Wi-Fi 7

If you’ve been keeping track of your Wi-Fi level, you may know that Wi-Fi 6 just started showing up in products. I hope you didn’t buy a lot of Wi-Fi 6 because Wi-Fi 7 stuff will be available in the first quarter of 2023. TP-Link will start selling a Wi-Fi 7 gateway that can communicate at 33 Gbps. Assuming a 4K video stream uses 50 Mbps, that’s 660 simultaneous 4K video streams. Of course, if you’re streaming those from a service that isn’t inside your house and you have a 1 Gbps data service (you probably don’t), that gets cut down to only 20 simultaneous 4K video streams. Even if you only have Wi-Fi 6, your data rate is likely okay, unless you have a lot more kids than I do.

Smart Business

Despite frequent evidence to the contrary, businesses exist primarily to make money. This is a harsh requirement for any technology that is designed for the business market. Specifically, businesses expect a positive return on investment.

Disruptive Technologies – Desk Occupancy Sensor

Disruptive Technologies makes postage stamp sized wireless sensors, that you can put anywhere, with some double-sided tape. This year they’ve added a desk occupancy sensor. With more people working from home, it’s a bit difficult to produce viable use cases for this device, but I still love how small and convenient the sensors are.

ACS – Smart Building Climatics

According to ACS, you can save 20 percent in energy costs for your building by installing sensors and using Climatics. Climatics creates a digital twin of your building and updates values from the sensors every 10 seconds. This allows you to see exactly what is happening with your building and provides guidance for improvements. An additional 20 percent savings can be achieved with smart optimization. Even more cost-savings are possible if you incorporate variable rates from the energy company.
**Rigel – Internet of Toilets**

What ACS does for heating and cooling systems, Rigel does for toilets. Rigel allows you to create a digital twin for all the restrooms in your building. Sensors in the restrooms keep track of toilet paper and paper towels. Flushes can be monitored, and messes can be detected. The restrooms that are frequently messy can be cleaned more frequently, but only when needed. Welcome to the IoT (Internet of Toilets).

**Cargill – Fast Food Locker**

Cargill is one of those companies that seems to do big projects that few people ever see. However, their food lockers at PPG hockey arena in Pittsburgh is an exception. With this system (called Checkt), fans don’t need to wait in line at concessions. They just order from their phone and wait for a text saying the food is ready. The finished order is placed in a windowed food locker. The fan just goes to the locker and returns a text from their phone saying they’re “here” and the locker opens. You’re much less likely to miss an exciting goal.

**Reekon tools – Bluetooth Tape Measure**

Reekon is digitizing tools. The Reekon tape measure communicates via Bluetooth with your phone. Measurements can be memorized and labeled. Areas and angles can be calculated, and you can communicate measurements to anyone on the job site. A measuring tool that clamps to your miter saw can enable you to just keep feeding in a board for multiple measured lengths.

**Koreasoft – Automated Edible Insect Farm**

Koreasoft makes automation software for insect farms. It turns out insects are relatively easy to raise. At times I have raised them inadvertently by leaving food on the counter or by having wooden studs in my house in Georgia. In several countries, including Korea, insects are eaten often enough that they are raised intentionally. Automation makes this easier and cheaper. It also means less direct interaction with insects.
Smart City

Smart cities are an emerging technology market with extremely diverse requirements and challenges. Every city is different, so any successful business plan in this market must be flexible enough to address these differences. In addition, the leaders of cities must make decisions for long term strategies that are durable enough to survive in future administrations—and those administrations change every few years on the whim of voters.

Watchmile – Indoor Parking Guidance Using AI and CCTV

Watchmile has a system to retrofit the closed-circuit video system in your parking facility to create a state-of-the-art automated parking garage. It does this with video analytics. Using AI, it can determine which parking spaces are free and which cars are parked in the occupied spaces. It can also track obstacles and pedestrians. This sounds like a terrific way to automate parking and security without the need to install sensors in each parking space.

NoTraffic – IoT Mobility Traffic Platform

NoTraffic is all about traffic. Like the Watchmile system, they use video analytics to anonymously track pedestrians, cars, busses, trucks, bikes, emergency vehicles and any other traffic. They then use this information to optimize traffic flow. Pedestrians get priority so a light will stay red longer to allow a slower pedestrian to cross. Emergency vehicles will get green lights. Plug-n-play IoT cameras are installed at eye level at each entrance to the intersection to get the traffic data. Of course, you must decide if you want to let an IOT system solve the trolley problem. (For one solution to the trolley problem, look here.)

