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# TECHNOTRENDS® NEWSLETTER

*The biggest ideas that are  
changing everything*

## IN THIS ISSUE

Major Election Year Opportunity

Quantum Computing Service

Plant-Based Pork

Million Mile Battery

Safer Batteries

Brain Tech

Liquid Electricity

Micro 3D Printing

Panic Button



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## Major Election Year Opportunity

*By Daniel Burrus, CEO of Burrus Research*

This new year, a whole new decade has begun with it. With the start of a new decade, amazing new opportunities will present themselves each year for you and your organization to use to your advantage.

In a year of great uncertainty, there are many things we can be certain about. The most known of those certainties is that in the U.S., 2020 is a presidential election year. Because it is an election year, most companies will view this as a time to “wait and see” in terms of innovation; organizations like to hold off on moving forward too quickly solely because of the political uncertainties that come along with an election. What if your candidate doesn’t win? There are so many possibilities and, above all, uncertainties that many companies and leaders see nothing but red flags in business.

*The United States has been in reality the Divided States when it has come to our mindsets*

We also know that as we get closer to the election date, many political ads both on- and off-line from both parties will be designed to create either fear or anger, which will in turn cause high emotions and distractions at home as well as at work. Even before this election year, the United States has been in reality the Divided States when it has come to our mindsets, and that has created amazing levels of emotional uncertainty.

Uncertainty does not give us the confidence to make bold moves. Instead, it forces us to hunker down and protect and defend

the status quo. In addition, many industries, including construction and manufacturing, historically slow way down during election years. And as mentioned earlier, all of this uncertainty will cause many companies to slow down their movement on innovation as a way to be “safe,” and they will rely on being agile and reactive to combat what might happen to them this year.

I am writing to tell you that this strategy of playing it safe couldn’t be any more wrong; you should not rest on your laurels and “wait and see” what 2020 has to offer because technology-driven exponential change and digital disruption will not slow down during an election year. As a matter of fact, it will continue to speed up!

Instead, you should be taking advantage of this “wait and see” strategy by identifying the indisputable Hard Trends that will occur regardless of the election outcome, anticipating whatever change is headed your way, pre-solving any problems coming with that disruption, and transforming it into great opportunity.

### Disruption Doesn’t “Wait and See”

Digital disruption will continue to increase at an exponential rate, impacting every industry it touches throughout 2020 and beyond, so a reactionary agile strategy will not serve you well this year while anticipatory leaders and their organizations are busy

*continued on page 8*

## TECHNOLOGY NEWS HIGHLIGHTS

# Quantum Computing Service

Amazon Web Services (AWS) recently rolled out a preview of its quantum computing services to select cloud-based enterprise customers.

Known as Braket, the new service allows users to experiment with early-stage quantum computing and explore the benefits to their businesses.

Quantum computing harnesses the properties of quantum physics to perform calculations thousands of times faster than traditional computers.

The applications for such a tool include scientific and medical research, transportation, logistics processing and financial transactions.

Amazon joins a growing list of companies that have already released cloud-based quantum computing platforms including Microsoft, International Business Machines (IBM) and Alphabet.

Although a substantial amount of work remains before the technology can be commercialized, platforms such as these provide much-needed data regarding how these systems will be used.

*For information: Amazon Web Services, Inc. 440 Terry Avenue N., Seattle, WA 98109; phone: 206-266-1000; Web site: <https://aws.amazon.com/blogs/aws/amazon-braket-get-started-with-quantum-computing/>*



Join Daniel Live on February 18th

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The banner features a portrait of Daniel Burrus, a man with glasses and a beard, wearing a suit and tie. The background is dark with geometric patterns. A blue button with a cursor icon is positioned next to the 'LEARN MORE' text.





## Plant-Based Pork

The same company that brought us the Impossible Burger has now announced Impossible Pork, a new pork substitute that is intended to be kosher and halal certified. The soy-based pork replacement contains sunflower oil, coconut oil, binders and other flavorings to mimic the flavor, texture and aroma of real pork.

