and scientists, and from trained and professional journalists so these voices can form a part of the discussion as it increasingly moves to the digital world. Nor are we calling for content regulation—beyond the application and enforcement of general laws which already exist related to such matters as defamation, fraud or hate speech—that would be a losing battle in any case.

Instead, we support increased transparency online regarding the source of digital content, how search engines are designed, how information is disseminated, and the development of tools to help identify false information, hate speech and bullying, or other anti-social behaviors online. Models for self-governance of social media sites should also be studied and explored, including enforceable codes of conduct.

It is all happening very quickly. Jonathan Albright of Elon University in North Carolina has called today's online environment an "information war." He recently published his research on how "fake news" is being quickly and widely disseminated:

They're sending out thousands of links to other sites and together this has created a vast satellite system of right-wing news and propaganda that has completely surrounded the mainstream media system ... [It's] surrounding and actually choking the mainstream news ecosystem ... like an organism that is growing and getting stronger all the time.¹⁵⁰

Digital technologies and increased public awareness can be used to help us understand, navigate, and use the vast and growing amounts of digital information more knowledgeably, including being more aware of the risks.



It's not just the surveillance that may be problematic; it's what is done with the information gathered through the surveillance.

There must also be strong laws and protections against digital surveillance, whether by private corporations or the government. As we live our lives increasingly online, we can now create a digital identity that contains all manner of information about our likes, dislikes, opinions, and behaviors in the past, present, and even predictions for the future. It's not just the surveillance that may be problematic; it's what is done with the information gathered through the surveillance, including the use of powerful new tools to influence our behavior and opinions that we may not even be aware of. While surveillance is a very complex and sensitive topic, it is already underway using the information we've (often willingly) provided.

The topic of government surveillance has been a high-profile topic for public discussion in the United States for several years, especially since the Edward Snowden leaks of 2013. Discussion of surveillance by private corporations has been more limited and many people are likely unaware of the degree to which it's happening. Long overdue is a wide and open discussion of what we should and should not allow in surveillance online and we should enforce those rules. We will talk further about our digital identity and the importance of personal privacy in the next section. In this section, we highlight the risks of digital surveillance especially as it relates to our rights as citizens. According to Glenn Greenwald, our ability to hold opinions in private is one of the fundamental underpinnings of our western democracies.¹⁵¹

In *The Guardian*, Carole Cardwalladr wrote of the tremendous dominance and influence Google and Facebook now have based on the massive amounts of data they have collected and stored by tracking the online behavior of their billions of users.¹⁵² While there are perhaps many benefits flowing from this (e.g., location-specific options and shopping convenience), there are also many risks, especially if we don't know what information they have, how it's being managed, and how it's being used, including use by third parties. We believe there needs to be much more transparency on all these elements and a code of ethics developed and applied.

We're concerned about the very underpinnings of a functioning democracy.

In our section on "rethinking work," we identified the need for a code of ethics in AI to ensure that we understand underlying assumptions in information processing and to further ensure that there is transparency, fairness, and incorruptibility, among other factors.¹⁵³ In that section we were concerned about applications such as assessing job applicants or health assessments; in this section we're concerned about the very underpinnings of a functioning democracy—the information and knowledge upon which we base our opinions and public discourse.

If search engines have unknown and built-in biases, if we're being sent only information and ideas to validate our already known positions, and if each of us receives very different messages from the same political candidate, where is there a basis for a shared understanding of the facts and informed discussion of the issues and options?¹⁵⁴ We collectively became more aware of the existence of these processes, including the risks associated with unknown



We must continue to ensure adequate funding for scientists and researchers, as they not only contribute analyses and informed views on the critical issues of today, but also have a longer-term perspective on the important issues of tomorrow.

algorithms being designed by anonymous people, during the recent US election and UK Brexit campaigns and some work has begun to make the processes and algorithms more transparent. We need to do more.