The system also supports vehicles with automobile-to-anything (A2X) technology. A2X wirelessly connects your car to traffic controls, monitors, and other ACARS as you travel. The anonymized data can then be fed to AI algorithms to control traffic or to observe what is happening. Streets can be closed, and traffic rerouted around construction. All the data is logged so patterns can be identified, and strategies improved.

AEye – Pedestrian Safety and Crowd Monitoring

AEye creates technology that uses lidar in a car-mounted system to automatically sense its environment. It can sense other cars, pedestrians, traffic lights, for example. AEye can be used to improve safety or to guide autonomous vehicles.
**HOPE Hydration HydroStation — Smart City Water Bottle Filler**

If all this traffic automation is making you thirsty, HOPE Hydration has a solution. They have a network of connected chilled and filtered water bottle filling stations. Pedestrians on the street or customers in a mall can easily fill water bottles. Usage is tracked remotely so faulty stations can be scheduled for repair and stations can be added or removed where needed. There is also a screen that can be used for instructions and advertising.

**NORAS — Induction-charged Motorized Rescue Buoy**

The NORAS rescue buoy is really a robotic watercraft. It looks like a U-shaped lifebuoy as it rests on its hanger, but the hanger is powered and is charging the buoy for emergencies. When someone in the water needs help, the lifeguard (or even people without training) can send the buoy out like a remote-control boat. It automatically starts the motors when it hits the water. The one-handed remote is intuitive, and the buoy works even if flipped upside down. When it reaches the swimmer, they grab the buoy and are motored to safety.

**Solar Roadways — Solar Panels Embedded in Roads**

Roads are great for driving on, but when empty, they are useless. That is, unless they have embedded solar panels. This is the idea of Solar Roadways. Solar panel embedded in the roadbed or parking lots can be used to generate electricity. There are some issues—cars, trees, snow, dirt, angle of the sun, but in some circumstances, they could be especially useful.

**Smart Home**

While IoT devices in the home is not the most important or profitable market, it is where most of us live. Also, the home market is where a lot of experimentation can take place because the coolness or novelty of the device may be more of a purchase motivator than how much money or time the device can potentially save. This is why Alexa can turn on my gas fireplace but doesn’t yet control the drinking fountains at work.

The following IoT devices were approved by the product departments in at least one company.
**Wi-Charge – TLC – Track-light Wireless Charger**

Wi-Charge is a wireless power company that had a couple of innovation award winning products this year. The Track Light Charger (TLC) is a wireless power transmitter that fits into any standard track lighting track. It has a backup battery to transmit power to your wirelessly powered devices even if your track lights are turned off (for a while). The Wi-Qi is a wirelessly charged wireless charger. It’s a Qi charger plate that will charge any Qi devices (i.e., newer phones, wireless ear buds) but it doesn’t need a cord. It just sits on a table like a drink coaster and is powered wirelessly by what Wi-Charge calls “AirCord.” I assume you can also use it as a coaster, but you may not want to until you see if it heats the condensed water from your glass. Wi-Charge can also wirelessly power door locks that are otherwise very tricky to power except with batteries.

**TalkSocket – PopSockets with Alexa**

Talksocket is like PopSockets® with Alexa embedded. Of course, you can use Alexa with the Alexa app on your phone, but that requires opening the app. TalkSocket pairs with the app and gives you Alexa access all the time. It is wirelessly charged, so you don’t need to worry about batteries. It can stick on any case or be used with PopSockets compatible cases from OtterBox.

**SVS – In-wall Subwoofer**

SVS is known for making high-quality subwoofer speakers, but they usually sit on the floor. This year they debuted a two-cone model that mounts between the studs in a normal 3 ½ inch wall. This is good if you’re into aesthetics and less interested in putting impressively loud boxes on your floor. However, this is still loud. I worry a bit about it shaking the sheetrock loose, but it comes with a free spackling kit (just kidding).

