

# INSPECTOR GADGET 2022

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

RKL ESOLUTIONS, LLC



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



[dcieslak@rklesolutions.com](mailto:dcieslak@rklesolutions.com)

Phone: 717-409-8835

[www.rklesolutions.com](http://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](http://www.rklesolutions.com))

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- 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

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Technology

Companies

IoT

Gear / Gadgets

EVs

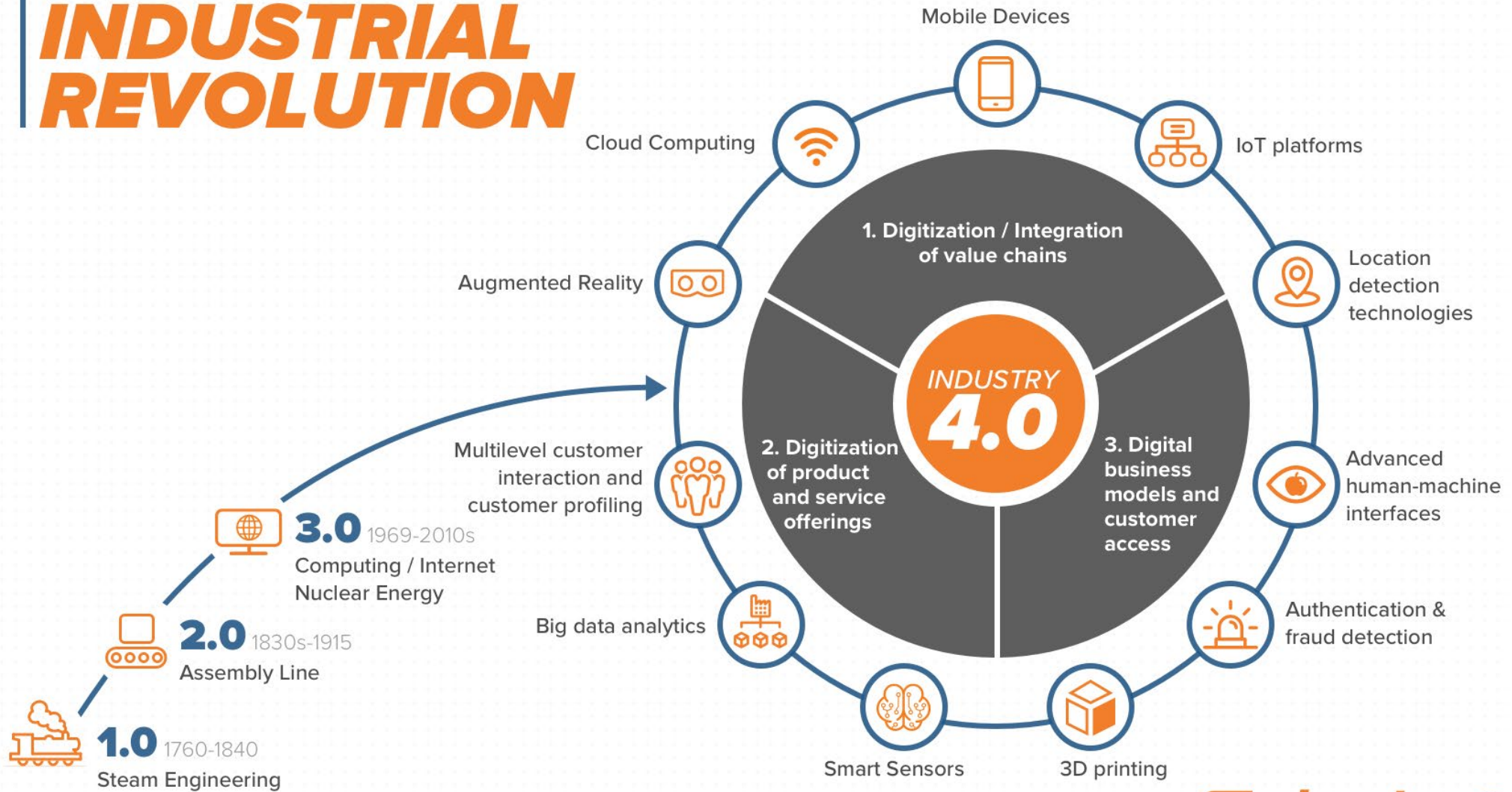
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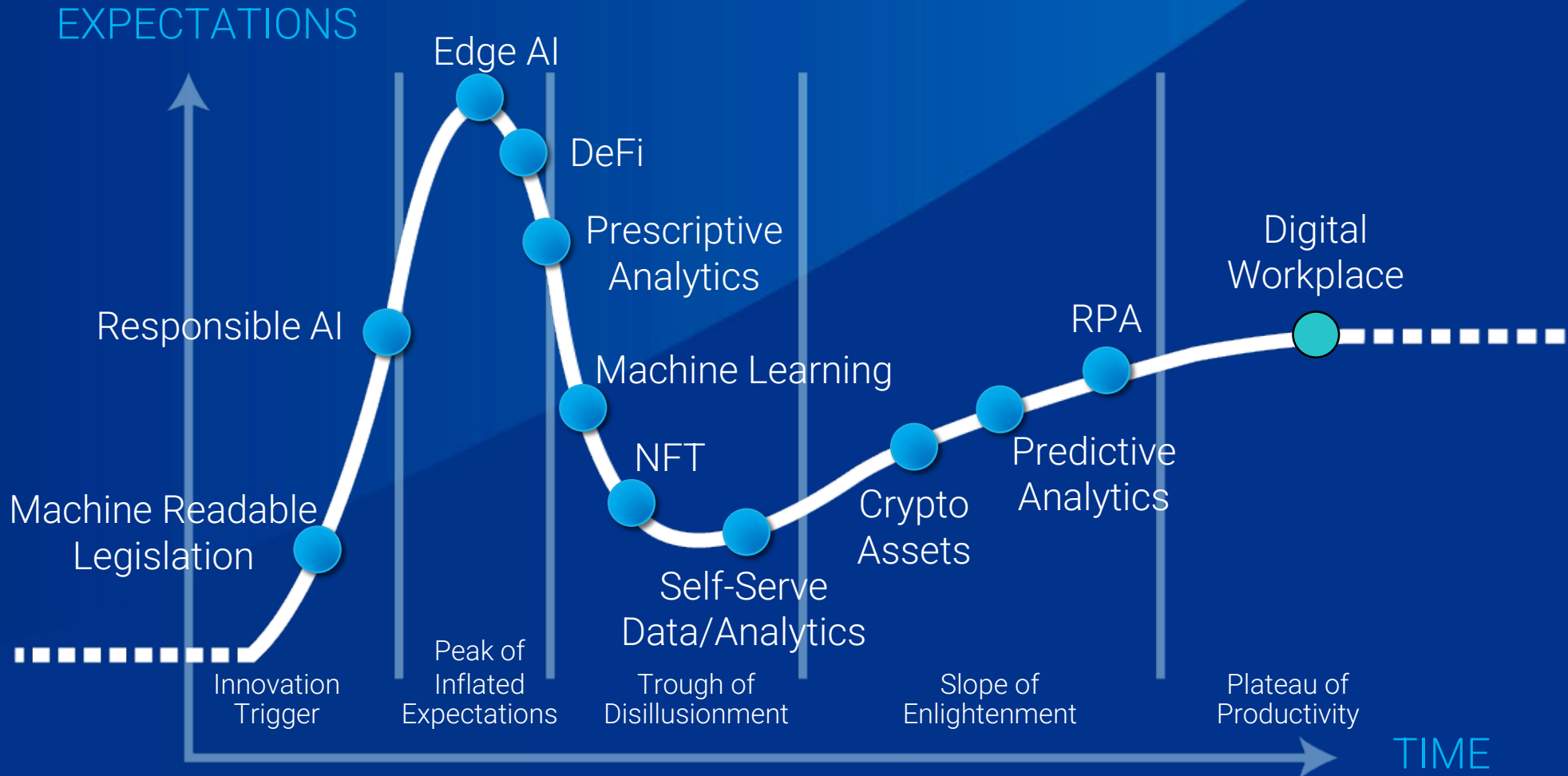


THE DAWN OF THE

# FOURTH INDUSTRIAL REVOLUTION

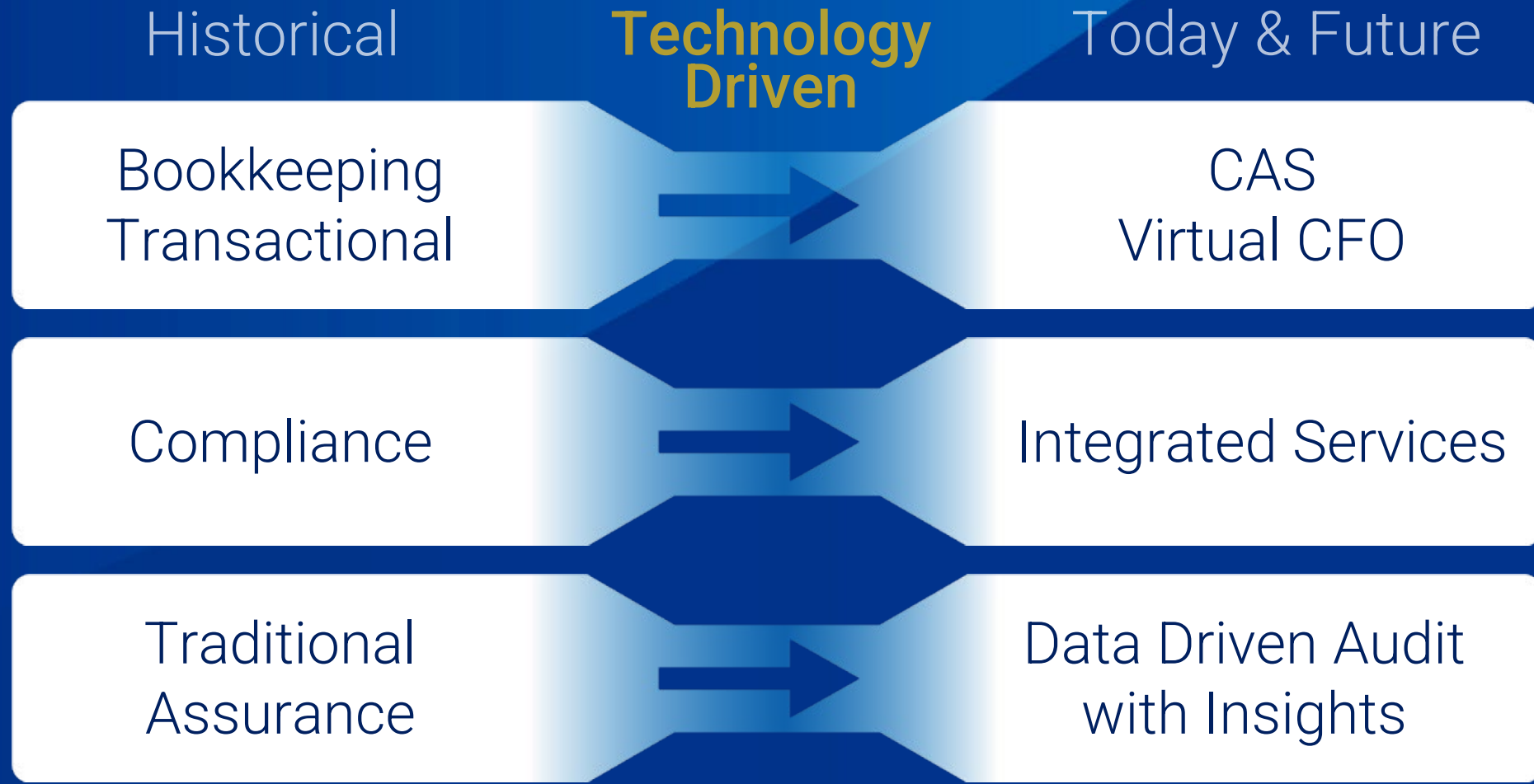


# 2022 Accounting Profession Technology Megatrends



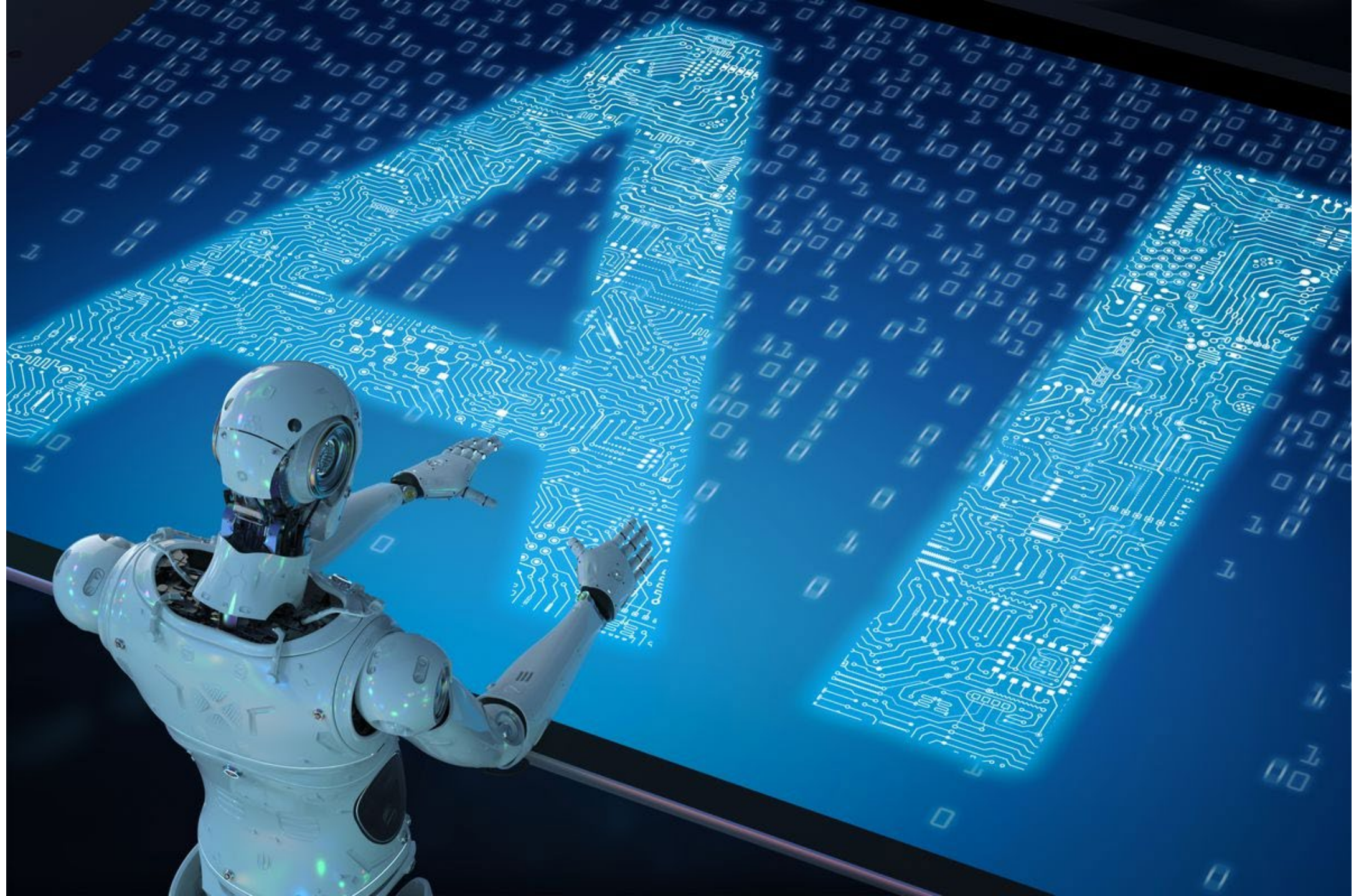
Source: 2022 CPA.com Identified Megatrends Plotted on the Gartner Hype Cycle Framework

