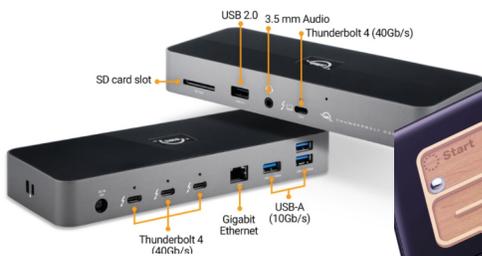


CES 2021

The Good and the Odd



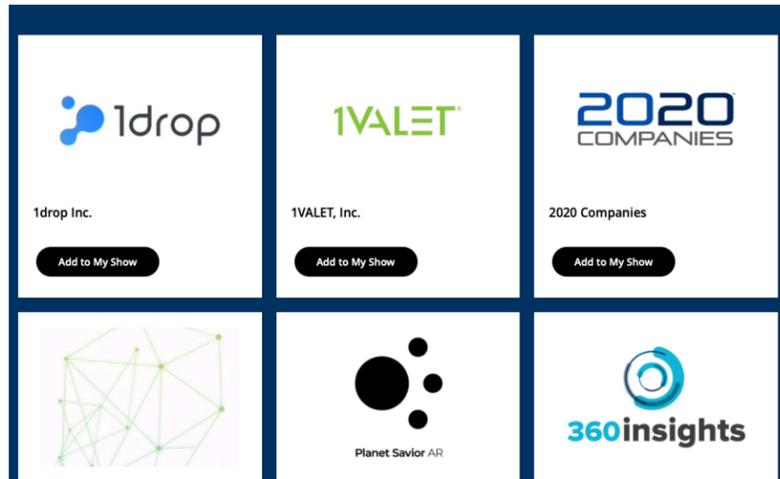
CES 2021: Pre-Show Virtual Events Feature Game Cubes, Telepresence Robots, and Disinfecting Alarm Clocks

By Jeff Porten

It's that time of the year when I normally greet you from "fabulous Las Vegas" with news from the annual CES exhibition. But this year, I'm writing from my undisclosed location in Philadelphia because CES is entirely virtual. That's a bit ironic for a show where "disruption" is every fourth word out of a marketer's mouth: seeing that exact thing happen to its fifty-year-old format.

The Consumer Technology Association, which runs the show, is doing its best to dress this change up as merely a variation on business as usual. Still, I have no idea how the virtual show will go, and I don't know how it will affect my ability to highlight the mix of wonderful, weird, and woeful that I typically see. Having attended the show roughly 20 times, I can scan several hundred booths in an hour, giving each one a brief opportunity to strike me as novel and worth more time. Compare that to the screenshot above right, which appears to be the booth experience this year, unless it changes when the doors officially open on 11 January 2021.

Clearly, someone understands that no one will browse nearly 2000



exhibitors this way, so CTA "helpfully" put a randomizer on its home page. (See screenshot below.)



That's all very nice, but I don't know what backwards-FE in a blue circle stands for and I shouldn't have to. I can't believe CTA didn't figure this out, but vertical business cards bearing logos don't replicate the exhibition experience. It could have been better simulated by giving each "booth" space for four

thumbnails and text the length of two tweets, and then letting each exhibitor do whatever they pleased with that to get me to click on their card.

Beyond that, so much of the value of CES is being there. Whether it's getting hands-on with a production model that won't be released until April, seeing a prototype under glass, or just getting a sense of whether a company has their act together—even if it's just two guys in a garage—nothing beats being there in person. My media pass to CES gets me access to a bunch of digital material and focuses it under a journalistic microscope—but most of

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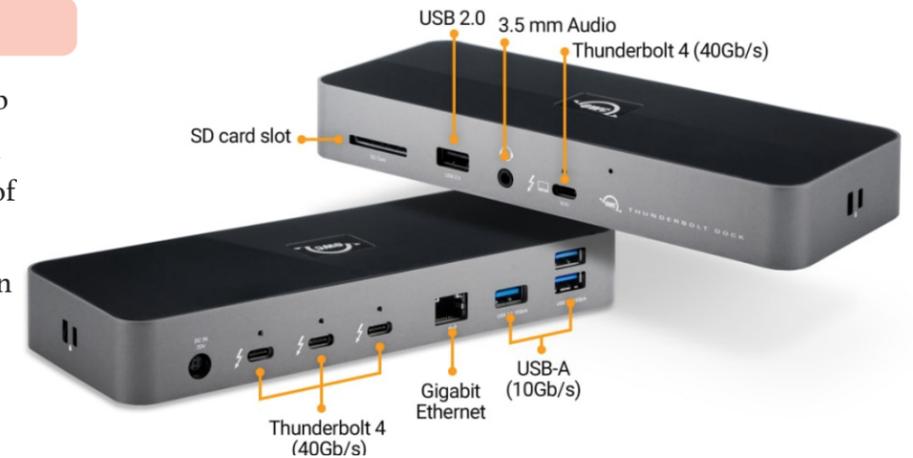
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this will be on the Web the end of the week. Mostly, I'll be curating filtering that firehose of data, but I probably won't see much more about each gadget than can. The value I can provide as a reviewer won't really come into play until some of these companies send samples—which is unlikely in the case of a \$45,000 electric SUV.

So I'm in the position of having to come up with a new definition of "eye-catching" to determine what to share with you. In one area that's not a break with tradition, there were shows before the official launch of the conference where I saw a few things that covered the spectrum from infrared to ultraviolet—literally.

OWC Docks and Drives

Other World Computing traditionally provides a suite at the Venetian that is an oasis of calm at CES, and the company has a reliable track record of solid products worth covering. A refreshed Thunderbolt Dock supporting the M1-based Macs' Thunderbolt 4 is shipping this month, with the key improvement over last year's Thunderbolt 3 dock being that Thunderbolt 4 supports hubbing one incoming and three outgoing Thunderbolt 4 ports (Thunderbolt 3 only



\$50 reduction from the release price of last year's Thunderbolt 3 dock. OWC has also refreshed its USB-C Travel Dock: the new USB-C Travel Dock E has added gigabit Ethernet to last year's collection of one USB-C port, two USB-A ports, an SD card slot, and HDMI supporting 4K resolution. It's available in February for \$64.99. I think it's attractive, and last year's model was sturdy, but you can find docks with more features at this price point.

OWC's new U2 Shuttle is a storage device designed to be slotted into a RAID or other

provide your own drives costs \$149; U2 Shuttles with OWC storage start at \$339 for 1 TB and \$449 for 2 TB, up to \$5299 for 32 TB.

1MORE ComfoBuds Pro Earbuds

1MORE reliably shows up at CES with an intriguing but sometimes bewildering line of audio products, many of which aim for the sweet spot of "pretty darned good for a mid-tier price." For example, I have a review unit of last year's Stylish earbuds (\$79), and they're the cheapest earbuds I've

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seen that can use either bud for master audio, allowing one to be used while the other charges in the case. But the sound quality and mic, while mostly decent, pale compared to other earbuds, and this year iMORE is setting higher sights, squarely targeting AirPods. Its ComfoBuds look like AirPods with a rubber tip added, and the spec sheet makes them sound

competitive: add IPX5 water-proofing, subtract an hour of playtime (4 hours vs. AirPods' 5 hours), then wrap it up in a \$59.99 price tag, on sale for \$49.99 at the

moment. The ComfoBuds Pro add "environmental noise cancellation (ENC)" and raise the price to \$99.99. I wish I knew the difference between ENC and ANC. As I said, bewildering, partially because the materials I have don't clarify between the ComfoBuds product line and the specific ComfoBuds product. I hope to have more detail when I can try a review model. ComfoBuds are available now, with ComfoBuds Pro coming in February.



Flic 2 Smart Button

The Flic 2 is a programmable button you can stick to things. That's all. This struck me as silly until I realized how often I use my Philips Hue remote to turn on my lights. Flic 2 ties into Apple's HomeKit (and a dozen other smart ecosystems such as IFTTT) to provide tactile access to any command, which might otherwise require 30 seconds of fiddling with your phone or

remembering Siri's magic word combinations. Buttons can be programmed with different results for press, double-press, and long-press.