**Evvr – In-wall Smart Home Hub**

If you liked the idea of putting the SVS subwoofer in your wall, you’ll also like the Evvr. It is an in-wall smart home hub. To be honest, it isn’t totally “in” your wall. It connects to your wall box with an Ethernet connection, but it sticks out about 1 cm as a 12 x 9 cm rectangle. It works as a Wi-Fi access point (up to AC and AX modes) with Bluetooth 5.0, ZigBee 3.0 and Z-Wave Plus. It will also support Matter with a future software upgrade.
**ROLLINGSQUARE – AirCard – Find My Card Tracker**

ROLLINGSQUARE is a constant fixture in the crowdfunding community. This year they made a credit card sized finder compatible with Apple Find My. The AirCard is about 2.6 mm thick (a bit more than a stack of two credit cards) and has replaceable batteries. The Spot card from Chipolo is even thinner at 2.4 mm and also works with Find My. It doesn’t have replaceable batteries, but the batteries last two years and you get 50 percent off a new card when you send your old one in for recycling. My Innway wallet finder card is only 1.5 mm thick and has an embedded rechargeable battery that lasts about 3 months on a charge. It doesn’t work with Find My. What I really want is a Find My wallet card from Apple that is 1 mm thick, is rechargeable and is an actual working Apple Card as well.

**EcoFlow – Lawnmower Robot with Bagger**

EcoFlow provides whole-home backup batteries and solar chargers, but they introduced a couple of new products this year. The EcoFlow blade is the first robotic vacuum with a bag. This is good for lawns that don’t work well with mulching mowers and can also be used to sweep up leaves. The EcoFlow Glacier is the first battery-powered cooler format refrigerator/freezer that can make ice. It can make 18 ice cubes in 12 minutes. It can also charge directly from solar panels.

**YARBO – Outdoor Robot Lawnmower, Snowblower, and Leaf Clean Up**

The Yarbo outdoor system is a modular tool that can mow your lawn, rake your leaves and clear the snow from your driveway. It does this by using a set of modular accessories that attach to a common motorized robot base. It has other attachments that can harvest your vegetables and take out the trash. The Yarbo recharges on a special mat and can retrieve the various attachments from a special robotic storage shelf.

**Pepaminto – Mattress Topper**

Pepaminto makes a temperature-controlled mattress topper controlled by the Apple Watch. You put it on top of your current mattress then set the temperature to what you like. You wear your watch to bed, and it keeps the temperature stable.
**FOGO – Graphene Radiator**

FOGO is a French company that has created a smart electric heater. In addition to being smart, it uses graphene as the heating element. I don’t know too much about graphene, but I know it’s one atom thick. The entire heater is much thicker than that (5.5 cm), but it’s still quite thin. The FOGO is equipped with sensors “to learn from your daily life.” It uses AI to optimize heating cycles and anticipate your needs. Of course, you can control it with your phone if you’re feeling a bit chilly. It’s compatible with Matter.

**Artifeel – AI Autonomous Alarm**

If you want to protect your stuff but think it’s a hassle to set up a monitored alarm system, the Check’In may be for you. The Artifeel Check’In is a battery-powered care-free intrusion alarm. You take it out of the box, stick it to the door of your house or hotel room, and done! You’ll need to run the smartphone app to notify you, but the physical installation is just sticking it to the door. It Uses 4G to connect (no Wi-Fi needed). It doesn’t require daily arming and will run for two years on the start-up subscription. They claim it will trigger before anyone enters the premises resulting in 70 percent *fewer* break-ins. (And probably 100 percent fewer hotel rooms cleaned.)

**Aiper – Smart Pool Cleaning Robot**

If you aspire to having a pool in your back yard, you may not consider that is a giant open bathtub for your children and pets, your children’s friends, their pets, and the neighborhood wildlife. According to Hollywood, this means supporting an industry of expensive, ripped pool boys. Aiper aims to disrupt this business model with the smart pool cleaning robot that suctions itself to the floor and walls of your pool and vacuums away debris. A similar pool-cleaning robot is available from Degrii. Hollywood will have to adapt.

**Eve Systems – Upgrade Motion Roller Blinds Kit**

If you’re overwhelmed by the daily annoyance of opening and closing window blinds, Eve has you covered. They are expanding their portfolio of automated things with a new motion roller blind kit. You can convert any roller blind to an Alexa-controlled source of entertainment for you and your hacking-savvy neighbors.
**365Pillow – Smart Pillow**

The 365 smart pillow enables you to sleep better. It uses a textile pressure sensor to detect your head position and weight distribution. The accompanying smart phone app is then used to inflate integrated air bags to move your head to a better position. You know, in case you want to control your pillow at home while you’re out of town. As a general reminder, always keep your smart phone secure.