Finally, in this section it is important to highlight the important role of researchers, scientists, and professional journalists, as well as the need to strengthen education at all levels in basic civics and critical analysis and judgement. These are also key to maintaining and enhancing our capability for an informed society. In addition to ensuring their voices are present online, we need to continue to ensure adequate funding for scientists and researchers as they not only contribute information, analyses, and an informed perspective on the important issues of today, but they may also have a longer-term perspective and be able to guide and warn us about important issues of tomorrow. The scientific method and peer-to-peer review processes of the scientific community are critical and help differentiate a scientist's opinion from others on the WWW.

Similarly, whereas we formerly relied upon journalists to sort through all the available information and guide us in our analysis via their investigative reporting, editorial, and curatorial roles, they, too, are overwhelmed, and their reports may be buried on the web, as we saw above. Some traditional media outlets have and are adapting well to a hybrid paper and digital world by adopting all the digital tools, including video and social media, and other professional news sites have emerged solely in the digital space.

We need to value and support the role of these journalists in adding depth, analysis, and meaning. In Canada, the United Kingdom, and Europe, there are also publicly funded news outlets that operate independently from the government. Because they're not driven solely by "the bottom line," these news media can cover regional stories, emerging stories, or assign investigative reporters that may not be within the budget of private media. This is important and should continue.

In the world of massive amounts of instantly available information, we all need to apply critical thinking skills to the information we receive.

In addition to increased transparency and public awareness of information and processes online, and in the context of "the information war," we also need to increase peoples' capability to find relevant and reliable information on the WWW and to be able to assess the validity of what they receive. In the world of massive amounts of instantly available information, communication by text and tweet, and 24-hour news on television and online, we all need to apply critical thinking skills to the information we receive and to further develop our analytical skills and media literacy. We should do this as part of the core curriculum, "learning by doing" at all levels, with specific topics developed as part of the civics curriculum.

The Digital Age identity

As outlined in an earlier section, there are large and growing challenges to the autonomy and privacy of the individual, including data tracking of every activity we undertake with a digital "foot



People ought to have the right to decide what, when, how, and how much about their identities to share with anybody else.

print,” growing commercial data bases of that information, and data analysis using algorithms designed to understand, predict, and influence our future behavior.

Identity theft is a major concern, as is loss of privacy. The data, often—but not always—freely and knowingly provided are being used to provide us with personalized advertising, products, and services, and to influence our behavior. It can be—and is being—used to influence opinions by directly targeting individuals with specific information and messages, including during elections. It potentially could be accessed by government agencies (police, security, tax, etc.) to conduct surveillance operations when authorized for specific purposes. It also means that others are earning revenue from this information, rather than you, the originator of that information.

Not surprisingly given the inter-relationship of both concepts as part of a functioning democracy, there is considerable overlap in what we need to do to create an informed society and what we need to do to support a Digital Age identity. We’ve noted the need for strong laws and protections against digital surveillance, whether by private corporations or the government. We also called for much more transparency and a code of ethics on what information is collected, how it is processed, and how it is used. We noted that we should also study models for self-governance of social media sites, including enforceable codes of conduct.

In this section, focusing on personal privacy and security, we go further by stating the principle that people should control their own information. As I’ve previously written, “People ought to have the right to decide what, when, how, and how much about their identities to share with anybody else.”¹⁵⁵ Let’s choose “privacy by design,” as former Ontario Privacy Commissioner Ann Cavoukian likes to say. We can do this by embedding privacy and security into data architecture and through blockchain. “The blockchain protocols allow us to choose the level of privacy we’re comfortable with in any given transaction or environment. It helps us to better manage our identities and our interaction with the world.”¹⁵⁶

We therefore support the work already underway to set up individual identity in a “black box” enabled by the blockchain.

We therefore support the work already underway to set up individual identity in a “black box” enabled by the blockchain.¹⁵⁷ Everyone will be able to define his or her own parameters through a portable personal avatar, which they own and control, and which will follow them around and implement their choices on which data to share, with whom, and at what price, if any. In addition to deciding the level of privacy, this approach enables the individual to earn money from their own data, should they so choose. From “big data” to “private data,” or as we’ve called it in *Blockchain Revolution*: little data.

