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TECHNOTRENDS[®] NEWSLETTER

*The biggest ideas that are
changing everything*

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Finding Exponential Opportunities in 2022 and Beyond

By Daniel Burrus, CEO of Burrus Research

A true entrepreneur always has their opportunity antenna held high, scanning the world diligently for the next great business opportunity or, more notably, problem that needs solving. On the surface, those who observe the behavior of an individual with an entrepreneurial mindset attribute much of their success to “being in the right place at the right time” or being “gifted” in a way most are not.

Yes, the first of those assumptions does often prove to be a piece of a successful entrepreneurial puzzle, and perhaps being “gifted” gives certain entrepreneurs a leg up in ways those who are considered to be merely “average” do not get. However, those moments where an entrepreneur captures lightning in a bottle are backed by a much more in-depth strategy than just luck or raw talent, and among these accessible strategies is anticipation.

An Anticipatory mindset makes visible the ordinarily invisible to entrepreneurs. Being able to see massive disruption and transformative changes in the world before they occur allows those trained to look for disruption and change to leverage it to their advantage. These place those individuals far ahead of others who foster a “wait and see” mindset or assume they aren’t lucky or talented enough to think of something innovative and revolutionary.

In this new year, there are great transformations taking place in many industries, especially as we are still coming out of the first pandemic in a century. With all of this transformation taking place, innovative business opportunities

are ripe for the picking, and those with an Anticipatory mindset are sure to benefit from them in some of the most exponential ways.

Five Industries That Boast Exponential Opportunity in 2022

Today, I’m going to give you that leg up I referred to earlier in this article. But before I do so, let me say: This is just a starting point. Your ability to use my Hard Trend Methodology to think more critically about these industries and then use those future certainties to become a positive disruptor as an entrepreneur or business leader is an integral piece to the puzzle.



Now, the sustainability movement has spawned an industry that is really starting to boom going into 2022 and beyond

1. Sustainability and Shipping

Every year, there are more efforts in our contemporary world to grow in a sustainable way and cut down on our consumption. Now, the sustainability movement has spawned an industry that is really starting to boom going into 2022 and beyond. That’s not to say that the industry itself is a stand-alone entity; many businesses and organizations industry-wide are embracing ‘green’ principles both internally and externally.

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TECHNOLOGY NEWS HIGHLIGHTS

Space Telescope

In a collaboration between NASA, the European Space Agency (ESA) and the Canadian Space Agency, the largest and most powerful telescope ever built was launched from French Guiana on Christmas Day 2021. Known as the James Webb Space Telescope (after a former NASA administrator during the Apollo program in the 1960s), it will be capable of studying planets within our own solar system as well as those that orbit other stars.

The Webb Telescope will far exceed the capabilities of the existing Hubble Telescope by imaging and analyzing wavelengths in the infrared spectrum as well as the visible range. But in order to detect the faint heat signatures of stars that formed billions of years ago, the infrared observatory will need to operate at temperatures within about 50 degrees of absolute zero (-370 degrees Fahrenheit or -223 degrees Celsius). It will orbit the sun about one million miles "behind" Earth at a location known as Lagrange 2 (L2). A sunshield, about the size of a

tennis court, will shield the mirror and provide an equivalent Sun Protection Factor (SPF) of about a million. The mirror itself is made up of eighteen hexagonal gold-plated segments that must be aligned to within nanometers (1/10,000th the diameter of a human hair) to function as a single optical device.

It will take a month for the Webb Telescope to reach its operational orbit, and about six months to cool down to its cryogenic operating temperature, before it can begin imaging cosmic features from the formation of galaxies to massive black holes. On-board spectroscopy will also be able to analyze their physical and chemical properties to compare with known elements. If all goes as planned, the revolutionary telescope will be able to detect light from a time when the universe was only 200 million years old while also providing valuable data and information about our own solar system.

