



EIB World Trade Headlines

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ExxonMobil Corporation Assessed a Penalty for Violating the Ukraine-Related Sanctions Regulations

ExxonMobil Corp., of Irving, Texas, including its U.S. subsidiaries ExxonMobil Development Company and ExxonMobil Oil Corp. (collectively, "ExxonMobil"), has been assessed a civil monetary penalty of \$2,000,000 for violations of the Ukraine-Related Sanctions Regulations, 31 C.F.R. part 589 (Ukraine-Related Sanctions Regulations). Between on or about May 14, 2014 and on or about May 23, 2014, ExxonMobil violated § 589.201 of the Ukraine-Related Sanctions Regulations when the presidents of its U.S. subsidiaries dealt in services of an individual whose property and interests in property were blocked, namely, by signing eight legal documents related to oil and gas projects in Russia with Igor Sechin, the President of Rosneft OAO, 1 and an individual identified on OFAC's List of Specially Designated Nationals and Blocked Persons (the "SDN List") (referred to hereinafter as an "SDN").

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Background

On March 16, 2014, the President issued Executive Order 13661, "Blocking Property of Additional Persons Contributing to the Situation in Ukraine," 79 Fed. Reg. 15,535 (Mar. 19, 2014) ("E.O. 13661"). E.O. 13661, among other things, granted the Secretary of the Treasury the authority to designate officials of the Russian Government, and blocked any property and interests in property, and prohibited any dealing in any property and interests in property, of a person so designated. Section 4(b) of E.O. 13661 expressly states that U.S. persons are prohibited from the receipt of any contribution or provision of funds, goods, or services from the designated person. In response to multiple media inquiries from March to April 2014, the White House issued press guidance or held press calls in which Senior Administration officials stated that the focus of sanctions against high-level Russian cronies at the time was to identify individuals and target their assets instead of the companies they manage and that U.S. persons are prohibited from doing business with persons who had been designated under E.O. 13661.

On April 28, 2014, OFAC designated Igor Sechin pursuant to E.O. 13661 and added him to its SDN List. The Department of the Treasury stated in a press release announcing the action that "[a]s a result of today's action...transactions by U.S. persons or within the United States involving the individuals and entities designated today are generally prohibited."

On May 8, 2014, before ExxonMobil signed the legal documents, but after the above-referenced White House statements were made, OFAC issued the Ukraine-Related Sanctions Regulations that included definitions of "property" and "property interest" that, along with the prohibitions in E.O. 13661 and the public statements made by the White House and the Department of the Treasury, made clear U.S. persons may not deal with any persons designated pursuant to E.O. 13661, including Igor Sechin or receive, deal in, or benefit from any service a designated person might provide.²

Despite these prohibitions and ExxonMobil's global market and sophistication, ExxonMobil moved forward with signing the legal documents with designated person Igor Sechin between on or about May 14, 2014 and on or about May 23, 2014.

Warning Signs That the Conduct at Issue Constituted a Violation of OFAC Regulations

ExxonMobil claims that it interpreted press statements as establishing a distinction between Sechin's "professional" and "personal" capacity, in part citing to a news article published in April 2014 that quoted a Department of the Treasury representative as saying that a U.S. person would not be prohibited from participating in a meeting of Rosneft's board of directors. However, that brief statement did not address the conduct in this case.

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Furthermore, the plain language of the Ukraine-Related Sanctions Regulations (which were issued after the Executive branch statements) and E.O. 13661 do not contain a "personal" versus "professional" distinction, and OFAC has neither interpreted its Regulations in that manner nor endorsed such a distinction. The press release statements provided context for the policy rationale surrounding the targeted approach during the early days of the Ukraine crisis, which was to isolate designated individuals who were targeted as a result of the crisis in Ukraine, rather than imposing blocking sanctions on the large companies that they managed. No materials issued by the White House or the Department of the Treasury asserted an exception or carve-out for the professional conduct of designated or blocked persons, nor did any materials suggest that U.S. persons could continue to conduct or engage in business with such individuals.

