

## Here Comes the Future: 10 Game-Changers That Will Transform the World in 2016

“The future is here. It just isn’t evenly distributed.” In 1983, the science-fiction author, William Gibson penned those prophetic words. They remain apropos for 2016 because ten existing technologies (listed below) are poised to change the game in virtually every business sector in the coming year.

**#1: Blockchain** Double-entry bookkeeping and limited liability partnerships don’t sound like “game-changers” today, but when they were introduced centuries ago they fueled commerce, trade, and global economic growth in tremendous ways. The same will be true of Blockchain—a distributed, digital ledger that is best known as the platform upon which Bitcoin was created. The technology has the ability to do more than just disrupt how money is distributed, it has the potential to decentralize the Internet by making it easier and more affordable to verify products, contracts and even transactions among individuals. In a recent edition of The Economist, Blockchain was labeled a “trust machine” And Santander, the Spanish bank, has estimated Blockchain could save the banking industry \$20 billion by 2022– which is just a small sample of Blockchain’s vast potential.



**#2: Virtual-Reality Cameras:** Oculus, Samsung’s VR gear and Microsoft’s Hololens have drawn significant attention to the burgeoning field of virtual reality. However, it is Nokia’s new virtual reality camera, Ozo, that may serve as a springboard for the field by placing this powerful new tool into the hands of both professionals and amateurs. Innovators in the hospitality, educational, real estate and sporting industries to be among the earliest exploiters of this new tool and, in 2016, expect to see the creation of a growing number of amazing and unexpected new virtual reality experiences.

**#3: Real Vegan Cheese:** Making cow’s milk without the cow might sound like an oxymoron but the technology to produce a substance molecularly identical to milk could become a reality in 2016. If so, Counter Culture Labs, the company perfecting the technology, will use

it to turn their “milk” into cheese—real vegan cheese. Undoubtedly, many people will prefer milk and cheese the way it has always been made but vegans and other consumers who are concerned about the strain the current agricultural system is placing on both animals and the planet may come to prefer this new alternative.



**#4: The Power Pack:** Elon Musk has deservedly received a great deal of media attention for shaking up the automotive industry with the Tesla, his high-performance all-electric vehicle, but it is actually the utility industry where he will first disrupt entrenched incumbents. In May of 2015, Musk introduced the PowerPack, a sleek, attractive and affordable new type of battery that allows homeowners and businesses to store energy produced from rooftop solar panels during the day and then draw upon that energy at night. In addition to lowering the strain on the existing grid, the technology will also move existing utility customers one step closer to severing any remaining ties to their local utility provider in 2016.

**#5: Nano-Steel:** Nano-Steel: Call it the “Mighty Mouse” of steel. Modumetal, a Seattle-based startup, has developed a new process that can increase the strength of steel ten-fold and make it more resistant to corrosion. The technology is already being tested in oil fields and, in 2016, with this new technology, automobiles will be made lighter and thus more fuel-efficient, bridges will be built to last longer, and buildings designed to soar to new heights.

**#6: Reusable Rockets:** The phrase “reduce, recycle and reuse” is no longer just a mantra for environmentalists, in 2016, it may well be the rallying cry for the space industry as well. In November, Blue Origin, the space company backed by Amazon founder Jeff Bezos, became the first company to launch a rocket into space and then successfully re-land it back on earth. Other companies, including SpaceX, United Launch Alliance and Virgin Galactic, are likely to follow suit in the coming year. The implications are profound. In addition to bringing affordable space tourism closer to reality, reusable rockets will dramatically lower the cost of launching satellites. This growing network of satellites will bring high speed

internet access to hundreds of millions of people around the globe and help everyone from climate scientists, data analysts and farmers do their jobs better.

**#7 Deep Learning:** The future is about to get deep, really deep thanks to the extraordinary advances now being made in the field of deep learning. In the simplest terms, deep learning is about making software better. In 2015 alone it has improved computer vision, speech recognition and even cooking. In 2016, thanks in part to significant investments in the field by Google, Facebook and IBM, deep learning will begin contributing profound insights into our understanding of the human genome and thus, human health.

**#8: Superwheat:** With all of the angst surrounding gluten, it is easy to forget that wheat still supplies the world with 18 percent of its total caloric intake. The price of supplying all of these calories—in terms of seeds, fertilizers and pesticides—is immense. Now, thanks to innovative researchers and scientists at the Land Institute, a new type of wheat will begin lessening the stress on the world’s farm fields. Kernza, a new superwheat, is a perennial crop meaning it can be grown year-round. More importantly, the crop’s deep and dense root system helps hold the soil in place and prevents erosion; reduces the need for costly and polluting fertilizers and pesticides; and acts as a “carbon sink” by storing massive amounts carbon dioxide. Due to these many positive attributes, a growing number of farmers will begin planting Kernza in the coming new year.

**#9: Passive Radiative Cooling:** Something that cools down rather than heats up when hit by sunlight might sound counterintuitive but researchers at Stanford University have created a new material that can simultaneously reflect light and radiate heat. The implication of this rather esoteric advance is that in the coming year scores of buildings can begin installing the material on their rooftops, thereby allowing the buildings to cool themselves without air conditioning. In a world concerned with energy usage and carbon emissions, the technology is, pardon the pun, a pretty cool trick that will have an outsized impact on the building, construction and real estate industries.

**#10: Antibiotic Dirt:** In 2014, in response to research indicating bacteria’s ability to develop resistance to every known antibiotic, Dr. Keiji Fukuda, the Assistant Director for Health Security at the World Health Organization issued a dire warning about a “post-antibiotic” world. The first step toward alleviating this serious and very real danger has been found in dirt. Earlier this year, researchers at Northeastern University used a new microfluidic device to discover a startlingly powerful new antibiotic called teixobactin while soil prospecting in their own backyards. Given that only 1 percent of soil bacteria (which is where a number of past antibiotics have been discovered) has ever been cultured, this suggests that the ability to gain a new foothold in our battle against bacterial resistance in 2016 may be as close as the dirt in your front yard.

As Heraclitus, the Greek philosopher, wrote 2500 years ago: Change is the Only Constant. From this perspective, 2016 is going to more of the same—much, much more.

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