

INSPECTOR GADGET 2022

DAVID M. CIESLAK, CPA.CITP, CGMA, GSEC

RKL ESOLUTIONS, LLC



David M. Cieslak, CPA.CITP, CGMA, GSEC



dcieslak@rklesolutions.com

Phone: 717-409-8835

www.rklesolutions.com

Twitter: @dcieslak

RKL eSolutions, LLC - EVP, Chief Cloud Officer

Frequent speaker for AICPA, CalCPA and numerous accounting industry groups and conferences

Named one of Accounting Today's 100 Most Influential People in Accounting nineteen times

CPA Practice Advisor— 2011-21 Top 25 Thought Leader, Hall of Fame Inductee - 2020

AKA "Inspector Gadget"



rkl eSOLUTIONS (www.rklesolutions.com)

- Helping small and mid-sized organizations transform their finance and accounting department
- ERP sales and consulting for 25 years
- 100+ employees in 22 states
- Sage Intacct awards
 - Rookie of the Year (2012)
 - President's Club (2014, 2015, 2017, 2019-2020)
 - Momentum Partner (2015)
 - Premier Partner (2015 – 2020)

sage Intacct
Premier Partner

Agenda

Technology

Companies

IoT

Gear / Gadgets

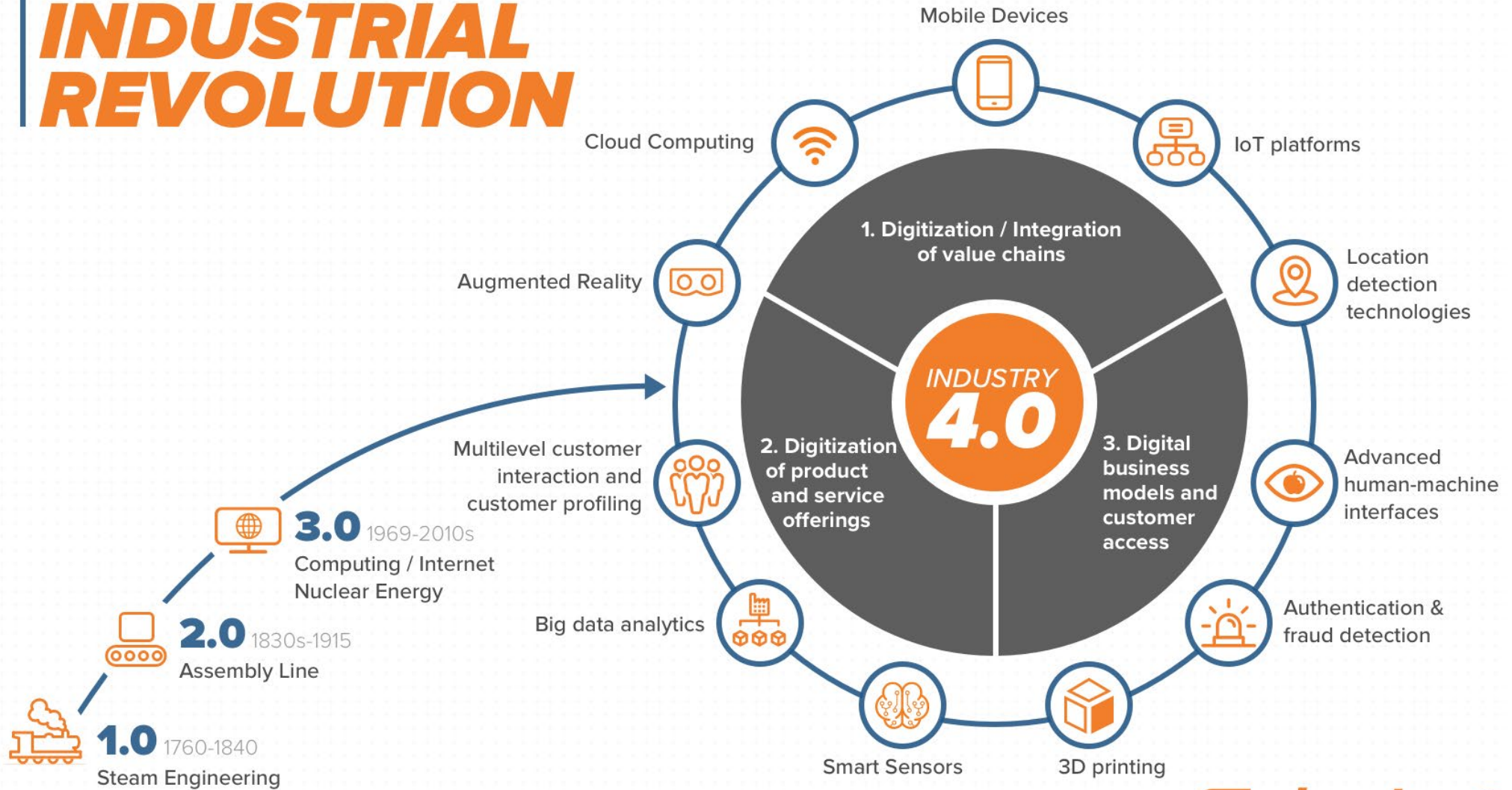
EVs

#FAIL

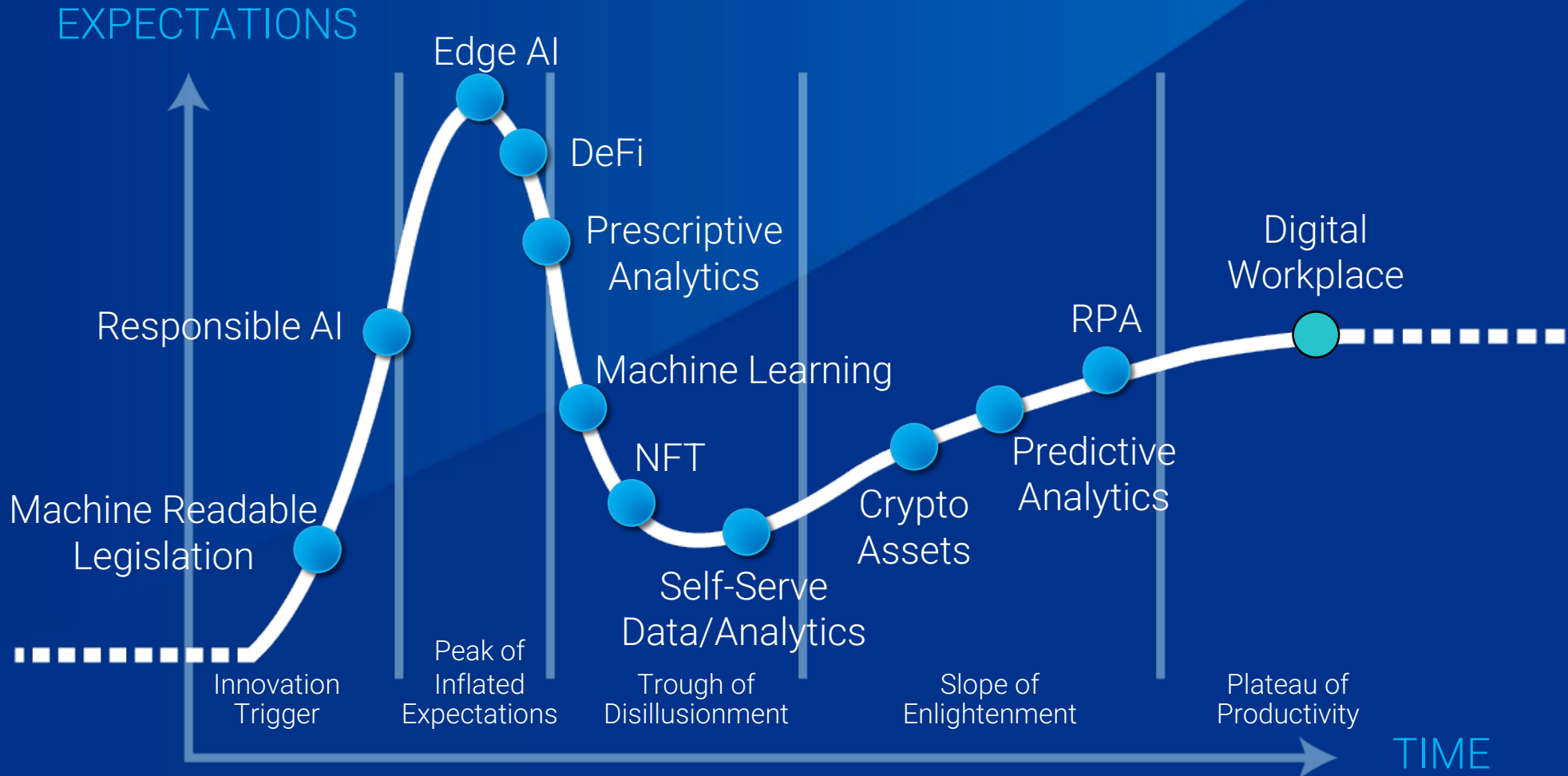


THE DAWN OF THE

FOURTH INDUSTRIAL REVOLUTION

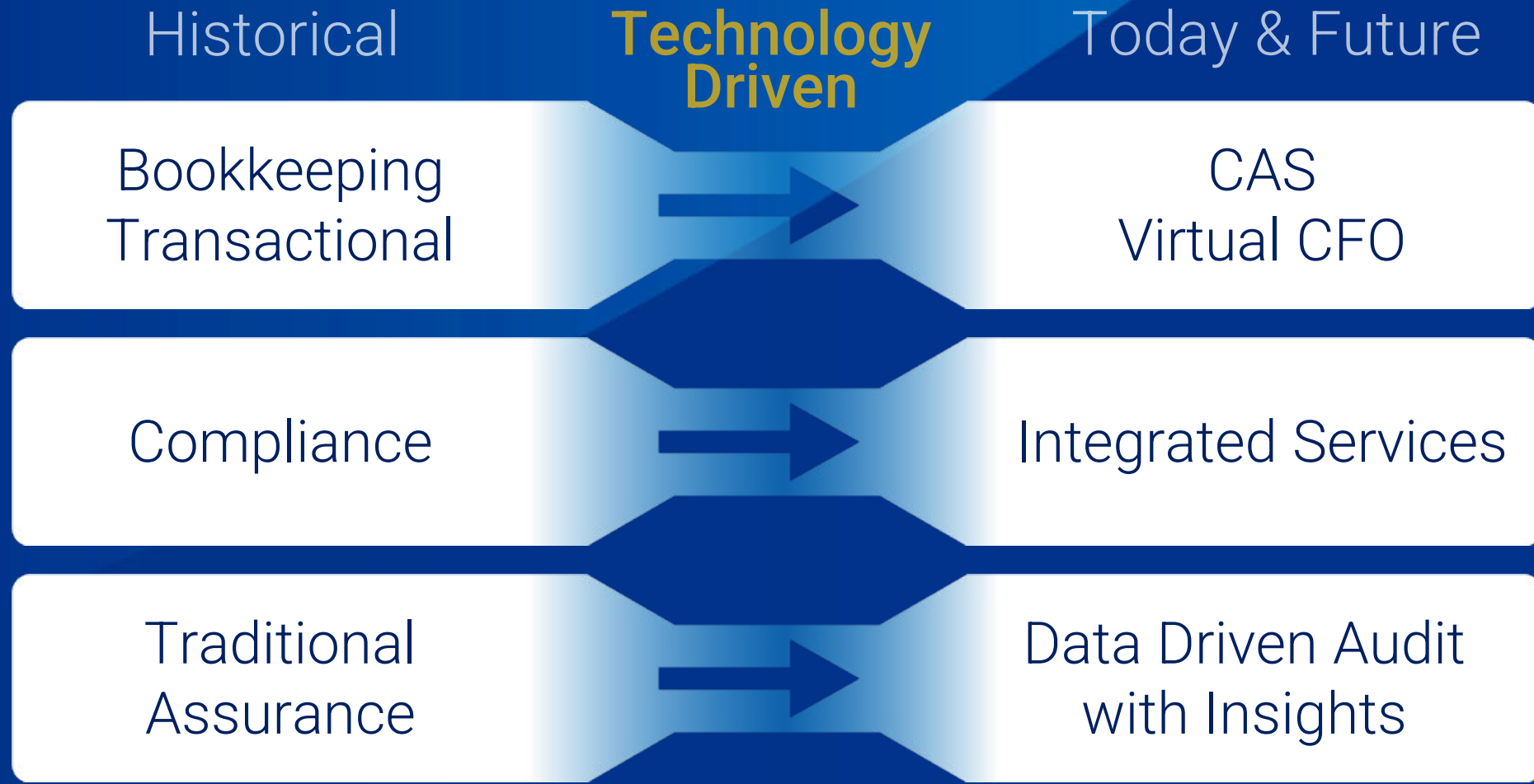


2022 Accounting Profession Technology Megatrends

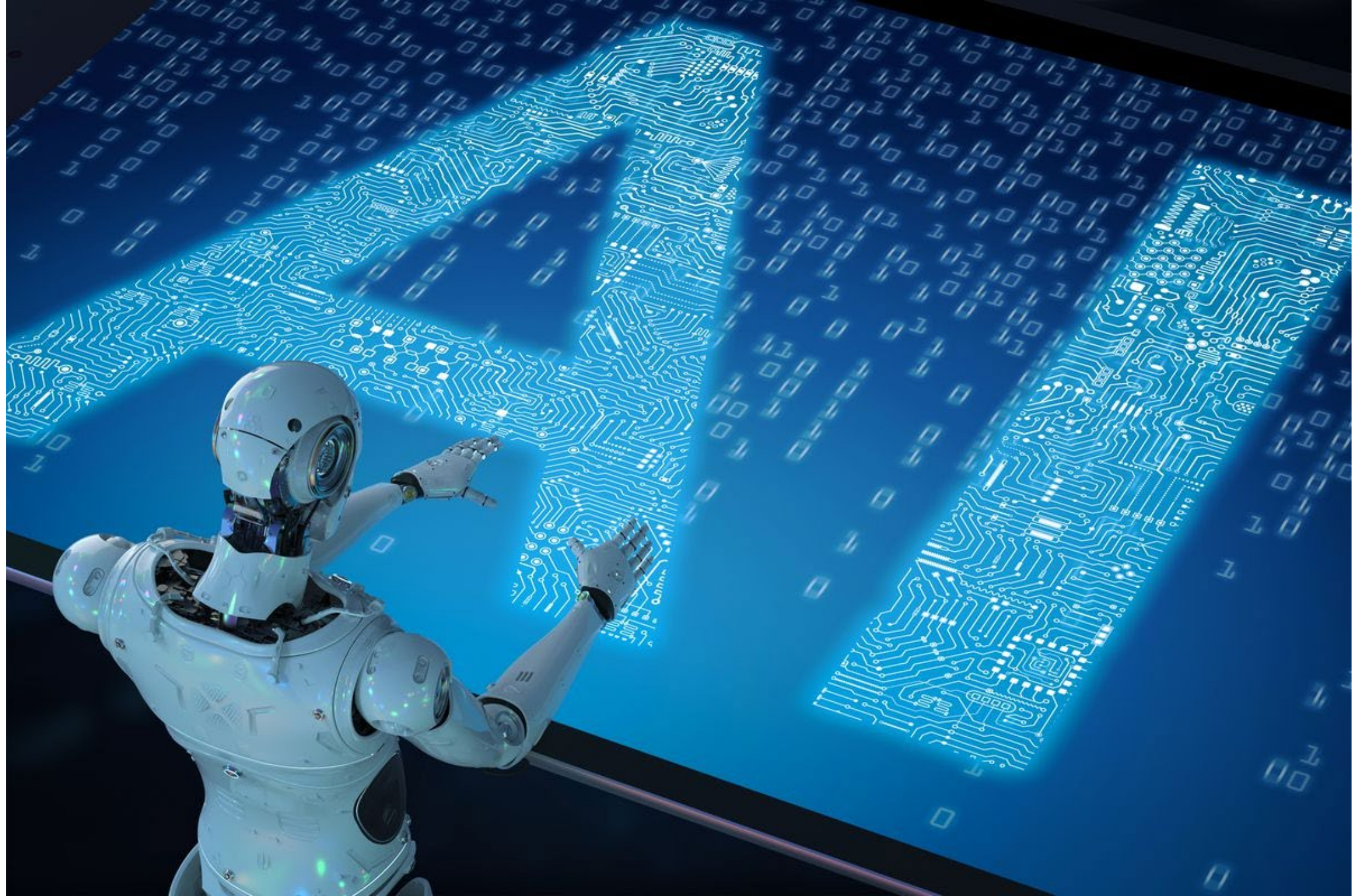


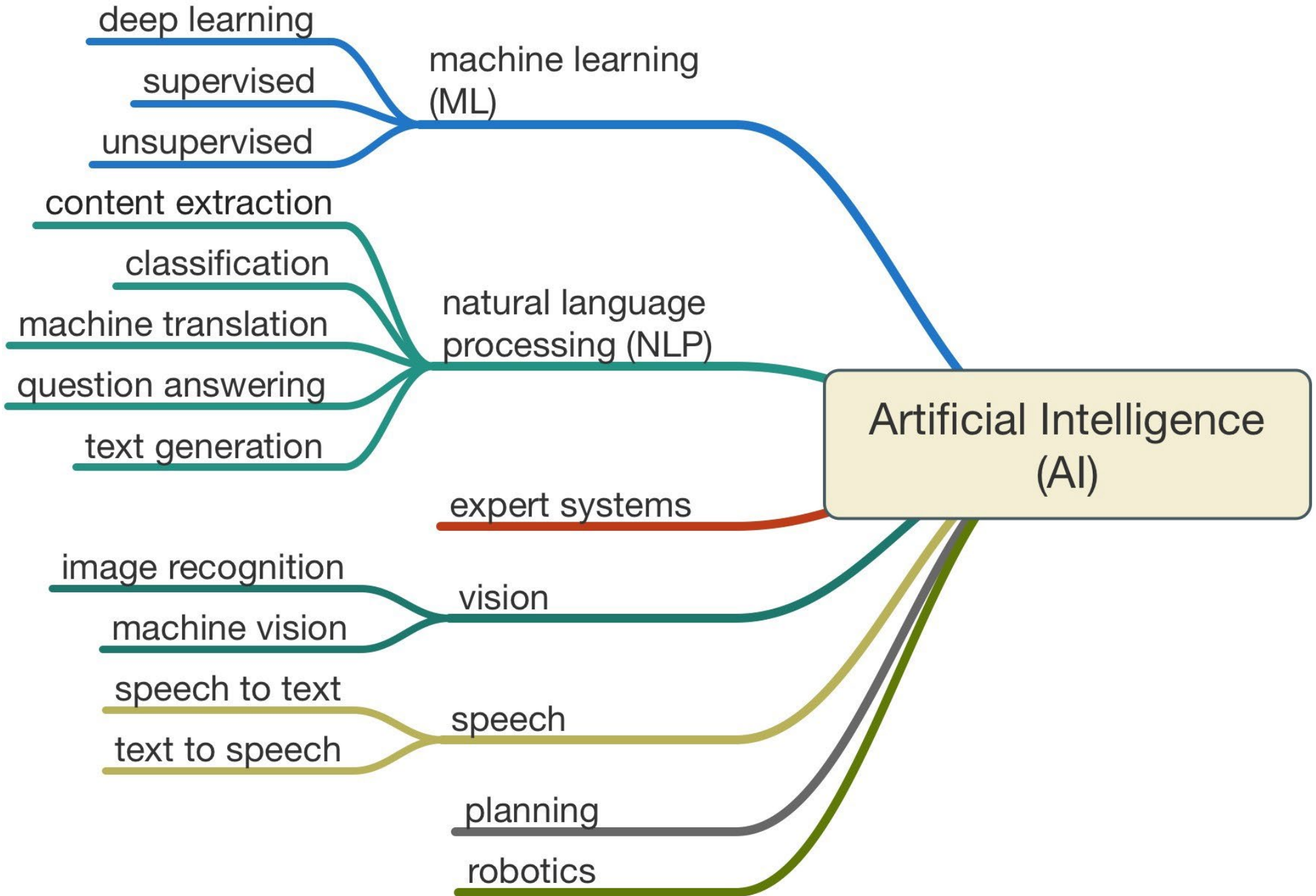
Source: 2022 CPA.com Identified Megatrends Plotted on the Gartner Hype Cycle Framework