*For information: James Webb Space Telescope;
Website: <https://www.jwst.nasa.gov/index.html>*



See The Future Before It Happens

Burrus.com/SeeTheFuture

Daniel Burrus shares the most influential technology trends shaping 2022.





Detecting Deepfakes



Solar Shingles

Generative Adversary Network (GAN) models are used to synthesize realistic human faces — known as deepfakes — and methods for detecting them generally rely on tracing signal artifacts that these models leave behind. But a new artificial intelligence (AI) algorithm has been developed that can spot fake images by analyzing reflections in the eyes.

In most portraits, corneal highlights should have approximately the same shape. The new system compares these shapes and assigns a similarity “score” using a metric known as intersection over union (IoU), a tool that is widely used for object detection in computer vision systems. The lower the IoU score, the more likely it is that the image is fake.

The method can only be used on frontal poses where the eyes are relatively parallel to the camera and the light or reflection source is visible to both. However, under these conditions it was able to identify GAN-synthesized images with an accuracy of 94 percent.

For information: University at Buffalo, Computer Science and Engineering, 338 Davis Hall, Buffalo, NY 14260; phone: 716-645-3180; Website: <http://engineering.buffalo.edu/computer-science-engineering.html> or <https://arxiv.org/pdf/2009.11924.pdf>

A newly designed roofing system will make it easier than ever for homeowners to go solar. Made up of shingles, rather than heavy panels or tiles, it can be installed easily as part of a traditional roof, eliminating the need for multiple installers. The company even provides a site assessment, calculates the system size and connects it to the grid once it's installed.

The shingles are fireproof, water-shedding and resistant to winds up to 130 miles per hour and can be nailed in place. They are strong enough to walk on, allowing access to the roof when necessary, yet transparent enough to harness the same amount of energy as traditional solar panels of the same size.

Timberline Solar™ Energy Shingles are about half the price of other currently available solar roof systems and in line with conventional solar panels. Over time, the energy savings alone may cover the cost of the new roof installation. In the U.S. alone, about 5 million roofs are replaced each year, and currently only 200,000 to 300,000 of those include solar. An affordable option that's easy to install could be the gamechanger that the solar industry has been waiting for.

For information: GAF Energy, 5981 Optical Court, San Jose, CA 95138; Website: <https://www.gaf.energy/timberline-solar/>



3D-Printed Home

Rising material costs and a shortage of skilled workers are making 3D printing more and more attractive as a means of meeting the growing demand for affordable housing. So, Habitat for Humanity recently partnered with a 3D printing company to construct its first home using these new fabrication methods.

The printer itself works on a gantry system, which allows for greater design flexibility. The one used for this Habitat house can print structures up to 22 feet wide by 25 feet deep by 19 feet high (6.8m x 7.7m x 5.8m). The interior and exterior walls are constructed using a patented concrete mix that is strong, durable, energy efficient and environmentally friendly. The size of the printing nozzle can be adjusted depending on the degree of detail needed, and the system can also print using mortar as well as materials with a high content of recycled components.

The finished 1,200-square-foot home has three bedrooms and two bathrooms, plus it includes a personal 3D printer for future repairs and replacement parts (e.g., trim pieces or cabinet knobs). After logging hundreds of hours of sweat equity work with Habitat, the owners took occupancy of their new dwelling just in time for Christmas.

For information: Habitat for Humanity; Website: <https://www.habitat.org/> and Alquist 3D LLC, 410 Broad Avenue, Stanton, IA 51573; Website: <https://www.alquist3d.com/>



Fin Power

A revolutionary amphibious robot is yet another example of technology mimicking nature to address a wide range of potential applications. Known as Velox, it utilizes flexible fins rather than traditional propellers to generate the thrust needed for moving through water, as well as across land and even ice.

The undulating fins extend outward along the side of the vehicle, similar to the mantle of a cuttlefish, enabling it to explore fragile underwater habitats, such as coral reefs, with less risk to animals and plants. It's quieter, more maneuverable than a propeller and can quickly reverse direction. It creates no cavitation (noise that results from gas bubbles), and the flexible material is less likely to get caught in weed beds.