An alternative approach but with similar intent—re-decentralization of the web—comes from Sir Tim Berners-Lee with his “Solid” (social linked data) initiative:

With Solid, you store your data in “pods” (personal online data stores) that are hosted wherever you would like. But Solid isn’t



just a storage system: It lets other applications ask for data. If Solid authenticates the apps and—importantly—if you’ve given permission for them to access that data, Solid delivers it.¹⁵⁸

There are two broad areas in which digital technologies can contribute to a more resilient biosphere: by becoming more energy efficient within the sector itself and by helping other sectors become more sustainable.

It is not possible to have privacy without security. Maintaining secure systems at the individual, firm, organization, government, and network level will require constant vigilance and constant improvement. One step already well underway is the adoption of the encrypted version of the web’s HTTP, that is, the move to HTTPS.¹⁵⁹ Blockchain also has built-in security.

A resilient biosphere

There are two broad areas in which digital technologies can contribute to a more resilient biosphere: by becoming more energy efficient within the sector itself and by helping other sectors become more sustainable. While the former is important, the latter holds even greater promise. While a resilient biosphere is a goal in and of itself and seemingly different from the other themes in this paper, we have grouped it under the broad “society” theme of the new social contract because of the broad societal nature of the challenges and the solutions. Also, like the other two directions in this category, improvements to our biosphere are based in large measure upon improved management and use of information.

Many of the largest consumers of energy within the digital economy have committed to zero-carbon footprint through conversion to entirely renewable energy sources. Google, for example, which in 2015 consumed as much energy as the entire city of San Francisco, announced:

In 2017 Google will reach 100 percent renewable energy for our global operations—including both our data centers and offices. ... To reach this goal, we’ll be directly buying enough wind and solar electricity annually to account for every unit of electricity our operations consume globally.¹⁶⁰

In his announcement, Urs Hölzle, a senior vice president of technical infrastructure at Google, emphasized two things—that renewable energy sources are increasingly the lower cost option, and that Google’s purchases enable further investment in renewable power, helping to drive down costs for everyone and therefore result in further reductions in CO₂.

Other digital companies also use renewable energy, including Apple, Facebook, Amazon, and Microsoft.¹⁶¹ Apple has achieved 100 percent renewable energy for its data centers.¹⁶² Apple uses wind energy to power its two new data centers in Ireland and Denmark, with solar power planned for a data center in North Carolina, while Facebook does the same for its data centers in Ireland and Sweden.¹⁶³ Amazon Web Services (AWS) has committed to using renewable energy for 100 percent of its power needs and expects to reach the 50 percent level by the end of 2017.¹⁶⁴



Because it makes both economic and environmental sense, it is expected that the trends by digital companies toward increasing energy efficiency will continue.

The use of renewable energy is in addition to other measures to reduce energy consumption generally, including a 50 percent increase in the energy efficiency of Google's data centers, due in part to the use of machine learning algorithms to analyze and increase data center efficiency. According to Cade Metz,

Facebook's role is also particularly notable ... In 2011, through its open compute project, or OCP, Facebook open-sourced many of its streamlined data center designs, sharing them with the world at large. This has sparked a dramatic shift in the way the industry builds hardware.¹⁶⁵

Because it makes both economic and environmental sense, it is expected that the trends by digital companies toward increasing energy efficiency, especially in data centers, and the use of renewable energy sources, will continue. This is especially important because there is expected to be more use of digital technologies in general across most sectors, including many applications that will have a positive environmental impact.

The energy sector achieves increased energy efficiency in addition to cost-effectiveness and reliability through the implementation of the "smart grid" including smart meters.¹⁶⁶ A group of US scientists has calculated that the implementation of a smart grid leads to a reduction in electricity consumption and CO₂ emissions within the sector itself through such factors as better diagnostics and improved consumer information and feedback.¹⁶⁷

"I'm pretty confident that the Internet of Things is going to have net negative power consumption."