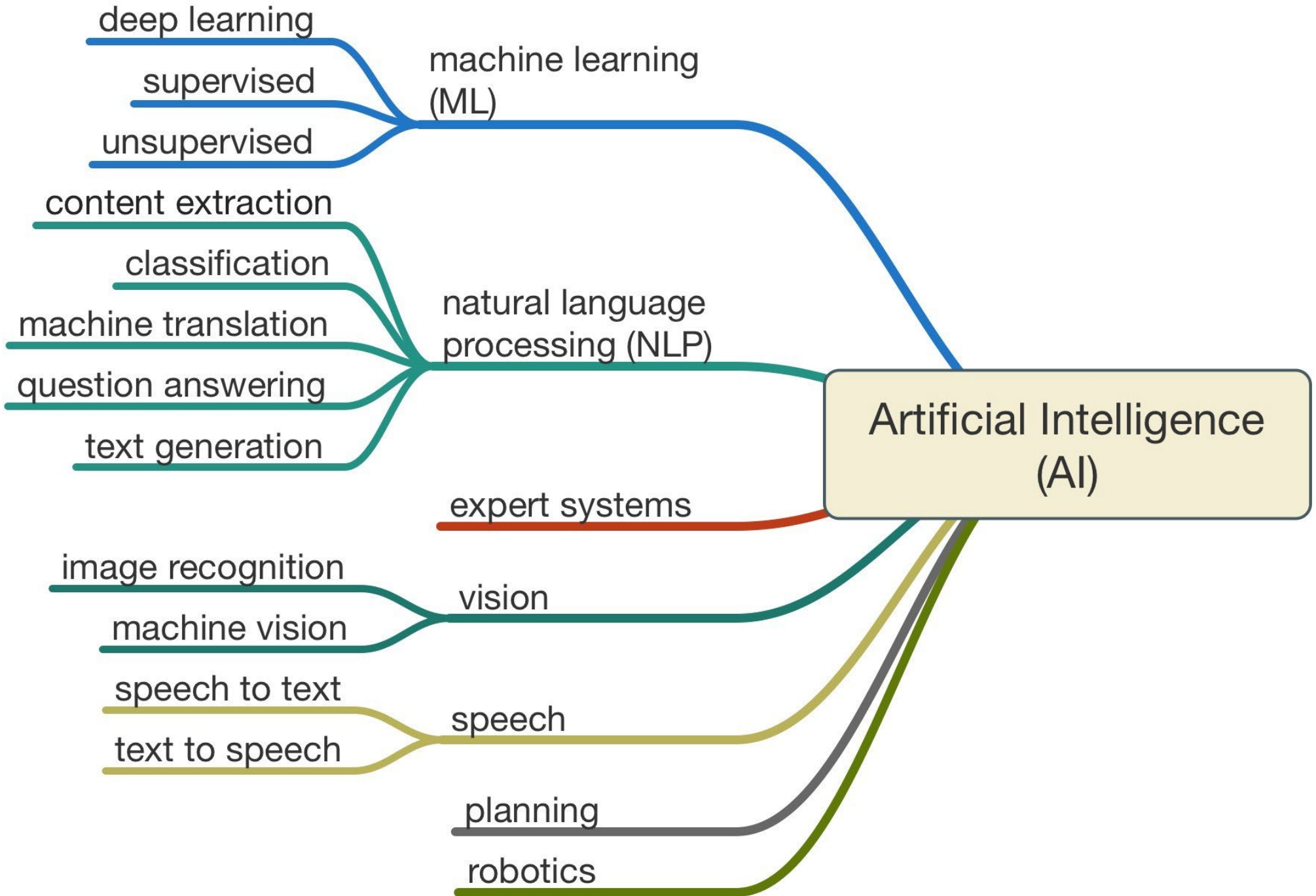
# Accounting Profession Transformation



Significantly Enhance Client Value







deep learning

supervised

unsupervised

machine learning (ML)

content extraction

classification

machine translation

question answering

text generation

natural language processing (NLP)

expert systems

image recognition

machine vision

vision

speech to text

text to speech

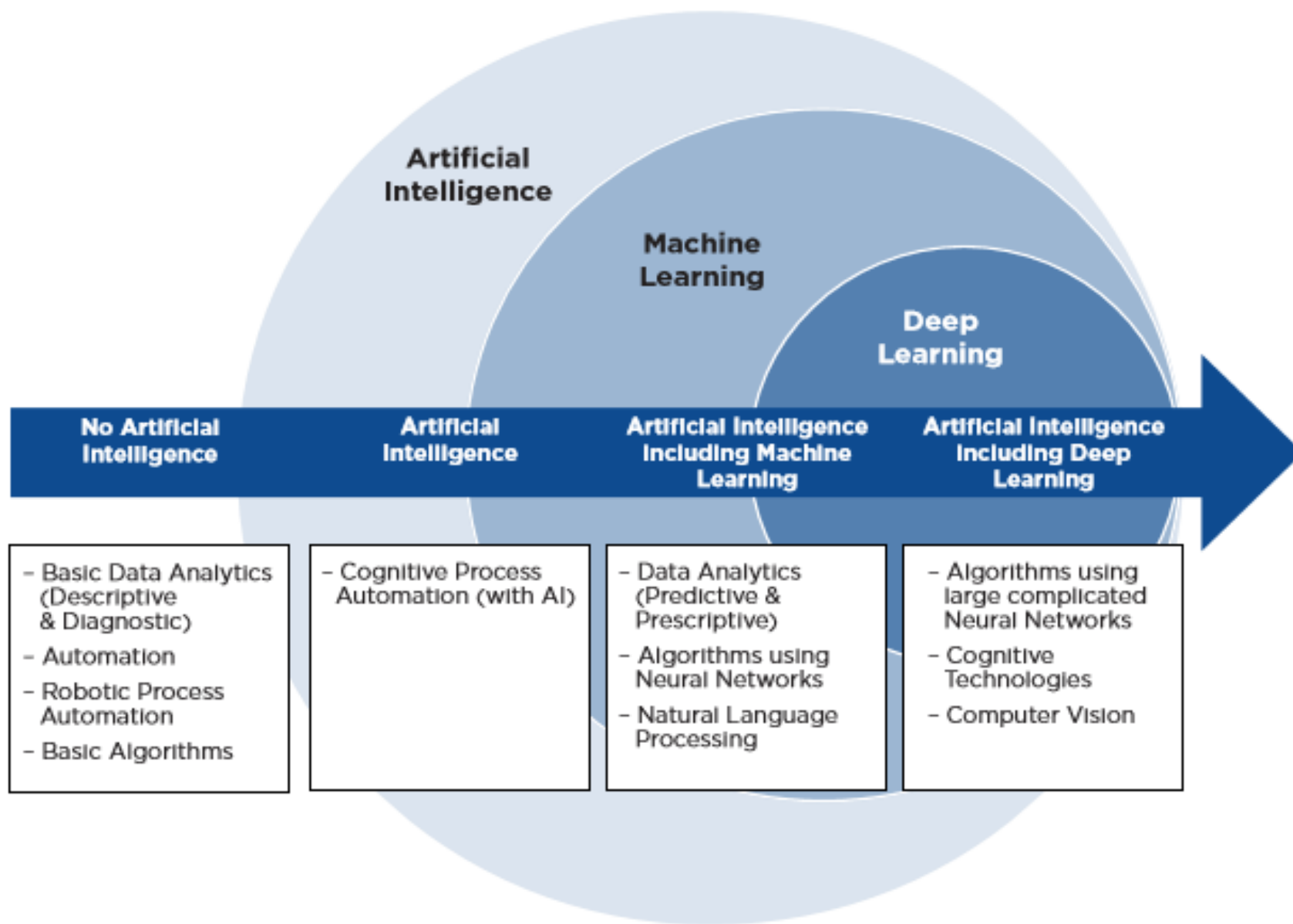
speech

planning

robotics

Artificial Intelligence (AI)





# 2022 AI Trends

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Workforce augmentation

Better language modeling

Cybersecurity

Metaverse

Low-code / no-code

Autonomous vehicles

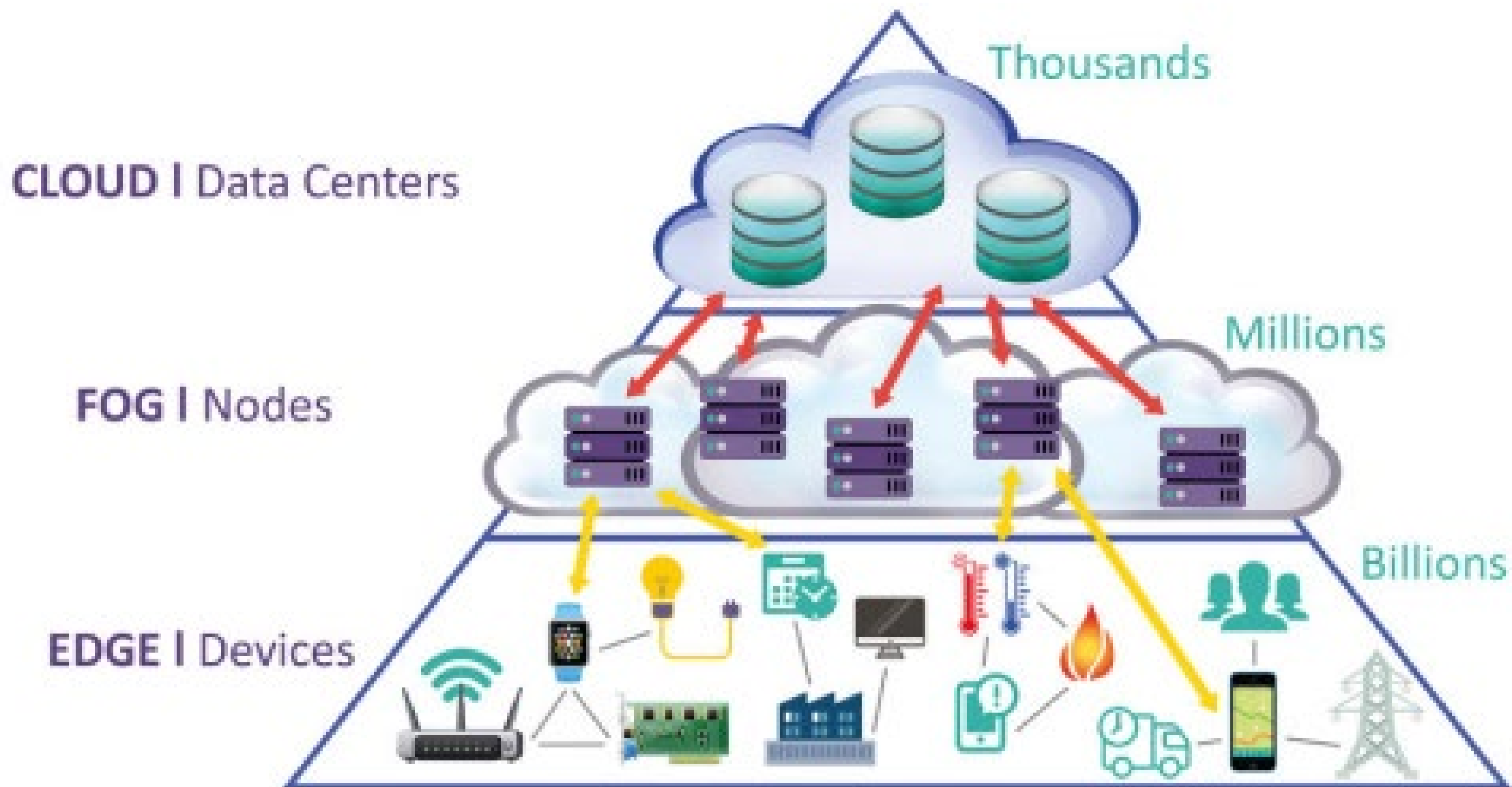
Creative





# CLOUD COMPUTING





A futuristic cityscape at night, featuring a glowing blue grid overlay that creates a sense of depth and connectivity. The grid lines are bright blue and form a perspective 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 it a high-tech, digital feel.

5G

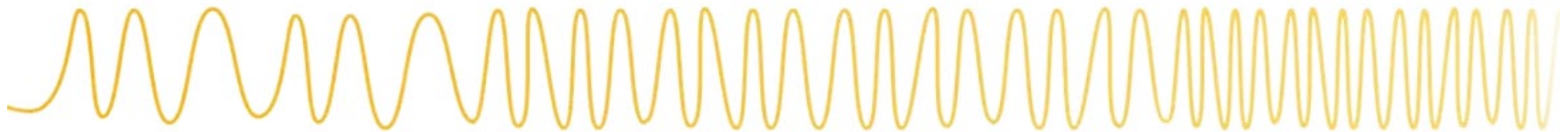




# What you need to know...

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

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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

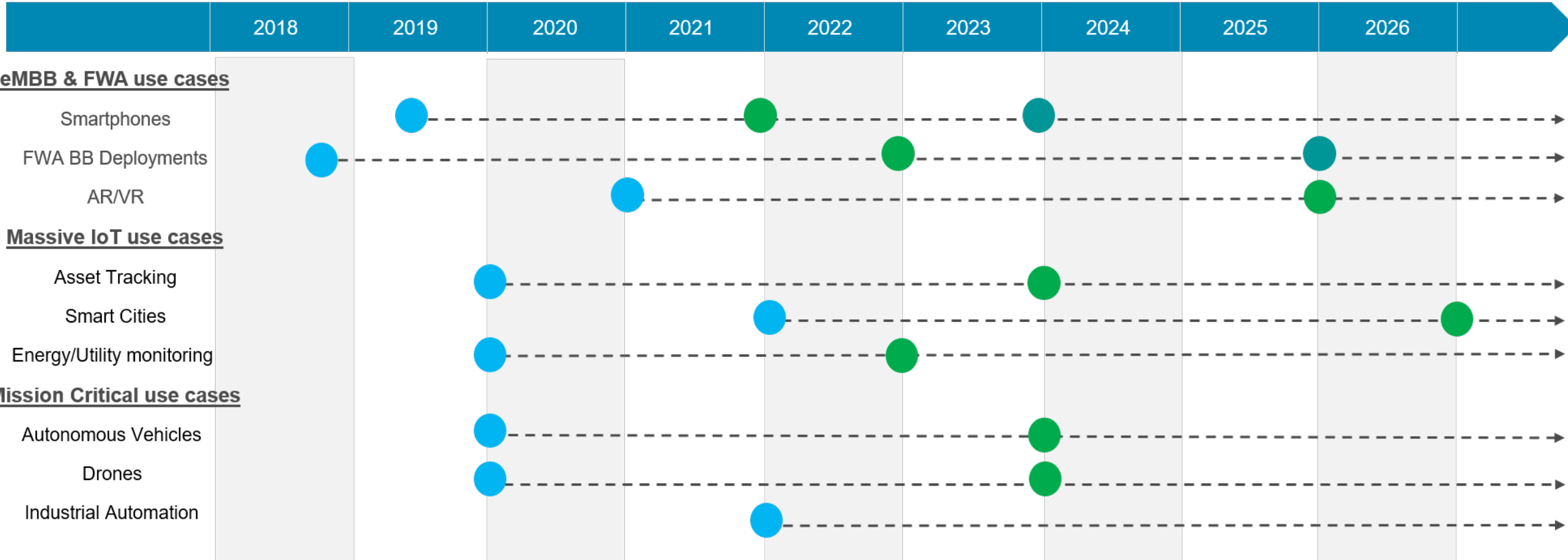
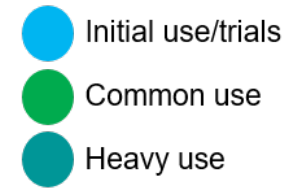
V

Verizon

 <b>Games Experience</b>	 JOINT WINNER	 JOINT WINNER	
 <b>Voice App Experience</b>		 WINNER	
 <b>Download Speed Experience</b>		 WINNER	
 <b>Upload Speed Experience</b>		 WINNER	
 <b>4G Availability</b>		 WINNER	
 <b>4G Coverage Experience</b>			 WINNER