As autonomous or remotely operated vehicles, Velox robots could be used for search and rescue operations, personal propulsion units for divers, wildlife observation or harvesting food from the sea. The technology could conceivably be scaled up to create a new generation of stealth submarine. And when moored in a stream or river, energy from the motion of the current could be harnessed to recharge the on-board batteries.

For information: Pliant Energy Systems, LLC, Brooklyn Navy Yard, Building 280, Suite 614, 63 Flushing Avenue, Unit 215, Brooklyn, NY 11205; phone: 718-522-3962; email: info@pliantenergy.com; Website: <https://www.pliantenergy.com/>



Superstrong Glass

Nacre (also known as mother-of-pearl) is a strong and resilient material composed of small mineral chips held together by thin layers of elastic biopolymers in a staggered structure that resembles a brick wall. It's this arrangement that gives nacre its toughness by preventing cracks from spreading transversely. Now researchers are using the same principle to make a glass composite that is nearly unbreakable for use in a variety of applications, from smartphone screens to windshields.

Glass flakes less than one-hundredth of a millimeter thick are sandwiched with a flexible acrylic that contains small amounts of hydrocarbons to make it interact with light in the same way that glass does — an important factor in maximizing transparency. The layers are formed by spinning the components in a centrifuge. The resulting material is five times stronger and more than seven times more resistant to damage than current automobile windshields. It can also be cut and drilled using standard tools without cracking thanks to the staggered construction.

Researchers are continuing to find the optimum balance of transparency, scratch resistance and strength. The ease with which the new material can be manufactured indicates that the process could easily be scaled up.

For information: Allen Ehrlicher, McGill University, Department of Bioengineering, 3480 University, Room 350, Montreal, Quebec, Canada H3A 0E9; phone: 514-714-8239; email: allen.ehrlicher@mcgill.ca; Website: <https://www.mcgill.ca/>



Food Printer

A proof-of-concept device that combines 3D printing with multi-wavelength lasers may bring us one step closer to Star Trek replicators by digitally printing dinner and cooking it too. The ability to control ingredients within millimeter precision could turn the technology into a sophisticated tool for delivering a unique culinary experience.

Researchers experimented by putting chicken in a blender and extruding the puree through the printer nozzle in layers about one-eighth-inch (3 mm) thick. A blue laser beam was passed over each layer to cook it to a safe temperature, and an infrared laser was used to brown the outside for flavor. The samples were evaluated for cooking depths, moisture retention, flavor and color. Results showed that the laser-cooked meat shrank 50 percent less than chicken cooked conventionally. It also retained twice the moisture and had a similar flavor. The next steps will include testing out other foods and multi-ingredient recipes.

A device like this could someday be combined with CAD-like software and digital “cookbooks” to produce a wide range of dishes that can be customized for individual tastes and dietary requirements...not to mention some highly elaborate shapes and designs.

For information: Hod Lipson, Columbia University, Department of Engineering, 500 West 120th Street #510, New York, NY 10027; phone: 212-854-2993; fax: 212-854-3304; email: mece-admin@columbia.edu; Website: <https://www.me.columbia.edu/>



Fully Autonomous Farming

Although self-driving tractors have been around for quite some time, fully autonomous equipment is only now beginning to emerge. At this year’s Consumer Electronics Show, John Deere unveiled an upgrade package for its 8R 410 tractors that allow a farmer to control the machine from a smartphone.

The system consists of two stereo camera pods mounted on the front and back, and an Nvidia graphics processing unit (GPU) that enables the farmer to view images in real-time on an Android or iOS device. Each pod contains three pairs of cameras that continuously scan for obstacles. The lights are turned on whenever the tractor is moving in

order to avoid false alerts that may be caused by shadows, leaves or variations in soil color.