**10minds – Anti-Snoring Pillow**

Perhaps your partner wants to sleep better. The 10minds Motion Pillow can sense snoring and rotate your head to a different position using airbags. This is a noted improvement to the traditional snoring abatement method of a sharp elbow to the ribs.

**Stepstap – Luxtep Balancing Bathmat**

If you’re like most people, a new bathmat is unlikely to hold your attention beyond the first time you place it on the bathroom floor. The new Luxtep hopes to change this by measuring your balance. Standing on this mat will cause it to assess your risk of falling. It can even alert our contact list if you haven’t checked your balance risk lately. To me it sounds like a medically validated reason to go back to bed.

**Nanoleaf – Smart Switches with Thread and Matter**

Nanoleaf is famous for creating IoT connected triangles of light that you can attach to your walls. They are one of the first companies to sell Matter certified products. Their new Sense+ light switches use the Thread networking protocol and have motion and ambient light sensors. Their learning assistant, Nala, can make that tedious light switching a thing of the past.

**BabyArk – Smart Child Car Seat**

BabyArk is the first smart child car seat that ensures you install it correctly. Almost half of child car seats are installed incorrectly. A smart phone app guides you step-by-step through the installation of the modular system and every step is verified by a light signal on the seat.
**Leedarson – Matter Smart Home Stuff**

Leedarson is an international company devoted to research and development, and manufacturing of interoperable IoT products. They are an early adopter of Matter and have Matter certified products.

**Kohler – Infinity Bath**

I reported on the $15,000 Infinity bath last year. It simulates Japanese forest bathing (which is a thing) by filling the tub until it overflows into an external drain where the water is reheated and pumped back into the tub. I’ve found that this experience is easy to simulate in your current tub if you just put a good-sized wad of gum in the overflow drain. The clean-up is a bit of a problem, but you can do quite a few repairs and still pay less than $15,000.

**Kohler – Sprig Shower Aromatherapy System**

Kohler is further enhancing the shower experience with the Sprig infusion appliance. It attaches to your shower head and uses special aromatherapy pods to shower you with stuff that smells better than you. The replaceable pods help you do important things like breathe, focus and recharge.

**Moen – Smart Sprinkler Controller with Sensors**

My lawn watering talent enables me to cultivate both a brown lawn and a wet sidewalk. Moen’s new smart sprinkler could improve on my skill with smart sprinkler sensors that measure soil moisture and communicate with my sprinkler controller. The controller can use this information to intelligently switch sprinklers on and off to get the soil moisture exactly right.

**Casana – HeartSeat Smart Toilet Seat**

When you’re using the restroom, you’re quite literally wasting a lot. Products from Withings and Vivoo, can observe your urine and provide analysis to your smart phone. The Casana HeartSeat can passively track health parameters from your bum. This includes an electrocardiogram (ECG), ballistocardiogram (BCG), and your blood oxygenation (SpO2) level. The urge to use the restroom is about the most reliable scheduler I can imagine. Passive health tracking like this is likely to succeed because it doesn’t require us to modify our behavior.
**SMT – Self-powered Shower Head Monitor and Filter**

The Water N shower filter will filter your shower water and report important statistics like temperature and usage history via a smart app. It generates its own electricity by spinning a generator from the water flow.

**Norelco – Shaver S9000 Prestige**

Confession: I have a connected toothbrush and a connected scale. My toothbrush identifies how well I am brushing my teeth and results in fewer cavities. My scale helps me manage my weight and body fat. I feel better and might live longer. My shaver isn’t connected and unless it has a sexy meter, I’m not sure how it improves my life.

The Norelco app makes you a member of the “GroomTribe,” teaches you more efficient shaving techniques and lets you know if you’re shaving with the right amount of pressure. I’m still not convinced it will improve my life, but do I want one? Yes. It’s connected.

**Bartesian – Smart Cocktail Machine**

Some people go to bars and pay mixologists to mix expensive drinks for them. This has been shown to progressively impair judgement and lead to poor life decisions. With Bartesian, you can drink as much as you want from the comfort of your own home. Handy compressed tablets with barcodes replace expensive drink ingredients, and the robot doesn’t require tips. If you feel the need to socialize, there’s always Alexa.