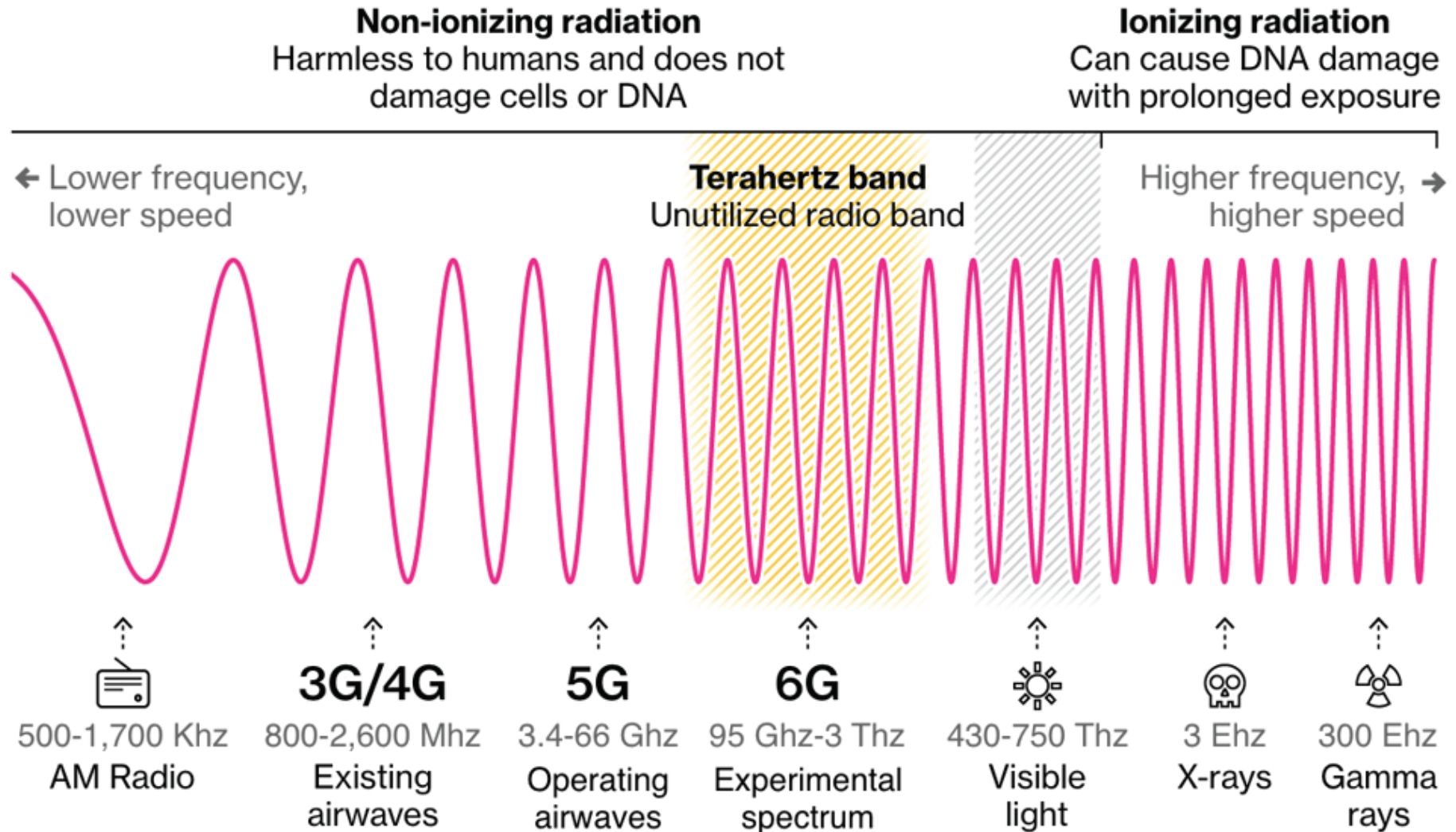






# Experimental Band

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



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



# Starlink

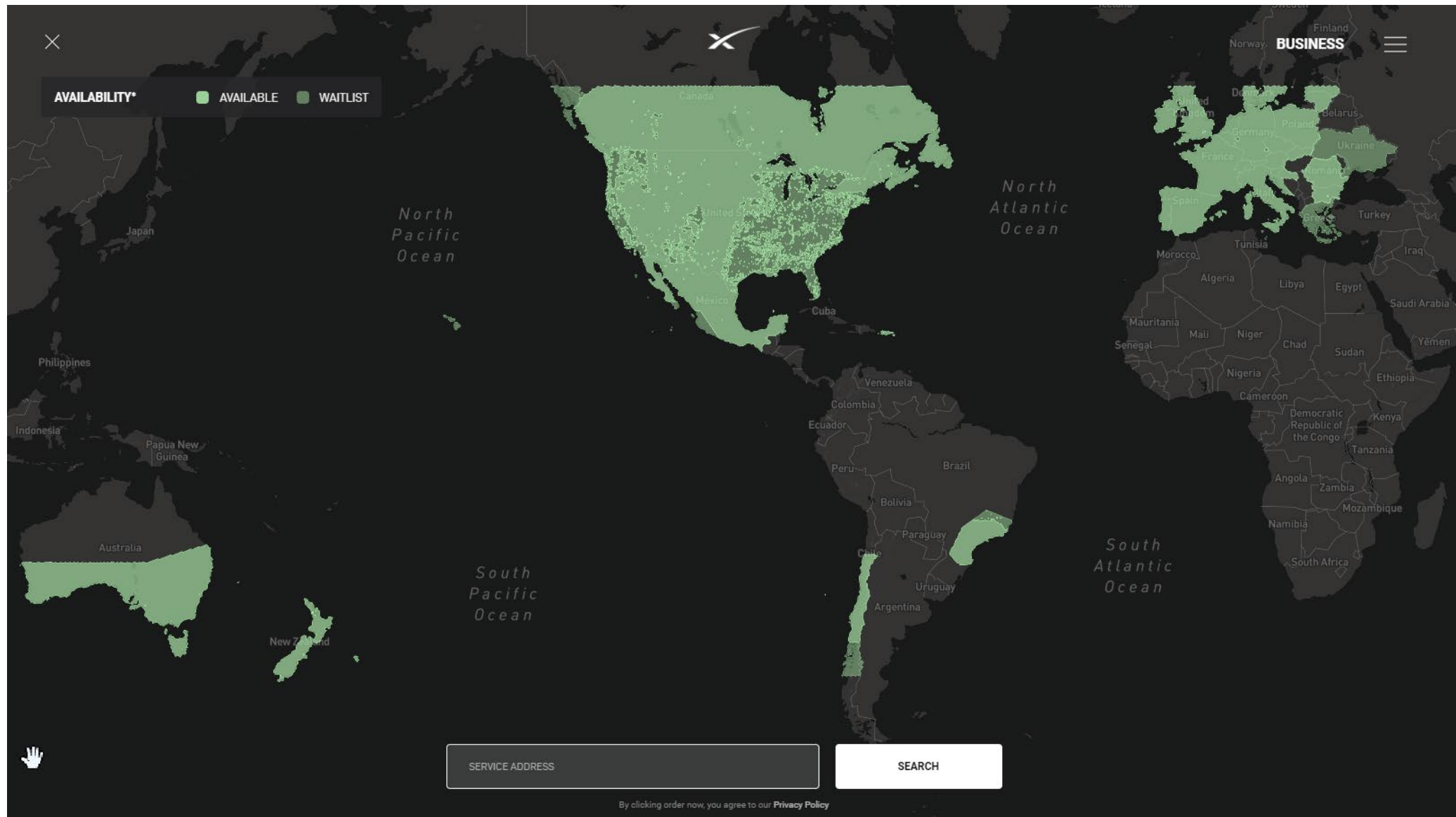
High-speed, low-latency broadband internet across the globe

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](http://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. In the top right corner, the word 'BUSINESS' is displayed next to a hamburger menu icon. 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, Austria, Hungary, Italy, Portugal, Ireland, Iceland, Malta, Cyprus, Bulgaria, Serbia, Croatia, Slovenia, Albania, Montenegro, Bosnia and Herzegovina, Kosovo, Albania, Turkey, Georgia, Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan, Afghanistan, Pakistan, India, Bangladesh, Sri Lanka, Nepal, Bhutan, Myanmar, Thailand, Laos, Cambodia, Vietnam, Philippines, Indonesia, Malaysia, Singapore, Brunei, Timor-Leste, Papua New Guinea, Fiji, Tonga, Samoa, Vanuatu, Solomon Islands, New Zealand) and parts of Africa (Morocco, Tunisia, Algeria, Libya, Egypt, Sudan, 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. At the very bottom, a small text line reads: 'By clicking order now, you agree to our [Privacy Policy](#)'.

# 3G networks shutting down in 2022

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[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

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# WiFi 6

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## 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	
<b>Features</b>	<b>Benefits</b>
 More, contiguous spectrum	 Gigabit speeds
 Wider channels	 Extremely low latency
 Less interference	 High capacity



# WiFi 7

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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)

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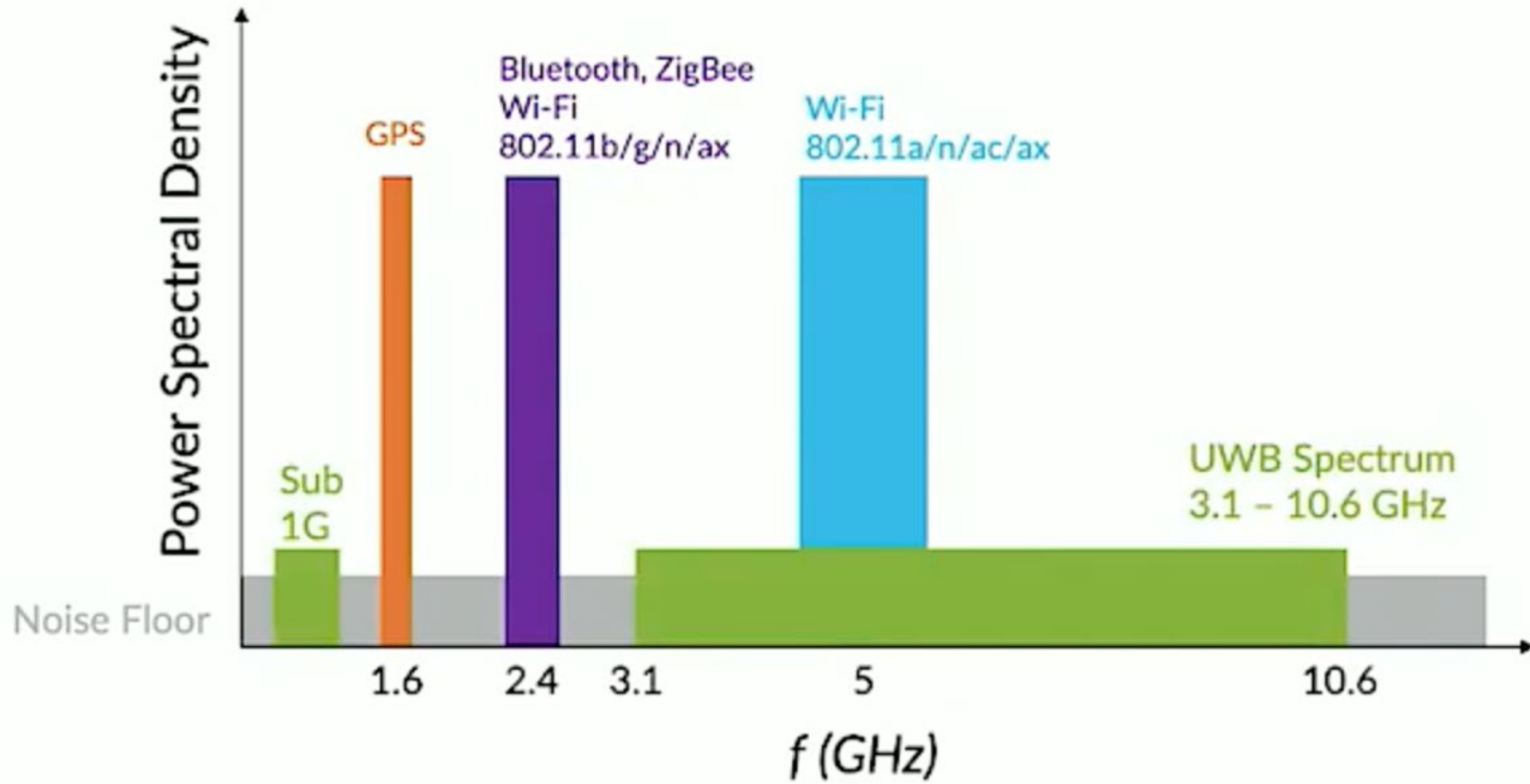
**Fast, secure and low power radio protocol** used to determine location **with extreme accuracy (10 centimeters)**

Very low interference

Operating range of 200 meters (656 feet)

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

# UWB SPECTRUM





# UWB is better than...

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## 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

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**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

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**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

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## Apple (U1 chip)

- iPhone
- Air Tags
- Home pod mini



## Samsung

- Galaxy phones
- Smart Tags

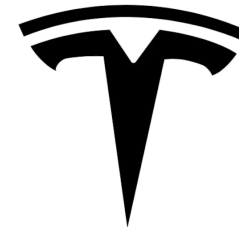


## Google

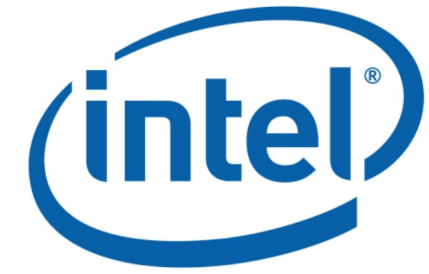
- Pixel phones



## Tesla







# Intel Alder Lake (12<sup>th</sup>-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 3<sup>rd</sup> 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

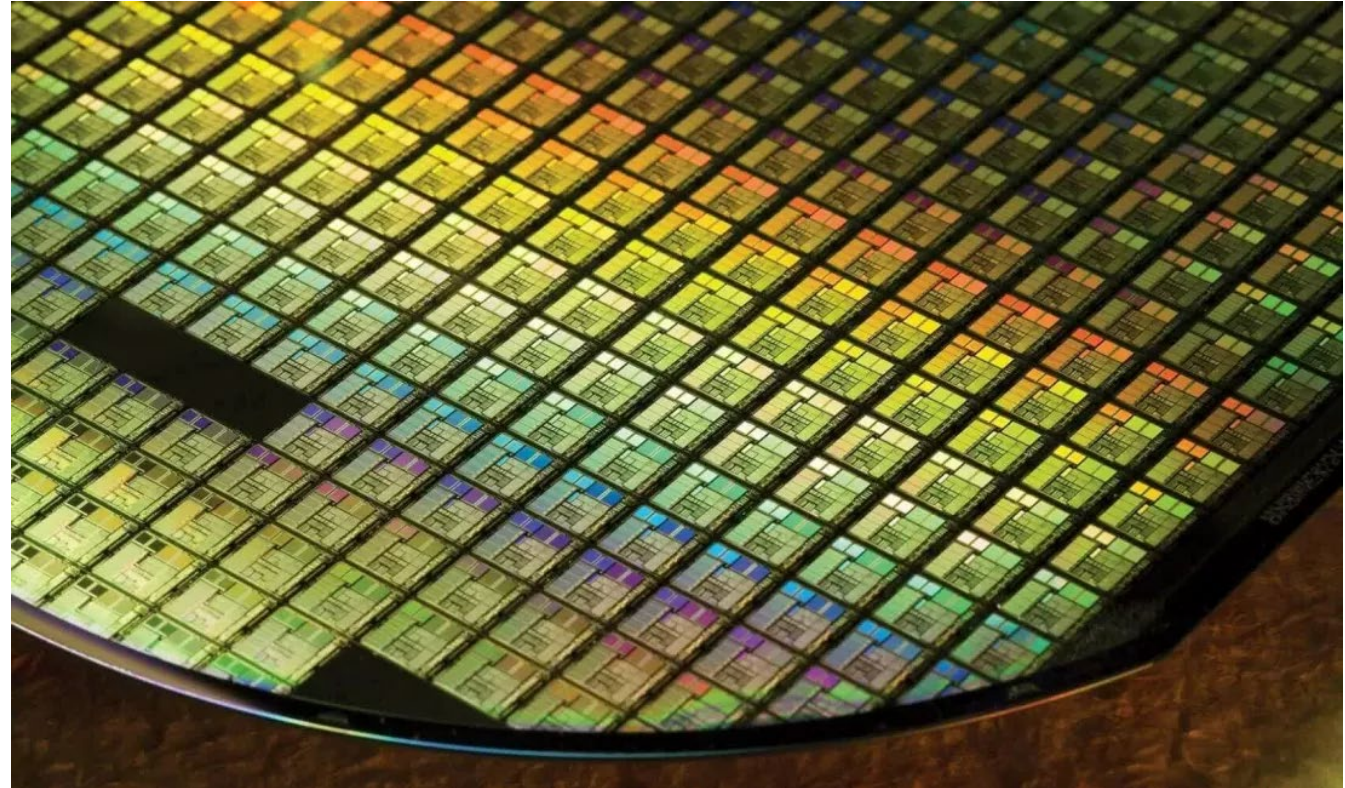
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300mm wafers being produced at the rate of 7,200 wafers per month (wpm) - approximately equal to the projected demand