Flic retailing is confusing. In US retail stores that the company is still lining up, a starter kit including the required hub, four buttons, and nine stickers with various icons for labeling



the buttons is \$159.99; additional buttons come in two-packs for \$49.99. On Flic's website, the starter kit has only three buttons for the same price, but there's also a Pro Kit (six buttons, \$219.99) and a Mega Kit (15 buttons, \$399.99). Accessories include a \$19.99 infrared beamer that enables a Flic 2 button to control any device that uses an IR remote control, a \$3.99 metal clip to attach a Flic 2 to clothes or straps, and an additional 40-icon sticker pack for \$4.99. It's all available now online.

iHome PowerUVC Disinfectant Clock

iHome has a knack for coming up with designs that look reminiscent of Apple, so it's not too surprising that its PowerUVC Pro alarm clock resembles the love child of an LED watch and a Mac mini. With the top closed, it functions as a standard bedside alarm clock. Flip the top lid open, and there's a compartment that will

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sterilize your phone, keychain, and other handheld devices in 3 minutes using UV light. Use the built-in buzzer as an alarm or make the clock into a Bluetooth speaker; you can keep your phone charged with the two included USB charging ports. A quick search suggests that, although there are potentially infectious bacteria on mobile phones, the level is similar to frequently touched surfaces in domestic and public environments. The concern is higher for healthcare workers, whose phones carry a more worrying collection of pathogens. I'm not aware of the clinical value of disinfecting a phone, but I'm guessing it couldn't hurt—but whether that's worth \$99–\$129 (depending upon retailer) is a judgment call. Available now.

Pictar Stay Home Kits

Pictar sells a range of products designed to augment your phone's camera; for example, its Pro Grip gives an iPhone the heft and physical feel of a camera body. Its new products for 2021 are an



uninteresting line of selfie sticks, but I was rather impressed by its marketing of "Stay Home Kits," each of which bundles a selection of products for a particular use. For example, its Family Zoom Kit includes a wide lens, light, and phone

tripod for \$109.99 (\$15 cheaper than a la carte), while the Home Studio Pro Kit adds the Pro Grip to that bundle and costs \$234.99 (\$40 cheaper). I've been in innumerable Zoom calls where people were crowding around a laptop; had I known about the Family Zoom Kit a few weeks ago, I might have put one under a tree or two.



Ohmni Telepresence Robot Robots have been ubiquitous at CES for a long time, so much so that it's one reason the show is a comedic target. So there's nothing new about a robot that's basically an iPad on a

high-tech stick—but I suspect many people have newfound uses for a Zoom-enabled tablet that they could navigate around a family member's home that weren't obvious a year ago. The \$2699 Ohmni

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Understanding 5G, and Why It's the Future (Not Present) for Mobile Communications

By Glenn Fleishman

How much bandwidth do we need in day-to-day life? Do we need enough to stream 4K video at 60 frames per second while driving down the highway? How quickly do we need interactions to round-trip from our phones to provide a real-time feel and interact with new devices—like self-driving cars? In a world where billions have little access to high-speed data, why would a gigabits-per-second standard even matter?

Those are the questions that we should ask as cellular data networks continue to mature. Apple devoted a “Stan Sigman of Cingular at the iPhone introduction” level of time and attention to 5G at its recent iPhone 12 introduction, and many of us in the industry are still puzzling over why. Apple doesn't usually parrot marketing points or let speakers from other companies drone on about things that aren't immediately useful to Apple or its customers.

Fifth-generation (5G) cellular networks have already achieved a reasonable level of rollout across the US and a few other countries, and many more countries are aggressively pushing private companies to build out the infrastructure as a national goal. It will eventually allow phones, tablets, fixed devices, and other equipment to transfer data at speeds ranging from hundreds of megabits per second to several gigabits per second. That's impressive, given that it's far faster than the vast majority of broadband Internet connections in the developed world.

5G is inevitable, and it would be a simple joke to say that it's “just one more” than 4G, but to some extent, that's true. 3G was the first Internet-focused flavor of cell networks, and 4G and 5G built on those principles. But 5G is being marketed as The Next Big Thing that will have some kind of transformative

effect on everyday life and business.

Even the current generation of 5G-equipped devices that really have 5G tech—not the “5GE” label that is just fast 4G—have the potential to make data move zippier and with fewer delays. In practice, though, true 5G is hard to find in the field, where 4G LTE often outpaces 5G with current-generation devices. (Apple's 5G-enabled iPhones aren't yet widespread, so we can't compare their performance; it's unlikely to be much different.)

However, 5G won't be transformative for most people or purposes. Its advantages primarily accrue to cellular carriers, even more so than 3G or 4G, which offered significant boosts in throughput and allowed higher rates over broader areas. 5G will let carriers charge more for service in some cases, handle more customers simultaneously, break into new markets that require higher throughput or low latency, and equip more kinds of devices with ubiquitous high-speed cellular data connections.

For users, it will gradually feel like we have broadband no matter where we might be, which is not terribly exciting except when you want to stream a 4K movie in the backseat of a car on a highway or download a 5 GB file in a minute in a coffee shop. The level of excitement should be more akin to finding out your city has silently dug up the streets while you were sleeping, replaced 10-inch water mains with 20-inch ones, and then cleaned it all up without you knowing. 5G is better network plumbing that your “Internet utility” has to install to deal with the amount of data and new data connections it wants to move around a city.

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(If you're concerned about health issues related to 5G, I wrote an extensive article about why the current debate is mostly manufactured. See “Worried about 5G and Cancer? Here's Why Wireless Networks Pose No Known Health Risk,” 6 December 2019.)

Let's start with the 5G technology and move into its applications.

Five Gee Whiz

The cellular industry has advanced across five generations of standards, about one generation per decade, starting in the 1980s. The 1G standard was analog and entirely focused on voice, although slow data rates could be crammed through. (I once filed a newspaper column over 1G at 9600 bps.) 2G switched to digital, improved voice quality, and enabled throughput close to that of the 56 Kbps dial-up modems of the 1990s. Next, an interim 2.5G improvement called EDGE, a bridge to 3G, upped data rates to as fast as 200 Kbps in Apple's first iPhone. (That iPhone avoided 3G because the chips available in mid-2007 drained batteries like the dickens.)

It wasn't until 3G emerged that we saw glimmerings of modern, high-speed, ubiquitous Internet availability. While 3G came in many flavors, it started at roughly hundreds of Kbps upstream and just over 1 Mbps downstream in the best conditions. Over a few years, improved phone chips and base stations enabled 3G to reach over 7 Mbps downstream. Some versions allowed voice and data to flow simultaneously; others had to pause data while a call was active.

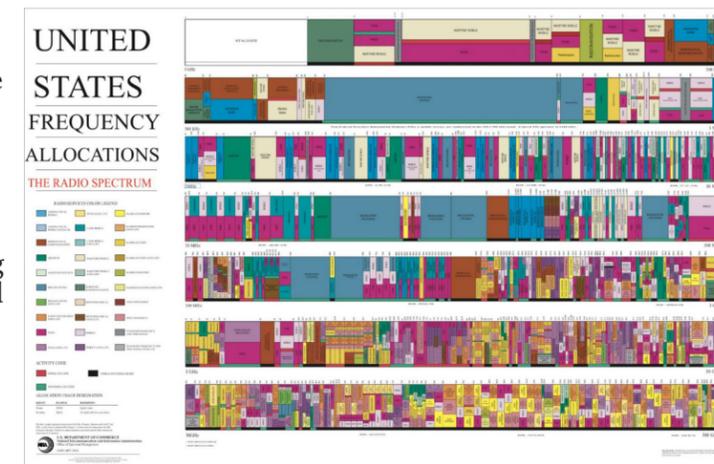
While the future of cellular was still in development as Long Term Evolution (LTE), which would be the underpinning of 4G networks, carriers in the US got antsy. They started labeling their faster 3G networks as “4G,” presaging what's happening today with 5G. Early “4G” networks were only slightly faster. True 4G LTE boosted speeds into the current tens of Mbps range, although LTE's specification allowed for up to 1 Gbps for fixed usage and 100 Mbps for mobile purposes. (4G and LTE are sometimes used together, as “4G LTE,” and sometimes LTE is used preferentially to 4G.)

Along with the evolution of these generations came an increase in the number of electromagnetic frequency ranges that cellular carriers could

use. Every country slices its spectrum up a little differently, though North America and much of Europe are aligned, as are many adjacent countries in other regions. While you may be accustomed to unlicensed spectrum used for Wi-Fi, cellular carriers must generally purchase licenses—often time-limited leases—for swaths of spectrum at auction or in carefully arranged government deals that in some countries reek of patronage, nepotism, or outright corruption.

This 2016 wall chart (see figure above) from the National Telecommunications and Information Administration shows the utter complexity of frequency bands in use.