Contrary to the U.S. where poultry is the most popular choice for animal protein, on a worldwide basis, pork is the most widely consumed meat. On its own, China eats more than half of the pork produced. And with livestock accounting for nearly 15 percent of greenhouse gas emissions annually, plant-based meats could help reduce the cost and environmental impact of farming and ranching.

For the most part, Impossible Pork is also healthier than the real thing. Although it's higher in sodium, the meat substitute is lower in calories, fat and cholesterol while delivering about the same amount of protein. The company intends to begin test marketing a sausage version for Burger King's Croissanwich later this month.

*For information: Impossible Foods, 400 Saginaw Dr., Redwood City, CA 94063; phone: 650-451-4385; Web site: <https://impossiblefoods.com/>*



## Million Mile Battery

When it comes to lithium-ion battery technology, one of the main goals of research has been increasing their useful life. Current commercially available batteries are good for about 1,000 charge cycles (300,000 to 500,000 miles) before their energy-holding capacity degrades to the point where they need to be replaced. But a new lithium-ion battery has been designed that will withstand up to 4,000 charge cycles while retaining 90 percent of its charging capacity.

For the most part, the components don't differ all that much from other lithium-ion batteries – a graphite anode, an electrolyte made from lithium salts and other ionic compounds, and a cathode made from Lithium Nickel Manganese Cobalt Oxide (NMC). But rather than focusing on varying the lithium compounds to improve performance, the researchers looked at the cathode itself.

An NMC cathode is typically constructed of many small crystals. Over time, with many charge-discharge cycles, they can develop cracks. Instead, the new battery cathode is made of larger crystals, which are less susceptible to fracturing. The researchers (in partnership with Tesla) were recently awarded a patent for a single-crystal NMC

lithium-ion battery design.

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## Safer Batteries

Ever since we heard about the first exploding phone, another major focus of battery research has been safety. Lithium-ion batteries are constructed from toxic and flammable materials, meaning that even small defects can result in safety hazards from overheating. But another team of researchers recently developed a battery that's virtually indestructible. Not only can it be cut, shot, bent and soaked without interrupting power, it's also fireproof.

In traditional lithium-ion batteries, overheating is basically due to the electrolyte, which can break down over time and create a short circuit. When the heat from such a reaction comes into contact with an oxygen-rich cathode, the result is a flaming battery. Their solution is a water-based electrolyte that's mixed with a polymer to create a soft plastic. This allowed them to increase the electric potential from about 1.2 volts (typical of current aqueous batteries) to 4 volts, which is comparable with current lithium-ion batteries.

The soft-flexible battery opens up a host of

new uses such as integrating it into fabric to create wearable electronics. It's also usable for underwater applications. The next step will be to finetune the electrolyte chemistry to improve the battery life, which is currently only about 100 charge cycles.

For information: Konstantinos Gerasopoulos, Johns Hopkins University, Applied Physics Laboratory, 11100 Johns Hopkins Road, Laurel, MD 20723; phone: 240-228-5000; Web site: <https://www.jhu.edu/> or <https://www.jhuapl.edu/PressRelease/191014>

## Brain Tech

This year's Consumer Electronics Show (CES2020) featured a number of new devices that rely on brain waves to improve sleep, reduce anxiety, enhance concentration and even control prosthetics.

For example, Urganight consists of a headband and app that teaches the user how to control their brain waves. The system displays a real-time EEG and uses neurofeedback to identify exercises and tasks to produce identifiable changes in behaviors. It's designed to be worn for 20 minutes per session three times per week, and can be done at any time during the day. In clinical trials, Urganight helped users fall asleep up to 40 percent faster and reduced sleep interruptions by half. The device and app will be available in June for iOS and Android at a cost of about \$500.

A device called NIRSIT Lite was developed in collaboration with a large Korean education system and is designed to monitor a student's concentration and engagement during aptitude testing. When used in conjunction with test scores, the system offers important information on student thought patterns.

