Bill Ford outlines the technologies he expects will shape the Industries of the Future

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We must also reckon with the future. Digitization, Big Data, and the migration of IT services to the cloud are driving change now but we're also starting to see the opportunities that will lead to Globalization 5.0.

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Understanding the state of our world and how we can shape that agenda is the primary purpose of the World Economic Forum annual meeting. The theme for this year's gathering is Globalization 4.0 – how we're handling the changes shaping the world by the increasing interconnectedness of cultures and economies. Digitization, Big Data, and the migration of IT services to the cloud are driving change now, and we're also starting to see the opportunities that will lead to Globalization 5.0.

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Next Generation Life Sciences

Gene editing and genetic engineering are revolutionizing human therapeutics, agricultural biology, and basic scientific research. Modification of the human genome through CRISPR and other gene editing techniques will have broad consequences. We could eventually correct genetic differences, eliminate microbes that cause disease, more productively cultivate healthier foods, resurrect extinct species, and eradicate dangerous pests that cause and spread disease.

Advances in synthetic biology will be as significant. We can design biological components that do not exist in the natural world to enable researchers to manufacture new DNA sequences that can be used to produce biofuels, biochemicals, bioelectrics, and synthetic medications.

Advancements in bioinformatics and computational biology will be pivotal in the fight against cancer and other illnesses. Through analysis of large volumes of biological data, these advanced technologies will allow us to detect diseases far earlier in their development, rendering common treatments more effective.

Smart Cities and Energy Infrastructure

By 2025, 85% of the U.S. population will live in cities and urbanization will continue to accelerate worldwide.[1] Rapid urbanization brings excessive consumption of finite resources, congestion, and operational inefficiencies that can be better managed with smart waste management, route optimization software, intelligent public transport systems, wireless networks, and connected energy-efficient lights. A 20% reduction in commercial energy usage in the U.S. alone can save $80 billion annually on energy bills.[2]

Investments in electricity generation, grid automation and integration, and advanced lithium-ion battery technology will lead to positive spillover effects in adjacent industries, including electric vehicles, smart cities, and manufacturing. So, the smart city could be the locus of a broader global industrial boom.

Mobility

The average American driver spends about one hour a day driving, yet cars are only in use 5% of the time.[3]

Autonomous driving can alleviate this inefficiency and reduce transportation costs. Electric vehicles comprise just 1.3% of global auto sales and hybrid electric vehicles.[4] This could grow to more than 30% by 2030, reducing pollution and global warming.[5]

The nascent and converging factors of autonomous driving, electric vehicles, and personal short-distance aviation are critical to the development of smart cities and will shape the way that people move within and between the cities of the future.

5G and Advanced Networks

5G or "Fifth Generation Wireless" is a new standard for wireless technology that will dramatically improve network speeds while allowing more devices to connect at once.[6] Technologies such as autonomous vehicles, the Internet of Things, augmented reality, and remote surgery will benefit from 5G's decreased latency and higher bandwidth.

Robotics and Human Labor

While robotics has its origins in manufacturing and has helped catalyze the advent of Industry 4.0, advancements in both hardware and software are driving adoption of robots across the economy. [7]

Two emerging categories are growing rapidly: "collaborative robots" that work alongside humans to augment their capabilities, and "service robots" that perform a growing number of tasks outside of manufacturing environments.[8]

Advanced Computing

The rise of artificial intelligence and machine learning have created new kinds of computing workloads that are ill-suited for traditional processing and demand new and more advanced computing architectures. This need will accelerate a renaissance in chip design as well as quicken the development of quantum computing technologies to create a step change upgrade of humanity's computational power.

Cybersecurity

As digital infrastructure comes to mediate more of our personal, professional, and civic life, cyber-criminals have more to gain than ever before. Banks, retailers, and social media providers have unprecedented – and increasingly, heavily scrutinized – access to personal data and information. Likewise, companies across every industry have increasingly more value stored in digital assets.

Advances in artificial intelligence, machine learning, and cloud computing create a new security paradigm with the potential to disrupt established players and impact leadership in the space.

The Commercialization of Space

The commercialization of space will enable access to previously unattainable data, equipping researchers and entrepreneurs to answer new questions about humanity and the hard sciences. One example is anti-gravity data. Private space companies are already creating "constellations" of satellites that can perform previously impossible experiments and data transmission activities.

Undoubtedly, incumbent companies in the technology, manufacturing, automotive and consumer sectors will play a role in developing and harnessing these new industries, but new household names will emerge as global entrepreneurs apply their energies to these next chapters of the human story.

*Bill Ford is Chief Executive Officer of General Atlantic, a leading global growth equity firm providing capital and strategic support for growth companies. He has more than 25 years of experience investing in and helping build leading growth companies, including IHS Markit, e*Trade, Priceline, and First Republic Bank. Established in 1980, General Atlantic combines a collaborative global approach, sector specific expertise, a long-term investment horizon and a deep understanding of growth drivers to partner with great entrepreneurs and management teams*

to build exceptional businesses worldwide.

[1]http://www.un.org/en/development/desa/population/publications/pdf/urbanization/the_worlds_cities_in_2016_data_booklet.pdf

[2] https://www.energy.gov/eere/buildings/about-building-technologies-office

[3] http://fortune.com/2016/03/13/cars-parked-95-percent-of-time/

[4] https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/the-global-electric-vehicle-market-is-amped-up-and-on-the-rise

[5] https://www.jpmorgan.com/global/research/electric-vehicles

[6] https://www.pcmag.com/article/345387/what-is-5g

[7] https://www2.deloitte.com/insights/us/en/focus/signals-for-strategists/next-generation-robots-implications-for-business.html

[8] https://www2.deloitte.com/insights/us/en/focus/signals-for-strategists/next-generation-robots-implications-for-business.htm

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