As cellular standards advanced, radio-chip manufacturing became more sophisticated,



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processing power and bandwidth demands from phones grew ever heavier, and spectrum availability became more baroque. Early cell phones, even well into the 3G era, had chips that could handle only a handful of popular bands. Apple made several models of iPhones to cope with worldwide differences. Over just a few years, though, Apple, Samsung, HTC, and others generally gained the ability to produce as few as two worldwide models that could handle dozens of bands. While moved a bit in this direction, 4G was more substantial, and 5G takes the cake. If you want to get a sense of how many different frequency bands are currently used, consult Apple's 5G and LTE iPhone bands page.

If you read down that list with a gimlet eye, you will note something intriguing: while most frequencies are listed as MHz (megahertz), just a few have GHz (gigahertz) following their names—and only on the newest iPhone models sold in the United States.

That's because the actual innovation in 5G isn't in better data rates in spectrum ranges used by 4G and earlier standards. Rather, it's about millimeter-wave (mmWave) transmissions that work at

extraordinarily high rates over very short distances. Let's dig into that along with what else 5G offers.

Long and Slow or Short and Fast

When trying to increase data throughput in any communications system designed to pass information, wired or wireless, engineers are constrained by the Shannon-Hartley theorem, a proof developed by three brilliant people (Harry



Noise is why you might see a Wi-Fi device advertised as carrying a maximum of 3.2 Gbps but measure only 500 Mbps of actual throughput when you copy a large file: with any interference or signal degradation over distance, the maximum data rate quickly drops down. (Wireless networking also has a fair amount of overhead—from 20 to 40 percent of throughput—that's necessary for managing traffic and preventing competition among devices on the same

and nearby networks.)

Throughput = Spectrum x Antennas

There are several methods to improve throughput within the constraints of Shannon-Hartley. One is to add spectrum: expand the frequency ranges to increase the amount of data that can flow. But adding frequencies requires the aforementioned government interaction. Countries are eager to spur innovation and investment, so they have regularly made more spectrum available to gain the ostensible future benefits of 5G.

Another method of improving throughput relies on adding antennas. That might sound like just improving reception or transmission, but for over 15 years, multiple-in, multiple-out (MIMO) radio systems have allowed devices to transmit simultaneous streams of data that a receiver can distinguish. By changing certain wireless characteristics and using different combinations of antennas, cellular and Wi-Fi base stations can even direct signals directly to specific devices, called beamforming.

MIMO allows frequency reuse in the same space, effectively multiplying throughput. It doesn't violate Shannon-Hartley because it leverages distinct

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Mailplane 4.3

Uncomplex has released [Mailplane 4.3](#), bringing support for macOS 11 Big Sur but not the new M1-based Macs at this time. The Gmail-specific email client also adds a Clipboard option to the Save Clip feature (enabling you to copy the current message as Markdown), indicates in the menu bar if an account has been signed out in the background, resolves a crash that occurred when canceling Insert Screenshot with the Escape key, and lets users disable the Enable GPU Rendering option to save battery life. (\$29.95 new, free update, 78.2 MB, release notes, macOS 10.12+)



Agenda 11.2

Momenta has released version 11.2 of its [Agenda](#) date-focused note-taking app, bringing full compatibility with macOS 11 Big Sur and the Relevant Notes widget to macOS. Mirroring the capabilities found in iOS 14, the Relevant Notes widget lets you select eligible notes from all notes or only from on-the-agenda, today, or upcoming for display in Notification Center. The update also enhances the output of prints and exported PDFs, ensures the reminder editor now

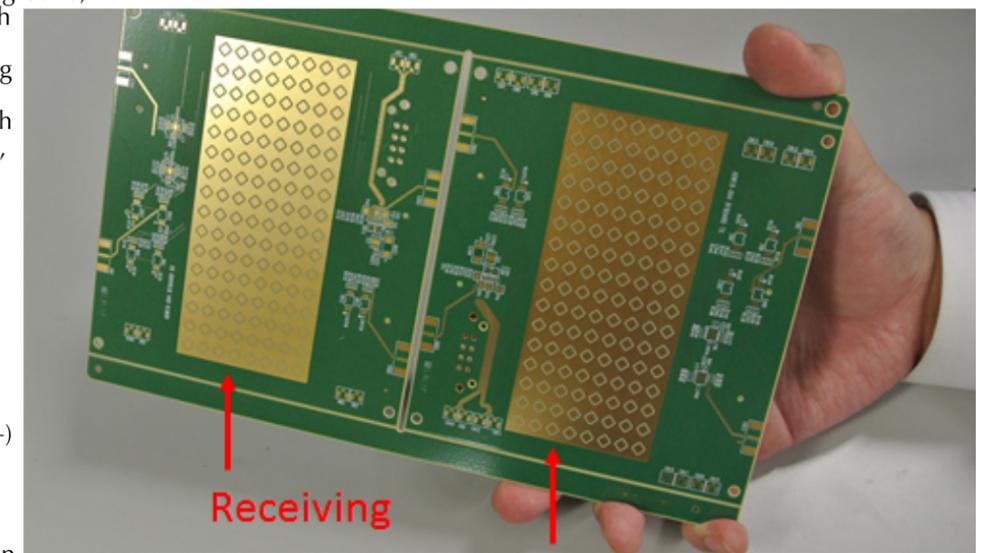


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paths across the same volume of space. Imagine a billiard table on which you send balls caroming around along unique paths. The difference is that as long as wireless signals are on different paths, they pass through each other, unlike billiard balls.

But MIMO has a physical



Fujitsu's 2018 design for a 128 antenna 28 GHz phased-array panel.

constraint: antennas have to be a particular length that corresponds with the frequency wavelength. The 2.4 GHz wavelength used in Wi-Fi is about 5 inches (12.5 cm), and commonly used antennas are designed to be half a wavelength. You've probably seen Wi-Fi routers festooned with antennas—some have 8, 9, 12, or even more external ones! But there's a practical limit on adding more antennas, even for cellular towers, due to their size and the complexity

of attaching them.

The millimeter-wave (mmWave) ranges available for 5G start at 24 GHz, which allows for extremely small antennas that can be packed together tightly. (A half-wavelength antenna at 24 GHz is 0.25 inch or 6.35 mm.) Cellular base stations might be equipped with several dozen antennas linked together into a phased array,

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production. But the idea was sound—particularly at mmWave scale.)

The downside of mmWave hinges on the relationship between signal power and wavelength. Higher frequencies require more power than lower frequencies to achieve the same range at the same signal quality to noise ratio (the commonly seen SNR measurement). At the same power level, lower frequencies can't transmit as much information as higher frequencies, but they travel further and penetrate solid objects better.

Range and penetration were two reasons why 2.4 GHz was preferred originally for Wi-Fi because, with the original very narrow Wi-Fi bands, transmissions could pass through objects, walls, and ceilings while maintaining a passable data rate. Wi-Fi in 5 GHz (and in 6 GHz in the US soon) relies on rules that allow for greater power and the capability to use much larger swaths of frequencies.

With mmWave, because the frequencies used are so high (starting at 24 GHz), its estimated range is like Wi-Fi: about a 500-foot (150-meter) radius. In comparison, cellular frequencies at 2 GHz enjoy a roughly 3-mile radius, and when you drop down to the even lower-frequency 700

MHz range, signals can travel within a 6-mile radius. (In practical terms, cell towers have to overlap to ensure seamless handoff and are placed far more densely than those maximum ranges to handle large numbers of users in dense urban areas.)

There's one more parameter here, too, that can affect throughput. Network systems encode data through modulation, which (more or less) maps bits into an analog pattern. Quadrature amplitude modulation (QAM) is heavily used for wireless communications. You can think of it as a square containing a pattern of dots spread out across rows and columns, called a constellation. The dots as transmitted should be received exactly on the interstices where rows and columns cross, but QAM is designed to let a receiver nudge dots that don't line up back into the right place.

Each generation of digital cellular and Wi-Fi technology has increased the size of this constellation, making it possible to cram more data into each time-slice of wireless transmission. Larger constellations require cleaner signals, which typically means that a device has to be relatively close to a transmitter to achieve the higher throughputs.

Conveniently, the high

frequencies of mmWave require base stations to be located close together to provide coverage at all. That fits nicely with large QAM constellations requiring clean signals.

Latency

Alongside all of these changes to increase throughput is the potential for 5G to reduce latency, a lagging factor in cellular that's a key attribute of responsive wired and Wi-Fi networks. Latency measures the amount of time it takes for a network transmission to pass from its origin to its destination, no matter how fast it goes. Think of the flow of water to a faucet: the water pressure and pipe width control the throughput—how much water can be delivered in a period of time—while latency measures how long it takes from turning the tap until water comes out.