Another headband device known as Muse S monitors brain activity, heart rate, respiration rate and body movement to provide real-time feedback that can help users meditate more effectively.

FocusFit optimizes the wearer's focus during a workout or athletic activity, then uses guided meditation to speed recovery times to reduce inflammation and cortisol levels. The same company is also working on an AI-powered prosthetic hand that uses brain waves to guide movements. A software platform allows the user to train the device to perform a virtually unlimited number of gestures from playing piano to writing calligraphy. The prosthetic hand is currently awaiting FDA approval and is expected to be available by the end of the year and will be priced well below other robotic prosthetics.

For information: Urgotech; email: [hello@urgonight.com](mailto:hello@urgonight.com); Web site: <https://urgonight.com/> Obelab, Inc.: Web site: <http://obelab.com/index.php> or [http://obelab.com/product/product\\_nirsit-lite.php](http://obelab.com/product/product_nirsit-lite.php) BrainCo, 120 Beacon Street, Suite 300, Somerville, MA 02143; phone: 617-945-2166; email: [general@brainco.tech](mailto:general@brainco.tech); Web site: <https://www.brainco.tech/>

# Liquid Electricity

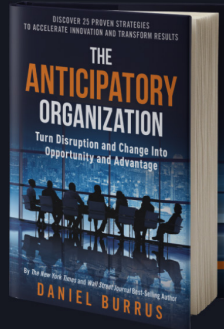
A major hurdle in optimizing the efficiency of renewable energy systems is finding a way to store the excess energy that's produced during low demand hours for use later, when demand is at a peak.

Now a group of engineers has found a way to convert that power into liquid ammonia that can be used to generate electricity again.

Storing electricity as a carbon-neutral liquid such as ammonia has many benefits. First of all, it's very stable so it can be stored for long periods of time. In addition, in areas where infrastructures don't currently exist to transmit power from renewable sources, ammonia can be transported easily and inexpensively via pipeline, railroad or truck.

In the long run, the technology could greatly reduce our dependence on energy imports as well.

For information: John Hu, West Virginia University, 1374 Evansdale Drive, P.O. Box 6070, Morgantown, WV 26506; phone: 304-293-4821; email: [john.hu@mail.wvu.edu](mailto:john.hu@mail.wvu.edu); Web site: <https://www.wvu.edu/> or <https://wvutoday.wvu.edu/stories/2019/10/18/it-s-electric-wvu-breaks-new-ground-in-developing-transportable-carbon-neutral-energy-source>



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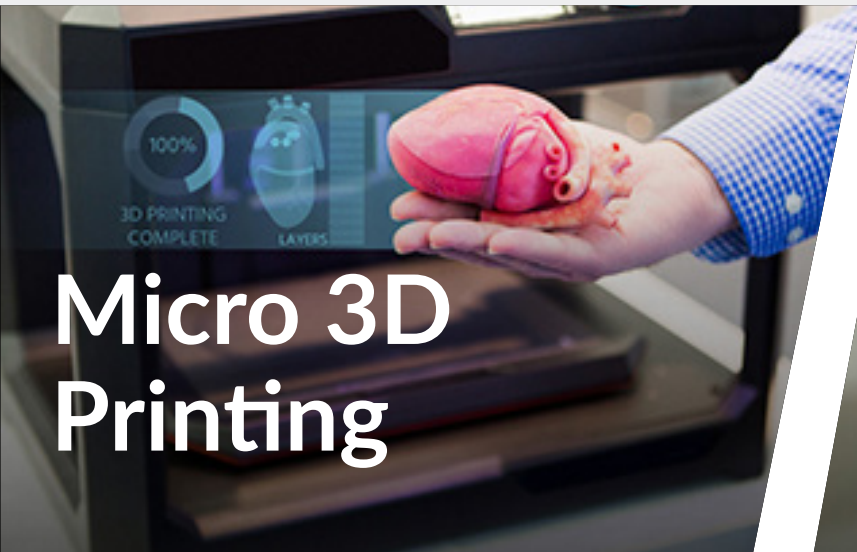
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# Micro 3D Printing

3D printing has been an extremely useful tool for modeling human body systems and even creating artificial organs. But it's limited when it comes to very small structures, such as capillaries, which range in size from only 5 to 10 micrometers yet must withstand high fluidic pressures.