Separately, there was a Frequently Asked Question (FAQ) publicly available on the OFAC website at the time of the violations that specifically spoke to the conduct at issue in this case, though framed in the context of the Burma sanctions program. FAQ #285, which OFAC issued in 2013 and was publicly available on OFAC's website at the time of ExxonMobil's violations, stated that U.S. parties should "be cautious in dealings with [a non-designated] entity to ensure that they are not providing funds, goods, or services to the SDN, for example, by entering into any contracts that are signed by the SDN." In rebuttal to this guidance, ExxonMobil has pointed out that OFAC's regulations state that different interpretations may exist among and between the sanctions programs that it administers, but FAQ #285 clearly signaled that OFAC had, in a sanctions program also involving SDNs, viewed the signing of a contract with an SDN as prohibited, even if the entity on whose behalf the SDN signed was not sanctioned. OFAC acted consistently with that approach in this case.

The issuance of E.O. 13661 and the publication of the Ukraine-Related Sanctions Regulations prior to the violations at issue here; press statements by the White House and the Department of the Treasury regarding prohibited transactions with persons designated under E.O. 13661; and previous OFAC precedent published in 2013 and available on OFAC's website at the time of the violations all clearly put ExxonMobil on notice that OFAC would consider executing documents with an SDN to violate the prohibitions in the Ukraine-Related Sanctions Regulations.

OFAC Determinations and Analysis

OFAC determined that ExxonMobil did not voluntarily self-disclose the violations to OFAC and that the violations constitute an egregious case. Both the base civil monetary penalty and the statutory maximum civil monetary penalty amounts for the violations were \$2,000,000.

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OFAC thoroughly considered the arguments ExxonMobil set forth in its submissions to OFAC, and the penalty amount reflects OFAC's consideration of the following facts and circumstances, pursuant to the General Factors under OFAC's Economic Sanctions Enforcement Guidelines, 31 C.F.R. part 501, app. A.

OFAC considered the following to be aggravating factors: (1) ExxonMobil demonstrated reckless disregard for U.S. sanctions requirements when it failed to consider warning signs associated with dealing in the blocked services of an SDN; (2) ExxonMobil's senior-most executives knew of Sechin's status as an SDN when they dealt in the blocked services of Sechin; (3) ExxonMobil caused significant harm to the Ukraine-related sanctions program objectives by engaging the services of an SDN designated on the basis that he is an official of the Government of the Russian Federation contributing to the crisis in Ukraine; and (4) ExxonMobil is a sophisticated and experienced oil and gas company that has global operations and routinely deals in goods, services, and technology subject to U.S. economic sanctions and U.S. export controls.

OFAC considered the following to be a mitigating factor: ExxonMobil has not received a penalty notice or Finding of Violation from OFAC in the five years preceding the date of the first transaction giving rise to the violations.

For more information regarding OFAC regulations, please go to: www.treasury.gov/ofac.

The first meeting of the U.S.-China Comprehensive Economic Dialogue

The first meeting of the U.S.-China Comprehensive Economic Dialogue, created during President Trump's meeting with Chinese President Xi Jinping in April, takes place **Wednesday**. Wendy Cutler **writes** for *The Hill* that the talks take place "at a time when U.S. exporters and investors are becoming increasingly vocal on the plethora of barriers to the Chinese market and feel no comfort as China focuses on building up sectors like information technology and robotics, its 'strategic emerging industries.'" - Fareed's Global Briefing

Are China's Drones a Threat to America?

Washington might not like it, but other countries are increasingly able to secure a piece of the combat drone action -- with an assist from China, report Jeremy Page and Paul Sonne for the Wall Street Journal.

"State companies are selling aircraft resembling General Atomics's Predator and Reaper drones at a fraction of the cost to U.S. allies and partners, and to other buyers," they write.

"The Pentagon estimates China could produce almost 42,000 aerial drones -- sale value more than \$10 billion -- in the decade up to 2023. Beijing's drone program began with old Soviet designs; more recently, U.S. officials say, China used espionage and open-source material to reverse-engineer U.S. drones. Beijing denies that."

The Key to Fixing the Venezuela Crisis? China

The road to resolving the political crisis in Venezuela might run through China, Bloomberg editorializes. After all, few countries can match the economic sway Beijing has over Caracas.