 URS HÖLZLE
Senior Vice President
Google

Transportation consumes almost 30 percent of energy used in the States.¹⁶⁸ Residential and commercial buildings also represent approximately 30 percent of energy consumption in the United States (excluding computer usage inside the building, roughly 10%).¹⁶⁹ There is significant potential for greater energy efficiency in building management, including heating, cooling, lighting, water heating and other functions as all become connected to the Internet of Things (IoT). In addition to other benefits, the IoT enables remote monitoring and "just in time" usage, meaning that energy-consumption can be managed more efficiently overall and/or timed to take advantage of variable pricing.¹⁷⁰ In *Wired*, Cade Metz reported on the IoT perspective within Google:

"I'm pretty confident that the Internet of Things is going to have net negative power consumption," Hölzle [of Google] said during a briefing with reporters on Tuesday. "If you control lights, heat, and cooling in smarter ways, that's really substantial." Even self-driving cars, he says, will push us toward lower power consumption. "You'll have fewer cars on the road, fewer parking lots, less congestion, because every car is a potential carpool."¹⁷¹

Other IoT and digital technology-enabled energy efficiency measures in the transportation sector include improved fleet management, remote diagnostics, improved traffic signaling to reduce congestion and wasted energy, and the use of mobile technologies to reduce the



The opportunity to earn revenue from a solar or wind power investment will provide a further incentive to invest in renewable energies and to reduce reliance on CO₂.

need for office space and unnecessary commuting. Of course, cost and energy savings are achieved across all sectors through video and audio teleconferencing as a substitute for expensive and energy-intensive travel. Undoubtedly there is even more energy-savings potential through teleconferencing in the future.

The emerging blockchain offers several new opportunities for increased energy efficiency across various sectors. In *Blockchain Revolution*, we identified several such opportunities including the establishment of blockchain-enabled mesh networks which will enable, for example, farmers, home-owners, and others with excess power derived from renewable sources to sell that power to others who are participating on the neighborhood microgrid.¹⁷²

The opportunity to earn revenue from a solar or wind power investment will provide a further incentive to invest in renewable energies and to reduce reliance on CO₂. It will also reduce energy loss by reducing the need for long-distance transmission. Work is already well advanced on this opportunity including a model project in Brooklyn, New York.¹⁷³

Blockchain-enabled technology can enable more efficient uses of resources across many sectors, for example, in property management where vacant office space or meeting rooms can be identified through digital sensors; and people seeking space can locate, use, and pay for the space entirely through an automated system. Just-in-time production in the manufacturing sector can result in even fewer delays and less wastage of scarce resources.

Another blockchain-enabled opportunity with significant positive environmental impact is the potential to implement a CO₂ cap and trade system at the regional, national, or international level.¹⁷⁴ Such a network would provide a transparent and incorruptible means of recording carbon emissions and sequestrations and associated transactions. When combined with IoT, or other means of verification, it would be a powerful mechanism to support a cap and trade system to drive reduced emissions.

There's even the potential to create a workable cap and trade model for individual people. That would certainly change behavior and could even create new sources of revenue for people, including the poor, since they are undoubtedly low carbon users.

These are just a few of the ways in which blockchain, combined with the IoT, can support the achievement of a resilient biosphere. To paraphrase what we've already written in the book on blockchain, anywhere where blockchain-enabled devices (e.g., sensors) can be used to sense (e.g., falling temperature, broken pipeline, traffic jam, energy usage) and respond (e.g., turn on the heat, send the repair crew, change the traffic light cycle, price and provide feedback) holds the potential to conserve energy among other benefits.



Stewardship of the new social contract

While necessary, these industrial-scale solutions were and still are insufficient for the challenges of the digital era. The rise of the Internet marked a significant departure from the traditional culture of governance.