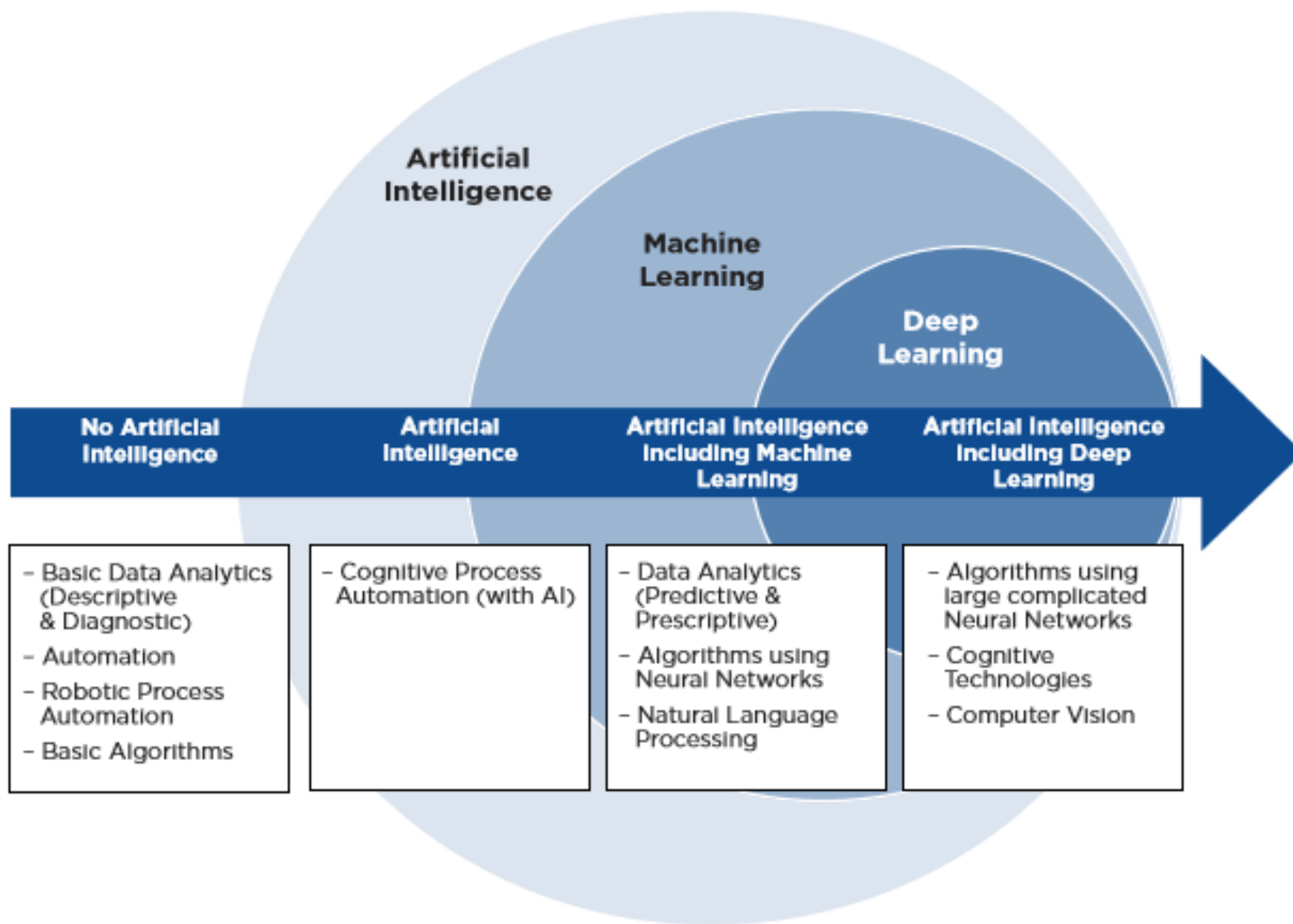
Accounting Profession Transformation



Significantly Enhance Client Value







2022 AI Trends

Workforce augmentation

Better language modeling

Cybersecurity

Metaverse

Low-code / no-code

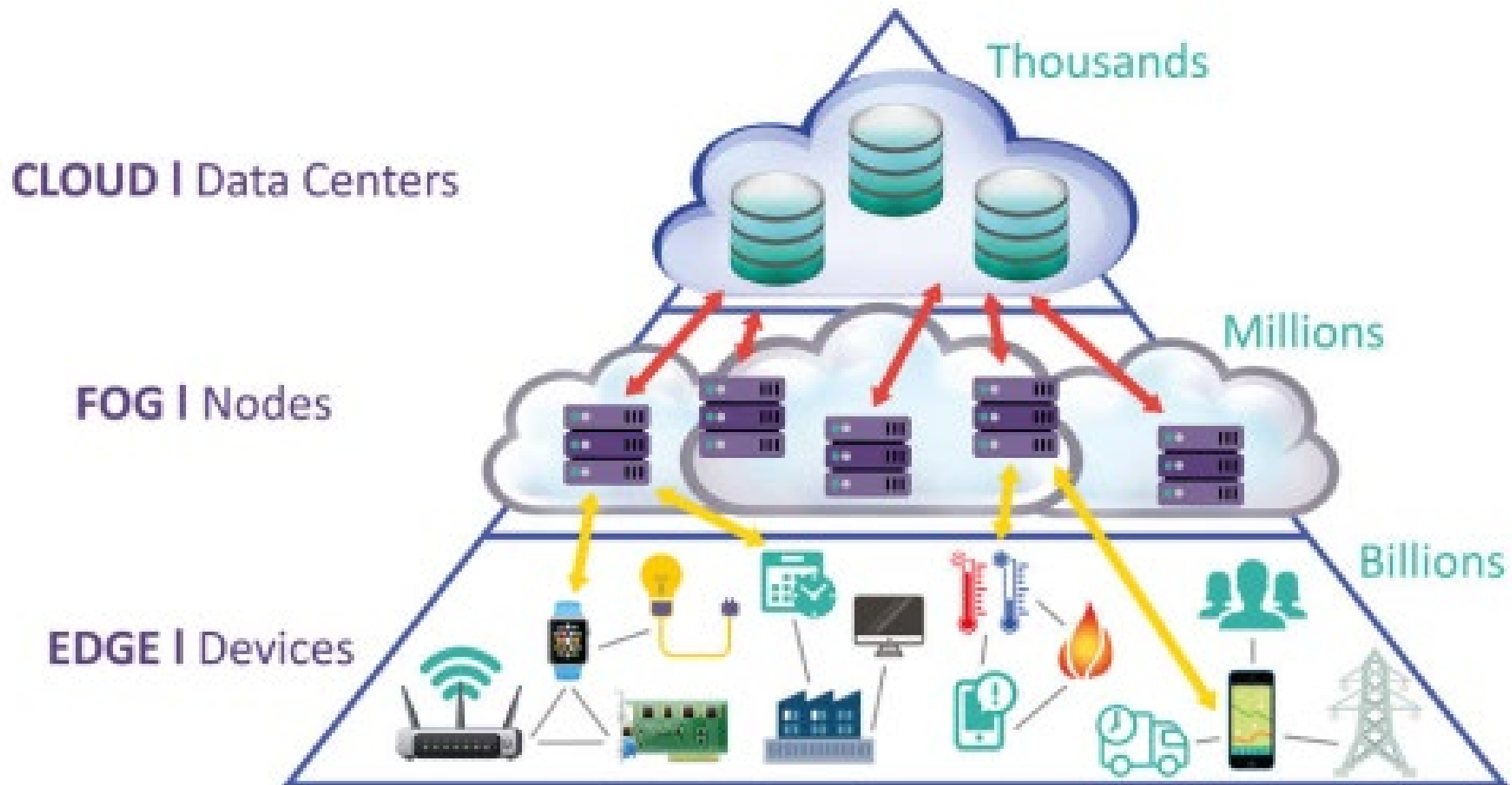
Autonomous vehicles

Creative





CLOUD COMPUTING



A futuristic cityscape at night, featuring a glowing blue grid overlay that creates a sense of depth and perspective. The grid lines are bright blue and form a mesh that recedes into the distance. In the center of the image, the text "5G" is displayed in a large, bold, white font. The background shows a city skyline with various skyscrapers, some of which are illuminated with blue and white lights. The overall color palette is dominated by deep blues and bright cyan, giving the image a high-tech, digital feel.

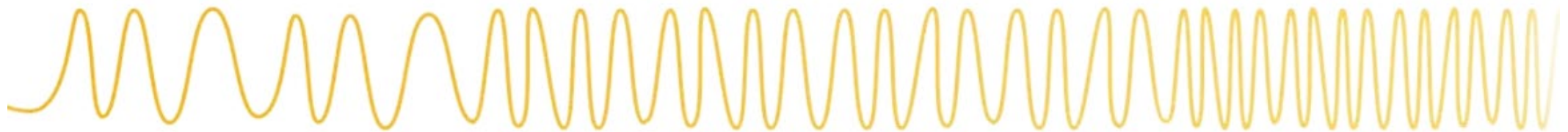
5G



What you need to know...

Three flavors:

- 4G (5G low-band spectrum) – LTE widely utilized today (28 Mbits/s, 50 millisecc latency)
- 5G Sub 6 (mid-band spectrum) – broader coverage (600 Mbits/s)
- 5G mmWave (high-band spectrum) – high speed, extra capacity, dense areas, shorter distances (multi gigabit, 1 millisecc)



Sub-1 GHz

Low Bands Below 2GHz

Sub-6 GHz

Mid Bands 2GHz to 6GHz

mmWave

High Bands Above 24GHz

Devices will simultaneously support all three with seamless switching - **not an “all or nothing.”**



Smart Home



Augmented/ VR



Autonomous
Vehicles



Industry
Automation



Smart
Agriculture



Transport &
Logistics



Mobile UHD



Work/Play Cloud



Digital Health



Robots & Drones



Smart Cities



Smart Building

eMBB and FWA

- Capacity for peak data rates at home (FWA) and on the move (eMBB)
- Network intelligence to allocate resources

Mission critical comms

- Ultra-high mobile reliability
- Substantial security
- Ultra-low latency

Massive IoT

- Deep coverage and density
- 10+ year battery life
- Low data rate optimization

5G download speed is now faster than Wifi for smartphone users in seven leading 5G countries



OPENSIGNAL

Data collected January 22- April 21, 2020



C-Band

More than a half-dozen companies spent over \$80 billion for C-band, a new set of airwaves that promise to fix the perilous state of American 5G. The future of 5G!

C-band sits between the 2.4GHz and 5GHz Wi-Fi bands (5G mid-band) - specifically, the range from 3.7 to 3.98GHz

Generally, AT&T and Verizon will use C-Band technology

Rollout likely starting in late 2022

Many newer phones are already certified for C-Band



But wait!

Catastrophic consequences using C-Band near airports?

- C-band spectrum (3.7–3.98 GHz range), sits just below the 4.2–4.4 GHz frequencies used by radar altimeters. Concerns about “bandwidth pollution.”
- As of 1/19/22 – AT&T and Verizon agree to delay implementation near key airports, as well as tilting antennas downward & limiting power for 6 next months - avoiding airlines grounding flights.

Note: Europe 5G services use the slower 3.4 to 3.8 GHz range and less power, i.e. not an issue

FAA scrambled to test and certify altimeters to work with C-band transmissions. Turns out, 90% of planes were fine. Flights have gone on as planned, with some exclusion zones for C-band transmitters around airports.

FAA now wants airlines to upgrade their altimeters. The Airline Pilots Association has removed C-band from its list of concerns to advocate about.



Mobile Experience Awards, USA

OPENSIGNAL

January 2022, USA Report

A




AT&T

T

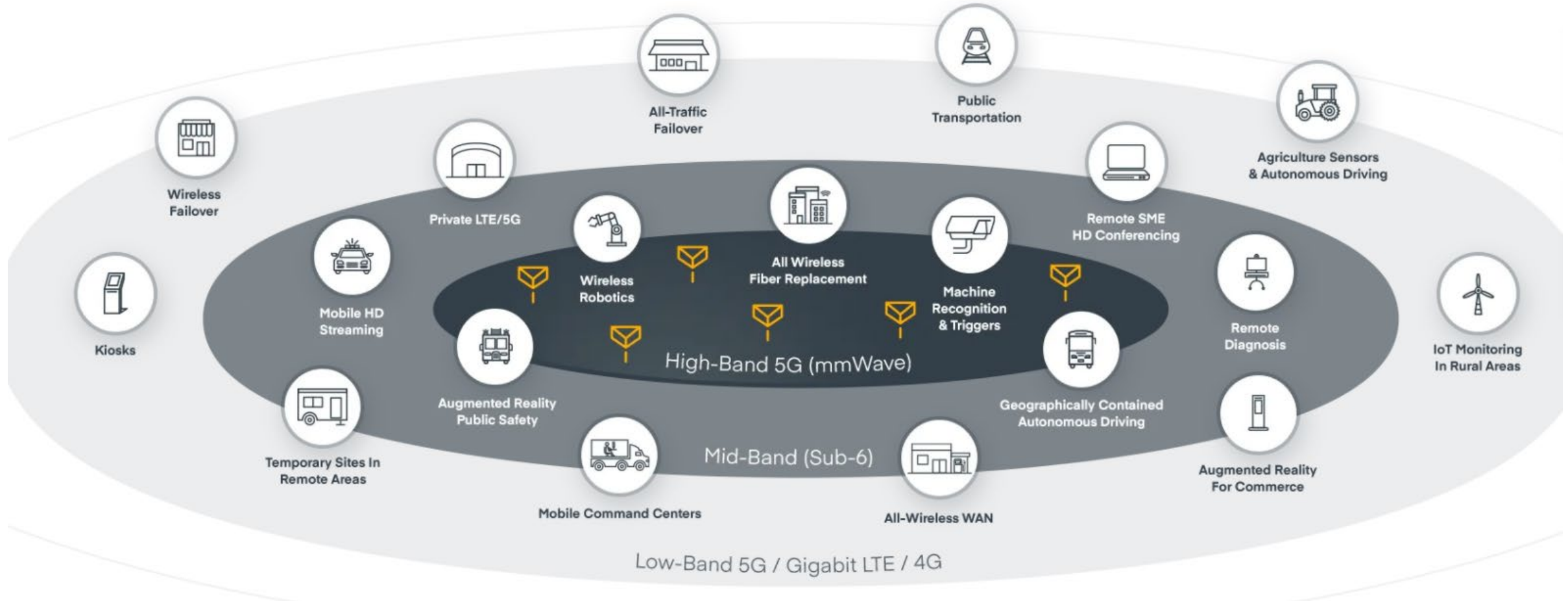
T-Mobile

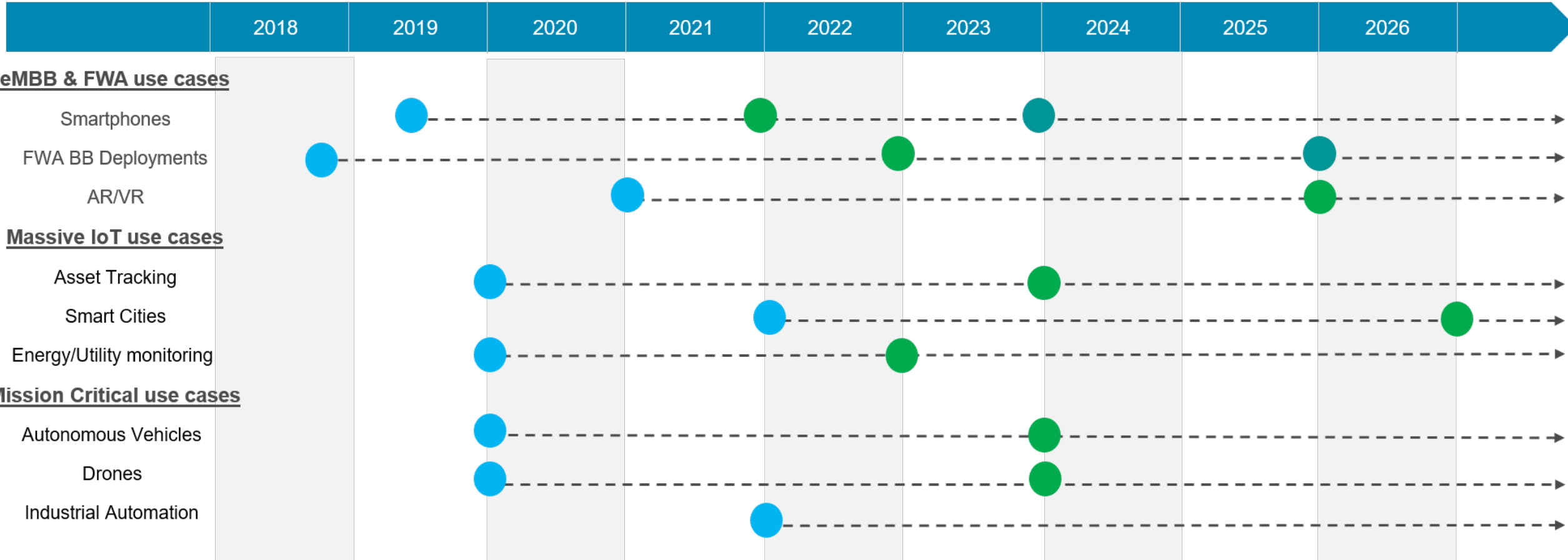
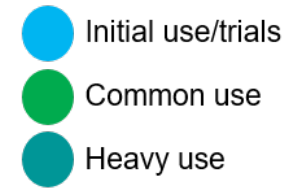
V

Verizon

 Games Experience	 JOINT WINNER	 JOINT WINNER	
 Voice App Experience		 WINNER	
 Download Speed Experience		 WINNER	
 Upload Speed Experience		 WINNER	
 4G Availability		 WINNER	
 4G Coverage Experience			 WINNER