"Venezuela owes [China] more than \$62 billion for loans, and is behind in the oil shipments used for payment. A Venezuelan default -- or worse, a slide into civil war -- is not in China's interests," Bloomberg argues. "On the other hand, China could benefit from better ties with Venezuela's opposition parties, which have threatened to repudiate debt instruments that lack the legislature's approval. More broadly, Chinese aid and investments are crucial to Venezuela's escape from economic misery."

- Fareed's Global Briefing

Trump and Putin Overplayed Their Hands: Sanger

The Trump administration and Vladimir Putin both wanted sanctions eased, not tightened. The reason they didn't get what they wanted? "Two global leaders overplaying their hands," argues David Sanger in the New York Times.

"Mr. Putin is beginning to pay a price for what John O. Brennan, the former C.I.A. director, described last week as the Russian president's fateful decision last summer to try to use stolen computer data to support Mr. Trump's candidacy. For his part, Mr. Trump ignited the movement in Congress by repeatedly casting doubt on that intelligence finding, then fueled it by confirming revelation after revelation about previously denied contacts between his inner circle and a parade of Russians," Sanger writes.

"As one of Mr. Trump's aides pointed out last week, there is a long history of granting presidents that negotiating leverage when dealing with foreign adversaries. But by constantly casting doubt on intelligence that the Kremlin was behind an effort to manipulate last year's presidential election, Mr. Trump so unnerved members of his own party that even they saw a need to curb his ability to lift those sanctions unilaterally."

The Real Putin Bromance

Forget the speculation over the relationship between President Trump and Russian President Vladimir Putin. Instead, keep an eye on Chinese President Xi Jinping, suggests Alexander Gabuev in the Financial Times. "Beijing and Moscow are stealthily scaling up their co-operation in areas that are likely to pose challenges to Western interests and policies."

"The dominant view in the West is that the 'bromance' between Mr Putin and Mr Xi masks an awkward relationship, in which mutual trust is conspicuously absent. But this obscures a more complex picture. The truth is that Russian and Chinese national interests tend to coincide precisely in areas where they oppose those of the West," Gabuev writes.

"Co-operation between China and Russia might be transactional, but it has geo-strategic consequences. At times, Mr Putin and Mr Xi have found an unlikely ally in Mr Trump. The latter's clumsy approach to foreign policy and fractious relations with long-time allies leave the West poorly equipped to push back. Nor should we expect that an increasingly isolated U.S. administration will have the political capital to manage conflict and competition between great powers in the post-cold war era." Fareed's Global Briefing

Rhode Island STEP Grant: Funding Still Available!

STEP is an annual federal grant administered by the U.S. Small Business Administration and designed to assist small businesses in entering and expanding into international markets. The current grant will expire [on September 29, 2017](#) and there is still funding available! STEP funding can be used to help offset the cost of numerous projects designed to support increased export sales, including participating in international trade shows, use of Department of Commerce services, website translation, international marketing media, and export training. The Chafee Center has already submitted their request for renewed funding for the STEP program, which would begin [on September 29, 2017](#). We hope to have good news on our new request by the end of the summer!

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The second round of Brexit talks began Monday

The second round of Brexit talks began **Monday**. Gideon Rachman [writes](#) in the *Financial Times* that there is growing chatter about the possibility of a second referendum. "It is now obvious that this vision of a painfree Brexit was an illusion. As the real choices become clear, the slim pro-Brexit majority could easily fall apart. That is all the more likely because opinion polls have consistently suggested that a majority of voters are not prepared to pay a personal economic price to secure Brexit," Rachman writes

Laser-based technology helps in detection and identification of underwater targets

A new study has found that laser-based technology can serve as complementary solution to existing sonar sensors in the detection of underwater targets, especially in shallow waters, complex marine regions such as archipelagos with several small islands, and inaccessible locations.

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The research was commissioned by the European Defence Agency (EDA) and carried out by a consortium comprising the Swedish defence research body FOI and the French-German Institute of Saint-Louis (ISL).

EDA's study was based on the use of both Light Detection and Ranging (LIDAR) and Laser Detection and Ranging (LADAR) laser systems.

The study found that the technologies could be successfully incorporated into existing detection and identification solutions for underwater targets located in difficult operating conditions such as those found in the Baltic Sea.

The use of laser systems is expected to have a positive impact on performance, including improving detection and identification times.