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)

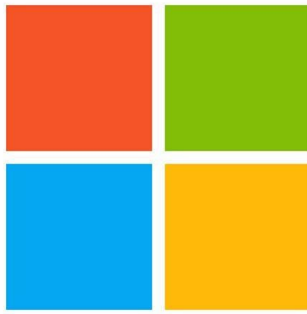


# Companies





Microsoft



# Microsoft Windows 11

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

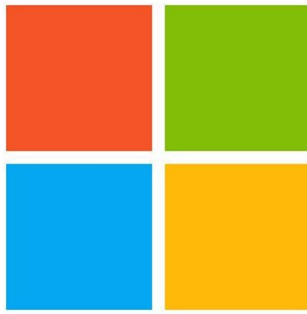
Windows Start menu moved from the bottom left of the screen to the middle, with app icons arranged in the center next to it.

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

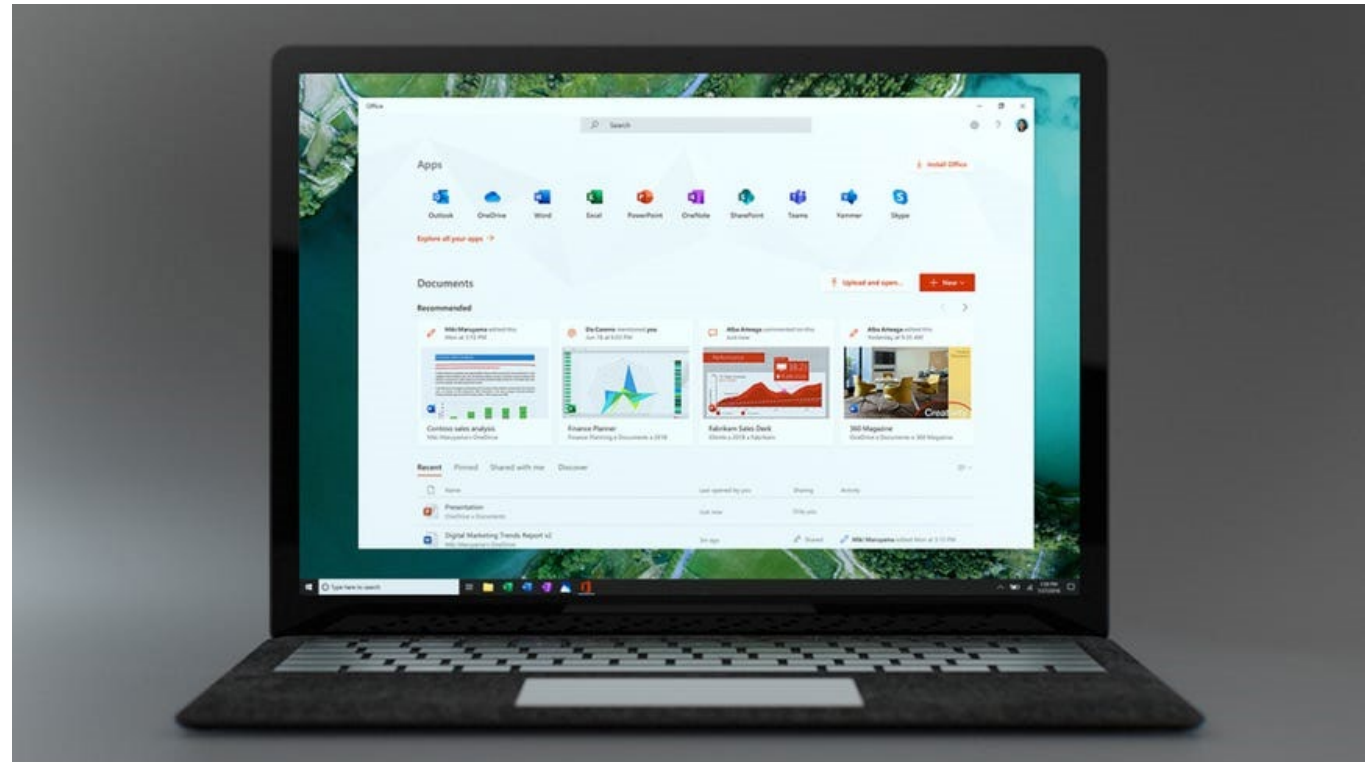
Flat-price version of MS Office –no subscription required, but won't recv. regular feature updates.

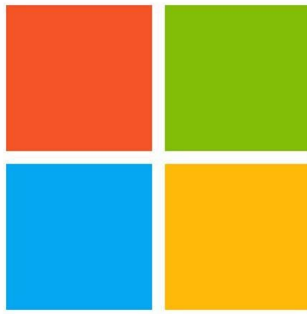
Two versions:

- 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

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

Product key only – no CD/media

Price – as low as \$50

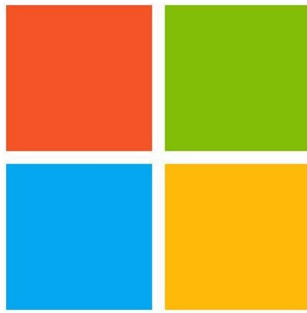
Avail: Now

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



Office  
Professional Plus 2021





# Microsoft One Outlook (Monarch)

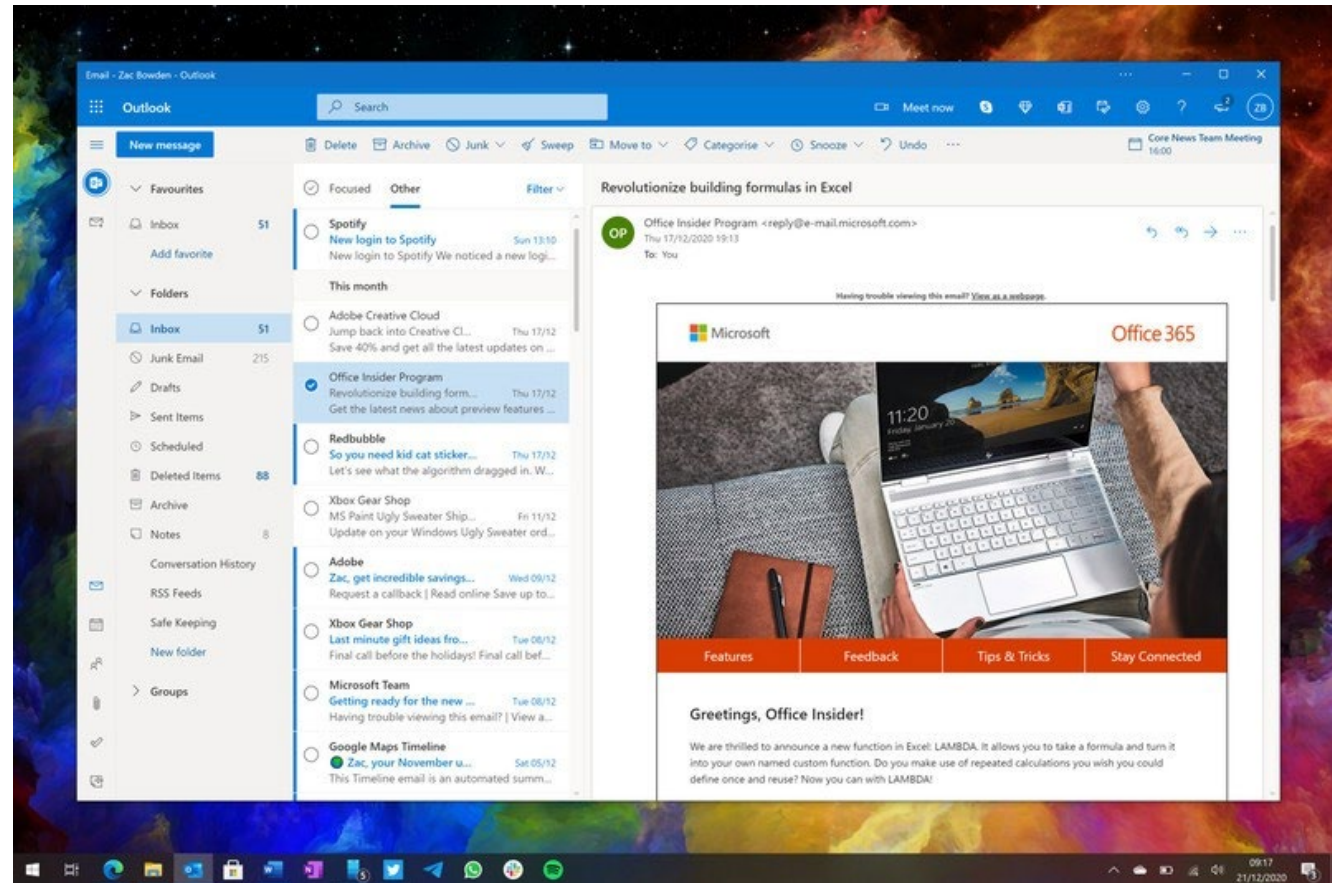
New version of Outlook - designed for large-screen experiences

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

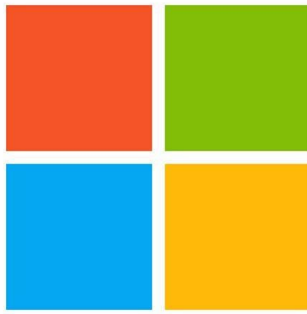
Will work across PC, Mac, and the Web

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

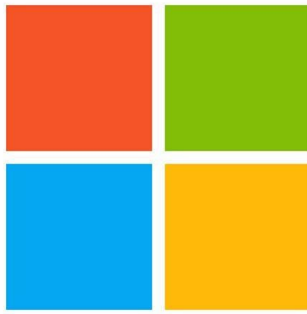
Face recognition, glass trackpad,  
Bluetooth 5.1, Wi-Fi 6 and 1080p HD  
webcam

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

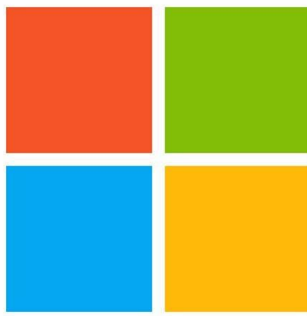
USB-C / Thunderbolt 4 (2)

Storage: 128GB - 1TB

Signature Keyboard and Surface Slim Pen  
2 (sold separately)

Starting at \$1,099





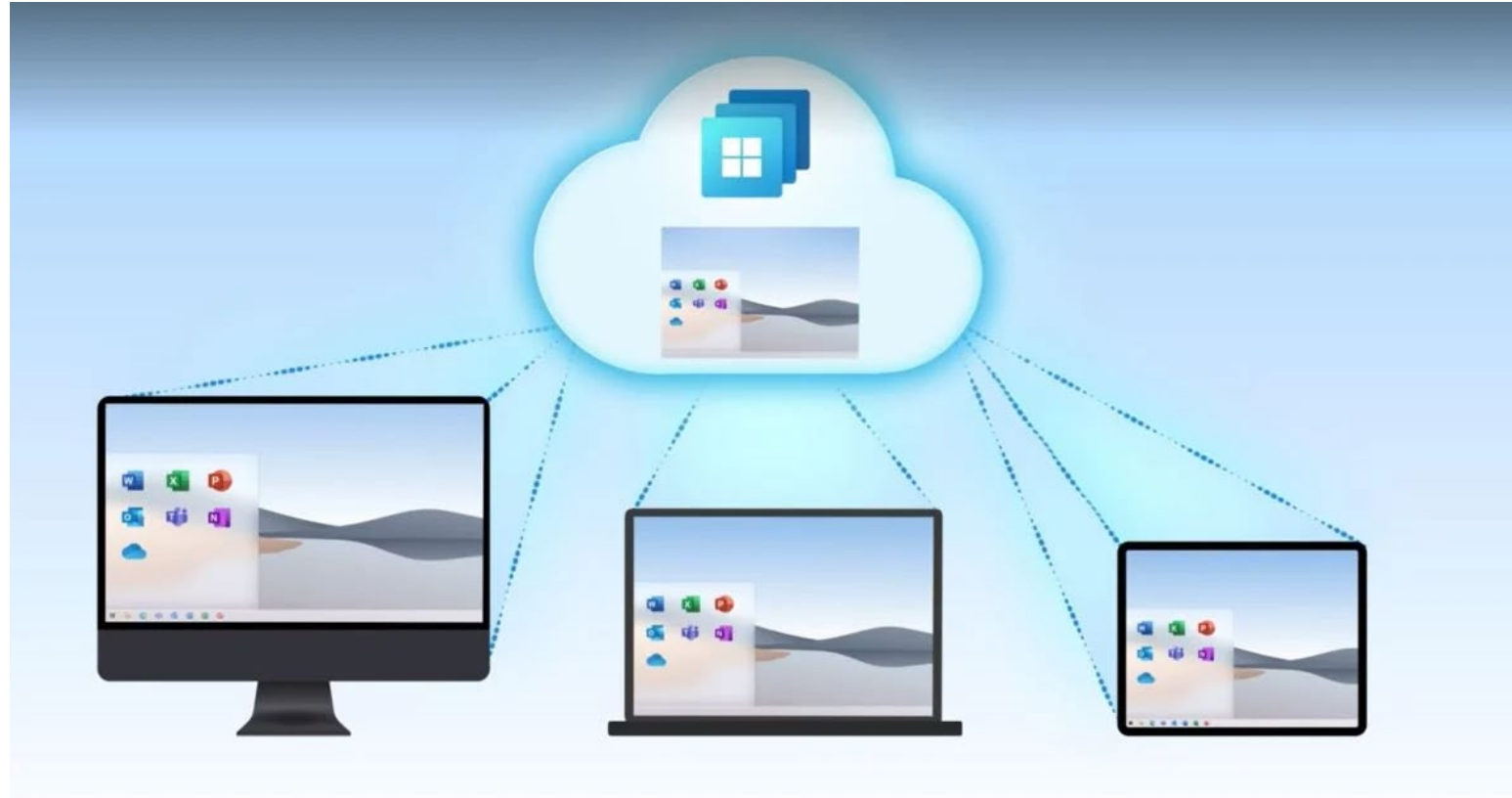
# Windows 365/Cloud PC

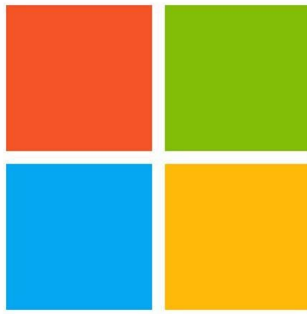
**Windows as a Service** – built on top of Azure Virtual