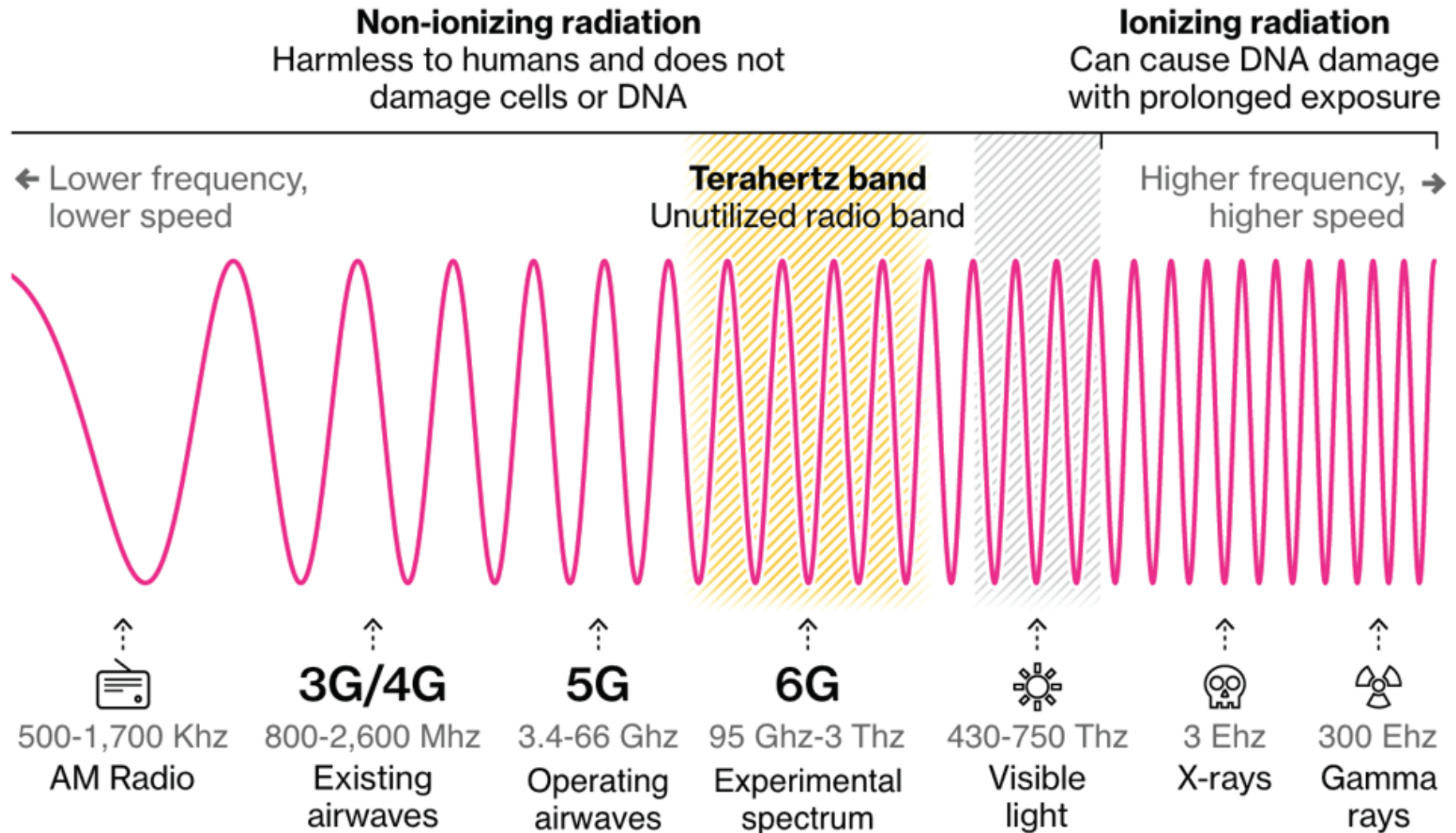
Rollout and Use Cases





Experimental Band

Terahertz waves could meet 6G's speed, latency requirements



Sources: Ofcom, CB Insights, 4G.co.uk



Starlink

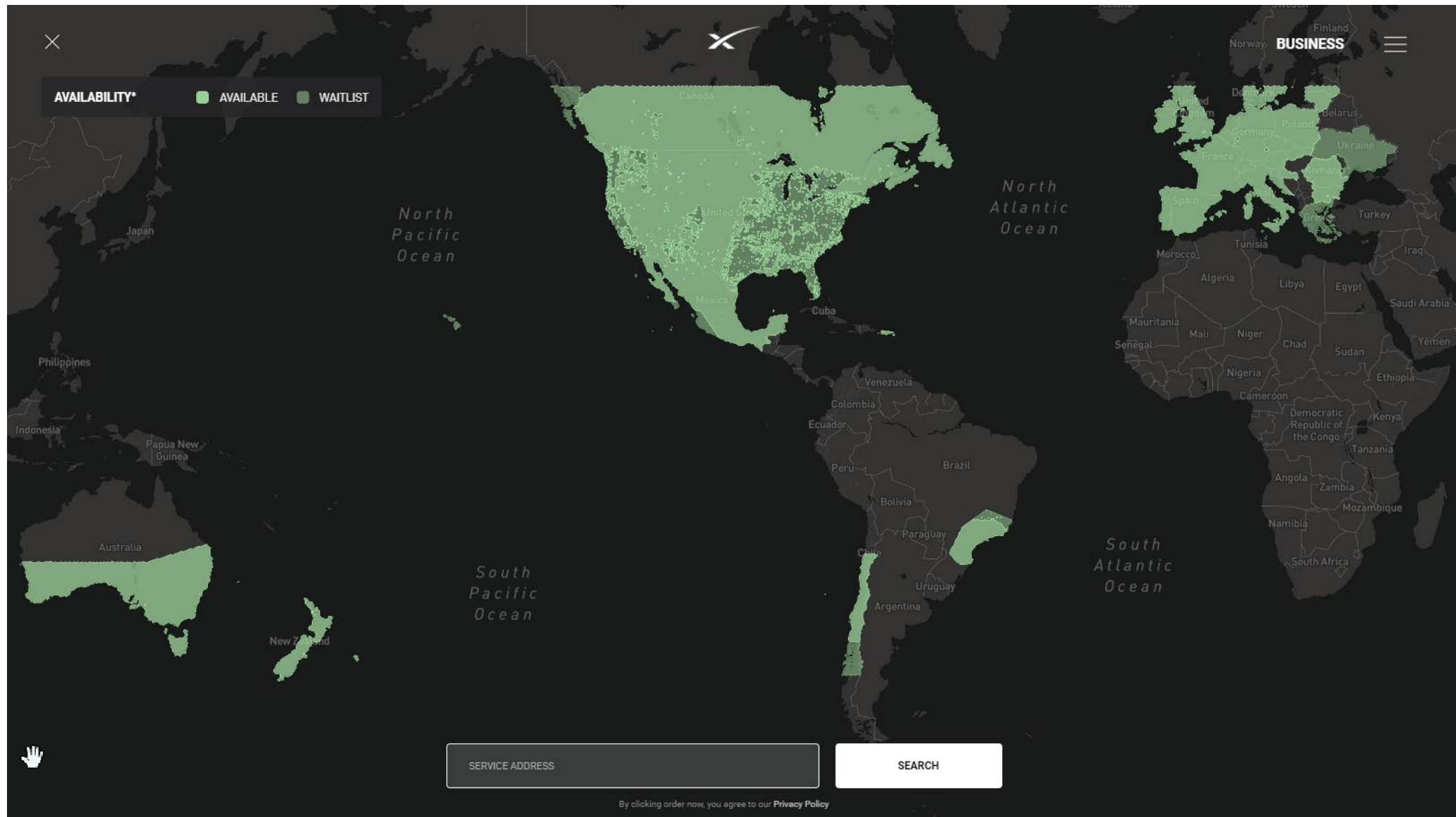
High-speed, low-latency broadband internet across the globe

Download speeds between 100 Mb/s and 200 Mb/s and latency as low as 20ms in most locations

Within each coverage area, orders are fulfilled on a first-come, first-served basis.



www.starlink.com



The image shows a dark-themed web interface for checking Starlink service availability. At the top left, there is a close button (X) and a legend for 'AVAILABILITY*' with two categories: 'AVAILABLE' (represented by a light green square) and 'WAITLIST' (represented by a dark green square). The Starlink logo is centered at the top. The main area is a world map where serviceable regions are highlighted in light green. These regions include North America (Canada, United States, Mexico), parts of Europe (United Kingdom, Denmark, Germany, Poland, Ukraine, Romania, Greece, Spain, France), Australia, and parts of South America (Brazil, Chile, Argentina). Other regions shown in dark green, indicating a waitlist, include parts of Europe (Finland, Norway, Sweden, Belgium, Netherlands, Luxembourg, Czech Republic, Slovakia, Hungary, Austria, Italy, Slovenia, Croatia, Serbia, Bulgaria, Romania, Greece, Turkey, Israel) and parts of Africa (Morocco, Tunisia, Algeria, Libya, Egypt, Saudi Arabia, Yemen, Ethiopia, Kenya, Tanzania, Angola, Zambia, Mozambique, Namibia, South Africa). The map is labeled with 'North Pacific Ocean', 'North Atlantic Ocean', and 'South Pacific Ocean'. At the bottom, there is a search bar with the placeholder text 'SERVICE ADDRESS' and a 'SEARCH' button. A hand icon is visible in the bottom left corner. In the top right corner, the word 'BUSINESS' is displayed next to a hamburger menu icon. At the very bottom, a small line of text reads: 'By clicking order now, you agree to our [Privacy Policy](#)'.

3G networks shutting down in 2022



[AT&T](#) announced that it will finish shutting down its 3G network by February 2022.

[Verizon](#) announced that will finish shutting down its 3G network by December 31, 2022.

[T-Mobile](#) announced that it will finish shutting down Sprint's 3G CDMA network by March 31, 2022 and Sprint's 4G LTE network by June 30, 2022. It also announced it will shut down T-Mobile's 3G UMTS network by July 1, 2022, but has not yet announced a shutdown date for its 2G network.

Device Tech

WiFi 6

Naming:

- WiFi 6 is new name for 802.11ax
- WiFi 5 = 802.11ac

Speed: WiFi 6 supports **9.6 Gbps (vs. 3.5 Gbps on Wi-Fi 5)** – although individual devices likely won't ever experience this speed since typical download speeds in the US are just 72 Mbps.

Throughput: Given the speed boost, WiFi 6 will **support more devices** without degradation.

Security: All WiFi 6 devices must support new **WPA3 security** standard

Compatibility: Backward compatible with 802.11 a/b/g/n/ac







Devices: WiFi 6 will require new devices to utilize, i.e. legacy WiFi 5 based devices won't be able to take advantage of speed/bandwidth boost



WiFi 6E

Announced in 2020, WiFi 6E products support the 6GHz spectrum – enabling faster speed and lower latency than WiFi **operating on the 2.4GHz and 5GHz wavelengths, but shorter range and more sensitive to physical obstructions (another reason to deploy via mesh networks).**

Move to 6GHz quadruples the amount of available airwaves.

Wi-Fi 6E brings Wi-Fi® into 6 GHz	
Features	Benefits
 More, contiguous spectrum	 Gigabit speeds
 Wider channels	 Extremely low latency
 Less interference	 High capacity



WiFi 7



802.11be EHT (Extremely High Throughput)

Still uses 2.4GHz, 5GHz, and 6GHz radio bands

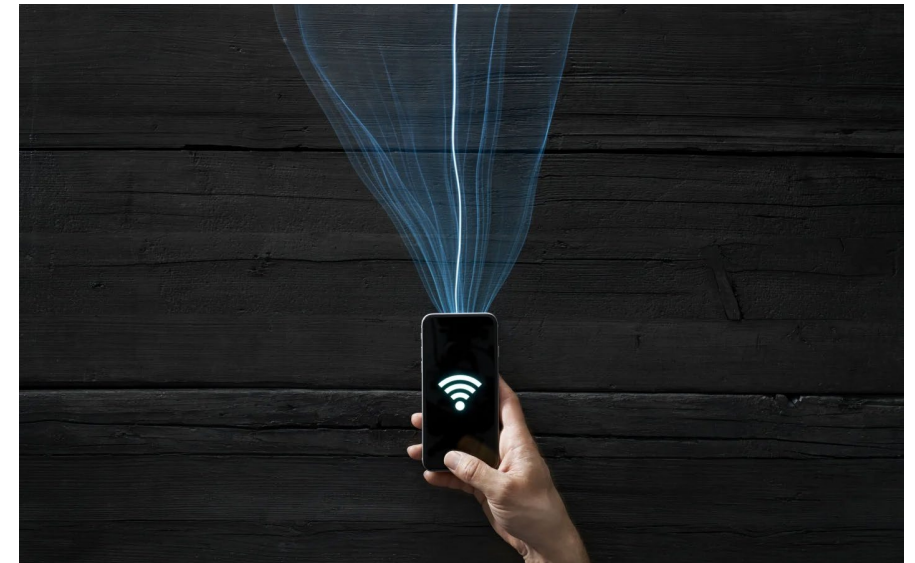
Multi-Link Operation (MLO) technology

- **Allows devices to simultaneously send and receive data over multiple radio bands to create a single aggregated connection.** Faster throughput, reduced latency and allow data to flow unimpeded by network traffic or interference.

Fast!

- Projected peak data rates of Wi-Fi 7 is **46Gbit/s, 4.8 times faster than Wi-Fi 6/6E** and almost 6x faster than Wi-Fi 5.
- Slightly faster than the 40Gbits/s delivered by a Thunderbolt 3/4 connection.

Avail: Late-23





Ultra-wideband (UWB)

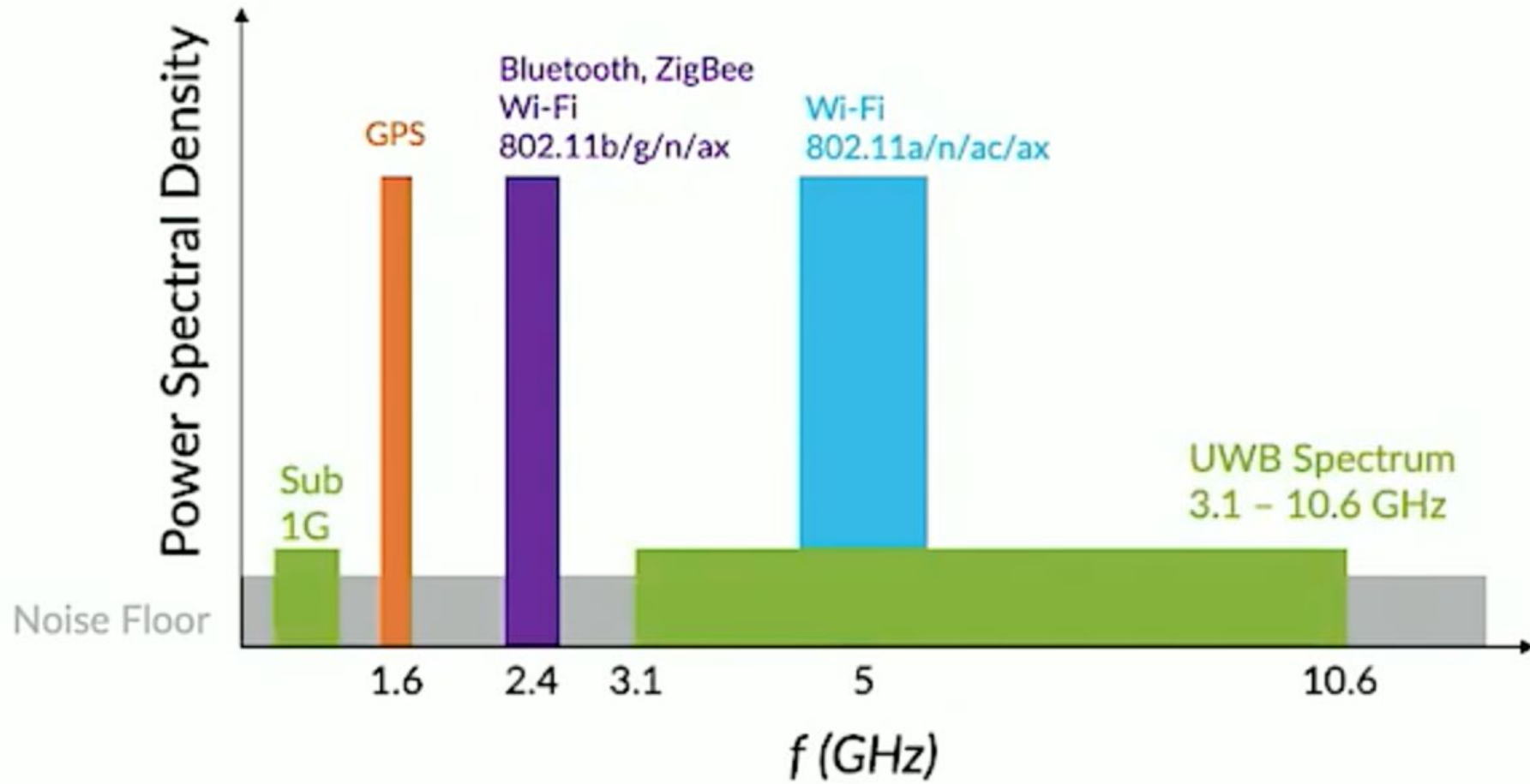
Fast, secure and low power radio protocol used to determine location **with extreme accuracy (10 centimeters)**

Very low interference

Operating range of 200 meters (656 feet)

Not new (2002), but lots of recent interest!

UWB SPECTRUM





UWB is better than...

Bluetooth

- Unable to measure distance or location accurately
- Recently been hacked

NFC (RFID)

- Very short range

WiFi

- Expensive
- A/C power and WiFi infrastructure
- Short range (100 meters)



Sample Use Cases

Smart Car Access - unlock a car with a smartphone as soon as you approach it for keyless entry and remote start.

Secure Wireless Payments - it's more secure than NFC and you can leave your smartphone in a pocket.

Secure Building Access - Automatically open doors to a secure area within a building once you approach them.

Smart Retail - provide useful information about a product you just picked up or special offer for buying one.

Asset Tracking - Boeing uses UWB tags to track more than 10,000 tools, carts and other items on its vast factory floors.

Sports & Fitness Tracking - NFL is already tracking players on a field for instant replay animations with UWB transmitters in each shoulder pad. A football's location is updated 2,000 times per second.

Wearable Health Sensors - Biometric UWB bracelet that monitors body temperature, oxygen saturation levels, body movement, heart-rate 24 hours a day.



Sample Use Cases

Medical Radars - UWB pulses can be used to monitor respiration and heart beat of the person from a distance by reading reflected UWB signals.

Indoor Navigation - Get precise navigation indoor to your gate in the airport or a product on a shelf.

Smart Home - Lights, audio speakers, and any other connected device with UWB sensing capability will be able to follow users from one room to another, for example adjust the volume of a speaker based on where you're standing or switch Netflix profile to yours.

Warehouse Positioning - Actively track people, machines and equipment indoors, accurate positioning in emergency situations - finding unconscious person.



UWB – Notable recent interest

Apple (U1 chip)

- iPhone
- Air Tags
- Home pod mini



Samsung

- Galaxy phones
- Smart Tags

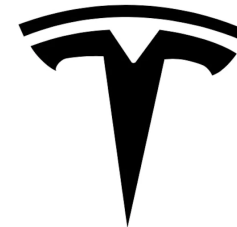


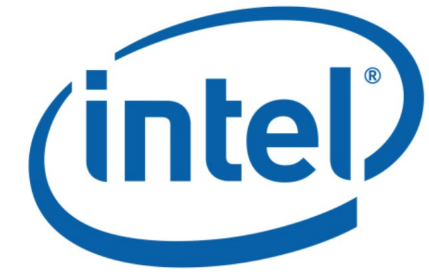
Google

- Pixel phones



Tesla





Intel Alder Lake (12th-Gen)

30%-40% performance boost

Fastest mobile processors to date

- H-Series – Enthusiast laptops
- P-Series – Performance thin & light laptops
- U-Series – Modern thin & light laptops

Longer battery life



Evo: What's New with 3rd Edition

Key Experiences

Responsiveness from Anywhere

AND

Real World Battery Life

AND

Instant Wake

AND

Fast Charge

AND

NEW Intelligent Collaboration



New Key Spec Technologies

12th Gen SoC

Intel® Wi-Fi 6E (Gig+)*

Intel Connectivity Performance Suite***

Dynamic Background Noise Suppression

≥FHD camera**

Intel Visual Sensing Technology
(Innovation Option)

* WiFi6e: Subject to 6 GHz band availability, operating system support, and router compatibility, Not available in all markets.

**Not all designs will have >FHD camera, best designs have Intel IPU6/MIPI

***Windows Only



Apple M1 Pro / M1 Max

ARM-based system on a chip (SoC) CPU for Apple devices

Impressive miniaturization

- 34 billion transistors in the M1 Pro
- 57 billion in the M1 Max
- Special chip modules for graphics, video, AI, communications and security into its high-end MacBook Pros.