Laser systems can provide operational improvements compared to sonar systems. For instance, airborne laser scanning can be deployed rapidly, which helps to detect underwater or floating objects.

Airborne laser scanning can also identify different types of targets, provided that the target is large enough. It is then possible to deploy a surface or underwater vessel equipped with a Laser Gated Viewing (LGV) or Underwater Laser Scanning (ULS) system to confirm the target.

New \$125K Grant Expected to Help Grow Rhode Island Composites Industry

Last week, Rhode Island Senators Jack Reed and Sheldon Whitehouse and Congressmen David Cicilline and Jim Langevin announced a \$125,000 federal grant to develop a composites industry cluster that is expected to support job creation and economic growth in Rhode Island.

The grant from the U.S. Economic Development Administration (EDA), a bureau of the U.S. Department of Commerce, was awarded to the Rhode Island Marine Trades Association (RIMTA) and the town of Bristol, R.I., to develop a strategic plan to maximize the competitiveness of the local composites industry, with a focus on Bristol and surrounding communities in the East Bay region of the state. The federal grant was matched by funding from the Rhode Island Foundation and \$25,000 from the Real Jobs Rhode Island program.

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"The creation of a Composites Innovation Cluster would add to the state's growing manufacturing base, and funding from this grant will enable the Town of Bristol and the Rhode Island Marine Trades Association to develop a strategic plan to expand the composites industry and further economic growth," said Rep. Langevin.

The East Bay is home to more than 45 composites companies with a broad range of expertise in manufacturing, design, and engineering. These companies are supported by nearby educational institutions like IYRS, which deliver industry-specific curriculum and training in composites, as well as research and development.

"Rhode Island-made composites are well-suited to meet the need for light, durable materials in infrastructure, aerospace, defense, and wind energy," said Senator Whitehouse, who has brought several EDA officials to Rhode Island in recent years for meetings with composites stakeholders. "Our local composites industry has all the elements to keep growing and hiring more Rhode Islanders in the years ahead. This federal grant will harness those components into a strategic plan for expanding advanced manufacturing in the East Bay."

Sen. Whitehouse has been a strong advocate for the composites industry for years. Last year, he wrote a provision for the Water Resources Development Act directing the U.S. Army Corps of Engineers to study the performance of composites and other innovative materials in water resources projects. The American Composites Manufacturers Association (ACMA) worked with members of both chambers to ensure the inclusion of that language was included in the final version of the legislation.

Emirates highlights female role models in aviation with simulator challenge

Championing the importance of women's contributions to the growth and development of aviation, Emirates recently hosted Shaesta Waiz for a Boeing 777 simulator challenge in its home base of Dubai.

Waiz is the founder and pilot of Dreams Soar (DSI), a non-profit organization whose mission is to inspire and empower young females to become the next generation of STEM (Science, Technology, Engineering and Math) and aviation professionals, through a global outreach mission.

The outreach includes a global solo flight mission, where Waiz is piloting a single-engine Beechcraft Bonanza A36 to circumnavigate the globe. Waiz stopped in Dubai, one of 34 stops across 18 countries in her five continent journey which will clock in just under 47,000 kilometres upon completion.

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Shaesta was met at Emirates Aviation College by Bakhita Al Muheiri, Emirates Boeing 777 First Officer, to test her aerial skills in an Emirates Boeing 777 simulator. Bakhita is one of Emirates' youngest female Emirati pilots at 24 years. She earned her wings in 2016 and has accumulated over 1,100 flying hours after completing the airline's National Cadet Pilot Programme. After a short briefing, Shaesta and Bakhita began their simulator challenge in the Boeing 777 cockpit, taking-off, landing and piloting each assigned journey. Watch both pilots command the Boeing 777 simulator and share their personal experiences here.

Adel Al Redha, executive vice president and chief operations officer Emirates airline said: "Through our National Cadet Pilot Programme, we want to grow the next generation of female pilots, by creating an environment that retains, nurtures and values them so they are able to progress and take a wider role within our industry. We also believe that one of the ways to support the need for pilots today is to tap into the female talent pool and inspire them to take their career path into aviation which is one of the most rewarding fields."