Boundaries and barriers are mapped during the initial setup either by manually driving the tractor or using an all-terrain utility vehicle connected to the company’s mapping technology. After that, the farmer must be with the vehicle at the start of each day of operation. Obviously, uninterrupted wireless access throughout the area to be farmed is a must.

Fully autonomous operation is limited to tilling the field prior to planting. This is viewed as the simplest task to automate, and one that often gets skipped due to labor shortages. But proper tilling can save time and money later in the growing season by reducing the reliance on chemical fertilizers.

The upgrade is currently available for tractors built in the last three years, although older machines may eventually be able to be retrofitted as well. With population still on the rise and the average age of farmers nearing 60, autonomous farming may become more a necessity than a luxury.

For information: John Deere World Headquarters, One John Deere Place, Moline, IL 61265; Website: <https://www.deere.com/en/index.html>

A promotional graphic for the book "The Anticipatory Organization" by Daniel Burrus. On the left is the book cover, which has a blue and white design with the title in orange and white. To the right is a dark blue banner with white and orange text. The banner says "SPECIAL HARDCOVER OFFER" at the top, followed by the title "THE ANTICIPATORY ORGANIZATION" in large white letters. Below the title is the website "WWW.THEA0BOOK.COM" in a blue box. At the bottom of the banner, it says "FROM #1 NEW YORK TIMES BEST SELLING AUTHOR DANIEL BURRUS..." and includes a quote: "I'll Pay For The Book, You Cover The Shipping" next to a small photo of Daniel Burrus.

Finding Exponential Opportunities in 2022 and Beyond

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The sustainability and green movement is a disruptive Hard Trend in and of itself, and it provides much opportunity for an Anticipatory entrepreneur or business leader in many different ways, especially when applying technology. For instance, carbon emissions are certainly something transportation companies frequently face as well as delivering items to remote locations.

For example, Amazon and other online retailers have already started successful drone delivery systems in certain parts of the world, and this is a growing Hard Trend that will only accelerate. Keep in mind as you look at this opportunity, and the others I share in the article, another principle I teach in my Anticipatory Organization Model: the Both/And Principle. When applied to the accelerating growth of drone delivery, you can see that the future is “both” drone delivery “and” many other delivery types as well.

This future fact provides you with a growing opportunity and a chance to be part of it, perhaps as a drone repair company that keeps delivery drones in the sky or getting involved in drone development to further the technology.

2. At-Home Fitness

Thanks to the coronavirus pandemic and continuous surges of elusive variants, gyms have struggled to maintain active members. There are many social benefits of going to work out with a trainer or simply around other individuals and this will grow; however, for many, home-based workouts are more

appealing these days. Using Hard Trends, you can anticipate new opportunities.

For example, you know that wearable technology and other digital workout applications have been around long enough to be a growing answer to efficient at-home workouts, but think about this: Equipment costs money, as does prepping a dedicated workout space that motivates you. And to boot, what happens if you decide to return to the gym? Does all that investment go to waste, or become a burden you have to sell?

An anticipatory entrepreneur might consider a business that leases at-home gym equipment, much like leasing a water softener or rent-to-own type appliances. Perhaps you set up an app and a system that allows customers to select what equipment they want and the length of the lease, and maybe this lease covers repairs for moving parts or allows you to upgrade weight as you grow in your lifting abilities. For additional revenue you could offer a health bot trainer and wellness coach that can be fully personalized by the user.

3. Travel Planning

As apps and the internet have brought us more and more ways to plan our own vacations effortlessly, the use of traditional travel agencies has been diminishing rapidly. Many did not embrace an Anticipatory mindset and instead treaded water in the shallow end, hoping that they would still have crumbs to nibble on after everything. Enter: The coronavirus pandemic, leveling all travel with restrictions and closures.