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

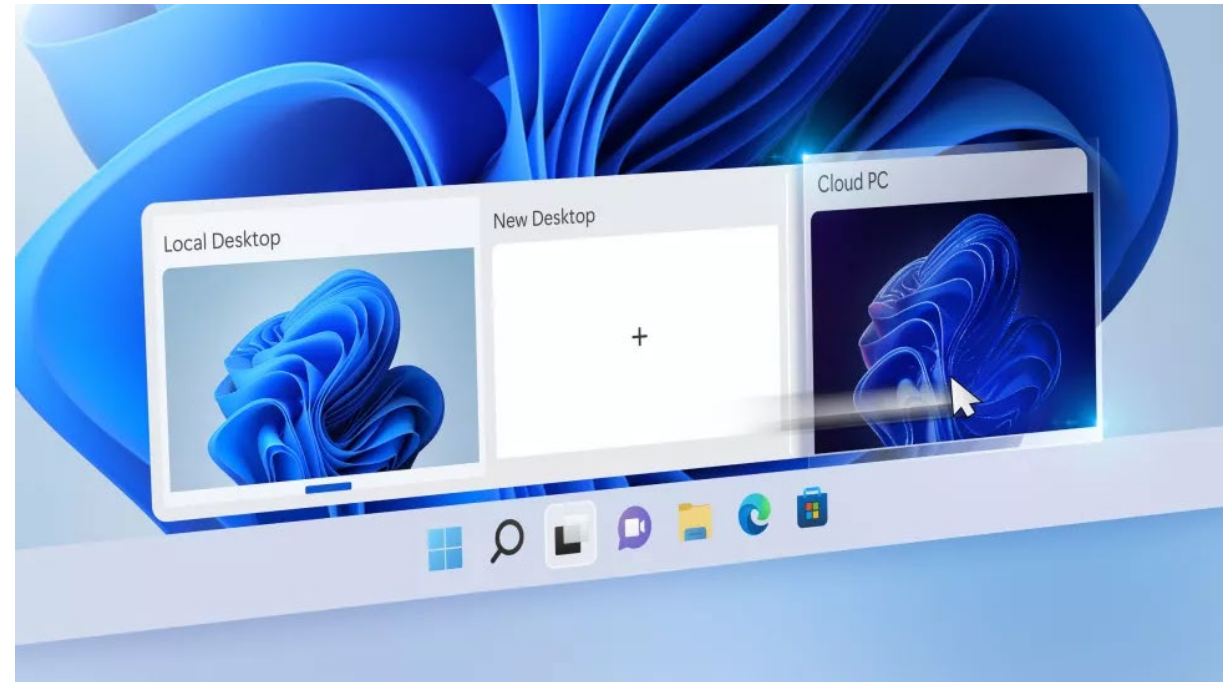




# Windows 365/Cloud PC

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.



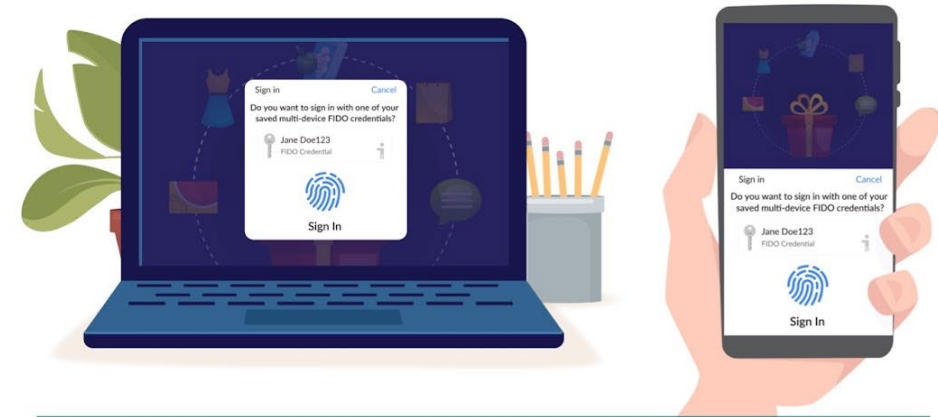
# FIDO Passkey

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.

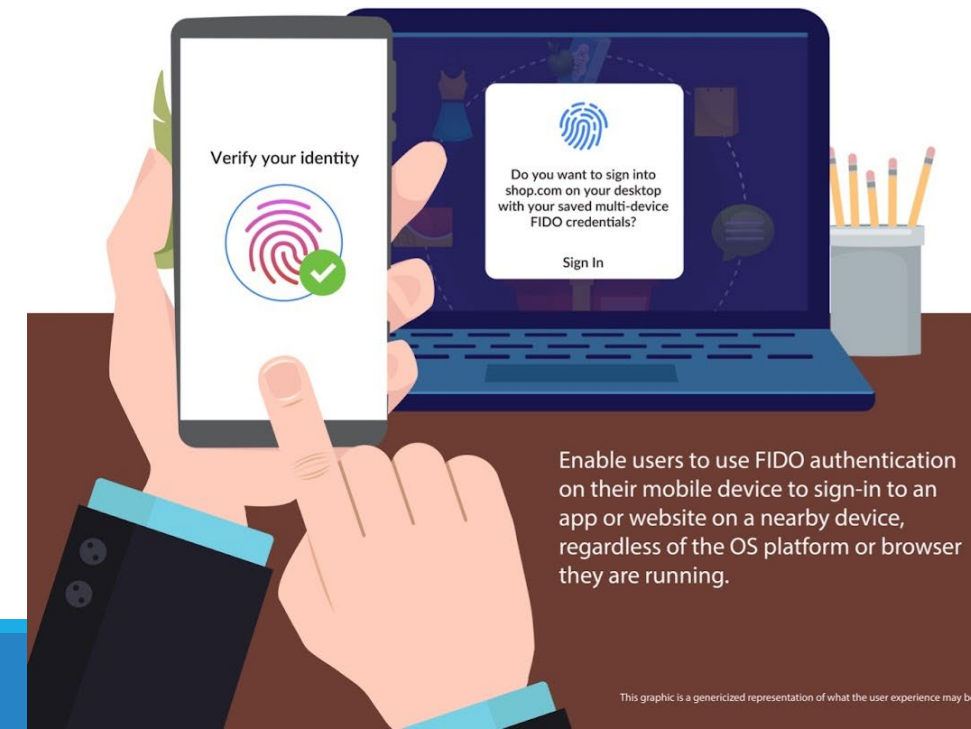
Passwordless login process will let users choose their phones as the main authentication device for apps, websites, and other digital services

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**<sup>TM</sup>

# Lenovo X1 Carbon, Gen 10

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

CPU: **12<sup>th</sup> 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: **12<sup>th</sup> 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: **11<sup>th</sup> 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

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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 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

---

A13 bionic processor (20% faster)

10.2" Retina display

12MP Ultra Wide front camera

64GB – 256GB storage

Avail in 2 colors

\$329 - \$559





# iPhone 13 Pro/Pro Max

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5G – Automatic switching between 5G & LTE (preserves battery life)

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

Super Retina XDR display with 1,000 nits of peak outdoor brightness (25% higher than last year) - (Pro – 6.1" / Pro Max – 6.7")

Upgraded cameras

- Ultra wide camera can shoot subjects less than 1" away (macro mode)
- Wide camera captures 2.2x more light
- Cinematic mode

Bigger battery / longer life

128GB – 1TB

\$999 - \$1,299





# iPhone 13 & iPhone 13 Mini

---

5G

A15 Bionic (6-core) CPU / 4-core GPU

Super Retina XDR display (6.1" / Mini – 5.4")

Upgraded cameras

- Ultra wide camera
- Wide camera

Bigger battery / longer life

128GB – 512GB

\$729 - \$1,129





# Apple

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## iPhone SE

- A15 Bionic chip
- 5G
- Better battery life





# Apple Watch Series 7

Screen size: 41mm and 45mm - “Always-on” Retina display with smaller bezel – 70% brighter

Battery life: 18 hours

Fast charging: From 0-80% power in 45 minutes

Dust resistant: IP6X certified

Water resistance: Up to 50m

Crack resistant front glass

Fall detection feature

5 colors

Avail – Fall-21

\$399 - \$849





2022



# Here's what's coming in 2022 (we think)

iPhone 14 – updated notch

iPad Pro – with glass back

Apple Watch Series 8

AirPods Pro 2

MacBook Air

iMac

iOS 16





# 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)



Google







# Google Pixel 6 / 6 Pro

Display: 6.4" (6) / 6.7" (6 Pro) OLED

Body: Gorilla Glass Victus front / Gorilla Glass 6 back

Processor: Google Tensor, Titan M2 security

5G, WiFi 6E

RAM: 8GB (6) / 12GB (Pro)

Internal Storage: 128 GB, 256 GB, 512 GB (6 Pro)

Camera: Rear – 50 MP main, 12 MP ultra-wide, 48 MP Telephoto (6 Pro)

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

CPU: Android 12, Pixel UI

Price: starting at \$599

Avail – Now



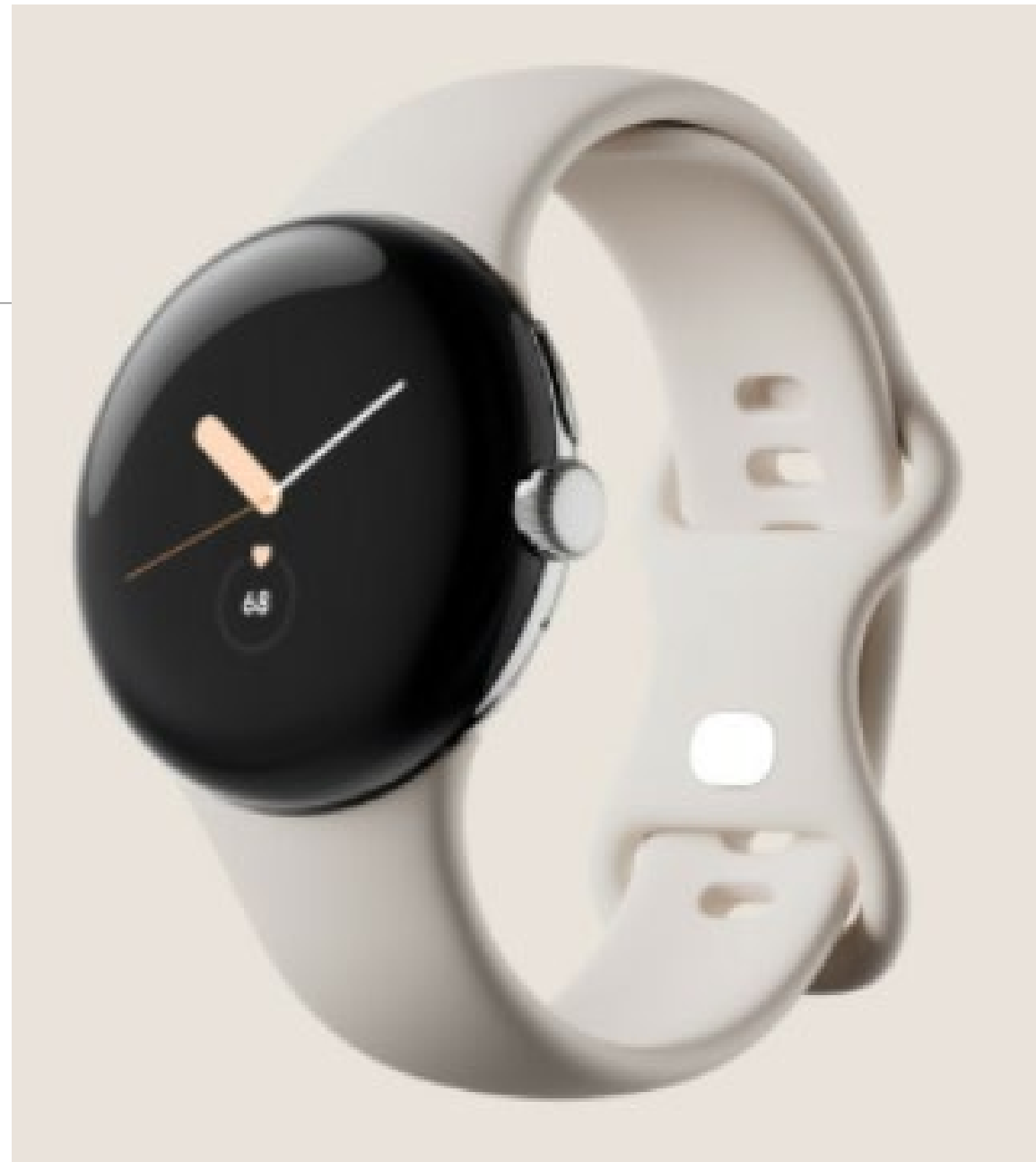
# Google Pixel Watch

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

Wear OS - compatible w/ Android only, not iOS

Avail: Fall-22



# amazon



# Amazon AZ2 Chip

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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

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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

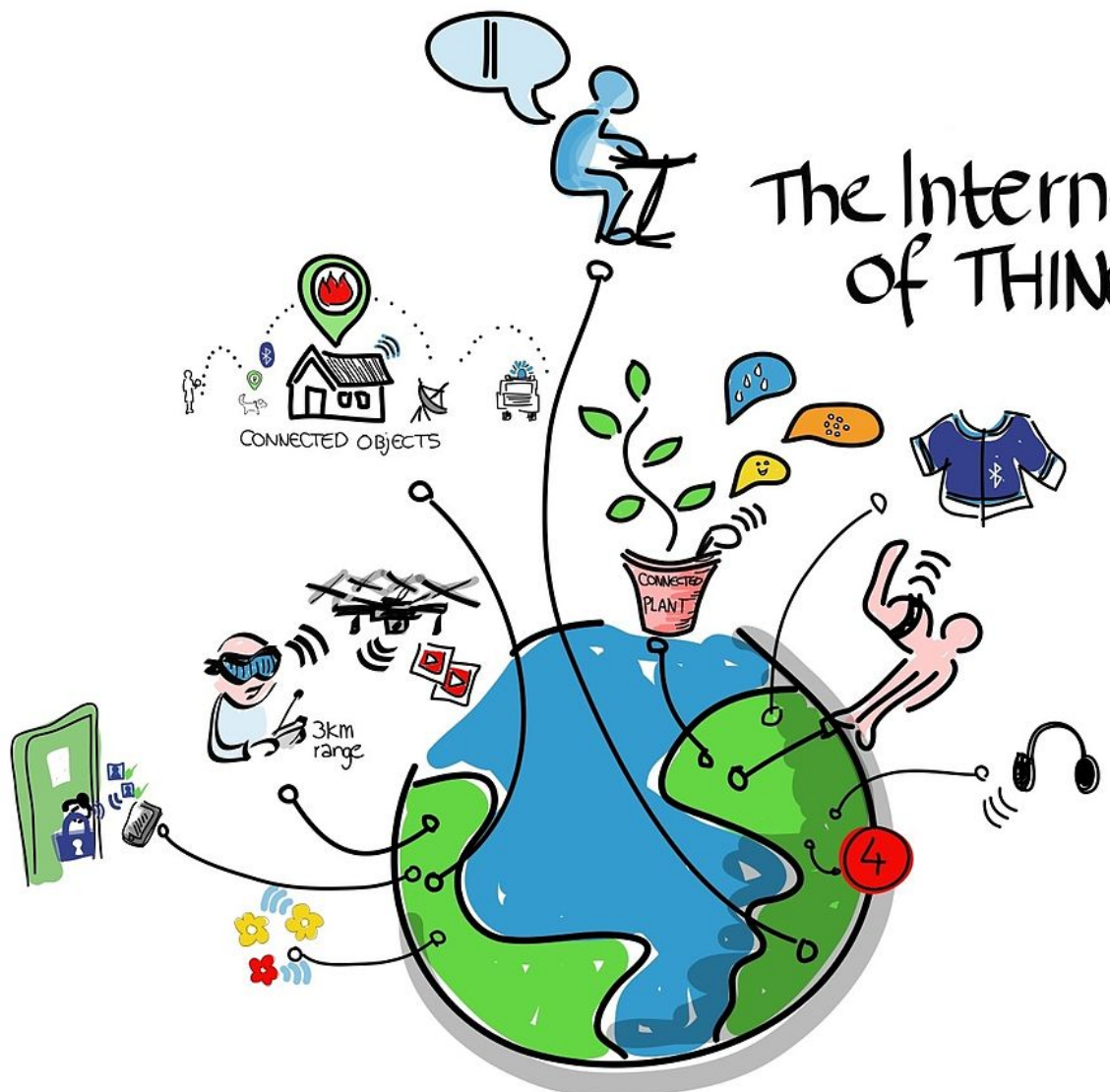
**Goal – use smart home devices and voice assistant(s) of your choice,** incl. Apple's Siri / HomeKit, Amazon Alexa, and Google Assistant.