Bakhita Al Muheiri also commented on the simulator experience with Shaesta: "I am truly inspired by Shaesta's story. As the first civilian female pilot from Afghanistan, she has demonstrated that the world is full of possibilities and when we expose females to a wide range of careers in STEM and aviation we boost their interest to enter fast-moving sectors with a wealth of opportunities."

Commenting on her twin engine Boeing 777 simulator challenge, Shaesta said: "An airplane doesn't know if you are a girl or boy, what your religion or background is. It reacts based on the input of the pilot. My hope from the time I spent flying the Boeing 777 simulator with Bakhita, learning of her empowering story, and Emirates helping to pave the way for many more young women, is for more role models to devote their time and energy inspiring our next generation. Let us work together and expend our resources to create brighter futures for our tomorrow."

Emirates' female cockpit crew come from 24 nationalities, covering a diverse age range of 20 to 59 years. Emirates also has the first Arab woman to Captain the Airbus A380, as well as the youngest Emirati female pilot operating the A380.



The Fourth Industrial Revolution

We stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another. In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before. We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive, involving all stakeholders of the global polity, from the public and private sectors to academia and civil society.

The First Industrial Revolution used water and 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, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.

There are three reasons why today's transformations represent not merely a prolongation of the Third Industrial Revolution but rather the arrival of a Fourth and distinct one: velocity, scope, and systems impact. The speed of current breakthroughs has no historical precedent. When compared with previous industrial revolutions, the Fourth is evolving at an exponential rather than a linear pace. Moreover, it is disrupting almost every industry in every country. And the breadth and depth of these changes herald the transformation of entire systems of production, management, and governance.

The possibilities of billions of people connected by mobile devices, with unprecedented processing power, storage capacity, and access to knowledge, are unlimited. And these possibilities will be multiplied by emerging technology breakthroughs in fields such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing.

Already, artificial intelligence is all around us, from self-driving cars and drones to virtual assistants and software that translate or invest. Impressive progress has been made in AI in recent years, driven by exponential increases in computing power and by the availability of vast amounts of data, from software used to discover new drugs to algorithms used to predict our cultural interests. Digital fabrication technologies, meanwhile, are interacting with the biological world on a daily basis. Engineers, designers, and architects are combining computational design, additive manufacturing, materials engineering, and synthetic biology to pioneer a symbiosis between microorganisms, our bodies, the products we consume, and even the buildings we inhabit.

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Challenges and opportunities

Like the revolutions that preceded it, the Fourth Industrial Revolution has the potential to raise global income levels and improve the quality of life for populations around the world. To date, those who have gained the most from it have been consumers able to afford and access the digital world; technology has made possible new products and services that increase the efficiency and pleasure of our personal lives. Ordering a cab, booking a flight, buying a product, making a payment, listening to music, watching a film, or playing a game—any of these can now be done remotely.

In the future, technological innovation will also lead to a supply-side miracle, with long-term gains in efficiency and productivity. Transportation and communication costs will drop, logistics and global supply chains will become more effective, and the cost of trade will diminish, all of which will open new markets and drive economic growth.

At the same time, as the economists Erik Brynjolfsson and Andrew McAfee have pointed out, the revolution could yield greater inequality, particularly in its potential to disrupt labor markets. As automation substitutes for labor across the entire economy, the net displacement of workers by machines might exacerbate the gap between returns to capital and returns to labor. On the other hand, it is also possible that the displacement of workers by technology will, in aggregate, result in a net increase in safe and rewarding jobs.

We cannot foresee at this point which scenario is likely to emerge, and history suggests that the outcome is likely to be some combination of the two. However, I am convinced of one thing—that in the future, talent, more than capital, will represent the critical factor of production. This will give rise to a job market increasingly segregated into “low-skill/low-pay” and “high-skill/high-pay” segments, which in turn will lead to an increase in social tensions.

In addition to being a key economic concern, inequality represents the greatest societal concern associated with the Fourth Industrial Revolution. The largest beneficiaries of innovation tend to be the providers of intellectual and physical capital—the innovators, shareholders, and investors—which explains the rising gap in wealth between those dependent on capital versus labor. Technology is therefore one of the main reasons why incomes have stagnated, or even decreased, for a majority of the population in high-income countries: the demand for highly skilled workers has increased while the demand for workers with less education and lower skills has decreased. The result is a job market with a strong demand at the high and low ends, but a hollowing out of the middle.

