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TECHNOTRENDS[®]

NEWSLETTER

*The biggest ideas that are
changing everything*

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Embracing the Power of Blockchain Technology

By Daniel Burrus, CEO of Burrus Research

During this digital transformation, we have witnessed traditional forms of physical media fall out of favor with users who have abandoned their treasure trove of CD's, DVD's, books, magazines and even photo albums to enjoy an entirely clutter-free life.

Digitally organizing our lives has enabled us to remove shelves, cabinets and dust magnets while we get our entertainment fix from the likes of Netflix, Spotify or the endless list of online alternatives.

We often forget just how much technology has changed our lives in the last few years, and it should be of no surprise that our love of cold hard cash could be the next 20th-century casualty to fall by the wayside.

Over in Denmark, along with its Scandinavian neighbors Norway and Sweden are leading a charge towards a cashless society that will see the end of tooth fairy payments for children but will equally wave goodbye to a world of money laundering, fraud, and tax evasion.

The bonus of scrambling around for loose change for any purchase or public transport journey to be replaced by just swiping a card or smartphone for a contactless payment is incredibly appealing for most users.

In many ways, the concept of handing over a handful of silver coins in exchange for any product

or service can feel quite primitive in our modern world that is dominated by technology and an always online ethos. However, it's not all about contactless and smartphone payments as there is another game changer on the horizon in the form of a cyber currency.

We have already seen the publishing, music and movie industry ultimately evolve into something quite different from what many of us remember or grew up with, but does this latest technology disrupter have the power to transform our traditional banking system?



We often forget how much technology has changed our lives in the last few years.

Blockchain is the digital ledger software code that powers Bitcoin that is probably best known for its connection with cryptocurrency Bitcoin. Meanwhile, CEO of Digital Asset Holdings Blythe Masters has her sights set on changing the way banks trade loans and bonds in a way that could dramatically change the way we look at both business and banking. The speed in which technology trends can go viral illustrates how an Internet of finance could become a reality sooner rather than later.

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TECHNOLOGY NEWS HIGHLIGHTS

Personal Digital Assistant



A leading developer of dashboard mounted car cameras and wearable technology for the visually impaired recently introduced an “augmented attention” device that’s designed to observe the world around you and offer helpful advice. Known as MyMe, it combines the concepts of Google Glass and the Siri digital assistant with advanced sound- and image-recognition processing.

Based on their earlier work designing products for the visually impaired, the new device can read text, recognize faces and identify products on a shelf with the simple point of a finger. But MyMe goes a step further to analyze facial expressions, automatically log what you eat and even create profiles of the people you interact with.

Like Google Glass, MyMe includes a Bluetooth earpiece to communicate with the wearer. However,

the camera – designed as a pendant that clips onto your shirt or belt – is less obtrusive than the glasses-mounted design.

Privacy concerns have also been addressed by performing all data processing in real time so that no images or sounds are recorded. Instead, MyMe gathers the information and provides a summary for the user, making it not only more efficient but also less invasive to others.

Although the price has not been disclosed, it is expected that MyMe will become available to consumers in the fall of this year.

For information: Orcam Technologies Limited, Israel; phone: 800-713-3741; Web site: www.orcam.com/

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General Motors is taking a revolutionary approach to designing electric vehicles that are priced for the masses, recently unveiling the 2017 Chevy Bolt. From the outside, it looks like a typical five-door compact, but if it meets GM claims, it could be a game-changer in the EV market.

The word on the street is that the Bolt will boast a triple-digit range of 200 miles on a full charge. More importantly, after the federal tax credit, it will cost less than \$30,000 – a price point lower than the average new car currently sold in the U.S. The only other company that offers comparable range is Tesla, but their least expensive models start at more than \$70,000 – not exactly affordable for the masses.

The 60 kilowatt-hour lithium-ion battery contains 288 cells in 96 cell groups to deliver 160 kilowatts of peak power.

A newly-developed, nickel-rich battery chemistry improves thermal operating performance to maintain output in varying climates, and lower profile cells span the entire floor while maximizing the interior space.

The automaker has also provided a glimpse at some other interesting features, including a 4G LTE connection with “EV navigation mapping” to guide you to a charging station when the battery is running low. The car can even recognize the driver

based on which key is being used, and automatically makes adjustments (like tuning the radio station) accordingly.

For information: General Motors Company, P.O. Box 33170, Detroit, MI 48232-5170; phone: 800-222-1020; Web site: <http://www.gm.com/content/gmcom/home.html> or <http://media.chevrolet.com>



The challenge of integrating intermittent, distributed energy resources – such as solar and wind – into the power grid has been a major roadblock to the widespread adoption of renewables. But recently, companies in several countries have launched trading platforms that will allow owners of small, renewable generators to trade energy as supply and demand warrants.