CPU: Up to 10-core (eight performance cores and two efficiency cores)

GPU: M1 Pro (up to 16-core) / M1 Max (up to 32-core)



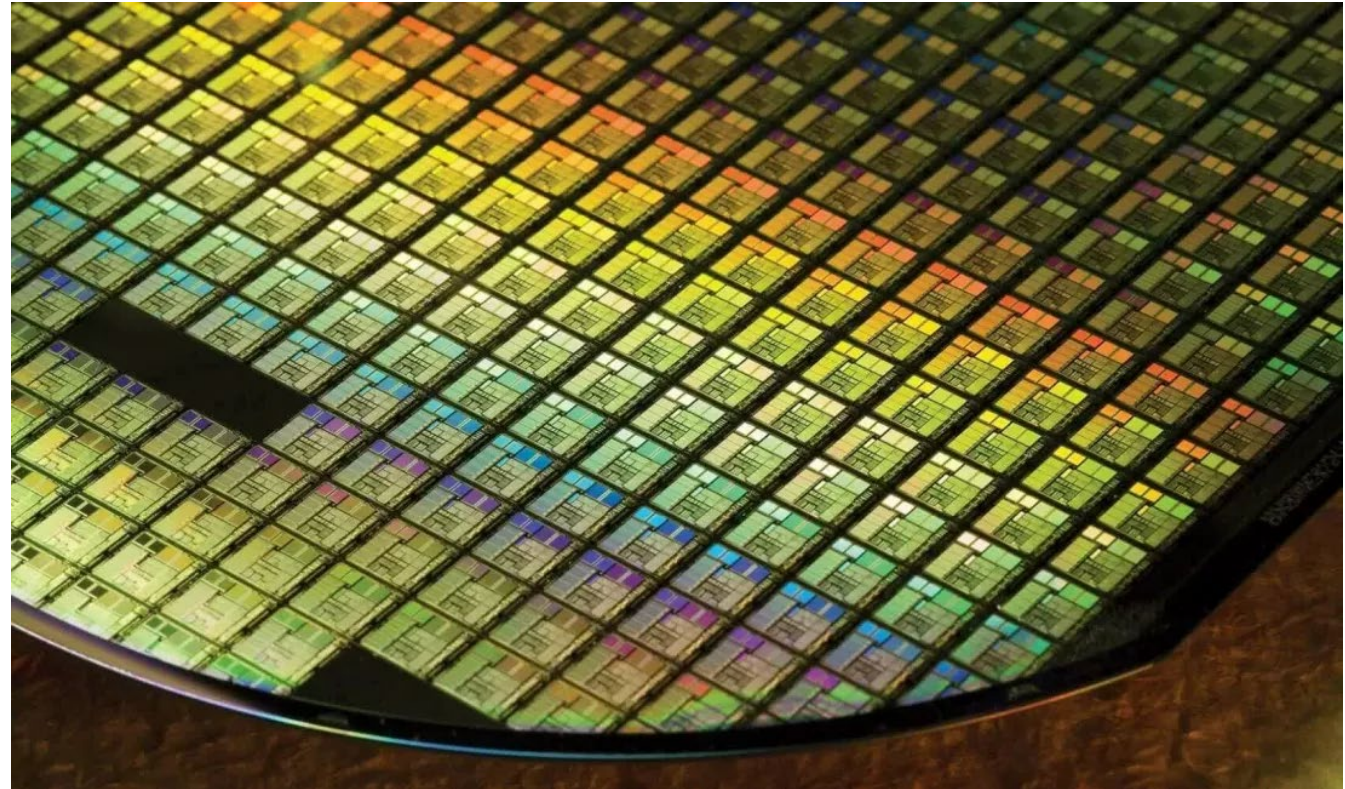
Chip shortages

300mm wafers being produced at the rate of 7,200 wafers per month (wpm) - approximately equal to the projected demand

But demand is increasing fast, and wafers are specialized to customer specifications/device requirements

COVID has further compounded

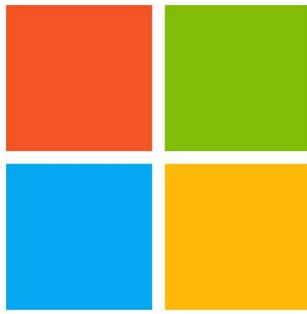
Supply issues will continue through 2023, until more wafer plants come on line in 2024 (approx. 3 yrs. to build plants)



Companies



Microsoft



Microsoft Windows 11

Streamlined new design, with pastel-like colors, rounded corners, a new startup sound and overall a more Mac-like look.

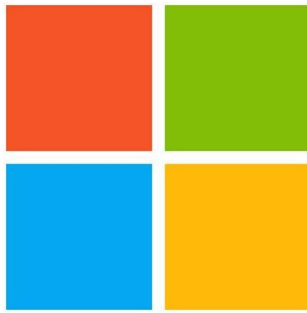
Windows Start menu moved from the bottom left of the screen to the middle, with app icons arranged in the center next to it.

Widgets give you information on the weather, stocks, news and more.

Android apps will be integrated into Windows and installable from the Microsoft Store.

Avail: Now





Microsoft Office 2021

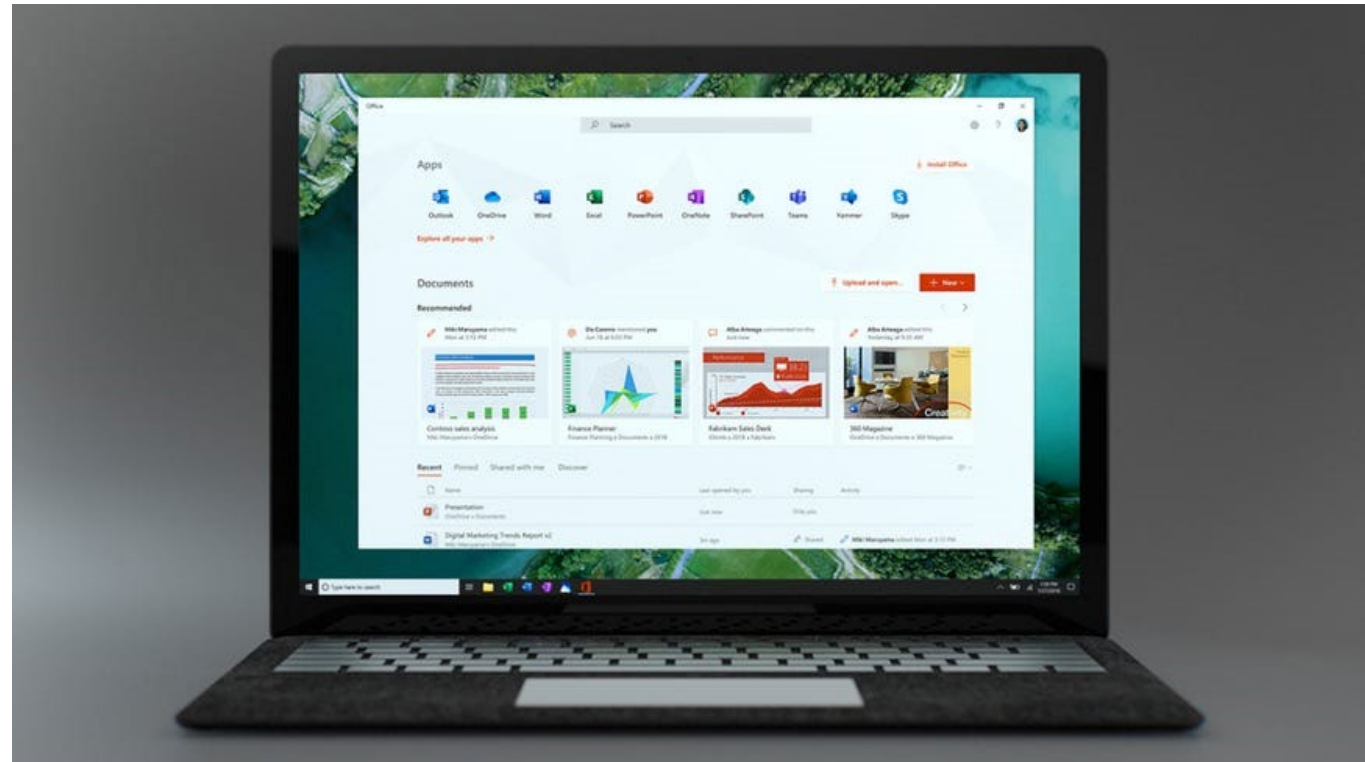
Flat-price version of MS Office –no subscription required, but won't recv. regular feature updates.

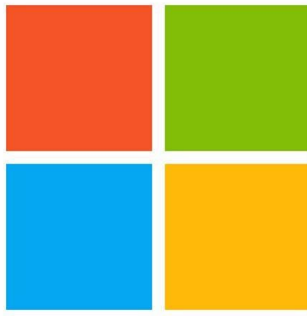
Two versions:

- Personal
- LTSC (Long Term Servicing Channel - will include enhanced accessibility features, performance improvements across Word, Excel and PowerPoint, and visual improvements, like dark mode support across apps.

Price \$249

Avail: Now





Microsoft Office 2021

Office Professional 2021 one PC version
with Lifetime Key For Windows 10 &11

Product key only – no CD/media

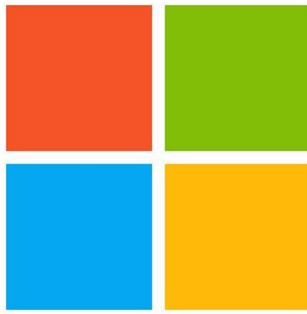
Price – as low as \$50

Avail: Now

Where: Cult of Mac, Amazon.com,
selected other resellers



Office
Professional Plus 2021



Microsoft One Outlook (Monarch)

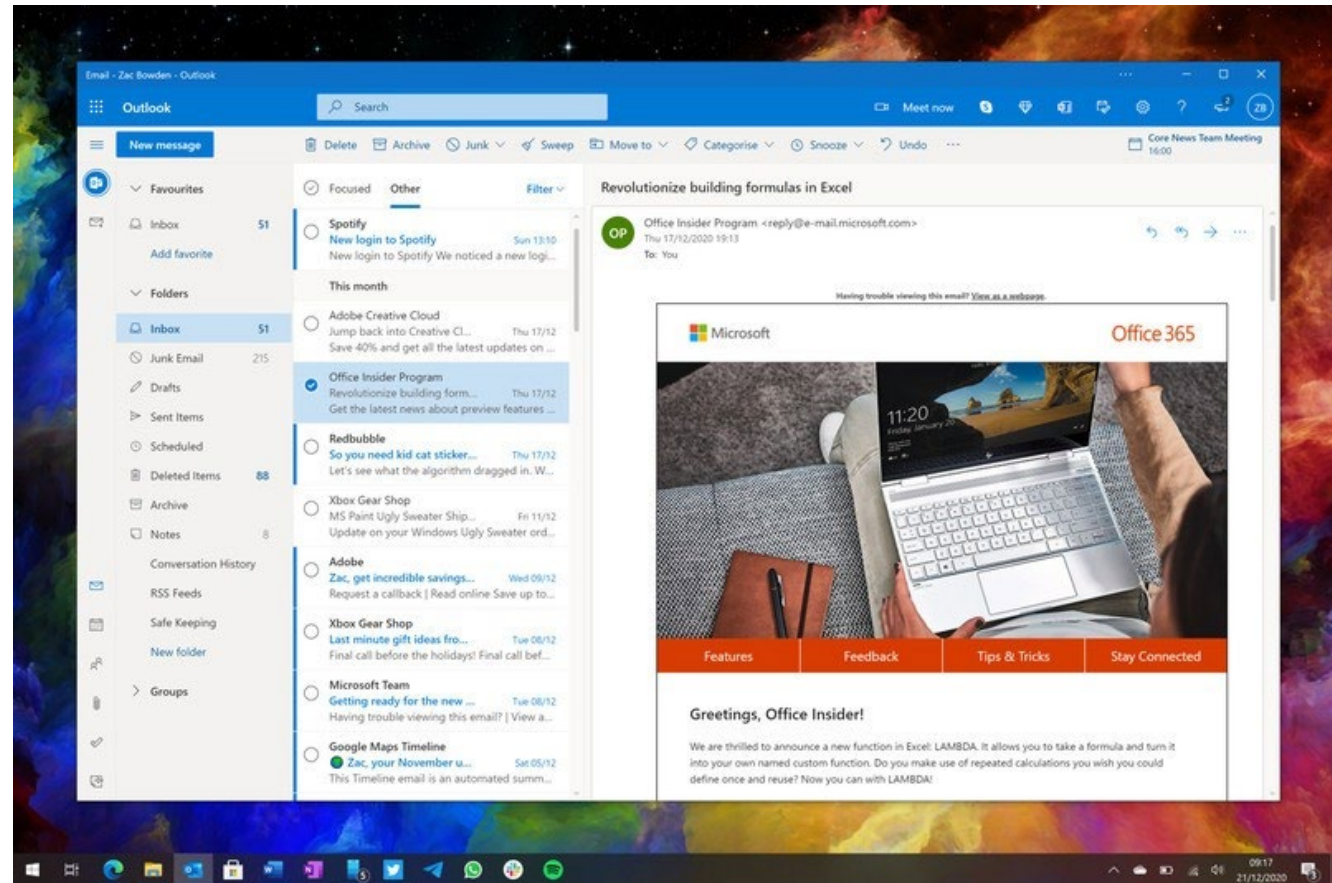
New version of Outlook - designed for large-screen experiences

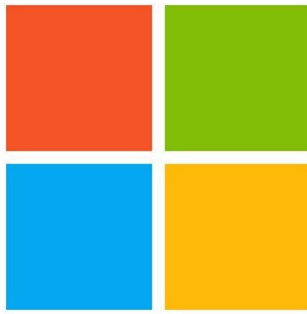
Will replace existing Outlook clients for desktop, including Outlook Web, Outlook (Win32) for Windows, Outlook for Mac, and Mail & Calendar on Windows 10.

Will work across PC, Mac, and the Web

Will replace default Mail & Calendar apps on Windows 10 when ready

Avail:??





Surface Laptop Studio

(Replaces the Surface Book 3)

14.4" (2400 x 1600) 3-position 120Hz
PixelSense display

Surface Slim Pen 2 (\$130)

11th Gen Intel® Core™ H Series processor
– i5 or i7

Windows 11

RAM – 16GB or 32GB

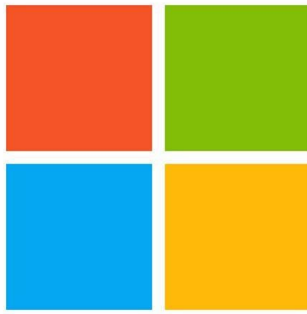
Face recognition, glass trackpad,
Bluetooth 5.1, Wi-Fi 6 and 1080p HD
webcam

USB-C / Thunderbolt 4 (2)

Storage: 256GB, 512GB, 1TB, 2TB SSD

Starting at \$1,599





Surface Pro 8

13" (2880 x 1920) PixelSense display

11th Gen Intel® Core™ i5 or i7

Windows 11 Home

RAM – 8GB - 32GB

Face recognition, Bluetooth 5.1, Wi-Fi 6
and 1080p HD webcam

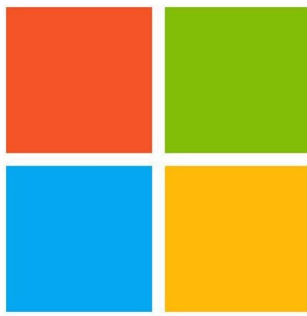
USB-C / Thunderbolt 4 (2)

Storage: 128GB - 1TB

Signature Keyboard and Surface Slim Pen
2 (sold separately)

Starting at \$1,099





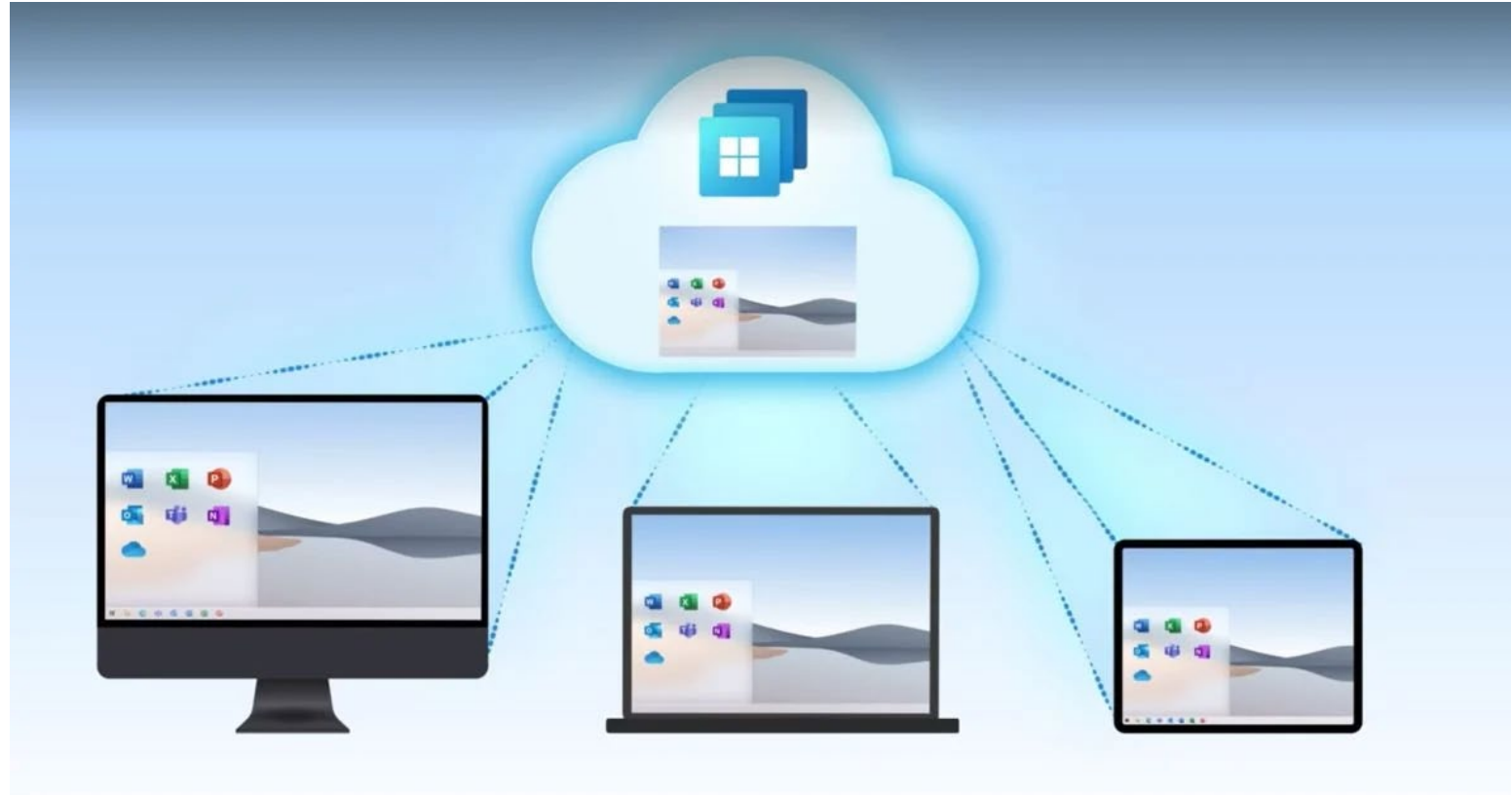
Windows 365/Cloud PC

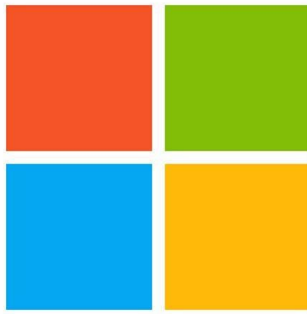
Windows as a Service – built on top of Azure Virtual

Stream Windows — including personalized apps, content, data, and settings — from the Microsoft cloud to **any device** (PCs, Macs, iPads, Linux, and Android) via Remote Desktop or web browser

Multiple price points and plans avail. which will offer different amounts of processing power, storage and memory.