A new approach to 3D printing called direct laser writing makes it possible to fabricate micro-sized architectures that are strong enough to do the job. It utilizes special liquids that turn into polymers when exposed to light. Using a laser pulse at femtosecond (one quadrillionth of a second) rates, engineers were able to create structures with a diameter of less than 100 micrometers. Depending on what is being printed, the process can take anywhere from 10 minutes to one hour.

The team has also successfully connected the tiny vessels to larger structures. The goal is to be able to generate systems that can be used to understand more about living cells and how they interact.

*For information: Ryan Sochol, University of Maryland, Department of Mechanical Engineering, 2147 Glenn L. Martin Hall, Building 088, College Park, MD 20742; phone: 301-405-6928; email: [rsochol@umd.edu](mailto:rsochol@umd.edu); Web site: <https://www.umd.edu/> or <http://bamlab.com/>*



# Panic Button

When the pilot of a small plane becomes incapacitated for whatever reason, there is very little time for passengers to react. Even if they can broadcast a distress call fast enough to be guided by an expert on the ground, it's difficult for an inexperienced person to land an aircraft safely. Which is why a new product called Autoland is going to become a standard feature on the Piper M600/SLS turboprop, and other single-engine aircraft are expected to follow suit in the near future.

Autoland can be easily activated by passengers and combines GPS satellite-based navigation with electronic aircraft control systems to provide an alternative landing protocol in the event of an emergency. It goes beyond the standard autopilot by transmitting an emergency code to air-traffic controllers and other planes close by. It analyzes weather conditions and fuel reserves before selecting the optimum landing site. Landing is also automatic as it lowers the landing gear, sets the flaps, aligns the plane on the runway and applies the brakes once on the ground.

Although Autoland has been designed purely for emergency use, it could bring us another step closer to autonomous aircraft for passenger use.

*For information: Garmin International, 1200 E. 151st Street, Olathe, KS 66062; phone: 913-397-8200; Web site: <https://www.garmin.com/en-US/> or <https://www.garmin.com/en-US/autonomi/>*

# Major Election Year Opportunity

*continued from page 1*

creating new competitive advantages and disruptions. Anticipatory Leaders know that it is a Hard Trend, or future certainty, that contextually aware devices built around the Internet of Everything (IoE) will continue to grow at an exponential rate, along with other prominent digital disruptions. This is why these anticipatory leaders and organizations do not “wait and see” for fear of unknown election results. Regardless of who is elected president, exponential change and digital disruption will escalate!

Disruptions and game-changing hardware and software have no political agenda and will not wait for the election results to make themselves appear. So with all that being said, are you and your organization going to “wait and see” like many of the masses, or continue to say “yes” to elevating your innovation game and grow exponentially?

## Going Opposite

The first way to continue to anticipate and better become a positive disruptor instead of the disrupted is to go opposite. I've written about this principle in the past; going opposite is always a better option for your organization's growth. When everyone goes one way, Anticipatory Leaders go the other and take the road less traveled.

In the case of the election, after everyone first goes the way of “waiting and seeing” what happens, they all will naturally need to react quickly after the results. Doesn't that sound like a lot of stress, work, and a little more uncertain in the long run, especially when we have future certainties in our hands, such as mentioned above with the constant rise of software and hardware improving and impacting the Internet

of Everything (IoE) as an example?