Now, everyone involved in the travel planning industry has a fresh start to leverage technology and the Hard Trend of tourist travel, which has already started to ramp up yet again. Let's think a bit more exponentially about this for a second: People have many ways to plan a

trip, but what about a personalized A.I. travel agent customized by the user that suggests other things for you to do based on your interests?

That's right: Consider an app or other artificially intelligent service that acts as a travel agent that knows you personally. Do your internet searches or social media follows suggest you enjoy snowboarding or mountain biking while you're on a road trip that passes through Breckenridge? This technology can identify specific things for you to explore while in certain areas, saving you from having to google and put it together piecemeal yourself.

4. Remote Working

A trend that many wished would end is proving to be the exact opposite — a future certainty that isn't going away anytime soon. Global lockdowns forced so many industries with employees who never before imagined working from home to turn their kitchen corners into a cubicle. For better or worse, office workers and teachers alike have developed virtual working systems that can be utilized at will, but will this trend expand to other workers, or will it shrink?

With the ever-accelerating spectrum of digital change happening long before the pandemic, it is safe to say that in the near future, a disruptive Anticipatory Entrepreneur might look at machine operators and other once heavily hands-on jobs in manufacturing and find a way to do them remotely. For instance, couple AI, 5G, augmented reality and advanced mobile robots with the Industrial Internet of Things (IIoT), and suddenly you're seeing an opportunity for work to feel quite like a video game.

At CES in Las Vegas, a remote-controlled race car was revealed. Ask yourself: Is there an ideal application for this in the transportation industry that would unlock the possibility for

other types of hands-on careers to work from remote locations? Think about ways in which you can help drive this transformation as an Anticipatory entrepreneur.

5. Cybersecurity

With so many connected devices and new ways to integrate AI machine learning, the Internet of Things (IoT) and edge computing, including smart machines, into our everyday lives, cybersecurity is becoming one of the most important topics in our world. Each new, transformative technology that connects us to information faster and each other more efficiently is a haven for hackers and cyber criminals to run rampant in.

Since the dawn of the internet, we have had antivirus software that is meant to thwart these potential attacks. However, cyber criminals are becoming smarter, and already, software upgrades will not be able to keep up. Cybersecurity is often left to the IT department of major corporations, but as an entrepreneur looking to break into the field with your own business, how can you think exponentially about where the industry is heading?

I wrote a blog about how companies could hire reformed hackers to help point out their network's weak points. This has been happening since that article was published and many companies have formulated teams of IT professionals and yes — former hackers — that consult with large corporations and train their IT departments on best cybersecurity practices.

This has been a powerful way to fight fire with fire. Could you use AI, behavior analytics and personality profiles available from social media companies such as Facebook to create a cybersecurity bot for companies to use to anticipate cyber threats? The answer is yes, and if you don't do it, someone else will.

Learn to Look Ahead as an Anticipatory Leader

These aforementioned industries and opportunities are growing; however, keep this in mind: We're already in 2022. And if you have learned anything from my Anticipatory Leader System, you likely know that an Anticipatory Leader is already looking ahead to 2023 and beyond using both Hard Trends and Soft Trends to identify game-changing opportunities!

The most Anticipatory practice to consider in becoming a positive disruptor in any of these industries and beyond is to always have a Futureview based on the Hard Trends that are shaping the future today.

In my Hard Trend Methodology, I frequently cite that these trends are not slowing down or going away — they will only continue to accelerate. If these five industries mentioned in my article today are not something that you explore, that does not mean there aren't other Hard Trend future certainties impacting industries that you do know a thing or two about!

Technology-driven change is accelerating at exponential levels, creating amazing new levels of untapped opportunity. Being able to identify exponential opportunities before anyone else does is a skill that can and should be developed, allowing you to not only be the positive disruptor creating the transformations that need to happen to increase relevancy and accelerate growth, and keep your own career and organization ahead of the disruption curve.



THE ANTICIPATORY LEADER™







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TUESDAY, FEB 22, 2022

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