4G networks have a latency of about 50 milliseconds. 5G should typically be closer to 10 ms, which is similar to modern Wi-Fi and roughly equivalent to the limits of human visual perception—the time between an image appearing and us processing it. However, 5G has the potential to drop even lower, down to 1 ms, which is the same latency that wired Ethernet can achieve.

For interactive purposes,

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URL Manager Pro 5.5

Alco Blom has released version 5.5 of his URL Manager Pro bookmark manager, now a macOS Universal app that will run natively on both M1-based Macs and Intel-based Macs. Compatible with macOS 11 Big Sur, URL Manager Pro 5.5 updates its Preferences window with new icons that fit the Big Sur look and feel. The update also adds new Note, Date Added, and Date Modified columns to the main view (configurable via Preferences) and expands the size of the Edit Note window. (\$35 new, free update, 13.7 MB, release notes, macOS 10.13+)



CleanMyMac X 4.7

MacPaw has released CleanMyMac X 4.7 with numerous under-the-hood changes, interface improvements, and bug fixes to ensure compatibility with macOS 11 Big Sur. The update to the Mac maintenance utility also introduces the CleanMyMac X Widget in Notification Center, enabling you to check available space on your Mac and launch Smart Scan directly. The app icon also gets a fresh look to better match the new Big Sur style. (\$89.95 one-time fee, \$34.95 annual subscription, or included in the \$9.99-per-month Setapp Mac app subscription service, free update, 63.9 MB, release notes, macOS 10.10+)



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high latency is a killer: it's what makes you see or hear a lag when using videoconferencing or VoIP calls, and it prevents things from happening in what feels like a real-time way. That's critical for gaming, but also for many industrial and business purposes, where the lag has to be as close to zero as possible.

Sub-Channels

There's one more trick up cellular's sleeve. Both 4G and 5G also employ a technique—used earlier in Wi-Fi standards—that breaks a wide swath of frequency set up as a channel into tiny sub-channels, each of which has its own modulation. If there's interference or a reflection problem in one sub-channel, it doesn't downgrade the throughput of the entire transmission. It's like plowing a field and avoiding rocks.

The Purported Potential Uses of 5G

The US is the first country in which 5G will rely on a triad of cellular frequencies: existing ones across a range of bands, new allocations up near the bands currently used for 5 GHz Wi-Fi and soon for 6 GHz Wi-Fi, and mmWave starting at 24 GHz. It's a grand experiment for delivering broad-scale higher-performance in lower bands and super-fast throughput as needed in the

much higher bands.

The uses cited for 5G include all things we do now, though carriers actually don't mention video streaming all that often. Perhaps 4K-quality video streams just aren't that compelling, especially given that some carriers already downscale video automatically or require a higher-priced subscription to get higher fidelity than 480p, and more expensive plans top out at 1080p.

Carriers are excited about (and investing in) 5G because they anticipate new money-making opportunities, particularly in industries in which low-latency, high-bandwidth, high-coverage wireless enables new products or services, or allows shifting intelligence from edge devices to central processing.

Just as Web apps have benefitted from the massive improvements of speed in JavaScript running in a browser that allows a combination of locally downloaded code and seamless interaction with remote resources, 5G networks will ostensibly enable massively scaled systems that can feed data out in real time to edge points. This includes both relatively low-featured Internet of Things (IoT) devices that will benefit from storing their brains elsewhere—with all the security and privacy issues

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associated with that—and more sophisticated hardware, like autonomous or driver-assisting vehicles.

Some of the most compelling cases are:

- **Augmented reality:** In recent years, Apple has focused significant attention on AR, which can require a lot of constantly updated data that's processed centrally and streamed to a device, all while responding to movements in the physical environment.
- **Gaming:** Gamers often required wired Ethernet connections in their homes for the best results. 5G will make mobile gaming more responsive.
- **Rural access:** Every generation of cellular technology promises better coverage for rural residents. Every generation often disappoints them, too, because carriers prefer to deploy service where they can more easily make money. However, 5G's greater efficiency and variety of frequency options, particularly in some new frequency territory around 5 GHz and 6 GHz, should generally improve rural service.
- **Urban/suburban access:** In some cases, carriers and other parties might find it feasible to deliver high-speed urban and suburban

residential broadband over 5G. It's more likely to happen outside the US because in this country there's sufficient inexpensive wired infrastructure (cable, phone wire, and fiber) in more densely populated areas. I pay \$85 per month for unlimited gigabit Internet in Seattle; it's hard to imagine a wireless provider offering even 100 Mbps at that price for residential-scale video and other use in the US. However, in some developed and developing countries, even relatively populated or dense areas lack wired or fiber-optic infrastructure at the level demanded.

- **Remote medical procedures:** We've all become more familiar with telemedicine consultations in the last few months, but with sufficient bandwidth, remote medical procedures are here today. Diagnosis and even robot-assisted surgery can be performed through remote linkages, but setting up a stable, low-latency, high-bandwidth network where a wired, low-latency broadband connection is unavailable, or for facilities that aren't able to wire Ethernet into existing areas, would open up new possibilities. (That said, would you want a wireless surgeon operating on you? Seems like a hard sell.)
- **Autonomous cars:** A car can't rely solely on a 5G network for robotic

operations while it's zooming down the highway, but it could overlay its onboard capabilities with information gathered around and ahead of it to reduce accidents and improve safety.

- **Expanded sensor networks:** 5G will enable massively scaled sensor networks for monitoring infrastructure. A Deloitte report suggested, "Imagine a scenario where millions of such devices can be connected in a city center, measuring temperature, humidity, air quality, flood levels, pedestrian traffic, and more." I can imagine plenty of negative uses, too, but after suffering from weeks of bad air in Seattle recently, I can also acknowledge some of the more constructive purposes.
- **Industrial robots:** Robots used in factories have to be hard-wired for control to keep latency low. Wi-Fi relies on unlicensed frequencies, which makes depending on throughput sometimes iffy, as we've all seen. Licensed 5G inside manufacturing facilities could enable wireless robots and make it easy to move them or add new ones without rewiring the factory floor. These private 5G networks would be like Wi-Fi but with higher power, lower latency, and more stability thanks to running over restricted frequencies.

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Transmit 5.7

Panic has published Transmit 5.7, adding support for macOS 11 Big Sur and M1-based Macs. The file transfer app also resolves an issue with saving local files edited in Transmit, corrects a problem with connection advanced preferences potentially not being applied when opening two tabs with the same server, fixes a bug that could cause the File Browser window to be resized too small in some cases, ensures that simultaneously uploading multiple large files to AWS S3 no longer potentially causes transfers to halt, sorts out an issue that prevented uploading files to OneDrive when their names contained invalid characters, and fixes the Places Bar drawing blank in some versions of macOS. (\$45 new, free update, 40.3 MB, release notes, 10.13+)



SEE Finance 2.2

Scimonoce Software has released SEE Finance 2.2, bringing numerous adjustments for compatibility with macOS 11 Big Sur and adding support for M1-based Macs. The personal finance app changes how the program identifies itself for OFX Direct Connect downloads (which may require reactivation or additional verification), adjusts account downloads to process any successfully downloaded accounts when others fail, stops



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Additional use cases will surely arise as the networks are deployed, but you're excused if you don't find the list above compelling. That's a problem for carriers, who are largely eating the cost of network updates, except Verizon, which is charging customers more for it; see below. It also troubles phone makers who want the engineering effort of adding 5G support to be seen as a major reason to buy the next generation of phones that have only incremental improvements otherwise. Smartphones haven't reached the end of innovation in their features, but the camera, display, and processing improvements make less of a difference with each release.

In short, although 5G is inevitable and may become an important aspect of society's networking infrastructure, there's no reason for most people to upgrade to get it right now.

Carriers Plan Their Plans

When it comes to 5G rollouts, cellular carriers face a lot of competing problems and employ different marketing and pricing approaches, even as they have more or less adopted the same technology. It's a bit like Coke and Pepsi if Coke only let you buy its sugar water in 12-packs of cans and Pepsi could only be purchased in 2-liter bottles.