In Germany, Sonnenbatterie has developed a system that connects consumers directly with producers. It incorporates battery storage for suppliers to pool excess energy reserves from which community members can draw on demand.

The price is set at 25 cents per kilowatt-hour, which is less than publicly available power in Germany but more than utilities pay for producers to transfer power into the grid.

In the Netherlands, the platform developed by Vandebron allows consumers to contract directly

with clean energy suppliers at a mutually negotiated price. The system has more than 38,000 subscribers.

And in the United States, Yeloha links consumers with generator owners, feeds the electricity into the grid, and works with utilities to track the amount of power transferred between providers and users.

*For information: Sonnenbatterie GmbH, im Innovationspark Allgäu Am Riedbach 1, 87499 Wildpoldsried, Germany; Web site: www.sonnenbatterie.com
Vandebron Energie B.V., Herengracht 545, 1017 BW Amsterdam, The Netherlands; phone: +31-0-880-444555; Web site: <https://vandebron.nl/#/>*



Infection-Detecting Bandage

Dangerous bacterial infections are a relatively common complication of wound healing that not only compromises patient health but is also costly to treat. As a result, antibiotics are often over-prescribed, which contributes to the never-ending circle of drug-resistant bacteria and the need for more potent antibiotics down the line. To help combat this issue, researchers have developed a new type of dressing that turns fluorescent green when exposed to levels of bacteria that commonly cause wound infections.

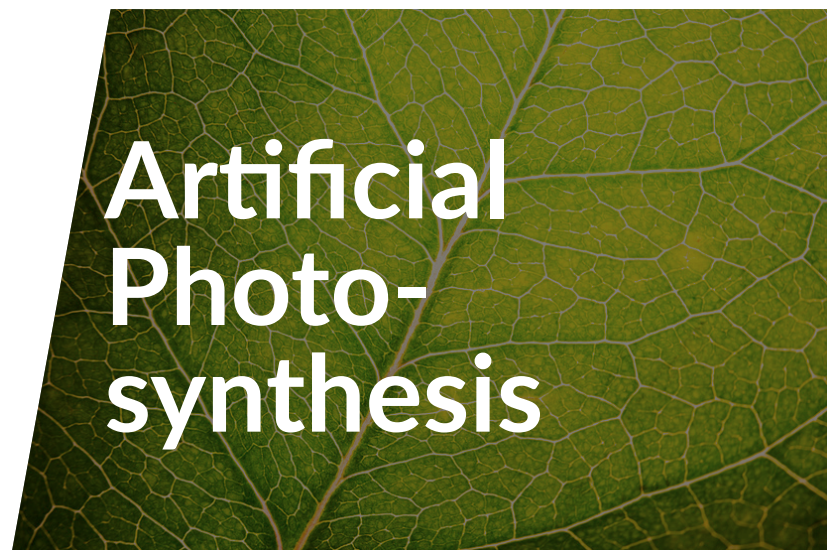
While bacteria are present in all wounds, they are often cleared by the immune system before the population reaches harmful levels. In some cases, however, the infection can grow out of control, requiring intervention.

According to the researchers, this transition may occur several hours before the onset of clinical symptoms, and is likely associated with the formation of a biofilm layer containing microbes that prevent the immune system from fighting off the bacteria.

The new dressing is designed to react to the toxins released by this biofilm layer. Tiny capsules containing dye mimic typical cell membranes. When the toxins puncture these membranes (as they do cells in the body) the capsules release their dye into a gel which causes it to glow, providing an early warning of potentially life-threatening infection. Earlier warning means earlier intervention, which is generally easier and more effective.

Although the new “smart” bandage has yet to be tested on humans, experiments using sample swabs from wounds and blisters indicate that the dressing is specific to pathogenic bacteria, but does not respond to biofilms of non-pathogenic species, and so will not produce false positive results. Clinical testing is expected to begin in 2018.

For information: Toby Jenkins, University of Bath, Department of Chemistry, Claverton Down, Bath BA2 7AY, United Kingdom email: A.T.A.Jenkins@bath.ac.uk; Web site: www.bath.ac.uk



Artificial Photo-synthesis

When it comes to sustainable energy, hydrogen is the ultimate fuel – combining harmlessly with

oxygen to produce pure water. And when it comes to producing hydrogen, photosynthesis is the ultimate process – using sunlight to break down water into oxygen and hydrogen.

Put the two together and you have a system that's not only sustainable, but environmentally neutral – which is why artificial photosynthesis has become the holy grail of carbon-neutral energy production. And recently, engineers found a material that may bring it one step closer to reality.