Anticipatory individuals know that this is the year where it's much easier to grab competitive advantage due to the fact that most are sitting on their hands and will have so much wasted time to make up for once the November election results roll around. Anticipatory Leaders are looking to do the opposite in 2020 and, more importantly, looking to do much more with their year. They will double down on redefining and reinventing their products, services, and customer experiences before someone else does, disrupting you instead of allowing you to be the disruptor.

## Realign Focus and Become Positive Disruptors

Another big reason so many organizations and individuals alike “wait and see” instead of anticipate and disrupt during an election year is due to lack of focus. I'm sure everyone reading this in the United States can attest to the fact that we all get bombarded with divisive, degrading, and ultimately distracting political TV ads throughout the entire year.

These ads, in addition to social networks like Facebook that allow politicians to post and share whatever they desire, fact or fiction, leave us divided rather than united and ultimately distracted from our strategic focus. In turn, this divisiveness could also greatly hurt our ability to communicate and collaborate with colleagues and allies. I challenge you and your organization to disallow yourself from getting sucked into political attack ads emotionally if you wish to reap the rewards of taking positive action in this 2020 election year.

I highly suggest not to just merely increase your focus, but increase your focus on being positive disruptors. Becoming a positive disruptor is doing something that needs to happen as everything can either be improved dramatically or has facets to it that need dramatic improvement. Oftentimes, during



an election year, this is the perfect time to more easily anticipate and see where positive disruption can occur, as an election year is generally when more of the country feels negative or uncertain about the future. Because Hard Trends will still always be at play, a positive disruption has the power to reunite many and help humankind move forward in a positive way.

### **The Cost of “No” in 2020**

Another crucial concept for companies thinking they will play the “wait and see” game during the election year to consider is what I refer to as the cost of the “no.” Saying “no” to the time and money needed for innovations has always been easier than saying “yes” because in the past, “no” didn’t have a cost associated with it. It costs nothing to turn good ideas down, to turn down expensive innovation, and the way some see it, to avoid any kind of “dangerous financial risk” it might have.

Likewise, saying “yes” to innovation will take time and money. An employee at a manufacturing firm with an idea of how to implement augmented reality on the manufacturing floor to increase productivity and jump ahead of the competition will cost something to develop and implement, whereas saying “no” to it will quickly eliminate all costs and time spent. Your average financial executive would sooner say “no,” and save the money for something else, most likely a low-risk incremental improvement.

However, a positive disruptor who says “yes” to a game-changing innovation that is based on a Hard Trend they know will happen anyway, regardless of who does it, will drive low-risk innovation and win. Anticipatory Leaders do the opposite of taking a “wait and see” approach during an election year by increasing their focus on using Hard Trends to drive innovation and positive disruptions because they know those innovations will happen,

either by them or by someone else.

The important question to ask yourself and your organization is this: What’s the cost of waiting this year? Better yet, ask: What is the cost of saying “no” when you know that positive disruptors are saying yes? Consider what happens if you say “no.” Are you risking more by playing it safe in a time of exponential, transformational change? The answer is yes, you are! Your customers and the entire world are changing, no matter who is elected president this year. Are you changing as fast as they are, or will they pass you up? Additionally, what’s the cost of losing market share to Anticipatory Leaders? Truth be told, depending on the level of digital disruption created, that cost could be your entire business.

### **Starting Fresh in This New Year and New Decade**

So where do you start? This is a new year, a new decade, and an election year. It is quite uncertain in many ways; however, strategy based on certainty has low risk and high reward, so to make it more certain, start by identifying Hard Trends and certainties you do know will happen. Remember that trends by themselves do not have power until you attach them to an opportunity. Continue to pay attention to those Hard Trends and related opportunities in order to see disruption before you get disrupted, and use those opportunities to become a positive disruptor.

Most importantly, and unique to this year, do not “wait and see!” Go opposite, keep focused on creating the positive disruptions that need to happen, and understand the cost of saying “no.” If you continue to innovate and disrupt, you will utilize this transformative new year in a profound way and likely set your organization ahead much further than you ever thought it could be.

# Burrus Research®

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