For now, we're seeing the major cellular firms roll out 5G networks in order to claim they have 5G networks in place—they want competitive bragging rights. Only a few limited areas have 1 Gbps or faster mmWave service available for customers. PCMag dug into maps for Verizon's mmWave service and found it was scarce so far and, as expected, clustered in places that likely also have high-speed free or paid Wi-Fi. AT&T and T-Mobile have not yet announced mmWave plans. Here's how it shakes out now:

- Verizon says its mmWave "5G Ultra Wideband" (UWB) can be found in 55 cities, while it has regular 5G across swaths of metropolitan areas nationwide. It charges \$10 extra on its unlimited plans per line for 5G data rates.
- AT&T seemingly calls its current 4G network "5G," but says "5G+" (actual 5G) is "available in select innovation zones in over 15 states across the US." AT&T includes 5G throughput on its "Unlimited Starter, Extra, and Elite plans," which start at \$35 per month and require at least four lines.
- T-Mobile claims it has the biggest deployment, with over 7500 cities and towns having 5G in place, but given that the company also promises that "our network will be 8x faster than current LTE in just a few years, and

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15x faster in the next six years,” it’s unclear which part of the network is faster 4G and which is actually next-generation 5G. At least T-Mobile says it won’t charge more for 5G service. (T-Mobile acquired Sprint earlier this year and has developed a 5G plan that coordinates the two brands.)

Verizon’s early mmWave deployments are promising, providing fiber-optic broadband and high-end Wi-Fi speeds in the extremely limited areas

they cover, though I will ask again—to what end? I don’t need 1 Gbps while strolling down Newbury Street in Boston. But I can imagine appreciating excellent throughput when we’re once again surrounded by thousands of people in public.

More disappointing, however, is that the “normal” flavor of 5G, the generational upgrade to 4G, appears to be lagging behind 4G LTE performance in some areas where they overlap. That will change, but it seems odd that your fancy new

iPhone with 5G capability could see worse performance than 4G in some places.

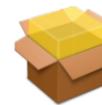
Are We Ready for 5G?

I hate to be a downer when it comes to improved technology that actually does what it says on the tin. 5G networks will provide substantial improvements in throughput and availability that we will notice—in a year or maybe two. Until then, not so much.

I’d almost rather the entire industry didn’t talk about it

Safari 14.0.1

Apple has released Safari 14.0.1 for macOS 10.15 Catalina and 10.14 Mojave to patch several security vulnerabilities. The Web browser improves input validation to deal with an address bar spoofing issue and tweaks memory management to prevent maliciously crafted Web content from executing arbitrary code. You can download Safari 14.0.1 only via System Preferences > Software Update. (Free, macOS 10.15 and 10.14)



Security Update 2020-006 (Mojave and High Sierra)

Apple has released Security Update 2020-006 for macOS 10.14 Mojave and 10.13 High Sierra to patch a trio of security vulnerabilities in the older operating systems (see “Apple Updates Numerous Operating Systems for Exploited Security Vulnerabilities,” 5 November 2020). They address a memory corruption issue that could allow a maliciously crafted font to execute arbitrary code, improve state handling to prevent a malicious application from executing arbitrary code with kernel privileges, and resolve a memory initialization issue that could disclose kernel memory. You can access the updates via Software Update. We haven’t heard of any problems related to these updates, and the

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matches the available AirPods Max colors: silver, space gray, sky blue, pink, and green.

The AirPods Max’s whopping microphones: Active Noise and one voice. Two of Noise microphones duty as voice presumably reduction.

An interesting Digital like on the With it, you the volume, play and pause audio, skip music tracks, respond to phone calls, and invoke Siri. They also include a noise control button to switch between Active Noise

using optical and position sensors.

They’re also packed with sensors. Each ear cup has an optical sensor, a position



HomePod. The outer cup is aluminum, and the headband frame is made from stainless steel. You can buy replacement ear cup cushions for \$69 each.

Apple’s One Last Thing for 2020: AirPods Max

By Josh Centers

Despite titling its M1 Mac announcement “One More Thing,” it turns out that Apple had one last thing up its sleeve for 2020: the AirPods Max, new over-ear headphones that expand the AirPods product line beyond earbuds. While the AirPods Max are an intriguing product, sit down before you see the price: \$549. They are available to order now.

The AirPods Max feature a pair of Apple’s H1 chips, the same custom

silicon that powers the second-generation AirPods, the AirPods Pro, and various Beats headphones.



As such, the AirPods Max include all the features of the AirPods Pro, including Active Noise Cancellation with Transparency mode, Adaptive EQ, spatial audio, and automatic switching between devices running the latest Apple operating systems.

Like other AirPods, the AirPods Max are based on Bluetooth with the usual Apple flourishes. You can also connect them directly, but that requires a \$35 Lightning to 3.5mm audio cable. Unfortunately, the cable comes in only white or black, neither of which

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head. Just as with the AirPods and AirPods Pro, the AirPods Max can detect when they’re on your head

charging, Apple includes a Lightning USB-C cable but bundle a USB-C adapter. You can also Lightning to USB-A with one of the USB-A power adapters most of us lying around. Apple included a soft case the Smart Case, Apple says puts the AirPods Max in an “ultralow power” to help preserve the battery. Unlike other

AirPods, the AirPods Max do not charge through a case. Apple claims up to 20 hours

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vulnerabilities they eliminate are being exploited in the wild, so we recommend updating soon. (Free, sizes, release notes)



Hazel 5.0

Noodlesoft has released [Hazel 5](#), a major update for the file automation and cleanup utility. The biggest change is its move from being a preference pane to a standalone app. Hazel now combines the folder list, rule list, and rule editor into the app's main window, and you can now organize folders into groups.

Adding support for macOS 11 Big Sur and M1-based Macs, Hazel 5 also adds custom list item and table attributes that enable you to match against an item in a list (created in Hazel or loaded in from an external file) or table, respectively. With the table-matching capabilities, you can match against one column in a table and rename with the values from another. The update also enables you to detach Rule editors so you can view multiple rules simultaneously, ensures that Preview mode sticks while navigating between different rules in the same ruleset, and now requires 10.13 High Sierra. Hazel 5 costs \$42 for a new license or \$20 for an upgrade from a previous version. If you purchased Hazel 4 on or after 1 January 2020, you're eligible for a free upgrade. You can also purchase a Hazel 5 family pack for up to five members of a household for \$65. (\$42 new or \$65 for a five-member family pack, \$20 upgrade, 20.4 MB, [notes](#), macOS 10.13+)



Nisus Writer Pro 3.2 and Nisus Writer Express 4.2

Nisus Software has released [Nisus Writer Pro 3.2](#) and [Nisus](#)

[Writer Express 4.2](#), adding support for macOS 11 Big Sur, M1-based Macs, and Dark mode to both editions of the word processing app. New features for both apps include prompts for how an inserted PDF should be treated (text, an image, or sequence of images), new Show Font Previews and Choose Replacement Font menus that display selected text using available fonts, and an Extract Text From Image menu that uses OCR to extract text (requires 10.15 Catalina). Both Nisus Writer Pro and Nisus Writer Express also add dedicated image manipulation commands, enable you to Show Linked File in Finder to see a linked image's source file, add Touch Bar items for changing applied text styles, ensure that DOC and DOCX files import reliably in Big Sur, resolve several user interface issues and irregularities in Big Sur, and address problems with zoom restoration when exiting full-screen mode.

Nisus Writer Pro gains a new Copy Link to Bookmark option; adds text search to filter targets and allows choosing a target by indexing or styles in the Insert Cross-Reference and Add Link to Content windows; adds various macro commands to inspect and change the shadow of text, images, and shapes; and fixes a bug that prevented tracked deletions and replacements from being exported to HTML and EPUB. (Nisus Writer Pro: \$65 new with a 25% discount for [TidBITS members](#), free update, 277 MB, [release notes](#). Nisus Writer Express: \$26 new, free update, 71.7 MB, [release notes](#). Both require macOS 10.11+)



Firefox 83

Mozilla has issued [Firefox 83](#) with significant updates to the SpiderMonkey JavaScript engine, which improves page load performance by up to 15%

and page responsiveness by up to 12% while reducing memory usage by up to 8%. The release also now enables Macs with trackpads to (finally) support the pinch-to-zoom gesture to zoom in and out of Web pages, uses less power when restoring a session with minimized windows in macOS, and supports keyboard shortcuts for fast-forwarding and rewinding picture-in-picture videos. Firefox 83 will also run on M1-based Macs, supporting emulation under Apple's Rosetta 2 that ships with macOS 11 Big Sur—Mozilla is working on a native release for M1-based Macs. (Free, 73 MB, [release notes](#), macOS 10.12+)