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

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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



# SwitchBot Smart Switch Button Pusher

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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 ?





# Portabl

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Compatible with Windows  
and MAC

Pricing: starting at \$570

Avail: Now



# Chipofy USB-C cable w/ LED display

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Measure your device's power consumption as it charges

6.6' braided cable

Price \$26

Avail: Now



# Fujitsu fi-8170 image scanner

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Scans big volumes with “Automatic Separation Control”

"Paper Protection" function using Image Monitoring technology and sound technology

Optimized high-quality image data with "PFU Clear Image Capture"

Scans variety of documents including passports and booklets

Color LCD Panel for easy operation

PaperStream IP and PaperStream Capture providing advanced image processing functions, with PaperStream Capture Pro software as a premium option

PaperStream ClickScan for ad-hoc use



# Cocoon Vault MCP3410

Accommodates Up To a 16" MacBook/Laptop

2 RFID-blocking pockets and built-in GRID-IT!® Organizer

Avail: Now

\$100



# 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





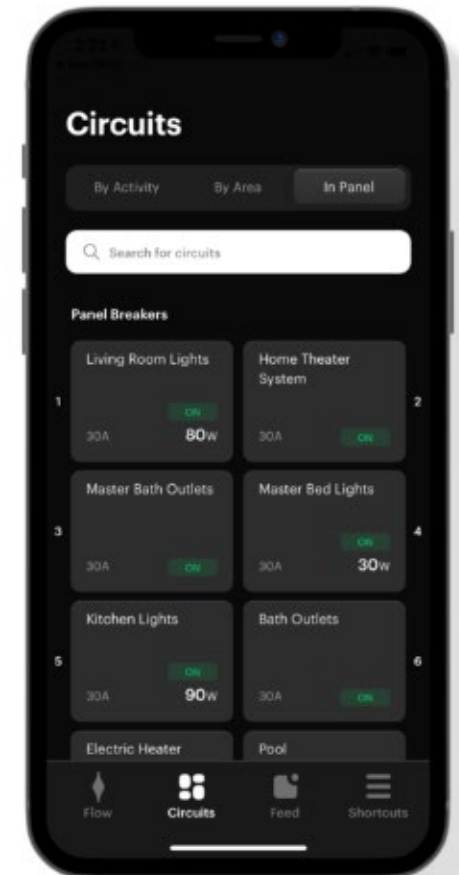
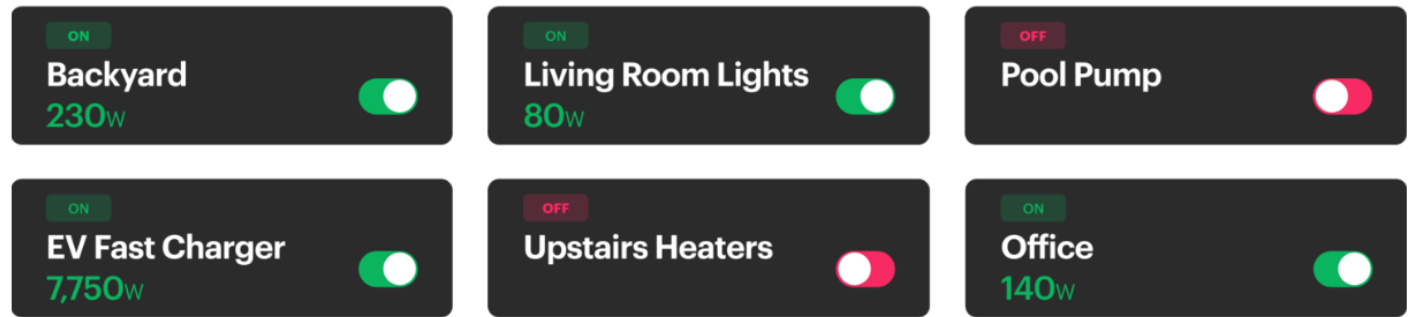
# Span

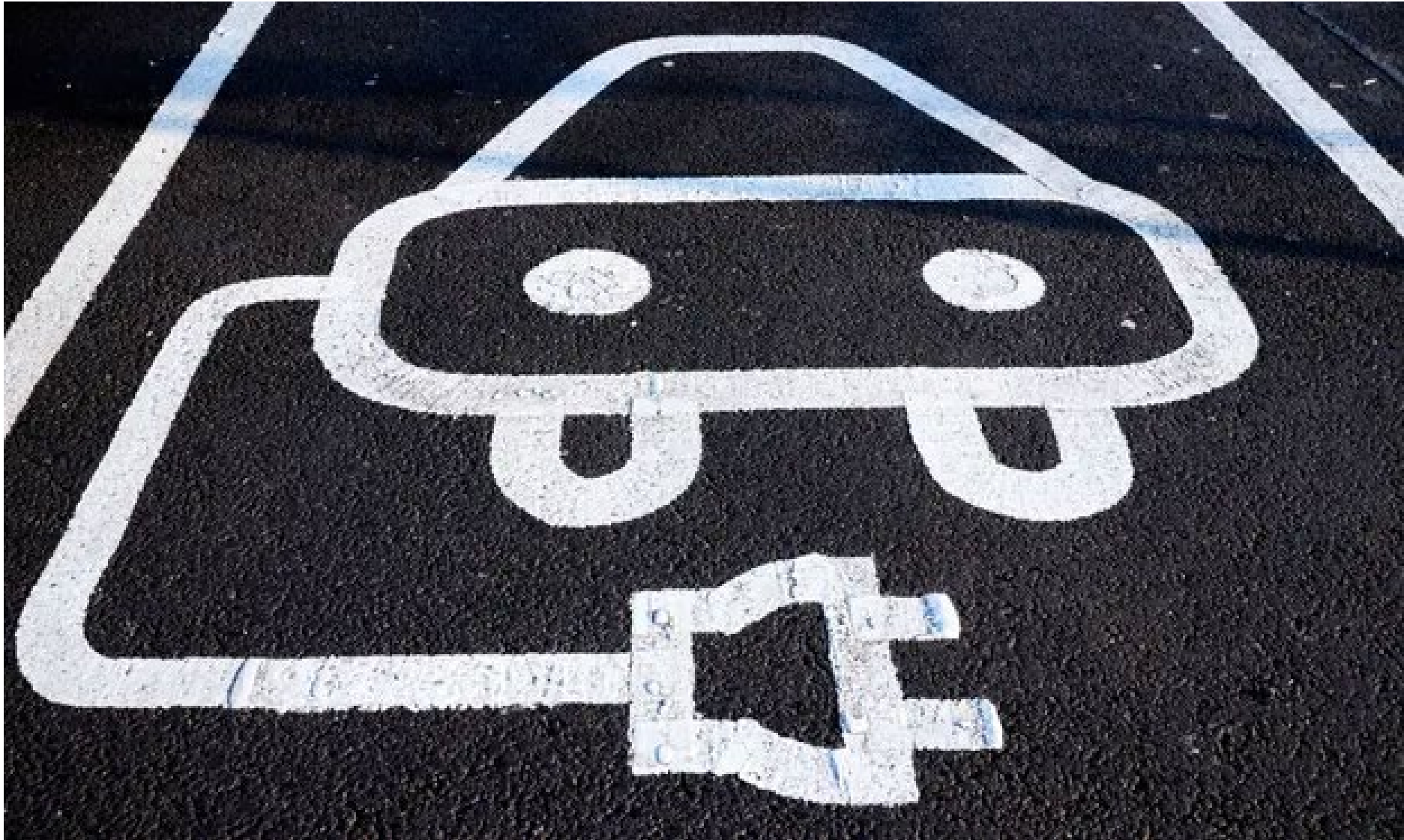
Replaces existing electrical panel

Control every circuit in your home from your phone

Pair with solar and battery for optimal generation and storage

Pricing: \$3,500 + installation



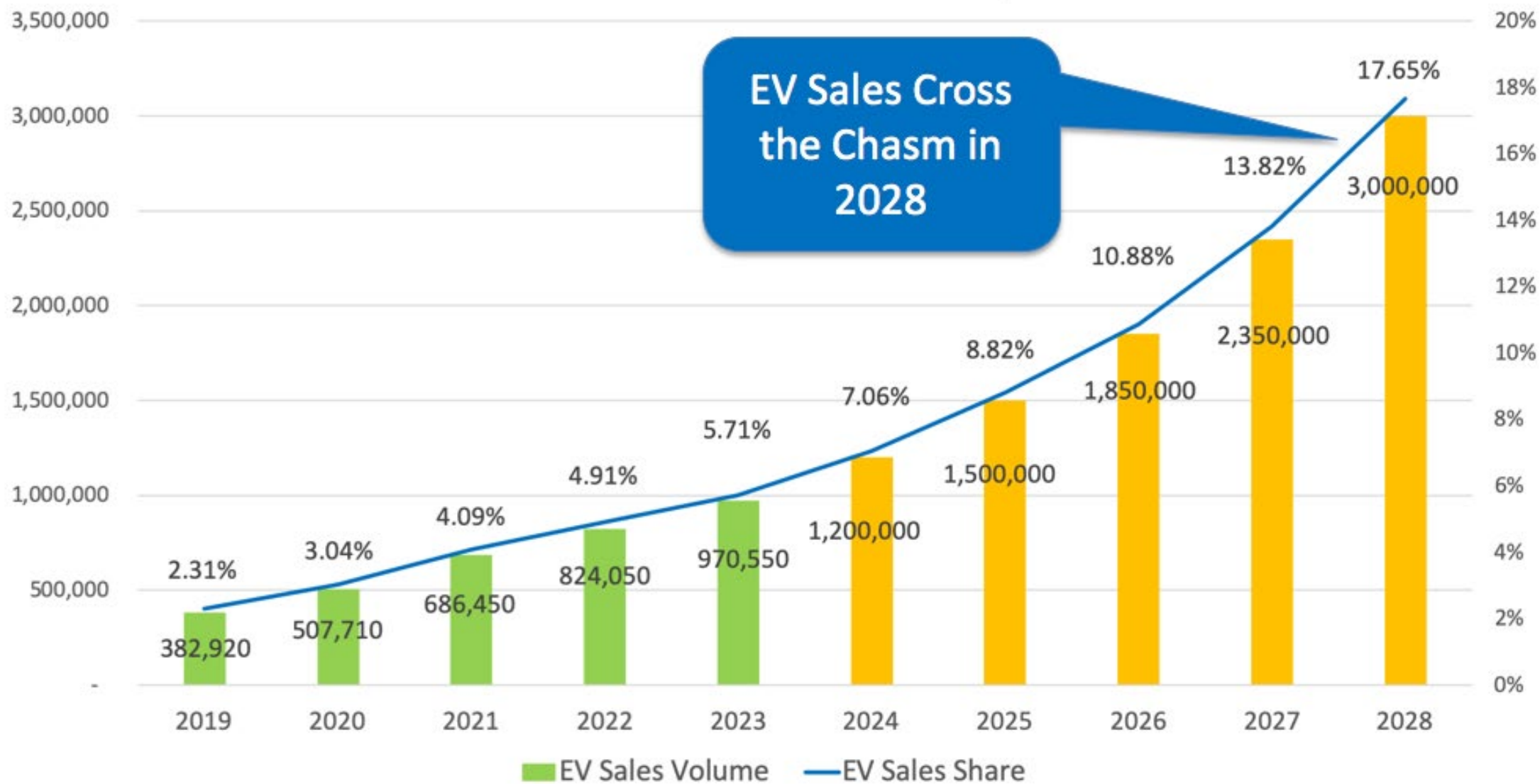


# 2022



# US Electric Vehicle Sales Forecast: 2019-2028

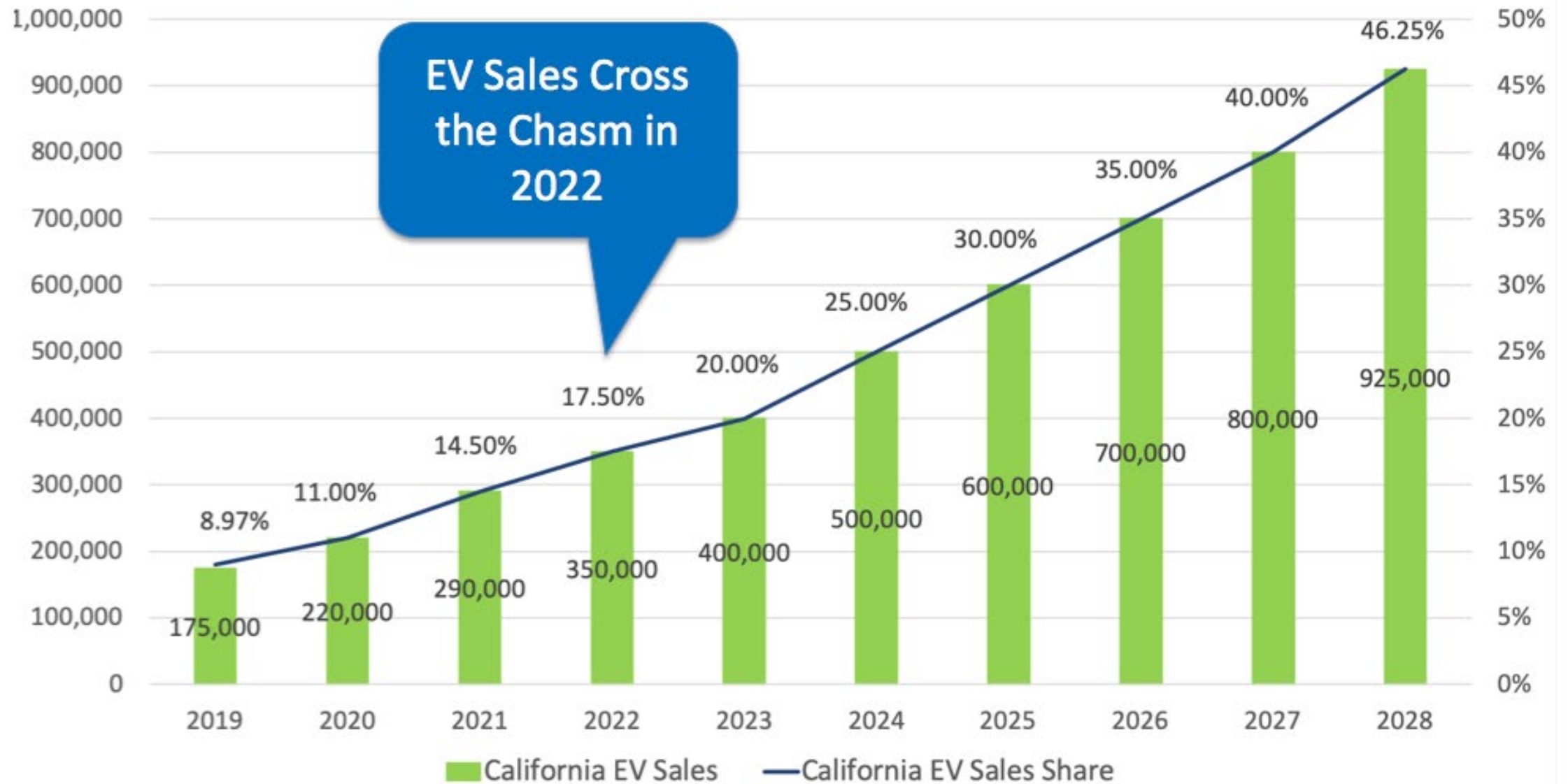
Forecast & Chart: Loren McDonald/EVAdoption.com