It turns out that mimicking what plants do naturally is not a simple task. Developing devices to gather light efficiently requires expensive manufacturing techniques which stack up thin layers of material (such as silicon) to create a band gap that can trap energy without absorbing it (ala solar cells).

The new discovery simplifies the material into a single layer of manganese oxide, making it cheaper to manufacture as well as more efficient. As a result, less sunlight is needed in order to carry out the process of generating fuel.

The discovery has some very exciting potential for creating new energy sources. In theory, a rooftop made of the new material could turn rain water into energy using nothing but the sun, and hydrogen-powered vehicles could recycle their own by-products to generate more fuel.

For information: Jose Mendoza-Cortes, Florida A&M University-Florida State University, Department of Chemical and Biomedical Engineering, 2525 Pottsdamer Street, Building A, Suite A131, Tallahassee, FL 32310; phone: 850-410-6149; fax: 850-410-6150; email: chemical@eng.fsu.edu; Web site: www.eng.fsu.edu/cbe/



Vegetarian Shrimp

Over the years we've seen all sorts of animal food substitutes come available that contain absolutely no animal products – from tofu turkey to veggie burgers to egg substitutes. Now a new startup is focusing on developing high-protein, low-fat seafood using only plant-based ingredients – starting with shrimp, the most popular seafood in the U.S.

The shrimp prototype, which is due to be taste-tested in February, is made primarily from a strain of algae that shrimp eat. It's also the main ingredient that imparts the characteristic flavor and color.

Other proteins are added to the mix to get the right combination of flavor and texture, and to keep protein levels on a par with the real thing.

Sustainability and health are principle driving factors in the development of seafood substitutes. Scientists have projected that by 2050, the number of edible fish in the ocean will be decimated due mainly to overfishing and pollution. These same toxins are already present in shrimp and fish currently being harvested in many parts of the ocean, and concerns about antibiotics are now causing consumers to look for other protein sources. If they also taste good, it would be a win-win for everyone.

For information: Dominique Barnes, New Wave Foods, 485 Jessie Street, San Francisco, CA 94610; Web site: <http://www.newwavefoods.com/#start>



“Cool” Lasers

Scientists at the University of Washington recently discovered how to “point cool” very small target areas using an infrared laser, a technique which could have far-ranging implications for a variety of applications including medicine, computing and manufacturing.

Using materials commonly found in commercial lasers, a single crystal suspended in water was illuminated with infrared light, causing the crystal to glow in such a way that the glow itself had more energy than the light it absorbed. This actually carried heat away from the crystal and the water surrounding it, lowering the temperature by 36 degrees Fahrenheit. The team also demonstrated a process for manufacturing the crystals in a fast, inexpensive and scalable manner, paving the way for laser refrigeration.

Such a laser could be used to reduce temperatures within specific components of computer chips, or to cool down neurons and individual cells without damaging them. And the cooling technology itself could be used to prevent higher powered lasers (such as those used in communications or defense applications) from overheating.

For information: Peter Pauzauskie, University of Washington, Center for Nanotechnology, 302D Roberts Hall, Seattle WA 98195; phone: 206-543-2303; fax: 206-543-3100; email: peterpz@uw.edu; Web site: www.washington.edu



Deep Learning Car Computer

The future of autonomous driving has arrived with the introduction of NVIDIA DRIVE™ PX2, a deep-learning computer platform for in-vehicle artificial intelligence that solves the daunting challenges of self-driving cars.

The DRIVE PX2 incorporates two Tegra® processors and two discrete Pascal graphics processing units (GPUs) to provide 8 teraflops of computing power – the equivalent of 150 MacBook Pros. Multiple sensors and 360-degree detection allow the system to quickly adapt to vehicles, pedestrians, road debris and signs and to anticipate potential threats for safer navigation. Deep learning also addresses issues which conventional visual processing units cannot, such as poor weather (rain, snow, fog) and extreme lighting conditions.

Volvo recently announced that the new system will be incorporated into a fleet of 100 SUVs hitting the road next year. The autonomous driving program is part of a company-wide initiative, known as DriveMe, which sets new safety benchmarks. Volvo’s vision is to eliminate death or serious injury in new Volvos by the year 2020 through the deployment of safety improvements that will include autonomous and semi-autonomous driving technologies.

For information: NVIDIA Corporation, 2701 San Tomas Expressway, Santa Clara, CA 95050; phone: 408-486-2000; fax: 408-486-2200; Web site: <http://www.nvidia.com>

Embracing the Power of Blockchain Technology

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Blythe delivered a massive wake-up call to finance leaders when she compared the influx changes to the arrival of the internet when she advised “you should be taking this technology as seriously as you should have been taking the development of the internet in the 1990s. It’s analogous to email for money.”