How do we get there? Through multistakeholder governance networks. The governance of critical global resources—water, education, healthcare, labor, food supplies, transportation and energy, old growth forests, fisheries, and technologies such as the Internet and the blockchain—has been a key focus of our research over the last five years. When we use the word, *governance*, we mean *stewardship*, which involves collaborating, identifying common interests, and creating incentives to act on them. We do not mean *government*, which involves legislating and regulating behavior and punishing those who misbehave.

Since the end of World War II, state-based institutions have administered most of the world's important resources. Two of the most powerful—the International Monetary Fund and the World Bank—were born at the Bretton Woods Conference in 1944. The United Nations and other groups under its umbrella—the World Health Organization and the World Trade Organization—received a wide berth to exercise their monopoly on global problem-solving and set forth.

For example, in 1948, the UN General Assembly adopted the Universal Declaration of Human Rights. It was the product of a collaboration among representatives of stakeholders from diverse cultures around the world, not just to prevent a Third World War but to ensure lasting world peace with prosperity for all.¹⁷⁵ These organizations were hierarchical by design, because hierarchies were the dominant paradigm during the first half of a war-torn century.

While necessary, these industrial-scale solutions were and still are insufficient for the challenges of the digital era. The rise of the Internet marked a significant departure from the traditional culture of governance. “We reject kings, presidents, and voting,” said MIT computer scientist David Clark in 1992. “We believe in rough consensus and running code.”¹⁷⁶ That was the mantra for stewardship of the first generation of the Internet when few could imagine how it would transform human existence.

Given that the private sector, government, civil society, and individuals all have a role to play in developing a new social contract and putting it into practice, how can they come together?

Clark's words embodied a philosophy for the leadership of a global resource that was radically different from the Bretton Woods model, yet one that engendered a remarkably effective governance ecosystem. That the Internet has become a global resource in so short a time is astounding, in no small part thanks to strong leadership and governance and despite the powerful forces against it.

Given that the private sector, government, civil society, and individuals all have a role to play in developing a new social contract and putting it into practice, how can they come together? Are the existing institutions, as weak as they are, the only route forward? We believe this is already emerging through multistakeholder networks, which we first defined in 2013:



No government or group of governments controls the Internet or its standards, though several US government agencies once funded it.

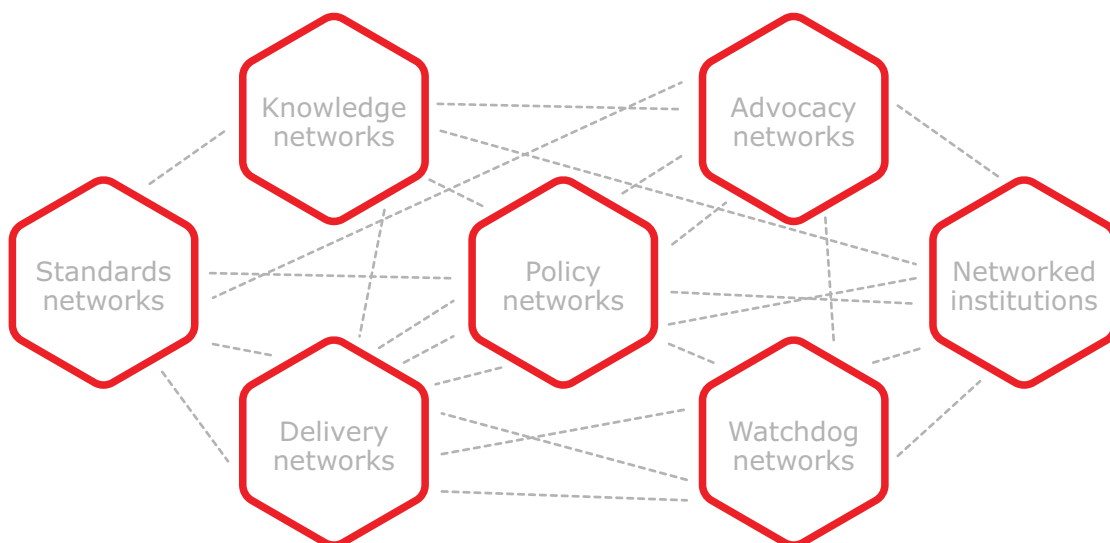
There is a fundamental change underway regarding how global problems can be solved, and perhaps how we govern ourselves on this shrinking planet. Emerging non-state networks of civil society, private sector, government, and individual stakeholders are achieving new forms of cooperation, social change and even the production of global public value. They address every conceivable issue facing humanity from poverty, human rights, health, and the environment, to economic policy, war, and even the governance of the Internet itself."¹⁷⁷