Avail: Now

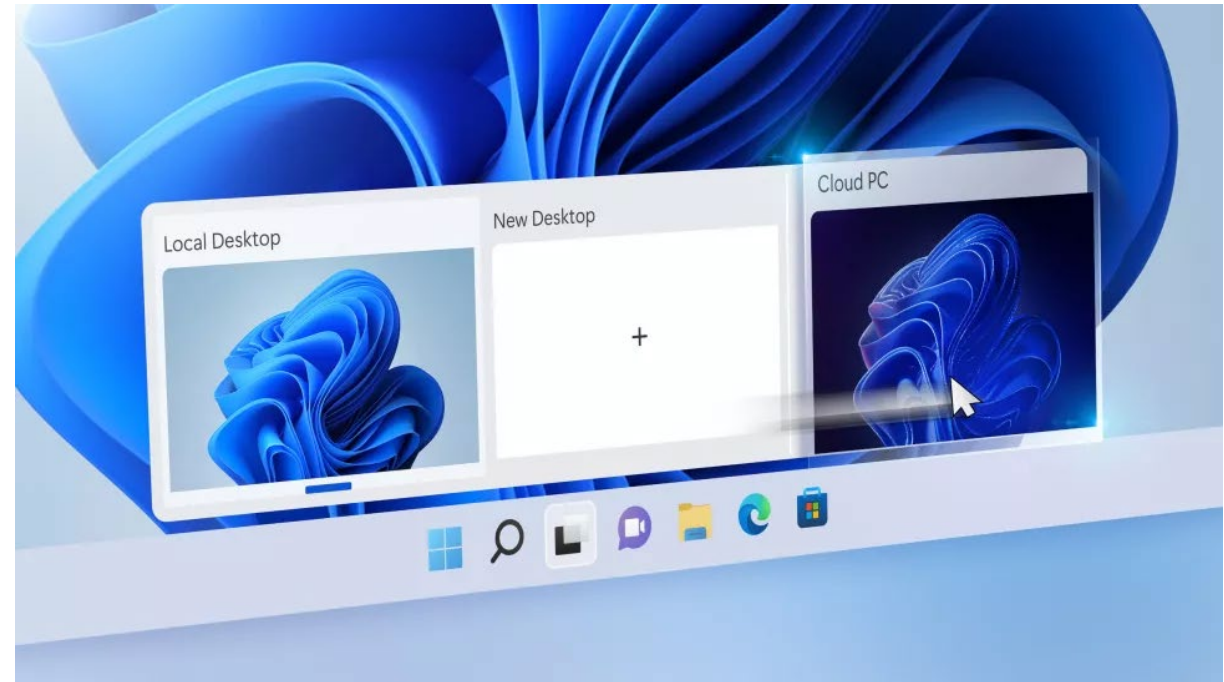




Windows 365/Cloud PC

Four recent additions:

- **Windows 365 Boot** - Launch directly to your Cloud PC at startup.
- **Windows 365 App** - Provides easy access to the cloud desktop from the Windows 11 taskbar
- **Windows 365 Switch** - makes transitioning between desktops as simple as switching between regular windows.
- **Windows 365 Offline** - give users access to some elements of their cloud desktop when a connection is unavailable, or in the event of a service outage.



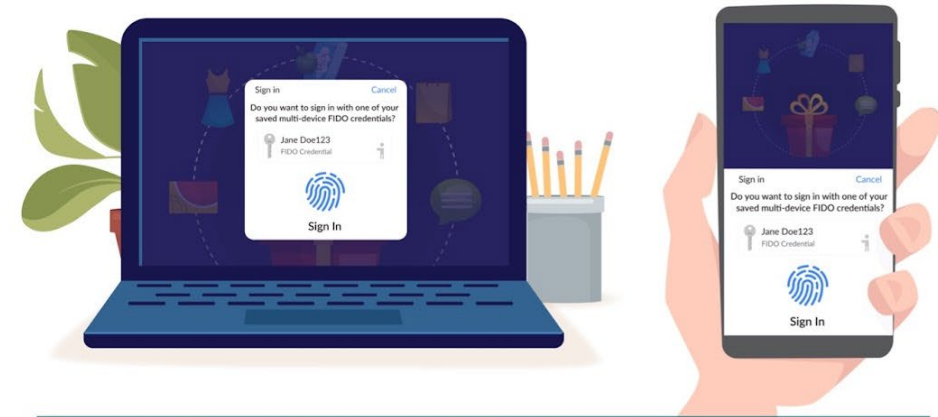
FIDO Passkey

Apple, Google, and Microsoft announced passwordless sign-in across all of the mobile, desktop, and browser platforms that they control in the coming year, including: Android and iOS mobile operating systems; Chrome, Edge, and Safari browsers; and the Windows and macOS desktop environments.

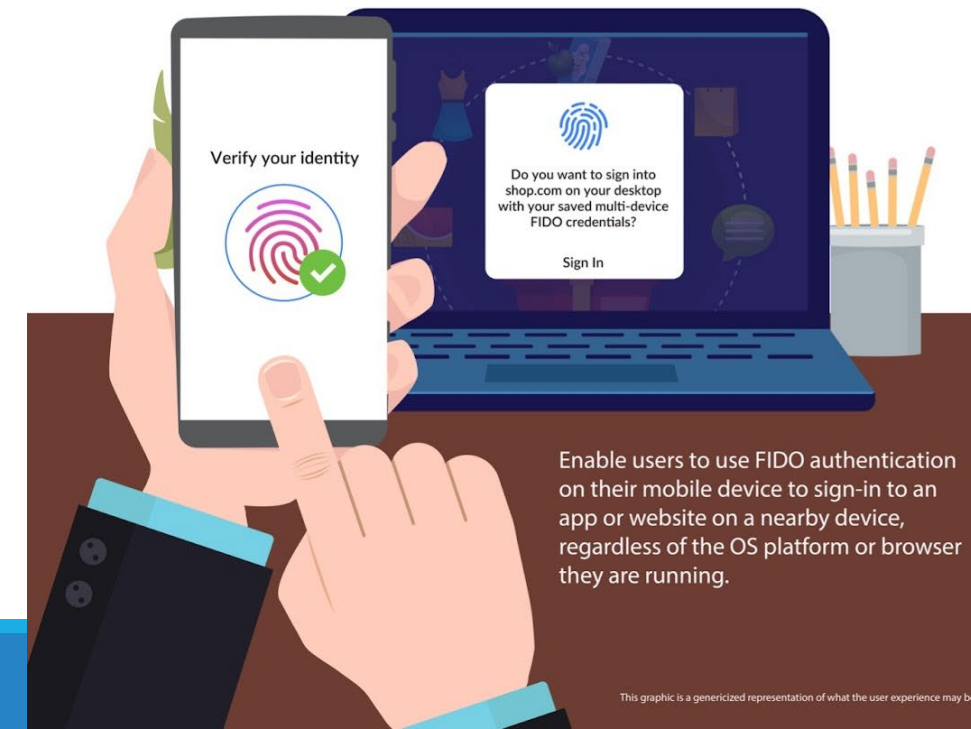
Passwordless login process will let users choose their phones as the main authentication device for apps, websites, and other digital services

A user's phone can store a unique FIDO-compliant passkey and will share it with a website for authentication only when the phone is unlocked.

User Experiences with Multi-device FIDO Credentials



Allow users to automatically access their FIDO sign-in credentials (referred to by some as a "passkey") on many of their devices, even new ones, without having to re-enroll every account.



Enable users to use FIDO authentication on their mobile device to sign-in to an app or website on a nearby device, regardless of the OS platform or browser they are running.

Lenovo™

Lenovo X1 Carbon, Gen 10

Display: 14-inch - 4K WQUXGA touch, 2.8K OLED, WUXGA, or ePrivacy

CPU: **12th Gen Intel® Evo™ vPro® i5 or i7**

Memory: 8GB/16GB

Storage: 256GB/512GB/1TB/2TB

Battery: up to 16 hours

Intel Thunderbolt™ 4 ports, Wi-Fi 6E

Bluetooth 5.2

Weight: 2.49 lbs.

Price: starting at \$1,560

Avail: Now



Lenovo X1 Yoga, Gen 7

Display: 14-inch - WQUXGA IPS or OLED

CPU: **12th Gen Intel® Evo™ vPro® i5 or i7**

Memory: 8GB/16GB

Storage: 256GB/512GB/1TB

Integrated pen

Intel Thunderbolt™ 4 ports, Wi-Fi 6E

Bluetooth 5.2

Weight: 2.49 lbs.

Price: starting at \$1,721

Avail: Now



Lenovo X1 Titanium Yoga

2-in-1 with 360-degree hinge (laptop or tablet)

Ultralight chassis with titanium cover - 0.45" thick

Display: 13.5" QHD (2256 x 1504) display

CPU: **11th Gen Intel® Evo™ vPro® i5 or i7**

Memory: 16GB

Storage: 512G – 1TB

Battery: up to 16 hours

Intel Thunderbolt™ 4 ports, Wi-Fi 6

Price: starting at \$1,252

Avail. - Now







HP EliteBook 1040 G9 Laptop

14" diagonal WUXGA LED UWVA Anti-Glare (1920x1200)

Intel Core i5, 12th Gen

Storage: up to 2TB

RAM: up to 64GB

WiFi 6E / Bluetooth 5.2

Thunderbolt 4

Optional 5G

Windows 11 Pro

Price: starting at \$2,367





HP EliteBook x360 1040 G8 Convertible

14" diagonal WUXGA LED UWVA Anti-Glare (1920x1200)

Intel Core i5 or i7, 11th Gen

Storage: 256GB-2TB

RAM: 8GB-32GB

WiFi 6E / Bluetooth 5.2

Windows 11 Pro

Price: starting at \$2,129









iPad Pro*

M2 chip (15% faster)

11" or 12.9" Retina display

12MP Ultra Wide front camera

128GB – 2TB storage

USB-C connector

5G cellular option

Avail in 2 colors

\$799 - \$2399





iPad Air

M1 chip (8-core CPU & GPU)

10.9-inch Liquid Retina display

12MP Ultra Wide front camera

64-256GB storage

WiFi 6 & Bluetooth 5.0

USB-C

5G optional

Apple Pencil (\$129), Magic Keyboard (\$349)

5 colors

\$599 - \$899

Aval: Now





iPad*

A14 bionic processor (20% faster)

10.9" Retina display

12MP Ultra Wide front camera

64GB – 256GB storage

Avail in 4 colors

\$449 - \$749





iPhone 14 Pro / Pro Max*

A16 Bionic (6-core) CPU / 5-core GPU

Super Retina **“Always On”** XDR display with 2,000 nits of peak outdoor brightness (Pro – 6.1” / Pro Max – 6.7”)

Upgraded cameras

- 48MP Main
- 12MP Ultra Wide
- 12MP 2x Telephoto; 12MP 3x Telephoto
- 3x optical zoom in, 2x optical zoom out; 6x optical zoom range; digital zoom up to 15x

Longer battery life (23 hrs playback)

128GB – 1TB

\$999 - \$1,599





iPhone 14 / 14 Plus*

A15 Bionic (6-core) CPU / 5-core GPU

Super Retina XDR display (6.1" / Plus – 6.7")

Upgraded Main, TrueDepth and Ultra wide cameras.

5G

Crash Detection – 10 sec countdown

Emergency SOS service via satellite

Longer battery life (20 hrs playback)

128GB – 512GB

\$729 - \$1,199





Apple Watch Series 8*

Screen size: 41mm and 45mm - **“Always-on”** crack resistant Retina display

Safety: Fall detection, crash detection, Emergency SOS, international roaming

Health tracking: cardio notifications, blood oxygen, ECG, high & low heart rate, irregular rhythm, sleep stages, cycle tracking)

Battery life: 18 hours; fast charging

Dust resistant: IP6X certified

Water resistance: Up to 50m

5 colors Avail – Sept-22

\$399 - \$1409





Apple Watch SE*

Screen size: 40mm and 44mm Retina display

Safety: Fall detection, crash detection, Emergency SOS, international roaming

Health tracking: cardio notifications, high & low heart rate, irregular rhythm, sleep stages, cycle tracking)

Battery life: 18 hours

IP6X certified

Water resistance: Up to 50m

3 colors Avail – Sept-22

\$249-\$849





Apple Watch Ultra*

Screen size: 49mm “Always-on” Retina display

Safety: Fall detection, crash detection, Emergency SOS, international roaming

Health tracking: cardio notifications, blood oxygen, ECG, high & low heart rate, irregular rhythm, sleep stages, cycle tracking)

Battery life: 36 hours; Fast charging

Dust resistant: IP6X certified

Water resistance: Up to 100m – depth gauge with depth sensor

Crack resistant front glass

Fall detection feature

1 color - avail – Sept-22

\$799



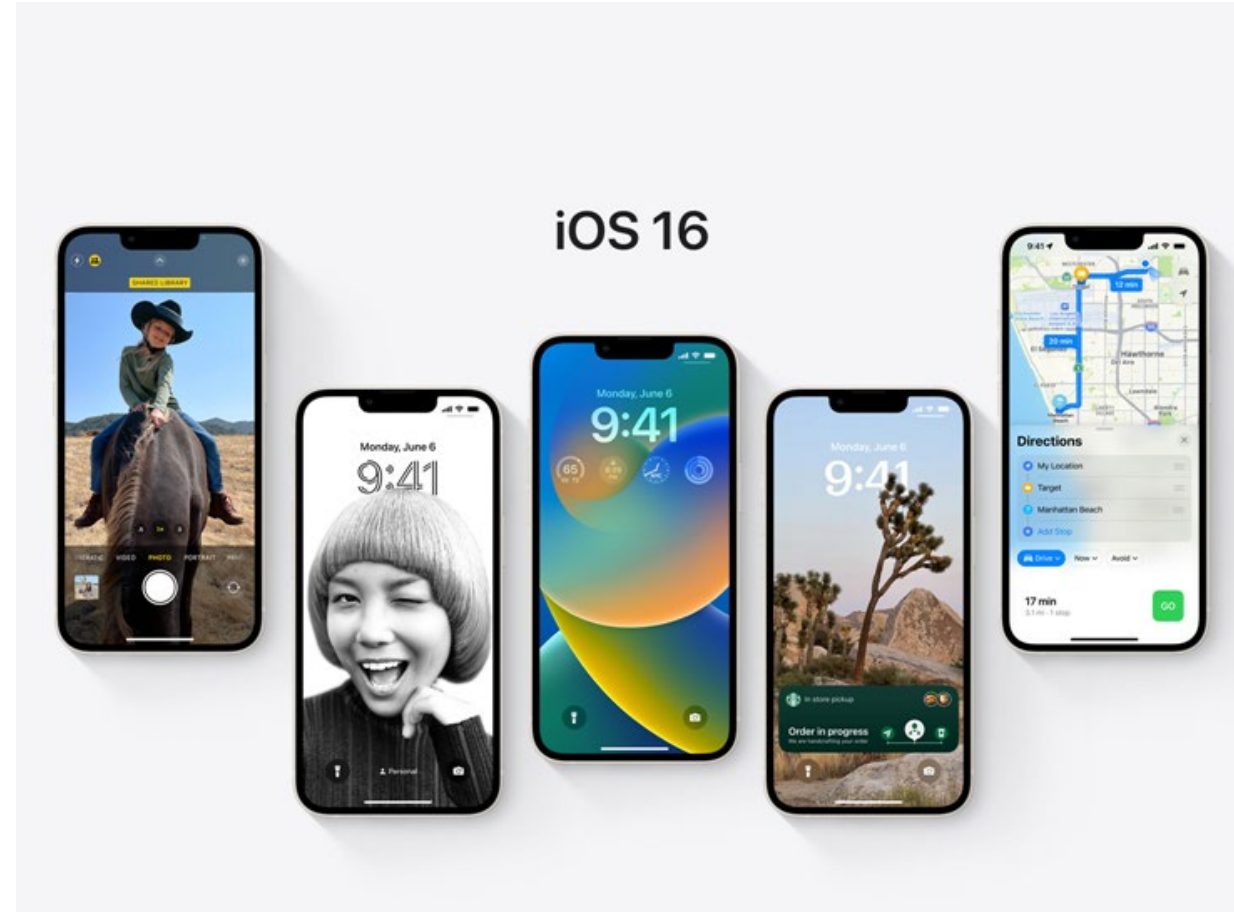


iOS 16

Personalize your Lock Screen with photos, customized widgets, and notifications.

Create Shared Photo Library to share photos and videos with loved ones.

Enhance everyday moments with powerful new features in Messages and Mail.





Galaxy S22

S22

- Display: 6.1-inch, 2,340 x 1,080 -pixel AMOLED
- RAM: 8 GB
- Storage: 128 GB or 256 GB
- Pricing starts at US\$799

S22 Plus

- Display: 6.6-inch, 2,340 x 1,080 -pixel AMOLED
- RAM: 8 GB of RAM
- Storage: 128 GB or 256 GB
- Pricing starts at \$999

S22 Ultra

- Display: 6.8-inch, 3,088 x 1,440 -pixel AMOLED
- RAM: 8 GB or 12 GB
- Storage: 128 GB, 256 GB, 512 GB, 1TB
- Pricing starts at \$1,199

All

- CPU: Snapdragon 8, Gen1
- 5G
- Triple cameras: 10-MP telephoto, 12-MP ultra-wide, 50-MP Wide (S22 & S22+), 108-MP (S22 Ultra)



Samsung Galaxy Z Fold 4*

Snapdragon 8 Plus Gen 1 processor

50-megapixel main camera and a telephoto lens with 3x optical zoom, in addition to the existing 12-megapixel wide-angle lens

Flex Mode: utilize bottom corner of screen as track pad

Storage: 256-512GB

Price: \$1,800

Avail: Now



Google





Google Pixel 7 / 7 Pro*

Display: 6.3" (7) / 6.7" (7 Pro) OLED – Always on

Body: Gorilla Glass Victus front / Gorilla Glass 6 back

Processor: Google Tensor G2

5G, WiFi 6E

RAM: 8GB (7) / 12GB (7 Pro)

Internal Storage: 128 GB, 256 GB, 512 GB (7 Pro)

Camera: Rear – 50 MP main, 12 MP ultra-wide, 48 MP Telephoto (7 Pro)

Security: In-display fingerprint, Titan M2 chip, IP68-rated

CPU: Android 13, Pixel UI

Price: starting at \$599

Avail – Oct-22



Google Pixel Watch*

Powered by 2018 Samsung Exynos (4-year old) chip

Always on display

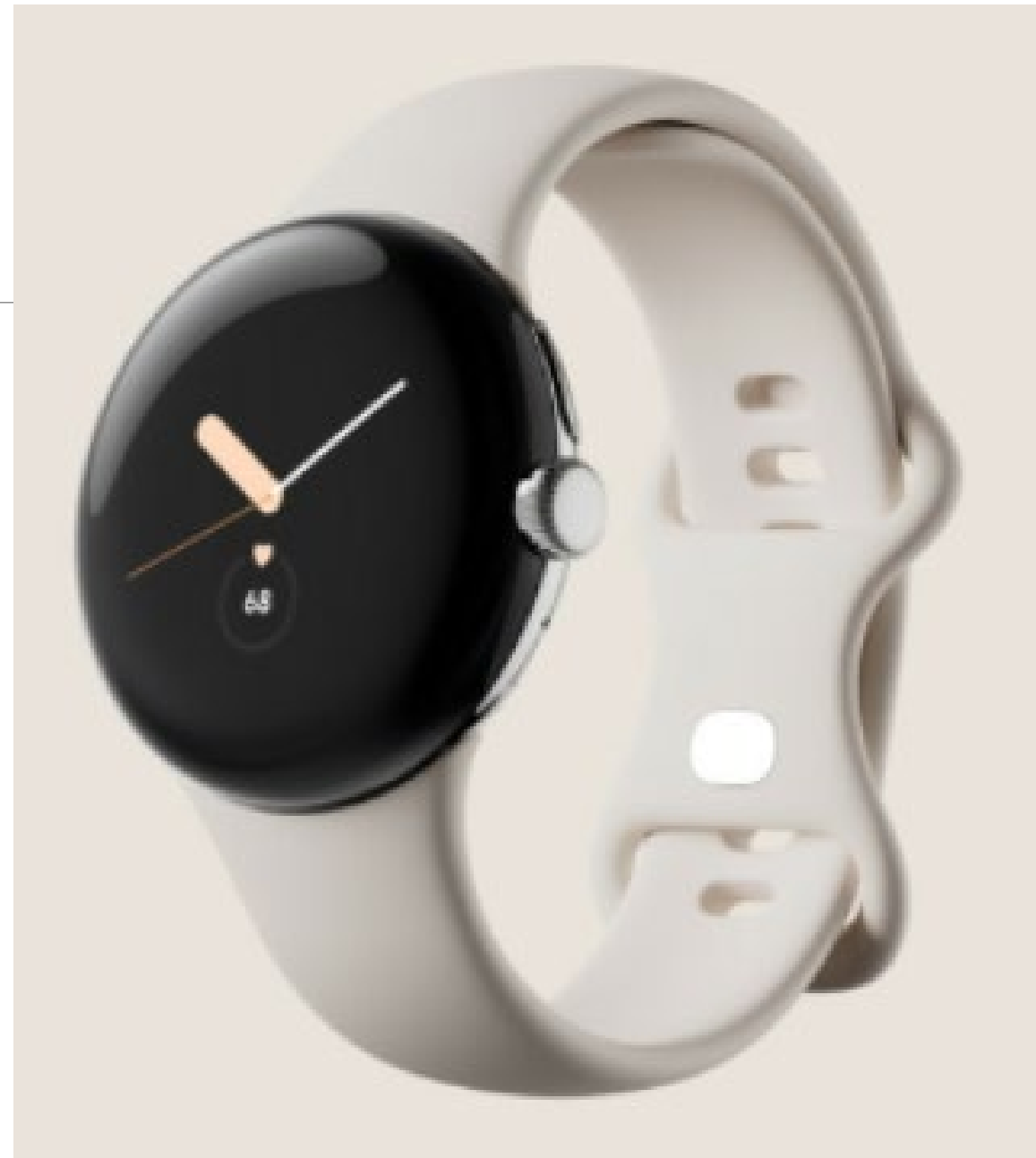
Wear OS 3.5 - compatible w/ Android only, not iOS

Optional LTE, emergency SOS, international emergency calling and mobile payments through Google Wallet.