# California Electric Vehicle Sales Forecast: 2019-2028

Forecast & Chart: Loren McDonald/EVAdoption.com





# Setting the pace...

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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

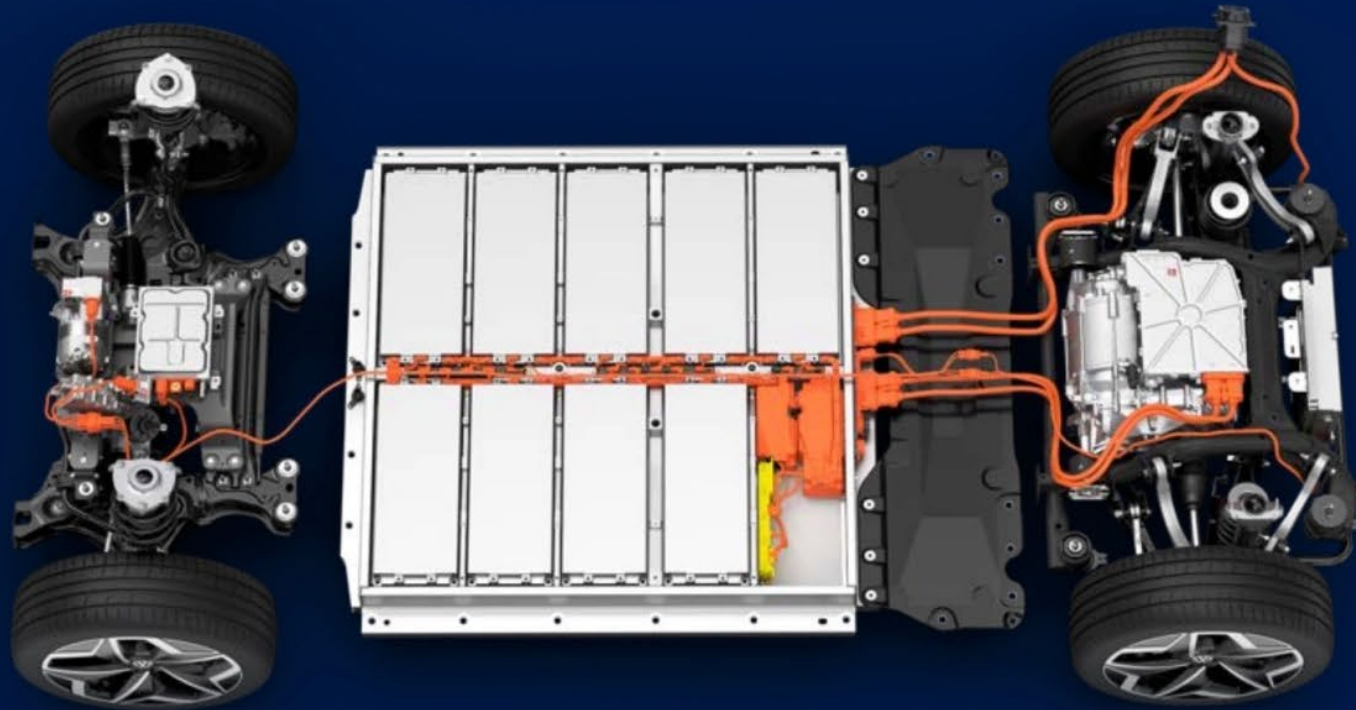


## Improvements to MEB (skateboard) platform

- 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







GAS 13 <sup>8</sup>/<sub>5</sub>  
TAX 4 <sup>4</sup>/<sub>5</sub>  
TOTAL 17 <sup>8</sup>/<sub>5</sub>



# 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



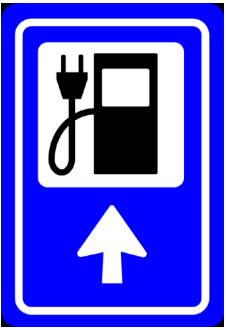
## DC level 3

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)

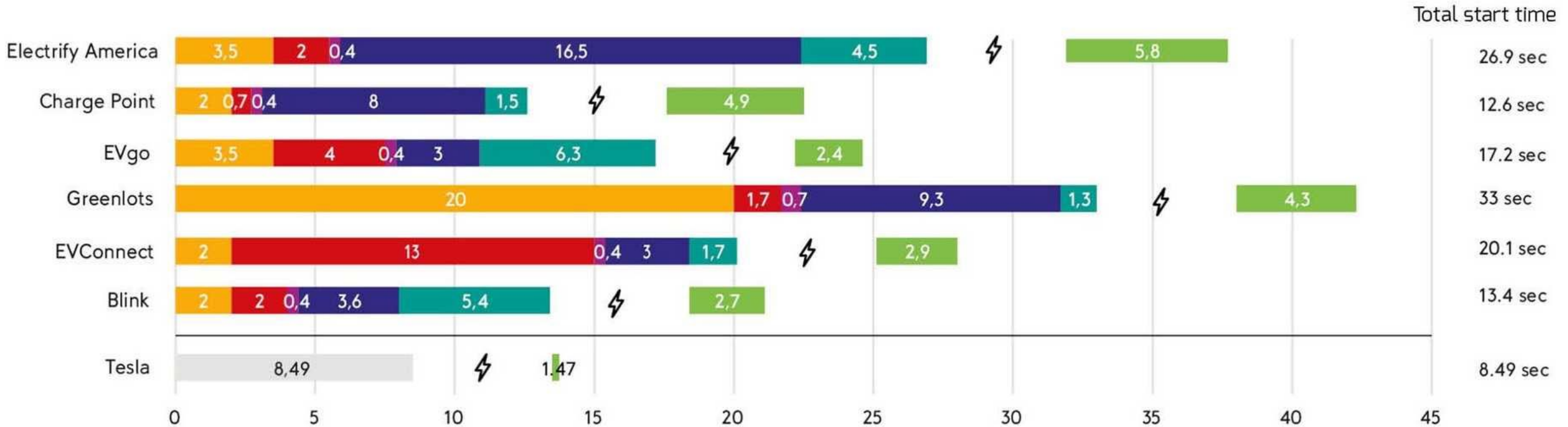
- 730 locations / 2,438 charging units / 500+ DC fast

Charging time for 100 km of BEV range<sup>[citation needed]</sup>

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.

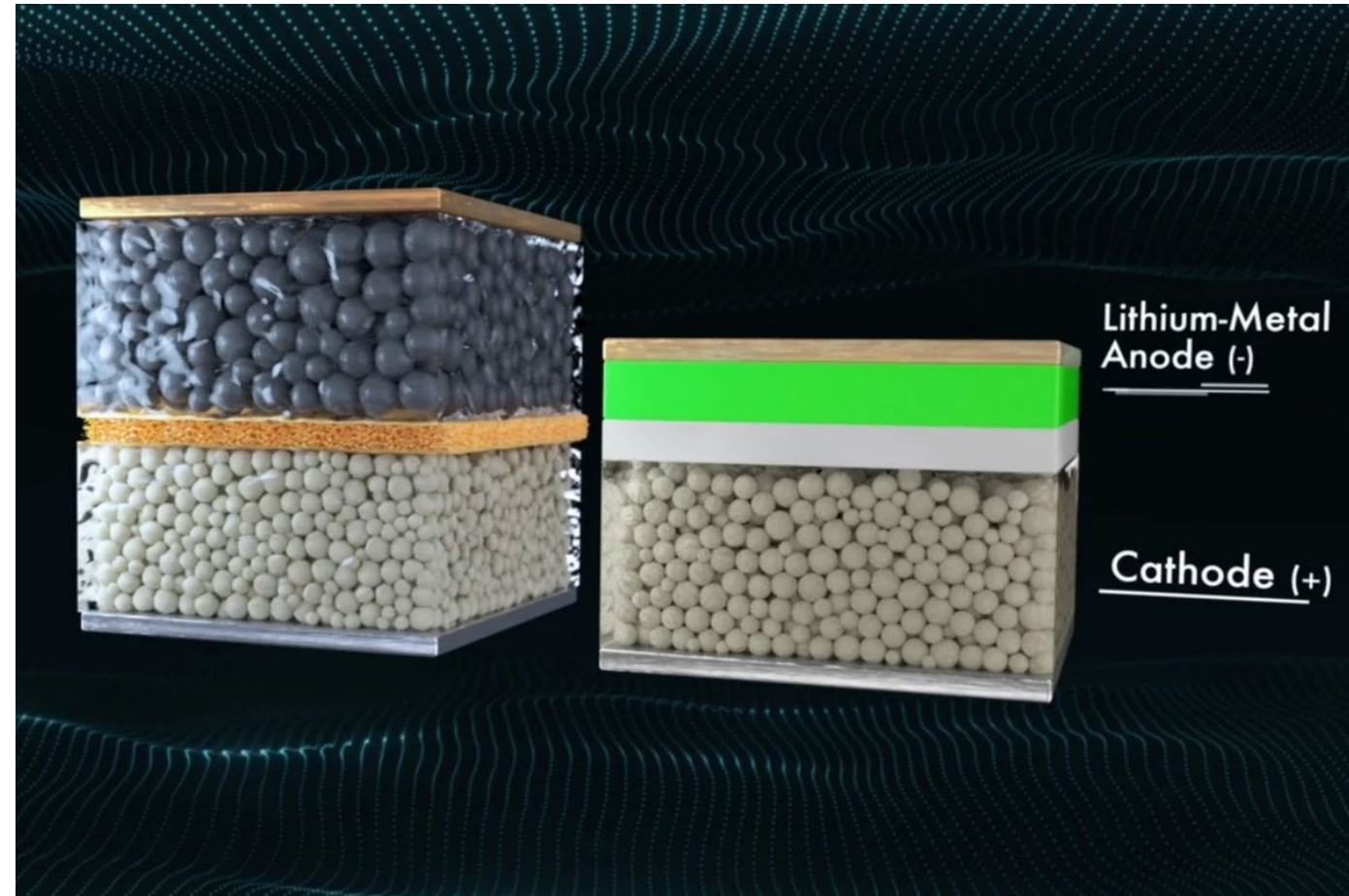


# QuantumScape Solid state battery

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.

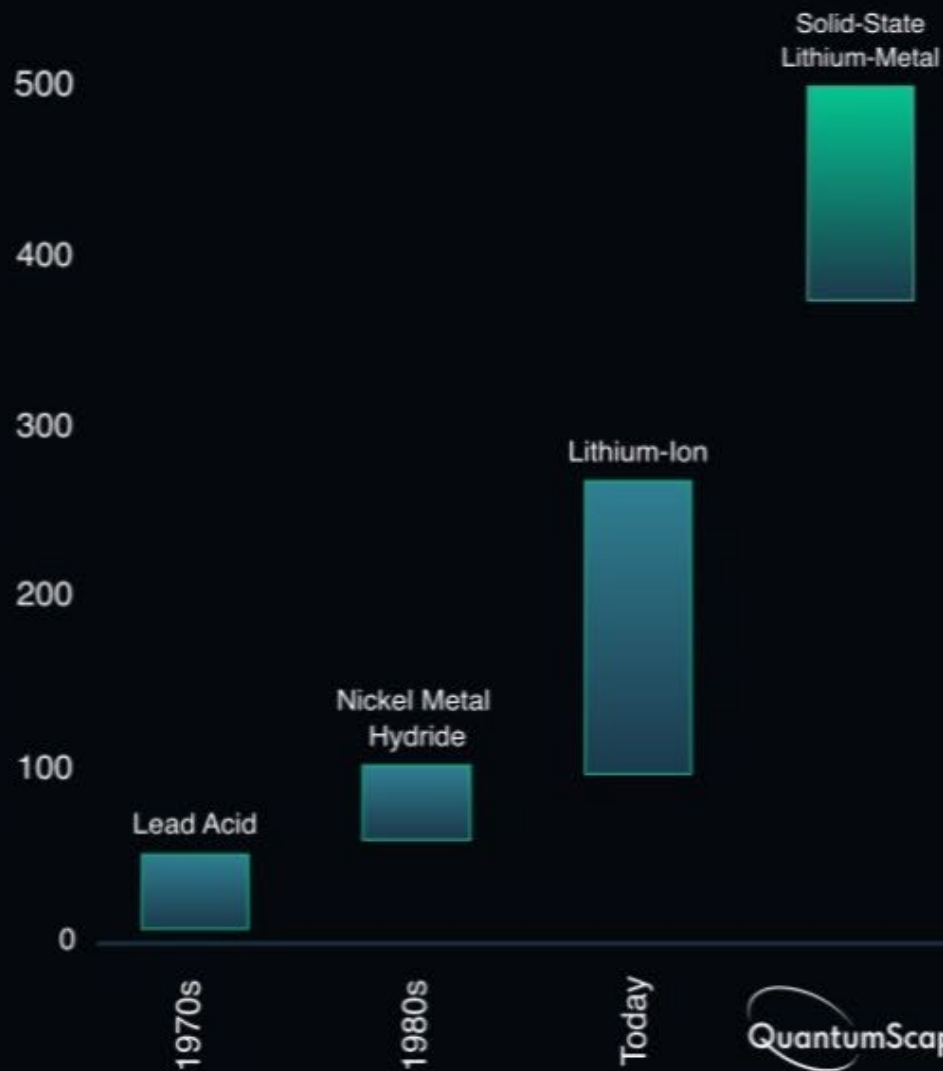


# Solid-State Lithium-Metal

The Next Generation of Battery

**Energy Density**

Cell Mass-specific Energy (Wh/kg)