These networks are, of course, enabled by digital technologies that allow them to connect, share information, and collaborate on solutions.

In a three-year research project, we set out to do the definitive investigation into Internet governance—who exactly was providing this stewardship to solve problems and ensure the development and continuance of the Internet and what made the ecosystem tick. No government or group of governments controls the Internet or its standards, though several US government agencies once funded it.¹⁷⁸ Instead, a vast ecosystem of companies, civil society organizations, software developers, academics, and state-based institutions were collaborating in transparent, distributed forums that defied measurement by traditional command-and-control frameworks.

In the infancy of the Internet as a global resource, this ecosystem has proven that diverse stakeholders, loosely organized in seven types of open multistakeholder networks that operate by consensus, could effectively solve problems and steward each element of our new social contract (Figure 1). To demonstrate, here is how these networks work for the Internet.

Figure 1: Multistakeholder networks for stewarding a new social contract



1. Standards networks

Standards networks are non-state, nonprofit organizations—such as the Internet Architecture Board (IAB) and the Internet Engineering Task Force (IETF)—that develop technical specifications and standards, the building blocks of the product, and infrastructure development that leads to mass adoption. To succeed as standards networks, the IAB and IETF regularly engage the expertise of individuals, civil society organizations, and private-sector enterprise. Similarly, the World Wide Web Consortium (W3C) develops, tests, and implements standards that promote the web’s evolution and ensure its interoperability.

2. Knowledge networks

The primary function of knowledge networks is to conduct research and develop new ideas that can help solve global problems. For example, the Internet Research Task Force (IRTF) investigates emerging technologies of potential relevance to the Internet. If IRTF creates a specification suitable for standardization, then it proposes it to the IETF. More savvy users can realize the upside of new global resources while minimizing the downside. Internet2 is a global research and education network designed to remove barriers to discovering new knowledge and its impact.

3. Delivery networks

This class of networks actually delivers the change it seeks or solutions to problems, supplementing or even bypassing the efforts of traditional institutions. For example, the International Corporation for Assigned Names and Numbers (ICANN) delivers domain names. Supporting delivery networks include African Network Information Centre (AfriNIC), American Registry for Internet Numbers (ARIN), Asia-Pacific Network Information Centre (APNIC), Latin America and Caribbean Network Information Centre (LACNIC), and Réseaux IP Européens Network Coordination Centre (RIPE).

In 2016, 17 public interest groups collaborated to develop the Internet Policy Platform, which featured specific policy initiatives on Internet access, choice, free speech, privacy, and transparency.

4. Policy networks

These networks support policy development or seek alternatives for policy, whether governments support them or not. The goal is to inform, if not shape, the policy-making process of corporations and governments so that it is more transparent, shared, and inclusive. For example, the Internet Policy Research Initiative at the MIT Computer Science and Artificial Intelligence Lab also works with technologists and policy-makers to increase the integrity of interconnected digital systems. In 2016, 17 public interest groups collaborated to develop the Internet Policy Platform, which featured specific policy initiatives on Internet access, choice, free speech, privacy, and transparency.¹⁷⁹



5. Advocacy networks

Advocacy networks seek to change the agenda or policies of governments, corporations, and other institutions. Among them are Internet.org and the Alliance for Affordable Internet, which advocate for greater inclusion. The Industrial Internet Consortium, a relatively new open group of researchers, companies, and public agencies, is advocating the adoption of Internet applications across various industries to accelerate the IoT.¹⁸⁰

