



The Right Side of (Game) Change

If you want to stay on **the right side of the future**, the first thing to do is to acknowledge that the future will be different—perhaps radically different—than the present. With this in mind, here are ten game-changing technologies and trends it would behoove you to begin familiarizing yourself with today.

- 1 **Super Quantum Computers:** Nvidia is already selling a **\$129,000 supercomputer** that is facilitating breakthroughs in science, health care, and finance but one of the under-appreciated things about computers is that they can be used to improve themselves. To this end, in 2015, D-Wave created a quantum computer 100 million times faster than a tradition computer. Now, in less than two years, it has created a **2,000 qubit computer chip that is 1000 times faster still**. In other words, the next quantum computer will be 100 billion times faster than a classical computer! Expect the users of quantum computers, including Google, Lockheed Martin, and the Defense Department to achieve some profound breakthroughs shortly.
- 2 **Shape-Shifting Materials:** From stones to iron to bronze to silicon, materials have always shaped our future. Society is now on the brink of a new era of super, shape-shifting materials. **Scientists at Los Alamos** and researchers at **Northwestern University** have combined supercomputers, machine learning and Dip-Pen Nanolithography to speed up the discovery and creation of new materials with desired properties. Among the materials expected to be created are shape-memory alloys (materials that can change shape based on external factors) and new nanomaterials with unusual properties which could transform everything from drug delivery to energy production.
- 3 **Plastic-Eating Bacteria:** While the world's oceans are already awash with plastic debris, plastic is also currently filling up landfills at an alarming rate. Researchers at Kyoto Institute of Technology have unearthed **plastic-eating bacterium**. By identifying the gene that produces the enzymes that allow the bacterium to pull off this feat, researchers believe they can recreate the proteins and apply them to innovative new plastic recycling and waste management techniques. If successful, one of the scourges of modern day existence may simply disappear.
- 4 **Artificial Leafs:** While Mother Nature has long used sunlight to turn carbon dioxide into fuel—in the form of plants and trees. Humankind—more specifically scientists at **the University of Illinois, Chicago**—have edged closer to producing an innovative new solar cell that sucks up carbon dioxide (CO₂) and spits out burnable fuel. The trick to scaling the technology is creating a new type of catalyst that can efficiently turn the CO₂ into a burnable fuel in an inexpensive way. Thanks to advances in nanotechnology such catalysts are closer than ever to being created.
- 5 **Wide-scale, Blockchain-Enabled Distributed Energy:** The creation, development, and maintenance of the modern transmission grid rank among society's greatest technological and engineering achievements because it has delivered affordable,

- reliable energy to people all around the world. Society is now on the verge of another seismic shift in power generation, storage and transmission thanks to **advances in micro-grid technology**. The advances portend the day when people will not only be able to safely and affordably produce and store their own renewable energy but also sell and transfer that energy—through **the Blockchain**—without any centralized authority. The net impact is that the world may soon possess a vast network of affordable distributed energy production that can withstand threats from hackers, military adversaries, and killer solar storms.
- 6 **Wickedly Fast World-Wide Internet Coverage:** Google’s Project Loon, Facebook’s solar-powered drone Aquila, and Space X’s proposed massive satellite network share the same goal of delivering high-speed Internet access to all 7.5 billion on the planet by 2020. These remarkable, game-changing technological advances are, however, just the tip of the proverbial iceberg because researchers at Samsung, AT&T, New York University and Oledcomm (among others) are simultaneously developing innovative new 5G and **Li-Fi technologies that are 100 times faster** than today’s 4G wi-fi speeds. Soon, a child in Africa will be able to download a shelf of library books or hours of video tutorials in the blink of an eye.
 - 7 **Three-Parent Baby Boom:** If three’s a crowd then the number of **3-parent babies** is about to get very crowded. Following on the heels of John Zhang’s successful procedure using the DNA from three people to eliminate a rare genetic disease, the world can expect a profusion of other parents, patients, and physicians to investigate how the technique of spindle nuclear transfer can cure scores of other unborn children of genetic diseases.
 - 8 **Early Onset Diagnosis for Alzheimer’s:** Few diseases strike more fear in people than being diagnosed with Alzheimer’s. The good news is that if it can be diagnosed early, treatments are likely to be more beneficial. Until now diagnosing the disease has been difficult but researchers at the Rowan University School of Osteopathic Medicine have recently developed an intriguing new blood test that has shown **100 percent accuracy in diagnosing early stage Alzheimer’s**. The test also diagnoses Parkinson’s and multiple sclerosis with high precision. The breakthrough suggests that the quality of life for people suffering from these diseases will soon improve because more effective treatment regimes can be applied earlier.
 - 9 **Fountain of Youth Springs Anew:** In a scientific discovery that may have Ponce De’ Leon dancing in his grave, researchers at the University of Virginia School of Medicine have discovered a gene, **dubbed Oct4**, that is believed to play a critical role in causing most heart attacks and strokes. More intriguing still is the discovery that the gene is also one of the “stem cell pluripotency factors”—meaning that it may also possess the ability to revitalize old and worn-out cells. In other words, the aging process may be reversible!
 - 10 **The Universal Basic Income:** **The UBI**—or the idea that every person receives a basic level of income regardless of age, status or level of employment—is not a new idea, but it is a radical one. And it may very well gain steam in the coming year as



advances in robotics, 3D printing, artificial intelligence and cognitive computing begin displacing truck and taxi drivers, manufacturers, bankers, doctors and lawyers. As this happens, millions of people previously believing themselves to be immune from “disruptive” change will find themselves on the wrong side of the future; out of both a job and a livable income. Basic survival will be no easy feat as these people seek to retrain themselves for their next job or “gig.” To help society deal with the growing pains of automation—and, perhaps, stave off a full-blown political revolution—politicians, business leaders, and citizens alike will begin seriously promoting **the concept of a Universal Basic Income.**

*Interested in reading some of **futurist Jack Uldrich’s** past articles on game-changing technologies? Check out these past articles:*

Here Comes the Future: Ten Game-Changing Technologies That Will Transform the World in 2016

10 Game Changing Technologies Poised to Transform the World in 2015