**Curtis – Nugget Ice Machine**

If your robot is mixing drinks for you at home, you will want to provide bar-quality ice to complete the experience. Curtis (by Frigidaire) will create soft, yet crunchy ice nuggets to enhance the quality of your home mixology.

**GE – Profile Smart Stand Mixer**

The GE Profile stand mixer is a smart stand mixer. In addition to mixing and standing, it also weighs ingredients, times things and senses the stiffness of your dough. It can automate recipes through the smart phone app, and you can control it with Alexa and Google.
**Samsung – Bespoke Oven with Interior Camera**

I have a Samsung smart oven that will allow me to preheat it while I’m at the grocery store. I have cameras that let me see what I have in my refrigerator, so I don’t buy an extra dozen eggs. This year Samsung combined the two and added AI. The new Samsung Bespoke AI oven has a camera inside. It not only allows you to see what’s cooking, it knows what’s cooking and will alert you if you’re about to burn it! It can recognize 80 different dishes and is the first oven to receive the UL Solutions AI cooking appliance verification.

**GreenLifeTech – Extend Shelf Life of Food by Removing Oxygen**

Timing your bananas can be tricky. Too early, and they are hard and flavorless. Too late and they are a thin-peeled glob of mush. Green Life Tech solves the narrow window banana problem by literally sucking the oxygen out of the room—or at least out of the countertop storage container. A pump circulates air through the box and removes oxygen. Your vegetables are stored at room temperature in the box and can last up to five times longer than if you left them on the counter in your oxygen-rich kitchen.

**Tineco – Smart Toaster**

Tineco creates several connected light appliances, including smart vacuums. But my favorite is their iconic smart toaster named “Toasty One.” It has sensors that detect your toast’s status and report it on a built-in color screen. Each slice can be set to a different toasty level. Each family member can store their ideal shade and crispiness. It even prompts you when you need to empty the crumb tray. Finally, no more whining at breakfast! At least less whining about toast.

**Ecobee – Premium**

My thermostat talks to me. I got the Ecobee that has Alexa built in because it is in a part of my house that doesn’t otherwise have Alexa coverage. That’s what I tell myself. But my smart thermostat was outsmarted by the new “premium” model. What makes it premium? An air quality monitor, Spotify, and a hands-free intercom. The air quality monitor makes sense, but no music deserves to be heard on a tiny speaker in a thermostat.
Switchbot – Button Presser

Back in my day, we dreamed of a future where we could get most anything by simply pressing a button. It seems young whippersnappers today can’t bother! The Switchbot will push the button for you if you just ask Alexa.

Kids Tech

The engine of innovation is imagination and there is no better source of imagination than kids. Simultaneously, there are few markets with more restrictive product requirements. Products for kids put a premium on safety and usability. For example, they must be durable enough to be dropped from the tallest structure in the playground or survive 20 minutes in the bathtub. They have to be simple enough for a 5-year-old. Kids tech is a wonderful place to look for ideas that can have application in the grown-up world.

Kinoo – Magic Wand to Teach Kids

Jim Marggraff invented the LeapPad and a whole series of smart pens I’ve had over the years. Now he is introducing the Kinoo magic wand. It is a handheld device that kids can use the help them learn to read and do other activities. The Kinoo also works with special editions of those Highlights magazines that are always lying around in doctor and dentist offices. You can add new activities with the companion smart phone app and the Kinoo Connect app lets kids do Kinoo activities with approved friends and family over a video connection.

Robosen – Working Optimus Prime Robot

Robosen has created a real working Optimus Prime robot. It automatically converts from a car to a robot just like in the movies. And, of course, it can dance.

Wowwee – Dog-E with Personality

Wowwee always brings interesting robots for kids to CES. They are most famous for RoboSapien. This year, they introduced the Dog-E. Each has a different personality, developed during a “minting” process with each child. The Dog-E can manifest assorted colors, eye shapes and tail styles and will develop a unique personality that can be protective and hungry or sweet and lazy or other combinations. The Dog-E also has a unique tail that spins and lights up to spell words using persistence of vision. You can also control Dog-E from the companion smartphone app.