6. Watchdog networks

These networks scrutinize organizations to ensure that they behave appropriately. Topics range from human rights, corruption, and the environment, to financial services and commercial practices. In the process, they drive public debate, boost transparency, and ignite movements for change. Perhaps the most vocal watchdog of civil liberties online is the Electronic Frontier Foundation.¹⁸¹ It scrutinizes corporate and government policies and holds them accountable through litigation and grass-roots activism.

7. Networked institutions

Some networks provide such a wide range of capabilities that we describe them as “networked institutions.” They are not state-based but true multistakeholder networks. The value they generate can range from knowledge, advocacy, and policy to the actual delivery of solutions. The Internet Society, for example, excels at incorporating the many views of diverse stakeholders, not just the efforts of the IAB, the IETF and the IRTF, but also the OECD, the International Telecommunications Union (ITU), the World Intellectual Property Organization (WIPO) and several other United Nations commissions.¹⁸² The Internet Governance Forum (IGF) also engages participation across stakeholder groups.

In the early days of the Internet, governments demonstrated both restraint and foresight. They showed restraint by limiting regulation and control throughout the Internet’s evolution and they showed foresight by allowing the system to flourish before trying to impose rules and regulations. Now that the Internet has permeated every aspect of our lives, courts and legislators have started recognizing new claims, such as the right to be forgotten, and imposing local rules that often conflict in the global realm of the digital.

We need this type of collaborative problem-solving among multistakeholders in education, healthcare, labor unions, food supply chains, transportation and energy systems and, above all, governments to begin work immediately on a universal Declaration of Interdependence.



The time is now

The challenges are huge, the need is urgent, current trends are not sustainable. We must act now to minimize further climate change. There are far too many people excluded from the global economy, too many people living on the margins at extreme risk and with no hope for the future, too many regions suffering from the loss of industrial jobs with no jobs in sight to replace them, global temperatures are at an all-time high with increasing numbers of weather emergencies, and too many governments and other institutions we look to for leadership move too slowly, if at all, to address these challenges.

We have lost confidence in our leaders and the democratic process and lost interest in, and perhaps the capability for, a respectful public discourse based on objective information on the challenges and their possible solutions. There is no consensus on the best path forward with strongly held and competing views on all sides.

In part, due to political events in Europe and the United States over the past two years, but also due to longer term underlying trends, there is now a burning platform for change. More people say that we must get at the root of our current economic problems by revisiting the “social contract” that has been assumed—but not practiced—for so many years. Or, as McKinsey has called it, “a new societal deal.”¹⁸³

Canada is wealthy as a country. So is the United States, and other nations (Table 2).¹⁸⁴ In a world of abundance, we can’t let people starve to death, or be homeless, or have illnesses that go untreated because they can’t afford help. Let’s have a conversation about what really matters to us in our communities, our countries, and our

Let’s have a conversation about what really matters to us and what we need to do to build stronger and more inclusive economies and societies.

Table 2: Total wealth by region, 2018		
Region	Wealth (in billions)	% change
Africa	2,553	4.4
Asia-Pacific	56,715	1.7
China	51,874	4.6
Europe	85,402	5.5
India	5,792	2.5
Latin America	8,055	-4.9
North America	106,513	6.5

Source of data: James Davies, Rodrigo Lluberias and Anthony Shorrocks, Credit Suisse Global Wealth Databook 2018, p. 5.



planet, and what we need to do to build stronger and more inclusive economies and societies. Let's participate in multiparty community, national, and global solution networks to discuss the underlying directions of a new social contract more appropriate to the digital economy and to develop innovative solutions to complex challenges based on these principles. The mood is right and the time is now for leaders and activists in every jurisdiction to initiate these solution networks.