Water resistant up to 5 ATM

Price: \$350

Avail: Fall-22



amazon



Amazon AZ2 Chip

Second-generation neural processor

22 times faster than the previous model

Powers artificial intelligence tasks like understanding voice commands and figuring out who is issuing those commands

Key to Visual ID (optional facial recognition feature that lets Alexa show personalized recommendations, calendars, to-do lists, etc. when user face is captured by the camera)



Echo Show 15

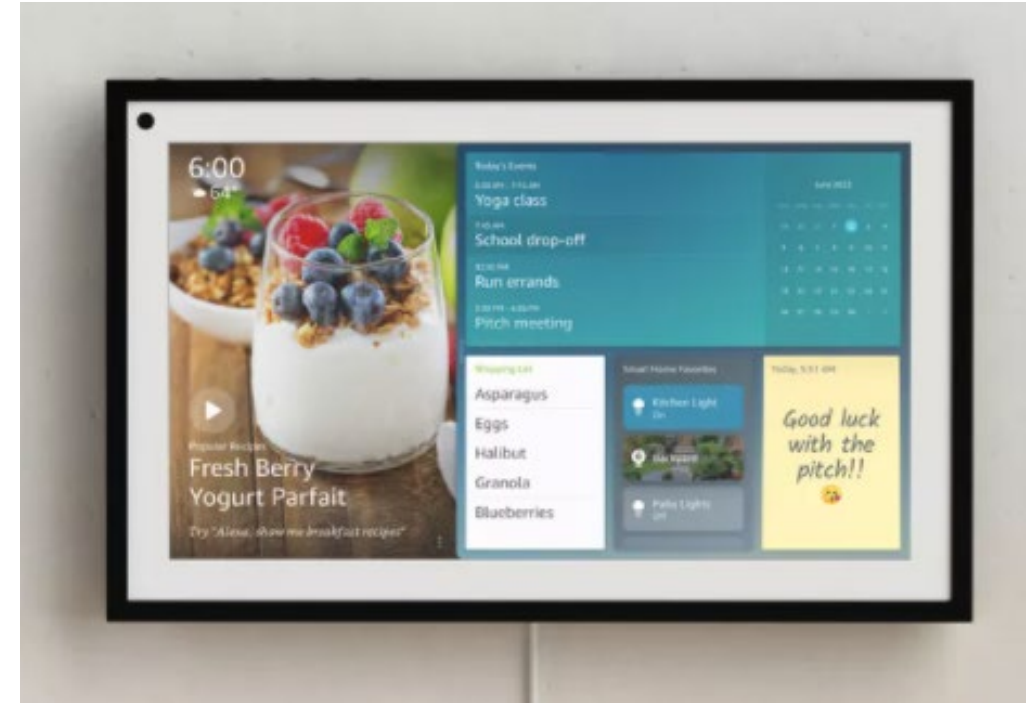
15.6-inch, 1080p HD touchscreen

microphone, front-facing camera and side-firing speakers

Mount display horizontally or vertically on a wall or place it on a stand (wall mounting equipment included with the Echo Show 15. Counter stand accessories sold separately).

AZ2 processor - gives the Echo Show 15 Visual ID capabilities, a facial recognition feature that lets Alexa show you personalized recommendations, calendars, to-do lists and more when your face is captured by the camera.

\$250



Amazon Smart Thermostat

Ultra-cheap, ultra-basic, Alexa-powered smart thermostat.

\$60



Amazon Smart Soap Dispenser

Works with Alexa (no built in speaker or microphone)

12-oz dispenser with 20 second timer

Rechargeable battery lasts up to 3 mos.

\$55



Amazon Matter

Partnership between Amazon, Apple, Google, Samsung, the Zigbee Alliance, and dozens of other companies, working together on an open standard

Goal – use smart home devices and voice assistant(s) of your choice, incl. Apple's Siri / HomeKit, Amazon Alexa, and Google Assistant.

At launch, Matter will run on Ethernet Wi-Fi, Thread, and Bluetooth Low Energy.

In short - Matter is "a home automation connectivity standard that allows smart home devices to work with each other across different smart home systems."



The Internet of THINGS



CONNECT THE WORLD

IoT



Lights



Garage door



Sprinklers



ALARM.COM

Security



HVAC



Solar



PENTAIR Pool



Video doorbell & cameras



orbi

NETGEAR

Mesh network



Tesla



ANOVA Sous Vide



ember Coffee cup!



Trust your home to Schlage.

Schlage Encode Plus

Smart WiFi Deadbolt

Unlock your door with your Apple Watch or lock it with Alexa, Siri® or Google Assistant

Schedule codes and monitor lock activity in real time with Schlage Home

Price – starting at \$329

Avail: Now



Wyze Cam v3 Garage Door Controller

Control and view your garage door remotely

View garage in 1080p

No sensor required (camera views QR code on insides of garage door)

Schedule closing

\$40

Avail: Now



SwitchBot Smart Switch Button Pusher

Use button pusher on anything with a pressable button and a small flat area

Works well with nearly any rocker switch as well as buttons on any appliance - from coffee makers and televisions to air conditioners, PC monitors, kitchen appliances, and more

\$29

Avail: Now



Gear & Gadgets



LG DualUp Monitor

27.6-inch (2,560 x 2,880 pixel - 16:18 aspect) monitor designed for multitasking

Instead of two 21.5-inch displays sitting side-by-side, the "double-height" screen essentially positions them one above the other, so users can split the screen. Negates side-to-side head movements.

Thin bezels on three sides

98 percent of the DCI-P3 color gamut and HDR10 for realistic color delivery

1,000:1 contrast, and brightness of 300 nits, with auto-brightness adjustment.

Avail: 2022

Price ?



Lenovo ThinkVision M14d

2240 x 1400 resolution, 16:10 aspect ratio, 14-inch, anti-glare IPS WLED-backlit display with a 6ms response time and 60hz refresh rate

It will support USB-C connectivity and can serve as a USB hub.

Avail: July 2022

Price: starting at \$299



Portabl

Compatible with Windows
and MAC

Pricing: starting at \$570

Avail: Now



Chipofy USB-C cable w/ LED display

Measure your device's power consumption as it charges

6.6' braided cable

Price \$26

Avail: Now



Targus Cypress Hero EcoSmart Backpack

Find My technology built-in

\$149

Avail – Summer-22



Chipolo CARD Spot

Fits into your wallet, without adding any extra bulk, and helps you find it through the Apple Find My network.

2.4mm (.09in) thick

Long battery life – up to 2 yrs.

105dB alarm

IPX5-rated water-resistant

Anti-stalking features

\$35

Avail: preorder



CPE Podcasts



Started in Canada

More extensive /diverse content

Great web site

5 free CPE credits at sign up

Corporate license avail.



Newer

Mobile only

Practitioner focused

Free and paid tiers avail.

ECO FRIENDLY



Pela Lomi Kitchen Composter

Countertop composter

Reduces waste by up to 90%

3 cycles – Eco Express (3-5 hours), Lomi Approved & Grow (16-20 hours)

Add resulting compost to any soil

Includes activated charcoal filters and Lomi Pods (proprietary probiotic mixture – speeds decomposition.)

Price: \$499

Avail: Now



Zero Mass SOURCE

Rooftop hydropanel, uses sunlight to harvest 4-10 liters of water vapor from air, per day.

Make renewable, perfectly balanced drinking water without any additional infrastructure. Works in most every climate.

SOURCE has the potential to meet the drinking water needs of the more than seven billion people on the planet

Entry residential config. - 1 panel + 15 gal. reservoir - \$60/mo. or \$4,999 one-time



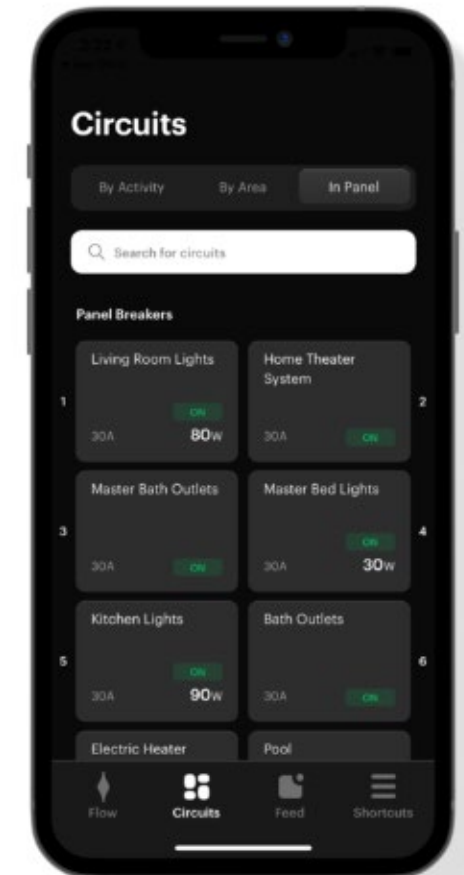
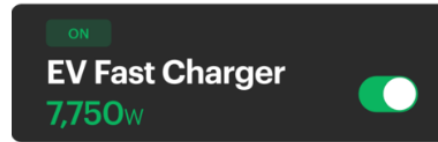
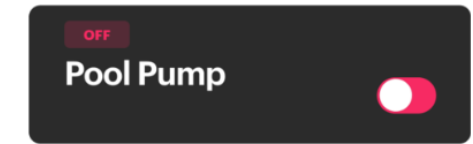
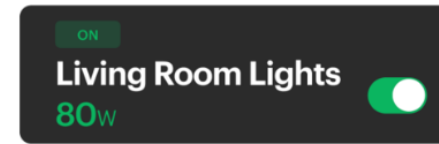
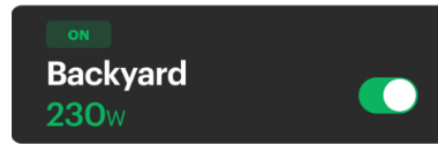
Span