Pixelmator Pro 2.0

The Pixelmator Team has released [Pixelmator Pro 2.0](#), a major release of the image editing app that provides a more refined design, loads of new features, native support for M1-based Macs, and compatibility with macOS 11 Big Sur. Pixelmator Pro 2's entirely Metal-powered editing engine can use the unified memory architecture of Apple's M1 chip to speed up image editing greatly, and the app's Core ML-powered features can now use the M1's dedicated Neural Engine for speedier machine-learning processing (up to 15x faster for ML Super Resolution). The "Junipero" update also introduces a new Effects browser that makes it easier to find and apply effects; brings full app customization for positioning the Tools and Layers sidebars into a bespoke workspace; adds over 200 new color adjustment, effect, layer style, gradient, and shape presets; adds seven new color adjustment preset collections; enables you to zoom your images in and out quickly using the new Zoom slider in the unified toolbar; provides

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multiple AppleScript fixes; and fixes a bug that prevented dragging and dropping layers between documents. (\$39.99 new from Pixelmator and the [Mac App Store](#), free update, 217 MB, [notes](#), macOS 10.14.4+)



Zoom 5.4.4

Zoom updated its [eponymous videoconferencing app](#) to version 5.4.3, adding the capability to share multiple apps during a meeting instead of just a window or screen. An extensible green border denotes shared apps, and other apps and unoccupied areas on the desktop will not be visible to viewers. The update also provided enhanced in-meeting user abuse reporting, added a new option in the Security panel to suspend all participant activities immediately, enabled users to pin a message to the top of a channel, and showed profile pictures or names for participants in non-video meetings rather than a plain screen with meeting info and options. A quick 5.4.4 update resolves high CPU use issues related to macOS 11 Big Sur. (23.0 MB, [release notes](#), macOS 10.9+)



1Password 7.7

AgileBits has issued [1Password 7.7](#) with design refinements for macOS 11 Big Sur (including a new icon) and Safari integration enhancements that include an inline menu that appears when filling in logins, credit cards, and forms. The password manager now enables you to unlock 1Password using an Apple Watch on Macs with a Secure Enclave, improves the Strong Password Generator in the main 1Password editor, scales down and wraps large type for extra-long passwords,

resolves an issue where dragging items onto the spring-loaded vault selector would fail, fixes browser integration with Google Chrome Beta and Dev releases, and adds support for administrators to enforce MDM settings for many of the options in Security Preferences. (\$64.99 standalone app from [AgileBits](#) or the [Mac App Store](#) or a \$2.99- or \$4.99-per-month subscription ([TidBITS members](#) setting up accounts receive 6 free), free update, 57.5 MB, [release notes](#), macOS 10.13+)



DEVONthink 3.6

DEVONtechnologies has released [DEVONthink 3.6](#), bringing some necessary changes to ensure compatibility with macOS 11 Big Sur. The document and information manager also focuses on document links, scanning databases for link relationships between documents (either outgoing or incoming "backlinks") and making those links available for searches, criteria for smart groups, and sorting lists. Note that existing databases will be scanned the first time they're opened. The update also improves in-document searching via the Search inspector to allow wildcards and operators, adds more Markdown support, includes a new Daily Journal template, adds the capability to duplicate and replicate items via the Move To popover when modifier keys are held, enables PDFs with a table of contents to be split by chapters into separate documents, reduces CPU and memory usage of the iCloud upload monitor, improves the overall reliability of WebDAV sync stores, and ensures more efficient updating and reloading of sidebars in main windows. (\$99 new for DEVONthink, \$199 for DEVONthink Pro, and \$499 for



DEVONthink Server with a 15% discount for [TidBITS members](#); free update; 115 MB; macOS 10.11.5+)

RapidWeaver 8.7

Realmac Software has released [RapidWeaver 8.7](#) with official support for macOS 11 Big Sur. The Web design and publishing software also now sets Site Language correctly by default, fixes an issue where adding a remote resource URL to an Override Site Banner section caused a crash, resolves issues where photos in portrait orientation weren't always uploaded, removes all internal uses of WebKit, and addresses a problem that caused headaches for Keychain and the [Forklift](#) FTP client.



RapidWeaver is also included in the \$9.99-per-month [Setapp](#) Mac app subscription service. (\$89 new, free update, 80.7 MB, [release notes](#), macOS 10.12+)

Bookends 13.4.7

Sonny Software has published [Bookends 13.4.7](#), restoring importing from JSTOR and improving the speed and reliability of requests to Crossref. The reference management tool improves scanning LibreOffice ODT files, offers to unlock a PDF that is locked in the Finder when you try to add or edit a PDF tag, outputs author names terminated with a comma as entered for Author-Date citations, enables you to close the Quick Look PDF display with Command-W without closing the library window, restores detection of PDFs and other files types dropped onto the Bookends Dock icon, fixes a bug that prevented Live Search of notecards from finding tags, and resolves an issue with Live Search that initiated Spotlight searches with every keypress instead of just Return. (\$59.99

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new with a 25% discount for [TidBITS members](#), 70.3 MB, [release notes](#), macOS 10.10+)

Ulysses 21

Ulysses has released version 21 of its eponymous writing app, refreshing the user interface to fit with the look and feel of macOS 11 Big Sur, including a new app icon. The update also enhances Revision mode with a dedicated view outside the dashboard, debuts the new monochrome D21 default editor theme (which is optimized for revision tasks), introduces the new Editor Focus mode that hides all chrome and presents sidebars as overlays, resolves an issue where sheet ordering could become lost on rarely used devices, and fixes a bug that caused incorrect highlighting of search matches in the sheet list. The iOS version gains Revision mode and the comprehensive grammar and style checker introduced earlier this year (see “Ulysses 20,” 15 July 2020).

Ulysses 21 is priced at \$5.99 per month or \$49.99 for an annual subscription, and the update is free for current subscribers. Students can purchase Ulysses at a discounted price of \$10.99 per six months. (\$49.99 annual subscription from the Mac App Store, included in the \$9.99-per-month

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telepresence robot has an adjustable height that maxes out at 5 feet and a tilting neck that simulates head movements, and it includes dual cameras and a long-range mic and speaker. The company claims “quiet and smooth motion on any surface” (which I doubt applies to, for instance, beaches)—see the video. After the 5–6 hour battery runs out, there’s an autodocking system that starts the Ohmni recharging without anyone there having to fiddle with it. This model is the twelfth generation Ohmni has made, but it’s not new for 2021; if I see newer competitive gadgets that top it, I’ll write them up too. There’s a three-week lead time for delivery because each one is built to order based on customer preferences for various options.

WOWCube Gaming Device

WOWCube is a game that looks like it was dropped from the future. It’s a 2-by-2 Rubik’s Cube where each of the 24 squares is an independent screen, and each of the 8 smaller cubes that combine into a WOWCube is an independent module. Games on the WOWCube are three-dimensional; there may be things going on on

all six surfaces. As with a Rubik’s Cube, you play games by twisting the sides or sometimes giving the whole thing a shake. A prolonged shake, similar to an Etch-a-Sketch, takes you back to the home screen where you can select a new game—again, watch the video. The

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Setapp Mac app subscription service, free update, 30 MB, release notes, macOS 10.14.4+)

iStat Menus 6.5.1

Earlier in November, Bjango Software issued version 6.5 of iStat Menus with improvements for the menubar-based system monitoring utility. The release improved support for APFS disks and AirPods Pro, updated the display of CPU dropdown history graph with a large number of cores, enhanced support for 2019 and 2020 Macs, improved battery menubar icons, resolved some issues with menubar colors in macOS 11 Big Sur, improved the CPU process display, and fixed a bug with hidden disks still showing in the combined dropdown. This week, Bjango released version 6.5.1 with added support for M1-based Macs. (\$9.99 new, 28.8 MB, release notes, macOS 10.11+)

Scrivener 3.2

Literature & Latte has issued [Scrivener 3.2](#) to add compatibility with M1-based Macs and macOS 11 Big Sur—including an updated user interface and icons, plus updated default colors that play well with Big Sur. (If you’re using custom colors, you will need to reset the Preferences to the Defaults to see the updated Big Sur theme.) The long-form writing tool updates a few ebook compilation features

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WOWCube connects via your phone to the Internet, where the company plans to make available an ecosystem of game updates and new games. CubiOs says it will announce pricing and availability this week during CES.