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This helps explain why so many workers are disillusioned and fearful that their own real incomes and those of their children will continue to stagnate. It also helps explain why middle classes around the world are increasingly experiencing a pervasive sense of dissatisfaction and unfairness. A winner-takes-all economy that offers only limited access to the middle class is a recipe for democratic malaise and dereliction.

Discontent can also be fueled by the pervasiveness of digital technologies and the dynamics of information sharing typified by social media. More than 30 percent of the global population now uses social media platforms to connect, learn, and share information. In an ideal world, these interactions would provide an opportunity for cross-cultural understanding and cohesion. However, they can also create and propagate unrealistic expectations as to what constitutes success for an individual or a group, as well as offer opportunities for extreme ideas and ideologies to spread.

The impact on business

An underlying theme in my conversations with global CEOs and senior business executives is that the acceleration of innovation and the velocity of disruption are hard to comprehend or anticipate and that these drivers constitute a source of constant surprise, even for the best connected and most well informed. Indeed, across all industries, there is clear evidence that the technologies that underpin the Fourth Industrial Revolution are having a major impact on businesses.

On the supply side, many industries are seeing the introduction of new technologies that create entirely new ways of serving existing needs and significantly disrupt existing industry value chains. Disruption is also flowing from agile, innovative competitors who, thanks to access to global digital platforms for research, development, marketing, sales, and distribution, can oust well-established incumbents faster than ever by improving the quality, speed, or price at which value is delivered.

Major shifts on the demand side are also occurring, as growing transparency, consumer engagement, and new patterns of consumer behavior (increasingly built upon access to mobile networks and data) force companies to adapt the way they design, market, and deliver products and services.

A key trend is the development of technology-enabled platforms that combine both demand and supply to disrupt existing industry structures, such as those we see within the “sharing” or “on demand” economy. These technology platforms, rendered easy to use by the smartphone, convene people, assets, and data—thus creating entirely new ways of consuming goods and services in the process.

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In addition, they lower the barriers for businesses and individuals to create wealth, altering the personal and professional environments of workers. These new platform businesses are rapidly multiplying into many new services, ranging from laundry to shopping, from chores to parking, from massages to travel.

On the whole, there are four main effects that the Fourth Industrial Revolution has on business—on customer expectations, on product enhancement, on collaborative innovation, and on organizational forms. Whether consumers or businesses, customers are increasingly at the epicenter of the economy, which is all about improving how customers are served. Physical products and services, moreover, can now be enhanced with digital capabilities that increase their value. New technologies make assets more durable and resilient, while data and analytics are transforming how they are maintained. A world of customer experiences, data-based services, and asset performance through analytics, meanwhile, requires new forms of collaboration, particularly given the speed at which innovation and disruption are taking place. And the emergence of global platforms and other new business models, finally, means that talent, culture, and organizational forms will have to be rethought.

Overall, the inexorable shift from simple digitization (the Third Industrial Revolution) to innovation based on combinations of technologies (the Fourth Industrial Revolution) is forcing companies to reexamine the way they do business. The bottom line, however, is the same: business leaders and senior executives need to understand their changing environment, challenge the assumptions of their operating teams, and relentlessly and continuously innovate.

The impact on government

As the physical, digital, and biological worlds continue to converge, new technologies and platforms will increasingly enable citizens to engage with governments, voice their opinions, coordinate their efforts, and even circumvent the supervision of public authorities. Simultaneously, governments will gain new technological powers to increase their control over populations, based on pervasive surveillance systems and the ability to control digital infrastructure. On the whole, however, governments will increasingly face pressure to change their current approach to public engagement and policymaking, as their central role of conducting policy diminishes owing to new sources of competition and the redistribution and decentralization of power that new technologies make possible.

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Ultimately, the ability of government systems and public authorities to adapt will determine their survival. If they prove capable of embracing a world of disruptive change, subjecting their structures to the levels of transparency and efficiency that will enable them to maintain their competitive edge, they will endure. If they cannot evolve, they will face increasing trouble.