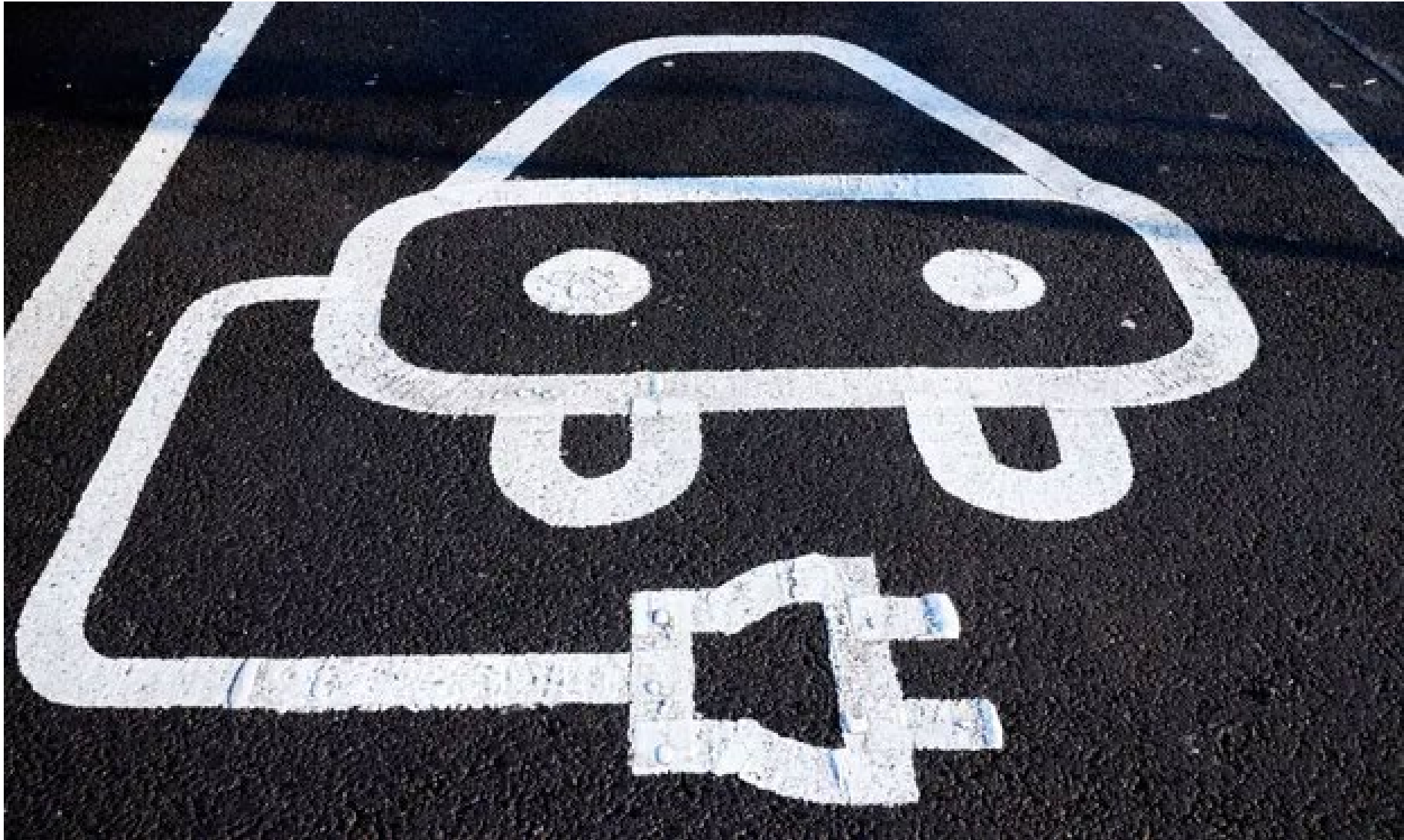
Replaces existing electrical panel

Control every circuit in your home from your phone

Pair with solar and battery for optimal generation and storage

Pricing: \$3,500 + installation



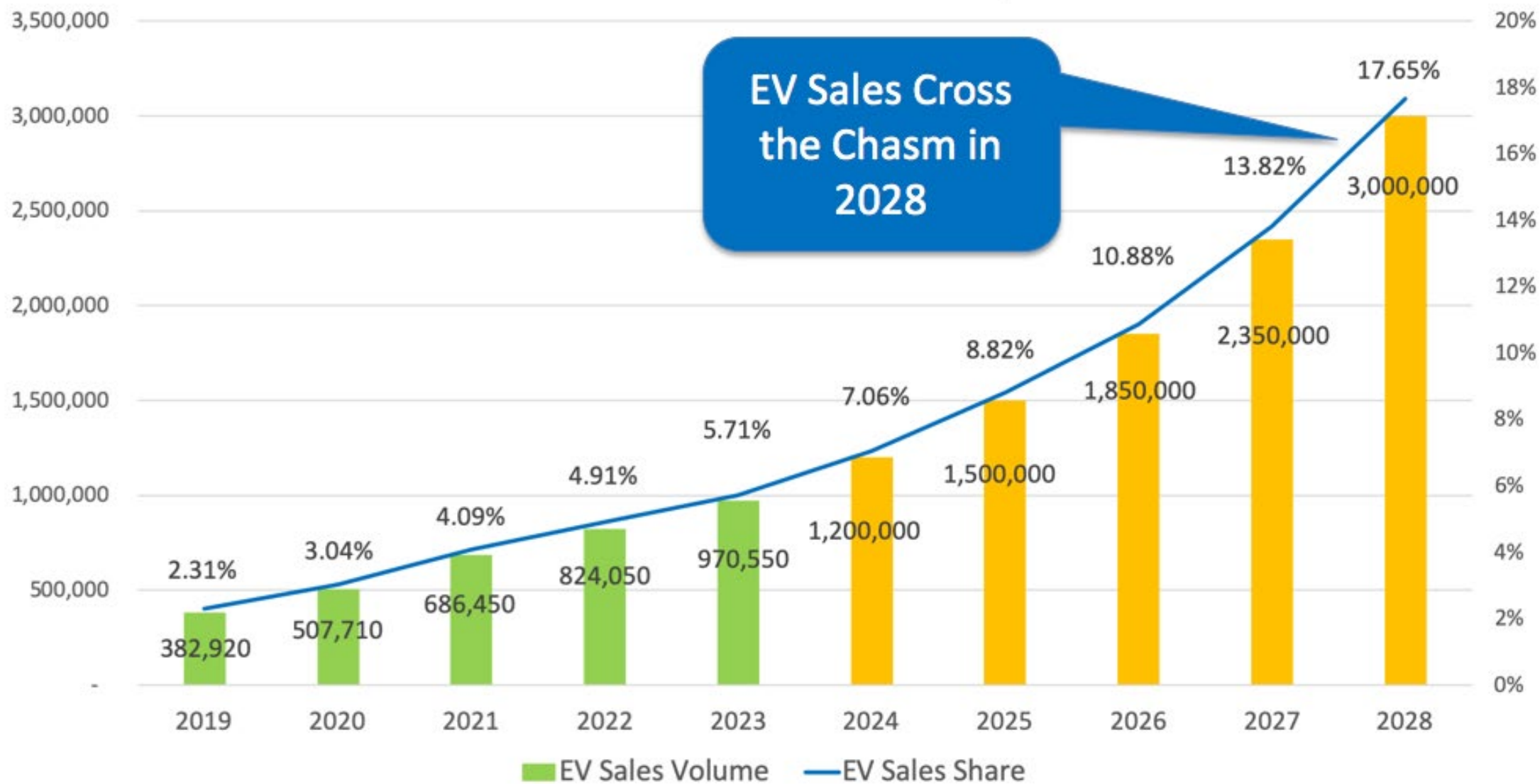


2022



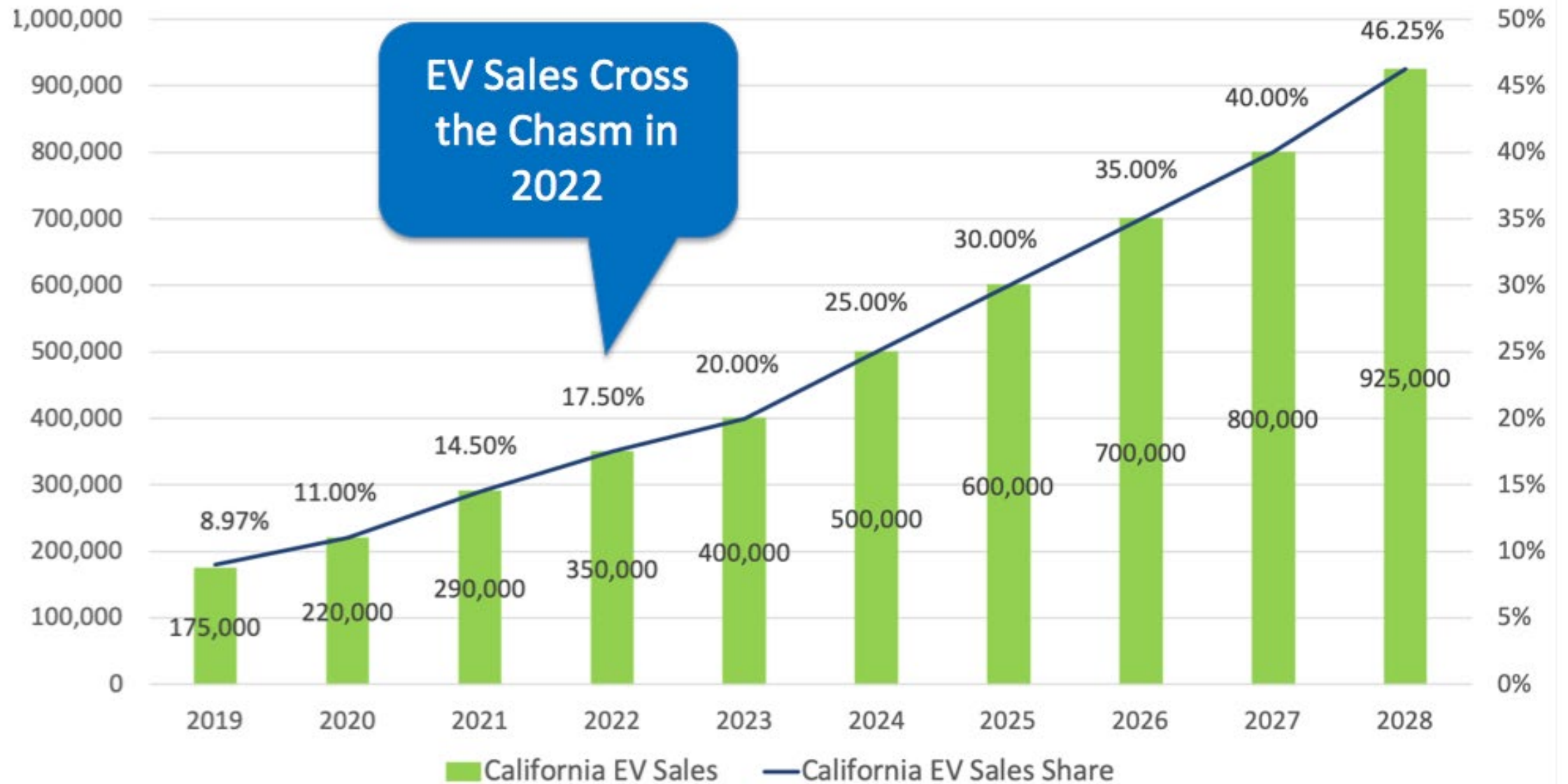
US Electric Vehicle Sales Forecast: 2019-2028

Forecast & Chart: Loren McDonald/EVAdoption.com



California Electric Vehicle Sales Forecast: 2019-2028

Forecast & Chart: Loren McDonald/EVAdoption.com



Setting the pace...

Battery tech / long distance – 402 mi.

Supercharger network

- 30,000+ chargers in 3,254 locations – with plans to triple in size in 2 yrs.
- V3 supercharger – 75 mile recharge in 5 min.

Autopilot – over 3.3 billion miles logged / Safety

OTA updates – constantly improving

Open source patents

Vertical integration



VW

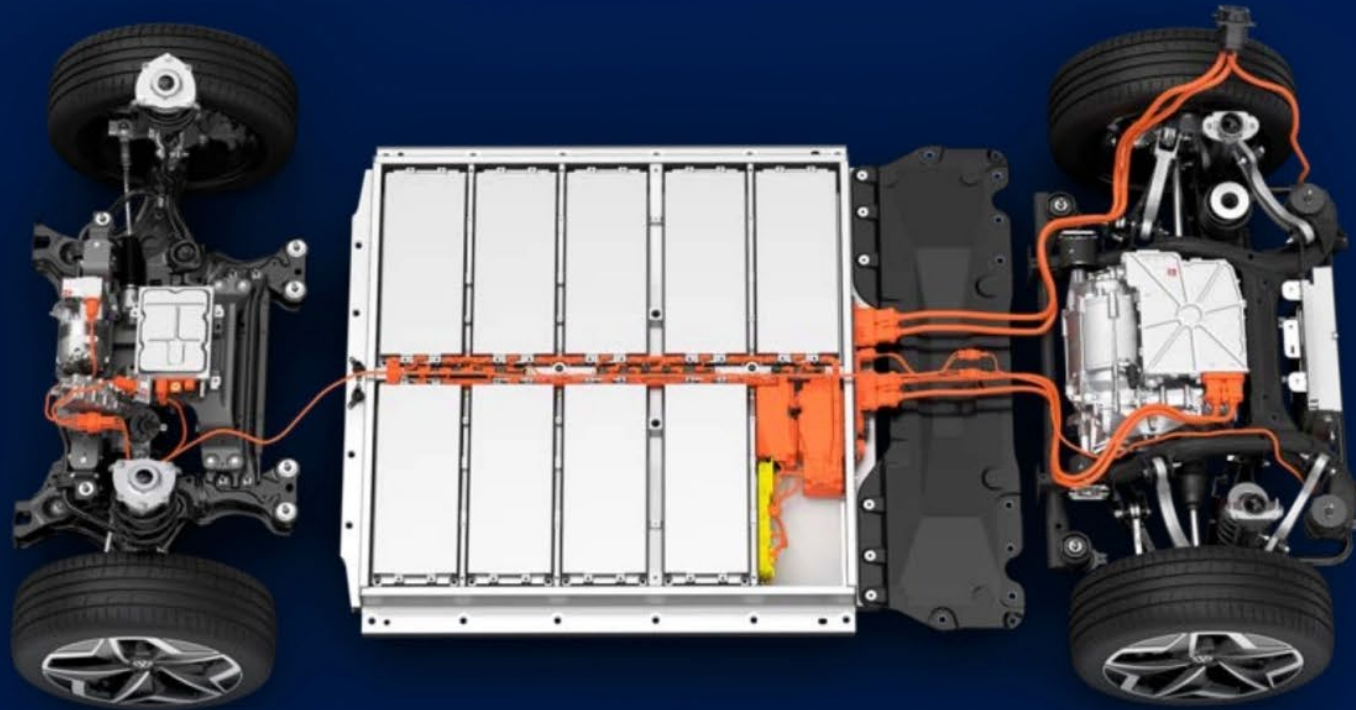


Improvements to MEB (skateboard) platform

- ID.Buzz
- ID.5



To come: Enhancements in the MEB platform



Range

up to 700 km

Charging power

> 200 kW

Acceleration

about 5.5 sec. (w/ AWD)





Ford F-150 Lightning

“Model T moment”

320-mile est range

10,000 lb towing capacity

Extended-range 131-kWh battery pack can power the average US home for three days in the event of an outage

200K reservations since 2020 reveal (no addtl. resv. at this time)

Target 150K units/yr by 2023

Starting at \$40K





The three levels of EV charging

(Time to fully charge)



AC level 1

Basic Home
Charging



17-25

hours



AC level 2

Home or Public
Charging



3-8

hours



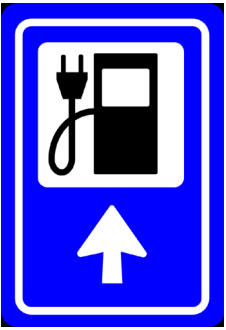
DC level 3

DC Fast
Charging Station



20-1

mins hour



Charge networks (USA) – May-22

Tesla

- 1,370 superchargers (99% of population covered) – 22% located in CA. FL & TX next most
- V3 - 250 kW - 13 mi. / minute (90% in 30 min.)
- V2 - 150 kW (50% in 20 min)

ChargePoint

- 30,000 charging units / 1,500 DC fast

Evgo

- 850+ DC Fast (50kW) locations – 3 mi./min.

Electrify America (subsidiary of Volkswagen, America)

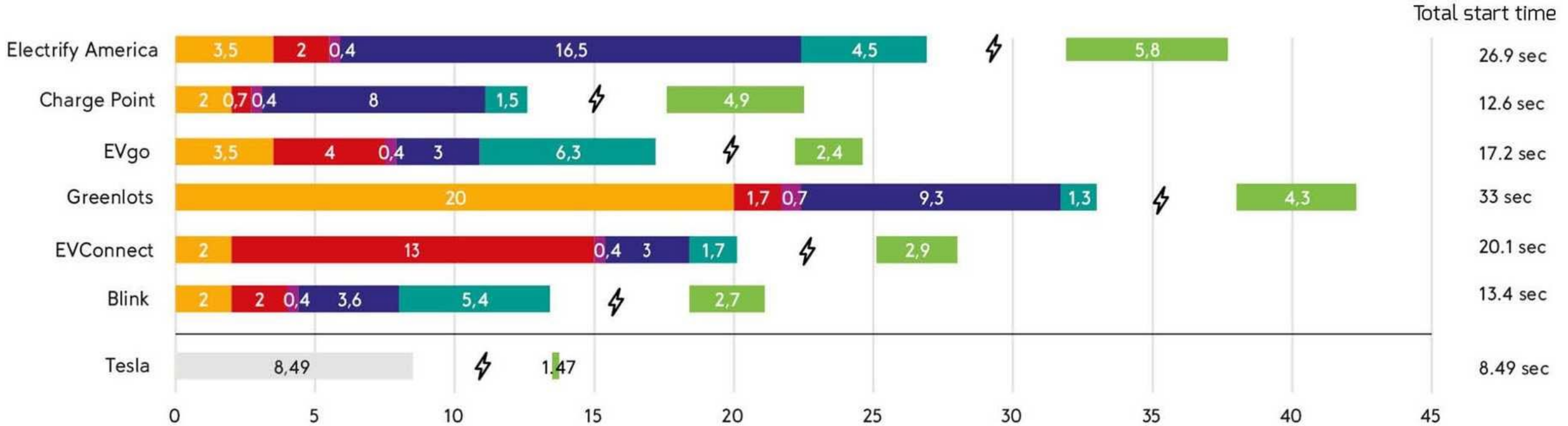
- 730 locations / 2,438 charging units / 500+ DC fast

Charging time for 100 km of BEV range^[citation needed]

Power supply	Power	Voltage	Max. current	Charging time
Single phase	3.3 kW	230 V AC	16 A	5–6 hours
Single phase	7.4 kW	230 V AC	32 A	2-2½ hours
Three phase	11 kW	400 V AC	16 A	1½-2 hours
Three phase	22 kW	400 V AC	32 A	44–55 minutes
Three phase	43 kW	400 V AC	63 A	22–28 minutes
Direct current (DCFC)	50 kW	400–500 V DC	100–125 A	19–24 minutes
Direct current (DCFC)	120 kW	300–500 V DC	300–350 A	8–10 minutes

2021 EV Fast Charging Benchmark

Charging Start and Stop Times



*This chart displays the fastest start and stop times measured for each charging network.

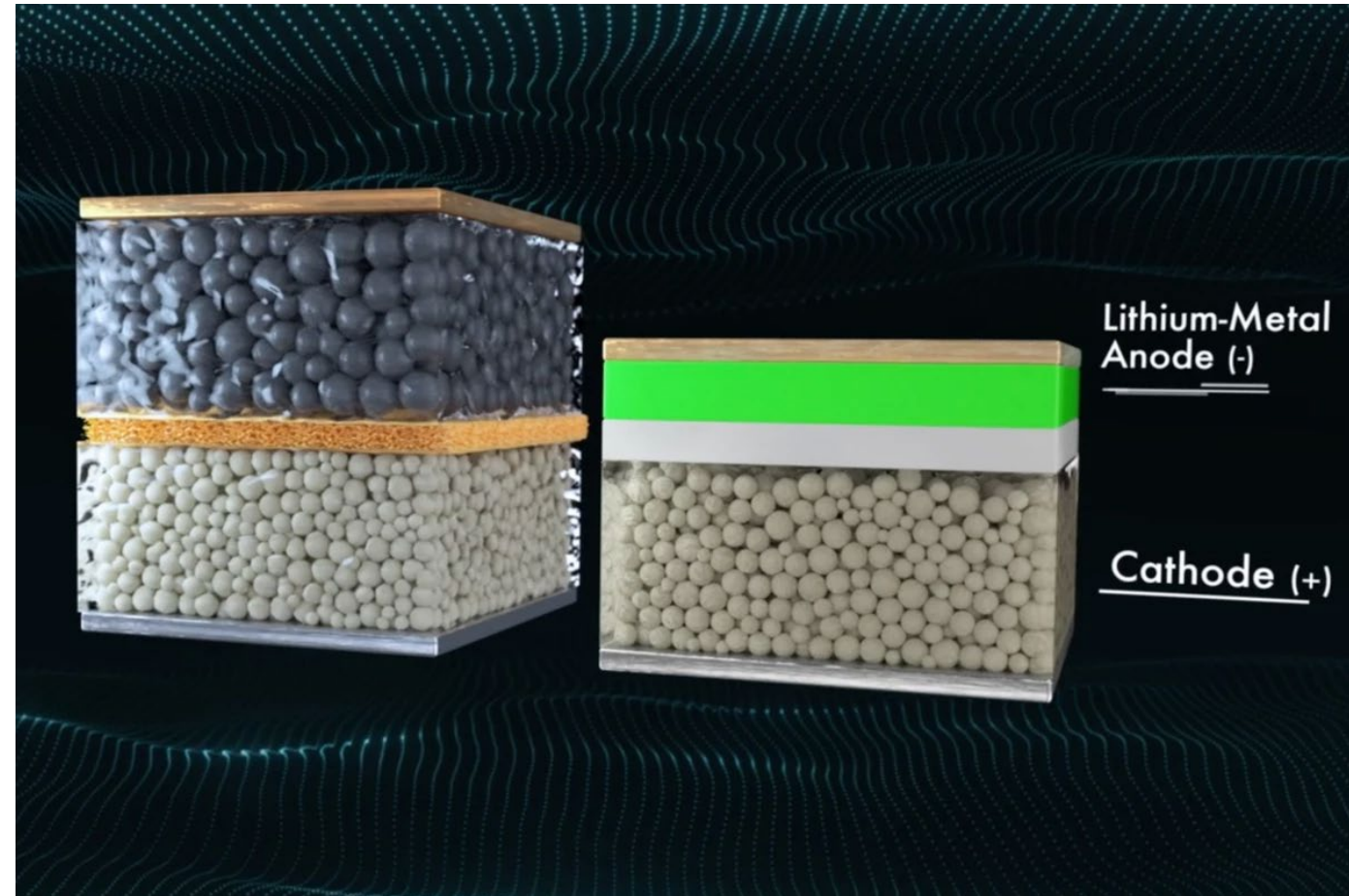
**Tesla does not follow the ISO 15118 standard for its EV-EVSE communication, so the charging stages could not be identified.

QuantumScape Solid state battery

Using a solid electrolyte instead of the typical liquid solution, solid state batteries can store considerably more energy by weight and volume than today's lithium cells

Charges from 0-80% in 15 min.

US\$300 million from its largest shareholder and partner, the Volkswagen group. Other investors include Continental and Bill Gates.