Atari is back, and it immediately captured my middle-aged heart by demoing the new Atari VCS, which looks like an Atari 2600 that’s been baked in an oven with Shrinky Dink

results. As you might expect, the Atari VCS ships with the Atari VCS Vault, a collection of 100 games that ran on the 1970s console, but it can also run modern games that you

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can purchase and download through an online store. The standard bundle includes an old-school joystick jazzed up with LED lights and a rumbler, along with a more modern controller. The Atari VCS Vault, store, and other apps like Chrome are all available in an ecosystem interface available on boot, similar to what Microsoft and Sony provide on their Xbox and PlayStation consoles. Atari also stole an idea

from ColecoVision, enabling the Atari VCS to boot into Windows or Linux. As much as I want Atari to succeed for nostalgic reasons, I have trouble seeing this \$389 product competing against the juggernauts of the Xbox Series S (\$299) and PlayStation PS5 Digital Edition (\$399, if you can find one). It strikes me as a product that will require oodles of venture capital and a loss-leader strategy to acquire sufficient market share to make developers take notice.

CES 2021: Family Firewalls, Flying Cars, and Creepy Pet Robots

By Jeff Porten

Most years at CES, I tell you when I'm at one of the sideshows that accompany the main floor because exhibitors there have an advantage over everyone else. These smaller shows are invite-only for the media, and we're wine and dined. Unfortunately, I've had to go without my usual freebie Heineken and the Wynn's excellent dessert bar this year—but I'll still mention that these products were all from Showstoppers exhibits held throughout the week, because all of these products had an extra opportunity to rise above the noise. Circle Family Internet Monitoring

During 2020, everyone with school-age children saw more of them than usual, and their children spent much more time at home staring at various screens. I fielded numerous questions from friends about technological aids to monitor and filter their kids' usage of the Internet, and Circle was frequently mentioned in those threads by other parents. The Circle Home Plus is essentially an

Internet firewall that blocks sites and activities based on certain heuristics, but its interface and features are geared to parents enforcing family guidelines.

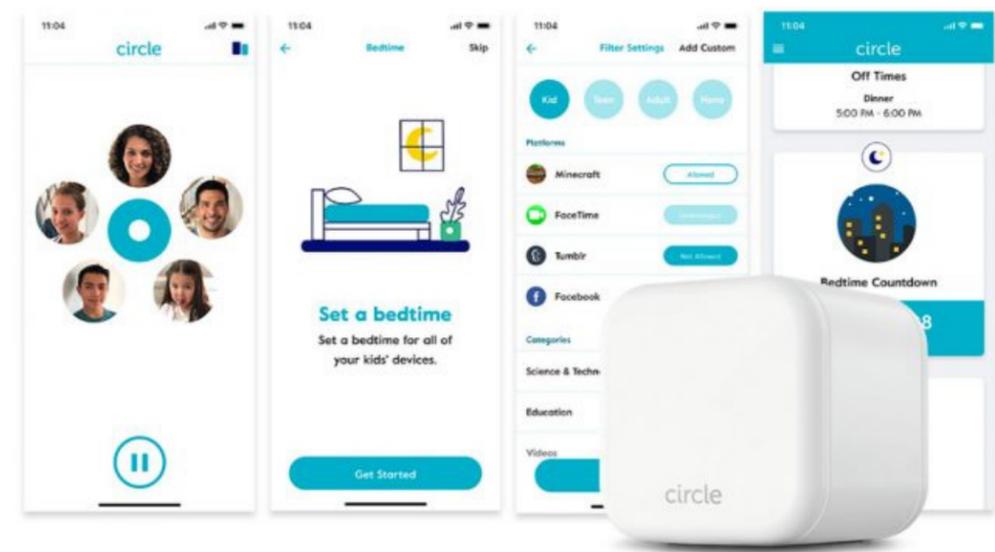
Circle's latest new feature came out at CES a year ago—a prescient "Focus Time" during which parents can set certain apps to unlimited time and block others—perfect for school hours—but its new salience makes the Circle Home Plus worth mentioning. According to Circle's statistics, screen time is up across the board: 56.5% for children, 50.4% for teens, and 39.5% for adults. If you need more control over how that screen time is used, Circle Home Plus might be for you. It's sold as a bundled subscription that includes the hardware: \$69 for three months, \$129 for one year, or \$299 for lifetime. Additional subscription time costs \$9.99 per month or \$99.99 per year.

DeepScore AI Trustworthiness Detector

This may strike you as more Brave New World than

anything you'd like to see in your upcoming technology, but you may not have a choice. DeepScore AI sells a technology to other businesses that enables them to conduct a video interview with prospective customers and grades them on their likelihood of lying to one or more questions. DeepScore AI purportedly accomplishes this with emotion and stress analysis in facial movements and voice tone. The company claims 88.9% accuracy—which may sound high, but a 1-in-9 false positive rate is worrisome. While DeepScore doesn't appear to be used in any American products yet—it's targeting the Japanese financial market first—something like this could be in your future. I'm concerned by any company with the Orwellian tagline, "Honesty makes you happy." You can try a free demo on its Web site—and if you do, let us know in the comments because I felt a bit too squicked out to give the company my data.

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Kotozna Hotel In-Room Translation

On my last international trips—which feel like they took place in 1987—I made liberal use of Google Translate to get me through interactions. But it was and remains awkward: both people have to crowd around the same phone, and most people I encountered seemed to prefer trying out their English, which was less than optimal for specific directions and some business transactions. So I'm interested in seeing if hotels buy Kotozna's in-room translation service. The hotel guest is provided with a QR code they can scan in their room to download an app or launch a website. They can then use any of 109 different languages to communicate with a hotel operator who responds in their own language. Because it's focused on hotels, the proprietor can have a library of documents and local discounts set up and ready to share for frequently asked questions. This would be exceptionally useful in

Japan, where the company is based, to solve a cultural problem. In my experience, Japanese staff take such ownership and apologize so profusely for even trivial problems that my American standards are deeply embarrassed to have caused such distress. (I once had a Japanese policeman personally apologize to me for the confusing layout of a train station.) Pricing and



availability are unclear, but Kotozna says it's targeting the kind of mid-range hotels that are nice enough to attract an international audience but too small to be able to afford a

multilingual staff.

SkyDrive Flying Car

Is any technology more stereotypically futuristic than a flying car? Flying cars aren't exactly new at CES (see, most recently, Aeronext in "CES 2020: Flying Cars, Smart Pillows,

and Virtual Dog Fences," 16 January 2020), but it's always good to see a new competitor in the air. SkyDrive's most interesting release is its timeline: a successful (but not particularly ambitious) test flight in 2020, a sales release in 2023 in what it calls a "social implementation trial," mass production in 2026, and general adoption in 2028. Skydrive plans a model with two seats and a maximum load

of 400 kilograms (880 pounds) that will cruise at 100 km/h (about 60 mph) at a height of 500 meters (about 1600 feet).

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No pilot's license necessary—it's all automated. With a battery lasting 20–30 minutes, you'll be able to travel 20–30 miles on a charge, and SkyDrive acknowledges that one of many barriers to be overcome is setting up charging stations that will allow for longer flights. As with Aeronext, you may need to go to Japan to try SkyDrive, as that's where the Japanese company is attempting to make regulatory headway first.

DFree Bladder Sensor

Most people are born with a bladder monitoring system that tells them when to go to the bathroom, but a wide range of illnesses can temporarily or permanently make it impossible to know to go. Triple W's DFree bladder sensor provides a technological backup to physiology for those who need it. A matchbook-sized sensor is attached with surgical tape just below the waist, with a wired connection to a larger processing device that's presumably carried in a pocket. Ultrasound waves from the sensor measure the contents and capacity of the wearer's bladder, which the device then updates on the wearer's phone. When it's time to go, the phone gets a notification. The app also tracks prior bathroom visits so the wearer can use that data to make a schedule, hopefully



Watch on YouTube

ending urgent interruptions. Available now for \$399.99, but only in the United States.

Stern Led Zeppelin Pinball

Stern Pinball gets my attention every year because I'm a fan of pinball, despite not being very good at it. Although the game has seen a recent resurgence in emulated form, Stern is the last major manufacturer still releasing new games. This year's model: Led Zeppelin, so The Song Remains the Same for intriguing tie-ins. Unfortunately, for obvious reasons, I can't tell you how well it plays—and with pricing starting at \$6199, I'm not



expecting to get a review unit—but I've had a Whole Lotta Love for the Good Times Bad Times I've had with Stern's previous games.

Qoobos and Moflin, Japanese Pet Robots

It's an open question whether civilization will

end with a zombie apocalypse (as envisioned by the Centers for Disease Control and Prevention) or a robotic one (as explored by Randall Munroe of xkcd and "What If" fame). Two different Japanese companies make the robot apocalypse sound even worse with the corollary: what if the robots were mutant cat-like creatures? Because even the cutest kitten is a murder machine.