In this paper, we've suggested what we believe should be the new directions as well as many specific initiatives. In many cases, these directions and initiatives represent a dramatic change from past practices. This is necessary and appropriate, in that past approaches clearly no longer work. Radical new models are possible now, with the knowledge and tools of the digital economy. People everywhere are becoming smarter together, scrutinizing institutions, organizing collectively, and forging alternative ways of doing almost everything.

We need to value the individual—all individuals—and give everyone the opportunity to participate fairly in the digital economy. Businesses need to recognize that they can't succeed in a world that's failing. Teachers, scientists, researchers, and the Fourth Estate need to ensure our children grow up skilled in analytical thinking and that our deliberations and decisions are evidence-based.

Democracy in the Digital Age must be based on a culture of transparency, accountability, participation, and active citizenship. We need high-performance governments and government leaders who are not afraid to adopt new and sometimes controversial paths, and to lead the transformation we so desperately require.

There won't be one answer; there won't be one solution. But if we can start the conversation and begin to test new models, it will give us a path forward. The time for action is *now*.



Pocket watch 3156771 by annca, 2018, used under CC0 1.0.



About the author

Don Tapscott, executive chairman of the Blockchain Research Institute, is one of the world's leading authorities on the impact of technology on business and society. He has authored 16 books, including *Wikinomics: How Mass Collaboration Changes Everything*, which has been translated into over 25 languages.

Don's most recent and ambitious book was co-authored with his son, Alex Tapscott, a globally-recognized investor, advisor, and speaker on blockchain technology and cryptocurrencies. *Blockchain Revolution: How the Technology Behind Bitcoin and Other Cryptocurrencies is Changing the World* was published in May 2016. It is, according to Harvard Business School's Clay Christensen, "the book, literally, on how to survive and thrive in this next wave of technology-driven disruption." The paperback version of the book, updated with new material covering recent developments in the blockchain industry, was published in June 2018.

In 2017, Don and Alex co-founded the Blockchain Research Institute. Its nearly 100 projects are the definitive investigation into blockchain strategy, use-cases, implementation challenges, and organizational transformations.

Don is a member of the Order of Canada and is ranked the second most influential management thinker and the top digital thinker in the world by Thinkers50. He is an adjunct professor at INSEAD and Chancellor of Trent University in Ontario. It is hard to imagine anyone who has been more prolific, profound, and influential in explaining today's technological revolutions and their impact on the world.

Acknowledgments

Joan McCalla was the research director and primary collaborator on this project. David Ticoll and Alex Tapscott provided their insights and countless discussions on this topic. Kirsten Sandberg and Mary-Jane Pilgrim updated the report to include 2018 developments. Without them, this would not exist.





About the Blockchain Research Institute

Co-founded in 2017 by Don and Alex Tapscott, the Blockchain Research Institute is a knowledge network organized to help realize the new promise of the digital economy. It builds on their yearlong investigation of distributed ledger technology, which culminated in the publication of their critically acclaimed book, *Blockchain Revolution* (Portfolio|Penguin).

Our syndicated research program, which is funded by major corporations and government agencies, aims to fill a large gap in the global understanding of blockchain technology and its strategic implications for business, government, and society.

Our global team of blockchain experts is dedicated to exploring, understanding, documenting, and informing leaders of the market opportunities and implementation challenges of this nascent technology.

Research areas include financial services, manufacturing, retail, energy and resources, technology, media, telecommunications, healthcare, and government as well as the management of organizations, the transformation of the corporation, and the regulation of innovation. We also explore blockchain's potential role in the Internet of Things, robotics and autonomous machines, artificial intelligence, and other emerging technologies.

Our findings are initially proprietary to our members and are ultimately released under a Creative Commons license to help achieve our mission. To find out more, please visit www.blockchainresearchinstitute.org.

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Kirsten Sandberg – Editor-in-Chief
Jane Ricciardelli – Director of Marketing
Wayne Chen – Director of Business Development
Maryantonett Flumian – Director of Client Experience
Luke Bradley – Director of Communications



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