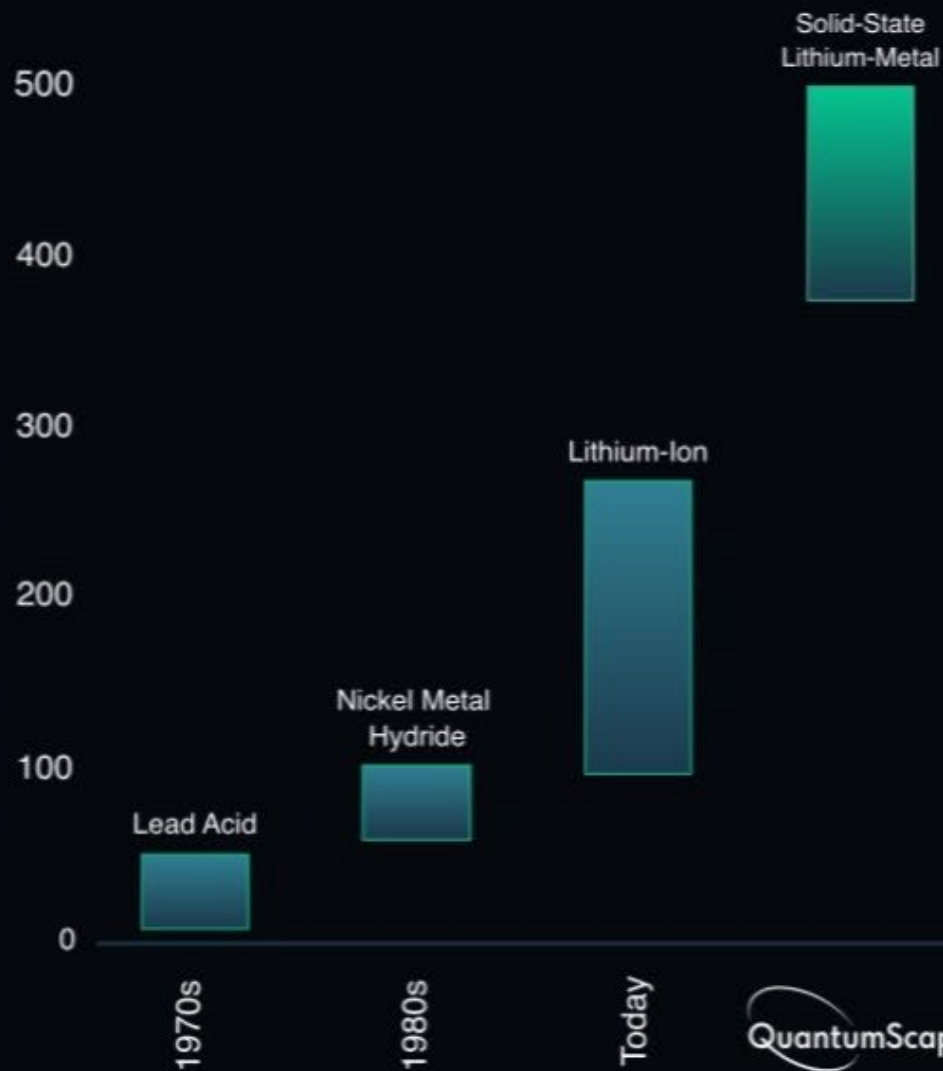


Solid-State Lithium-Metal

The Next Generation of Battery

Energy Density

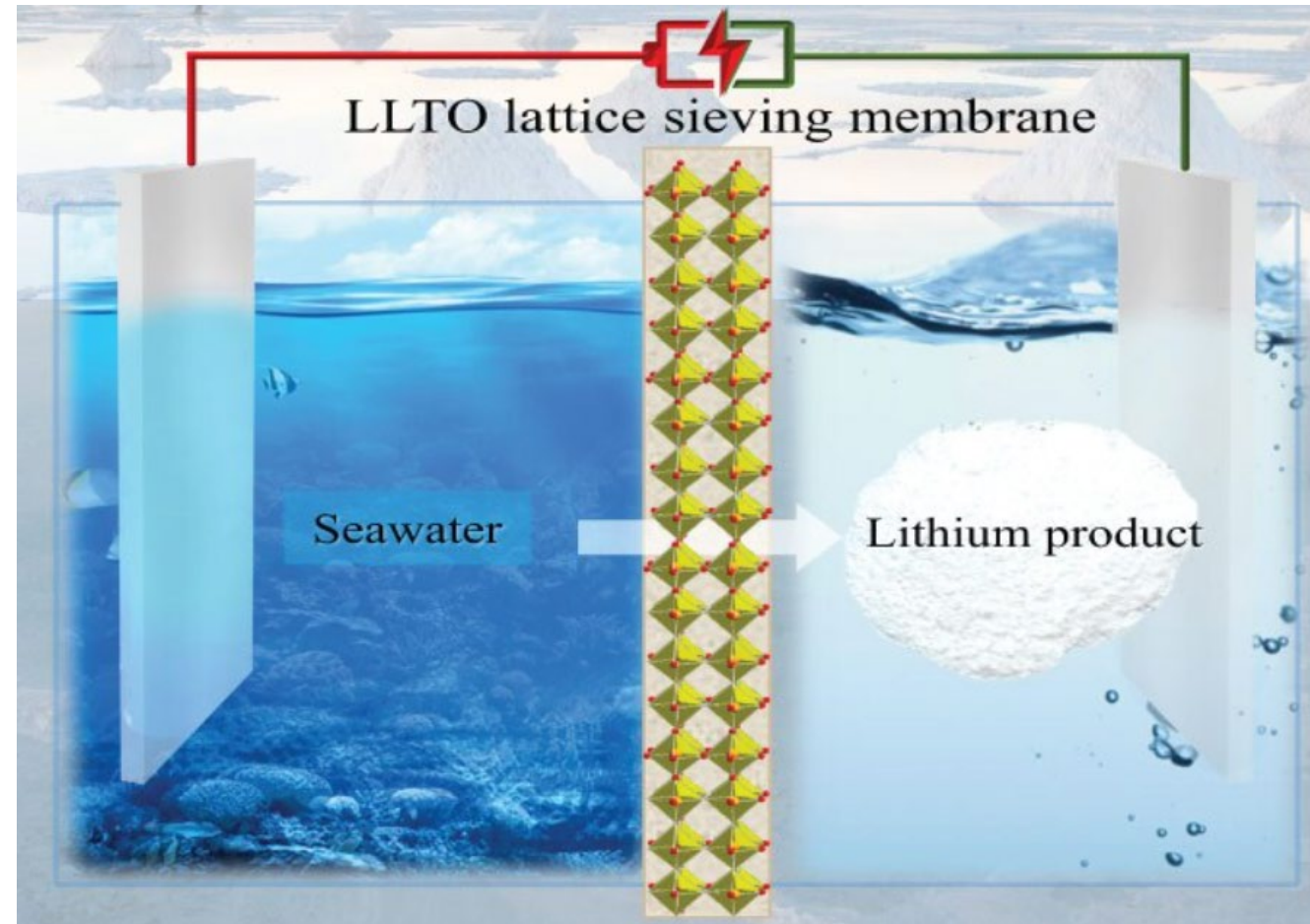
Cell Mass-specific Energy (Wh/kg)



KAUST – Lithium from seawater

Newly developed technology by Saudi Arabia's King Abdullah University of Science and Technology (KAUST) cheaply extracts battery-grade lithium out of the ocean, for a negligible electricity cost, that's more than offset by the hydrogen and chlorine gases that are produced in the process – and it pumps out desalinated freshwater as a by-product.

Note: 5,000 times as much lithium in the oceans (about 180 billion tons) as there is in land deposits. Would supply the projected 2030 global demand for lithium more than 100,000 times over.



VinFast

You own the vehicle, and VinFast will own and maintain the battery. (cost of charging included).

10 yr. / 120K mi. warranty

Starting at \$41K

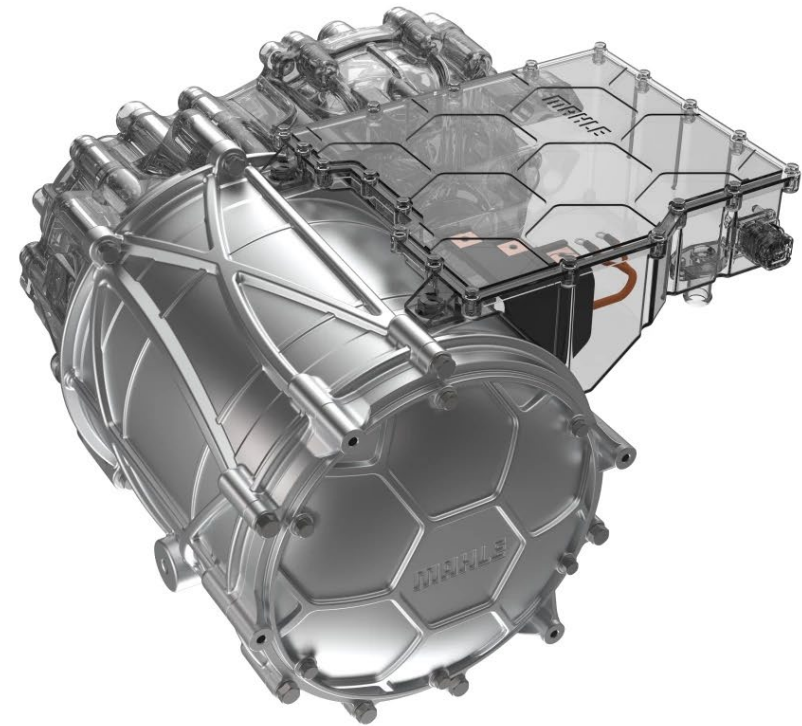
Avail: Fall-22



Mahle magnet-free motor

Uses powered coils in its rotor (power via induction), instead of permanent magnets.

Ability to tune and change the parameters of the rotor's magnetism instead of being stuck with what a permanent magnet offers has allowed its engineers to achieve efficiencies above 95 percent right through the range of operating speeds – "a level that has only been achieved by Formula E racing cars."



Koenigsegg Quark

Best torque-to-power-to-weight ratio electric motor

Raxial Flux design

66 lbs.

0-60 mph in 1.9 sec. in the Koenigsegg Gemera (super car)



Michelin Uptis

Unique Puncture-Proof Tire System (Uptis)

Airless tire

Partnership between Michelin & GM

Working on regulatory approval

Avail: 2024



FAIL

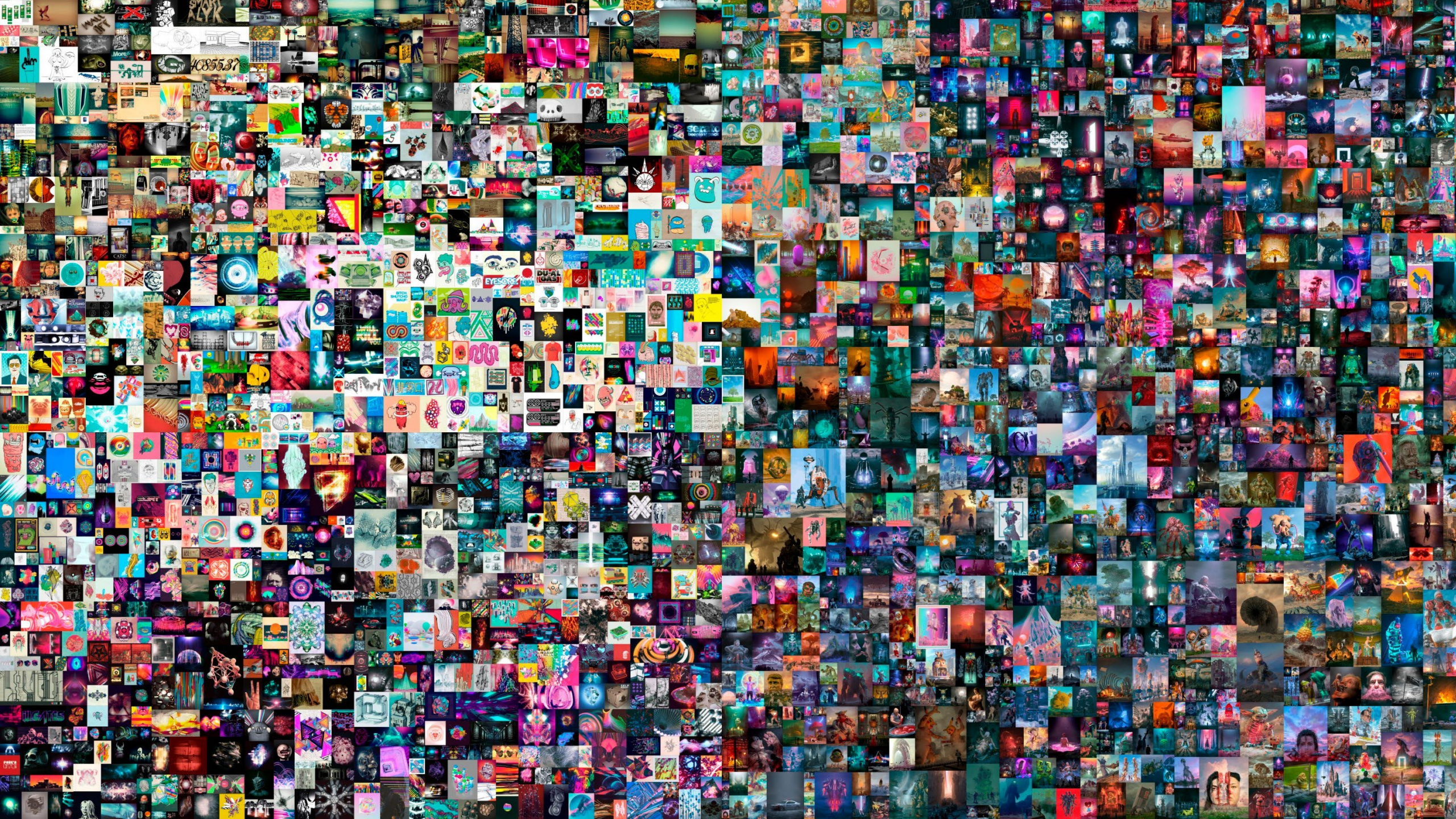


BMW iX Flow

E-ink like technology

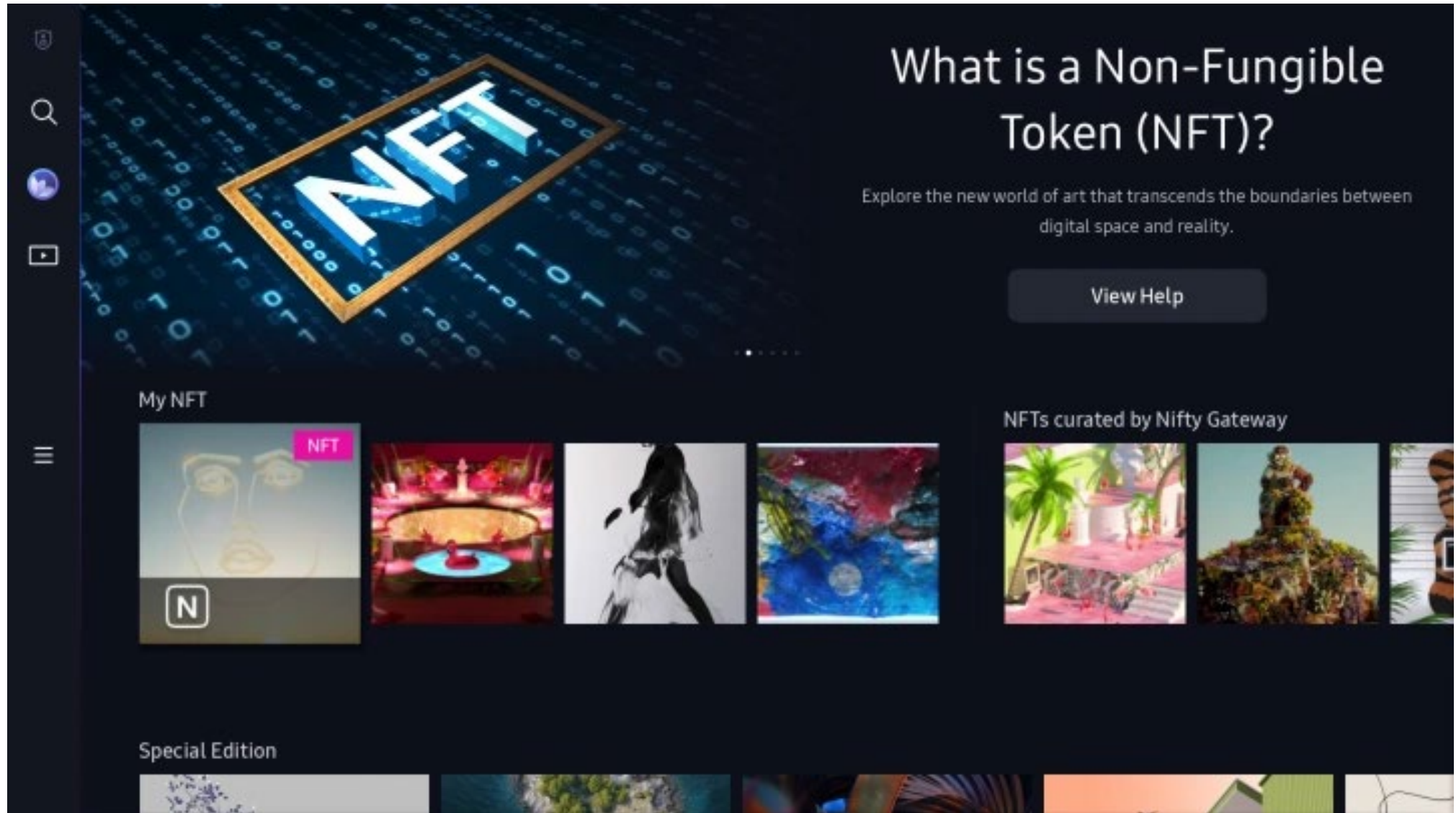
With the tap of an accompanying smartphone app (at least in BMW's demo) the SUV shifts from black to white and back again in a few seconds







NFTs on Samsung TVs



NFTs on Instagram



Amazon Astro

Robot can follow you around playing podcasts and music, as well as check on others in the house remotely. Astro can also make calls, send messages, and set timers, alarms and reminders.

Robot even has a little detachable storage bin to carry and deliver items, like a bottle of water, to specific people in the home by [creating a visual ID](#).

You can video chat on Astro, too, and the robot will move with you, [keeping you in the frame, like the Facebook portal](#).

\$1,000



Ring Always Home

Fly around your house following a preset flight path. You'll be able to schedule a route around the house or trigger a trip manually. In addition, the camera will be able to respond to certain events -- such as an armed door/window sensor in the Ring Alarm system being set off..

\$250



Google Little Signals

Six ambient computing concept devices that engage with senses in subtle and nuanced ways, such as:

- Ambient sound
- Puff of air
- Moving shadows
- Physical taps

One concept has an arm that clinks against the glass of a bottle of medicine, letting users know it's time to take their prescription.



Microsoft “Ocean Plastic” Mouse

20% recycled ocean plastic and a
100% plastic-free, recyclable box



LG PuriCare

HEPA air purifier with built-in mic and speakers

LED lights

Runs 8 mos. on a single charge

May or may not protect against SARS-CoV-2

Avail: ?



Dyson Zone

A duct on each earcup allows clean air to flow into the visor, which sits around the lower half of your face without touching it - captures 99% of inhalable particles down to 0.1 microns in size

Noise cancelling headphones – 3 levels

Charge via USB-C

Price ?

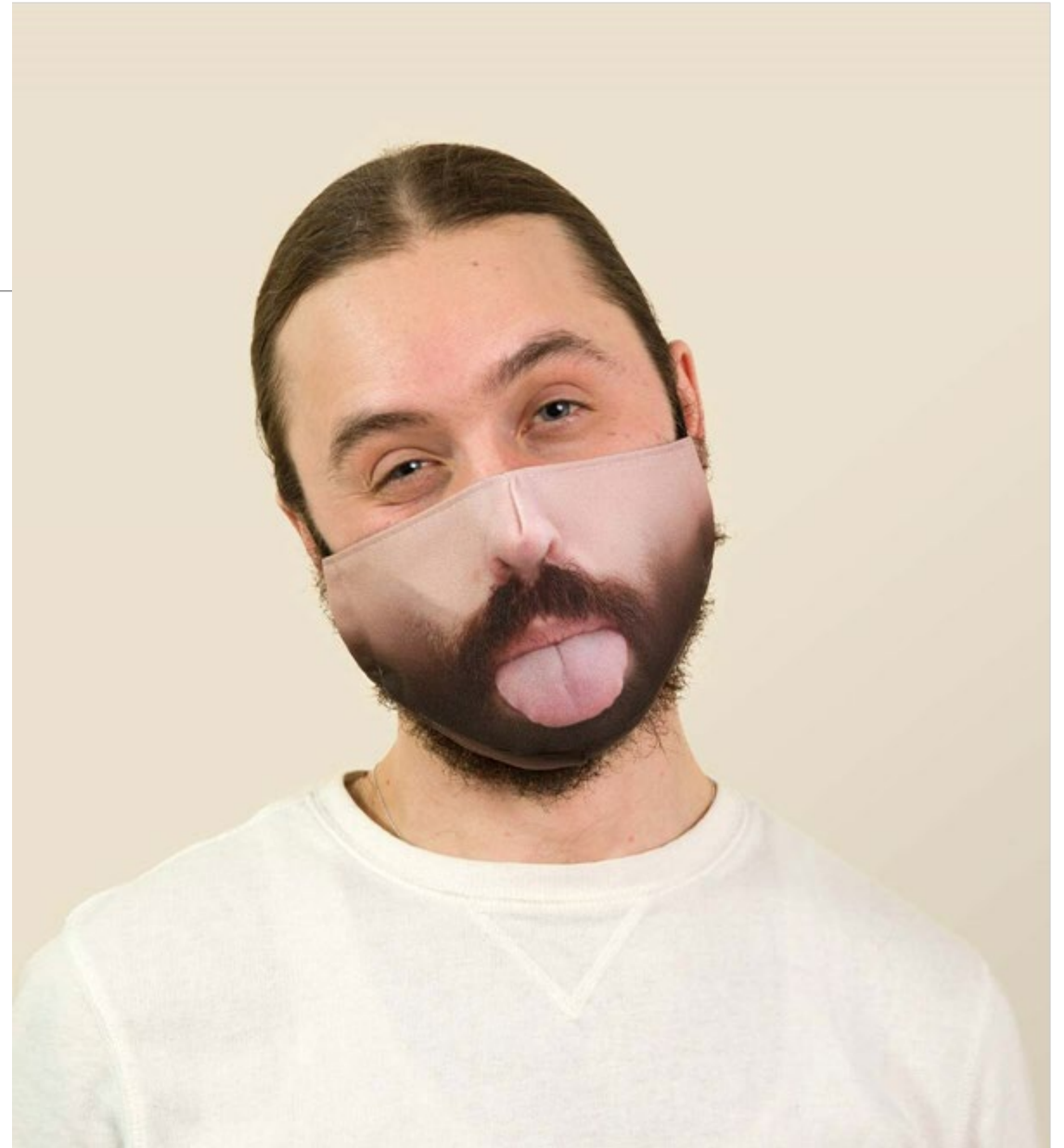
Avail: Fall-22



Maskalike

\$27

Avail: Now



Connect on LinkedIn and Twitter



David Cieslak, CPA.CITP, GSEC

EVP, Chief Cloud Officer

RKL eSolutions, LLC

@dcieslak

[linkedin.com/in/davidmcieslak](https://www.linkedin.com/in/davidmcieslak)