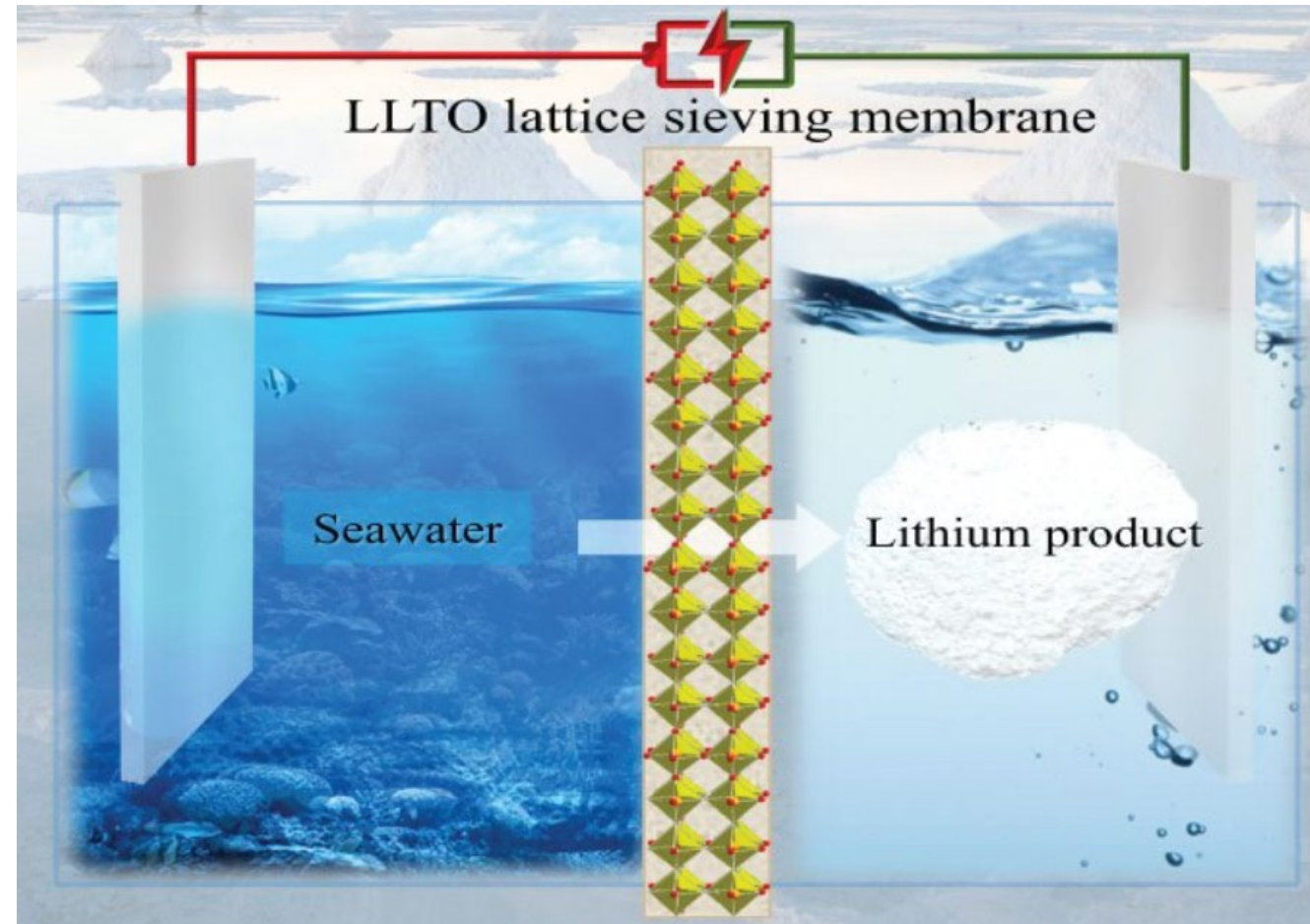




# KAUST – Lithium from seawater

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

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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

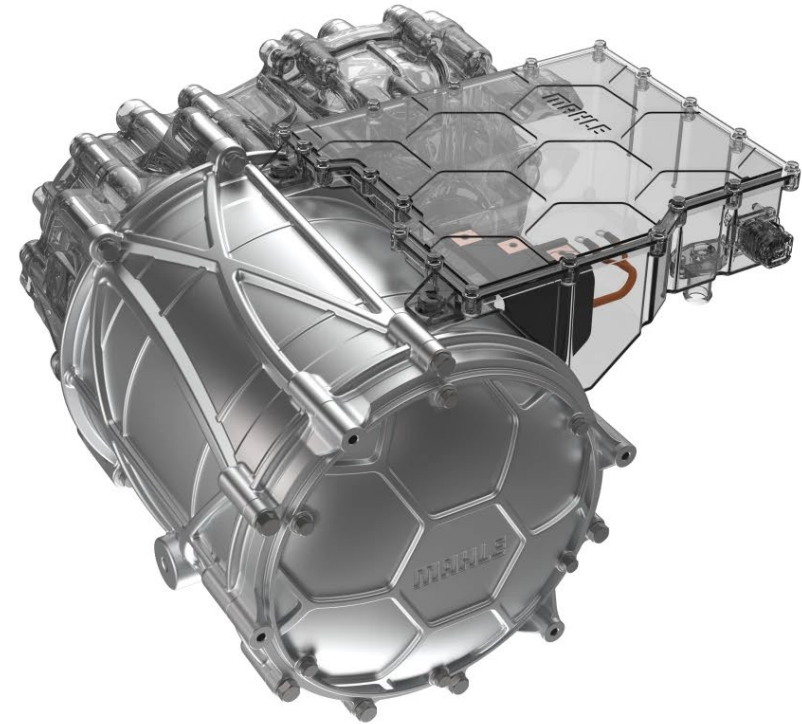


# Mahle magnet-free motor

---

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

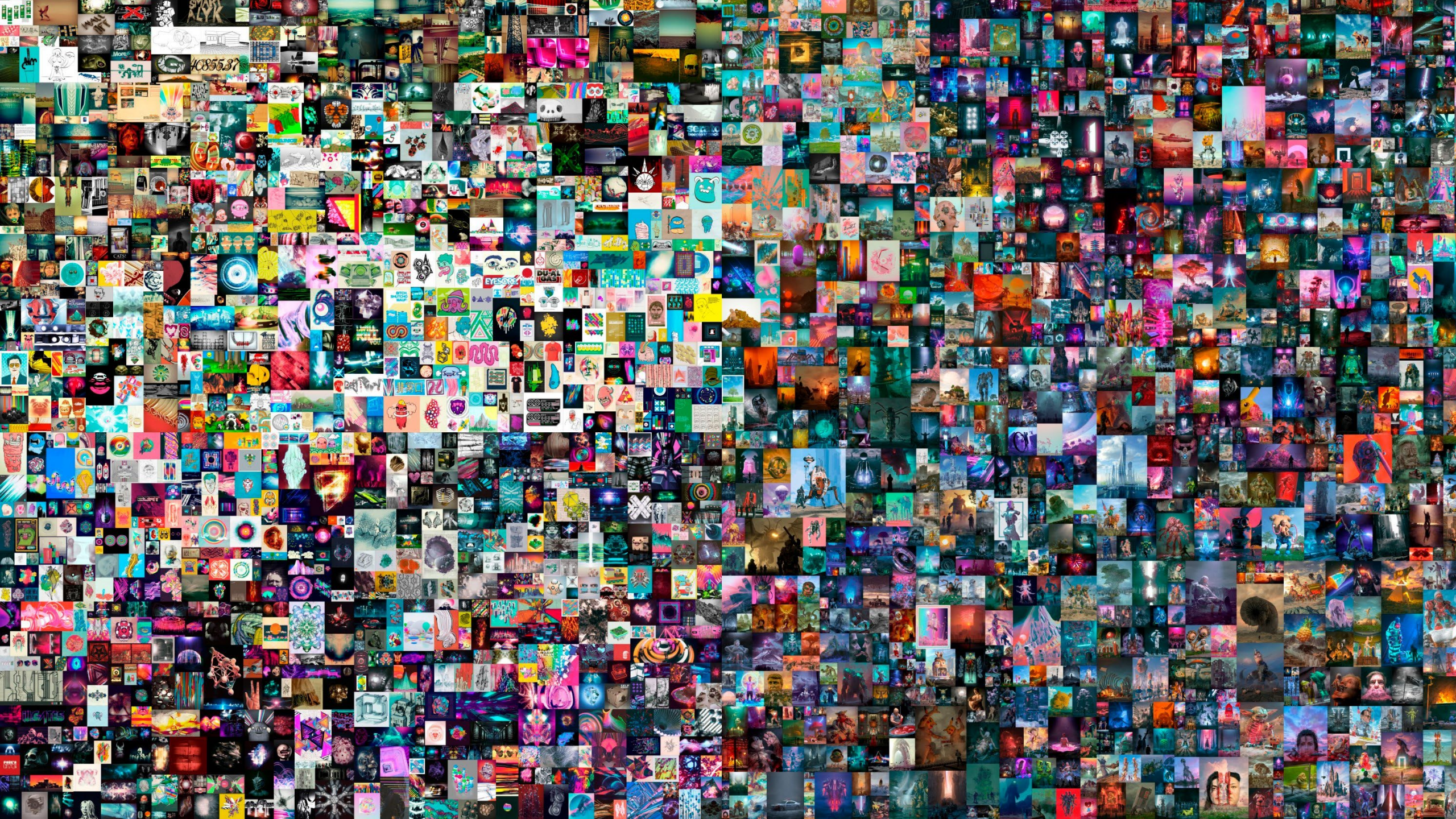
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E-ink like technology

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



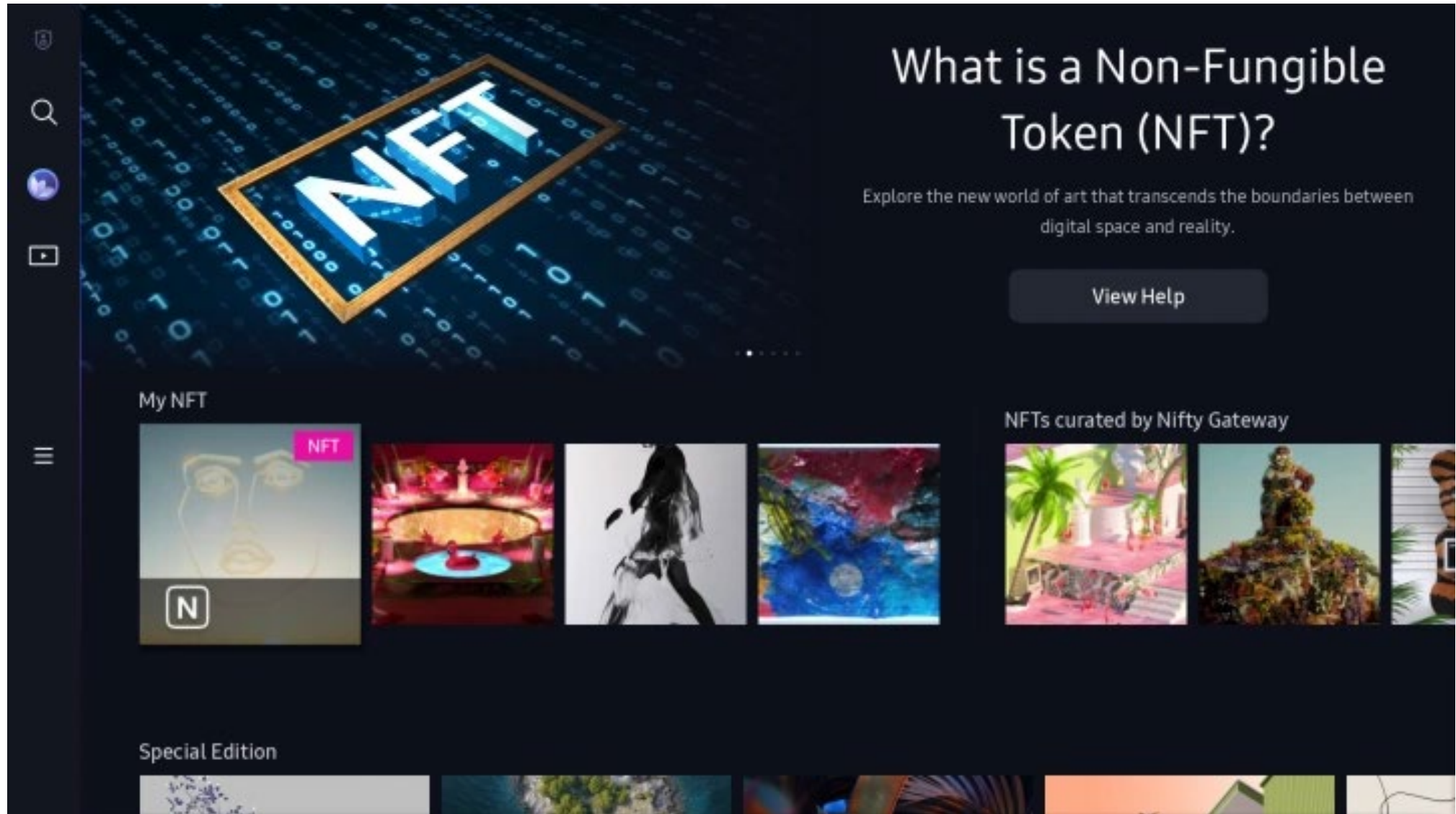








# NFTs on Samsung TVs





# 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

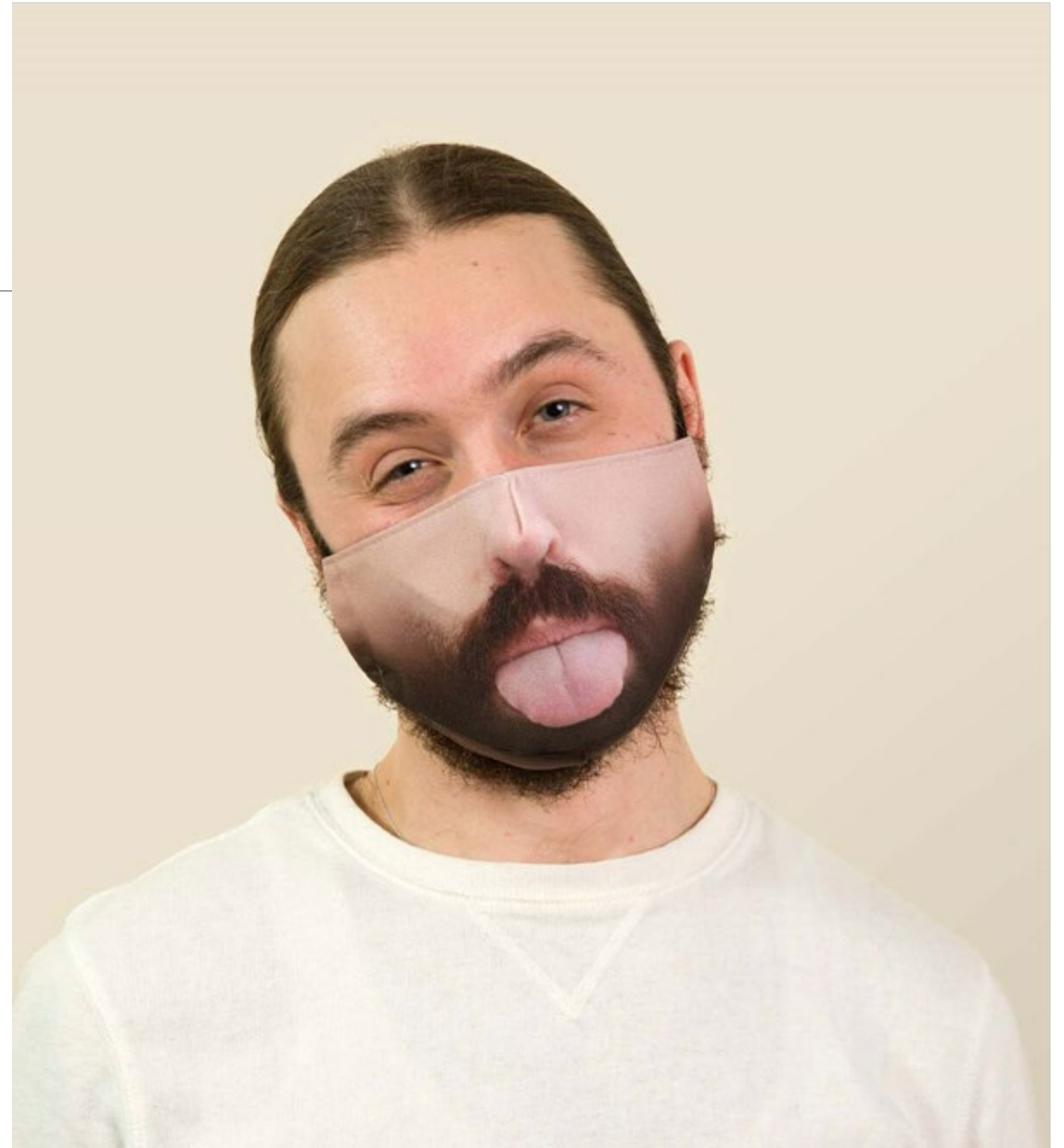


# Maskalike

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\$27

Avail: Now



## Connect on LinkedIn and Twitter

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David Cieslak, CPA.CITP, GSEC

*EVP, Chief Cloud Officer*

RKL eSolutions, LLC

@dcieslak

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

<https://bit.ly/2PmRqPH>