This will be particularly true in the realm of regulation. Current systems of public policy and decision-making evolved alongside the Second Industrial Revolution, when decision-makers had time to study a specific issue and develop the necessary response or appropriate regulatory framework. The whole process was designed to be linear and mechanistic, following a strict “top down” approach.

But such an approach is no longer feasible. Given the Fourth Industrial Revolution’s rapid pace of change and broad impacts, legislators and regulators are being challenged to an unprecedented degree and for the most part are proving unable to cope.

How, then, can they preserve the interest of the consumers and the public at large while continuing to support innovation and technological development? By embracing “agile” governance, just as the private sector has increasingly adopted agile responses to software development and business operations more generally. This means regulators must continuously adapt to a new, fast-changing environment, reinventing themselves so they can truly understand what it is they are regulating. To do so, governments and regulatory agencies will need to collaborate closely with business and civil society.

The Fourth Industrial Revolution will also profoundly impact the nature of national and international security, affecting both the probability and the nature of conflict. The history of warfare and international security is the history of technological innovation, and today is no exception. Modern conflicts involving states are increasingly “hybrid” in nature, combining traditional battlefield techniques with elements previously associated with nonstate actors. The distinction between war and peace, combatant and noncombatant, and even violence and nonviolence (think cyberwarfare) is becoming uncomfortably blurry.

As this process takes place and new technologies such as autonomous or biological weapons become easier to use, individuals and small groups will increasingly join states in being capable of causing mass harm. This new vulnerability will lead to new fears. But at the same time, advances in technology will create the potential to reduce the scale or impact of violence, through the development of new modes of protection, for example, or greater precision in targeting.

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The impact on people

The Fourth Industrial Revolution, finally, will change not only what we do but also who we are. It will affect our identity and all the issues associated with it: our sense of privacy, our notions of ownership, our consumption patterns, the time we devote to work and leisure, and how we develop our careers, cultivate our skills, meet people, and nurture relationships. It is already changing our health and leading to a “quantified” self, and sooner than we think it may lead to human augmentation. The list is endless because it is bound only by our imagination.

I am a great enthusiast and early adopter of technology, but sometimes I wonder whether the inexorable integration of technology in our lives could diminish some of our quintessential human capacities, such as compassion and cooperation. Our relationship with our smartphones is a case in point. Constant connection may deprive us of one of life’s most important assets: the time to pause, reflect and engage in meaningful conversation.

One of the greatest individual challenges posed by new information technologies is privacy. We instinctively understand why it is so essential, yet the tracking and sharing of information about us is a crucial part of the new connectivity. Debates about fundamental issues such as the impact on our inner lives of the loss of control over our data will only intensify in the years ahead. Similarly, the revolutions occurring in biotechnology and AI, which are redefining what it means to be human by pushing back the current thresholds of life span, health, cognition, and capabilities, will compel us to redefine our moral and ethical boundaries.

Shaping the future

Neither technology nor the disruption that comes with it is an exogenous force over which humans have no control. All of us are responsible for guiding its evolution, in the decisions we make on a daily basis as citizens, consumers, and investors. We should thus grasp the opportunity and power we have to shape the Fourth Industrial Revolution and direct it toward a future that reflects our common objectives and values.

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“The harder you work for something, the greater you’ll feel when you achieve it.”

To do this, however, we must develop a comprehensive and globally shared view of how technology is affecting our lives and reshaping our economic, social, cultural, and human environments. There has never been a time of greater promise, or one of greater potential peril. Today’s decision-makers, however, are too often trapped in traditional, linear thinking, or too absorbed by the multiple crises demanding their attention, to think strategically about the forces of disruption and innovation shaping our future.

In the end, it all comes down to people and values. We need to shape a future that works for all of us by putting people first and empowering them. In its most pessimistic, dehumanized form, the Fourth Industrial Revolution may indeed have the potential to “robotize” humanity and thus to deprive us of our heart and soul. But as a complement to the best parts of human nature—creativity, empathy, stewardship—it can also lift humanity into a new collective and moral consciousness based on a shared sense of destiny. It is incumbent on us all to make sure the latter prevails.

This article was first published in Foreign Affairs

Author: Klaus Schwab is Founder and Executive Chairman of the World Economic Forum

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