Yukai Engineering's Petit Qoobo is a smaller version of its prior Qoobo robots. Both

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are ovals shaped like a frisbee that gorged itself on Kitty Chow with fattening results, with feline-reminiscent fur and no head or legs. Aside from the size, the biggest difference between them is that the Qoobo has a full-sized tail whereas the Petit's tail has been bobbed. Which can't help its personality.

Meanwhile, Vanguard Industries' Moflin is more akin to a banana slug wearing a cat costume. Both express emotion: the Qoobo wags its tail, while the Moflin's head is on a robotic neck, and both make sounds that are probably listed in GarageBand's loops as "Cat or Human, Infant, Adorable." Moflin's AI is more advanced than Qoobo's—Qoobo robots come out of the box "disliking loud sounds," but Moflin has a Tamagotchi-like ability to develop a personality based on

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(including recommending Kindle Previewer for generating MOBI files), avoids crashes by forcing the scratchpad to refresh its content whenever the window is brought to the front, adds a Big Sur-specific option to use a monochrome toolbar, improves Apple's Select Word action so it no longer selects spaces, and fixes a bug that could cause new typing to take on a link after deleting a comment and then returning immediately to the editor.



how it's treated. So when your Moflin takes telekinetic control of your smart home, you'll know whom to blame. On the other hand, Qoobos

robots are good for isolated seniors, it's not inconceivable someone you know might want one. Only the original Qoobo is currently available,



have a heartbeat, so it's up to you to decide which is more terrifying.

Vanguard Industries Inc. / Vanguard Industries As you might have guessed, both of these products fell squarely into my uncanny valley and couldn't climb out of it. But given that there's some evidence that

albeit not in the US: a Czech website sells them in Europe for 2999 koruna (about US\$140), which is the best argument for Brexit I've heard. Petit Qoobos retail for approximately \$110 in Japan but haven't yet colonized other countries. Vanguard Industries' Kickstarter is no longer available, but it listed a Moflin for 41,800 yen (about US\$400) and claimed a June 2021 ship date; that page links to a page in Japanese where you can sign up for its mailing list.

GrandPerspective 2.5.3

Erwin Bonsma has released GrandPerspective 2.5.3, adding support for M1-based Macs and updating the graphical disk usage utility's interface for macOS 11 Big Sur (GrandPerspective is covered briefly in "How to Deal with Running Out of iCloud, Google, and Dropbox Space," 17 February 2020). The update also addresses ToolbarItem size deprecation warnings, improves

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honors the Create All-Day Reminders by Default preference setting, improves indentation behavior in the editor, fixes a bug that caused the sidebar to scroll behind the window buttons, and ensures the

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applying last-used settings for transactions when selecting adjustment payees, improves loading time of the Calendar viewing option, resolves an issue where the split transactions could be out of order when generated from a scheduled transaction, and

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for a while, but 5G-involved companies have to talk about something because that's how marketing works. Advertising that "we keep making things slightly faster" is not a winning campaign, particularly when your competitor is shooting off 5G fireworks.

5G is inevitable, in that all phones and

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of battery life and says that just 5 minutes of charging will get you 90 minutes of use.

Make sure it matches your shoes.

The AirPods Max certainly seem impressive, but the \$549 price tag makes them more expensive than a pair of HomePods (which regularly sell for \$250) or five HomePod

recently edited and related notes panel no longer shows notes that have been moved to the trash. Agenda 11.2 is also available for iOS and iPadOS with improved behavior when using Scribble. (Free with \$24.99 in-app premium feature purchase, free update, 59.3 MB, [release notes](#), macOS 10.12+)

addresses a problem connecting to Vanguard (and possibly other institutions) due to not returning requested cookies from previous connections. Normally priced \$49.99, SEE Finance is on sale for a limited time for \$39.99 from the Scimonoco Software Web site and the Mac App Store. (\$49.99 new, free update, 49.5 MB, [release notes](#), macOS 10.12+)

cellular-capable devices will transition to supporting early flavors of it over the next year, including some relatively fast versions that use mmWave. The question is when we'll see use cases that impact our everyday lives.

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minis (which list for a mere \$99). While serious audiophiles may spend thousands of dollars on headphones, they have exacting standards that Apple may be hard-pressed to meet. Who will shell out \$549 for Bluetooth headphones? But as is often the case with Apple products, the answer may be: more people than you might imagine. Already, the AirPods Max are backordered for up to 14 weeks.

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the Reset toolbar item by flipping it horizontally, and resolves an error when building published source files. The app is available for free from SourceForge or for \$2.99 from the Mac App Store (which helps support further development). (Free, 3.1 MB, macOS 10.9+)

PDFpen and PDFpenPro 12.2.1

Smile has released version 12.2.1 of [PDFpen](#) and [PDFpenPro](#), adding compatibility with M1-based Macs. The PDF-manipulation apps also resolve multiple issues when running in macOS 11 Big Sur, including problems saving page actions, crashes with imprints, OCR layer editing issues, and sidebar and highlight button appearance. The standard version of [PDFpen](#) is included in the \$9.99-per-month [Setapp](#) subscription service. (\$79.95/\$129.95 new with a 20% discount for [TidBITS members](#), \$35 upgrade, free update, 91.4/140.6 MB, macOS 10.13+)

Yojimbo 4.6

Bare Bones Software has published [Yojimbo 4.6](#), adding native support for M1-based Macs and bringing the Downloads window back to the Window menu. The information organizer also now creates PDF archives of Web pages asynchronously so as not to stall the user interface, creates a PDF archive directly from the downloaded data when creating a PDF from a Web address (rather than trying to snapshot it like a Web page), fixes a cosmetic issue when drawing text in the item list while in Dark mode, restores bookmarklet installation to working order, and changes a default behavior so Yojimbo no longer attempts to force a light appearance based on a note's text or background while

displaying or editing notes in Dark mode. (\$30 new, free update, 9.4 MB, [release notes](#), macOS 10.13.6+)

Sip 2.5

The Sip team (brothers André Gonçalves and Rui Aureliano) has released [Sip 2.5](#), bringing support for macOS 11 Big Sur to the menubar-based color picker app (see "[Sip: Smart Color Management for Your Mac](#)," 6 August 2019). The update also adds new Smart Formats (Nova & Brackets) and new export options (Hex, GIMP, JASC & Xcode Assets), improves cloud sync, and fixes issues with the Status menu and Contrast Checker. (\$10 new, free update, 10.4 MB, [release notes](#), macOS 10.14+)

Quicken 6.0

Quicken Inc. has released version 6.0 of [Quicken for Mac](#), a major release for the financial management app that introduces a new modern interface plus compatibility with macOS 11 Big Sur and M1-based Macs. The update removes the title bar and replaces it with a new Q button for viewing file names and accessing your Quicken account, restyles the quick access items at the top of the Quicken window, and revamps the Account Settings window so you can more easily manage your accounts.

Quicken 6 also improves upon several recently introduced Net Worth reports (adding the capability to drill down on net worth report segments), changes the Customize button on the Report toolbar to an Edit button to better represent its purpose, adds a new Usage window that provides more detail regarding the number of payments you've made, brings a new Pay Another Bill button in the Quick Pay and Check Pay window, and now requires 10.13 High Sierra or later. Quicken features [three annual subscription tiers](#) (each of which has risen in

price over the previous version): Starter at \$35.99 per year, Deluxe at \$51.99 per year (adds budget customization and debt tracking), and Premier at \$77.99 per year (adds free online bill payment, a \$119-per-year savings). Quicken Deluxe and Quicken Premier are currently on sale for \$31.19 and \$46.79 for a limited time. (\$34.99/\$51.99/\$77.99 annual subscriptions, free update for subscribers, [release notes](#), 86.2 MB, macOS 10.13+)

Timing 2020.12

Daniel Alm released [Timing 2020.11](#) to add support for M1-based Macs and fix an issue that could lead to high CPU usage on Macs running macOS 11 Big Sur with a bright desktop image (i.e., dark menu text). The update also enabled you to make the project list as wide as you want, fixed a minor display issue with the + button in the project list, and ensured that the New Task button is always wide enough for its contents. Shortly after this release, Alm released [Timing 2020.12](#) to further tweak the fix for high CPU usage in Big Sur and resolve crashes in Big Sur and 10.13 High Sierra. Timing is available in three annual subscription tiers: Productivity (\$42 annually, \$4.50 monthly), Professional (\$66 annually, \$7 monthly), and Expert (\$96 annually, \$10 monthly). It's also included in the \$9.99-per-month [Setapp](#) Mac app subscription service. (\$42/\$66/\$96 annual subscriptions, free update, 35.3 MB, [release notes](#), macOS 10.13+)