The interesting aspect of Bitcoin is the ability to buy and sell without the need for an intermediary that could represent a paradigm shift in the management and structure of the financial services industry. However, adopting innovation and changing entire ecosystems is not something that the notoriously cautious types that frequent financial services or regulation committees are famed for.

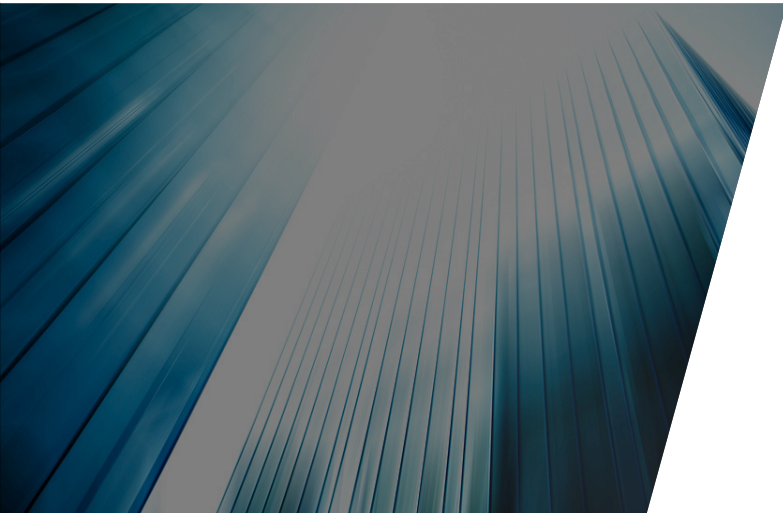
This technology that has the potential to reduce the role of the banks would also be like turkeys voting for Christmas but do not write these developments off just yet. These could save consumers and the financial industry billions of dollars while also removing their reliance on middlemen to offer a speedier more efficient 21st-century banking experience.



The ultimate goal is to move payments globally much faster while also becoming more transparent and lowering costs. We will probably begin to witness early adopters making waves in the private market before the cautious big players speak of standardization and implementation, but there are already a few of them dipping their toes into the water.

According to the PwC, there are already over 300 technology start-ups that are developing ideas that will allow blockchain to revolutionize the financial services. Big players Visa and Nasdaq are already heavily investing into a blockchain start-up and there are also plans to modernize the London Market, and Lloyds are looking towards blockchain technology to improve their data access and reduce costs associated with administrative paperwork.

There are daily stories of heavyweights within the finance industry that are becoming increasingly eager to capture the tamper-proof benefits offered by a future web-based cryptocurrency and technology leaders such as Microsoft also throw their hat into the ring to demonstrate the possibilities that blockchain technology can offer.



This technology offers an exciting potential to completely revolutionize the way in which the finance industry works but in its infancy, many will continue to exercise great caution before rushing into a shiny electronic cash system that's fully peer-to-peer, with no trusted third party. However, the future of cash and pockets full of loose change are indeed looking numbered and wonder if in just a few years we will be looking back at our quaint primitive methods of using the physical money, in the same way, many do with physical media now.

Cryptocurrencies that thrive in a transparent environment might feel like a foreign concept today, but the rise of blockchain technology is one Hard Trend that will quickly prove to be impossible to ignore. This was confirmed by anyone who attended the World Economic Forum in Davos, Switzerland where once again Blockchain technology dominated conversations.

Although the partnership between technology and finance seems like a natural progression, it's not until the industry can eradicate the fear of online fraud that consumer confidence will be restored enough to enable the mass adoption required to kickstart the migration away from the traditional infrastructure.

With authentication and authorization being the most important components, it's clear that individuals, businesses or even governments will demand a strong focus on cybersecurity, identity management, and privacy along with international standards without stifling innovation. The key to doing this is by challenging the old way of doing things.

As politicians and economists continue to debate the possibilities this disruptive technology has to offer. There is no denying how the removal of middlemen and the manual processing of our past, will not only reduce costs and increase the efficiency of services but will finally deliver the much needed instantaneous transferring of money to anywhere in the world.

A fascinating aspect of the latest installment of this digital transformation is how technology continues to disrupt almost every established area of what we know and love. The way in which Airbnb and Uber have effortlessly changed the hotel and taxi industry illustrates perfectly the speed in which our world is evolving.

Maybe its time to stop clinging to business models of the past and accept the fact that the finance industry is just another monopoly in dire need of a 21st-century upgrade to remain relevant in our fast moving digital world.

An abstract graphic in the top right corner of the page, consisting of a dense web of thin, light-gray lines connecting small, dark-gray circular nodes. The nodes are scattered across the upper right portion of the image, creating a complex, interconnected pattern that resembles a molecular structure or a network diagram.

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